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COMBATING CHILDHOOD COMMUNICABLE DISEASE
COUNTRY ASSESSMENT
GHANA

Ministry of Health
Canadian International Development Agency
Agency for International Development

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Accra, Ghana

SUMMARY

The Combatting Childhood Communicable Diseases (CCCD) project is a cooperative health project between African nations and the nations comprising Cooperation for Development in Africa (CDA). The CCCD project aims to reduce childhood mortality and morbidity through control programs for diseases preventable by immunization, diarrheal disease and malaria. The United States Agency for International Development takes a lead role in the implementation of the CCCD Project.

In December 1982, a three person team (including a representative of the Canadian International Development Agency (CIDA) carried out a CCCD Country Assessment of Ghana. The assessment involved officials of the Ministry of Health (MOH) and was carried out through meetings with responsible persons in different sections of the MOH, review of available documents and records, visits to regional and local health facilities and discussions with representatives of international agencies.

The MOH is the largest provider of modern health services in Ghana. The MOH maintains a system of hospitals, health centers, polyclinics, health posts and some community health workers throughout Ghana. The next most important network of health facilities is that maintained by religious Missions. The Mission health facilities care for between 1/3 and 1/2 as many out-patients as the MOH.

Primary health care (PHC) has been an important concept in the documents and policy statements of the Ministry of Health since 1977. The stated purpose of PHC is to extend health services to the presently largely unserved rural populations of Ghana through community health workers and other means. To date, there has been limited implementation of PHC, in part because of financial limitations. In 1980, the MOH decided to implement PHC in one district in each health region per year. District health management teams which have the responsibility for implementation of PHC have been increasingly active in some districts in 1982.

The Expanded Program on Immunization (EPI) was introduced in Ghana in 1979. Although successful in improving the existing cold chain and acquisition of vaccines, the EPI has had limited impact, achieving coverage rates with measles vaccine of children by the first birthday of between 10 and 20%. The bulk of vaccinations of children are carried out by the Maternal and Child Health (MCH) Child Welfare Clinics (CWC). Diarrheal disease is an important cause of morbidity and mortality in children less than five years of age estimated to cause about 10% of all deaths in that age group. In 1982, a joint WHO and MOH plan of operations for control of diarrheal disease in Ghana was elaborated. As of December 1982, the operation plan had not been acted on by the Ministry of Health. Malaria is the leading cause of morbidity and mortality in Ghana. There is no formal malaria control strategy for Ghana. The major present control activity is use of chloroquine and other anti-malarial drugs for treatment of illnesses believed to be malaria and to a limited extent, for chemoprophylaxis.

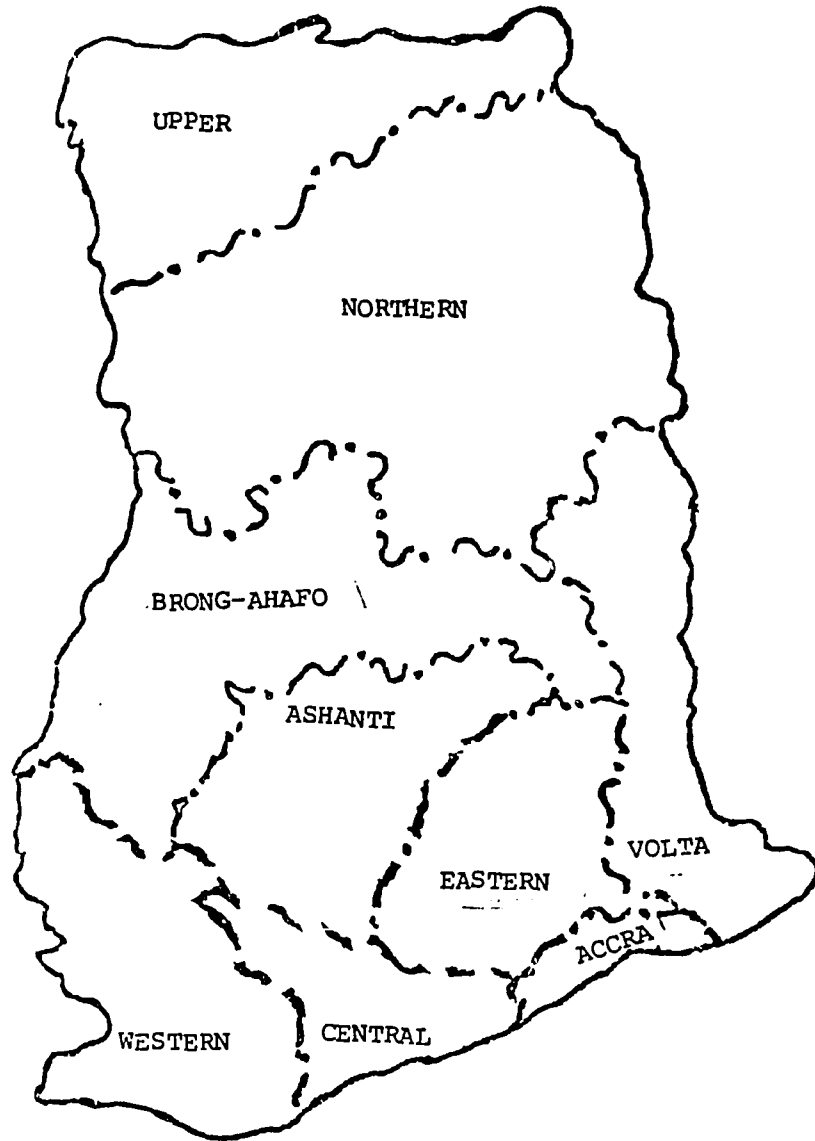
In 1982, Ghana has experienced major economic difficulties including rapid inflation (approximately 100% per year), economic stagnation (many businesses and factories operating at 10% of capacity) and limited availability of foreign exchange. These chronic problems may be aggravated by food shortages caused by scanty rainfall during 1982. In the government health services, these economic difficulties have interfered with program operations--particularly because of inadequate amounts of drugs and other essential supplies.

In view of the importance of the three components of the CCCD Project as causes of childhood mortality and the present difficulties faced by the MOH in Ghana, the CCCD Assessment Team recommended a \$2 million assistance package for 1983-1986. This package would help the MOH maintain present service coverage levels at approximately 25% for EPI and malaria and allow introduction of diarrheal disease activities targetting a 25% coverage. The activities include:

- a vehicle and supplies for a CCCD program evaluation team.
- equipment for local production of oral rehydration salts.
- technical assistance and equipment for training health workers.
- technical assistance equipment and supplies for a mass media type health education campaign on oral rehydration.
- vehicle spare parts.
- raw material for local chloroquine and disposable syringe production.
- equipment and training for cold chain maintenance capacity.

If the Government of Ghana: a) institutes user fees for MOH services; commits foreign exchange resources for commodities needed under the CCCD project and c) institutes more adequate control of vehicle use, the CCCD Assessment Team recommends a larger package totaling \$2.7 million. The larger package includes trucks for each region for distribution of supplies and increases in the quantities of support in the \$2 million package.

The CCCD Assessment Team recommends that the Ghana CCCD Project be presented first to the Canadian International Development Agency for funding and then to the U. S. Agency for International Development.



GHANA

CONTENTS

	Page
Summary	1
1. Introduction: CCCD in Africa	5
1.1 Scope of project	
1.2 Purposes of project	
1.3 Project design	
2. Country Assessment for Ghana	6
2.1 Method of assessment	
2.2 Geography, demography, government and economy	
2.3 Organization of health services	
3. Epidemiology of CCCD target diseases	23
3.1 Communicable Disease Reporting	
3.2 EPI diseases	
3.3 Diarrheal disease	
3.4 Malaria	
4. National health policy regarding childhood diseases	27
4.1 The primary health care plan	
4.2 Expanded programme on immunizations (EPI)	
4.3 Diarrheal disease control	
4.4 Malaria	
5. Proposals for CCCD in Ghana	41
5.1 Overview	
5.2 Proposed CCCD regional support	
5.3 Proposed CCCD bilateral assistance to Ghana	
Appendices:	
1. Persons contacted by the CCCD team	49
2. Documents reviewed by CCCD team	51
3. Training equipment recommended	53
4. Health education equipment recommended	53
5. Recurrent cost analysis	54

1. INTRODUCTION: CCCD IN AFRICA

1.1 Scope of Project

The Combatting Childhood Communicable Diseases Project (CCCD) is a major co-operative effort by African Nations and the Nations comprising the Cooperation For Development in Africa (CDA). Its goal is to reduce childhood mortality, disability and morbidity in Africa through improved prevention and treatment of childhood infectious diseases. CCCD is a specific response to the World Health Organization's request for increased technical cooperation in support of primary health care programs in Africa.

Assessments of current health status in Africa clearly identify children under the age of five years as at exceptionally high risk of morbidity and mortality. Of the four million children born each year in Africa, it is estimated that 25% will die before their fifth birthday. Millions more are weakened or permanently disabled by disease.

The risk of death and disability for African children is 20-25 times higher than that experienced by children born in developed countries. This represents an unacceptable level of largely preventable human suffering. The basic causes are a complex interaction of undernutrition, infectious diseases and economic underdevelopment. A firm governmental commitment to integrated primary health care, focused on community-based initiatives to prevent and control infectious diseases, can significantly improve child health during the next ten years.

1.2 Purposes of Project

CCCD provides a regional support mechanism for strengthening the ability of African national and regional health institutions to identify priority health problems and design, implement and evaluate appropriate integrated strategies for prevention and treatment of these diseases. Three categories of childhood disease have been chosen on the basis of their importance as causes of mortality, the effectiveness of available technologies to alleviate them and the feasibility of addressing them in an integrated manner. The categories are the vaccine preventable diseases, acute diarrheal disease and malaria. While these three categories form the core of the CCCD project, other important causes of childhood mortality or morbidity such as meningitis, yellow fever or yaws can be included.

The CCCD Project provides two types of technical support, regional and country specific (bilateral). Regional support is available to all subsaharan African nations in the following areas:

- Training
- Training development/adaptation
- Health education/promotion
- Operations research
- Health information systems

In addition, it is anticipated that most subsaharan African countries will receive country specific (bilateral) assistance during the eight years of the CCCD project. Country specific assistance will normally consist of provision of commodities, equipment and supplies and the services of a resident technical advisor for approximately four years. Such assistance will be focused on the implementation of integrated national programs to immunize children, provide oral rehydration treatment for acute diarrhea and provide presumptive treatments of fever for malaria. Assistance will include attention to management, logistic, and health education systems necessary for the efficient implementation of such services.

1.3 Project Design

Under the CCCD project, an agreement was executed in 1981 between AID and CDC. This Agreement funded the major portion of regional support activities and provided funds for personnel to participate in country assessments.

The objective of an assessment is to determine the current child health status of a country; assess current plans and strategies, identify available and required resources and specify external assistance needed to strengthen national CCCD related programs.

The country assessment report should contain the information necessary to develop of a project grant agreement for country specific (bilateral) activities.

2. COUNTRY ASSESSMENT FOR GHANA

2.1 Method of Assessment

In December 1982, an assessment of current and projected primary health care, MCH and certain other health activities was conducted by a three man team from the Centers for Disease Control (CDC), The Canadian International Development Agency (CIDA), and USAID in conjunction with officials of the Ministry of Health, Government of Ghana. Meetings were held with individuals having program responsibility in the Ministry of Health and the Ministry of Finance and Economic Planning as well as local representatives of international organizations. The team reviewed existing health and demographic data; program operations in primary health care, maternal and child health, yaws and yellow fever, malaria and health education programs; epidemiology of diarrheal disease, malaria and vaccine preventable diseases and future plans for their control. Based on this review and field visits, the feasibility of strengthening programs in these areas was analyzed and proposals for CCCD program support were developed and reviewed by an ad hoc project committee of the CCCD assessment team and MOH officials established for this purpose.

2.2 Geography, Demography, Government and Economy

2.2.1 Geographic Data

Ghana is situated on the south coast of the western bulge of Africa, on the South Atlantic Ocean, between five and eleven degrees north latitudes, and between one degree east and three degrees west meridians. It is bordered by the Atlantic Ocean to the south, Ivory Coast to the west, Upper Volta to the north, and Togo to the east.

Ghana has an area of 238,538 km² (92,100 mi²), a coastline of 537 km, and north-to-south length of 672 km. Half of the country is less than 152 meters (500 feet) above sea level, and the highest point is 883 meters (2,900 feet). The coastline is mostly a low, sandy shore backed by plains and scrub. A tropical rain forest belt, broken by heavily forested hills and many streams and rivers, extends northward from the shore. This area produces most of Ghana's cocoa, minerals, and timber. North of this belt is the savanna, with low bush and grassy plains. Climate is tropical, warm and fairly dry in the eastern coastal belt, hot and humid in the southwest corner, warm and humid in the forest belt, and hot and dry in the north. Except in the north, where the rainy seasons merge, two rainy seasons are separated by a short, fairly dry period in July and August, and a longer dry season from December to February. A dry northeasterly wind, the harmattan, blows from December to March. Annual rainfall in the coastal zone averages 83 cm. (33 in.).

A major characteristic of the country's geography is the man-made Volta Lake, which extends from the Akosombo Dam (completed in 1966) in southeastern Ghana, some 520 km (325 mi) to the Northern Region. The lake is used to generate electricity, and provides inland navigation.

Ghana has nine administrative regions, which are further subdivided into 67 districts.

Accra is the nation's capital and largest city. Major ports are at Tema and Takoradi.

2.2.2 Demographic Data

The last national census in Ghana was conducted in 1970; a planned census in 1982 has not taken place. The estimated population, 1982 mid-year, is approximately 12,600,000 persons, with an annual growth rate of 3.5%. The estimated total fertility ratio is 6.7, while the crude birth rate is 50/1,000 population. The crude death rate is 19/1000, the infant mortality rate was estimated at 101/1000 live births (1981), maternal mortality is estimated between 5-15/1000 births, and life expectancy at birth is about 50 years. Women of child bearing age constitute 22.5% of the population, and children under age 5, 20%.

Structure - The population structure by age and sex is shown in Table 1.

Table 1
GHANA - POPULATION BY AGE AND SEX
(1982 MID-YEAR ESTIMATION)

Age	Male	Female	Total	%
0-4 yrs.	1,110,149	1,290,674	2,400,823	19.1
5-14 yrs	1,602,016	1,865,747	3,467,763	22.6
15-45 yrs.	2,314,535	2,752,574	5,067,109	40.3
45 + yrs.	719,413	9,2,751	1,632,164	13.0
TOTAL	5,746,113	6,821,746	12,567,859	100.

Population distribution: Estimated national population density is 53 persons per km² (1982). According to the 1970 census, about 70% of Ghanains live in rural areas. Approximately 83% of the population live in communities of 200 people (30 to 40 households) or greater.

Table 2
GHANA - URBAN/RURAL POPULATION BY SIZE AND NUMBER.
1970 CENSUS DATA

Population Size	Number of Localities	% of Total Population
Less than 100	35,974	9.3
100-1,000	10,512	37.5
1,000-5,000	1,148	24.3
5,000-20,000	112	10.9
20,000-50,000	17	5.4
50,000 +	6	12.6

Table 3

GHANA - POPULATION BY REGION AND REGIONAL CAPITALS.

MID-YEAR 1982

<u>Region</u>	<u>Population</u>	<u>Capital</u>	<u>Population</u>
Greater Accra	1,222,789	Accra	998,772
Western	1,144,939	Sekondi/Takoradi	117,721
Central	1,317,371	Cape Coast	69,273
Eastern	1,846,990	Koforidua	59,598
Volta	1,403,588	Ho	32,568
Ashanti	2,172,297	Kumasi	401,613
Brong-Ahafo	1,144,939	Sunyani	67,998
Northern	1,083,355	Tamale	191,245
Upper	<u>1,280,422</u>	Bolgatanta	<u>42,074</u>
TOTAL	12,616,690		1,980,862

Ethnically, Ghana is divided into many small tribal groups, with more than 50 languages and dialects spoken. The larger linguistic groups are the Akans, which include the Fantis along the coast and the Ashantis in the forest region; the Guans, on the plains of the Volta River, the Ga- and Ewe-speaking peoples of the south and southeast, and the Moshi-Dagomba-speaking tribes of the Northern and Upper regions. Tribal identification and loyalty is as strong as national identification for half of Ghana's people; there have been outbreaks of inter-tribal violence as recently as 1981.

English, the official and commercial language, is taught in all schools. About 25% of the general population is literate in English.

45% of the population are Christian, 38% traditionalist (animist), and 12% Muslim.

2.2.3 Government

Ghana is governed by the Provisional National Defense Council (PNDC), Committee of two to seven persons appointed by its Chairman. In its 25 years of independence since 1957, Ghana has had nine governments, three of them elected, and six military. There have been four changes of government in the past five years.

Regional and district councils exist to advise the Government Chief Executive at those levels, but they have little power; Ghana is a unitary state. Traditional tribal chiefs still have powers in land allocation and family law, and meet in regional councils, but have little influence on national issues.

2.2.4 The Economy

By African standards, Ghana has a diverse and valuable resource base. The country remains basically agricultural, however, with most of its workers engaged in farming. Cash crops consist mainly of cocoa and cocoa products (which provide about 60% of export revenues), timber products, coconuts and other palm products, shea nuts, and coffee. Corn, plantains, rice, yams, cassava and groundnuts are basic foodstuffs. Minerals, principally gold, diamonds, manganese ore, and bauxite, are mined and exported. One commercially exploitable oil field has been discovered and is producing oil. Ghana's industrial base is relatively advanced compared with many other African countries. Import-substitution industries include textiles, steel (using scrap for raw material), tires, oil refining, simple consumer goods, car, truck, and bus assembly, and pharmaceuticals. These industries depend on imports for most of their raw materials.

Ghana attained independence in 1957 with a substantial physical and social infrastructure, as well as \$481 million in foreign reserves. However many of the Nkrumah era investments consisted of public works with little revenue-generating capacity, and poorly conceived, badly managed agricultural and industrial schemes. By the mid-1960's, Ghana's reserves were gone, and the era of increasing debt and foreign exchange shortages began. Real per capita income has steadily declined. Adapted industrial technologies are inefficient, use few domestic resources, and require scarce foreign exchange. The Government bureaucracy has been increased to meet employment objectives. The Cocoa Marketing Board employs about 105,000 persons, yet cocoa production has fallen from a peak of 566,000 metric tons in 1964/65 (38% of the world total) to about 225,000 tons (13% of the world total) in 1981/82. Cocoa has been increasingly used as a source of Government revenue. Low producer prices have led to deteriorating farms and declining output.

Gold production in the Government-managed mines, fell from about 950,000 ounces in 1960 to 340,000 ounces in 1981.

A policy of price controls, an overvalued currency (a twenty-fivefold difference exists between the official and the unofficial exchange rates of the Cedi in late 1982), and strict foreign exchange controls, have discouraged investment and hurt production, as shortages of critical spare parts, fuel, tires, or cement, etc., have shut down production lines and construction sites.

Triple digit inflation in the late 1970's, and 116% in 1981 over 1980, has resulted from increasing government deficits, and declining public and private production, imposing severe hardships on Ghanaians. Wage earners have to supplement incomes by farming, or other means. Government deficits rose to almost 60% of expenditures in each of fiscal years 1980-81 and 1981-82.

The present government wishes to redistribute income to the needier groups in Ghana, reduce corruption, increase agricultural production, lower prices, and reduce government spending.

Cocoa production is expected to decline by about 15% in 1982. The industrial sector is grinding to a halt because few import licenses have been issued in 1982. Trading activities are down. An exodus of teachers, doctors, and skilled workers to other countries has become a major problem. Aluminum production is down because the low water level in Volta Lake caused by lower rainfall in 1982 has reduced electricity supply to VALCO. Food production in 1982 has suffered from the lower rainfall and reduced fertilizer supply.

Table 4

GHANA - KEY ECONOMIC INDICATORS
(All values in US \$ Million unless otherwise indicated)

<u>INCOME AND PRODUCTION</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1981 % 1980 Chg.</u>
GDP at current prices (million cedis) ^a	26,279	37,111	58,452	55.0
GDP at constant (1975) prices (") ^a	4,996	5,121	5,121	0.0
Per capita GNP (Dollars) ^a	400	N/A	N/A	-
Cocoa (1,000 MT)	265	296	258	-12.8
Gold (1,000 Troy Ounces)	362.4	353.0	340.6	- 3.5
Diamonds (1,000 Carats)	1,253.2	1,258.2	836.5	-33.5
Manganese (1,000 MT)	270.8	252.5	223.1	-11.6
Bauxite (1,000 MT)	213.7	225.1	181.3	-19.5
Aluminum (1,000 MT)	168.7	187.7	190.5	1.5
 <u>MONEY, PRICES AND BUDGET</u>				
Money supply (end December)	1,739.8	2,263.7	3,728.0	64.7
Consumer price index (1977=100)	267.3	401.2	868.6	116.5
Wholesale price index (1977=100)	244.6	349.5	523.7	49.8
Government expenditure ^b	1,730.2	2,904.0	3,273.0 ^a	12.7
Government revenue ^b	1,072.7	1,192.5	1,564.0 ^a	31.2
Government deficit ^b	657.5	1,711.5	1,709.0 ^a	0.0
Government debt (end December)	2,435.1	3,396.5	5,302.0	56.1
 <u>BALANCE OF PAYMENTS AND TRADE</u>				
Gross international reserves (end Dec.)	299.7	215.6	196.2	- 9.0
External debt (end December)	1,305.5	1,324.5	1,615.4	22.0
Annual debt service	65.8	68.0	82.8	21.8
Balance of trade	263.0	84.6	0.7	-99.2
Exports, FOB	1,066.1	1,159.5	766.4	-33.9
Imports, FOB	803.1	1,072.8	765.7	-28.7

a) These estimates must be used with caution. The official exchange rate, 1 cedi = .3636 \$ U.S. or ₵2.75 = 1.00 (\$) does not reflect the true value of Ghanaian currency.

b) Fiscal years (July 1-June 30) 1979-80, 1980-81, 1981-82.

2.3 Organization of Health Services

2.3.1 General

Health services in Ghana are provided by:

1. Ministry of Health facilities and personnel
2. Mission health facilities and personnel
3. Private professionals: doctors, dentists, and hospitals
4. Traditional healers, herbalists, psychic healers, and traditional birth attendants
5. Health facilities and personnel of mines and other industries
6. University Hospitals in Accra and Kumasi
7. Local councils, which employ "dressers", and health inspection assistants
8. Village health workers, overseen by village health committees, (in a few scattered projects)

In addition, significant volumes of traditional and modern medicines are sold "over the counter" in traditional markets and urban drug stores.

Data are not available on the relative or absolute volumes of care provided by these various sources. The modern health sector, both governmental and private, is concentrated in urban areas, and most of the 70% of Ghanaians in rural areas still live and die without effective access to modern health care. It is therefore possible that traditional healers provide a greater volume of services in Ghana than do the Ministry of Health, or the entire modern sector.

The Ghana Psychic and Traditional Healers Association claimed in a letter to the PNDC in February 1982, to have a membership of 29,747 in Ghana.

It is highly probable that a larger quantity of pharmaceuticals are purchased privately in Ghana than are provided by the Ministry of Health.

Mission hospitals and clinics distributed in districts and small population centers throughout Ghana are making an increasingly important contribution to care, as government institutions deteriorate. In 1981/82, mission hospitals had a total of approximately 4,000 beds, and government hospitals about 13,000 beds in all. Mission health units saw about one half as many outpatients as government institutions. The mission health institutions work within a framework and policy established by the Ministry of

Health, and receive grants from the Ministry to pay part of their operating expenses, totaling 20.9 million cedis in 1981/82.

2.3.2 Ministry of Health

At the national level, the Ministry of Health is divided into a number of functional divisions: medical care, nursing, epidemiology, maternal and child health/family planning, nutrition, environmental health, dental health, leprosy, health education, mental health, and medical stores. These divisions are represented at the regional level, and in most cases at the district level and below, but at these levels they report administratively to the Regional Medical Officer of Health, or District MOH or Health Center Superintendent, as the case may be. (Still, they have enough contacts with, and influence from, their technical supervisors at national level, to weaken integrated management control at regional level).

The Epidemiology Division is represented at the regional level and below by "Medical Field Units." The MFU technical personnel are responsible for communicable disease surveillance and reporting, diagnosis, treatment, and contact follow-up, also for maintaining and distributing vaccines.

The Maternal and Child Health Division (MCH) is represented at the regional level and below by Public Health Nurses and Community Health Nurses, many of them also trained in midwifery, and by midwives. These personnel provide antenatal and postnatal care, attend deliveries, and child welfare clinics, at health centers and posts, and at separate MCH clinics, fixed and mobile.

Both MCH personnel and MFU technicians perform immunizations. MCH personnel do not normally provide treatment, but refer patients to hospitals or to the Medical Assistant at a health center or post. MFU teams were mobilized to carry out the Yaws/Yellow Fever mass campaign throughout Ghana in 1981 and 1982.

Health councils have been appointed by the PNDC Government at the national and regional levels in 1982, and are planned or in the process of formation at the district level. These councils are made up of members of the public and health workers, and are to advise the Chief Executive and Ministry of Health Executive Officer at their respective levels. Also in 1982 all health institutions have formed "Workers' Defense Committees" from among their workers, to monitor and advise the management of the institution.

In December 1982, the PNDC announced a policy of decentralization of government functions from national to regional and district levels. It is too early to assess the effects of these recent changes on Ministry of Health services.

2.3.3 Facilities

Table 5
Health Facilities in Ghana, 1982

<u>Region</u>	<u>Number Of Districts</u>	<u>Hospi- tals MOH</u>	<u>Hospi- tals Mission</u>	<u>Hosp. Quasi Govt.</u>	<u>Hospi- tals Mines</u>	<u>Health Centers</u>	<u>Health Posts</u>	<u>Dressing Stations</u>
Gtr.								
Accra	3	6	-	6	-	2	6	20
Eastern	10	10	3	1	1	11	18	-
Volta	8	6	8	1	-	11	28	21
Central	7	6	4	1	1	3	21	-
Western	7	9	2	1	4	3	12	12
Ashanti	10	6	4	1	2	14	4	-
Brong- Ahafo	7	1	-	1	-	14	11	18
Northern	7	3	2	1	-	7	9	9
Upper	<u>8</u>	<u>4</u>	<u>3</u>	<u>-</u>	<u>-</u>	<u>4</u>	<u>10</u>	<u>7</u>
Total	67	51	35	12	8	69	119	67

This table does not include private hospitals, for which data are not available.

Other important health facilities in Ghana are the training facilities, including the two medical schools, at Accra (Korle Bu) and Kumasi, the Rural Health Training School at Kintampo (where medical assistants and MFU technicians are trained) and the schools for nurses, midwives, and health inspectors. Other points of health service not tabulated above include nutrition rehabilitation centers, MFU offices, and MCH fixed and mobile clinics.

Other important health institutions in Ghana are the Center for Research into Plant Medicine, and "GIHOC" a government-owned industrial corporation that includes a 600 employee pharmaceuticals production unit.

Utilization: Complete data on health facility utilization are not available, however, it is known that many government hospitals have low occupancy rates, probably due to the very limited stocks of drugs and supplies. Most health posts and health centers do not serve the public at all in the afternoons, except for emergencies, and many have only brief sessions in the mornings in recent years because of shortages of drugs and supplies.

Reported total out-patient attendances (exclusive of special clinics such as CWC) at health facilities in Ghana, by region, for 1981 and the first half of 1982, are presented in Table 6.

Table 6
Total Out-Patient Visits

<u>Region</u>	<u>Year 1981</u>	<u>1982 (Jan-June)</u>
Greater Accra	699,203	356,368
Ashanti	899,852	504,556
Brong Ahafo	917,760	482,167
Eastern	901,394	626,409
Central	442,536	284,968
Volta	797,738	474,890
Northern	122,734	76,434
Upper	139,991	78,393
Western	346,788	194,026
Total	5,267,996	3,078,211

The Church Hospital Association of Ghana (CHAG) reports a total of 2,555,496 outpatients seen at Mission hospitals in Ghana in 1980.

2.3.4 Personnel

Table 7

<u>Category</u>	<u>1975 Total</u>	<u>Population per Professional</u>
Physicians	1,031	9,625
Dentists	60	165,383
Nurses	6,153	1,613
Midwives	4,932	2,012

No recent survey has been done, but it is believed that the number of Ghanaian physicians in Ghana peaked at about 1,200 several years ago, and has since declined to about 600, as emigration has outpaced production. Many physicians have left government ranks for private practice.

A staffing report from the maternal and child health/FP division for a recent year indicates that there were then 248 Public Health nurses at post in Ghana, including senior grades, and 1,215 community health nurses.

While vacancies exist for highly skilled and management grades of health personnel in the Ministry of Health service, personnel serving at health centers, health posts, MCH clinics, dressing stations, etc., have been greatly underemployed in recent years because of severe supply shortages and lack of transportation capability, with resultant drop in clientele.

2.3.5 Pharmaceuticals

Ministry of Health drugs are received at Central Medical Stores, at Tema, from GIHOC, private manufacturers in Ghana, and overseas sources. An exception is vaccines, which are received and stored in Accra under the control of the Epidemiology Division. Currently most vaccines are provided to the MOH free of charge by UNICEF.

Drugs are distributed from Tema to regional medical stores in the various regions, in a central MOH truck, which makes the rounds every 4-6 weeks. Alternatively, regions can visit at Central Medical Stores, Tema; with their own vehicle, for urgent interim requirements. In recent months, regions are no longer requested to submit requisitions for quantities required. Because national supplies are far below total need, stocks are allocated to regions according to a population or past use formula.

District hospital, health center, and health post staff travel to regional medical stores, by whatever transport they can arrange, (this is often difficult and a return trip can take days), to pick up drugs and

District hospital, health center, and health post staff travel to regional medical stores, by whatever transport they can arrange, (this is often difficult and a return trip can take days), to pick up drugs and supplies. Mission hospitals and clinics are also provided with part of their requirements. Since the cold chain does not function reliably and continuously outside regional capitals, vaccines are taken to districts in cold boxes, in quantities that can be used up in the following day or two.

Over the past year, many health posts and health centers have been without the most essential and elementary drugs for days to weeks at a time. At many health centers and posts, no vaccinations have been carried out for more than a year.

2.3.6. Financing

Total expenditures on health care in Ghana today are unknown. It appears that by far the greater portion flows in the private sector - for the services of private professionals and traditional healers, for private hospitals, and for drugs. Resources attracted from out of country by the missions for their services, in kind and in personnel time, plus fees paid by patients at mission hospitals and clinics, constitute a significant portion of total national health care expenditures.

As for government expenditures, the National Health Planning unit in 1977 estimated that, "the Ministry of Health controlled about 65% of total spending on formal health care and health related activities. Other Government ministries and agencies controlled about 32% and external aid was about 3%." "In the six years from 1971 to 1977, Health expenditures increased 272% in cedis, but decreased 2% in real terms and decreased still further to -19% when adjusted for population growth."

Table 8
Ministry of Health Expenditures
Adjusted for Cost of Living and Population Growth - 1971 - 1977

<u>Fiscal Year</u>	<u>Total Expenditures</u> (£000's)	<u>Consumer Price Index*</u>	<u>Total Expen. Adjusted for Cost of Living</u>	<u>Per Capita Expenditure Adjusted**</u>
1970-71	34,505	197.3	34,505	£4.03
1971-72	34,026	216.4	31,023	3.51
1972-73	41,965	246.6	33,515	3.68
1973-74	71,223	290.9	28,306	5.14
1974-75	103,279	362.1	56,274	5.89
1975-76	112,095	334.0	41,416	4.13
1976-77 (Budget)	128,414	750.0 (Est.)	33,781	3.27
1977-78 (Budget)	183,745	N/A	N/A	N/A

* CPI based on March 1963 = 100. This has been adjusted to equate all years in this table to the base year. Figures shown are average of the two years listed. Estimates for 1975-76 and 1976-77 by the National Health Planning Unit.

** Based on 1970 census of 8,559,000, increased at an annual average rate of 3.2% for the subsequent years.

Government of Ghana budget allocations to the Ministry of Health in recent years have totaled from 8 to 10% of total budget. Table 9 shows allocations for three recent years.

Table 9
Government of Ghana, Budgetary Allocation by Sector

Sector	1976/77		1980/81		1981/81	
	Amount, Cedis	%	Amount, Cedis	%	Amount, Cedis	%
Health	128,414,000	10.3	407,373,000	8.1	596,649,000	8.2
Water & Sewerage	25,842,524	2.1	136,251,413	2.7	200,705,500	2.7
Labor, Youth & Soc. Welfare	33,323,000	2.7	40,561,000	0.8	34,253,000	0.5
Education	212,889,000	17.0	781,356,000	15.5	1,391,873,000	9.1
Agriculture	110,976,000	8.9	409,019,000	8.1	556,920,000	7.6
Transport & Com- munications	22,078,000	1.8	129,427,000	2.6	182,401,000	2.5
Works & Housing	135,745,000	10.9	485,537,000	9.7	425,548,000	9.9
Local Govt., Rural Dev. Coop.	52,601,000	4.2	243,632,000	4.8	208,602,000	2.8
All Others	550,974,000	44.2	2,535,113,000	50.4	3,605,912,000	100
Total	1,272,843,524	100	5,032,018,000	100	7,302,158,000	100

The most recent year for which actual expenditures by the Ministry of Health (as distinct from budgetary allocations) are available is 1976/77. They were:

Recurrent: 52,002,402 Cedis
Capital: 37,258,862 Cedis
Total: 89,261,264 Cedis

Table 10

Summary of Expenditure by Program - 1980/81

Current Expenditure (cedis)

<u>Program</u>	<u>Estimates 1979/80</u>	<u>Estimates 1980/81</u>	<u>+Increase -Decrease</u>
Ministry of Health (Medical/Dental Serv.)	113,066,000	129,992,000+	16,926,000
Dental Services	1,488,000	1,468,000-	20,000
Environmental Health Services	13,702,000	17,241,000+	4,197,000
Epidemiological Div.	13,702,000	14,397,000+	695,000
Health Laboratories	2,433,000	3,219,000+	786,000
Maternal and Child Health Services	5,020,000	6,299,000+	1,297,000
Medical Care	58,754,000	66,987,000+	8,233,000
Mental Health	15,754,000	17,610,000+	1,641,000
Nutrition Services	1,912,000	1,920,000+	8,000
National Blood Transfusion Services	744,000	851,000+	107,000
Total Ministry of Health	286,522,000	340,522,000+	54,500,000

Nominal fees are charged to out-patients and in-patients at MOH facilities. However, government servants and their families, and the destitute, are excepted, and inconsequential revenues are collected. Legislation to increase the "user fees" was presented to parliament before the last change of government, but was never implemented. The present government has decided to increase user fees in the near future.

2.4 Health Information

Health information includes several categories of statistical information that describe the health status of the population and the activities of the health care system.

Health status indicators include the vital events of birth and death. It is necessary to have the number of the total population and specific segments of the population (e.g. infants less than one year of age, children less than five years of age, pregnant women) to calculate rates of vital events per population. Infant and under five mortality rates are important indicators of the health status of young children who are the age group at highest risk of preventable death. Childhood death rates reflect a complex interaction of the effect of curative and preventive activities of the health services and the economic and social systems of the area (e.g. environmental sanitation, nutritional status and cultural patterns of treatment of illness). Nutritional status is another important health status indicator which is usually measured by: birth weight; anthropometric studies of the weight for height or weight for age of children under five; and the occurrence of overt undernutrition (kwashiorkor and marasmus).

The occurrence of cases and deaths of specific illnesses (including communicable diseases) is a standard measurement of a disease and the effectiveness of health interventions (e.g. the number of measles cases in population receiving measles vaccination).

The number of specific activities of the health services (e.g. out-patients treated with chloroquine, hospital admissions for dehydration, vaccinations performed) indicate the magnitude of the health services response to health problems. The percentage of target populations receiving a specific service (e.g. the percent of children under two years of age who have received measles vaccination or the percent of children under five who receive oral rehydration a treatment for dehydration caused by diarrhea) is a measure of utilization of a program.

Vital Statistics

Ghana legally requires the registration of all births and deaths. Signs throughout the country exhort the registration of births and deaths. Registrars of births and deaths (administratively under the Central Bureau of Statistics) are located in all district capitals and some other towns, often in a MOH health facility. The registration system covers only 46% of the population of Ghana. At the time of the CCCD assessment, the registered births and deaths for 1980 (published in July 1982) were the most recent data available.

Registered Births (x 1,000) 1976-1980

<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
167.6	182.5	188.4	190.4	229.9

The numbers of births in 1980 can be estimated by multiplication of the estimated crude birth rate (50 per 1,000 population) by the 1980 estimated population of Ghana (11,800,000) yielding an estimate of 590,000 births. The 1980 registered births are only 40% of that estimate.

Registered deaths (x 1,000) Ghana 1976-1980

<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
35.9	40.1	38.3	38.5	33.9

In 1980, almost two thirds (60%) of the deaths were reported from hospitals and clinics, in part, because a death certificate is required to remove a dead body from a health facility. A death certificate is legally required for burial but while this requirement is enforced in cities and towns, it is generally ignored in rural areas. In 1980, 4,650 deaths were registered for children less than one year old. The infant mortality rate (IMR) based on registered births and deaths for 1980 was 20.3 deaths per 1,000 live births. Gaisey estimated that the IMR in 1971 was 122 deaths per 1,000 live births suggesting as much as 80% under-registration of infant deaths.

Statistics on Activities of the Health Services

Statistics on the activities of health services are maintained by various MOH services. In general, they include only a small fraction of the activities of Mission and private health facilities. The Maternal and Child Health/Family Planning Program has very limited statistical information available at the national level for 1981 and 1982. At the regional level, statistics for January to June 1982 were available. Statistics on immunizations performed in Ghana are collected and published by the Epidemiology Division of the MOH. The MFU assist in collecting immunization data. New reporting forms have been designed during 1982 to gather data by age of the vaccinees and ordinal number of dose (for DPT, Polio, BCG, etc.) The data on immunizations performed includes many of the Mission and now MOH governmental health facilities (e.g. military and police). The reporting is incomplete. For example, the Greater Accra Region, one third of the expected monthly immunization reports from January to October 1982 had not been received by December 1982. Two facilities had submitted no reports during 1982.

There are no statistics on the amounts of ORS or chloroquine used.

Summary of Health Information

In Ghana, the collection of health statistics is neither centralized nor integrated. Different health status indicators and activities are recorded and consolidated by different sections of the government both within and outside the Ministry of Health. Within the Ministry, distinct programs (e.g. Epidemiology, Maternal and Child Health) maintain their own statistical services. In general, the statistical information is available months or years after occurrence and is incomplete - including only a small proportion of the events.

A fundamental problem is the absence of reliable population figures. The last census was completed in 1970. Total population, specific population (e.g. children less than 5 years old) and the population served by a particular health facility can only be estimated based on extrapolation from the 1970 census.

Even so, the recorded information is useful in assessing trends and in management of programs. The surveillance of communicable disease morbidity and mortality and immunizations performed has improved during 1982. Additional methods to validate and extend the available information, in particular sample surveys to estimate mortality and morbidity patterns; coverage of target populations with services like immunizations or ORS; and the status of health facilities in regards to supplies and equipment should be developed.

3. EPIDEMIOLOGY OF CCCD TARGET DISEASES

3.1 Communicable Disease Reporting

Every health facility in Ghana is expected to report cases and deaths of communicable diseases diagnosed at the facility. These cases and deaths are reported weekly on the form "CD-1" (listing 28 diseases including the 6 EPI diseases, malaria, yaws, cholera, food poisoning but not diarrhea). At the regional level, the "CD-1's" are consolidated into "CD-Form 2" a large (90 x 50 cm.) form that lists cases and deaths for the 28 reportable diseases for each health facility in the region. At the national level, the "CD Form 2's" are consolidated into a monthly summary by region and district by the Epidemiology Division. Regional totals are available 2-4 months after the close of a reporting month and national totals published in a quarterly "The Ghana Epidemiological Bulletin" 3-9 months after the close of the reporting period. The Epidemiological Bulletin includes analysis of the trends of communicable diseases. In most of the nine regions, the MFU district and regional teams play an active role in obtaining and analyzing communicable disease case and death reports. Both cases and deaths reported are those which have been diagnosed at health facilities. The system does not cover cases and deaths seen by private medical practitioners or those who do not seek medical assistance, which constitute the majority.

3.2 EPI Diseases

The six target diseases of the Expanded Program on Immunization (EPI) are measles, tetanus, whooping cough (pertussis), paralytic polio, diphtheria and tuberculosis. The following table presents the officially reported cases and deaths for 4 of the EPI diseases from 1972 to 1981:

Table 11

Cases and Deaths of Selected Communicable Diseases
Ghana 1972-81

	<u>Measles</u>		<u>Tetanus</u>		<u>Pertussis</u>		<u>Acute Polio</u>	
	<u>C(*)</u>	<u>D(*)</u>	<u>C(*)</u>	<u>D(*)</u>	<u>C(*)</u>	<u>D(*)</u>	<u>C(*)</u>	<u>D(*)</u>
1972	95,529	<u>273</u>	1,372	<u>321</u>	18,216	<u>14</u>	136	<u>6</u>
1973	94,918	<u>290</u>	1,503	<u>297</u>	17,191	<u>18</u>	214	<u>6</u>
1974	91,315	<u>324</u>	1,232	<u>239</u>	12,486	<u>12</u>	230	<u>4</u>
1975	140,821	<u>384</u>	1,520	<u>245</u>	22,009	<u>6</u>	275	<u>3</u>
1976	131,405	<u>439</u>	1,142	<u>204</u>	22,348	<u>16</u>	313	<u>8</u>
1977	108,440	<u>378</u>	1,012	<u>150</u>	21,444	<u>16</u>	157	<u>17</u>
1978	107,381	<u>442</u>	1,038	<u>109</u>	16,457	<u>43</u>	155	<u>6</u>
1979	88,808	<u>215</u>	1,194	<u>151</u>	13,459	<u>2</u>	445	<u>4</u>
1980	81,788	<u>317</u>	1,025	<u>172</u>	12,592	<u>4</u>	145	<u>4</u>
1981	31,470	<u>135</u>	897	<u>137</u>	13,509	<u>12</u>	98	<u>2</u>

(*) C = Cases D = Deaths

Source: Epidemiology Division, MOH

The reported cases are remarkable for the relatively small variation from year to year between 1972 and 1980. The ranges of largest and smallest numbers of reported cases are:

	<u>Largest Number of Reported Cases (Year)</u>	<u>Smallest Number of Reported Cases (Year)</u>
Measles	140,821 (1975)	81,788 (1980)
Tetanus	1,520 (1975)	1,012 (1977)
Pertussis	22,348 (1976)	12,486 (1974)

Case fatality ratios are highest for tetanus (15-23%), intermediary for polio (1-10%), and lowest for measles and pertussis (both less than 0.4%). The case fatality ratios are low, possibly because deaths occur at home.

Communicable disease reporting in Ghana is considerably better than most developing countries, even so cases of the EPI diseases are under-reported. During the 1970's, only limited amounts of measles vaccine were purchased. Since 90-100% of all children get measles by about age 6, the estimated number of measles cases is the estimated live births minus infant mortality minus the effective vaccinations. The reported measles cases represent 1/3 to 1/2 the actual number of cases. As mentioned above, deaths also appear to be under-reported. There are no data on the occurrence of neonatal tetanus.

3.3 Diarrheal Disease

Very limited epidemiologic data on diarrheal diseases incidence, dehydration caused by diarrhea, dysentery, etc., are available for Ghana. Cholera is the only diarrheal disease routinely reported in Ghana. Table 12 presents cholera cases, deaths and vaccinations in Ghana in recent years. Cholera vaccination has been very popular in Ghana since the appearance of cholera in 1970 even though most studies indicate it is not an effective preventive measure. In fact, until recently this vaccine was the most frequently administered of all vaccines in Ghana except for smallpox vaccine (1974-1976).

The 1982 "Plan of Operations/Diarrheal Diseases/Ghana" estimated that 6,284,000 episodes of diarrhea occur in 1982 among children less than five years of age. It estimates 2.5 episodes of diarrhea per year for each of the 2,514,000 children less than five years old. Assuming a 0.5% death rate per episode, 31,420 deaths caused by diarrhea are estimated for children less than five years old during 1982.

Table 12

Reported Cholera Cases, Deaths, Vaccinations

Ghana, By Year, 1970 - 1981

	<u>Cholera Cases</u>	<u>Cholera Deaths</u>	<u>Cholera Vaccinations</u>
1970	2,733	180	Nil
1971	13,048	641	1,229,005 (*)
1972	625	32	976,130 (*)
1973	675	37	680,438 (*)
1974	483	37	442,541
1975	166	12	325,949
1976	102	Nil	303,399
1977	5,968	333	854,771 (*)
1978	1,812	118	521,381 (*)
1979	1,783	113	753,811 (*)
1980	260	21	332,679
1981	365	26	120,429

(*) Most frequently given of all vaccines.
Source: Epidemiology Division, MOH

3.4 Malaria

There is little current information available to define the extent, seasonality, mortality and morbidity of malaria in Ghana. Even so, malaria in Ghana appears similar to malaria in other West African countries.

There is little reason to believe that the current situation varies markedly from previous findings. Malaria is hyperendemic throughout Ghana. Some of its characteristics are summarized below.

- (1) The principal vector is Anopheles gambiae followed by A. funestus.
- (2) In a recent malariometric survey near Ho, 92% of positive blood smears were Plasmodium falciparum, 4% Pl. malariae and 4% mixed Pl. falciparum/malariae infections. This finding is similar to results of the DANFA Project, 1969-79. The rainy seasons and immediately afterward are associated with a somewhat higher incidence of malaria.
- (3) Malaria parasitemia rates are high. The ranges of positive blood slides in small population-based studies by age groups are:

0-1 years	24-26%
1-4 years	36-45%
5-14 years	44-46%
- (4) Malaria is a major cause of mortality in Ghana accounting for 7.2% of registered and certified deaths among the children less than five years old.
- (5) There is no evidence of chloroquine resistance to Pl. falciparum in Ghana.
- (6) In the months of July-December 1981, malaria was the most frequently reported communicable disease accounting for more than half of all communicable disease cases reported in Ghana.

4. NATIONAL HEALTH POLICY REGARDING CHILDHOOD DISEASES

4.1 The Primary Health Care Plan

4.1.1 Background

The Government of Ghana developed the "Primary Health Care Concept" in its National Health Planning Unit in 1977. It recognized that "in spite of huge infusions of resources (both facilities and highly trained professionals) since 1960, there has been little improvement in the general health status of the nation in the last 15 years. In fact, certain communicable diseases (including reported cases of measles, infectious yaws, tuberculosis, pertussis, malaria, and hepatitis) have been increasing over the past 10 years." The National Health Planning Unit found that 70% of Ghanaians did not

have effective access to the health care system. They calculated that, of Ghana's estimated 200,000 deaths annually, (120,000 of them in children under 5), 130,000 were preventable, through simple interventions which could be applied at the community level in a primary health care system. They found that 40% of Ghana's health expenditures were being spent on 1% of the population for tertiary hospital care, 45% of spending was on 9% of the people, for secondary hospital care, and that only 25% was being spent on basic health services at health posts, health centers, and satellite clinics accessible to the remaining 90% of the population.

The Planning Unit designed a Primary Health Care system, based on the mobilization of community resources (called "A" level), to select, support, and supervise community health workers of three types: a community clinic attendant for general curative, preventive, and promotive functions; an environmental worker, and a trained traditional midwife. A village health or development committee would arrange any needed workplace (e.g. clinic), and decide on health worker remuneration, user fees and other fund raising. The Ministry of Health would provide initial worker training, and supplies and technical supervision, in regular visits from the nearest health post, health center, or dressing station ("B" level). A "District Health Management Team" at the district, or "C" level, would initiate and manage the system.

The specific goal of this Primary Health Care system was to maximize the total healthy life of the Ghanaian people, with the two targets to be achieved by 1990:

- 1) 80% coverage of the population by introduction of the system to all villages of population 200 or more, and
- 2) Effective attack on the disease problems that contribute 80% of the unnecessary death and disability afflicting Ghanaians.

With regard to the CCCD target diseases (the immunizable diseases, diarrheal diseases, and malaria) village health workers would not give injections or do immunization themselves, but would do promotion and arrange for villagers to attend the immunization sessions done by visiting "B" level staff. Village health workers would dispense antimalarial tablets for treatment and prophylaxis in children and pregnant women, and would dispense oral rehydration salts for diarrhea, along with related health promotion.

4.1.2 Implementation of PHC

The Government of Ghana adopted the Primary Health Care strategy in 1978. All subsequent statements of health policy, including annual budget statements, have proclaimed the Primary Health Care system to be central and fundamental to Ghana's health policy. The present PNDC Government has expressed "a total commitment to the adoption of National Primary Health Care." However, implementation to date has been minimal.

In 1977, village health worker training was begun, for both "community clinic attendants" and "traditional birth attendants", with WHO support, at Kintampo in Brong-Ahafo Region, on a demonstration basis. About 40 were trained, and took up duties in their villages. However, the Ministry of Health has not been able to make supervisory visits to them, or to supply them, or evaluate their performance. By 1981, some 60 had been trained, but the demonstration project had not been replicated elsewhere in the Ministry of Health services.

In 1979-80 the Ministry of Health decided to implement Primary Health Care in one district per region per year. A district was chosen in each region, District Health Management Teams were selected, and two national training programs were held for them, in 1979 and 1981. External aid projects assisted implementation in some of the districts. However, implementation was limited, (except in a few mission-supported programs, at Techiman, Berekum, and Agogo), usually because of lack of transport and because of inadequate supplies at "B" level health centers. By late 1982, village health worker training has been implemented in a few districts, notably in the Eastern and Volta regions.

The plan to train three separate health workers per village has been dropped, as over-ambitious. Also it has been recognized that Ministry of Health will be unable to provide drugs and supplies to village health workers. Resources for this will have to come from the village. UNICEF has provided vehicles for the District Health Management Team in the "lead" district in each region.

By late 1982, an estimated 100-200 village health workers have been trained and are at their posts, throughout Ghana. Information on their supply situation or effectiveness is not yet available. Traditional birth attendants have received training sessions in a few locations. At Techiman, training in Primary Health Care has been given to traditional healers.

4.1.3 Constraints and Feasibility of PHC

While successive Governments have proclaimed commitment to Primary Health Care, no funds have been specifically allocated to PHC in the Ministry of Health budget. Ministry of Health organization continues to be along functional lines, with the responsibility for PHC divided among different units. Ministry personnel see Primary Health Care as an additional responsibility added to their previous ones, for which additional resources have not been provided. Without specific budgeted funds for Primary Health Care and extensive retraining for more integrated Primary Health Care and village support functions, little has been possible.

There is continued belief and some evidence that in villages the necessary human and financial resources exist to carry out their part of the Primary Health Care scheme. However, real resources available to the Ministry of Health to maintain its services at hospitals, health centers and health posts, let alone reach out to the villages, have been shrinking in recent

It does not now appear feasible for the Ministry of Health to carry out its functions under the Primary Health Care strategy without substantial external assistance. The recent Government statement of policy to decentralize decision-making to regions and districts may, however, facilitate the functional integration needed in support of Primary Health Care, at the district and "B" levels.

4.1.4 Manpower Requirements for PHC

The major part of the manpower required for Primary Health Care is available in the village, and must be financially supported by the village, although training must be done by Government. Given the present economic difficulties of the Government of Ghana, new personnel cannot be hired for Primary Health Care. However, since most Ministry of Health personnel at district and "B" levels are underemployed, it should be possible, with retraining, to mobilize them for Primary Health Care. While a few physicians have been trained in and outside of Ghana to be District Medical Officers of Health, and provide District Health Management Team leadership, a doctor will probably not be available for most Primary Health Care districts for years to come. Training and retraining for Primary Health Care for District and "B" level personnel should focus on Public Health Nurses, Community Health Nurses, Midwives, Health Inspectors, Health Inspection Assistants, and MFU Technical Officers. Further inservice training courses similar to the two that have been held will be required, as well as shorter courses arranged at the regions for "B" level personnel.

The number of personnel at posts in the regions, requiring retraining, are shown in Table 13. The table does not include mission health facility staff that will be included in PHC training because statistics were not available.

TABLE 13

Region	Category of Personnel						
	PHN	CHN	CHNM	HI	HIA	TO	FT
Greater Accra	24	180	(*)	40	21	2	16
Central	19	80	6	13	80	16	15
Western	13	62	1	17	16	14	9
Eastern	39	101	11	34	98	6	18
Volta	22	83	3	26	47	10	19
Brong-Ahafo	18	72	-	21	69	26	18
Ashanti	8	156	(*)	(*)	(*)	23	11
Northern	6	81	4	19	47	25	10
Upper	8	52	1	20	34	37	25
Total	157	867	26	190	412	159	141

PHN = Public Health Nurse
 CHN = Community Health Nurse
 CHNM = Community Health Nurse/Midwife
 HI = Health Inspector

HIA = Health Inspection Assistant
 TO = Technical Officer (MFU)
 FT = Field Technician (MFU)
 (*) = Data not available

4.1.5 Financial Requirements for PHC:

Funds required to pay village health workers, to arrange for their working space, and for their supplies, will have to be raised at the village level. Totals for the country have not been calculated, and will depend on decisions taken at the village level, as well as rate of implementation nationally.

The Ministry of Health will require funds for retraining of its district and "B" level personnel, for village health worker training, and for transportation for district and "B" level personnel to reach the villages to promote and support village health or development committees, and to provide technical supervision to village health workers. The amount of funds to carry out these responsibilities has not been calculated.

4.1.6 Compatibility of the PHC Plan with the CCCD Projects:

The proposed CCCD project is fully compatible with, and supportive of, the PHC strategy. In fact, the specific components envisaged in the CCCD project, immunizations, treatment of fevers with chloroquine, oral rehydration fluids for diarrhea, and health education in these areas also constitute a large part of the specific PHC techniques to reach the goal of an 80% reduction of preventable morbidity and mortality. The training component of CCCD would naturally be included in PHC training courses.

4.2 Expanded Programme on Immunizations (EPI)

4.2.1 Background:

Immunizations have been widely used in Ghana since the 1960's. Until the late 1970's, vaccinations were principally those against epidemic diseases (smallpox, measles, yellow fever and cholera) and tuberculosis (BCG). The following table gives total doses of vaccine administered in the period 1970 - 1981:

TABLE 14

Total Doses (x 1,000) of Vaccines Administered,
Selected Vaccines, Ghana, 1970-1981

	<u>MEASLES</u>	<u>DPT</u>	<u>TETANUS</u>	<u>POLIO</u>	<u>YELLOW FEVER</u>	<u>BCG</u>
1970	412	4	2	3	364	554
1971	277	3	2	2	209	278
1972	229	16	8	5	104	137
1973	132	32	22	19	138	73
1974	233	46	61	31	57	161
1975	185	42	75	23	26	218
1976	131	24	48	32	66	133
1977	53	63	100	44	82	90
1978	105	80	80	72	263	214
1979	109	84	60	66	488	52
1980	90	92	89	70	421	36
1981	116	110	304	97	485	254

Source: Epidemiology Division, MOH

Several large programs using external funds have been important in the development of immunization activities in Ghana.

- The smallpox eradication/measles control program (USAID and GOG financed between 1966 and 1970), used mass vaccination against smallpox and measles by mobile teams principally the Medical Field Units (MFU) of the Epidemiology Division. Although the last case of smallpox in Ghana was reported in 1968, smallpox vaccination was widely used until the late 1970's (205,000 doses in 1978).

- An EPI feasibility study was financed by the WHO and SIDA to test the effectiveness of combined fixed center and mobile team activities in a densely populated area (Central Region) and a sparsely populated one (Northern Region). The study also examined the feasibility of immunizing expectant mothers to prevent neonatal tetanus; the need for a continuously functioning

cold chain; and the effectiveness of two doses of DTP and oral polio vaccine given at six month intervals. The mobile team vaccination (MFU) achieved higher coverage levels than the fixed centres but was costly and difficult to sustain due to transport problems caused by road accidents and insufficient spare parts to maintain vehicles.

- The Yaws/Yellow Fever (YYF) program (financed by GOG, USAID, WHO, UNICEF and EEC) started field activities in January 1981. The principal purpose was to screen and treat rural populations for yaws. Program activity was concentrated in the three regions (Ashanti, Eastern and Central) from which 80 percent of yaws is reported. A total of 18 teams was fielded with at least one in each region. The YYF teams also vaccinated women and children with the following vaccines:

- a) measles vaccine - children 9 months - 2 years
- b) BCG vaccine - children 0 - 4 years
- c) yellow fever vaccine - children 1 - 10 years
- d) tetanus toxoid - women 15 - 44 years

After an initial good start, the YYF program has been plagued by operational problems including petrol shortages, accidents making two (of 20) vehicles inoperable, and insufficient spare parts (tires, shock absorbers etc.) to keep vehicles operational and teams in the field. The YYF project is scheduled to end in 1983. To date, the YYF program has accomplished the following:

TABLE 15

	<u>1981</u>	<u>1982</u> <u>(Jan.-Sept.)</u>	<u>Total</u>
Persons examined for yaws	803,375	444,041	1,247,416
Persons found to have infectious yaws	15,074	2,966	18,040
Persons treated with penicillin for yaws	544,465	283,479	827,948
Persons vaccinated measles vaccine	55,791	22,599	78,390
Persons vaccinated tetanus toxoid	125,715	61,253	186,968
Persons vaccinated yellow fever vaccine	252,037	169,946	421,983
Persons vaccinated, BCG vaccine	120,793	15,192	135,985

Source: Epidemiology Division, MOH

The YF program mass vaccination effort has made substantial contributions to immunization activities in Ghana in the last two years. For the four vaccines administered by the YF teams, the YF program has carried out about half of all the reported vaccinations in the country as seen in the following percentages of all reported vaccinations that are performed by the YF teams in 1981:

Measles - 50%
Tetanus toxoid - 42%
Yellow fever - 52%
BCG - 48%

In 1979, the WHO EPI program was formally adopted by the MOH with the formation of an EPI Coordination Committee. Vaccinations were principally to be done by the child welfare clinics (CWC) of the MCH/FP Division. Health facilities outside of the MOH (e.g. Missions, military and police, private clinics) were to extend vaccination services as much as possible. The Epidemiology Division was responsible for acquisition, storage, and distribution of vaccines at the national, regional and district levels. The Epidemiology Division also collects and publishes the national statistics on vaccinations performed.

A WHO sponsored Mid-Level-Managers EPI training course was held in Cape Coast with 49 participants in September 1980. A coverage survey was done in the Mamprobi section of Accra finding coverage levels of DPT - 1 (71%), DPT - 3 (49%); measles (41%). No other coverage surveys have been done. The EPI Coordination Committee has not met since 1980. No formal evaluation of the EPI program has been carried out. Dr. William Osei was named EPI program manager in 1980 just before leaving the country for public health training. Dr. Osei has taken up these duties again in December 1982 on his return to Ghana.

4.2.2 Objectives and Targets of EPI

The official MOH vaccination schedule for the EPI vaccines for children is:

at birth	-	BCG
at 3 months	-	DPT - 1, Polio - 1
at 4 months	-	DPT - 2, Polio - 2
at 5 months	-	DPT - 3, Polio - 3
at 9 months	-	Measles

Pregnant women not previously vaccinated against tetanus receive two doses tetanus toxoid

at fifth month of pregnancy and
at seventh month of pregnancy.

4.2.3 Observations on the EPI in Ghana

- MCH Child Welfare Clinics: The child welfare and ante-natal clinics are the most effective immunization activity of young children and pregnant women in Ghana. Although statistics for recent years are not available the MCH/CWC, in 1980, registered 237,000 children less than age 5 for a total of 1.5 million visits. Children are weighed, examined, vaccinated and, if available, given nutrients. About half of the children attending CWC are less than one year of age. Children are vaccinated according to the EPI schedule. The following figures for reported immunizations performed in 1980 by MCH indicate the scope of their effort. (Note that the 1980 figures include all regions except the Northern Region. The percentages indicate the proportion of all vaccinations reported by the Epidemiology Division performed by MCH. Some percentages exceed 100% because the MCH vaccinations were apparently not completely included in the national statistics.)

Measles vaccine 32,916 doses (36%)

DPT vaccine 136,100 doses (148%)

DPT-1 69,401 doses

DPT-2 38,657 doses

DPT-3 23,900 doses

DPT-4 4,111 doses

Oral polio vaccine: 116,000 doses (166%)

BCG vaccine: 58,000 doses (161%)

Tetanus toxoid: 151,900 doses (171%)

TT-1 107,300 doses

TT-2 42,000 doses

TT-3 2,600 doses

The distribution of food supplements ("nutrients") by the CWC clinics is an important attraction. CWC clinics are much better attended when it is believed that food will be distributed.

- Missions: There are no national data available on the contribution of mission health facilities to the vaccination of children in Ghana. Some individual mission health facilities report hundreds or thousands of vaccinations performed in a year. One mission hospital in the Northern Region is reported to have administered about 50,000 measles vaccinations in a special campaign.

- Vaccine Supplies: No vaccines are produced in Ghana. The MOH imports most vaccine through UNICEF and some measles vaccine from USAID/SHDS. Vaccine is stored by the MFU of the Epidemiology Division in national and regional vaccine depots. Vaccine is provided free of charge by the MOH to all health facilities in Ghana including Missions and private clinics. Vaccine supply has been adequate at the national level (Accra) but intermittent shortages

have occurred at regional, district and local levels. In some cases, more than half of the doses distributed are not accounted for in reported vaccinations performed.

- Cold Chain Equipment: Refrigerators, vaccine carriers, cold boxes, thermometers have been received from UNICEF and the YF Program. This equipment has improved the cold chain in recent years. There is no up-to-date inventory of cold chain equipment that informs the functional status of the refrigerators. There are several problems in the functioning of the present cold chain.

- The Accra central cold room breaks down frequently.
- In at least two regions (Volta and Northern) there are no functioning refrigerators in MOH facilities outside the regional capital.
- Kerosene is difficult to obtain.
- Spare parts such as wicks and chimneys are not available.
- There are no MOH personnel trained in maintenance and repair of refrigerators.

- Vaccination Coverage: The presently available data do not allow simple calculation of the coverage of target populations. No coverage survey has been performed since 1980. However, an estimate of the upper limit of coverage can be made for measles vaccine in 1981 when 116,000 measles vaccinations were reported. Assuming that all doses were given to children less than one year old (an estimated 550,000) the coverage would be 20%. The actual coverage is probably lower. Assuming there are about 550,000 deliveries per year, only about 20% of pregnant women receive the first dose of tetanus toxoid through MCH ante-natal clinics.

- Sterilization of Equipment: Shortage of syringes and needles necessitates the re-sterilization and reuse of "disposable" needles and syringes and the use of a syringe to vaccinate several persons with only the change of needle between vaccinations.

- Information System: The data system used by the Epidemiology Division has been improved considerably in 1982 by the collection of data on vaccinations by age of vaccinees and dividing multiple-dose vaccines into separate doses (e.g. DPT-1, DPT-2, DPT-3). Even so, the system has not registered all the vaccinations performed.

- Training: No EPI training has been done since 1980. Updated training emphasizing cold chain and program evaluation should be carried out. Ideally, this staff training should be integrated with other PHC activities and include staff of Mission health facilities.

- National Plan: There is no current national EPI Plan for Ghana.

- Number of Staff: Appears to be adequate and is not the limiting factor for expansion of services.
- Transport and Petrol: Vehicles and petrol are insufficient for delivery of vaccine, supplies and kerosene and supervision. Motorcycles and bicycles might be used more extensively.

4.2.4 Feasibility of Increased EPI Coverage

The present economic difficulties of Ghana (e.g. rapid inflation, extremely scarce foreign exchange, economic stagnation and government deficits) do not auger well for increased coverage of programs like the EPI. Inadequate petrol and kerosene, shortage of spare parts for vehicles and refrigerators, shortage of syringes and needles, will probably continue in 1983. There is reason for hope because of the increased activity in the PHC initiative. The MOH urgently needs assistance in the critical shortage areas in order to maintain its present level of performance until the economic situation improves, and in order to take advantage of the PHC initiative.

4.3 Diarrheal Disease Control

4.3.1 Background

Diarrheal diseases are recognized as a major cause of deaths in children age 0-4 probably accounting for about 10% of all deaths in that age group.

Treatment of acute diarrheal disease in Ghana usually includes use of antibiotics, removal of solids from diet and intravenous fluid therapy in cases of dehydration. Oral rehydration salts have been used during acute cholera epidemics but have not been widely utilized for other acute dehydrating diarrheas. Most health posts and centers do not have oral rehydration salts on hand and health staff have not been trained in its use.

In 1982, WHO and the MOH developed a Plan of Operations for the Control of Diarrheal Diseases in Ghana. This document was reviewed by the CCCD Assessment Team who are in general agreement with the course of action proposed.

4.3.2 Goals and Objectives

The general goal of the diarrheal disease control program is to reduce both mortality and morbidity in children under five years of age to no more than 35% of its current level by 1995. The objectives for the next four years are:

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
% population with access to ORS	-	15%	30%	40%
% with access utilizing ORS	-	40%	60%	80%
% reduction in mortality	-	6%	18%	30%

To accomplish these objectives the following activities will be carried out. During 1982, a Diarrheal Disease Coordination Committee is to be established. During 1983, a monthly diarrheal disease surveillance system is to be established in at least 30 sentinel health facilities, studies will be conducted on the various causal agents of diarrhea in Ghana and a random sample survey will be carried out to determine the diarrhea-associated mortality rate in children 0-4 years of age. During 1984, production is to start of four million ORS packets per year and a mass media health education program is to begin, to increase utilization of oral rehydration salts and promote breast feeding and appropriate feeding practices during and after episodes of diarrhea. By the fifth year of the plan, ORS will be available in communities.

The control of diarrheal disease through health education and use of oral rehydration salts will be an integral part of primary health care in Ghana. The recurrent costs of purchasing ORS packets are expected to be covered by user fees incorporated in that system.

4.3.3 Current achievements in Control of Diarrheal Disease

In the past, the Government of Ghana has addressed the problem of diarrheal disease by improved environmental sanitation (water supplies and human waste disposal) and treatment of diarrhea patients with anti-diarrheal medicines and intravenous fluids. The simple treatment technology of oral rehydration has yet to be widely used. A WHO plan for a diarrheal disease control program in Ghana was submitted to the MOH in August 1982. As of December 1982, the plan has not been officially adopted by the MOH.

4.3.4 Feasibility of Diarrheal Disease Control

A) Government Commitment

The government's commitment is to primary health care of which oral rehydration therapy is an integral part. While the mobilization of additional resources is particularly difficult at this time, the government policy of instituting user fees should facilitate the initiation of wider use of oral rehydration for acute diarrhea.

B) Resources Available and Committed

All the resources currently committed for the diarrheal disease program are external ones. WHO has budgeted \$25,000 in 1984 and UNICEF will supply oral rehydration salt packets until local production can be initiated.

C) Summary of Feasibility of Diarrheal Disease Control

The diarrheal disease control activity is a prime example of an appropriate health care technology. It can be implemented within the infrastructure, personnel and supply systems already available. The additional recurrent costs generated by the introduction of oral rehydration salts are modest (about US\$ 0.36 per child treated per year) and may actually save money over the long run as more expensive intravenous rehydration is replaced. The recurrent costs can be paid by proposed user fees.

4.4 Malaria

4.4.1 Background

Malaria is the leading cause of morbidity and mortality in Ghana (see Section 3.3). There is no overall plan for malaria control in Ghana at the present time. For the past several years, the limited malaria control activities include an ad hoc program for treatment of malaria cases and presumptive treatment of fevers by MOH hospitals, health centers and MCH services, as well as minor epidemiological studies and very limited residual insecticide spraying done by the national center for malaria control in Ho, Volta Region. Recently even this limited approach to malaria has faltered due to lack of chloroquine, and other supply shortages. Supplies of chloroquine in the MOH system have been inadequate for presumptive treatment of outpatients. It is not known if chloroquine supplies are adequate in the private sector. Treatment is ordinarily in a divided dose regimen. Insufficient chloroquine is available to support widespread chemoprophylaxis programs although a small portion of the population does obtain chloroquine prophylaxis from private sources. No estimate currently exists of the amount of chloroquine that would be required to provide presumptive treatment of fevers in children who come to MCH clinics and hospitals.

The constraints to obtaining adequate supplies are the same combination of inadequate MOH funds and severely limited foreign exchange seen in other programs. The principal external sources of anti-malarials are UNICEF and the Government of the Netherlands which together will provide 15-20 million 150 mg. base chloroquine tablets in 1983.

As primary health care is implemented, the overall requirement of chloroquine should increase considerably, but the self-financing mechanisms of the PHC program are expected to meet some of the increased costs.

4.4.2 Goals and Objectives

The World Health Organization has proposed four goals ("tactical variants") for malaria control in developing countries. They are:

1. Reduction of malaria mortality by treatment of malaria cases and presumptive treatment of fevers for malaria.
2. Reduction of mortality and morbidity through chemoprophylaxis of vulnerable population groups.
3. Reduce the prevalence of malaria through chemotherapy, chemoprophylaxis and vector (mosquito) control by spraying with residual insecticides or larvaciding.
4. Countrywide malaria control.

The MOH has incorporated the elements of tactical variant 1 in its primary health care strategy. Currently, presumptive treatment of fevers is to be implemented at all three levels of the primary health care system. Supply of anti-malarials to the "A" level (most peripheral) is to be funded by user fees for drugs provided.

A national workshop on mosquito control was held in Accra in December 1982. Vector control activities will include the use of insecticides and drainage of breeding sites. In short, the Government of Ghana's intentions are to fully integrate limited malaria control activities into primary health care services and carry out some vector control activities.

4.4.3 Current Achievements of Malaria Control

No estimates of the current level of malaria treatment or presumptive treatment of fevers for malaria exist. It is believed that many patients presented for treatment which they were unable to obtain because chloroquine was not available.

4.4.4 Feasibility of Malaria Control

A) Government Commitment

The Government of Ghana is committed to its Primary Health Care Program. Its commitment to malaria control is secondary to that primary commitment and extends primarily to treatment of cases of malaria and presumptive treatment of fevers for malaria. Malaria is, however, the most frequent and most serious problem with which the Primary Health Care program must deal.

B) Resources Available and Committed

The Ministry of Health provided anti-malarials in 1981. The Government of the Netherlands plans to provide 15,000,000 chloroquine tablets in 1983 through GIHOC. UNICEF will import 1-3 million tablets in 1983. The recent policy decision by the Government of Ghana to institute patient charges for medications should help alleviate MOH budget constraints. However, since chloroquine is not synthesized in Ghana, the problem of limited foreign exchange resources will remain a crucial one.

C) Summary of Feasibility of Malaria Component of CCCD

The limited goals of the Government of Ghana with respect to malaria are technically feasible within the current limits of manpower, logistics, and facilities. The institution of patient charges for anti-malarials will lessen the MOH budgetary constraint. The major outstanding feasibility issue is that of the willingness of the Government of Ghana to apply scarce foreign exchange to the purchase of the chloroquine.

5. PROPOSALS FOR CCCD IN GHANA

5.1 Overview

The previous sections of this paper describe the Ghanaian health system and the importance of the CCCD target diseases (diarrhea, immunizable diseases and malaria) in Ghana. These diseases figure prominently in the Ghanaian primary health care plan and are major causes of infant and childhood mortality and morbidity.

The constraints to strengthening the ability of the Government of Ghana to expand its childhood communicable disease programs are serious ones. Major problems exist. The most important ones which were considered and which determined the level and type of support outlines below are: 1) severe budgetary constraints; 2) low morale of many of health staff; 3) very poor maintenance for equipment; 4) severe foreign exchange constraints; 5) a health care system comprised of vertically organized non-integrated teams requiring redundant logistic and transport facilities; 6) chronic logistic and transport problems in part due to (5) above.

These serious shortcomings are alleviated to some extent by (1) the excellent calibre of manpower at many executive and mid-level positions, (2) the commitment of the government to primary health care with its implied integration of services at the periphery and (3) the emerging policy of the government to institute user charges.

This complex of strengths and weaknesses has resulted in two sets of recommendations. The first set is mainly limited to a group of activities to improve training, maintenance and repair and health education activities designed to rehabilitate and better use existing resources. The first set of

recommendations also includes assistance to the local production of chloroquine, oral rehydration salts and syringes. The second set of recommendations incorporates the first set and adds additional commodity support which would be provided if a system of user fees is instituted, the government is willing to make a long-term commitment to allocate foreign exchange resources to this area and measures to better control vehicular usage are instituted.

The CCCD proposals are presented in terms of regional and country specific support.

5.2 Proposed CCCD Regional Support

Whether or not bilateral assistance is made available, the Government of Ghana will be able to avail itself of CCCD Regional Activity Support during the seven years of the project. These activities include:

<u>Category</u>	<u>Activity</u>
A. Training	1. Sponsor inter-regional participants for (a) CCCD Management Course; (b) Mid-level management/trainee courses and (c) Cold chain maintenance and repair courses.
B. Training Development/ Adaptation	1. Assist in the development of integrated materials for EPI, CDD and malaria training.
C. Health education/ promotion	1. Sponsor regional training for mass media education. 2. Assist in the development of health educational materials.
D. Health information systems	1. Develop survey techniques for establishing baseline and follow-up data. 2. Work with the Divisions of Epidemiology and Office of Health statistics to improve the reporting system.
E. Operations research	1. Surveillance by assessing the effect of the program on overall and disease-specific infant and childhood diseases, using sentinel reporting sites, village based surveys and special population based prospective studies. 2. Immunization coverage, vaccine efficacy and cost-effectiveness of immunization.

3. Diarrheal disease program coverage. Acceptance of oral rehydration therapy and local production of ORS.
 4. Malaria, including sensitivity of *P. falciparum* to chloroquine, and efficacy of single dose oral chloroquine treatment.
 5. Impact of mass media health education.
- F. CCCD Project evaluation
1. Coverage studies
 2. Management studies
 3. Cost analysis

Items A-C and F above will be funded under the CCCD Regional Project and coordinated through the Regional Coordinator located in Brazzaville.

A medical epidemiologist stationed in Abidjan will have part-time responsibility to the Ghana CCCD program with particular emphasis on health information systems and operations research. Operations research protocols will be submitted for review by appropriate national research councils and by the Regional Research Review Committee established by the epidemiologist in Abidjan.

5.3 Proposed CCCD Bilateral Assistance to Ghana

If approved by CIDA or AID and GOG, a Project Grant Agreement will be developed to implement the recommendations of this Assessment.

The assessment team met four times to discuss issues and agree upon two sets of recommendations. The first set of recommendations is for a modest program to rehabilitate and refocus current activities, if it is not feasible to institute a set of user fees and to obtain commitments by the Government of Ghana to devote increasing amounts of foreign exchange resources to the purchase of commodities required to continue CCCD programs. The second set of recommendations include additional commodity and technical support to be provided if the Government of Ghana is able to institute suggested policies. A general recommendation is that commodities and supplies provided should be distributed to Mission health facilities in quantities reflecting their portion of total patient load.

5.3.1 Elements of Minimal CCCD Program

The objectives of the minimal CCCD program are the maintenance of the current level of activities with respect to EPI and malaria, the introduction of oral rehydration salts as a treatment for dehydrating diarrheas, and support to health education activities necessary to launch oral rehydration

activities in the most effective fashion. The CCCD assessment team strongly recommends an international evaluation of the EPI program be carried out in the first semester of 1983.

Quantitative national coverage targets for the minimal program are presented below:

Program Component	YEAR 1	YEAR 2	YEAR 3	YEAR 4
EPI and Malaria	25%	25%	25%	25%
CDD	-	5%	15%	25%

Specific activities include:

- 1) Vehicle spare parts to maintain current transport involved in EPI.
- 2) Provision of one vehicle, equipment and supplies for a national CCCD program evaluation team.
- 3) The provision of equipment for local production of oral rehydration salts.
- 4) Provision of technical assistance and training equipment to train mid-level and peripheral health care workers.
- 5) Provision of technical assistance, equipment and supplies necessary for mass media oral rehydration education campaign.
- 6) Raw material for local chloroquine and vaccination syringe production.
- 7) Provision of training and equipment for a central and regional cold chain repair and maintenance capability.

The bilateral assistance budget: (in U.S.\$) for the minimal level activity is estimated to be:

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Vehicle spare parts	90,000	50,000	50,000	50,000
CCCD Evaluation Team vehicle and equipment	25,000	5,000	5,000	5,000
Oral rehydration salts manufacturing equipment and raw materials		100,000	225,000	190,000
Training: Technical assistance and equipment	57,000	6,000	6,000	6,000
Health education: Technical assistance and equipment(2)	67,000	6,000	6,000	6,000
Chloroquine bulk (5&6) raw material	-	100,000	80,000	65,000
Cold chain repair equipment	5,000	1,000	1,000	1,000
Polyethylene and polypropylene for syringe manufacture (5&7)	30,000	25,000	20,000	15,000
Bicycles and/or motocycles	15,000	1,000	1,000	1,000
10% Contingency	29,000	29,000	39,000	34,000
TOTAL COMMODITIES	318,000	323,000	443,000	373,000
Resident Technical Adviser	120,000	130,000	140,000	150,000
TOTAL	438,000	453,000	583,000	523,000
GRAND TOTAL 1983-1986:				\$1,997,000

1) See appendix 3

2) See appendix 4

- 3) Raw material (dextrose, NaCl, KCl and NaHCO₃) sufficient to produce 4,000,000 packets/year.
- 4) 75% of price of raw materials sufficient to produce 4,000,000 packets/year.
- 5) Funds are to be used to supply bulk materials to local manufacturers who will produce products under contract with MOH.
- 6) Amounts for chloroquine are calculated as sufficient to cover 100% of costs for 10,000,000 tabs in 1984. 75% of costs in 1985 and 50% in 1986.
- 7) Amounts for syringes are calculated as sufficient to cover 100% of costs in 1983, 75% in 1984, 50% in 1985 and 25% in 1986.

5.3.2 Elements of High Option CCCD Project

If the Government of Ghana is able to institute a system of user fees, commit foreign exchange resources on an increasing basis over the next four years and institute measures to adequately control the use of vehicles, the Team would recommend more substantial commodity support, in addition to the support described in the minimal CCCD project. This support would permit an increase in the coverage of the EPI and malaria components as indicated in the Tables below:

<u>Program Component</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
EPI	25%	30%	35%	40%
Malaria	25%	30%	35%	40%
CDD	-	10%	20%	30%

The budget (in US \$) for the increased level of support is estimated to be:

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Vehicle spare parts	90,000	50,000	50,000	50,000
CCCD Evaluation Team vehicle and equipment	25,000	5,000	5,000	5,000
Trucks for kerosene transport (9), plus 25% for spare parts	250,000	10,000	10,000	10,000
Oral rehydration salts manufacturing equipment and raw materials	-	100,000	225,000	190,000
Health education: Technical assistance and equipment	67,000	6,000	6,000	6,000

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Training: technical assistance and equipment	57,000	6,000	6,000	6,000
Chloroquine bulk raw material	30,000	160,000	130,000	105,000
Cold chain repair equipment	5,000	1,000	1,000	1,000
Polyethylene and polypropylene for syringe manufacture	30,000	40,000	30,000	25,000
Bicycles and/or motorcycles plus 25% for spare parts	15,000	1,000	1,000	1,000
Refrigerators	36,000	40,000	44,000	48,000
Other cold chain supplies	10,000	5,000	5,000	5,000
10% Contingency	<u>61,000</u>	<u>42,000</u>	<u>52,000</u>	<u>45,000</u>
TOTAL COMMODITIES	666,000	466,000	579,000	497,000
Resident Adviser	<u>120,000</u>	<u>130,000</u>	<u>140,000</u>	<u>150,000</u>
TOTAL	786,000	596,000	719,000	647,000
GRAND TOTAL 1983-1986:				\$2,748,000

Appendix 1

Persons Contacted by CCCD Team

A. Ministry of Health - Accra

Dr. Charles Boadu, Secretary for Health
Dr. Djan, Principal Secretary
Dr. Y. Aboagye-Atta, Acting Director of Medical Services
Dr. K. Victor Agadzi, SMO Epidemiology Division
Dr. Moses Adibo, Deputy Director Medical Services (Planning)
Dr. Joseph D. Otoo, Manpower
Mrs. Victoria Assam, Maternal and Child Health
Dr. William Osei, Epidemiology Division
Mr. Francis Kofi, Epidemiology Division
Mr. Sampson, Health Education Unit
Dr. Sakwa-Maanti, Health Statistics

B. Ministry of Health - Regional and District

Dr. D. Ababio, RMOH, Greater Accra Region
Dr. J. A. Adamafio, RMOH, Eastern Region
Dr. J. Singh, SMO Malariologist, Ho, Volta Region
Dr. Nettey-Marbell, DMOH, Suhum, Eastern Region
Dr. S.A.Q. Mensah, MO/CD, Greater Accra Region

C. Ministry of Finance and Economic Planning

Mrs. V. Ofosu-Amaah, Principal Secretary

D. University of Ghana Medical School

Dr. Kwasi P. Nimo, Community Health
Dr. Ashitey, Community Health

E. World Health Organization

Dr. K. Ward-Brew, Country Coordinator

F. UNICEF

Dr. Denis Caillaux, Representative

G. The Netherlands Embassy

Appendix 1 (Continued)

Mr. H. F. Van Trigt, Second Secretary

H. European Economic Community

Mr. Gary Quince

I. Canada International Development Agency

Mr. Paul Huddleston, First Secretary

J. United States Embassy

Hon. T. W. M. Smith, Ambassador

K. USAID/Ghana

Mr. Lary Saiers, Director

Mr. Gerald G. Graf, Program Officer

Mr. Lawrence R. Eicher, Health, Population & Nutrition Officer

L. Christian Health Association of Ghana

Miss May Kissiedu, Executive Secretary

The CCCD Assessment Team wishes to thank all persons interviewed for their kindness and assistance. Thanks are also given to the USAID staff who helped prepare this report.

Appendix 2

Documents Reviewed by CCCD Team

- Financing a Primary Health Care Programme for Ghana by K P Nimo, Nov 1982.
- The Health Policy of Ghana, Revised 29.4.82, MOH, GOG.
- Plan of Operations, Programme for the Control of Diarrheal Diseases, Ghana, Aug. 1982, Newberry - WHO.
- Accelerated Action Programme for Health in Ghana, 1982, MOH.
- YYF Programme Progress Report, MOH, Nov 1982.
- USAID Annual Budget Submission, Ghana, FY 1984, June 1982.
- Annual Report, 1981-82, Christian Health Assn. of Ghana.
- Economic Trends Report, Ghana, July 1982, U. S. Embassy, Accra.
- Background Notes, Ghana, U. S. State Department, Feb. 1981.
- Maternal Child Health and Family Planning Division Four Year Report, 1976-1979, MOH, Ghana.
- UNIPAC Catalogue Price List, 1983.
- DANFA Project Final Report, 1979.
- Statistical Data, Demographic Analysis, and Background on Population Projects in Ghana, USAID, Accra, 1982.
- PID, Primary Health Care Support, Project No. 641-0022, USAID, Ghana, 1979.
- A Primary Health Care Strategy for Ghana, MOH, GOG, Revised Aug 1978.
- UNICEF Assistance to Ghana 1980-83. Summary of Goals, Objectives, and Major Programme Areas of the Ministry of Health, Ghana.
- The New Dimension of Medicine: Primary Health Care, G A Ashitey, Korle Bu, about 1980.
- Manpower Plan for Ministry of Health, Primary Health Care: Manpower for Level B, MOH, GOG, undated.

Appendix 2 (Continued)

Primary Health Care Report, MOH, GOG, 1980.

Health Policies for Ghana, MOH, GOG, Revised, July 19, 1978.

Review of the Maternal Child Health and Family Planning Programme (MCH/FP) in the Context of the Primary Health Care (PHC) System in Ghana, 1980.

Appendix 3

Training Equipment Recommended

	<u>Number</u>
Mimeograph Machine	(1)
Photocopier	(1)
Overhead Projectors	(3)
Slide Projectors	(3)
16 mm. Movie Projectors	(3)
Screens (large)	(3)
Camera 35 mm.	(1)

Appendix 4

Health Education Equipment Recommended

	<u>Number</u>
Offset Duplicator	(1)
Process Camera	(1)
Plate Maker	(1)
Enlarger	(1)
35 mm. camera	(1)
16 mm. projector	(1)
Overhead projector	(1)
Tape recorder	(2)
Amplifiers	(2)

Photographic and broadcasting equipment

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NO. 54

Appendix 5 - Continued

Additional GOG Recurrent Costs of High Option CCD Project (US\$)

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Chloroquine production	-	-	52,500	105,000
Vaccine syringe production	-	30,000	60,000	90,000
Oral rehydration salts manufacturing	-	-	-	90,000
Vehicle operation	<u>50,000</u>	<u>50,000</u>	<u>50,000</u>	<u>50,000</u>
TOTAL	50,000	80,000	162,500	335,000