WHO PHARMACEUTICAL SITUATION ASSESSMENT – LEVEL II –

Health Facilities Survey in GHANA

Report of a survey conducted May – June 2008

June 2009

Ministry of Health, Ghana

Report Author

Dr Daniel Kojo Arhinful

Project Team

Survey Manager:
Dr Daniel Kojo Arhinful

Survey Coordinator:
Mrs. Martha Gyansa-Lutterodt

Survey Liaison:
Mrs. Edith Andrews-Annan

Area Supervisors:
Agyemang Badu
Eileen Opoku-Asiama
Nathaniel Akorli
Doris Grace Kpongboe
John Korbuvi
Zacchi Sabugu

Data Collectors:
Sarah Amo-Mensah
George Asare-Tabi
Augustus Yamoah
Samuel Kaku Essien
Henry Odouku Andrews
Justice Sekyi
Yohanes Atuwo
George Nana Yaw Yeboah
J. Owusu Agyeman
Thomas K. Amekplenu
Christian Seddoh
Vanessa Senaye
Edmund Dianbiir
George Dabuo
Sarah Van-Ess
Barbara Yankey
Priscilla Ama Amoah

Data entry personnel:
Anthony Kusi

Table of Contents

Abbreviations

AF	Affordability
AV	Availability
EML	Essential Medicines List
DHI	Development Human Index
GA	Geographic Access
GDP	Gross domestic product
HAI	Health Action International
HFS	Health Services Survey
HH	Household
Ind.	Indicator
Inj	Injection
M	Mixed
MSH	Management Sciences for Health
Nb	Number
NMP	National Medicines Policy
OB	Originator brand
PSA	Pharmaceutical Situation Assessment
Q	Quintile
QL	Quality
RU	Rational Use
SD	Standard Deviation
SF	Survey Formulary
STG	Standard Treatment Guidelines
USD	United States dollars (also $)
WHO	World Health Organization
% ile	Percentile

List of Figures

.

.

No table of figures entries found.

List of Tables

Acknowledgements

We would like to thank the directors/heads of regional and district health directorates in all six regions who endorsed the study for their invaluable support. We also wish to extend our thanks to the Advisory Group and resource persons:

- Mr Sam Boateng
- Mr. Felix Yellu
- Mr. Isaac Adams
- Mr. Charles Allotey
- Mr. Martin Auton
- Dr. Gilles Forte
- Mr Desta Abayneh
- Mr. Patrick Mubangizi

The contribution of the survey team comprising supervisors, data collectors, data entry personnel and support staff that ensured the successful completion of the study is gratefully acknowledged. We would also like to thank the following individuals whose assistance was invaluable to the study:

- Dr Daniel Kojo Arhinful (NMIMR) Survey Manager and report writing
- Mrs. Edith Andrews Annan (WHO, Accra) for overall liaison
- Mrs. Martha Gyansa-Lutterodt (GNDP-MoH) Survey Coordination
- Mrs. Augustina Koduah (MeTA Ghana/ MoH) Administrative coordination
- Anthony Kusi, (NMIMR) Data Management and report writing assistance

This document has been produced with the financial assistance of the European Union and of the UK Department for International Development (DFID). The World Health Organization (WHO) and the Medicines Transparency Alliance (MeTA) International Secretariat have provided technical support as part of the work of MeTA in Ghana. The views expressed herein are those of the authors and can therefore in no way be taken to reflect the official opinion of the European Union, the World Health Organization, the Medicines Transparency Alliance and the UK Department for International Development.

CONFLICT OF INTEREST STATEMENT

None of the authors of this survey or anyone who had influence on the conduct, analysis or interpretation of the results has any competing financial or other interests.

Executive summary

Background

This field study to assess the pharmaceutical situation was undertaken in Ghana in May-June 2008 using a standardized methodology developed by the World Health Organization. The study assessed medicines availability and affordability, geographical accessibility, quality and rational use among other issues.

Methods

The survey was conducted in six regions: Greater Accra region, Brong Ahafo region, Central Region, Volta Region, Upper West region and Western region. In each region, 6 public heath care facilities, 12[1] private pharmacies and 1 warehouse were surveyed. Data entry was performed using designed survey forms (Annex 2). Analysis was done using Excel ® program. The WHO - HAI workbook was used to analyze drug price data. Most results are expressed as medians (median values).

Key results concerning facility survey:

Country background- health and pharmaceutical sector

The health system in Ghana is centred on the Ministry of Health which is the highest policy making body and all stakeholders in the health sector are ultimately responsible to it. An official National Medicines Policy (NMP) document exists, which guides the pharmaceutical sector and forms the basis of government's responsibility to ensure access by its citizens to good quality drugs at affordable prices, enacting drug regulations, developing professional standards, and promoting the rational use of drugs.

Access

Overall indicators of access show that key essential medicines selected for the country are to a high extent available in public health warehouses (80%), which supply the public health facility dispensaries (also had 80% availability). Availability of key essential medicines was even better in mission health facility dispensaries (98%), but slightly lower at private pharmacies (73.3%), which compared poorly to the situation in 2002 (85.7% availability at private pharmacies). The length of stock out duration (29.9 and 26.3 days for public health facility dispensaries and warehouses supplying the public sector respectively) indicates a recurrent logistic problem although the situation was an improvement over the 2002 survey results (78 and 50.7 days for public health facility and public sector warehouse respectively). The percentage of dispensed medicines administered to patients at public health facility dispensaries reached a high value (94.2%). In the public sector, the procurement agency is purchasing medicines at prices higher (1.50 times) than international reference prices, indicating a need for improvement in the level of purchasing efficiency.

[1] In Greater Accra region data collectors inadvertently collected data from eight instead of twelve pharmacies as methodologically defined.

Concerning geographical accessibility, it took more than one hour to arrive at the public dispensing facility for few (11.7%) patients interviewed at public dispensing facilities, but all the respondents interviewed usually take under an hour to access private pharmacies.

On drug prices

- The Median Price Ratio (MPR) obtained for procurement prices at public facilities suggests inadequate tendering procedures and medicine prices offered to patients in public facilities are similar to those in private pharmacies.
- Final patient prices for generic medicines in the public sector are about 3.48 times their international reference prices.
- Public sector patient prices for generic medicines are 139.6% more than those for public procurement, indicating high mark-ups in the public sector distribution chain.
- Generic medicines in the private sector were priced similarly to those in the public sector mainly because prices of medicines in both the private and public sectors are set and driven by the National Health Insurance Scheme for reimbursement purposes.
- In treating common conditions using standard regimens, the lowest paid government worker would need between less than a day (anxiety) and 2.7 (Ulcer) days' wages to purchase the lowest priced generic medicines from the private, mission as well as the public sectors. Some treatments were clearly unaffordable, e.g. the treatment of Hypercholesterolaemia with generic Simvastatin 20 mg cap/tab would cost 10.1 days' wages.

Quality

The percentage of expired medicines was zero but some challenges in drug quality exist in the area of adequacy of storage conditions based on proxy measurements. For example, using proxy measurements including temperature control method, good ventilation, cold storage and the area being free from pest and moisture, about a third of private drugs outlets and at least 20% of store and dispensing rooms of public health facility dispensaries are dispensing in low quality storage conditions.

Use of medicines

Quite a high level of injection use (13.3%) and excessive levels of antibiotic (43.3%) prescribing were observed with the latter remaining the same as the situation in the 2002 survey. In health facilities procedures to promote rational use are in place. The national EML was found in 94.4% and STG in 75% of surveyed public health facilities. The selling of prescribed medicines without prescription seems to be a common practice in private medicines outlets as two out of three clients (66.7%) purchased medicines without prescription. One in seven patients (15%) and one in four clients (24.3%) in public and private pharmacies respectively had <u>not</u> been informed on how to take their medicines.

Additional indicators

Most public dispensing facilities and private pharmacies do not comply with the law, since pharmacists were not found in most of them and the profile of health workers dispensing medicines was not adequate. Doctor (78%) is the most frequent prescriber found, and 77% of prescribers have been recently trained in rational use of medicines.

Lessons learnt

The results of the survey show that the access components – such as strategies to improve availability and enhance affordability of medicines – should be improved in order to ensure equity in access to basic medical treatments, especially for the poor. Appropriate use of drugs should also be promoted, particularly in the area of prescription enforcement and use of qualified dispensers at dispensaries. All these also show that managerial and economic policies concerning pharmaceuticals should be improved.

Recommendations

Based on the results of the survey, the following recommendations are made for improving access, quality and rational use of medicines in Ghana:

- A price regulation backed by an effective enforcement is required to control the high mark ups on medicines to make them more affordable to consumers.
- Some gains have been made in improved procurement and availability but there is need to enhance procurement efficiency through improved storage and dispensing room conditions
- There is need to step up rational use activities to reduce high antibiotic use and poor generic prescribing
- Attention must be given to proactive dissemination and consumer awareness of the dangers of irrational drug use.

Introduction

In May/June 2008, the World Health Organization conducted a nationwide study of the pharmaceutical situation in public health facilities, private pharmacies, and in warehouses supplying the public sector in Ghana. The main goal of the study was to document the degree of success in achieving strategic pharmaceutical objectives.

This study was conducted using the standardized methodology developed by the World Health Organization (WHO), to assess pharmaceutical situation at the health facility level. This is an indicator-based approach that provides systematic data on access to and rational use of quality medicines through a facility-based survey.

The core indicators measure the most important information needed to understand the pharmaceutical situation in a country.

The main objectives of the study were to answer the following questions:

- Are medicines available and affordable in public and private dispensing facilities to treat common conditions at primary care level?
- Do people have adequate geographical access to public and private dispensing facilities?
- Are there expired medicines in public and private dispensing facilities?
- Are medicines adequately stored and handle in public health facility dispensaries and warehouses supplying the public sector?
- Are medicines adequately prescribed, labelled and dispensed?
- Are patients informed on how to use their medicines?
- Are pharmacists present at dispensing facilities according to the law?
- Are pharmacists present at dispensing facilities?
- Which professional are prescribing and dispensing?
- Do prescribers comply with good prescribing practices?
- How does Ghana compare to other countries with regard to access to and use of medicines?

Country background

Ghana is a relatively small sized country, covering an area of 238,537 km^2 (92,100 sq miles) and lies along the west coast of Africa. It is divided into ten administrative regions. The total population is 23.5[2] with the majority living in rural areas (56.2%)[3].

Ghana is a low income country with a GDP of US $647 per capita. About 30% of the population live on less than US $1/day, and 53.6% live on less than US $2/day[4]. Of

[2] Source: World Development Indicators database, April 2009

[3] Ghana Statistical Service 2007-2009; http://www.statsghana.gov.gh/KeySocial.html (Date:17/08/09)

[4] Source: International Bank for Reconstruction and Development/The World Bank(2008) Poverty data: a supplement to world Development indicators 2008
http://siteresources.worldbank.org/DATASTATISTICS/Resources/WDI08supplement1216.pdf : 20/08/09

the total labour force, approximately 11.2% are unemployed[5]. According to the most recent national census in 2000, the average number of people per household is 5.1%. Key contributors to morbidity and mortality are malaria, HIV/AIDS related conditions, anaemia, cerebro vascular accidents, pneumonia, Septicaemia as well as hypertension and cardiovascular diseases. Annex 3 and Annex 4 provides detailed morbidity and mortality pattern for 2006.

Table 1. General profile of Ghana

Aspect	Indicator	Number	Source	Year
General data	Population	18,912,079	GSS	2000
	% rural population	56.2	GSS	2000
	% women	50.2	GSS	2000
	% under 5 yrs	6.5	GLSS5[6]	2008
	% over 60 yrs	3.3	GLSS5	2008
Socioeconomic data	DHI			
	GDP (current US$) (billions)	15.15	WDI	2007
	GDP *per capita*	647	WDI	2007
	% under Poverty line	28.5	TWF	2007
	Unemployment rate	11.2	GSS	2007
	Literacy rate (adult 15+) Literacy rate (youth 12-24 years)	65 78	WDI WDI	2007 2007
General health data	Infant mortality rate	64	GSS	2003
	Life expectancy in years of the population over 60 years	58	GSS	2003

Source: http://unstats.un.org/unsd/demographic/products/socind/statistics.htm

Health sector

In 2006, the per capita total expenditure on health was US$ 33 (average exchange rate). Approximately 5.1% of the GDP is spent on health. Of the total expenditure on health, 34.2% is government expenditures, which represents 4.4% of all government expenditures. The remaining 65.8% of total expenditures on health is represented by private expenditures, of which 77.8% are out-of-pocket expenditures[7] through national health insurance.

There are "four main categories of health care delivery systems in Ghana – the public, private-not-for-profit, private-for-profit, and traditional systems" (Ghana Medium Term Health Strategy [GMTHS]: 1995). The health system is centred around the Ministry of Health which is the highest policy making body and all stakeholders in the health sector are ultimately responsible to it. The Ghana Health Service (GHS), established by the Ghana Health Service and Teaching Hospitals Act 525, 1996, is responsible for the administration and management of state owned-hospitals and other health facilities but excluding teaching hospitals and quasi-state institutions such as the universities and security services.

[5] http://www.nationmaster.com/country/gh-ghana/lab-labor
[6] *Ghana Statistical Service (2008) :* Ghana Living Standards Survey Report of The Fifth Round (GLSS 5)
[7] (Source: World Health Statistics 2009 Table 7: Health Expenditures http://www.who.int/whosis/whostat/EN_WHS09_Table7.pdf

The public health service is offered through a hierarchy of hospitals, health centres, maternity homes and clinics including Community-based Health Planning and Services (CHPS) compounds. Services are run on a three-tier system of care; from primary through secondary to tertiary services organized at five levels: community, sub district, district, regional and national. Community and sub-district levels provide primary care, with district and regional hospitals providing secondary health care. The teaching hospitals are at the apex providing tertiary services and responsible for the most specialised clinical and maternity care and also provide the highest level of academic and practical training and research in medicine and related health fields. In order to give real meaning to the interface of the various levels, the structures incorporate a functional referral system from lower levels to the level immediately above them although this is not always adhered.

The public health sector is complemented by the private health sector, which provides about 42 per cent of Ghana's health care services. The main providers in the private sector are the mission based providers and the private medical and dental practitioners. The Christian Health Association of Ghana (CHAG) which constitutes the mission based providers represents member health institutions of sixteen Christian Churches involved in the provision of health care. Government provides about 80% of salaries of CHAG health staff. Private for profit providers also offer health care services under the umbrella of the Private Medical and Dental Practitioners. Table 2 provides the health sector structure of health facilities by category of ownership.

The role played by the traditional birth attendants (TBAs) and the traditional healers is also receiving national recognition. The Ministry of Health also collaborates with various ministries, departments and agencies (MDAs) as well as other partners and stakeholders in the health sector. The key ones include the Ministries of Education, Environment, Science and Technology, Works and Housing and Local Government and Rural Development.

Table 2. Health sector structure according to Health facilities by type and ownership

Facility category	Ownership	Number of facilities
Teaching hospitals	Government	2
Regional hospitals	Government	9
Psychiatric hospitals	Government	3
Hospitals	CHAG	55
	Government	93
	Islamic	10
	Private	156
	Quasi government	22
Poly clinic	Government	10
Health centres & clinics	CHAG	156
	Government	1059
	Islamic	8
	Private	688
	Quasi government	64

Maternity homes	Government	9
	Private	379
	Quasi government	1
CHPS	Government	285
	Private	2
Grand Total		3011

Source: CHIM/PPME-GHS: The Health Sector In Ghana; Facts And Figures, 2007

Pharmaceutical sector

There are approximately 8000 licensed private retail medicine outlets in the country. Sectors which dispense a substantial proportion of medicines to patients include the public sector representing about 55 % of the total health facilities while the private sector made up of the mission based providers and the private medical and dental practitioners represent about 45%. By the end of 2007, approximately 300 private pharmacies and about 230 chemical sellers' shops had been accredited by the National Health Insurance Authority to dispense medicines to patients from both public and private accredited health facilities[8].

National Medicines (Drugs) Policy

In Ghana, a National Medicines Policy (NMP) document exists in official form. It forms the basis of forms the basis of government's responsibility to ensure access of its citizens to good quality drugs at affordable prices, enacting drug regulations, developing professional standards, and promoting the rational use of drugs. An implementation plan that sets out activities, responsibilities, budget and timeline is in place; it was last updated in 2004.

Regulatory system

The Food and Drugs Board is medicines regulatory authority. It is funded through regular budget from the government and fees from registration of medicines. Legal provisions are in place requiring transparency and accountability and promoting a code of conduct in regulatory work. The Foods and Drugs Board provides information on: legislation, regulatory procedures, prescribing information (such as indications, contra indications, side effects, etc.), authorized companies, and/or approved medicines.

A quality management system with an officially defined protocol for ensuring the quality of medicines is also in place in Ghana. Medicine samples are tested for medicines registration and post-marketing surveillance. In 2008, 979 of 1,147 human allopathic medicines samples received were quality tested, with 70 representing 7.15 failing to meet quality standards. Regulatory procedures are in place for ensuring the quality of imported medicines.

Legal provisions are also in place for the licensing and practice of prescribers and pharmacies. The Medical and Dental Council of Ghana is the statutory governmental

[8] Source, MoH Ghana Facts and Figures: NHIA summary statistics, http://www.moh-ghana.org/moh/facts_figures/default.asp: 12/09/09

agency that regulates the standards of training and practice of medicine and dentistry in Ghana while the Pharmacy Council is responsible for the regulation of the pharmacy profession.

The country's drug policy makes prescribing by generic name and generic substitution mandatory in both the public and private sectors but the policy is poorly enforced particularly in the private sector due to poor enforcement.

Medicines supply system

Public sector procurement is pooled at the national level. Both public sector medicines procurement and distribution are the responsibility of the Procurement Unit of the Ministry of Health. Purchase of pharmaceuticals by the Central Medical Store (CMS) is through international competitive bidding and purchasing from local Private suppliers. The Regional Medical Stores (RMS) and teaching hospitals are meant to procure medicines through the CMS and from the local Private sector. All the regional hospitals and facilities are, in turn, expected to procure from the RMS in their respective regions. Although the MOH policy enjoins public facilities to procure through the public system, except in cases of unavailability, significant purchases from private sector purchases at all levels.

The following tender processes are used for public sector procurement:

- National competitive tender
- International competitive tender
- Negotiation / direct purchasing

The break down of the transactions reviewed by procurement methods in number, value and percentage in 2006 by the Procurement Unit of the Ministry of Health are as follows:

Table 3: Break down of the transactions reviewed by procurement methods in number, value and percentage in 2006

Methods	No.	Value Million cedi	Percent
ICB	10	80,581.00	37.37
NCB	231	45,085.00	20.91
National shopping	688	60,918.00	28.25
Sole sourcing	500	22,678.00	10.52
CMS/RMS/Others	123	6,351.00	2.95
TOTAL	**1552**	**215,613.00**	100

Source: Procurement Unit, Ministry of Health

Public sector procurement is limited to medicines on the Essential Medicines List (EML). There are regulations for local preference in public sector procurement which is usually within a margin of 15-20 percent.

Medicines financing

In 2008, the Ministry of health budget for medicines was US$ 62,606,022. The total medicines expenditures per capita was 2.66 and the percent government medicines expenditure was 9.6[9]. There is paucity of accurate pharmaceutical market statistics but estimates put the Ghana pharmaceutical market (both for non prescription – OTC and prescription medicines) to be approximately 30% locally produced and 70% imported products[10].

There is a national policy for Government to finance the procurement and management of adequate quantities of essential drugs to the public sector. While the principle of cost recovery is in place, appropriate mechanisms also exit that offer exemptions from medical care including medicines for persons under eighteen years and pensioners under the state social security scheme (SSNIT) or persons seventy years and above and pregnant women.

The National Health Insurance Scheme (NHIS) became operational in 2004 through an Act of parliament (ACT) passed in 2003. Ghanaians and residents in Ghana can become members through the payment of premiums, which covers about ninety percent of medicines. Membership registration is done through a District Mutual Health Insurance Scheme and as at the end of 2008, there were 145 DMHIS schemes in operation with a cumulative recorded membership of twelve and a half million. Some of the population also have private health insurance, which cover or may not cover most essential medicines. All public health facilities in the country are automatically accredited to the NHIS. Private health facilities however have to apply to the NHIA for accreditation to participate in the NHIS. As at then end of December 2008, a total of 1,551 private providers of different categories had been accredited.

Ghana has a policy of covering medicine prices that applies to the public sector. The Ministry of Health seeks to address the issues of sustainability, equity of access and affordability through an official policy that determines the margins to be applied on medicines. At the central, regional and service delivery points, the margins are intended to maintain the viability of the facility's Revolving Drug Fund. The main premise is to allow the facilities to generate sufficient funds to maintain procurement capacity, a hedge against inflation and losses or wastage that might occur.

Ghana does not have a national medicine price monitoring system for retail/patient prices. In recent past however, the Ministry of Health in collaboration with the World Health Organization (WHO) and Health Action International (HAI) Africa initiative has been undertaking studies to measure prices of medicines using an international standardized methodology developed by WHO and HAI. There are also no regulations mandating retail/patient medicine price information to be made publicly accessible. There are however official written guidelines on medicine donations that

[9] MoH Annual General Statement, 2008

[10] Jonathan Harper and Martha Gyansa-Lutterodt (2007) The viability of pharmaceutical manufacturing in Ghana to address priority endemic diseases in the West Africa sub-region Deutsche Gesellschaft

provide rules and regulations for donors and provide guidance to the public, private and/or NGO sectors on accepting and handling donated medicines.

Rational use of medicines

Ghana's Essential Medicines List (EML) last updated in 2004contains five hundred and sixty six (566) simple-substance formulations. The national EML is the basis for public sector procurement. The Ghana National Drugs Programme coordinates the selection of products on the national EML.

STUDY DESIGN AND METHODS

The survey with Level II indicators is a very important part of the pharmaceutical sector assessment. These indicators measure the outcome and impact of strategic pharmaceutical programs in a country: improved access, quality and rational use. Access is measured in terms of the availability and affordability of essential medicines, especially to the poor and in the public sector.

Measuring the actual quality of medicines by testing samples can be expensive. Instead, the presence of expired medicines on pharmacy shelves as well as the adequate handling and conservation conditions are indicators of the quality of medicines made available to the population. Finally, rational use is measured by examining the prescribing and dispensing habits of health providers and the implementation of key strategies such as standard treatment guidelines (STG) and essential medicines lists (EML). Level II indicators are measured in public health facilities, private drug outlets, and in warehouses supplying the public sector.

The "survey areas" for data collection were selected based on a combination of purposive and random sampling. Initially, two regions were selected. The largest urban centre of Greater Accra Region was selected as one survey area and Upper West Region was selected as representative of a low income area. Additional four regions were chosen both randomly and some purposively based on the following arguments. Central region was included because it is known to be the poorest region in the south of Ghana and there is need to determine access to medicines in the region. Brong Ahafo region was included because it has its regional medical stores outside the regional capital and it is important to find out how this may affect drug procurement and distribution patterns. Volta region was included because of its heterogeneity in terms of agro-ecological zones. Western region was included because of its geographical location as the south westerly border region of Ghana.

This resulted in the following six survey areas:

1. Greater Accra Region
2. Brong Ahafo Region
3. Central Region
4. Upper West Region
5. Volta Region
6. Western Region

Figure 1 below provides the geographic location of the six surveyed regions.

In each survey area, the sample of public facilities was identified by first selecting the main public regional hospital. An additional five public health facilities per survey area were then selected at random from all middle level public health care facilities at different distances from the main regional hospital. For each public facility two nearest private medicines outlets (made up of a private pharmacy and a chemical sellers shop as the case may be) were visited except in Greater Accra region where data collectors inadvertently collected data from eight instead of twelve pharmacies as methodologically defined. Also, in each area, a total of six mission/NGO and private health facilities that were expected to prescribe and dispense medicines were randomly selected and surveyed. Additionally one warehouse that supplies the public sector was visited in each area. In each health facility or drug outlet, thirty outpatients or outpatient records as the case may be were targeted.

The sampling methodology followed, resulted in the study of outpatient records or outpatients from 36 public health facilities and its dispensary, 19 mission/NGO health facilities and its dispensaries, 17 private health facilities and its dispensaries, 68 private medicines outlets and 6 warehouses. A total of 4061 outpatients and/or outpatient records were studied in the above facilities. The detailed number of facilities and outpatient records per region is provided in Annex 2 . The characteristics of outpatients interviewed by gender and age indicate that adults constituted the most patients (65.34%) about and from whom data was obtained. Majority (57.12%) of them were also female. The observation was consistent in all health facilities surveyed and the detailed distribution is provided as Annex 3.

In each facility surveyed a set of Survey Forms (Annex 2) was applied. This allowed standard method of gathering information to calculate the indicators. Table 4: **Summary list of indicators and corresponding survey form used to collect the data** summarizes the Level II indicators and lists the corresponding survey forms. Information on data collection and calculation can be found on the respective survey forms.

Table 4: Summary list of indicators and corresponding survey form used to collect the data

Indicator		Survey Form
Access		
1	Availability of key medicines in public health facility dispensaries, private drug outlets and warehouses supplying the public sector (country list) Mean availability of originator brand and generic medicines in the public/private sector	1, 10, 15 2 &11
2	% of prescribed medicines dispensed or administered to patients at public health facility dispensaries	6
3	Average stock-out duration in public health facility dispensaries and warehouses supplying the public sector	4, 16
4	Adequate record keeping in public health facility dispensaries and warehouses supplying the public sector	4, 16
5	Geographical accessibility of public health facility dispensaries and private drug outlets	6, 14
6	Indicators related to affordability and prices of drugs: • Patient prices for generic medicines/innovator drug in the public/private sector • Prices of generic/ innovator drug in public/private sector compared to international price index. • Affordability -ratio of cost to treat common conditions using standard regiments, to the lowest daily government worker wage for X (condition) and X (condition) (days' wages to purchase lowest priced generic medicines from public and private sector)	2, 11
Quality		
1	% medicines expired in public health facility dispensaries, private drug outlets and warehouses supplying the public sector	1, 10, 15
2	Adequacy of storage conditions and of handling of medicines in public health facility dispensaries and warehouses supplying the public sector	5, 13, 17
Rational use of medicines		
1	% medicines adequately labelled at public health facility dispensaries and private drug outlets	6, 14
2	% patients informed on how to take medicines at public health facility dispensaries and private drug outlets	6, 14
3	Average number of medicines per prescription at public health facility dispensaries and public health facilities	6, 7
4	% patients prescribed antibiotics in public health facilities	7
5	% patients prescribed injections in public health facilities	7
6	% prescribed medicines on the essential medicines list at public health facilities	7
7	% medicines prescribed by generic name (INN) at public health facilities	7
8	Availability of standard treatment guidelines at public health facilities	8
9	Availability of essential medicines list at public health facilities	8
10	% tracer cases treated according to recommended treatment protocol/guide at public health facilities	9
11	% prescription medicines bought with no prescription	14
Other information		
1	% of facilities that comply with the law (presence of a pharmacist)	Section A, C
2	% facilities with pharmacist, nurse, pharmacy aide/ health assistant or untrained staff dispensing	Section A, C
3	% facilities with doctor, nurse, trained health worker/health aide prescribing	Section B
4	% facilities with prescriber trained in RDU	Section B

The verification of availability, stockout and expired medicines were based on a list of key medicines, selected according to the first-line therapeutic choice to most common

and important health conditions at the primary health care level. In addition to the national list of key medicines, medicines in a global list were also selected. Availability was measured for both innovators and lowest priced generics.

Verification of affordability of treatment as well as compliance of prescribers to recommended treatment protocol/guide was performed considering tracer health conditions treated with drugs in the global list. Data collection methods included patient and health worker interviews after oral consent, check list guided observation and clinical and pharmacy records review. The survey was conducted after approval by the Ministry of Health and Ghana Health Service. Local health managers were contacted for specific approval and cooperation.

The field team consisted of six teams of three data collectors, selected according to educational qualification and skills in data collection. One supervisor per team who supervised the daily checking of the data collected to eliminate errors and enhance quality as well as deal with immediate practical logistic problems on the field. All field teams were trained in their specific roles and procedures during training of data collectors from 5th May to 9th May 2008. Data collection took place between 19th May 2008 and 6th June 2008.

After review of completed Survey Forms, data were typed in Summary Forms 1–4 and Workbook, both in Excel® and in freeware provided by the WHO survey package. These programs permitted indicator calculation. Indicator measures on each survey forms were calculated manually and summaries were entered in an automated excel spread sheet. For data on medicines prices and affordability the WHO-HAI "Medicines Prices" work book was used.

Limitations of the data

The study was not intended to give a detailed analysis of the pharmaceutical sector but to provide an overview of the national pharmaceutical situation in the country, to help in policy analysis and in the design of appropriate interventions.

The regions and facilities selected cumulatively represent the national situation and must be used as such.

RESULTS AND DISCUSSION

This section presents findings on the key areas and indicators on access to medicines covered in the survey.

Access

Key findings on access to medicines

Table 5 below summarizes the results of general indicators for access.

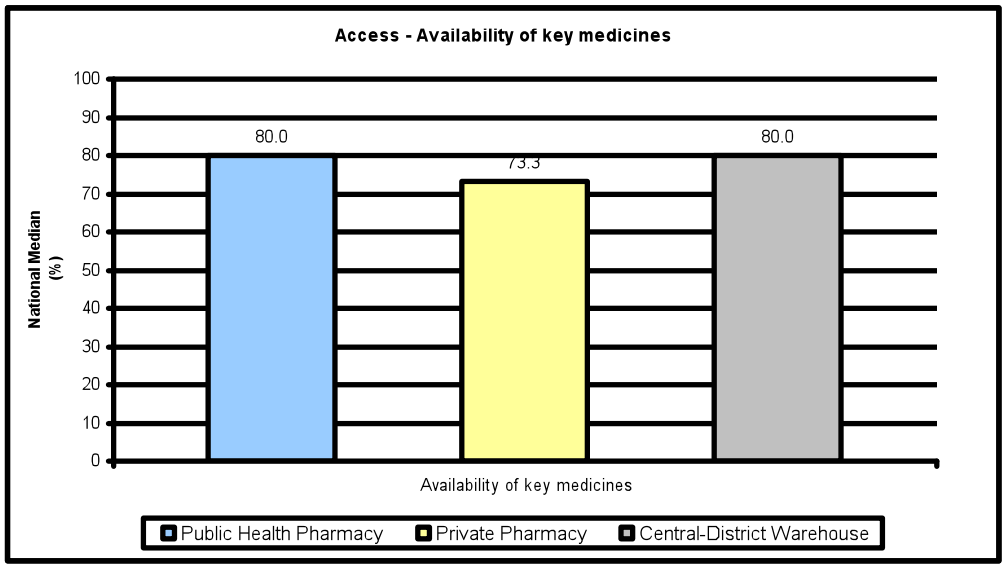
Table 5: General indicators for Access, PSA-HFS Level II, Ghana, 2008

Indicator	National (Median)	25th Percentile	75th Percentile
Availability			
Availability of key medicines (country list) in			
public health facility dispensaries	80.0	71.7	80.0
private drug outlets	73.3	66.7	86.7
warehouses supplying the public sector	80.0	75.0	85.0
% of prescribed medicines dispensed or administered to patients at public health facility dispensaries	94.2	87.0	97.0
Average stockout duration in			
public health facility dispensaries	29.9	9.4	57.0
warehouses supplying the public sector	26.3	7.3	93.7
Adequate record keeping in			
public health facility dispensaries	80.0	73.3	86.7
warehouses supplying the public sector	90.0	86.7	93.3
Drug prices and affordability			
Final patient prices (MPR) for generic medicines in the public/ private/mission sector (# times IRP=MSH IRP)[11]			
Public sector outlets	3.48	-	-
Private sector outlets	3.49	-	-
Mission sector outlets	3.48		
Ratio of cost in treating common conditions using standard regiments to the lowest day wage government worker			
Asthma	1.9	-	-
Adult respiratory infection	0.5	-	-
Geographical accessibility			
% patients taking more than one hour to travel to			
public health facility dispensaries	11.7%	0.0	0.2
private drug outlets	0.0	0.0	0.1

[11] To facilitate international comparisons, medicine prices found during the survey are expressed as ratios relative to a standard set of international reference prices, known as the median price ratio or MPR. The MPR is thus an expression of how much greater or less the median local medicine price is than the international reference price. The MPR of 3.48 in the public sector means that the local medicine price is over three times the international reference price. The International Reference price used here is the 2007 Management Sciences for Health (MSH) reference prices. The MSH Guide consolidates information from recent price lists of large, non-profit generic medicine suppliers that generally do not include insurance or transportation charges.

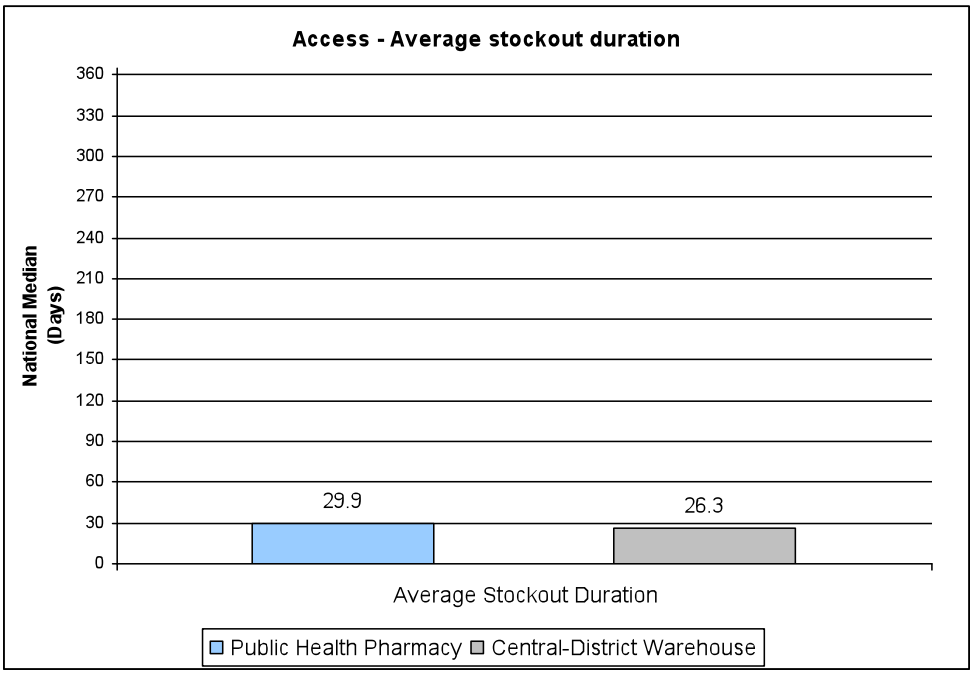
Average transportation cost (cedis) to the			
public health facility dispensaries	1.0	0.5	1.3
private drug outlets	0.3	0.0	0.8
Average Transport cost (cedis) to minimum daily salary or lowest paid Government worker to the			
public health facility dispensaries	0.4	0.2	0.6
private drug outlets	0.1	0.0	0.4

Figure 1: Median Availability of key medicines (country list) in public health facility dispensaries, in private drug outlets, and in warehouses supplying the public sector. PSA-HFS Level II, Ghana, 2008.



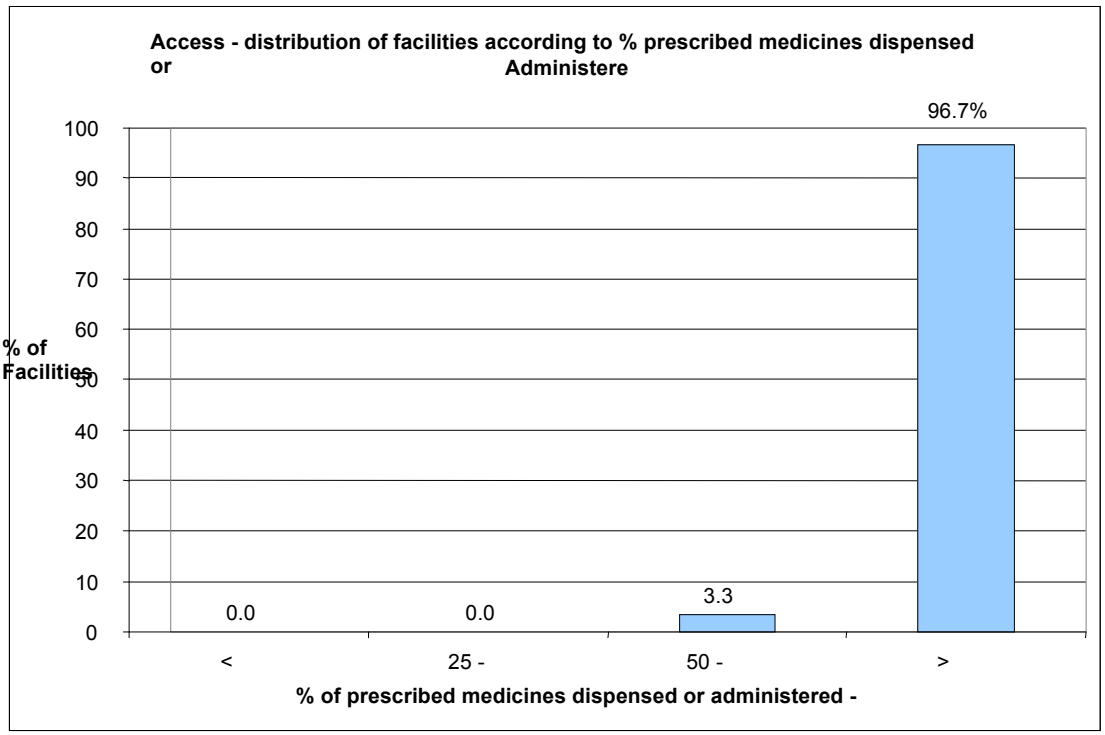
Availability of key medicines was high in all drug outlets. It was slightly higher in public facilities and district warehouses then in private pharmacies. .

Figure 2: Median stockout duration in public health facility dispensaries and in warehouses supplying the public sector. PSA-HFS Level II, Ghana, 2008.



As the above figure indicates, stockout duration in public health pharmacy and regional warehouses are high and quite similar. This indicates the ripple effects of the supply chain system when shortages occur.

Figure 3: Distribution of facilities according to percentage of prescribed medicines dispensed or administered. PSA-HFS Level II, Ghana, 2008



Over 75% of facilities dispense and administer about 97 percent of prescribed medicines.

Table 6: Public sector procurement - ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found (SF2b with WHO -HAI Medicine Prices Work Book). PSA-HFS Level II, Ghana, 2008. (From WHO-HAI workbook)

Product type	Median MPR	25th percentile	75th percentile
Originator brand (n = 1 medicines)	2.17	2.17	2.17
Lowest price generic (n = 16 medicines)	**1.50**	**0.82**	**2.36**

1. Of the 16 medicines included in the survey, 1 originator brand and 16 generics were found in the public procurement sector; the public sector is therefore procuring predominantly generic products. Based on the median MPRs, the public sector is procuring generics at 1.50 times their international reference prices (for information on IRP please see http://erc.msh.org/), and originator brands at 2.17 times their international reference prices. Thus, the government procurement agency could improve its efficiency in purchasing. The inter-quartile range shows substantial/ variation in median price ratios across individual medicines (0.82 at the 25th percentile to 2.36 at the 75th percentile). Further investigation is required to identify the determinants of these variations in purchasing efficiency.

Table 7: Public sector patient prices - ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found (SF2a with WHO-HAI workbook). PSA-HFS Level II, Ghana, 2008. (From WHO-HAI work book)

Product type	Median MPR	25th percentile	75th percentile
Originator brand (n = 0 medicines)	0	0	**0**
Lowest price generic (n = 15 medicines)	**3.48**	**1.85**	**4.87**

Public sector patient prices

The results above show that in the public sector:

- Originator brand medicines are rarely used as none was found among the 15 products included in the survey.
- Lowest price generic medicines are sold at 3.48 times their international reference price. Half of the lowest priced generic medicines were priced at 1.85 (25th percentile) to 4.87 (75th percentile) times their international reference price; there is therefore substantial variation in MPRs across individual generic medicines in the public sector.

- In the Ghana 2004 WHO/HAI pricing survey, the median MPR for the lowest priced generic medicines was 2.43 times higher than their international reference price suggesting that the medicines pricing situation is not getting better.

Lowest price generic medicines priced several times higher than international reference prices include Diclofenac (MPR = 10.37), Ciprofloxacin (MPR = 5.83), Glibenclamide (MPR = 4.91). In the Ghana 2004 pricing survey, MPR for Diclofenac was 8.58, Ciprofloxacin was 7.05 and Glibenclamide was 5.47 indicating a consistent high pricing from over the situation in 2004,. The 25th and 75th percentiles for individual medicines show that, for generic medicines, prices vary significantly between public sector medicines outlets.

Table 8: Median MPRs for medicines found in both public procurement and public sector medicine outlets (final patient prices). PSA-HFS Level II, Ghana, 2008. (From WHO-HAI work book)

Product type	Median MPR Public Procurement	Median MPR Public Patient Prices	% difference patient prices to procurement
Originator brand (n = 0 medicines)	-	-	-
Lowest price generic (n = 15 medicines)	**1.45**	**3.48**	**139.6%**

Procurement vs. Patient prices

In the above table, only those medicines found in both public procurement and public sector medicine outlets were included in the analysis to allow for the comparison of purchase price to final patient price. Results show that final patient prices in the public sector are 139.6% higher than procurement prices for generics. These price differences may result from local purchases at public health facilities and/or from add-on costs applied in the distribution chain.

Private sector patient prices

Table 9: Ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found. PSA-HFS Level II, Ghana, 2008. (From WHO-HAI work book)

Product type	Median MPR	25 %ile	75 %ile
Lowest price generic (n = 16 medicines)	3.49	1.78	4.71

The results above show that in the private sector:

- lowest price generic medicines are generally sold at 3.49 times their international reference price, which is lower than the 4.12 recorded in the 2004 pricing study. Half of the lowest priced generic medicines were priced at 1.78

(25th percentile) to 4.71 (75th percentile) times their international reference price; there is therefore substantial variation in MPRs across individual generic medicines in the private sector.

Median price ratios for individual medicines found in the private sector.

Lowest price generic medicines priced several times higher than international reference prices include Simvastatin (MPR = 17.43), Diclofenac (MPR = 6.22), Mebendazole (MPR = 5.97). The MPRs for Diclofenac and Mebendazole in the 2004 pricing survey were 8.6 and 20.2 respectively, indicating improvement in pricing in the private sector.

Comparison of patient prices in the public and private sectors

Table 10: Median MPRs for medicines found in both public and private sectors, PSA-HFS Level II, Ghana, 2008. (From WHO-HAI work book)

Product type	Median MPR Public sector patient prices	Median MPR Private sector patient prices	% difference private to public
Lowest price generic (n = 15 medicines)	**3.48**	**3.49**	0.0%

In the above table, only those medicines found in both public and private sector medicine outlets were included in the analysis to allow for the comparison of prices between the two sectors. Results show that final patient prices for generics in the private and public sector are similar.

Affordability of standard treatment regimens

The affordability of treatment for 12 common conditions was estimated as the number of days' wages of the lowest-paid unskilled government worker needed to purchase medicines prescribed at a standard dose. For acute conditions, treatment duration was defined as a full course of therapy, while for chronic diseases, the affordability of a 30-days' supply of medicines was determined. The daily wage of the lowest-paid unskilled government worker used in the analysis was 2.25 Ghana cedis

Table 11. Median prices for standard treatments of common conditions in the public/ private/ mission sectors PSA-HFS Level II, Ghana, 2008. (From WHO-HAI work book)

Disease condition and 'standard' treatment			Final patient prices for generic medicines (Ghana Cedis)		
Condition	Drug name, strength, dosage form	Treatment schedule	Median Treatment price - public sector	Median Treatment price – private sector	Median Treatment price - mission sector
Asthma	Salbutamol 100 mcg/dose inhaler	1 inhaler of 200 doses	4.20	5.70	4.00

Diabetes	Glibenclamide 5 mg cap/tab	1 cap/tab x 2 x 30 days = 60	1.20	1.20	1.20
Hypertension	Atenolol 50 mg cap/tab	1 cap/tab x 30 days = 30	1.80	1.80	1.80
Hypertension	Captopril 25 mg cap/tab	1 cap/tab x 2 x 30 days = 60	-	-	-
Hypercholesterolaemia	Simvastatin 20 mg cap/tab	1 cap/tab x 30 days = 30	-	22.80	-
Depression	Amitriptyline 25 mg cap/tab	1 cap/tab x 3 for 30 days = 90	-	-	-
Adult respiratory infection	Ciprofloxacin 500 mg cap/tab	1 cap/tab x 2 for 7 days = 14	2.80	2.10	2.80
Paediatric respiratory infection	Co-trimoxazole 8+40 mg/ml suspension	5ml twice a day for 7 days = 70 ml	0.70	1.05	0.70
Adult respiratory infection	Amoxicillin 500mg cap/tab	1 cap/tab x 3 for 7 days = 21	1.05	1.47	1.05
Adult respiratory infection	Ceftriaxone 1 g/vial injection	1 vial	4.68	4.50	4.68
Anxiety	Diazepam 5mg cap/tab	1 cap/tab x 7 days = 7	0.07	0.07	0.07
Arthritis	Diclofenac 50mg cap/tab	1 cap/tab x 2 x 30 days = 60	3.00	1.80	6.00
Pain/inflammation	Paracetamol 24mg/ml suspension	child 1 year: 120mg (=5ml) x 3 for 3 days = 45ml	0.23	0.18	0.23
Ulcer	Omeprazole 20mg cap/tab	1 cap/tab x 30 days = 30	6.00	6.00	6.00

Table 12: Number of days' wages of the lowest paid government worker needed to purchase standard treatments. PSA-HFS Level II, Ghana, 2008.

Disease condition and 'standard' treatment			Day's wages of lowest paid Government worker (2.25 cedis daily) to pay for treatment		
Condition	Drug name, strength, dosage form	Treatment schedule	Lowest price generic - public sector	Lowest price generic - private sector	Lowest price generic - mission sector
Asthma	Salbutamol 100 mcg/dose inhaler	1 inhaler of 200 doses	1.9	2.5	1.8
Diabetes	Glibenclamide 5 mg cap/tab	1 cap/tab x 2 x 30 days = 60	0.5	0.5	0.5
Hypertension	Atenolol 50	1 cap/tab x 30	0.8	0.8	0.8

	mg cap/tab	days = 30			
Hypertension	Captopril 25 mg cap/tab	1 cap/tab x 2 x 30 days = 60	-	-	-
Hypercholesterolaemia	Simvastatin 20 mg cap/tab	1 cap/tab x 30 days = 30	-	10.1	-
Depression	Amitriptyline 25 mg cap/tab	1 cap/tab x 3 for 30 days = 90	-	-	-
Adult respiratory infection	Ciprofloxacin 500 mg cap/tab	1 cap/tab x 2 for 7 days = 14	1.2	0.9	1.2
Paediatric respiratory infection	Co-trimoxazole 8+40 mg/ml suspension	5ml twice a day for 7 days = 70 ml	0.3	0.5	0.3
Adult respiratory infection	Amoxicillin 500mg cap/tab	1 cap/tab x 3 for 7 days = 21	0.5	0.7	0.5
Adult respiratory infection	Ceftriaxone 1 g/vial injection	1 vial	2.1	2.0	2.1
Anxiety	Diazepam 5mg cap/tab	1 cap/tab x 7 days = 7	0.1	0.1	0.1
Arthritis	Diclofenac 50mg cap/tab	1 cap/tab x 2 x 30 days = 60	1.3	0.8	2.7
Pain/inflammation	Paracetamol 24mg/ml suspension	child 1 year: 120mg (=5ml) x 3 for 3 days = 45ml	0.1	0.1	0.1
Ulcer	Omeprazole 20mg cap/tab	1 cap/tab x 30 days = 30	2.7	2.7	2.7

Affordability of standard treatment regimens

The affordability of lowest price generics in the public sector was varied for most conditions, with standard treatment costing a days' wage or less of the lowest paid government worker. It is however important to note that many people in the more dominant informal sector earn less than the lowest paid government worker. Treatments costing over a days' wage of the lowest paid government worker include:

- Ulcer using Omeprazole 20mg cap/tab (2.7 days wages);
- Adult respiratory infection using Ceftriaxone 1 g/vial injection (2.1 days wages) and
- Asthma where Salbutamol 100 mcg/dose inhaler is used (1.9 days wages)

In the private and mission sectors, the affordability of lowest price generics was similar to the pattern observed in the public sector. For most conditions, the standard

treatment cost a days' wage or less. In the private sector, treatments costing over a days' wage of the lowest paid government worker include:

- Hypercholesterolaemia for which the medication Simvastatin 20 mg cap/tab was available in only that sector (private) at a cost of 10.1 days wages;
- Ulcer using Omeprazole 20mg cap/tab (2.7 days wages) and,
- Asthma where Salbutamol 100 mcg/dose inhaler is used (21.9 days wages).

In the mission sector, treatments costing over a days' wage of the lowest paid government worker include:

- Ulcer using Omeprazole 20mg cap/tab (2.7 days wages);
- Arthritis which involves the use of Diclofenac 50mg cap/tab (2.7 days wages) and
- Adult respiratory infection using Ceftriaxone 1 g/vial injection (2.1 days wages).

Altogether, the most affordable standard treatments were those for treating acute conditions like anxiety and pain/inflammation (0.1 days' wages).

It should be noted that treatment costs refer to medicines only and do not include the additional costs of consultation and diagnostic tests. Further, many people in Ghana earn less that the lowest government wage; as such even treatments which appear affordable are too costly for the poorest segments of the population. Finally, even where individual treatments appear affordable, individuals or families who need multiple medications may quickly face unmanageable drug costs. An example is provided below of a family where the father has diabetes and the child has asthma. If the family is earning the equivalent of the lowest-paid government worker's salary, total treatment costs are 2.4 days' wages in the public sector and 3.0 days' wages in the private sector (if the lowest price generics are purchased).

Key findings on access to medicines

- The median percent availability of key medicines reached 80% in the public health facility dispensaries, 73.3% in the private drug outlets, and 80% in the warehouses supplying the public sector. For the public sector, this performance was a slight improvement over the 2002 figure of 78.6%.
- Some 94.2% of prescribed medicines (an improvement over the 89.2% in 2002 survey) were dispensed or administered to patients at public health facility dispensaries indicating that a high percentage of patients had their prescribed medicines obtained at the public health facility dispensaries with a uniform performance of this indicator among the health facilities.
- The median stockout duration was 29.9 days/year in the public health facilities and 26.3 days/year in the warehouses, indicating that some issues remain to be solved in the distribution. Alhough the 2008 figures are far better than those recorded in 2002 in public health facilities (78.0 days) and public sector

warehouses (50.7 days), there is still more room for improvement to meet the increasing demand associated with the national health insurance scheme.

- The percentage of patients taking more than one hour to travel to medicine dispensing facility was 11.7% and 0% for the public and private sector respectively, indicating a better geographical accessibility for private dispensaries.
- The average transport costs to the public and private dispensary facilities comprise 0.4 and 0.1 of the minimum daily salary respectively, indicating a relatively high burden to poor people to public health facilities compared to private drug dispensaries.
- Prices of medicines in both the public and private sector were about 3.5 times the International Reference Prices. As regards affordability, treatment for most of the surveyed conditions cost less than 1 day wage of the lowest paid public sector worker.

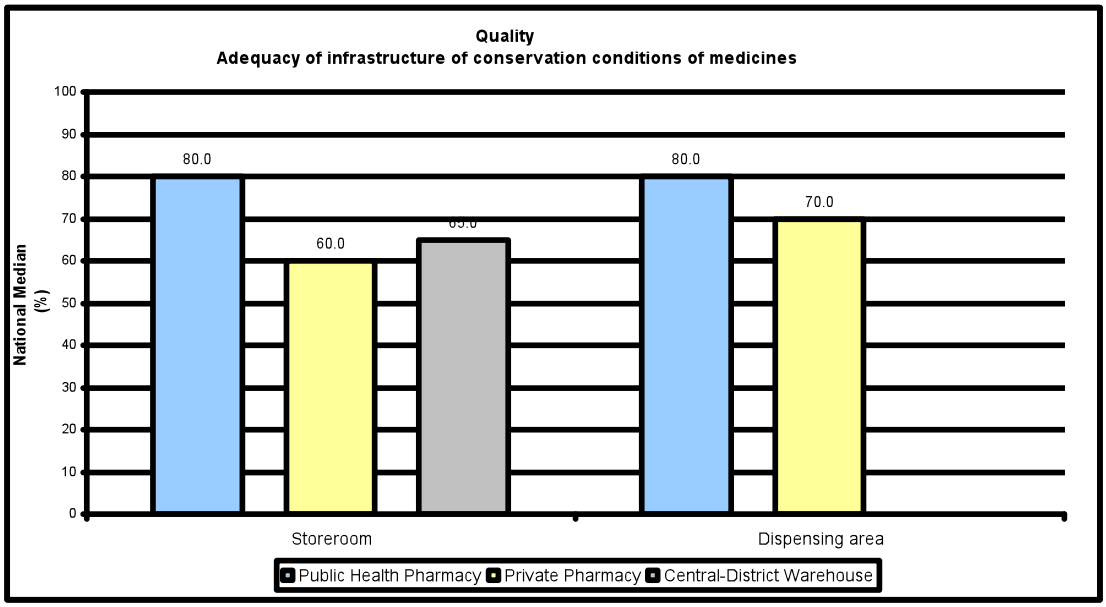
Quality of medicines

Table 13: Proxy indicators for quality of medicines, PSA-HFS Level II, Ghana, 2008

Indicator	National (Median)	25th Percentile	75th Percentile
% medicines expired in			
public health facility dispensaries	0.0	0.0	0.0
private drug outlets	0.0	0.0	0.0
warehouses supplying the public sector	0.0	0.0	0.0
Adequacy of storage conditions of medicines in			
storerooms of public health facility dispensaries	80.0	70.0	90.0
dispensing rooms of public health facility dispensaries	80.0	70.0	90.0
storerooms of private drug outlets	60.0	47.5	80.0
dispensing rooms of private drug outlets	70.0	60.0	90.0
storerooms of warehouses supplying the public sector	65.0	60.0	70.0

The median percentage of expired medicines was zero in public health facility dispensaries, private drug outlets and warehouses supplying the public sector, respectively, indicating that expired medicines were found in none of these facilities.

Figure 4: Adequacy of infrastructure of conservation conditions of medicines (median), PSA-HFS Level II, Ghana, 2008.



Public facilities dispensary had a good rate of adequacy of infrastructure for conservation of medicines (80%) and this represents an improvement over 2004, when adequacy was 68.8%. Adequacy of storage conditions in private facilities and public warehouses was lower (60% and 68% respectively).

Key findings on quality of medicines

- Using availability of expired drugs as a proxy indicator suggests that the quality of medicines provided in the country is not an important concern in this part of the supply chain.
- However, challenges exist regarding adequacy of storage conditions. The storage conditions of medicines in storerooms of at least a third of private drug outlets and warehouses supplying the public sector were assessed as inadequate and needed improvement. Similarly, at least 20% of store and dispensing rooms of public health facility dispensaries and dispensing rooms of private drug outlets also had low quality storage conditions.

Rational use

Table 14. General indicators for Access, PSA-HFS Level II, Ghana, 2008.

Indicator	National (Median)[12]	25th Percentile	75th Percentile
Prescribing indicators			
Average number of medicines per prescription at public health facility dispensaries and public health facilities(SF6)	4.0	3	4
Average number of medicines per prescription at public health facility dispensaries and public health facilities(SF7)	3.6	3.3	4.0
% patients prescribed antibiotics in public health facilities	43.3%	39.3%	50.8%
% patients prescribed injections in public health facilities	13.3%	9.3%	23.3%
% prescribed medicines on the essential medicines list at public health facilities	87.5%	80.3%	92.3%
% medicines prescribed by generic name (INN) at public health facilities	59.9%	45.2%	74.6%
Patient care indicators			
% medicines adequately labeled at			
public health facility dispensaries	78%	18%	97%
private dispensaries	62.3%	23.8%	81.5%
% patients know how to take medicines at			
public health facility dispensaries	85%	76%	97%
private dispensaries	76.7%	63.3%	86.7%
Prescription medicines bought without prescription	66.7%	26.2%	93.2%
Facility specific factors for the rational use of medicines	National percentage		
Availability of standard treatment guidelines at public health facilities	94.4%	-	-
Availability of essential medicines list at public health facilities	75.0%	-	-

Key Findings on Rational Use of Medicines:

- The EML and the Standard Treatment Guidelines were found in 75% and 94.4% of the public healthcare facilities respectively, indicating that these fundamental documents are mostly available to the health care professionals although the distribution of the EML needs further improvement.
- The average number of medicines per prescription at the public facility dispensaries was 3.6, which may be considered high and is higher compared to the 3.3 recorded in 2002.
- The percentage of patients that were prescribed antibiotics in public facilities was 43.3%, which was high, indicating irrational prescribing patterns for this group of medicines. This indicator has not seen a change over time as a similar observation was made in the 2002 study.
- The percentage of patients with injections prescribed in the public facilities was 13.3%, and also high, indicating irrational prescribing patterns for this

[12] Median Value of Averages: As averages can be skewed by outlying values, median values are generally used as better representations of the midpoint values.

group of medicines. Yet, this represents a considerable improvement over the 2002 figure of 30.0%.

- Around 87.5% of medicines prescribed were part of the EML, which indicated a good adherence of physicians to this list. In 2002, adherence was higher as 96.1% of the drugs prescribed were on the EML though the availability of the EML in public facilities was 88.9%. This may be because the Ghana EML was last updated in 2004 although it is officially supposed to be updated every two years. An elaborate revision was in progress during the study and involved a number of workshops with various stakeholders at various levels which leads to delays but facilitates compliance with the final document.
- Some 59.9% of medicines in the surveyed prescriptions were prescribed by generic name, which leaves much to be desired since Ghana's Drug Policy requires all prescriptions to be done by generic name.
- The percentage of medicines adequately labelled was 78.1% and 62.3% at public health facility dispensaries and at private pharmacies respectively. About one in seven of clients in public facilities and one in four of clients in private dispensaries did not know how to take their medicines. This was also a great improvement over the 2002 situation where a little over two out of five clients (44.3%) in public facilities did not know how to take their medicines.

Table 15: ***Adherence of prescribers to recommended treatment guidelines. PSA-HFS Level II, Ghana, 2008.***

Indicator	Information source	Median	National Average	Standard Deviation
Non-bacterial diarrhoea in children under age 5	Total number of cases,	10.0	9.9	0.3
	% ORS	85.0%	71.8%	31.3%
	% Antibiotics	40.0%	41.3%	30.3%
	% Antidiarrhoeal and/or Antispasmodic	0.0%	4.6%	11.5%
Mild/moderate pneumonia in children under age 5	Total number of cases	10.0	9.4	2.4
	% receiving any one first line antibiotic	90.0%	84.1%	24.6%
	% receiving more than one antibiotic	0.0%	11.2%	14.3%
Non-pneumonia ARI in patients of any age	Total number of cases	10.0	10.0	0.0
	% Antibiotics	100.0%	88.3%	17.1%

Inappropriate treatments among prescribers persist on the basis of non-adherence to recommended treatment for specified conditions in the Ghana 2004 Standard Treatment Guidelines. Prescribers prescribed an antibiotic to all non-pneumonia ARI in patients of any age and excessive use of antibiotics (40%) was also registered in non-bacterial diarrhoea in children for which one in seven also do not receive ORS. In the 2002 study, four out of five cases for every non-pneumonia ARI, received an antibiotic while one in two of children with non-bacteria diarrhoea also received an antibiotic with one in five of the affected children not receiving ORS.

Compliance with Human Resources Regulations

Table 16: Dispenser profile and compliance with the law, PSA-HFS Level II, Ghana, 2008.

Professional dispensing during the visit	Public sector	Private sector
pharmacist	30.6%	19.1%
nurse	5.6%	1.5%
pharmacy aide/ health assistant	50.0%	50.0%
untrained staff	5.6%	44.1%
Facilities that comply with the law (presence of a pharmacist)	61.1%	34.3%

Table 17: Prescriber profile in the public sector, PSA-HFS Level II, Ghana, 2008.

% Facilities where	doctor	nurse	trained health worker/health aide
The professional was present during the visit	75.0%	50.0%	2.8%
The most senior professional present	78%	19%	0%
The most senior professional attended RDU-related training within the previous year	77%		

Key findings on compliance with Human Resources Regulations

- A pharmacist was found in 61.1% and 34.3% of public dispensaries and private pharmacies respectively, suggesting that the law concerning this issue is not well followed in most facilities, and more so in the private sector.
- Pharmacy aide and pharmacy assistants were the most frequent dispenser found in both public and private sectors. Untrained staffs were more likely to dispense in the private sector (44% of surveyed facilities).
- The most frequent prescriber found in the public health care facilities was the physician (75%) and nurse (50%). Also the most senior prescriber found was the physician, 77% of which participated in rational use of medicines training in the previous year.

Conclusions and recommended interventions and/or next steps

The results of this preliminary analysis suggest that a mix of policies needs to be implemented to make medicines more accessible and used in a more rational way. Although further investigation is required to obtain a more in-depth understanding of the causes and consequences of the findings, the results of this survey provide broad directions for future research and action. It is therefore recommended that the following steps be taken to improve medicine access and use in Ghana:

- ❖ A price regulation is required to control the high mark ups on medicines to make them more affordable to consumers.
- ❖ Some gains have been made in improved procurement and availability but there is need to enhance procurement efficiency through improved storage and dispensing room conditions.
- ❖ There is need to step up rational use activities to reduce high antibiotic use and poor generic prescribing
- ❖ Attention must be given to proactive dissemination and consumer awareness of the dangers of irrational drug use.

Utilization of Survey findings

The results of this survey were disseminated to relevant stakeholders in the public and private sectors as well as research institutions at a one day workshop in Accra. The forum provided a good opportunity for participants to raise questions, comments and make suggestions on the way forward. The following were the key points raised by participants in relation to the survey findings.

Key Points raised

1. Most of the issues raised border on systems which should not be handled in isolation. There are problems with the healthcare system and it has to be looked at thoroughly.
2. The fall in the number of medicines available in the private sector is a healthy development and probably has to do with the requirements of the national health insurance scheme but there is need to ensure that fair prices are paid to the private sector to sustain its contribution to the schemes and for that matter improvement in access to medicines. There is thus the need to take a second look at reimbursement prices.
3. The problem of stock-out duration in the supply chin is very significant and has to be tackled while making sure that medicines are stored in right conditions to ensure that they maintain their good quality when dispensed or sold to the general public.
4. The high margin between local medicines prices and the International Reference Price is worrying and measures need to be put in place to address pricing. Taxes and duties of imported items should be looked at to help reduce the prices of medicines especially imported medicines. In countries where medicines are manufactured, prices are usually uniform so if the issue of local manufacture could be addressed in Ghana it will partly help solve the problems of high priced imported medicines in the country.
5. Quality has to do with both the products and the personnel. Although expired medicines were not reported, health personnel are not treating patients the way they should and not providing the needed drug information to patients.
6. There is a Standard Treatment Guidelines (STG), Essential Medicines List (EML) and National Drug Policy (NDP) available which are instruments to ensure rational prescribing. There is however, no Legislative Instrument to make sure that these instruments are adhered to. Policy makers should make it a point to put a Legislative Instrument (LI) in place to make sure that all rule and regulations are adhered to.

7. Many people have confidence in pharmacists so it is worrying that in most pharmacies and chemical shops the people manning the shops were not pharmacists or trained drug dispensers to ensure that appropriate patient information is given to clients.

Recommendations

The following recommendations were also made at the stakeholder dissemination workshop to share the results of this study.

1. There is need to improve patient education and customer care in general in our health facilities and dispensing outlets. The fist step towards this is to ensure that the rules and regulations that require a trained pharmacist or dispensary technician to be at the point of dispensing is enforced to make sure that pharmacies comply with the provision.
2. The private sector has to bear the full cost of all products that is made available to consumers and/or clients so there is the need to look at what goes into the costing of drugs.
3. The cost of medicines is still very high despite the NHIS so there is need to explore how to use the health insurance to maintain a fair price regime to consumers.

References

1) Bulletin of the World Health Organization 2008
2) CHIM/PPME-GHS: The Health Sector In Ghana; Facts And Figures, 2007
3) Fact Book on WHO Level I and Level II monitoring indicators
4) Ghana Statistical Service 2007-2009; http://www.statsghana.gov.gh/KeySocial.html (Date:17/08/09)
5) *Ghana Statistical Service (2008) :* Ghana Living Standards Survey Report of The Fifth Round (GLSS 5)
6) Harper Jonathan and Martha Gyansa-Lutterodt (2007) The viability of pharmaceutical manufacturing in Ghana to address priority endemic diseases in the West Africa sub-region Deutsche Gesellschaft
7) MoH Ghana Facts and Figures: NHIA summary statistics, http://www.moh-ghana.org/moh/facts_figures/default.asp: (12/09/09)
8) WHO/HAI (2004) MEDICINE PRICES IN GHANA,
9) http://www.afro.who.int/index.php?option=com_docman&task=doc...gid (30/11/2010)
10) WHO Operational package for assessing, monitoring and evaluating country pharmaceutical situations: Guide for coordinators and data collectors. WHO/TCM/2007.2.

Annexes 1: Level II Questionnaire. Not attached to this version.

Annex: 2: Top Twenty Causes of Outpatient Morbidity2006

Rank	Diseases	Number of Cases	% of Total
1	Malaria	3,861,348	37.83
2	Upper respiratory tract infection	632,755	6.2
3	Diarrhoeal Diseases	345,454	3.38
4	Skin Diseases	341,044	3.34
5	Hypertension	283,591	2.78
6	Home/Occupational Injuries	167,029	1.64
7	Acute Eye Infections	192,984	1.89
8	Pregnancy and Related Complications	136,958	1.34
9	Rheumatic and Joint Diseases	183,144	1.79
10	Anaemia	143,171	1.4
11	Intestinal Worms	130,071	1.27
12	Gynaecological Diseases	100,913	0.99
13	Pneumonia	91,491	0.9
14	Malaria in Pregnancy	86,730	0.85
15	Acute Ear Infection	89,163	0.87
16	Typhoid Fever	67,780	0.66
17	Road Traffic Injuries	64,646	0.63
18	Other Oral Conditions	52,073	0.51
19	Dental Caries	53,632	0.53
20	Chicken Pox	N/A	N/A
	All Other Diseases	2,696,156	26.41
	Total Cases	**10,208,310**	

Source: Facts and figures, GHS 2008

Annex 3: Top Ten Causes of Death All Ages in 2006

Rank	Cause of Death	Proportional Mortality Rate (%)
1	Malaria	13.4
2	HIV/AIDS related conditions	7.4
3	Anaemia	7.3
4	Cerebro Vascular Accidents	6.4
5	Pneumonia	6.2
6	Septicaemia	5.1
7	Hypertension	4.1
8	Cardiac diseases	4
9	Meningitis	2.3
10	Diarrhoeal diseases	2.3
	All other causes	41.5
	Total	**100**

Source: CHIM/PPME-GHS in GHS (2008) The Health Sector in Ghana, Facts and Figures 2007

Annex 4: Characteristics of the surveyed facilities, PSA-HFS Level II, Ghana, 2008

Region	Category of facility	No. of facilities	No. of outpatients interviewed
Region 1:	Public Hospital	4	**120**
Greater Accra	Public Health Center	2	**60**
	Mission/NGO Health Facilities	3	**90**
	Warehouse	1	**Not applicable**
	Private Health Facility	3	**90**
	Private Drug outlet	8	**240**
Region 2:	Public Hospital	5	**150**
Brong Ahafo	Public Health Center	1	**27**
	Mission/NGO Health Facilities	3	**90**
	Warehouse	1	**Not applicable**
	Private Health Facility	3	**90**
	Private Drug outlet	12	**352**
Region 3:	Public Hospital	4	**120**
Central	Public Health Center	2	**60**
	Mission/NGO Health Facilities	4	**120**
	Warehouse	1	**Not applicable**
	Private Health Facility	2	**60**
	Private Drug outlet	12	**360**
Region 4:	Public Hospital	4	**120**
Upper West	Public Health Center	2	**60**
	Mission/NGO Health Facilities	3	**120**
	Warehouse	1	**Not applicable**
	Private Health Facility	3	**90**
	Private Drug outlet	12	**357**
Region 5:	Public Hospital	5	**150**
Volta	Public Health Center	1	**30**
	Mission/NGO Health Facilities	3	**60**
	Warehouse	1	**Not applicable**
	Private Health Facility	3	**60**
	Private Drug outlet	12	**330**
Region 6:	Public Hospital	5	**150**
Western	Public Health Center	1	**10**
	Mission/NGO Health Facility	3	**72**
	Warehouse	1	**Not applicable**
	Private Health Facility	3	**67**
	Private Drug outlet	**12**	**350**

Annex 5: Characteristics of outpatients interviewed. , PSA-HFS Level II, Ghana, 2008.

Category of health facilities	Number of outpatients interviewed	% Female	Age %	
Public Hospitals	810	65.19	1) under 5 yrs.	**12.1**
			2) older children	**14.1**
			3) adults	**61.0**
			4) over 60 yrs	**12.8**
Public Health Centers	247	62.75	1) under 5 yrs.	**20.6**
			2) older children	**16.6**
			3) adults	**49.4**
			4) over 60 yrs	**13.4**
Mission Health Facilities	522	63.60	1) under 5 yrs.	**13.8**
			2) older children	**11.7**
			3) adults	**59.0**
			4) over 60 yrs	**15.2**
Private Health Facilities	457	62.58	1) under 5 yrs.	**19.26**
			2) older children	**18.38**
			3) adults	**54.70**
			4) over 60 yrs	**7.66**
Retail Drug Outlets	1989	50.18	1) under 5 yrs.	**5.63**
			2) older children	**13.83**
			3) adults	**73.20**
			4) over 60 yrs	**7.34**
Total	4025	57.12	1) under 5 yrs.	**10.46**
			2) older children	**14.29**
			3) adults	**65.34**
			4) over 60 yrs	**9.91**