

## **Access to Essential Medicines: Ghana**

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Strategies for Enhancing Access to Medicines Program  
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## About SEAM

The Strategies for Enhancing Access to Medicines (SEAM) Program is funded by the Bill & Melinda Gates Foundation under contract D3601, and works to improve access to essential medicines and vaccines in the developing world by fostering partnerships between the public and private sectors.

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## Acronyms and Abbreviations

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¢	cedis (Ghanaian currency)
CDC	Catholic Drug Center
CHAG	Christian Health Association of Ghana
CMS	Central Medical Store
CWIQ	Core Welfare Indicators Questionnaire
Danida	Danish Agency for Development Assistance
DFP	donor-funded pool
DHA	district health administration
DMS	District Medical Store
EDL	essential drugs list
FDB	Food and Drugs Board
GDP	gross domestic product
GHS	Ghana Health Service
GMP	good manufacturing practices
GNDP	Ghana National Drugs Programme
GNEDP	Ghana National Essential Drugs Program
GNSTG	Ghana National Standard Treatment Guidelines
GOG	Government of Ghana
GSMF	Ghana Social Marketing Foundation
GSS	Ghana Statistical Service
GT	Ghana Telecom
GTZ	German Technical Cooperation Agency [German acronym]
HIPC	heavily indebted poor country
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
ICB	international competitive bidding
IGF	internally generated fund
INRUD	International Network for Rational Use of Drugs
MIMS	Monthly Index of Medical Specialties
MOH	Ministry of Health
MSH	Management Sciences for Health
MSP	Medical Supplies Programme [CHAG]
MTHS	Medium-Term Health Strategy
NGO	nongovernmental organization
OTC	over the counter
<i>PDR</i>	<i>Physicians' Desk Reference</i>
<i>PPM</i>	<i>Procurement Procedures Manual</i>
PSU	Private Sector Unit [MOH]
PU	Procurement Unit [MOH]
RHA	regional health administration
RMS	Regional Medical Store
RPM	Rational Pharmaceutical Management (Project) [MSH]
SEAM	Strategies for Enhancing Access to Medicines [MSH]

SP	sulfadoxine/pyrimethamine
STG	standard treatment guidelines
SWAp	sector-wide approach
TB	tuberculosis
USAID	U.S. Agency for International Development
WHO	World Health Organization

## Executive Summary

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Ghana rates among the world's poorest countries and struggles under a heavy disease burden typically associated with an equatorial location and low income levels. The health care delivery system in Ghana is complex and is composed of many interlinked functions and activities among sectors and organizations. Although some improvements in basic drug management and use have been realized in recent years due to concerted efforts on the part of the Ministry of Health, significant gaps in access to medicines exist, particularly in relation to affordability of products in all sectors and quality of service in private retail outlets and in rural areas.

Strategies that combine strengthening of existing systems and the introduction of innovative concepts have been formulated to address the most significant access gaps that are amenable to change. By using a multifaceted approach to work both within the existing interlinked health care delivery system and outside the existing system using commercial-sector influences, the strategy package has the potential to significantly address this access gap.

The main components of the intervention strategy include (1) strengthening the mission-sector drug management systems; (2) strengthening Pharmacy Council regulatory functions and training delivery capacity for chemical sellers; and (3) promoting a franchising operation for chemical sellers. These components combine to produce a very powerful intervention, considerably beyond the simple sum of the component parts. The proposed interventions have been formulated in partnership with the proposed implementing partners and have been discussed in detail with the community of involved stakeholders, where they enjoy widespread support. In addition, they are consistent with the Government's strategic aim to shift the burden of health care to the private sector. Real and potential constraints and threats to the interventions have been explored, and they are not considered serious impediments to implementation. All proposed interventions are formulated so as to achieve self-sufficiency during the life of the proposed intervention.



### SEAM Country Programs

In 2000, Management Sciences for Health (MSH) received a grant from the Bill & Melinda Gates Foundation to identify and test innovative approaches to address the lack of access to essential medicines in developing countries through greater participation of the private sector. As a first step in this mandate, MSH set out to operationalize the concept of access to essential medicines, design a method to measure the nature and extent of the problem, and monitor the impact of programs that aim to improve the situation.

The Strategies for Enhancing Access to Medicines (SEAM) access framework was developed after a review of the published and unpublished literature on the concept of access to health care in general and medicines in particular. This framework was later discussed at a consultative meeting, jointly sponsored by MSH and the World Health Organization (WHO), in Ferney-Voltaire, France, December 11–13, 2000. More than 40 experts from 15 countries participated in the discussions and concluded that, as with health services, access to essential medicines is a construct that encompasses distinct dimensions, and these are distinguished by sets of specific relationships.

The following four dimensions of access and one cross-cutting characteristic emerged from the discussions, along with a set of 17 key indicators to represent them.

- Physical availability, defined by the relationship between the type and quantity of product and service needed and the type and quantity of product and service available
- Affordability, defined by the relationship between the products and services and the user's ability to pay for them
- Geographic accessibility, defined by the relationship between the location of the product or service and the location of the eventual user of the product or service
- Acceptability (or satisfaction), referring to the fit between the user's and the provider's attitudes and expectations about the products and services and their actual characteristics
- Quality of products and services, an essential component cutting across all dimensions

After several rounds of internal discussions and consultations with experts from the WHO and the World Bank and with contacts in developing countries, six countries—Brazil (state of Minas Gerais), Cambodia, El Salvador, Ghana, India (state of Rajasthan), and Tanzania—were identified as countries where an assessment based on the conceptual framework would take place, with the understanding that only two, or at most three, countries would eventually be selected to carry out long-term projects under the SEAM Program. The initial selection criteria

included perceived or known significant lack of access to essential medicines, perceived enabling environment for private-sector initiatives, political and economic stability, and potential for collaboration with other MSH and Gates-funded local initiatives.

The assessments were carried out between February and May 2001. Local, private, not-for-profit or academic organizations collaborated in the adaptation of data collection instruments, sample selection, data collection, and analysis. The three main interventions were developed during October and November 2001. This report presents the assessment results and recommendations for Ghana. It is expected that the countries not selected for long-term assistance will have benefited from the assessment exercise, in particular from a SEAM-supported analysis of potential strategies involving local public-private initiatives to enhance access to essential medicines. With such an analysis in hand, other countries can approach donors and lenders for financing of such work, as appropriate.

## Country Overview

### Geography

Ghana is centrally located in West Africa and has a total land area of 238,539 square kilometers. Ghana is a low-lying country with only one range of hills, which sits on the eastern border with Togo and west of the Volta River in the Akwapim-Kwahu area. Along the coast is savannah grassland; the western and central parts of the country are heavily forested. The north is characterized by undulating savannah drained by the Black and White Volta Rivers. Ghana's climate is tropical, but rainfall and temperature vary by distance from the coast and by elevation. The average annual temperature is 26°C (79°F).



Figure 1. Map of Ghana

Source: CIA World Factbook <<http://www.cia.gov/cia/publications/factbook/geos/gh.html>>.

## Demographics

The 2000 census estimates Ghana's population at 18.4 million, which represents a 50 percent increase from the 12.3 million reported in the 1984 census, or an estimated growth rate of 2.6 percent. This growth has been uneven, however, with the largest rates of increase in the most urbanized regions (Greater Accra, Ashanti, Western), although the majority of the people (66%) live in rural areas (GSS 1998).

Gender distribution is 47.8 percent male and 52.2 percent female, with 44 percent of the population under 15 years and 5 percent over 65 years (GSS 2000A). Approximately 71 percent of the population over age 15 is literate.

Life expectancy in Ghana increased from 55 to 58 years from 1992 to 1999, and the infant mortality rate fell from 85 to 57 per 1,000 live births. Nonetheless, the pattern of morbidity has remained virtually unchanged. Malaria, upper respiratory infections, and waterborne diseases remain endemic throughout the country. An underlying cause of the persistence of these diseases is the prevalence of poor nutrition, poverty, inadequate housing, and lack of access to potable water in many communities.

## Social and Economic Development

Ghana is one of the most developed countries of West Africa and, on some basic indicators, scores above average compared to other low-income countries (see Table 1). The economy is based largely on subsistence agriculture and mining. Agriculture alone accounts for nearly half of the gross domestic product (GDP) and employs more than half of the workforce (World Bank 2000; GSS 2000A).

Although overall poverty rates fell during the 1990s (from 52 to 40%), this reduction was uneven geographically. The incidence of poverty in the rural savannah remained high (from 73 to 70%), and in some areas, most notably the urban savannah, the incidence of poverty actually rose substantially, from 37.8 to 43.0 percent (IMF/IDA 2001). In March 2001, Ghana joined the Heavily Indebted Poor Country (HIPC) Initiative.

**Table 1. Indicators of Social and Economic Development**

Indicator	Ghana	Low-income Countries
Infant mortality rate (per 1,000 live births)	57	77
Life expectancy at birth (years)	58	59
GDP per capita in US\$ (2000)	\$270.8	NA
Human Development Index	0.473; 133/174	NA
Literacy rate of population 15 years and older (2000)	71%	62%

Source: World Bank 2001A.

Note: GDP = gross domestic product; NA = not available.

## ***Infrastructure***

### *Telecommunications*

The largest and most important telephone/cell phone company in the country is Ghana Telecom (GT), a company that was privatized in 1997. It has about 200,000 telephone subscribers and the ability to cover all regions and some district city centers. Rural areas of all 10 regions have limited telephone access. A system called Fast Net, with 64 kilobits per second (kbps) bandwidth, is capable of sending data through the GT system. In remote areas, a radio-telephone is used to connect to a central exchange in the region.

Telecommunications are not completely reliable even in the capital city, Accra. The main problem is slowness in getting an open line; callers in the districts complain that it can take more than two hours to place an interurban call. A fiber-optic cable ring is being laid to complete a geographic ring connecting Accra, Kumasi, and Cape Coast. In recent years, there has been a boom in cell phone use, in large part due to problems with regular lines.

### *Transportation*

The most important modes of transportation in Ghana are trucks and buses. Although a network of roads unites the regional capitals, the quality of these roads is often precarious. Distances between major centers and services can be sizable, a situation that is worst in the northern- and eastern-most regions. A trip from the north to Accra can require an overnight stop. Although there is a rail system in Ghana, it does not extend to all regions.

## **The Health Sector**

Health and pharmaceutical services in Ghana are offered in the three major sectors: public, private for-profit, and private not-for-profit (NGO). The nongovernmental organization (NGO) sector is dominated by mission, or faith-based, organizations and contributes significantly to the public health program of the Ministry of Health (MOH). Ghanaians make out-of-pocket payments for most types of health service, including drugs. Health insurance is a relatively new concept to Ghana.

### ***Organization of Health Services***

The public health care system in Ghana has four administrative levels: central, regional, district, and subdistrict. There are 10 regional health administrations (RHAs) and 110 district health administrations (DHAs). Civil service reform, which began in the late 1980s, gave rise to public-sector reform, including administrative decentralization to the district level. The Ghana Health Service and Teaching Hospital Act of 1996 allowed for health-sector decentralization and

delegation of health care provision to an autonomous state agency, the Ghana Health Service (GHS) (Bossert et al. 2000). The intent of decentralization was to strengthen the MOH's role in regulation and policy oversight while leaving responsibility for providing public health care to the GHS. Implementation of this plan is still under way. Four statutory bodies<sup>1</sup> are responsible for regulating public and private health care providers and ensuring that standards set by these bodies are met by training institutions (Bentsi et al. 2000). GHS, the statutory organizations, and two teaching hospitals all report directly to the MOH.

MOH regional and district hospitals and clinics account for about half of all health facilities (see Table 2) (Bensti et al. 2000). Primary health care provision is the responsibility of health centers and 85 district hospitals, while nine regional hospitals (one in each region except Greater Accra) provide secondary care and two teaching hospitals provide tertiary services (Bossert et al. 2000). District health directors have oversight responsibility for all (public- and private-sector) organizations providing services within their catchment area. About 5 percent of all facilities are run by other organizations, such as the military and police (Republic of Ghana 1995).

**Table 2. Health Facilities by Type and Ownership, 1997**

Facility Type	Teaching Hospital	Psych./ Leprosy Hospital	Other Hospitals	Health Centers	Clinics	Comm.-Initiated Clinics	MCH Centers	Maternity Homes	Total	% of All Facilities
MOH	2	4	78	388	0	127	239	—	832	47.87
Quasi-gov.	—	—	10	—	76	—	—	—	86	4.92
Not-for-profit	—	—	44	—	100	—	—	—	154	8.81
Private for-profit	—	—	50	—	277	—	—	349	676	38.67
<b>Total</b>	<b>2</b>	<b>4</b>	<b>182</b>	<b>388</b>	<b>453</b>	<b>127</b>	<b>239</b>	<b>349</b>	<b>1,748</b>	<b>100</b>

Source: Bentsi et al. 2000.

Note: Psych. = psychiatric; Comm. = community; MCH = maternal and child health; MOH = Ministry of Health; gov. = governmental; — = not applicable.

Although the private for-profit sector accounts for nearly 40 percent of all health facilities in Ghana, it serves a small minority of the population. These facilities tend to be located in urban rather than rural settings, and they typically focus on curative as opposed to preventive care; however, in recent years, some providers have been encouraged to offer family planning and immunization services (Bentsi et al. 2000). In Ghana, traditional practitioners account for approximately 10 percent of consultations, and traditional birth attendants assist with approximately one-third of all births.

As part of its Medium-Term Health Strategy (MTHS), initiated in 1997, the Government of Ghana (GOG) began to promote public-private collaboration and partnerships (MOH/Health

<sup>1</sup>The Medical and Dental Council, the Pharmacy Council, the Private Hospitals and Maternity Homes Board, and the Nurses and Midwives Council.

Partners 2000). Toward this end, the Private Sector Unit (PSU) was established within the MOH to serve as a link between the MOH and the private health sector. One of the first actions of the PSU was to create a national-level database of all private clinics, hospitals, and maternity services. The expectation is that this database will eventually be tied to a registration process. The new database, which is in development, will be an important component of an eventual national insurance program. It may also be linked to quality assurance and accreditation initiatives.

Not-for-profit private health care providers are estimated to serve approximately 40 percent of the population in Ghana. This sector is dominated by faith-based organizations, primarily the Christian Health Association of Ghana (CHAG) and the Muslim Ahmadiyya Movement. The focus of the missions is on primary and secondary health services in rural areas (see Table 3). CHAG alone accounts for most of the NGO health delivery in Ghana and 70 percent of all private health delivery services (Bentsi et al. 2000; MOH/PSU 2000). CHAG is composed of 16 member Christian organizations, representing 121 health care facilities (45 hospitals and 76 clinics and primary and rural health care programs). Of these, nearly two-thirds are run by the Catholic Diocese.

**Table 3. Distribution of CHAG Facilities**

Region	Hospital	Clinic/Public Health Clinic	Nurses Training School	Total
Ashanti	10	17	2	29
Volta	7	10	0	17
Eastern	5	11	1	17
Brong Ahafo	9	5	1	15
Northern	3	11	0	14
Upper East	1	9	1	11
Central	3	5	0	8
Western	3	4	0	7
Upper West	2	3	1	6
Greater Accra	2	1	0	3
<b>Total</b>	<b>45</b>	<b>76</b>	<b>6</b>	<b>127</b>

Source: CHAG 1998–1999.

In 2000, CHAG received a Memorandum of Understanding from the MOH that awarded member hospitals district hospital status and held them accountable for fulfilling health service contracts (MOH/Health Partners 2000). This arrangement, which is supposed to be managed through the newly established PSU, effectively embraces these facilities as extensions of the public health system. As such, the missions are expected to operate within the national health policy guidelines and vision. The support received from the government is substantial and consists of secondment of personnel, subvention for the payment of most (about 85%) staff salaries, CHAG's exemption from paying duty on essential imports, and some financial support for equipment or renovation. The facilities are eligible to apply for and receive reimbursements for providing treatment to exempt patients.

Ahmadiyya estimates its health care program to be one of the largest in the country, after the Catholic Health Program (part of CHAG), although the program does not produce any annual reports to document its activities. The Muslim program includes six hospitals in five regions (Kaleo, Upper West; Techiman, Brong Ahafo; Asokore and Kokofu, Ashanti; Swedru, Central; Daboase, Western) and one clinic in Wa. Ahmadiyya promotes homeopathic medicine use through traditional healers. Unlike CHAG, Ahmadiyya has virtually no contact with or support from the government, although some of its hospitals function as district hospitals.

There is no consolidated database on the nonmission, not-for-profit organizations involved in providing health care. According to reports by the MOH PSU (2000) and MOH/Health Partners (2000), there are more than a hundred NGOs involved in health care. Most of these are Ghanaian, and the international health NGOs tend to operate through them. The activities of the NGOs are in areas such as health education, community mobilization, reproductive health, maternal and child health and family planning, HIV/AIDS prevention, water and sanitation, and disaster relief services. NGOs operating in the health sector include Planned Parenthood Association of Ghana, GSMF International (formerly Ghana Social Marketing Foundation, the Ghana Red Cross, and the Family Reproductive Health Programme of Save the Children (UK). Very few of these NGOs offer clinical services through hospitals or clinics, and they do not receive any support from the MOH to do so.

### **Management and Financing of Services**

Total expenditures on health represent approximately 4 percent of the GDP, or about US\$18 per capita. According to 2001 estimates, the health budget was 9 percent of total government expenditures (Table 4).

There are four sources of funding for the public health sector in Ghana: taxes contributed to the GOG by Ghanaians, donor funding, commercial credits, and internally generated funds (IGFs)/user fees.

**Table 4. Expenditures on Health in Ghana, 1998 (Estimates)**

<b>Expenditure</b>	<b>Percentage</b>
Total expenditure on health as % of GDP	4.3
Public expenditure as % of total expenditure on health	54.0
Public expenditure on health as % of general government expenditure	9.0
Tax-funded expenditure on health as % of public expenditure	77.3
External resources for health as % of public expenditure on health	22.7

Source: World Bank 2001B (Annex, Table 5, page 162).

Although GOG contributions are rising, they represent just over half (54%) of total sector funding (Foster et al. 2000). In 1994, the GOG and its donor partners adopted a sector-wide approach (SWAp) to health-sector management. An MTHS and a Programme of Work were developed that expressed a convergence between the GOG and health donor partners on specific objectives and strategies. A new financing mechanism was established: the donor-funded pool

(DFP), or Health Fund, in which a proportion of some health partners' resources was pooled or placed under government management (MOH/Health Partners 2000). There are now three main institutional arrangements governing the management of donor funds: pooled, earmarked, and donor-managed. Pooled funds are under the direct control of the MOH, whereas earmarked funds are those transferred to MOH for agreed programs and projects with varying degree of MOH control according to different donors. Donor-managed funds represent direct expenditure by the donor on behalf of MOH. In 1999, pooled funding accounted for 39 percent of total donor funding, and the total MOH-managed donor funds (pooled and earmarked) accounted for approximately 60 percent of total donor funding.

The pattern of arrangements for donor funding—of increasing MOH-managed donor funds—suggests a growing donor confidence in the GOG's management. This perception is supported by a decline in donor contributions to vertical programs, although some concerns have been expressed at the loss of impetus from the former vertical programs, particularly in the case of the tuberculosis and vitamin A programs.

IGFs, or fees from users, are collected at all levels of the Ghanaian health system and have increased significantly in recent years. According to an MOH and Health Partners report (2000), IGFs currently pay for 30 to 40 percent of the nonstaff running costs of government hospitals and for more than half of the same costs in the mission sector. The fees collected from the sale of prescribed drugs under the Cash-and-Carry system that was established in 1992 contribute significantly to the IGF.

Ghana is experiencing a gradual growth of a third-party payer system, but the number of patients covered by third-party payers is still small. The development of insurance programs, however, may not succeed unless basic controls are in place to monitor use and costs. According to some large employer groups currently being targeted by private insurance companies (e.g., Metropolitan and MedX), it is clear that the insurance industry will be hard-pressed to offer premiums that are competitive with the current company-run health care programs. In addition, in an effort to manage risk, the insurance companies have capped their coverage at levels that translate to decreased benefits for employees who now receive services from employer-owned-and-managed health care departments. The increased cost and decreased coverage offered by the insurance industry makes it difficult for employers to justify shifting financial risk and responsibility for health care to these private insurance companies.

Local insurance schemes and private insurance companies are also faced with the dangers of adverse selection because of the voluntary nature of the programs and the corresponding low numbers of participants. Insurance schemes like the one being launched by Holy Family Hospital in Nkawkaw will collapse under their own weight if the only people willing to participate are those most likely to use the services offered. Holy Family serves a population of more than 120,000 people in this rural area and intends to offer a voluntary insurance scheme targeting individual families for participation. Administrators predict that those most likely to participate are those most likely to need hospital services. They also predict that even if they can expand their pool to include relatively healthy subscribers, these people will not renew their insurance the following year if they have not used the medical services covered by the insurance scheme. The Holy Family Hospital insurance scheme excludes preventive care, which may be short-

sighted since it eliminates the actual and perceived value associated with care delivered to the community at large. The perceived value of preventive care may be sufficient to retain desired, relatively healthy subscribers. Also, preventive care services will decrease the need for costly in-patient care at a later date.

In 2000, Partners in Health, Danida, and the WHO conducted an evaluation of the Nkoranza Community Health Insurance Scheme, a community-based finance scheme in Nkoranza (Atim 2000). This scheme is the first of its kind in Ghana, and it was hoped that it could serve as an example for others around the country. The scheme was started in the early 1990s and has made quality health care affordable for about 30 percent of the population. This percentage is below the targeted range, however, and annual registration figures showed no tendency toward an increase in population coverage. Indeed, the evaluators noted a tendency to enroll only the most vulnerable members of the family (a form of moral hazard). Though the district has high levels of poverty, this was not seen as a major factor behind the poor registration figures.

## **The Pharmaceutical Sector**

### ***Pharmaceutical Policy, Laws, Regulation***

#### ***National Drugs Policy***

The Ghana National Essential Drugs Program (GNEDP) was established in 1988 with the goal of ensuring access to “effective, safe and affordable drugs of good quality [for all Ghanaians] in both the public and private sectors” that are “rationally used” through the implementation of the national drugs policy (Republic of Ghana 1995). The comprehensive Ghana National Drugs Policy addresses rational drug selection and use. In 1997, the Ghana National Drugs Programme (GNDP) was established as a five-year program to assist in the implementation of key GNEDP goals.

#### ***Quality Assurance***

The legal framework for a comprehensive quality assurance program is mostly in place through the Food and Drugs Law 305B of 1992, and draft legislative instruments were prepared in 1999. Procedures for both the public and private sectors have been elaborated for drug registration and certification for importation, supplier qualification of tendered products, random inspection and testing of drug imports, random testing of drugs in the marketplace, and licensing and inspection of manufacturers, wholesalers, and retailers. Implementation of these procedures is incomplete but in process.

Drug regulatory functions are handled by two organizations in Ghana: the Food and Drugs Board (FDB) and the Ghana Pharmacy Council. The FDB was established through the Food and Drugs Law, and supplanted the Standards Board. Its duties are (1) inspection and regulation of local pharmaceutical manufacturers; (2) drug registration (local and international sources);

(3) inspection of suppliers and warehouses; (4) monitoring of drug imports/exports (requiring permits for each shipment); and (5) postmarket surveillance of drug products. The Standards Board remains a WHO subregional laboratory for control drugs, but it is not functioning.

There are an estimated 850 to 900 registered drug products in Ghana (there is no comprehensive computer database). A recent study by the FDB indicates that about 8 percent of drugs in the market are unregistered. The registration fee is \$1,000 per drug product, and each product must be re-registered every three years for an additional \$1,000. The registration cycle is fixed such that all registrations, new and to be renewed, are due at the same time. The FDB acknowledges that this may delay registration as companies wait until the cycle begins to register, and it is considering a fast-track registration process in which a Certificate of Analysis will be accepted for a one-year provisional registration.

The FDB's laboratory can test 50 to 70 drug samples per month. In 2000, 880 drug samples were analyzed from customs, field complaints, local manufacturers, and central medical stores (CMSs). Of these samples, 124 failed quality testing, for a variety of reasons. However, no actions were taken by the FDB with respect to these results. The laboratory has a staff of two pharmacists, four diploma laboratory technicians (three years of training), and one certificate laboratory technician (two years of training). The FDB plans to double this capacity by the end of 2002 with additional equipment and personnel. Currently, there are 15 FDB inspectors responsible for covering the whole country. Manufacturers are supposed to be inspected for meeting good manufacturing practices (GMP) standards at least once yearly through announced and unannounced inspections. To date, only one company has been denied licensing until quality control improved to acceptable GMP standards.

Incipient FDB activities include a product problem reporting system and product recall system. The FDB currently operates a 24-hour free telephone line for consumers to report drug problems; problems are rarely reported, however. The product recall system is also minimal and places the burden completely on the manufacturer. The last recall occurred in 1992, when a penicillin injection was recalled. Approximately 90 percent of the recalled product was collected, down to the district warehouse level. Lots are not tracked to the facility level in the public or private sector. A National Center for Pharmacovigilance was recently created to monitor adverse reactions and product quality problems. In addition, all drug promotion and advertising in Ghana must be preapproved by the FDB. At the time of this study, guidelines were being developed jointly with all stakeholders.

The Pharmacy Council was established through the 1994 Pharmacy Act (with legislative instruments drafted in 1998). The council is responsible for licensing and inspecting pharmacies and chemical seller shops for compliance with standards for the following: (1) physical structure; (2) fiscal documentation of receipts and sales; (3) quality of drugs; (4) expired drugs; and (5) store license (must re-register every year). The council inspects approximately 1,500 pharmacies and chemical seller shops out of approximately 964 and 7,000 registered facilities, respectively, in the country. According to the council, the main reason pharmacies fail the inspection is the absence of a pharmacist on duty, and the main reason chemical seller shops fail is the sale of drugs that are not allowed by law. According to the Pharmacy Council, sanctions are prepared but usually no punitive actions are taken.

A third responsibility of the Pharmacy Council is the establishment of a curriculum and training for pharmacists and chemical sellers. The ability of the council to effectively carry out this responsibility has been severely compromised by lack of sufficient infrastructure and human capacity. The Pharmacy Council works collaboratively with the Pharmacy Board, the professional body that represents the profession.

## The Market

The Ghanaian pharmaceutical market is estimated to be \$90 million at manufacturer/importer prices, or \$5 per capita. Local manufacturers account for approximately 20 percent of the total market share; imports account for the balance (personal communication with the Food and Drugs Board [FDB]). MOH officials and local manufacturers estimate that up to 20 percent of all imports are unofficial or smuggled goods. Most imports (45%) arrive by air, mostly from Europe and Asia.

## Private For-Profit Sector

According to the *Ghana National Gazette* (Republic of Ghana 2000A), in 2000 there were 15 manufacturing wholesalers (wholesalers that have vertically integrated backward into manufacturing), 79 wholesalers (some of which also engage in retail activities), and 280 registered wholesale retailers. Many of the wholesalers are engaged in wholesaling drugs and nondrug items. Some of the larger wholesalers, like Kama, are engaged in manufacturing and importation and have integrated vertically, establishing small retail chains of pharmacies. The distribution of these companies is heavily concentrated in the Greater Accra region (see Table 5).

**Table 5. Distribution of Wholesalers in Ghana**

Region	Manufacturing Wholesalers	Wholesalers	Wholesale Retailers
Greater Accra	12	52	172
Ashanti	2	20	62
Eastern	1	NA	11
Western	NA	NA	14
Brong Ahafo	NA	NA	10
Volta	NA	6	4
Northern	NA	1	3
Central	NA	NA	2
Upper East	NA	NA	2
Upper West	0	0	0
<b>Total</b>	<b>15</b>	<b>79</b>	<b>280</b>

Source: Republic of Ghana 2000A.

Note: NA = not available.

Wholesalers supply goods to both the public and private sectors. Public-sector customers include government hospitals and other health centers and are estimated to account for 10 to 30 percent of the total sales. Private-sector customers include clinics, pharmacies, and chemical shops. Approximately 30 percent of customers pay cash and receive discounts of 5 to 10 percent; those that receive credit generally pay within 30 days. The largest wholesalers, according to other players in the pharmaceutical market, are presented in Table 6.

**Table 6. Estimated Sales and Market Share for Major Wholesalers (per year)**

Wholesaler	Estimated Sales (US\$ million)	Market Share (%)
Ernest	13	11
Kama	8	7
Unichem	5	4
Gokals	5	4
Osons (of Kumasi)	4	3
Western Pharmacy (of Kumasi)	2	2
Kina Pharma	3	3
Geo Pharmacy	2	2
Baseline	1	1
Other*	74	<1
<b>Total market</b>	<b>117</b>	

Source: Interviews, market research, FDB, CEPS.

\*Each other individual wholesaler has less than 1% market share.

There are approximately 964 pharmacies in Ghana; 64 percent are located in Greater Accra and 23 percent are located in the Ashanti region. In 1998, approximately one-third of public purchases and 80 percent of mission hospital purchases were from private pharmacies (Bentsi et al. 2000). Of the 1,200<sup>2,3</sup> or so pharmacists in Ghana, 90 percent or more work in private pharmacies either full- or part-time and are concentrated in urban areas (Bentsi et al. 2000). Four types of employees are legally allowed to work in pharmacies: pharmacists (four-year program), dispensing technologists (three years of training), dispensing assistants (no formal training), and dispensary attendants (no formal training).

To address the limited supply and unequal distribution of pharmacies in the country, the Pharmacy Board and MOH sanctioned the establishment of chemical seller shops to provide at least a minimal level of service to patients. Chemical sellers are now found in nearly every corner of the country, and according to one study, “Chemical sellers are often the first source of health care for the community . . . or the only access to health care at all” (Hulsmann 1997). According to the 1999 annual report of the Ghana Pharmacy Council, there are 7,961 registered chemical seller shops (one shop per 2,313 inhabitants), although it is estimated that there may be as many as 2,000 unregistered shops. The Pharmacy Council estimates that chemical sellers account for more than 60 percent of all visits to drug retail outlets.

<sup>2</sup>Estimate of 1,188 in Hulsmann 1997.

<sup>3</sup>Or pharmacist/population ratio of 1:14,300.

Chemical seller shop owners are not required to have received any formal training in health. The requirements for obtaining a chemical seller's license are to have reached GCE O level (to be a high school graduate) and to pass an examination given by the Pharmacy Council that must be renewed annually, which requires chemical sellers to attend specific continuing education courses. They are permitted to sell only items from a limited list of over-the-counter (OTC) products (called "Category C"). In reality, however, the chemical sellers carry a more extensive set of items than permitted and are known to attempt diagnoses and to prescribe therapies. One reason given for the growth in numbers of chemical sellers and for the sale of nonapproved items is the introduction of the Cash-and-Carry system, which requires patients to pay the full cost of the drugs prescribed to them in public facilities (Hulsmann 1997).

## **Public Sector**

### *Selection*

The National Drug Policy of Ghana expresses the MOH's commitment to a comprehensive approach to the rational management and use of drugs in the country. The essential drugs list (EDL) is one of the important tools used toward this end. In 1983, the MOH published the first EDL and standard treatment guidelines (STG). These documents were intended to guide treatment choices and to be used as references at all levels of the health system, both public and private. The fourth edition was published in 2000 but was not widely distributed until mid-2001.

The selection of items to add to or eliminate from the EDL involves the participation of a variety of professionals from both the private and public sectors. These professionals sit on various committees, including the STG Expert Committee, the EDL Review Committee, the Regional Directors of Health Services and Health Program Managers, teaching hospitals, and relevant professional associations. There are now 224 items on the EDL. Only two items were added to the most recent edition. Current selection criteria include safety, efficacy, and cost. There is interest in enhancing the pharmaco-economic evaluation of products in the selection process; at present, however, cost is evaluated primarily on the basis of cost-minimization analysis.

### *Procurement*

Procurement of drugs and medical supplies for the MOH is the responsibility of the Procurement Unit (PU) and was guided by the EDL. The budget for essential drugs in 2000 was \$4.5 million, of which \$3 million is through the central health fund. The budget for vaccines and contraceptives was \$4 million each. Half of the total MOH expenditure on essential drugs and vaccines in 2000 was spent on 14 items. The largest portion (15%) of the expenditure was for anti-snakebite serum (polyvalent, 10 ml) (see Table 7).

**Table 7. High-Value Essential Drug Purchases, 2000<sup>a</sup>**

<b>Product</b>	<b>Value of Purchase (US\$)</b>	<b>% of Total Purchases</b>
Anti-snakebite serum, polyvalent, 10 ml	839,250	15
Oral rehydration salts	320,491	6
Chloroquine base syrup, 80 mg/ml, 100 ml	225,446	4
Dextrose 5%, 500 ml	194,525	3
Streptomycin sulfate, 1 g, Pfr	181,342	3
Amoxicillin tabs/caps, 250 mg	161,261	3
Anti-rabies vaccine on venocells, vial, 10 ml	160,000	3
Carbamazepine tabs, 200 mg	149,653	3
Sodium chloride 0.9%, 500 ml	143,240	2
Dextrose 5% + NaCl 0.9%, 500 ml	128,444	2
Ciprofloxacin tabs/caps, 500 mg	108,110	2
Pyrazinamide tab, 500 mg	103,385	2
Paracetamol tab, 500 mg	100,407	2
Chloroquine, 40 mg/ml, 5 ml	83,461	1
<b>Total value of all purchases</b>	<b>5,736,106</b>	

<sup>a</sup>Data from Ghana Ministry of Health.

The MOH receives funds from a World Bank loan for the procurement of drugs and, therefore, is expected to follow World Bank procurement guidelines. In 2000, approximately \$2.83 million was spent on 128 items purchased through international competitive bidding (ICB), which occurs on an annual basis. Approximately \$2.7 million was spent on 103 purchases by local shopping on an as-needed basis. Fifty-eight items purchased through local shopping were also purchased through ICB in the same year, and 45 items were purchased through local shopping and were not purchased through ICB. Three items had duplicate purchases through local shopping (benztropine tablets, 2 mg; ciprofloxacin tablets, 500 mg; and flucloxacillin tablets, 250 mg). The high rate of local shopping has been noted in recent audits and is a matter of concern.

Frequent local purchases by health facilities were noted in the 1999 GNDP assessment and confirmed in the SEAM assessment (see Table 8). There is little question that this practice contributes to the need for frequent local shopping at the central level. The volume and frequency of these purchases have contributed to less than optimal prices for goods and erratic supplies at the various levels. According to the Procurement Unit (PU) staff, a root cause of the need to conduct local emergency purchases is the lack of proper quantification of needs from the districts. In step with reform efforts, in 1995 the quantification plan was changed from one based on central-level consumption (distribution) information to a bottom-up quantification (Republic of Ghana 1995). In 1999, the PU responded to findings from the GNDP's 1998 sector assessment that identified serious deficiencies in procurement practices at the regional and district levels, mostly due to lack of needs estimation skills. The PU developed the *Procurement Procedures Manual (PPM)* to guide procurement at all levels, and this manual was later supplemented by the development of a set of procurement indicators in 2000. The MOH and donor partners have adopted these procurement guidelines, and a nationwide training program was launched in 2000.

**Table 8. Sources of Drugs and Medical Supplies for 30 Public Health Facilities, 2000**

Source	No. of Facilities	% of Facilities
Central medical store	7	23.3
Regional medical store	26	86.7
District medical store	4	13.3
Mission store <sup>a</sup>	2	6.7
Private market	19	63.3

<sup>a</sup>Two district hospitals were mission facilities and, hence, purchased some supplies from a mission store.

### Example of District Purchasing

Akuapem District has a population of 108,638 (GSS 2000C). The district medical store (DMS) supplies five health centers and the hospital. Purchases are made monthly at the regional medical stores (RMSs) and are authorized by the District Director of Health Services and the District Pharmacist. A review of purchase requests showed that of the items requested from RMSs each month, between 29.7 and 83.3 percent were supplied each time (average of 46.3%). What is not supplied by an RMS is purchased on the open market in Accra. As per the procurement guidelines, three quotes are normally obtained and presented to the purchasing committee prior to purchase. The prices obtained in this manner are comparable with those from the RMSs, and a few items can be purchased at a cheaper price privately (e.g., infusions made at a local plant). The RMSs offer 30 days' credit, so with each monthly order the DMS pays for the previous order.

The hospital purchases mostly from the DMS, at 5 percent markup on the DMS price. The hospital may purchase directly from an RMS, without going through the DMS, as the hospital is semi-autonomous and not included under the district health administration. However, the hospital does require special regional authority to purchase from the central medical store (CMS). Prescribing habits fluctuate according to which doctors are practicing in the hospital (e.g., recently there were five Cuban physicians). The following information was obtained from reports on year 2000 drug expenditures:

<u>Hospital</u>	<u>Cost</u>
Drugs purchased from DMS	¢360,519,300 (61% of total; about the same as 1999)
Drugs purchased in private sector	¢222,998,351
Total purchases	¢583,517,651
Total revenue	¢600,360,710

*There was 0% expiry of drugs reported, and 100% of tracer drugs were available.*

<u>District Medical Store</u>	<u>Cost</u>
Drugs purchased from RMSs	¢178,708,867 (35% of total; doubled since 1999)
Drugs purchased in private sector	¢326,977,094
Total purchases	¢505,685,961
Total revenue	¢467,699,640

### Distribution

The distribution model for the public sector in Ghana is a tiered pull system. Each region has a medical store that is responsible for picking up supply orders at the CMS. The DMS must then pick up the orders it placed with the RMS. Hospitals and clinics must pick up their supplies from

the DMS. The system presupposes the availability of transportation; however, the limitations of transportation include lack of vehicles, cost of fuel, and long distances to travel. Field informants report that the private sector has been increasingly offering delivery services for products sold. Given that each step in the public-sector distribution system imposes a “tax” on supplies, purchases made directly from private-sector suppliers can be competitive, especially if delivery services are included.

## Use

Rational drug use has been a major concern of the MOH for some time. As mentioned previously, the GNDP was established to support the implementation of the National Drugs Policy, specifically to improve the rational use of drugs in Ghana. The University of Ghana is a core member of the International Network for the Rational Use of Drugs (INRUD) and has been actively involved in supporting GNDP efforts.

A longitudinal analysis of basic drug use in Ghana is possible because three studies have been conducted using the same basic indicators, starting with a rapid sector assessment by the MSH Rational Pharmaceutical Management (RPM) Project in 1993. In its pharmaceutical sector assessment of 1998 (GNDP 1999), the GNDP determined that there were several problems that had a negative impact on prescribing practices in the public sector. Prescribing problems were defined as high numbers of drugs per prescription, high prescribing rates for antibiotics and injections (Table 9), poor dispensing practices, and cost. Factors that contributed to these problems included poor access to the EDL and STG in health facilities and lack of functioning Drug and Therapeutics Committees. The SEAM 2001 assessment results are consistent with these findings, with some improvement in the availability of the EDL by 2001 (93% of facilities reported having a copy of the EDL, either the most recent or a previous version).

**Table 9. Basic Rational Drug Use Indicators**

Indicator	1993 <sup>a</sup>	1998 <sup>b</sup>	2001 <sup>c</sup>
Average number of drugs per prescription	4.3	4.5	3.4
Prescriptions including an antibiotic	47%	56%	42%

<sup>a</sup>RPM 1993.

<sup>b</sup>GNDP 1999.

<sup>c</sup>SEAM Survey 2001.

## Management Information System and Communications

Public facilities record their drug stock levels on a monthly basis using tally cards and ledgers. The district health management teams have been working to improve the use of these tools as part of the effort to improve overall drug supply management. The public health facilities visited for the SEAM assessment were using these tools to track stock movement, although the quality of record-keeping was not assessed.

The health facilities reported various problems related to communicating their needs to other levels. A large proportion of these problems (45%) related directly to a poorly functioning telephone system, the cost associated with maintaining a telephone line, or lack of a telephone altogether.

### *Financing*

As mentioned previously, in Ghana's public sector, drugs are financed through the Cash-and-Carry system that was initiated in 1992. This system includes user charges managed through revolving drug funds. The revolving funds receive reimbursements from the MOH for various categories of exempt patients, including the indigent, children, and the elderly. In recent years, however, full recovery of drug costs has been undermined by inflation and a slow reimbursement process.

Fees charged for essential drugs typically are set to recover exemption costs and other losses, as well as to generate internal funds. However, the pricing of drugs at the various levels has been a matter of concern, as prices tend to increase with each level of the distribution system, leaving the most remote patients the most vulnerable to the highest prices. The 1998 GNDP assessment (1999) revealed markup prices that ranged from 13 to 52 percent and noted a lack of clarity on the MOH's markup policy for essential drugs. The differences between public and various private facility prices (based on average lowest prices reported) show public-facility prices to be 35 percent lower than those charged by the private-sector health facilities (a complete analysis is presented in a later section on SEAM affordability indicators). Nonetheless, the impression is that prices in the public sector are too high or, at least, that they can be lower. The lack of an effective pricing policy and procurement practices lend credence to this impression. In March 2001, the newly elected President announced that the Cash-and-Carry system would be replaced by mechanisms that would be friendlier to the poor. The target year for implementation is 2004.

### **NGO Sector (Private Not-for-Profit)**

The Christian Health Association of Ghana ran a small medical store (now closed), and although it did not aim to be the major supplier of drugs and medical supplies for its membership, it did expect to generate sufficient revenue to cover basic operating costs. The Catholic Secretariat, a member of CHAG, operates four small manufacturing plants and medical stores through the Catholic Drug Center (CDC), and three Diocese Hospital Pharmacies (DHP). They supply Catholic and non-Catholic mission health facilities.

### *Selection*

The CHAG MSP started formally in 1983 after discussions with the MOH about the need to ensure a regular supply of drugs and medical supplies during times of crisis. Initial support was received from the German Technical Cooperation Agency (GTZ). A Drug Committee was established to manage the small medical store, located in Accra. The inventory list developed was based on the essential drugs concept, and today it represents a subset of the Ghana EDL (although some items carried, such as various vitamin and multivitamin preparations, are not on the EDL). The inventory includes 97 items and 120 dosage forms. Initially offering donated drugs free of charge to its membership, the service eventually made its own purchases and adopted a revolving drug fund model with a goal of full cost recovery.

The Catholic Secretariat operates the CDC, based in Accra, and three Diocese Hospital Pharmacies (DHP) located in Kumasi, Sunyani, and Wa. The objective of these four facilities is to support all Catholic health centers in the country, which include 30 hospitals (at least one in every region except Upper East, where there is a clinic), 62 clinics total, and two orphanages. The history of the CDC is much like CHAG's except that the CDC still receives many drug donations. About half of the more than 100 items the CDC manages are on the EDL.

### *Procurement*

CHAG's MSP operates as a revolving drug fund and has been an important source of revenue for the Secretariat as well as a service to member facilities, accounting for 40 percent of income received in 1999 (CHAG 1998–1999) but only about 3 percent of the drug supply for the member facilities. The total value of purchases made in 2000 by MSP was about \$120,000 and profits from sales about \$15,470. Because funds generated from sales are used to cover other CHAG services, the fund has become seriously decapitalized.

Until recently, the MSP conducted international tenders (mostly for some antibiotics and injectables) and limited local tenders to about once a year. Local purchases are made on a negotiated contract basis with a limited number of wholesalers and manufacturers. Items are then sold to facilities at a 15 percent markup. High inflation rates coupled with the devaluation of the local currency in the late 1990s forced CHAG to suspend many activities. The MSP has a 30-day payment period with its suppliers, with no penalties for late payment and no incentive for early payment. It offers the same terms for its own clients, although in principle it should be operating on a Cash-and-Carry basis (cash up front). Given recent economic difficulties and a certain expectation from some clients that CHAG should be able to donate supplies, it is not surprising that the MSP has a problem collecting from its clients.

Price lists are sent to member missions regularly, but there are no programmed purchases per se. Needs are estimated on the basis of historical data (what was purchased during a previous period). The combined impact of a limited selection, unpredictable demand and supply, an increasing tendency of missions to purchase elsewhere, and poor management of the revolving fund have worked together to bring the program to a near halt.

The CDC in Accra includes a small medical store and a small manufacturing unit. Raw materials are imported through the National Catholic Services Center, and a minilab is used to conduct simple quality testing. The CDC also conducts international tenders, makes local purchases (major suppliers are M&G, Gokals, Phyto-Riker, Ernest, and the CMS), and receives donations (duty- and tax-free). Often, donations are received for items not on the EDL that may have been requested by visiting physicians. Sometimes items can be exchanged, but generally the CDC informs donors of its donations policy (patterned after the *WHO Guidelines for Drug Donations*).

The CDC has price lists for cash and credit purchases. There is little coordination between the CHAG MSP and the CDC in terms of selection and quantification of needs. Given that the CDC is less likely to be out of stock, it believes that its clientele (which include non-Catholic organizations) and sales are more predictable. The total value of production in 2000 was approximately \$180,000, and the total value of sales was \$308,000 (Risselada and Sytema 2001).

Because the four Catholic medical stores do not stock a full range of medicines, mission facilities must purchase many needed supplies from other private suppliers. The modal number of purchases made was 12, for an average frequency of once a month. The average value of annual purchases was not easily calculated, due in part to limited availability of records (of 20 facilities surveyed, 16 acknowledged making purchases; of these 16, only 10 facilities reported a value) and the wide variation in results (from ₵1,632,000 to ₵376,749,658 per year, with hospitals rather than clinics at the high end of the distribution). Of the 20 facilities surveyed, 18 reported that local purchases were increasing (in volume and/or frequency) because of increases in patient loads. In some cases, price increases caused purchases to decrease from previous years.

#### **Apam, Catholic Mission Hospital, Central Region**

The hospital purchases drugs from CHAG and the CDC monthly for a total of ₵15 to 20 million; ₵7 to 13 million from CHAG, ₵6 to 12 million from the CDC, and another ₵1 to 2 million from a private wholesaler from whom it purchases any items not available from the mission suppliers (typically chloroquine tablets, needles, and syringes). The hospital currently owes CHAG ₵9 million cedis.

The hospital's price list is calculated by adding 33.3 percent to the purchase price, although this markup is not strictly adhered to for certain high-cost items such as antibiotics. This is a poor area; only about 75 percent of patients can pay for their drugs. There are, however, several private pharmacies in Apam.

### *Distribution and Storage*

As with the MOH system, mission facilities pick up their orders from mission stores and other suppliers. As CHAG does not typically send inventory updates, facility staff sometimes discover, after making a trip to Accra, that the items they seek are not in stock or that the prices have increased unexpectedly. Catholic facilities receive inventory updates from the CDC. The

Catholic Secretariat has a more sophisticated distribution system that includes the CDC in Accra and the shipping to three zonal medical stores in Kumasi, Wa, and Sunyani, greatly easing the burden of transportation for the facilities. It is important to note that private vendors (wholesalers and retailers) are increasingly offering distribution (delivery) services for a small fee (often a percentage of the value of the purchase).

All but one of 20 facilities surveyed reported having their own vehicle for the transportation of medicines. Most facilities reported some problem with costs associated with transportation, including fuel costs, and difficulty in scheduling pickups. Of 19 facilities with vehicles, 14 reported that at least one of their private-sector suppliers delivers their medicines.

The number of different items in inventory at the mission facilities ranged from 30 in the smaller clinics to as many as 400 in the hospitals. Only 3 of the 20 facilities surveyed reported having insufficient storage area for their medicines. Thirteen had a functioning air-conditioning system and four had a functioning fan; five facilities reported having neither. Sixteen had functioning cold storage (11 with functioning temperature control), but 14 of these did not keep records of temperatures.

### *Use*

CHAG member facilities receiving support from the MOH reported having qualified prescribers and dispensers. There was at least one trained person in each facility surveyed who was responsible for dispensing, although pharmacists were found in only six hospitals (Table 10).

**Table 10. Dispensers in CHAG Member Facilities**

<b>Position</b>	<b>Number</b>
Pharmacist	6
Dispensing technician	10
Dispensing assistant	16
Nurse	8
Orderly	1

Of the 20 facilities surveyed, 17 reported having access to at least one source of information about the use of drugs, the most common being the British National Formulary and the Monthly Index of Medical Specialties (MIMS) for Africa. The years of publication of these varied greatly, but essentially all facilities had a source published within the last eight years. Only nine facilities reported that they use the MOH STG and two reported use of other guidelines, a figure that may be considered low.

## *Finance*

The CHAG MSP has been operating as a revolving drug fund but has been decapitalizing over the past two years. The per-item charge has not generated sufficient funds to cover losses because of sudden increases in the cost of supplies, inflation, declining sales, and increasing problems with collecting debts from facilities. CHAG is now issuing a one-month credit with postdated checks. In March 2001, the debt was estimated at about ₵70 million (US\$70,000). In order for CHAG to qualify as a Budget Management Center (to manage public funds), it is required to hire management information systems and human resources staff, which is proving to be difficult given its current financial situation.

The Catholic Health Services share a similar concern about the impact of inflation, changes in the MOH, and donor fatigue on their financial security. Reference was made to implications of exemption policies that make it difficult to recuperate costs. Unlike CHAG, however, the CDC is subsidized by drug donations and extra revenue is generated by strategic price markups, which vary according to the type and popularity of each item.

CHAG has expressed interest in working with Nkoranza and Damango Community Health Insurance schemes. These are relatively new schemes and it is not clear whether they will survive or thrive. There is also support, in principle, for a national health insurance scheme (yet to be developed). Conceivably, a pharmacy benefit could be developed for these schemes that would involve a consortium of the insurance scheme, CHAG, and local private pharmacies or chemical sellers.

## Access to Essential Medicines, Vaccines, and Related Health Commodities

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The measures of access to essential medicines and medical supplies presented in this report are based on indicators reflecting important dimensions of access that were identified at the joint WHO-MSH meeting on defining and measuring access held December 11–13, 2000, in Ferney-Voltaire, France.

### Geographic Accessibility

**Indicator: Percentage of households more than 30 minutes away from a health facility/pharmacy expected to have a set of key items in stock at all times**

According to a survey conducted in 1997 (GSS 1998), just over half of all Ghanaians can reach a health facility in under 30 minutes (Table 11). This indicator is highly correlated with economic status and setting: those living in poor rural households have to travel farther. In the rural areas, 77 to 85 percent of the population travels for 60 minutes or more to reach a health facility (Bosu et al. 2000). Some regions clearly have greater problems with geographic access. Problems of geographic access are most acute in the Northern and Eastern regions, where residents who must travel more than 60 minutes to a health facility make up 8 percent and 7 percent, respectively, of the country's total population. The large proportion of the population of the Upper East Region with more than 30 minutes travel to a health facility represents only 4 percent of the total national population.

**Table 11. Percentage of Population More than 30 Minutes Away from a Health Facility, by Region, 1997**

Percentage	Western	Central	Greater Accra	Volta	Eastern	Ashanti	Brong Ahafo	Northern	Upper East	Upper West
Rural	69.1	57.6	37.2	48.9	55.1	52.0	61.6	83.6	84.0	86.1
Urban	15.3	24.9	6.5	25.2	24.2	24.9	24.2	50.1	78.2	17.4
Total population	6.0	4.0	1.0	5.0	7.0	6.0	6.0	8.0	4.0	2.0

Note: Total national population = 12,396,000. Adapted from GSS 1998.

From 1997 to 2000, the MOH made a concerted effort to improve geographic access to health facilities. During this period, two district hospitals and 126 health centers were built, and 11 health centers were upgraded to district hospitals. In addition, three regional hospitals were constructed to increase access to specialized care.

**Indicator: Average number that hours of health facility operates per day**

This indicator highlights the difficulties caused when facilities’ services are limited by the number of hours they operate or by the days or time of day when they provide services. The data for this indicator were captured in the SEAM facility survey (Table 12). Results indicate that public-sector facilities have, on average, longer hours throughout the week than private-sector facilities, reflecting the complementary effort by the MOH to increase geographic access. Chemical sellers have the most limited schedules, although the modal number of hours chemical sellers were open was greater (15 hours) than private pharmacies (12 hours) during the week. It is not clear if this relationship would hold with a larger sample.

**Table 12. Health Facility Operating Time per Day**

<b>Indicator</b>	<b>Public Facilities (N = 30)</b>	<b>Mission/NGO Facilities (N = 20)</b>	<b>Private Clinics/ Hospitals (N = 18)</b>	<b>Private Pharmacies (N = 10)</b>	<b>Chemical Sellers (N = 10)</b>
Average total number of hours open per day	20.4	16.0	14.9	12.1	11.7
Average number of hours open on weekdays	20.4	17.4	15.9	13.0	12.7
Average number of hours open on weekends	20.5	12.6	12.2	9.9	9.3
Mode	24.0	24.0	24.0	12.0	15.0
Facilities offering 24-hour service	24	12	8	1	0
Number of facilities not open on Sunday	3	2	8	5	4

**Availability of Medicines and Information**

**Indicators: Average percentage of unexpired key items in stock  
Average percentage of time out of stock of key items**

Drug availability is typically examined by considering two related indicators. The first measures the availability of unexpired tracer items at the moment the survey is conducted, by an examination of the stock records or by physical inspection. The second indicator measures the length of time that key items were not available and requires an examination of the stock-out rates for a period of one year prior to the survey. Reliable, up-to-date inventory records are essential for the calculation of this second indicator. Together, these indicators provide information about not only what items are available but also the likelihood of their being available.

A comparison may be made of results from the MSH study (RPM 1993), the baseline assessment conducted by the Ghana National Drug Programme in 1998 (GNDP 1999), and information from other studies as presented in the MOH/Health Partners (2000) sector report and the SEAM assessment. Although the specific items used for each calculation varied, the methodology for

identifying indicator items was identical. Indicator items should reflect what is expected to be available at all times, especially in public health facilities. The results indicate that the availability of drugs in 2001 was lower than in previous measures across all facilities.<sup>4</sup>

Tables 13 and 14 detail the results obtained for the present study. It is important to note that not all of the tracer items were expected to be available in the facilities of all sectors. Specifically, the various antibiotics were not expected to be available in the chemical seller shops, and many of the reproductive health items were not expected to be available in some of the mission-sector facilities. The results could be adjusted to reflect the number of items from the tracer list expected to be available for each type of facility in the indicator denominator; in such a case, the proportion of items expected to be available would increase somewhat. However, it is important to keep in mind that the tracer list of items was deliberately selected to reflect important public health items that should be available at all times in public health facilities and, therefore, the target measure is 100 percent.

The results of the SEAM survey reveal a relatively low level of availability of tracer items in public facilities. Most remarkable is the low availability of rifampicin/isoniazid (which was previously distributed through a vertical tuberculosis [TB] program); measles vaccine; retinol; and two important drugs used for the treatment of malaria, doxycycline and sulfadoxine/pyrimethamine (SP). Prior to the study, there were reports of shortages of these items, especially anti-TB drugs. This situation was attributed to the dissolution of the vertical TB programs combined with insufficient preparation of the facilities to assume responsibility for ensuring the TB drug supply. In fact, some facilities reported that stock-outs were due to the TB program's failure to deliver the items, indicating that facility managers were not informed about changes in the drug supply system. TB drugs were deliberately selected for the tracer list in hopes that survey results would help build support for bolstering the supply system for TB drugs.

Juxtaposing the availability of a set of tracer items with the average percentage time out of stock can provide insight into the likelihood of an item's being in stock at any particular point over the previous year. The limitation of this indicator, however, is its dependence on reliable data for the previous 12 months. In Ghana, record-keeping was found to be uncommon in private-sector facilities, so these data were collected only in the public and mission sectors (Tables 15 and 16). In addition, longitudinal data for mission and NGO facilities were not always available.

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<sup>4</sup>The availability of hospital-specific items was not assessed as part of this evaluation.

**Table 13. Percentage of a Set of Unexpired Tracer Items in Stock**

Facilities	1993 <sup>a</sup>	1998	1999 <sup>b</sup>	2001 <sup>c</sup>
Central medical stores	100	NA	NA	75
Regional medical stores	87	80–100 <sup>b</sup>	78–100	77
District medical stores	NA	84–97 <sup>b</sup>	95–100	61
Public hospitals/clinics	60	83 <sup>d</sup>	NA	68
Private hospitals/clinics	NA	83 <sup>d</sup>	NA	40
Mission hospitals/clinics	NA	90 <sup>d</sup>	NA	66
Pharmacies	NA	90 <sup>d</sup>	NA	67
Chemical seller shops	NA	65 <sup>d</sup>	NA	37

Note: CMS = central medical store; RMS = regional medical store; DMS = district medical store; NA = not available.

<sup>a</sup>RPM 1993.

<sup>b</sup>MOH/Health Partners 2000.

<sup>c</sup>SEAM survey data.

<sup>d</sup>GNDP 1999.

**Table 14. Availability of a Set of Tracer Items, All Facilities, 2001**

Tracer Item	CMS (N = 1)	RMS (N = 10)	DMS (N = 7)	Public Health Facilities (N = 29)	All MOH (N = 47)	Mission Clinics/ Hospitals (N = 19)	CHAG (N = 1)	Catholic Drug Service (N = 1)	Private Health Facilities (N = 17)	Private Pharmacies (N = 10)	Chemical Seller Shops (N = 10)
Acetylsalicylic acid tabs, 300 mg	100	100	70	93	96	95	100	100	59	100	100
Amoxicillin caps, 250 mg	0	90	70	97	94	89	100	100	82	100	40
Bendroflumethiazide tabs, 5 mg	0	40	30	59	51	26	0	0	18	80	0
Benzathine benzyl penicillin inj, 2.4 m $\mu$	100	40	10	17	23	42	0	100	0	40	10
Chloroquine tabs, 150 mg base	0	90	70	100	96	100	100	100	82	100	80
Condoms	100	70	40	55	60	42	0	0	18	90	90
Co-trimoxazole tabs, 400 mg + 80 mg	100	90	70	97	96	100	100	100	65	100	30
Doxycycline caps, 100 mg	100	80	20	45	51	58	0	100	41	90	0
Measles vaccine	0	40	30	38	38	26	0	0	0	0	0
Mebendazole tabs, 100 mg	100	100	60	93	94	95	100	100	59	70	80
Medroxyprogesterone (Depo-Provera)	100	50	40	62	60	47	0	0	18	40	0
Metronidazole tabs, 200 mg	100	100	70	100	100	95	100	100	82	100	60
Oral rehydration salts, BP sachet	100	100	70	100	100	100	100	100	71	90	80
Paracetamol tabs, 500 mg	0	100	70	97	96	100	100	100	76	100	100
Pyrazinamide tabs, 500 mg	100	80	30	59	62	42	0	0	6	20	0
Reserpine tabs, 250 mcg	100	100	30	76	77	68	100	100	47	60	10
Retinol (vitamin A) caps, 200,000 IU	100	50	20	34	38	26	0	0	6	20	10
Rifampicin/isoniazid tabs, 100/150 mg	100	70	20	48	51	42	0	0	0	0	10
Streptomycin inj, 1 g	100	80	20	52	55	42	0	0	18	40	10
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	100	70	20	45	49	74	100	100	53	90	30
<b>Average number of tracer items in stock</b>	<b>15</b>	<b>15.40</b>	<b>12.29</b>	<b>13.66</b>	<b>13.83</b>	<b>13.11</b>	<b>10</b>	<b>12</b>	<b>9.0</b>	<b>13.3</b>	<b>7.4</b>
<b>Average percentage of tracer items in stock</b>	<b>75</b>	<b>77</b>	<b>61</b>	<b>68</b>	<b>70</b>	<b>66</b>	<b>50</b>	<b>60</b>	<b>40</b>	<b>67</b>	<b>37</b>

Note: CMS = central medical store; RMS = regional medical store; DMS = district medical store; MOH = ministry of health; CHAG = Christian Health Association of Ghana, BP = British Pharmacopoeia.

**Table 15. Number of Days Out of Stock of a Set of Tracer Items, Public Facilities (2000)**

<b>Tracer Item</b>	<b>Central Medical Stores (N = 1)</b>	<b>Regional Medical Stores (N = 9)</b>	<b>District Medical Stores (N = 6)</b>	<b>Public Facilities (N = 25)</b>
Acetylsalicylic acid tabs, 300 mg	0	2	0	17
Amoxicillin caps, 250 mg	19	11	12	7
Bendroflumethiazide tabs, 5 mg	100	59	50	56
Benzathine benzyl penicillin inj, 2.4 mμ	0	51	84	84
Chloroquine tabs, 150 mg base	23	13	3	6
Condoms	0	35	50	41
Co-trimoxazole tabs, 400 mg + 80 mg	25	3	2	9
Doxycycline caps, 100 mg	88	29	67	69
Measles vaccine	1	56	73	57
Mebendazole tabs, 100 mg	24	1	13	18
Medroxyprogesterone (Depo-Provera)	1	37	53	41
Metronidazole tabs, 200 mg	4	4	6	7
Oral rehydration salts, BP sachet	16	15	1	9
Paracetamol tabs, 500 mg	0	1	0	10
Pyrazinamide tabs, 500 mg	0	24	67	52
Reserpine tabs, 250 mcg	27	5	36	28
Retinol (vitamin A) caps, 200,000 IU	0	59	83	61
Rifampicin/isoniazid tabs, 100/150 mg	14	33	67	56
Streptomycin inj, 1 g	1	26	67	54
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	0	45	90	47
<b>Total days out of stock for set of tracer items</b>	<b>1,311</b>	<b>16,772</b>	<b>18,029</b>	<b>66,636</b>
<b>Total days out of stock, all tracer items</b>	<b>7,300</b>	<b>65,700</b>	<b>43,800</b>	<b>182,500</b>
<b>Average percentage time out of stock of tracer items</b>	<b>18</b>	<b>26</b>	<b>41</b>	<b>37</b>

**Table 16. Number of Days Out of Stock of Tracer Items, Mission/NGO Facilities (2000)**

Tracer Item	Mission Facilities (N = 19)	CHAG Medical Supplies Store (N = 1)	Catholic Drug Center Store (N = 1)
Acetylsalicylic acid tabs, 300 mg	0	19	7
Amoxicillin caps, 250 mg	1	6	0
Bendroflumethiazide tabs, 5 mg	6	0	0
Benzathine benzyl penicillin inj, 2.4 mμ	7	0	0
Chloroquine tabs, 150 mg base	0	36	4
Condoms	2	0	0
Co-trimoxazole tabs, 400 mg + 80 mg	0	3	0
Doxycycline caps, 100 mg	9	0	55
Measles vaccine	3	0	0
Mebendazole tabs, 100 mg	1	80	16
Medroxyprogesterone (Depo-Provera)	4	0	0
Metronidazole tabs, 200 mg	0	30	0
Oral rehydration salts, BP sachet	1	10	0
Paracetamol tabs, 500 mg	0	14	0
Pyrazinamide tabs, 500 mg	13	0	0
Reserpine tabs, 250 mcg	0	0	3
Retinol (vitamin A) caps, 200,000 IU	4	0	0
Rifampicin/isoniazid tabs, 100/150 mg	12	0	0
Streptomycin inj, 1 g	11	0	0
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	7	47	0
<b>Total days out of stock, all tracer items</b>	<b>283,623</b>	<b>894</b>	<b>305</b>
<b>Average number of tracer items normally stocked</b>	<b>14.28</b>	<b>10</b>	<b>12</b>
<b>Average percentage time out of stock</b>	<b>7</b>	<b>24</b>	<b>7</b>

Note: CHAG = Christian Health Association of Ghana, BP = British Pharmacopoeia.

### **Indicator: Percentage of prescribed items that are dispensed**

The proportion of prescribed items that are dispensed can be used to triangulate with the inventory availability data. The issue of availability is brought closer to the patient at the point of dispensation. In those facilities that dispense what is prescribed, frequent stock-outs of many items will negatively affect dispensing. Similarly, inventory availability often influences prescribing; in other words, drugs that are actually available will be prescribed. Other factors also influence dispensing. In Ghana, for example, where patients must pay for their medications, the dispensing of items is likely to be influenced by the patients' ability to pay for them.

The information for this indicator was collected in public, private, and mission facilities (Table 17). The rate of dispensing prescribed items varied greatly by type of facility. In public facilities it was very low, with only 58 percent of prescribed items dispensed, corresponding to a relatively low level of availability. This is less than in the other two types of facilities. Although the rates of availability for public and mission sectors were comparable, the proportion of prescribed items that were actually dispensed was higher in mission facilities, perhaps because the prices at the mission facilities were more favorable.

**Table 17. Prescribed and Dispensed Items**

Items	Public Facilities	Private Facilities	Mission Facilities
Total number prescribed	2,755	2,255	1,976
Total number dispensed	1,593	1,749	1,832
Percentage dispensed	58	78	93

**Indicator: Percentage of facilities with access to a “valid” source of information about drugs**

When prescribers have access to valid or reliable sources of drug information, they are more likely to prescribe rationally. Although the criteria for defining what constitutes a valid or reliable source for this indicator were not defined during the conference at Ferney-Voltaire in 2000, it is possible to classify the types of information available. Traditional pharmacopeias, for example, offer information about product formulation but contain little or no therapeutic information. Some modern pharmacopeias (e.g., *Martindale*) contain therapeutic information in addition to pharmacological information. Pharmacology texts (e.g., *Goodman and Gillman’s Pharmacological Basis of Therapeutics*; *Remington’s Pharmaceutical Services*) and medical compendia contain minimal information about product formulation but do offer information more directly related to adequate and appropriate prescribing. Medication dictionaries, such as the *Physicians’ Desk Reference (PDR)*, which are financed by the pharmaceutical industry, generally contain only the information published on package inserts and are rarely subject to the criticism of any moral or legal authority.

The definition of a valid or reliable source of drug information, however, was not addressed during this study. Rather, the concern was with access to any information about drugs. In general, all facilities reported having access to at least one source of information, and many had two. Popular references included the British National Formulary and MIMS across all types of facilities except chemical sellers, where sources of information were both more varied and less sophisticated (see Tables 18 and 19).

**Table 18. Number of Sources of Information on Drugs, by Type of Facility**

Number of Sources	Public Facilities (N = 30)	Mission/NGO Facilities (N = 20)	Private Facilities (N = 18)	Private Pharmacies (N = 10)	Chemical Sellers (N = 10)
At least one source	28	17	18	10	9
Two sources	21	11	13	8	5
Three sources	12	9	9	7	3

**Table 19. Frequency of Mention of Specific Sources of Drug Information, by Type of Facility**

Type of Facility Information Source	Frequency of Mention
<b>Public Facilities (N = 30)</b>	
British National Formulary (1990, 1993, 1996, 1997, 1998, 1999, 2000)	15
Ghana National Formulary	1
Essential drugs list (1996)	3
British Pharmaceutical Codex (1968)	1
<i>Martindale</i> (29th ed.)	2
USPDI	2
Standard treatment guidelines	1
MIMS	3
Course materials	1
Malaria literature guidelines	1
<b>Mission/NGO Facilities (N = 20)</b>	
ABPI Data Sheet Compendium (1974, 1990–91)	2
British National Formulary	12
British Pharmaceutical Codex (1968)	1
British Pharmacopoeia	1
Clinical Pharmacology (Web site)	1
<i>Drugs Facts and Comparisons</i> (1995)	1
German Pharmacopoeia	1
Harrison	1
MIMS	5
Essential drugs list/Ghana National Formulary	4
None	1
<i>Sanford Guide to Antimicrobial Therapy</i>	1
<i>Martindale's Extra Pharmacopoeia</i> (1989, 1996)	3
<i>Physicians' Desk Reference</i>	1
<b>Private Facilities (N = 18)</b>	
Action Medior (supplier leaflets)	1
British National Formulary (1996)	7
<i>Clinical Pharmacy and Therapeutics</i> , 5th ed. (1992)	1
Continuing medical education	1
<i>Nursing Drug Reference</i> (1999)	1
Essential drugs list (1996)	1
<i>WHO Guide to Good Prescribing: Essential References</i>	1
<i>Ghana Medical Journal</i>	1
Handouts on drugs from seminars	1
Information/consultation from some doctors	1
Information from drug representatives	3
Internet	1
Literature from producers/manufacturers	2
<i>Martindale's Extra Pharmacopoeia</i>	2
Medical literature	2
<i>Medicine for Nurses</i> (1959)	1
Merck Index/Manual	2
MIMS (1971, 1998, 1999)	7
Treatment protocols	11
USPDI (1994)	1

(cont.)

Type of Facility Information Source	Frequency of Mention
<b>Chemical Sellers (N = 10)</b>	
British National Formulary	1
Handbook/information from Pharmacy Council	5
Literature inserts	1
MIMS (1982, 1992, 1993)	3
WHO tropical diseases information	1
<i>Encyclopedia and Dictionary of Medicine and Nursing</i>	1
Ghana National Formulary (1976)	1
Manufacturer information	1
<b>Pharmacies (N = 10)</b>	
American Hospital Formulary Service Drug Information (1997)	1
British National Formulary (1987, 1991, 1993, 1995, 1997, 1998, 2000)	10
Martindale (29th ed.)	2
MIMS (1996, 1998, 2000)	4
<i>Clinical Pharmacy and Therapeutics</i> , 5th ed. (1992)	1
Package inserts	1
<i>Where There Is No Doctor: A Village Health Care Handbook</i> (1992)	1
USPDI (1996)	1
<i>Physicians' Desk Reference</i>	1
Web site drug information	1

Note: USPDI = United States Pharmacopeia Dispensing Information; MIMS = Monthly Index of Medical Specialties; ABPI = adult personal data inventory.

**Indicator: Percentage of prescribed medicines for which patients were able to provide critical information and the sources of that information**

There are some marked differences between the public and mission facilities (Table 20). For two-thirds of all drugs prescribed in public facilities, patients indicated that the source of information about the name of the drug was someone other than a health care professional. A prescriber was identified as the source of information about the name of the drug for only 7 percent of drugs prescribed. For more than 35 percent of the drugs, the source of information on the drug's purpose was someone other than a health professional. In mission facilities, patients reported that the prescriber was the source of information about the name of the prescribed drug for 32 percent of the drugs, but prescribers were identified as the source of information about the purpose of the drugs for only 2 percent of the drugs. In both types of facilities, the pharmacist plays an important role in informing patients about actual drug use, although this role can probably be improved. Most significant, however, is that patients reported that for over half of their drugs, on average, drug use information was provided by someone other than a health care professional.

**Table 20. Prescribed Medicines for Which Patients Were Able to Provide Critical Information and the Sources of That Information, by Type of Facility**

Type of Facility	Number of Prescribed Medicines	Source of Information			
		Prescriber (%)	Pharmacist/Dispenser (%)	No One (%)	Other (%)
<b>Public Facilities (N = 25)</b>					
Total medicines prescribed	813				
Who informed about the name of the medicine?	526	7	19	12	62
Who informed about the purpose of the medicine?	437	28	14	23	35
Who informed about how much medicine to take?	807	2	57	1	40
Who informed about how long to take the medicine?	323	4	47	16	33
Who gave additional information about the medicine?	284	5	52	1	42
<b>Mission Facilities (N = 19)</b>					
Total medicines prescribed	621				
Who informed about the name of the medicine?	384	32	7	22	39
Who informed about the purpose of the medicine?	287	2	56	0	42
Who informed about how much medicine to take?	621	7	36	13	44
Who informed about how long to take the medicine?	227	15	48	0	37
Who gave additional information about the medicine?	217	11	12	18	59

## Affordability

### **Indicator: Percentage difference between public-sector procurement prices and median international prices for tracer items**

The comparison of tender prices for the MOH with other international tenders allows for a measure of the efficiency of procurement. By being as efficient as possible in drug procurement, the MOH can generate savings that may be applied to the procurement of more items or greater quantities of items. In order to conduct the comparison, Ghana MOH tender prices for 2000 were compared with the prices available from other international tenders published in the *International Drug Price Indicator Guide* (McFadyen 2000).

The MOH conducts an annual international competitive bid. In 2000, the MOH purchased 139 items through ICB for a value of almost \$3 million. Nearly 60 national and international bidders participated in the tender, and 27 ultimately received awards. A comparison based on the tracer

items shows that the MOH obtains favorable prices when compared with other international tenders, with an average difference of 63 percent below those listed in the price guide (see Table 21). However, a comparison of the complete list of items procured through tenders resulted in a 31 percent average difference between MOH prices and international prices, or 68.3 percent of international prices.

While this comparison would appear to indicate that the MOH's central procurement process is efficient, it must be weighed against the large amount of local shopping and repeat local shopping that occurs. In fact, audits of MOH procurement, although largely positive, indicate that the large number of local purchases is not only a financial drain on the system but is also difficult to control. The amount of time and resources involved in conducting local purchases is an indication of inefficiency that is most likely related in large part to poor quantification practices, probably combined with difficulty in budget management. The MOH recognizes that it is necessary to improve the quantification of needs throughout the system. One clear indication of a problem with quantifying needs is the number of local shopping events that take place. In 2000, 104 essential drug items were purchased through local shopping for a value near ₵15 billion. Some items were procured through local shopping, at times from the same supplier, but for different prices (e.g., amoxicillin tablets, 250 mg; benzyl penicillin injection, 1 mμ; and ciprofloxacin tablets, 500 mg).

**Table 21. MOH Tender Prices vs. Median International Prices for Tracer Items**

Tracer Item	MOH Unit Price (\$)	Median International Tender Unit Price 2000 (\$)	Difference MOH Price From Median International Tender Price (%)
Acetylsalicylic acid tabs, 300 mg	NA	NA	NA
Amoxicillin caps, 250 mg	0.0125	0.0258	-51.36
Bendroflumethiazide tabs, 5 mg	.0075	.0074	1.35
Benzathine benzyl penicillin inj, 2.4 mμ	NA	NA	NA
Chloroquine tabs, 150 mg base	.0037	.0185	-79.73
Cimetidine tabs, 200 mg	NA	NA	NA
Condoms	NA	NA	NA
Co-trimoxazole tabs, 400 mg + 80 mg	.0052	.0176	-70.17
Doxycycline caps, 100 mg	NA	NA	NA
Glibenclamide tabs, 5 mg	NA	NA	NA
Insulin lente vial, 100 U/ml	.5500	.7965	-30.95
Mebendazole tabs, 100 mg	.0022	.0141	-84.40
Medroxyprogesterone (Depo-Provera)	NA	NA	NA
Metronidazole tabs, 200 mg	.0004	.0039	-89.74
Nifedipine tabs, 10 mg (sustained release)	.0040	.0217	-81.57
Oral rehydration salts, BP sachet	NA	NA	NA
Paracetamol tabs, 500 mg	.0017	.0066	-73.18
Pyrazinamide tabs, 500 mg	.0123	.0879	-85.92
Quinine inj, 600 mg/2 ml	NA	NA	NA
Reserpine tabs, 250 mcg	.0050	.0069	-27.54
Retinol (vitamin A) caps, 200,000 IU	NA	NA	NA
Rifampicin/isoniazid tabs, 100/150 mg	.0119	NA	NA
Streptomycin inj, 1 g	.0535	.3372	-84.11
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	NA	NA	NA
<b>Average percentage difference</b>			<b>-63</b>

Note: NA = not available; MOH = ministry of health, BP = British Pharmacopoeia.

**Indicators: Average unit price difference between most expensive and least expensive products**

**Average percentage difference between average lowest prices charged to customers and patients**

According to a national survey, 67 percent of sick people not using health services reported that they were discouraged from doing so by the cost (GSS 1998). As may be expected, setting and poverty level correlate highly with health services utilization. Eighty percent of the sick rural poor reported that they did not seek care because of the expense. In the urban areas, more than three-quarters of the poorest of the poor did not seek care because of the expense involved. It may be expected that in a country like Ghana, where patients must pay for services and drugs themselves, affordability will be a concern, despite the subsidies allowed for the indigent. However, it is interesting to note that as many as 20 percent of the nonpoor sick in the country did not seek care due to cost.

The first indicator aims to capture the range of price options available to patients and customers. The percentage difference between the prices of specific items sold in a given type of facility is reported in Table 22. Calculations were possible only when data collectors recorded a pair of prices for the item. The difference between the lowest and highest prices was used to calculate the average difference for a group of facilities. When the facility provided only one price, it was not considered in the calculations. If two prices were provided, product choice was indicated. This indicator, therefore, reflects those situations where either product or price options were available to the client. The assumption is that when there are choices, the market is broader and open to more people. Selection, therefore, may be interpreted as a positive sign, even if not a direct indicator of affordability.

When interpreting these results, it is important to keep in mind that the number of observations is small. In addition, a wide range of values was recorded. Although this may well be an artifact of the limited sample, it may also be due to data collection error or data entry error. Errors would include recording pairs of price data when in fact no such pairs exist (data collection error). In many cases, however, observed significant price differences are consistent with the differences that are expected between generic and brand-name products and the variety of products expected to be available at the various types of facilities. For example, it would be expected that the range of items as well as the range of prices would be greater in the private pharmacies than in the chemical seller shops.

In order to accommodate some of these limitations, another analysis was conducted to compare the lowest prices available to patients across facilities (second indicator). The lowest prices charged to patients were averaged across each type of facility (Table 23), and various comparisons were made of the percentage difference between the prices charged by the different types of facilities (Table 24). Several observations may be made from the data presented in Table 24; one thing to keep in mind, however, is that the wide ranges shown may require reinvestigation to confirm that pack prices and sizes were accurately reported. Table 25 shows the range of prices that can be found within one facility.

Although the prices charged to patients in the public facilities are lower overall than those charged to patients in the private facilities (–35%) and pharmacies (–7%), the public facility prices are higher than the prices charged in the chemical seller shops (11%) for the few key items they both sell. The price of condoms accounts for the largest difference. Chemical seller prices were better than the public facilities' prices for mebendazole tablets (100 mg) and SP tablets (525 mg). The price differences between the public-sector facilities and the mission facilities overall are probably overstated. Indeed, if the large difference reported for condoms (1,352%) (Table 24) were eliminated from the analysis, there would be no difference overall. It is interesting to note, however, that the overall differences among the CHAG, CDC, and CMS prices were not so great. The price policies of CHAG and the CDC are different. CHAG's prices include a 15 percent markup, whereas the CDC markups vary by item according to the specific characteristics of the item. The latter approach is more rational from the perspective of revenue generation, as it allows the institution to take advantage of cheaper, high-volume items and subsidize the cost of more expensive items, for example.

**Table 22. Percentage Difference between Least and Most Expensive Prices for Tracer Items**

Tracer Item	Public Facilities (N = 30)	Private Facilities (N = 18)	Private Pharmacies (N = 10)	Chemical Sellers (N = 10)	Mission/NGO Facilities (N = 20)
Acetylsalicylic acid tabs, 300 mg	200	NA	607	217	100
Amoxicillin caps, 250 mg	15	40	271	NA	29
Bendroflumethiazide tabs, 5 mg	NA	NA	NA	NA	NA
Benzathine benzyl penicillin inj, 2.4 m $\mu$	NA	NA	220	NA	NA
Chloroquine tabs, 150 mg base	550	351	350	1,340	NA
Cimetidine tabs, 200 mg	NA	NA	NA	NA	NA
Condoms	0	NA	1,029	1,565	NA
Co-trimoxazole tabs, 400 mg + 80 mg	0	900	1,488	186	NA
Doxycycline caps, 100 mg	NA	NA	5,933	NA	NA
Glibenclamide tabs, 5 mg	NA	400	NA	NA	NA
Insulin lente vial, 100 U/ml	40	NA	NA	NA	NA
Mebendazole tabs, 100 mg	NA	NA	NA	NA	29
Medroxyprogesterone (Depo-Provera)	NA	NA	NA	NA	NA
Metronidazole tabs, 200 mg	0	1,700	543	NA	NA
Nifedipine tabs, 10 mg (sustained release)	NA	542	NA	NA	11
Oral rehydration salts, BP sachet	0	975	133	0	NA
Paracetamol tabs, 500 mg	29	0	744	50	NA
Pyrazinamide tabs, 500 mg	NA	NA	NA	NA	NA
Quinine inj, 600 mg/2 ml	NA	NA	NA	NA	NA
Reserpine tabs, 250 mcg	-7	1,499	NA	NA	NA
Retinol (vitamin A) caps, 200,000 IU	NA	NA	NA	NA	NA
Rifampicin/isoniazid tabs, 100/150 mg	NA	NA	NA	NA	NA
Streptomycin inj, 1 g	NA	NA	NA	NA	NA
Sulfadoxine/pyrimethamine tabs, 500mg + 25mg	NA	167	165	180	100
<b>Average percentage difference</b>	<b>1,779</b>	<b>1,111</b>	<b>1,044</b>	<b>505</b>	<b>54</b>

Note: NA = not available, BP = British Pharmacopoeia.

**Table 23. Average Lowest Prices Charged to Customers for Tracer Items, by Type of Facility (in Ghanaian Cedis)**

Tracer Item	Public Facilities	Private Facilities	Private Pharmacies	Chemical Sellers	CHAG	CDC	Mission/ NGO Facilities
Acetylsalicylic acid tabs, 300 mg	12.35	30.87	71.00	40.87	9.20	9.50	75.89
Amoxicillin caps, 250 mg	154.10	3365.36	201.00	162.50	114.54	NA	134.34
Bendroflumethiazide tabs, 5 mg	107.33	271.67	106.29	NA	NA	NA	99.55
Benzathine benzyl penicillin inj, 2.4 mμ	3500.00	NA	6570.00	NA	NA	NA	2800.00
Chloroquine tabs, 150 mg base	49.88	157.10	67.00	60.52	NA	25.00	68.28
Cimetidine tabs, 200 mg	350.00	1000.00	700.00	NA	NA	93.90	295.38
Condoms	411.36	140.00	169.63	122.22	NA	NA	28.33
Co-trimoxazole tabs, 400 mg + 80 mg	51.78	89.11	87.00	83.33	74.65	49.00	76.38
Doxycycline caps, 100 mg	298.45	311.14	397.22	NA	NA	103.77	295.24
Glibenclamide tabs, 5 mg	198.04	1945.56	120.00	NA	27.60	41.50	84.23
Insulin lente vial, 100 U/ml	65,700.00	132,326.67	NA	NA	NA	NA	56,116.67
Measles vaccine	NA	NA	NA	NA	NA	NA	NA
Mebendazole tabs, 100 mg	98.71	1133.08	311.90	91.25	25.16	57.35	654.06
Medroxyprogesterone (Depo-Provera)	1000.00	3166.67	1540.00	NA	NA	NA	835.00
Metronidazole tabs, 200 mg	36.09	78.91	55.56	63.89	26.85	20.90	101.84
Nifedipine tabs, 10 mg (sustained release)	673.15	311.59	600.00	NA	264.40	9.00	378.33
Oral rehydration salts, BP sachet	629.99	529.15	677.78	912.50	275.00	435.00	536.58
Paracetamol tabs, 500 mg	62.15	123.29	34.50	39.20	16.91	15.50	110.49
Pyrazinamide tabs, 500 mg	NA	183.00	1350.00	NA	NA	NA	NA
Quinine inj, 600 mg/2 ml	1173.33	3000.00	NA	NA	NA	NA	2076.83
Reserpine tabs, 250 mcg	128.80	204.93	55.01	50.00	8.05	14.00	222.45
Retinol (vitamin A) caps, 200,000 IU	370.00	800.00	462.00	500.00	NA	NA	200.00
Rifampicin/isoniazid tabs, 100/150 mg	50.00	NA	NA	NA	NA	NA	NA
Streptomycin inj, 1 g	100.00	1500.00	1037.50	1000.00	NA	NA	NA
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	986.95	1164.93	1285.19	944.44	258.74	NA	882.47

Note: NA = not available, BP = British Pharmacopoeia.

**Table 24. Percentage Difference between Average Lowest Prices Charged to Patients and Customers for Tracer Items**

Tracer Item	Private Pharmacy & Chemical Seller	Private Pharmacy & Mission Facility	Public Facility & Mission Facility	Public Facility & Private Facility	Public Facility & Pharmacy	Public Facility & Chemical Seller
Acetylsalicylic acid tabs, 300 mg	42	-7	-84	-60	-83	-70
Amoxicillin caps, 250 mg	19	33	15	-95	-23	-5
Bendroflumethiazide tabs, 5 mg	NA	6	8	-60	1	NA
Benzathine benzyl penicillin inj, 2.4 mμ	NA	57	25	NA	-47	NA
Chloroquine tabs, 150 mg base	10	-2	-27	-68	-26	-18
Cimetidine tabs, 200 mg	NA	58	18	-65	-50	NA
Condoms	28	83	1352	194	143	237
Co-trimoxazole tabs, 400 mg + 80 mg	4	12	-32	-42	-40	-38
Doxycycline caps, 100 mg	NA	26	1	-4	-25	NA
Glibenclamide tabs, 5 mg	NA	30	135	-90	65	NA
Insulin lente vial, 100 U/ml	NA	NA	17	-50		NA
Mebendazole tabs, 100 mg	71	-110	-85	-91	-68	8
Medroxyprogesterone (Depo-Provera)	NA	46	20	-68	-35	NA
Metronidazole tabs, 200 mg	-15	-83	-65	-54	-35	-44
Nifedipine tabs, 10 mg (sustained release)	NA	37	78	116	12	NA
Oral rehydration salts, BP sachet	-35	21	17	19	-7	-31
Paracetamol tabs, 500 mg	-14	-220	-44	-50	80	59
Pyrazinamide tabs, 500 mg	NA	NA	NA	NA	NA	NA
Quinine inj, 600 mg/2 ml	NA	NA	-44	-61	NA	NA
Reserpine tabs, 250 mcg	9	-304	-42	-37	134	158
Retinol (vitamin A) caps, 200,000 IU	-8	57	85	-54	-20	-26
Rifampicin/isoniazid tabs, 100/150 mg	NA	NA	NA	NA	NA	NA
Streptomycin inj, 1 g	4	NA	NA	-93	-90	-90
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	27	31	12	-15	-23	5
<b>Average percentage difference</b>	<b>11</b>	<b>-12</b>	<b>65</b>	<b>-35</b>	<b>-7</b>	<b>11</b>

Notes: Facility following the ampersand (&) is the comparator. A negative value indicates that the comparator's prices are on average more expensive.

Samples: Public facilities, N = 25; Mission facilities, N = 20; Private facilities, N = 20; Pharmacies, N = 10; Chemical seller shops, N = 10.

**Table 25. Lowest and Highest Prices Charged to Patients for Tracer Items, by Type of Facility (in Ghanaian Cedis)**

Tracer Item	Private Pharmacies				Chemical Sellers				Public Facilities				Mission Facilities				Private Facilities			
	No.	Low	High	% diff.	No.	Low	High	% diff.	No.	Low	High	% diff.	No.	Low	High	% diff.	No.	Low	High	% diff.
Acetylsalicylic acid tabs, 300 mg	10	10	50	400	10	17	150	800	25	5	50	900	16	7	50	614	10	4.5	134	2878
Amoxicillin caps, 250 mg	10	150	250	67	4	150	200	33	27	20	300	1400	17	25	200	700	13	75	300	300
Bendroflumethiazide tabs, 5 mg	8	100	200	100	0	NA	NA	NA	16	15	200	1233	4	18.2	150	724	3	115	500	335
Benzathine benzyl penicillin inj, 2.4mu	4	480	16,800	3400	0	NA	NA	NA	3	1500	6000	300	5	1000	4000	300	0	NA	NA	NA
Chloroquine tabs, 150 mg base	10	50	100	100	9	18	100	456	26	35	100	186	19	32	363	1034	14	30	1000	3233
Condoms	9	60	333	456	9	10	50	400	9	20	30	50	6	25	40	60	3	20	300	1400
Co-trimoxazole tabs, 400 mg + 80 mg	10	20	120	500	3	50	100	100	28	1.4	100	7043	18	8	200	2400	11	30	150	400
Doxycycline caps, 100 mg	9	25	600	2300	0	NA	NA	NA	12	60	600	900	10	25	1500	5900	7	60	500	733
Measles vaccine	0	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA
Mebendazole tabs, 100 mg	7	50	1167	2233	8	30	200	567	25	20	500	2400	17	22	200	809	9	2.5	657	26,164
Medroxyprogesterone (Depo-Provera)	3	120	2500	1983	0	NA	NA	NA	7	1000	1000	0	6	1000	1000	0	3	500	5000	900
Metronidazole tabs, 200 mg	9	20	100	400	6	33	100	200	28	12	67	456	17	15.8	845	5248	14	20	155	674
Oral rehydration salts, BP sachet	9	500	800	60	8	500	2000	300	25	14	1000	7043	18	50	1258	2417	12	25	1172	4590
Paracetamol tabs, 500 mg	10	20	50	150	10	17	175	929	13	15	150	900	19	12	50	317	13	15	1000	6567
Pyrazinamide tabs, 500 mg	2	1200	1500	25	0	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	1	183	183	0
Reserpine tabs, 250 mcg	6	30	100	233	1	50	50	0	25	12	200	1567	10	20	75	275	13	15	150	900
Retinol (vitamin A) caps, 200,000 IU	2	300	624	108	1	500	500	0	2	240	500	108	1	200	200	0	1	800	800	0
Rifampicin/isoniazid tabs, 100/150 mg	0	NA	NA	NA	1	600	600	0	1	100	100	0	0	NA	NA	NA	0	NA	NA	NA
Streptomycin inj, 1 g	4	750	1200	60	1	1000	1000	0	1	200	200	0	0	NA	NA	NA	3	1000	2000	100
Sulfadoxine/pyrimethamine tabs, 500 mg + 25 mg	9	500	5400	980	3	833	1000	20	15	200	2100	950	12	150	3333	2122	9	250	2500	900
<b>Average percentage difference</b>				<b>753</b>				<b>272</b>				<b>1413</b>				<b>1433</b>				<b>2946</b>

Notes: NA = not available, BP = British Pharmacopoeia.

**Indicator: Number of days worked by lowest-paid salaried worker needed to pay for a standard recommended course of therapy for tracer conditions**

According to the Ghana Universal Salary Structure (November 1, 2000), the base annual salary is ₵1,377,000. The per diem rate is ₵4,250 (₵1,377,000/324 days). The lowest-paid salaried worker would need to spend more than a third (37%) of a daily wage for the treatment of malaria if the treatment (as described in the Ghana National Standard Treatment Guidelines [GNSTG]) were purchased at a private health facility. If the treatment were purchased in a public health facility, it would cost the worker about 18 percent of a daily wage, and only 14 percent if purchased at a chemical seller shop.

For this indicator, the salary of the lowest-salaried worker was selected for the purpose of creating an index for affordability. In Ghana, as in many developing countries, incomes (household or individual) are difficult to assess. Using the standard published rate for formal salaries allows for some standardization. This choice is not to imply that the salaried worker is being characterized as representative of the workforce. Recently released income and expenditure data show that the mean income per capita as of March 1999 was ₵667,000 (GSS 2000A:105). The lowest quintile would include a range of ₵0 to 111,000 per capita, the second lowest up to ₵268,000, and the third up to ₵491,000.

The cost of treatment for key conditions is reported in Table 26. Of particular note is the relatively greater amount of time/salary needed to pay for treatment of chronic illnesses in public facilities compared with that needed for treatment in mission facilities and private pharmacies. Calculations for the cost of treatment for malaria were also made using price data from 1998. Table 27 illustrates how the impact of these costs can vary from region to region in Ghana. The impact would be the least in Greater Accra and the greatest in the Upper West region.

**Table 26. Days Income Needed to Treat Tracer Conditions, by Type of Facility 2001**

Condition (Standard Treatment)	Public Facilities	Mission Facilities	Private Facilities	Pharmacies	Chemical Sellers
Malaria (chloroquine, 150 mg)	0.12	0.16	0.37	0.16	0.14
Hypertension (bendroflumethiazide, 5 mg) (one month)	.76	.70	1.92	.75	NA
Diabetes (glibenclamide, 5 mg) (one month)	2.80	1.19	6.29	1.69	NA
ARI/pneumonia adults (amoxicillin, 250 mg)	1.52	1.33	1.72	1.99	1.61

Note: NA = not available; ARI = acute respiratory infection.

**Table 27. Percentage of One Day's Income Needed to Treat Malaria, by Type of Facility and Region, November/December 1998**

Region	Public/Mission Facilities	Private Facilities/ Pharmacies	Chemical Seller Shops
Western	13	26	17
Central	17	33	22
Greater Accra	8	16	10
Eastern	17	35	23
Volta	14	28	18
Ashanti	12	23	16
Brong Ahafo	14	27	18
Northern	35	69	46
Upper West	36	71	47
Upper East	23	45	30
<b>All regions</b>	<b>14</b>	<b>28</b>	<b>18</b>

Note: Adapted from GNDP 1999.

**Indicator: Percentage of the population covered by any risk-sharing or prepayment scheme**

Out-of-pocket expenditures for health care in general, and for drugs in particular, are known to be a major cause of impoverishment in many countries. This indicator aims to measure the extent to which the population is protected from this threat. In Ghana, a third-party payer system is gradually growing, taking many forms. The exemption policy implemented by the MOH was supposed to target those groups that were most at risk of not being able to afford health care. However, the evidence suggests that the policy is not applied consistently in the various regions (Bosu et al. 2000; MOH/Health Partners 2000). Although fees are increasing faster than exemptions, it is not clear that this trend results from poorer patients being fewer in number.

As described earlier, the voluntary nature of the local private insurance schemes in Ghana and the small numbers of participants present the danger of adverse selection, and the insurance industry will be hard-pressed to offer premiums that are competitive with the current company-run health care programs. In addition, in an effort to manage risk, the insurance companies have capped their coverage at levels that translate to decreased benefits for employees who are now receiving services from health care departments owned and managed by employers. The increased cost and decreased coverage offered by the insurance industry make it difficult for employers to justify shifting financial risk and responsibility for health care to these private insurance companies. However, in the face of the impending end of the fee-for-service and Cash-and-Carry systems, the MOH and the Ghana Health Service are committed to finding a more equitable and sustainable system to finance health care in the country.

**Indicator: Percentage of the population reporting problems with affordability of drugs and services**

The most direct but least objective approach to finding out about problems with affordability is to ask people. According to the Core Welfare Indicators Questionnaire (CWIQ) survey (GSS 1998:34), approximately one-third of sick people surveyed in Ghana did not use medical services

because they considered them too expensive. Indeed, according to some providers interviewed during the SEAM facility survey, many patients are unable to pay for their prescriptions not because the drugs are too expensive but because the consultation fees are too high. In contrast, for specific reproductive health services, fewer than 1 percent of both women and men surveyed who were not using a contraceptive method at the time of the study and who did not intend to use one in the future reported cost as being the main reason (GSS/MI 1999).

## Acceptability/Satisfaction

### **Indicator: Percentage of patients who report being satisfied with the services received at last visit**

In 1997, the Ghana Statistical Service (GSS) conducted a national CWIQ (GSS 1998). According to this study, on average just over half of patients are satisfied with the care they received (Table 28). Of the three sectors of interest (public, private, and mission), patients were most likely to be satisfied after having received care from private-sector care providers. The difference between the rate of satisfaction between public-sector and private-sector patients, however, was not as great as has been observed in other contexts. Patients who received care from mission facilities were less likely to be satisfied. Unfortunately, the published data did not break the responses down according to reason for dissatisfaction. However, the list of responses to the question “Did you have any problems at the health service?” included: none (satisfied), unclean facilities, long waiting time, no trained professionals, too expensive, no drugs available, treatment unsuccessful, and other.

**Table 28. Percentage of the Population Satisfied with Services Received, by Type of Provider**

Type of Provider	Population That Received Care (%)	Population Satisfied with Care (%)
Public hospital/clinic	43.0	49.0
Community health center	4.1	46.0
Private facility	8.6	51.0
Private doctor	3.2	56.0
Mission facility	5.1	39.0
Pharmacy	26.3	60.0
Traditional healer	7.8	65.0
Other	2.0	NA
<b>Total<sup>a</sup></b>	<b>100.1</b>	<b>Average 52.3</b>

Note: NA = not available.

Source: GSS 1998.

<sup>a</sup> Percentages do not total 100 due to rounding.

**Indicator: Number of drugs from the essential drugs list that are among the top best-selling drugs in the private sector**

Data for this indicator are currently unavailable.

**Quality of Products and Services**

**Indicator: Percentage of tracer drugs that failed quality testing sampled from facilities**

This indicator required that samples of tracer items be collected from facilities in each sector. Samples of seven different products were drawn using a systematic random-sample technique to ensure even distribution of products across sectors. The products sampled were amoxicillin, co-trimoxazole, doxycycline, metronidazole, rifampicin/isoniazid, chloroquine, and paracetamol. Samples were submitted to University Pharmaceutical of Maryland, Inc., located in Baltimore, Maryland, USA, for tests of the labeled strength. Of the 101 samples tested, only 3 failed the assay for labeled strength (Table 29), and all 3 samples were drawn from public health facilities (two district hospitals and one health center) in the Upper East and Eastern regions. Given these results, it would not appear that quality of products is a pervasive problem. Nonetheless, the MOH has expressed concern about the possibility of a high number of counterfeit drugs on the market, many of which may be of Nigerian origin.

**Table 29. Assay Results for Substandard Products**

<b>Product</b>	<b>Assay (% of labeled strength)</b>
Amoxicillin	86.1
Co-trimoxazole	92.7 (SX); 89.7 (TM)
Rifampicin/isoniazid	89.3

Note: SX = sulfamethoxazole; TM = trimethoprim.

**Indicator: Existence of an essential drugs list or national formulary that has been updated in the last five years**

This indicator would provide evidence that the MOH has a current and ongoing concern with the rational use and management of drugs, which is important for the delivery of high-quality care and services. In 1983, the Ministry of Health of Ghana published the first essential drugs list. This publication included therapeutic guidelines, which are designed to guide treatment choices and to serve as a reference for use at all levels in the health system, both public and private. A national committee meets once a year to review the continued appropriateness of the list and to make recommendations for adding or eliminating items. There have not been any great changes in the number of items on the EDL in the last few years. The EDL has been revised three times since the first edition; the fourth and most recent edition was published in late 2000, but it was not widely distributed until mid-2001.

**Indicator: Percentage of facilities that have a recent essential drugs list or national formulary**

The public and mission facilities had very high rates of availability of the Ghana National Essential Drugs List (GNEDL) (Table 30). The rate of availability of the GNEDL may be considered quite positive, but it could be improved. As noted earlier, the private pharmacies and chemical seller shops reported having varied sources of information about drugs available to them, but the GNEDL was not mentioned as one that was typically used.

**Table 30. Availability of Essential Drugs List or National Formulary, by Type of Facility**

Indicator	Public Facilities (N = 30)	Private Facilities (N = 20)	Mission/ NGO Facilities (N = 20)	Pharmacies <sup>a</sup> (N = 10)	Chemical Sellers <sup>a</sup> (N = 10)
Number of facilities with a copy of a GNF or GNEDL	28	14	18	2	1
Number of facilities with a copy of a recent GNF or GNEDL	15 (1996 ed.) 1 (1998 ed.) 1 (2000 ed.)	10 (1996 ed.) 1 (2000 ed.)	11 (1996 ed.) 2 (1998 ed.)	1 (1996 ed.)	0
Percentage of facilities with a recent version	57	55	65	10	0

Note: GNF = Ghana National Formulary; GNEDL = Ghana National Essential Drugs List., ed. = edition.

<sup>a</sup>The questionnaire did not specifically inquire about the presence of the GNF or GNEDL. These data were elicited from a question about sources of drug information used by the facility.

**Indicator: Percentage of patients who know how to take their medicines**

The data to calculate this indicator were obtained from interviews with patients exiting public and mission/NGO health facilities and information obtained from simulated patients at private retail outlets. These methods of data collection were not applied to the private hospitals and clinics, and no comparable information was collected from patients seeking care from these facilities. The survey did not aim to determine whether the information that the patient had about how to take the medicine was correct; rather, the intent was to determine if the patient was able to relate any information about the intended use of the medicine.

The rates for reporting the basic information about the name, purpose, and use of prescribed medicines for public facilities and mission facilities were virtually the same (Table 31). The patients were able to report the name and purpose of the medicines about half of the time. The patients were very specific on how they would use the medicines in terms of schedule; however, patients could report the duration of therapy for only about a third of the prescribed medicines.

Simulated patients were instructed to enter a drug outlet to demand service with the following story: "My little girl has had a fever and a runny nose for two days. She has not slept well throughout the night. Can you offer me something?" Of the 14 encounters in which drugs were actually supplied, only two clients (representing 14.3%) reported that they were not given any instructions on how to take the medications. One of these cases occurred at a pharmacy shop and

involved a cough mixture; the other occurred at a chemical seller shop and involved three items: paracetamol, chloroquine, and co-trimoxazole tablets.

Information on any problems the medication could cause was rarely given. In only 3 of 12 encounters was such information provided, and all 3 took place at pharmacy shops. However, this small sample is not sufficient to allow any firm conclusions about the prescribing habits of pharmacy shops compared with those of chemical seller shops. Furthermore, other advice or information on how to care for the child or treat the fever was rare; such information was provided in only 2 (one with a pharmacy, one with a chemical seller) of the 12 encounters.

**Table 31. Patients' Knowledge of Prescribed Medicines, by Type of Facility**

Indicator	Patients at Public Facilities <sup>a</sup> (N = 813) (%)	Patients at Mission/NGO Facilities <sup>a</sup> (N = 621) (%)
Patient knows the name of the medicine	64.7	61.4
Patient knows the purpose of the medicine	53.7	46.2
Patient knows how much of the medicine to take (schedule)	99.3	100.0
Patient knows how long to take the medicine (duration of therapy)	39.7	36.5
Patient received other information about the use of the medicine	34.9	34.9

Note: See discussion on indicator for percentage of population with access to reliable information about drugs for more details.

<sup>a</sup>Data from patient and simulated patient exit interviews.

**Indicators: Average number of drugs per encounter**

**Percentage of encounters in which an injection was prescribed**

**Percentage of encounters in which an antibiotic was prescribed**

One of the primary objectives of the Ghana National Drugs Programme, which was started in 1997, is to ensure that drugs are used rationally in the public and private sectors. In 1998, the GNDP conducted a study to obtain baseline data to describe various components of drug use, including prescribing. The methodology used to obtain these data was that recommended by INRUD and WHO in “How to Investigate Drug Use in Health Facilities” (WHO 1993) and is the same as that used in a study of the Ghana public pharmaceutical sector conducted by MSH/RPM in 1993. On the basis of the study conducted by the GNDP, regional teams (consisting of one pharmacist and one physician) were formed and trained in basic principles of rational drug use. These teams have been collecting prescribing and other rational drug use data from public facilities regularly since that time (in fact, these teams were used to collect the data for this current study).

As the results shown in Table 32 indicate, the scores for the three indicators have decreased in all sectors, suggesting an improvement in key prescribing practices. Although these are very encouraging results, it is hard to determine the actual cause of the change. As the largest changes are observed in the public sector, it may be that the efforts of the GNDP to increase awareness of problem prescribing have paid off. However, changes have also occurred in the other sectors. One explanation may be the influence of increased cost and decreased availability of drugs. A

systematic and rigorous approach to evaluating prescribing practices and developing appropriate interventions to curb undesired practices is likely to contribute significantly to further improvement in prescribing.

**Table 32. Prescribing Indicators, by Type of Facility and Year**

Indicator	Public Facilities			Mission/NGO Facilities		Private Facilities	
	2001	1998 <sup>a</sup>	1993 <sup>b</sup>	2001	1998 <sup>a</sup>	2001	1998 <sup>a</sup>
Average number of drugs prescribed per encounter	3.4	4.9	4.3	3.9	4.9	4.2	4.7
Percentage of encounters in which an injection was prescribed	34	42	56	26	28	52	54
Percentage of encounters in which an antibiotic was prescribed	42	56	47	45	52	45	48

Note: 2001 data do not include any results from the Central region.

<sup>a</sup>GNDP 1999.

<sup>b</sup>RPM 1993.

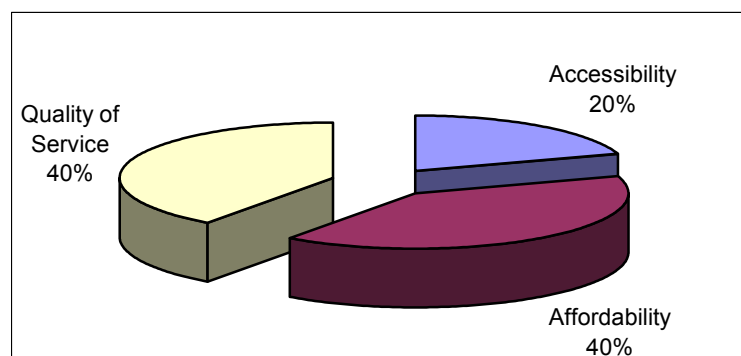
## Access Indicators Summary

Table 33 shows the collective conclusions of discussions on assessing the identified access gaps.

**Table 33. Current Access Situation**

Subsector	Accessibility	Affordability	Quality
<b>General</b>	Generally good geographic coverage but difficulties in rural and remote areas.	Serious problem; drug prices outside reach of large percentage of population.	No serious problems regarding quality of drugs, but extreme difficulties with quality of service.
<b>Ministry of Health</b>	Covers about 60% of population but not many outlets in remote/rural areas.	Serious problem with “cascading” markups as drugs pass through supply chain. Dispensing units are using drug sales for income generation for all health care functions, not just cost recovery.	Severe human resources shortages, lack of dispensing staff. Well-established EDL, STG, and program to address rational drug use. Major difficulties with supply chain stock-outs.
<b>Mission</b>	Covers 40% of population, mainly in rural areas.	Generally cheapest source but not buying well, and dispensing units are using drug sales for income generation for all health care functions, not just cost recovery.	Major difficulties with supply chain stock-outs, particularly for seasonal variations. No established rational drug use procedures.
<b>For-profit</b>	Approximately 950 pharmacy shops, 8,000 chemical sellers, and 203 private health facilities. Chemical sellers reported to be “first line” consultation for 60% of people with health-seeking behavior.	Generally, the highest prices are at private facilities, but a large element of this is recovery of consultation costs through loading drug price. Chemical seller prices are similar to public-sector prices.	Major problem with chemical sellers. No formal training required to obtain license. Many are dispensing drugs not on their approved list.
<b>Overall Summary</b>	People may be geographically near a source of medications, but many are not able to afford them and cannot be sure of obtaining the correct products and dosage regimens.		

Figure 2 graphically represents the relative weight of access problems as expressed by all stakeholders upon review of the findings.



**Figure 2. Ghana Drug Access Problem Ratio**

### Strategy Formulation Principles

The overall aim of the intervention strategy is to address the access deficiencies in relation to the depth of the problem and its effect upon the poor and vulnerable. The most pervasive problem is considered to be quality of service, particularly at chemical seller shops. The major thrust of the interventions, therefore, is to improve quality of service, and, with nearly 8,000 licensed chemical sellers in Ghana, this requires the most extensive intervention.

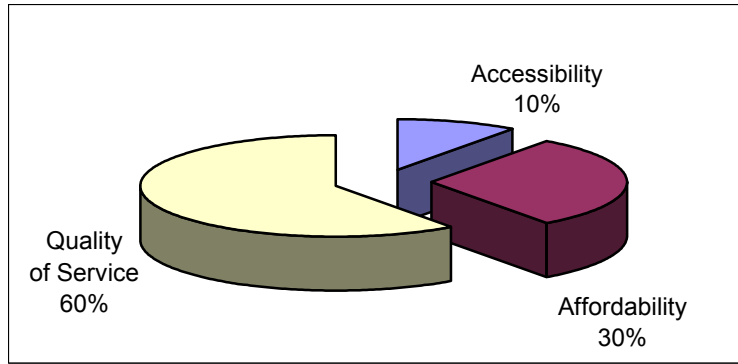
The potential for addressing affordability, another key problem, is restrained by a limited ability to influence the national marketplace, but significant effects are believed possible within both the not-for-profit and the commercial sectors. By reducing traveling time and the cost to chemical sellers of obtaining supplies, direct cost reductions are possible; and strengthening rational drug use in the mission sector can reduce prescription prices.

Private facilities, such as chemical seller shops, also face a built-in challenge. For any commercial outlet to be viable, population density must be high enough to support a minimum sales volume, and in remote areas this is generally not the case. Furthermore, the private sector has little or no ability to address issues of physical/geographical access. Improvements in mission-sector logistics, however, are possible and can help reduce stock-outs and improve physical access by improving reliability of availability; this could have a small but significant impact on the sector.

The identified access gaps are most acute in rural areas and, therefore, it is critical to emphasize interventions that can reach these areas. The mission sector operates primarily in rural areas and is a major health care provider. Chemical sellers are the primary providers for a large proportion of people seeking health care in rural areas. Working with these two sectors, therefore, offers the best hope for addressing the access gaps.

### ***Selected Interventions and Expected Impact on Access Gaps***

The proposed intervention in Ghana is based on the findings and principles discussed above. As agreed with the MOH and other stakeholders, the most appropriate relative weight that the identified access problems should have in the intervention are illustrated in Figure 3.



**Figure 3. Ghana Proposed Drug Access Intervention Ratio**

The proposed intervention has three main components: (1) strengthen the mission-sector drug management system; (2) strengthen the Pharmacy Council’s capacity to regulate and train chemical sellers; and (3) establish a chemical sellers franchise.

### ***Strengthen the Mission-Sector Drug Management System***

The central executive of the mission sector is CHAG, which currently has a weak structure and could not undertake major drug access intervention activities without first undergoing major organizational strengthening. Within CHAG, the Catholic secretariat forms the largest membership body, with the most hospitals, clinics, and health delivery units. The Catholic secretariat operates the Catholic Drug Center and three diocese hospital pharmacies that manufacture, procure, and distribute drugs to the Catholic and other mission facilities and has a functional managerial structure and sound financial operation. The Catholic secretariat has already identified weaknesses in the system but is currently constrained by lack of resources.

In order to address the main access gaps of affordability and quality of service through the mission sector, the three subobjectives are to—

- Improve drug sourcing to achieve better pricing and more reliable supply service
- Improve information flow to increase forecasting and stock management capacity to reduce stock-outs
- Promote rational drug use concepts and strategies to improve drug use

These subobjectives are to be achieved by—

- Strengthening the existing logistics and distribution operations
- Introducing microfinancing and improving revolving drug fund management at unit level
- Introducing new management information systems and means of procurement management
- Introducing rational drug use and information, education, and counseling components for training and as management tools

The partner for these activities will be the Catholic secretariat.

## ***Strengthen the Regulatory Capacity of the Pharmacy Council***

With nearly 8,000 chemical sellers in Ghana, it is apparent that a very powerful intervention will be required if change is to be effected in the quality of services in this sector. The subobjectives are to—

- Provide a route for chemical sellers to improve their skill sets and thereby improve the quality of service they deliver
- Motivate chemical sellers to improve the quality of their service by improving regulatory supervision

The access gap of poor-quality services provided by chemical sellers will be addressed by—

- Strengthening current operations of the Pharmacy Council, including—
  - Regulatory control and enforcement
  - Management of training programs for chemical sellers
  - Delivery of training programs
- Introducing new systems within the Pharmacy Council, including—
  - Management information systems
  - Strategic planning system

The partner for these activities will be the Pharmacy Council.

## ***Establish a Chemical Sellers Franchise***

Because chemical sellers represent a large and diverse segment of the retail sector, additional approaches are required if significant improvements are to be effected in quality of service and affordability over the long term. The idea of a commercial approach to behavioral change in the operations of chemical sellers has received widespread support among relevant stakeholders. For these reasons, a third component of the intervention has been developed to establish a franchise system for chemical sellers. The franchise will promote a uniform high-level standard of practice. In addition, chemical sellers that are part of the franchise will benefit from economies of scale gained through a group purchasing system. The subobjectives are to—

- Create a route for chemical sellers to obtain high-quality products at lower prices
- Promote a higher standard for drug-related services at chemical seller shops

The access gaps of poor-quality services, decreased availability of essential drugs, and affordability will be addressed by—

- Supporting the development of a chemical seller master franchiser
- Developing a group purchasing program for the franchise

The partner for this activity will be the Ghana Social Marketing Foundation (GSMF).

The proposed interventions have been formulated in complete partnership with the proposed implementing partners and have been discussed in detail with involved stakeholders, among

whom the interventions enjoy widespread support. The Ghana National Drugs Programme will contribute to this effort as part of its mandate under the national drugs policy to ensure the rational management and use of essential drugs.

Table 34 presents the access gaps to be addressed by the proposed interventions, specific objectives, implementing organizations, corresponding stakeholders, and stakeholders' relationship to the objective.

**Table 34. Overview of Involved Stakeholders and Linkages**

<b>Access Gap</b>	<b>Objectives</b>	<b>Implementing Organizations</b>	<b>Involved Stakeholders</b>	<b>Stakeholder Links</b>
<b>Accessibility</b>	Improved forecasting, management information systems, and logistics in mission sector to reduce stock-outs	CDC	Pharmaco-vigilance Unit	Inputs into training program
				Drug information ADR reporting
			MOH	MOH units, regions, districts, outlets, coordination of activities
			NGOs, other private-sector providers	Possible shared group procurement with other providers
	Franchising of chemical sellers—improved stock control to maintain availability of items	GSMF	Pharmacy Council	Direct link to concurrent activities of regulatory strengthening
			Food and Drugs Board	Policy considerations of permitted list of drugs chemical sellers can dispense
Pharmacy Council			Inputs into training program	
			Coordination with other public-sector pharmacy activities	
<b>Affordability</b>	Franchising of chemical sellers—improved procurement, distribution, and internal regulatory control to reduce retail prices	GSMF	MOH Procurement Unit	Inputs into procurement/purchasing mechanism design and operation
			CDD	Partnering on tendering/economies of scale
	Strengthening of mission-sector procurement system	CDC	MOH Procurement Unit	Inputs into procurement/purchasing mechanism design and operation
			GSMF	Possible shared group procurement with franchising system
			non-Catholic mission sector	Possible shared group procurement with other providers

(cont.)

<b>Quality</b>	Franchising of chemical sellers—increased training and internal service quality supervision/ enforcement	GSMF	Pharmacy Council	Direct link to concurrent activities of regulatory strengthening
				Inputs into training program
				Inputs into management/ supervision practices
			Food and Drugs Board	Expansion of Class C drugs list
			GNDP	Inputs into franchisee training program
				Coordination with other public-sector pharmacy activities
			Chemical Sellers Association	Inputs into franchisee training program, coordination with other chemical seller activities
			Pharmaceutical Society	Inputs into franchisee training program, coordination with private-sector pharmaceutical activities
	CDC	Possible links into shared/group procurement and supply mechanisms		
	Rational drug use in Catholic mission sector	CDC	GNDP	Inputs into training program and coordination with other public-sector pharmacy activities
			MOH	MOH units, Regions, Districts, outlets, coordination of activities
	Strengthening of Pharmacy Council regulatory functions to encourage chemical sellers to observe quality of service regulations	Pharmacy Council	Chemical Sellers Association	Inputs into methodology of regulatory enforcement
Pharmaceutical Society			Inputs into methodology of regulatory enforcement coordination with private-sector pharmaceutical activities	
Food and Drugs Board			Coordination of regulatory functions and linkage of shared database of regulatory information	

### **Possible Constraints**

There are at least three possible constraints to the success of the proposed intervention. The first is the overall shortage of pharmacists combined with high staff turnover rates amongst pharmacists in the mission sector. The attrition of trained pharmacists would reduce the benefits that may otherwise accrue. It is not clear if and how this risk might be minimized, at least in the short run. The second constraint is a potential opposition to the franchise initiative from the Chemical Sellers Association and from pharmacists. The pharmacists may see this intervention as creating undue competition and attempt to halt the Pharmacy Council activities. Activity development along this line must recognize this potential and reassure the profession that the clear distinction between the level of service potentially offered by chemical sellers is not of the same caliber as that offered by the pharmacists; this information must also be communicated to the public. Finally, a third constraint to optimal implementation and ultimate success of the described interventions is the potential conflict between the principles of rational drug use and the loss of real income that is generated from the sale of unnecessary drugs in the mission sector. A mechanism will have to be put in place to determine the extent to which this threat is real and then a means to avert it implemented.

### **The Role of MSH**

Management Sciences for Health will have a multifaceted role in the realization of the proposed strategies. Its primary role will be to provide assistance in such areas as strategic planning and policy development as well as in more specific technical areas such as quality assurance, procurement strategies, and rational drug use. MSH will also serve as a troubleshooting resource and coordination facilitator among the three interventions for the various partners.



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## Annex A. Assessment Methodology

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This effort was able to make use of various studies undertaken on the supply system in Ghana within recent years. Of particular relevance, in 1998, the Ministry of Health conducted a pharmaceutical sector assessment to examine issues of rational drug use and drug financing (MOH 1999A). The methodology used to collect information for this study was based on an indicator-based approach to assessing pharmaceutical management that has become standardized in recent years by the WHO Action Programme on Essential Drugs, the Center for Pharmaceutical Management of Management Sciences for Health, the Harvard Drug Policy Research Group, the International Network for Rational Use of Drugs, and the Pan American Health Organization. The approach requires that a sample of different sites be visited to obtain qualitative and quantitative data from facilities, processes, and officials in the public sector; the private sector; and potential suppliers. One recognized limitation of the 1998 *Ghana Pharmaceutical Sector Baseline Study* was that the private-sector component was not assessed. Therefore, in order not to duplicate recent data collection efforts, this assessment sought to update key information and to fill some of the relevant gaps from the previous study.

### Survey Timetable and Resources

MSH consultants, in collaboration with the Ghana National Drugs Programme (GNDP) and University of Ghana Medical School, completed the design, work planning, scheduling, training, and fieldwork in four weeks. Study design activities involving adaptation of questionnaires for interviews at private health facilities, public regional and district facilities, and drug retail outlets (pharmacies and chemical seller shops) began on March 5, 2001. Data collectors were trained March 7–8, 2001. The data collectors were selected on the basis of their role as regional rational drug use focal persons for the GNDP and represented matched teams of pharmacists and physicians. The survey began the following week in all 10 regions.

Concurrent with the survey of public-sector health facilities and private-sector drug outlets and pharmacies, MSH consultants conducted interviews with pharmaceutical manufacturers, importers, and distributors. The objective was to assess private-sector interest, willingness, and capacity to participate in alternative options to improve public-sector drug procurement, storage, and distribution (for instance, a prime vendor system or pooled procurements with delivery directly to health facilities, etc.) and to explore private-sector retail alternatives such as pharmacy franchises geared toward public health needs.

In addition, MSH consultants identified and interviewed key stakeholders in the government, the donor community, and the private sector to characterize the level of interest and support in potential Strategies for Enhancing Access to Medicines Program involvement in the pharmaceutical sector of Ghana. A list of persons interviewed is presented in Annex C.

## Indicator (Tracer) Items

A limited list of tracer items is a practical tool to quickly assess the status of drug supply for key items. The indicator list should include drugs that are commonly used, cover a range of key therapeutic categories, are available at all levels of a health care system, have a range of dosage forms, and are used by vertical programs important to the study.

The *2000 Ghana National Essential Drugs List* and the standard treatment guidelines guided selection of drugs for the study's indicator drug list. The list of indicator drugs first included drugs used to treat the most common health problems based on treatment guidelines and estimated drug requirements to treat leading causes of morbidity in Ghana, by level of facility (primary care and hospital). In addition, selected drugs and contraceptives that are important to vertical programs but are now subsumed under the common Health Fund were included. The resulting list of items is presented in Table A-1.

**Table A-1. Indicator Items**

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### For Primary Care Facilities

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Acetylsalicylic acid tabs, 300 mg  
 Amoxicillin caps, 250 mg  
 Bendrofluazide tabs, 5 mg  
 Benzathine benzylpenicillin inj, 2.4 mμ  
 Chloroquine tabs, 150 mg base  
 Condoms  
 Co-trimoxazole tabs, 480 mg  
 Doxycycline caps, 100 mg  
 Measles vaccine  
 Mebendazole tabs, 100 mg  
 Medroxyprogesterone (Depo-Provera)  
 Metronidazole tabs, 200 mg  
 Oral rehydration salts, BP sachet  
 Paracetamol tabs, 500 mg  
 Pyrazinamide tabs, 500 mg  
 Reserpine tabs, 250 mcg  
 Retinol (vitamin A) caps, 200,000 IU  
 Rifampicin/isoniazid (Rifinah) tabs, 100/150 mg  
 Streptomycin inj, 1 g  
 Sulfadoxine/pyrimethamine tabs, 525 mg

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### Additional Items for Hospitals

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Cimetidine tabs, 200 mg  
 Glibenclamid tabs, 5 mg  
 Insulin lente vial, 100 U/ml  
 Nifedipine tabs, 10 mg (sustained release)  
 Quinine inj, 600 mg/2 ml

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## Sample Selection

Although there was an opportunity to resample areas that had constituted the sample in the 1998 baseline study, the current assessment team took advantage of the existing capacity of local regional teams that focus on rational drug use. Those teams had already participated either in the 1998 baseline study as data collectors or in subsequent similar data collection efforts for the GNDP. The data collection effort for the purposes of this assessment could then also be used to support the ongoing activities of the rational drug use teams in their regions.

In order to achieve the data collection effort within the required time frame of 10 calendar days, convenience took precedence in the sampling. Data collectors were asked to select facilities by balancing convenience with representativeness, taking into consideration anomalies of the regions. The following characteristics of the regions would be considered in the interpretation of results from the 1998 baseline study—

1. Greater Accra: This small region is densely served by health care services, but it did not benefit from extensive diversity in the sites sampled. Outlying areas were in the main neglected, with one exception. However, this neglect probably does not affect the outcomes, because all sites in the region are accessible to suppliers of drugs and thereby lower prices. It was included in baseline study; proximity to the central medical store and other suppliers would be likely to positively influence availability indicators. Also, it was thought that the influence of a teaching hospital might be captured in the prescribing study.
2. Central: This small region was included in the baseline study. The regional capital is situated on the southern coast and no facilities were sampled from the extreme north, which may introduce a bias because the region is known as one of the poorest in the country and it is expected that poverty would increase with increasing distance from the regional capital.
3. Volta: This region formally became part of Ghana after World War II. It shares a long border with Togo. It is known to be heterogeneous in its agro-ecological zones and has been well studied. The sites chosen for study came from a variety of geographical locations well dispersed around the long, narrow region. It was excluded from the baseline study because of its heterogeneity.
4. Eastern: The Eastern region was included in the baseline study. It is a large region that is divided by Volta Lake. The facilities included in this study tend to be clustered around Koforidua, the regional capital.
5. Ashanti: Ashanti is a large region in the center of the country. Although the extreme ends of the region were not sampled for convenience reasons, a good variety of locations dispersed around the region were chosen. Few facilities were chosen in the regional capital, Kumasi. The region was excluded from the baseline study because it has a teaching hospital and it was believed that its influence might be observed in prescribing.

6. Brong Ahafo: The regional medical store is located outside the regional capital, Sunyani, possibly influencing procurement and distribution. The sampling of this sprawling region was limited mainly to the western and slightly southern sides, centered around the regional capital. One facility was sampled from the northern part of the region.
7. Northern: This region is huge, sparsely populated, rural, and poor. Sampling here covered areas around the regional capital, Tamale, in the center, to the east, and to the northern extremes, thus offering a good variety of settings and highlighting potential access and affordability issues. This region was included in the baseline study.
8. Upper East: This region, which borders Burkina Faso and Togo, was excluded from the baseline study. This small, underserved region was only sampled at five sites: the extreme northeast; the northwest; and around the regional capital, Bolgatanga, on the eastern side of the region. Site selection was limited because there are few facilities providing health care in the region.
9. Upper West: Upper West was excluded from the baseline study because of an ongoing Danida project. The sites chosen for this rural region were concentrated on the western side of the region, bordering Côte d'Ivoire, with one facility in the farthest north.
10. Western: This region was not included in the baseline study. Due to logistical restrictions, the survey sites in this region were limited to those along the coast. It is known that there is disparity in resources and economic status of the population throughout the relatively large region; there could therefore be a degree of bias introduced in the information gathered.

Remote, hard-to-reach areas were excluded from the selection process. By definition, they are recognized as areas with difficulties in access to essential drugs and supplies relative to the rest of the country.

## Sample Sites

### Ashanti Region

Facility	District	Village/Town
Health center	Sekyere East	Kumawu
Regional hospital	Sekyere West	Mamong
District hospital	Adansi West	Obuasi
NGO/mission clinic/hospital	Asante Akim North	Agogo
NGO/mission clinic/hospital	Kwabre	Abira
Private clinic	Sekyere East	Oyoko
Private hospital	Kumasi Metro	Kumasi
Private pharmacy	Kumasi	Kumasi
Chemical seller shop	Ejisu Juaben	Ejisu
Regional medical stores	Kumasi Metro	Kumasi
District medical stores	Amansie East	Bekwai

### Brong Ahafo Region

Facility	District	Village/Town
Health center	Asutifi	Kenyasi
Regional hospital	Sunyani	Sunyani
District hospital	Tano	Bechem
NGO/mission clinic/hospital	Techiman	Techiman
NGO/mission clinic/hospital	Dormaa Ahenkso	Kyeremasu
Private clinic	Berekum	Berekum
Private hospital	Sunyani	Sunyani
Private pharmacy	Sunyani	Sunyani
Chemical seller shop	Tano	Bechem
Regional medical stores	Kintampo	Kintampo
District medical stores	Asunafo	Goaso

### Central Region

Facility	District	Village/Town
Health center	Mfantisman	Anomabu
Regional hospital	Cape Coast	Cape Coast
District hospital	Upper Denkyira	Dunkwa on Offin
NGO/mission clinic/hospital	Asikuma Odoben Brakwa	Asikuma
NGO/mission clinic/hospital	Gomoa	Apam
Private clinic	Cape Coast	Cape Coast
Private hospital	Cape Coast	Cape Coast
Private pharmacy	Efutu Awutu Senya	Winneba
Chemical seller shop	Mfantseman	Mankesim
Regional medical stores	Cape Coast	Cape Coast
District medical stores	—	—

### Eastern Region

Facility	District	Village/Town
Health center	Akwapim North	Adukrom
Regional hospital	New Juaben	Koforidua
District hospital	Suhum Kraboa Coalta	Suhum
NGO/mission clinic/hospital	Manya Krobo	Agomanya
NGO/mission clinic/hospital	Akwapim South	Aburi
Private clinic	Manya Krobo	Agomanya
Private hospital	New Juaben	Adweso-Koforidua
Private pharmacy	Suhum Kraboa Coalta	Suhum
Chemical seller shop	Asuo Gyaman	Akosombo
Regional medical stores	New Juaben	Koforidua
District medical stores	Akwapim North	Mampong

### Greater Accra Region

Facility	District	Village/Town
Health center	Kpeshie	La
Regional hospital	Osu Klottey	Ridge
District hospital	Tema Municipal	Tema
NGO/mission clinic/hospital	Kpeshie	Teshie Nungua
NGO/mission clinic/hospital	Osu Klottey	Adabraka
Private clinic	Ayawaso	New Town
Private hospital	Okaikoi	Kaneshie
Private pharmacy	Kpeshie	La
Chemical seller shop	Ayawaso	New Town
Regional medical stores	Ashiedu Keteke	Accra central
District medical stores	Dangbe West	Dodowa

### Northern Region

Facility	District	Village/Town
Health center	West Mamprusi	Wale Wale
Regional hospital	Tamale Municipal	Tamale
District hospital	Savelugu	Savelugu
NGO/mission clinic/hospital	East Mamprusi	Nalerigu
NGO/mission clinic/hospital	West Gonja	Damongo
Private clinic	Tamale Municipal	Tamale Sabon Gida
Private hospital	Tolon Kunbungo	Gurngu
Private pharmacy	Tamale Municipal	Tamale
Chemical seller shop	West Mamprusi	Wale Wale
Regional medical stores	Tamale Municipal	Nyohini
District medical stores	East Mamprusi	Gambaga

### Upper East Region

Facility	District	Village/Town
Health center	Bolgatanga	Bolgatanga
Regional hospital	Bolgatanga	Bolgatanga
District hospital	Kasena Nankana	Navrongo
NGO/mission clinic/hospital	Bawku East	Bawku
NGO/mission clinic/hospital	Builsa	Wiaga
Private clinic	Bolgatanga	Bolgatanga
Private hospital	Bolgatanga	Bolgatanga
Private pharmacy	Bolgatanga	Bolgatanga
Chemical seller shop	Builsa	Sandema
Regional medical stores	Bolgatanga	Bolgatanga
District medical stores	Kasena Nankana	Navrongo

### Upper West Region

Facility	District	Village/Town
Health center	Nadowli	Nadowli
Regional hospital	Wa	Wa
District hospital	Jirapa/Lambussie	Jirapa
NGO/mission clinic/hospital	Nadowli	Kaleo
NGO/mission clinic/hospital	Lawra	Nandom
Private clinic	Lawra	Nandom
Private hospital	Wa	Wa
Private pharmacy	Wa	Wa
Chemical seller shop	Jirapa/Lambussie	Jirapa
Regional medical stores	Wa	Wa
District medical stores	—	—

### Volta Region

Facility	District	Village/Town
Health center	Kadjebi	Kadjebi
Regional hospital	Ho	Ho
District hospital	Hohoe	Hohoe
NGO/mission clinic/hospital	South Tongu	Sogakope
NGO/mission clinic/hospital	Kpando	Kpando
Private clinic	Akatsi	Akatsi
Private hospital	Ho	Ho
Private pharmacy	Ho	Ho
Chemical seller shop	North Tongu	Adidome
Regional medical stores	Ho	Ho
District medical stores	Jasikan	Jasikan

## Western Region

Facility	District	Village/Town
Health center	Ahanta West	Agona Nkwanta
Regional hospital	Shama Ahanta East	Sekondi
District hospital	Nzema East	Axim
NGO/mission clinic/hospital	Nzema East	Eikwe
NGO/mission clinic/hospital	Jomoro	Bonyire
Private clinic	Shama Ahanta East	Takoradi
Private hospital	Shama Ahanta East	Takoradi
Private pharmacy	Shama Ahanta East	Takoradi
Chemical seller shop	Ahanta West	Agona Nkwanta
Regional medical stores	Shama Ahanta East	Takoradi
District medical stores	—	—

## Training of Interviewers/Data Collectors

In a two-day workshop held in Accra on March 7–8, 2001, 20 data collectors from the 10 regions received training on the application of the survey instruments, including guidance on conducting interviews and patient simulation. Questionnaires for staff at health facilities, health offices, and pharmacies and data collection forms were reviewed in detail and field-tested on the second day. Revisions were made on a consensus basis. On the second day, each regional team prepared a workplan to complete data collection over the two weeks to follow. A list of the interviewers and data collectors is attached as Annex B.

## Interviews with Key Informants

Persons to be interviewed were identified on the basis of their affiliation with or knowledge of a relevant stakeholder group. The process of identifying and contacting informants was coordinated with local team members. The list of those contacted is presented in Annex C.

## Document Review

As mentioned previously, several studies have been conducted and reports written in recent times. To a great extent, this facilitated the information-gathering activities for this study. On the other hand, many sought-after pieces of information, in particular recent relevant statistics, were not yet available. Many government and business annual reports are due only in June. Therefore, many reports produced in 2000 presented data for 1999 only. In addition, the data collection activity for this assessment was conducted at a time when the MOH was preparing its own documentation for its new Plan of Work.

## Annex B. List of Data Collectors

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### Field Work Coordinator

Daniel Kojo Arhinful

### Data Collectors

<b>Name</b>	<b>Region</b>
Mr. Dominic Dobbin	Ashanti
Dr. Osei-Bonsu	Ashanti
Mr. Daniel L. Morton	Brong Ahafo
Mr. Stephen Korang	Brong Ahafo
Mr. Fred Ananga Yamyolia	Central
Mr. Raymond Tetteh	Central
Mr. Kwasi Brenyah	Eastern
Mr. E. Nartey Dongoyo	Eastern
Mr. Enoch Osafo	Greater Accra
Dr. T. E. Thompson	Greater Accra
Dr. Charles Isinguzo	Northern
Mr. Augustine Dan-Braimah	Northern
Dr. J. K. Abebrese	Upper East
Mr. Augustine Ayidiya	Upper East
Mr. Ziekal Yiriyeye	Upper West
Mr. Felix Yellu	Upper West
Mr. Harry Tayviah	Volta
Mr. Matthias Pinto	Volta
Dr. R. A. Sagoe	Western
Mr. S. T. Asamoah	Western

### **Other Support Staff**

<b>Name</b>	<b>Affiliation</b>
Mr. Divine Asiama	Ghana National Drugs Programme (GNDP)
Mr. Francis Aboagye-Nyame	GNDP
Ms. Violet Anna Osei	GNDP
Ms. Stella Kwofie	GNDP
Ms. Agnes Osei Konadu	GNDP
Ms. Mabel Kuevor	GNDP
Dr. Alex O. Dodoo	Center for Tropical Clinical Pharmacology and Therapeutics/University of Ghana Medical School (CTCPT-UGMS)

### **Data Coding and Entry**

<b>Name</b>	<b>Affiliation</b>
Ms. Jane Amponsah	Health Research Unit/Ministry of Health (HRU-MOH)

## **Annex C. List of Persons Contacted**

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### **Ministry of Health**

Samuel Adjei—Acting Director, Ghana Health Services  
Kweku Afriye—Minister of Health  
Kwabena Agyepong—Government spokesperson  
Daniel Amaning—Deputy Registrar/Inspecting Pharmacist  
Ken Anku—Head of Public Relations, Ministry of Health  
Dr. Denkyira Appiah—Regional Director of Health Services, Kumasi, Ashanti  
Dr. Aryee—Private Sector Unit/Ministry of Health  
Divine Asiamah—Ghana National Drugs Programme  
Samuel Boateng—Director, Planning, Policy and Procurement Division  
Ben Botwe—Acting Chief Executive, Food and Drugs Board  
Moses Dani Baah—Deputy Minister of Health  
Alex Dodoo—Coordinator, National Center for Pharmacovigilance  
Enniton Gavu—Chairperson, Pharmacy Council  
Bertha Garchong—Health Service Research Unit  
Dr. Jennifer-Jane Aisha Brown-Aryee—External Aid Coordinator  
E. N. Mensah—Director General, Ghana Health Services  
Miriam Naarendorp—Training Adviser, Procurement Unit  
Francis Nyame—Head, Procurement Unit  
Joseph Nyoagbe—Deputy Registrar, Pharmacy Council  
Enoch Osafo—Ghana National Drugs Programme  
Eunice Owusu-Ansah—Inspector, Pharmacy Council  
Joseph Sabblah—Central Medical Store, Tema  
Ken Sagoe—Director of Human Resources  
Docia Saka—Private Sector Unit/Private Hospital Board  
Sylvester Segbaya—Senior Inspector, Pharmacy Council  
Felix Yellu—Chief Pharmacist

### **Ghana Social Marketing Foundation, International**

Alex Banful—Managing Director  
Kojo Lokko—Deputy Managing Director  
David Marley—Chief, Financial Operations  
Rudi Lokko—Chief, Marketing Operations

### **Christian Health Association of Ghana**

Mae Kisiedo—Past Executive Secretary  
Kofi Asare Nyadu—Pharmacist in Charge  
Charles Adjie Acquah—Project Officer

### **National Catholic Secretariat**

Charles Allotey—Head Pharmacist, Catholic Drug Center  
Stephen Bonnah—Chief Pharmacist, Catholic Drug Center  
Gilbert Buckle—Executive Secretary, Department of Health

### **Pharmacy Council**

Michael Awuku Kwatia —Registrar  
Joseph Nyoagbe—Acting Deputy Registrar  
Sylvester Segbaya—Ashanti Region Representative

### **Chemical Sellers Association**

K. Djan-Mantey—President  
Abraham Gyesie—Consultant

### **Donors**

Lawrence Darko Aduonum—Population Specialist, USAID/Ghana  
Dr. E. Awittor—World Bank  
Dr. Kobina Bainsan—Senior Health Adviser, Health Sector Support Office, Danida, Accra  
Victor Bampoe—Health Programme Officer, Department for International Development (DFID)  
E. Debroise—French Cooperation  
Helen Dzikunu—Program Officer, Danida, Accra  
Dr. M. George—World Health Organization  
Jan van der Horst—First Secretary of Health, Women & Development Adviser, Royal  
Netherlands Embassy  
Filomena Maxwell—Child Survival Adviser, USAID/Ghana  
J. Newman—United Nations Fund for Population Activities  
Michael Owen—Chief, Economic/Commercial Sector, U.S. Embassy/Ghana  
K. Pekuri—European Union  
Peter Wondergem—Monitoring & Evaluation Adviser, USAID/Ghana  
M. Yokoi—United Nations Development Programme

**Other**

Michael Acquah—Legal Services/Deloitte and Touche  
Mike Addo—Executive Chairman, KAMA/Group of companies  
Kofi Addo-Agyekun—General Manager, KAMA/Group of companies  
Estelle Akofio-Sowah—Manager, Conference and Office Facilities/busyinternet  
Sam Sprong Appiah—National Health Coordinator, Presbyterian Church of Ghana, Accra  
Dr. Jehu Appiah—Chairman, Coalition of Health NGOs  
Rev. Asare-Duah—Alpha Medical Center, Church of Pentecost, Madina, Greater Accra  
E. K. Atikpui—Registrar, Medical & Dental Council  
Divine Awuku—Senior Operations Manager, Vanef STC  
Victor Blaber—Pannel Kerr Forster Chartered Accountants  
Gabriel Daniel—Country Representative, Africare/Ghana  
Dr. Mahamma Duwieha—Head of Department of Clinical & Social Medicine, Kumasi University of Science and Technology  
Dr. Edmund Dell—Director and Consultant, Dermatology Clinic/CAPDSH  
Jan Graabaek—Area Sales Manager, Vestegaard/Frandsen  
Andre van Heerden—Business Manager, Solution Africa/Aventis Environmental Science  
Denis Jackson—Senior Adviser, HIV projects Europe/Family Health International  
Philbert Kankye—Executive Secretary, Christian Health Association of Ghana  
Issaka Abdel Kasim—Plant Manager, Earnest Chemist Ltd.  
Ben Korley—Partner/Deloitte and Touche  
Abed Manteau—Deputy Director, Pharmaceutical Services, Regional Health Administration, Kumasi, Ashanti  
Daniel S. Marfo—Head Pharmacist, Bank of Ghana Clinic, Accra  
Issac Mensah—Managing Director, Ghana Cooperative Pharmaceutical Ltd.  
Dr. Osei Kwasi Mubarak—Health Coordinator, Ahmadiyya Muslim Mission, Accra  
Theresa Nobia—Coordinator of Health, Ghana Red Cross Society, Accra  
Vick Oline – Program Coordinator, Family Reproductive Health, Save the Children (UK), Accra  
Joyce Osei-Afryie—Customer Service/Ecobank Ghana Ltd.  
Leslie vander Puije—Head of Pharmacy, Tetteh Quarshie Hospital, Mampong, Akuapem, Eastern Region  
Gregg Ramm—Program Director, Save the Children (UK), Accra  
Alex Rousselet—Founding Partner/busyinternet  
Kofi Sakyiamah—Assistant, Medical and Social Secretary, Salvation Army, Accra  
Will Shaw—Deputy Director, Netmark Academy for Educational Development  
Samuel Tenkorang—Executive Secretary, Pharmaceutical Society of Ghana, Accra  
Alhaj Tetteh—Chairman, Greater Accra Regional Secretariat/Ghana Public Roads  
Joseph Teye Nuertey—Alpha Medical Center/Church of the Pentecost, Accra  
Francis Kofi Torkornoo—Managing Director, EFTEE Ltd.; Deputy Secretary, Pharmaceutical Society of Ghana  
Gopal Vasu—Director, M & G Pharmaceuticals Ltd., Akuapem, Eastern Region  
Debbie Walker—Communication Officer, Ghana Association of Private Volunteer Organizations in Eastern Region  
Dr. E. Wood—Head of Pharmacology, Faculty of Pharmacy, Kumasi University of Science and Technology

Obri Yeboa—Clinical Pharmacist, Tetteh Quarshie Hospital, Mampong, Akuapem, Eastern Region