Policy Note:
The Pharmaceutical Sector in Ghana

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Executive Summary

Main pharmaceutical policy goals in Ghana are access to essential medicines for everybody, quality assurance for all drugs on the market, a functioning and efficient supply chain as well as rational use of medicines by professionals and patients. There is also a commitment to strengthen the domestic pharmaceutical industry, outlined under health industry in the national health policy.

Key challenges are limited capacity to enforce regulation, high levels of provider indebtedness due to poor management and flaws in the payment system, a weak public sector supply chain that is increasingly being substituted by the private sector and a fragmented national private sector (manufacturing and distribution), lacking capital to make necessary investments into quality improvements.

The National Health Insurance System has significantly improved access to medicines for insured patients, measured in increased utilization of facilities and rapidly growing turnover of revolving drug funds. The risk is now that non-rational prescribing and fraud lead to a growing medicine bill that threatens financial sustainability of NHIS. On the other hand, NHIA has the resources and purchasing power to influence provider behavior as well as the market in terms of quality and price.

The incoming government will have to address the challenge of coordinating the various actors and ensure that they work together to develop, review and implement appropriate policies to address the above challenges.

Policy options presented for key areas include limited but efficient regulatory measures with focus on high risk products, solutions to fix the supply chain with different degrees of private sector participation, thoughts on a sustainable industrial policy for the sector, solutions to limit NHIS' drug expenditure and measures to improve rational use of drugs.

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Glossary of Terms

ACT	Artemisinin Combination Treatment for malaria
AMFm	Affordable Medicines Facility - malaria
CDC	Catholic Drug Center
CHAG	Christian Health Association of Ghana
CIF	Incoterm for Carriage, Insurance, Freight (paid by seller)
CMS	Central Medical Store
DFID	The British development agency
DRG	Diagnosis related groups
EML	Essential Medicines List
FDB	Food and Drugs Board (regulatory agency)
GFATM	Global Fund for Aids, TB and Malaria
Ghc	New Ghana Cedi (one Ghc equals about 0.80 USD)
GHS	Ghana Health Service (under MoH)
GMP	Good Manufacturing Practices
GNDP	Ghana National Drug Program (under MoH)
GPHF	Global Pharma Health Fund (German industry-funded NGO that developed the Minilab)
HAI	Health Action International (an NGO)
HAN	Health Access Network
ICB	International Competitive Bidding
IDA	IDA Foundation – Dutch procurement agency (not for profit)
IGF	Internally Generated Funds
INN	International Non-proprietary Name
ISO	International Organization for Standardization
ITN	Insecticide Treated Net
LIB	Limited International Bidding
LLIN	Long-Lasting Insecticide Treated Net
MeTA	Medicines Transparency Alliance (a DFID initiative)
MOH	Ministry of Health
MSH	Management Sciences for Health
NACP	National Aids Control Program
NCB	National Competitive Bidding
NGO	Non-governmental organization
NHIA	National Health Insurance Authority
NHIL	National Health Insurance Levy – 2.5 percentage points on top of VAT
NHIS	National Health Insurance Scheme
OOP	Out of pocket
OTC	Over the counter
PEPFAR	President's Emergency Program for AIDS Relief (USA)
PETS	Public Expenditure Tracking Survey
PMAG	Pharmaceutical Manufacturers Organization of Ghana
PMI	President's Malaria Initiative (USA)
PSGH	Pharmaceutical Association of Ghana
QAMSA	Quality of Anti-malaria Medicines in Sub-Saharan Africa – multi-country study
QCL	(Drug) Quality Control Lab
RMS	Regional Medical Store
SDP	Service Delivery Point
STG	Standard Treatment Guidelines issued by GNDP
USD	US Dollar
USP DQI	United States Pharmacopeia, Drug Quality Initiative
VAT	Value Added Tax
WB	World Bank
WHO	World Health Organization

Introduction

In February 2008, the Ghanaian Ministry of Health adopted a five year program under the Theme "Creating Wealth Through Health". The program sets clear goals and timelines for achievement. For the pharmaceutical sector, the main program focus areas are access to medicines, improved supply management systems, quality assurance and rational use. These objectives point at issues prevalent in all Sub-Saharan African countries. However, the emergence of health insurance as a major financing mechanism for medicines should put Ghana into a favorable position compared to other countries to implement the key objectives outlined in the programme of work 2007-2011.

Traditional policy makers such as Ministries of Health in Sub-Saharan Africa have limited resources and usually focus on service delivery through government owned or contracted outlets. Limitations in the availability or quality of government sponsored services drive large parts of the population into buying health services for cash and outside the regulatory reach of the public administration. In Ghana, the introduction of health insurance enabled pooling of this purchasing power to the extent that has reaches critical mass as a powerful driver of change in the system. About half of the population has an insurance card, and about 40% of the funds paid out by health insurance are for pharmaceuticals[2]. This explains why secure access to affordable, safe and effective drugs for their membership is high on the political agenda for those who represent health insurance in the Ghanaian public. Compared to a ministerial bureaucracy with limited enforcement capacity, a health insurance fund can use its purchasing power to influence providers, which usually is more effective than regulation and public sector management alone.

The impact of the modified power balance can already be felt in recent discussions between Ghana Health Service and other units of the MOH regarding a liberalization of pharmaceutical supply guidelines currently requiring GHS facilities to procure through the CMS-RMS system (although exceptions are possible and widely used already). Influence of NHIA policy actions can also be felt in drug pricing decisions and an increasing awareness of drug quality issues reflected in intensified monitoring activities by the Food and Drugs Board. In the longer term, there is potential for Ghana to "graduate" from the state of chronic dysfunction of a publicly dominated pharmaceutical sector typical for many low-income countries and reach a state in which contracting between health insurance and public and/or private providers aligns incentives and ensures supply with quality essential drugs for all insured patients. The main role of the public sector then would be to provide guidance in the form of a comprehensive policy framework and ensure an adequate level of regulatory oversight.

The purpose of this Policy Note is to provide a compact overview of the situation, trends and opportunities in the pharmaceutical sector in Ghana as relevant to the strategic objectives in the five year program of work. It summarizes data from a number of recent studies and reports that were done by a range of partners inside and outside the country as well as discussions with key stakeholders in the sector. The intent is to give decision makers up-to-date background information and provide some suggestions for specific policy initiatives designed to achieve the work program objectives, with a particular focus on the role health insurance can play to stabilize and improve service delivery, increase access to quality medicines and promote rational use.

[2] NHIA data show an increase from 39% in 2007 to 41% in 2008

Policy, Legal and Regulatory Framework for the Pharmaceutical Sector

Drug Policy for Ghana is defined in the Ghana National Drug Policy (second edition from 2004), which is an element of the overall Ghana National Health Policy. A more recent document that sets specific goals for health and also drug policy is the Five Year Programme of Work 2007-2011, issued by the MOH in February 2008. It defines drug policy objectives in the areas of access to medicines, improved supply management systems, drug quality assurance and rational use of medicines. The Ghana National Drugs Program is an entity within the MOH; its role is to define medicines policy and coordinate policy implementations within the pharmaceutical sector both public and private.
As a guidance document for the use of drugs by healthcare professionals, Standard Treatment Guidelines (STG) are issued by the GNDP based on a work process that involves the Ghanaian medical and pharmaceutical professionals as well as WHO. The last issue was in 2004, a review is currently underway.

Based on the STG, the Essential Medicines List (EML, last version from 2004) is issued. The EML serves as basis for public procurement and was also used in defining the Medicines List of the National Health Insurance Authority (NHIA, last version January 2008), although the latter is broader than the EML. The NHIA Medicines List defines which drugs are reimbursable under the NHIS and at what price they are reimbursed. The reimbursement price was defined by market research: the median prices found in the market for drugs on the NHIA Medicines List were set as maximum reimbursement prices. However, the NHIS Medicines reimbursable list is not part of the Disease Related Diagnosis (DRG) currently implemented by the NHIC

Ghana's Public Procurement of pharmaceuticals is done at tier levels as defined by public procurement law Act 663. The law allows for decentralization, but the trade-off is loss of economics of scale since service delivery points are permitted to procure their goods at the thresholds defined within Act 663. By administrative guidelines, a non-availability form obtained at the Central Medical stores is required for Budget Management Centers to shop for their needs from the private sector. However, this requirement is hardly observed in practice since the Central Medical Stores are operating at 50% capacity only due to high indebtedness. Distribution to regional medical stores has also been severely challenged. A procurement assessment report 2007 recalls inability of other procurement entities procuring for the health sector without considering logistics for distribution and dumping their products at the CMS.

The overall legal framework for the pharmaceutical sector is set by the Food and Drugs Law from 1992, amended by Act 523 in 1996. It defines the role of the Food and Drugs Board as separate entity under control of the MOH, responsible for regulating the sector.

Regulations determine the details of the application of the law. FDB takes the lead in drafting regulation relevant to its tasks and ensures adequate stakeholder input. The final draft is then issued by the MOH and has to be approved in parliament.

Specific tasks of the FDB's Drugs Division are the control of manufacture, import, export, distribution, use and advertisement of drugs. Food and Drugs Board regional offices are based in six Regions. There are also offices at the only official entry points for drugs into Ghana – Tema Harbour and Kotoka Airport. The FDB's investment and salary budget is funded by the MOH, while Internally Generated Funds (IGF - fees paid by applicants for regulatory actions) are paying for operational costs. Over the last years, the share of the IGF has increased relative to the MOH

funding. FDB has a total permanent staff of about 235, of which 75% have a technical or scientific background. The central inspection department for medicines has a staff of 15.

So far in 2008 FDB inspectors inspected 23 overseas companies (of which 3 were rejected), 22 local companies, 43 manufacturing plants for herbal products and 19 facilities that make cosmetics, devices or household chemicals.

FDB collaborates with WHO in various ways to increase capacity and stay on top of the technological development. Three FDB experts are involved in international inspections under the framework of the WHO Prequalification Program. An assessment of FDB by WHO based on the certification scheme for regulatory agencies has been requested. There is also a collaboration with USAID (with technical assistance provided by Unites States Pharmacopeia), aiming at building capacity to monitor the market for illicit and sub-standard drugs.

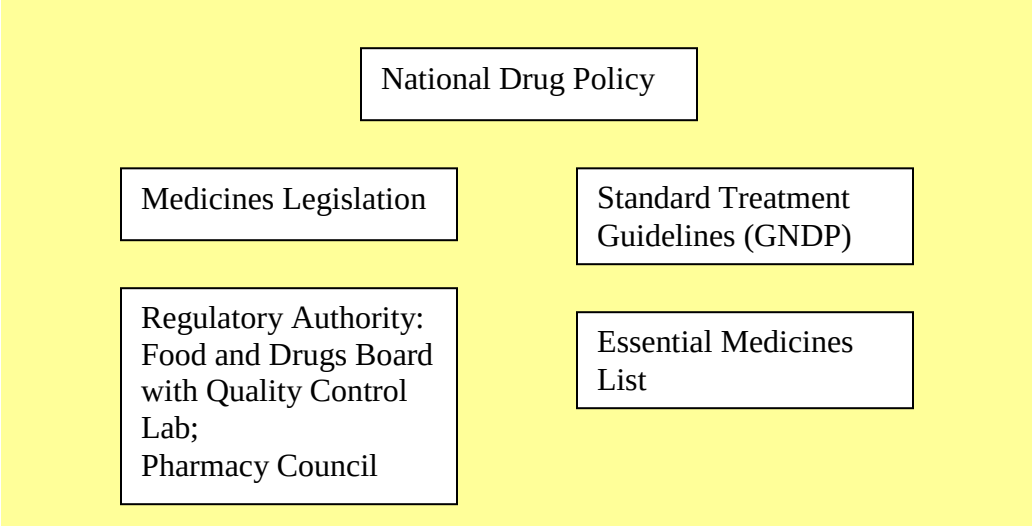
FDB is managing a pharmacovigilance program with a network of institutional contact persons in all major facilities as well as at the domestic drug manufacturers. A standard reporting form for adverse events is provided for use by these contact persons. A technical committee at the FDB hosted National Pharmacovigilance Center reviews reports on potential drugs side effects and makes recommendations for regulatory action. One major achievement of this program which was done in collaboration with the Centre for Tropical Clinical Pharmacology and Therapeutics of the University of Ghana Medical School, was the identification of side effects of a specific anti-malarial combination therapy, probably due to a formulation that led to higher than tolerated blood levels of one active ingredient in some patients. These findings led to the withdrawal of this drug from the Ghanaian market. Currently ongoing is a cohort event monitoring program covering 10,000 patients using ACTs for malaria, in collaboration with the National Malaria Program.

The FDB also runs the official Drug Quality Control Laboratory that is in charge of testing quality samples obtained from manufacturers, importers, distributors or other sources. This QCL has a physico-chemical section, a microbiology section and a medical devices testing section. It participates in the proficiency testing for drug quality control labs organized by WHO and passed the latest round. The QCL is expected to move into a new building in early 2009, which would improve working conditions and allow the lab to seek WHO Prequalification (an initial pre-inspection was already done but WHO was not willing to do the full inspection before the lab is in its new building). In connection with the move, an upgrade of some equipment is planned as well as well as an extension to include a pharmaceutical microbiology unit.

The FDB is also working on an improvement of its public website in an effort to strengthen communication with the general public to increase transparency and improve governance.

The practice of pharmacy is regulated by the Pharmacy Council through Pharmacy Act 489. The Council has been mandated to license pharmacists and Chemical Sellers. All pharmacists have to be members of a professional society, the Pharmaceutical Association of Ghana (PSGH). The PSGH is responsible for assuring professional ethics and standards and occupies three of the nine Board seats at the Pharmacy Council.

Figure 1: Framework for pharmaceutical regulation in Ghana



Main Institutions and Stakeholders

Table 1 lists the main actors and influencers in the area of pharmaceutical policy and public sector drug management

MOH/GNDP	Define drug policy and coordinate implementation of the policies and programs of the pharmaceutical sector; monitor certain performance parameters such as prices, rational use; issue Standard Treatment Guidelines and Essential Medicines List
FDB	Regulates pharmaceutical market, manufacturing, import, export, advertising, clinical trials
NHIA	Largest payer for drugs in public and private sector; influences prices through regulation (maximum reimbursement) and prescription practices through claims management
Pharmacy Council	Regulatory body that licenses retail pharmacies and chemical sellers; governed by a board on which the Pharmaceutical Society of Ghana has three seats out of nine
Pharmaceutical Society of Ghana	Professional society with mandatory membership for all Ghanaian pharmacists; its role is to ensure adherence to professional standards
MOH Procurement Department	Procures drugs for the public sector supply system (CMS) including some (but not all) donor funded drugs.
Central Medical Stores and Regional Medical Stores	Supply drugs to public and NGO facilities; RMS can organize their own procurements
National Programs: Malaria, TB and AIDS	Link with international donors for vertical malaria, TB and AIDS programs. Forecasting and planning for treatment campaigns; coordination of supply chain management and quality assurance
Universities	Support policy makers through research, for example studying drug prices, quality and usage; pharmaceutical experts participate

	in commissions supporting GNDP in updating drug lists, treatment guidelines etc
Teaching hospitals, GHS providers, CHAG providers	Some health facilities organize their own procurement and define formularies and policies that may deviate from the GNDP endorsed policies
Catholic Drug Service	Limited pooled procurement of drugs for CHAG facilities
Health Access Network	Pooled procurement of some donor funded drugs for mission hospitals; working on setting up a larger procurement pool. Research on important sector parameters (prices, availability, usage) for NHIA, GNDP; coordinating civil society participation in MeTA
PMAG	Pharmaceutical Manufacturers Association of Ghana; main interest is to improve business perspectives of local manufacturers
Local manufacturers	6 major manufacturers in terms of national significance and several smaller ones that are only serving the OTC market. Most of the major manufacturers operate their own distribution system; one is making APIs as well
Importers and wholesalers	200-300 importers and wholesalers, of which only around 20 are operating on a national or multi-regional scale
Pharmacists and Chemical Sellers	1600 licensed pharmacies, >80% concentrated in Greater Accra and Ashanti region; community-practice pharmacists have their own association. Over 10000 licensed chemical sellers all over Ghana
MeTA	DFID funded initiative that is open to all stakeholders; goal is to increase transparency of the sector in terms of prices, quality, access, utilization. Launched in Ghana in November 2008, currently developing detailed work program
WHO	Country Advisor (National Pharmaceutical Officer) provides technical assistance and advice for policy makers at the MOH and Agencies in coordination with experts from WHO Regional Office and Headquarters
USAID/ PMI	US bilateral program providing prevention and treatment for malaria. PMI operates its own procurement and supply system for malaria drugs through private contractors; the warehouse is located at the CMS in Tema
USP DQI	Drug Quality Initiative of the United States Pharmacopeia; supporting FDB in setting up monitoring program for quality of malaria drugs
Other Bilateral Donors	Some bilateral donors are engaged in the pharmaceutical sector either through local representatives (Dutch Embassy, also representing DFID) or international organizations (UNIDO working with the domestic industry through a GTZ funded project)
World Bank	Involved in the Treatment Acceleration Program (TAP) for HIV/AIDS, supports the procurement systems on behalf of Development Partners and currently supports NHIA's management system. Engaged in policy dialogue with various stakeholders in the pharmaceutical sector

Market Overview - Supply Side: What is on the market? Who is offering? At what price? What quality? To what extent can demand be met?

Overall market data

The statistics on the Ghanaian pharmaceutical market is quite weak. Unlike in larger markets that have market research companies with established data collection systems at critical points of sale, the data that are available in the literature[1] are based on aggregate estimates from various market participants. In 2005, the total market was estimated at 250 million USD at retail price level. Assuming a growth rate of 6-8%[2] (drug expenditure tends to grow above overall economic growth) the total market size could be in the 300 million USD range in 2008. Another factor driving growth has been the introduction of health insurance, measurably increasing utilization of healthcare facilities: more patients mean more prescriptions. The PMAG is currently undertaking a survey among its members to get a better estimate of the size of the market – supported by UNIDO. The sales data of manufacturers and distributors are not published, but a market insider estimates that the largest players reach sales volumes in the range of > 30 million USD.

The estimate of the OTC share of the total market is about 30% in value[3] (significantly higher in volume but OCT drugs tend to be cheaper than prescription drugs. Patients' first point of call is the chemical sellers/pharmacies where there are no payments for consultation; patients tend to prefer self-medication over seeking professional advice from doctors at the onset of a disease, which can be seen as rational behavior in places where access to healthcare facilities and cash to pay for services are limited. Health insurance is changing this pattern and increases the rate at which patients seek initial treatment in a health facility instead of self-medicating. Malaria drugs, making up a very significant share of all treatments dispensed in Ghana, are available officially without prescription, meaning they can also legally be sold by the about 10,000 licensed chemical seller. But anecdotal evidence exists that prescription drugs are also sold over the counter, as systems in place to enforce prescriptions are weak.

Table 2 provides a market overview for 2008 (based on estimates of market participants, no solid data available); in million USD

Total market at retail value	300
Prescription drugs total (70% of total)	210
Growth rate in %	6-8%
Retail sales of domestic manufacturers (30%)	90

Most of the drugs used in Ghana are generics/branded generics. But there is a significant market for originator brands mainly among wealthier patients – reflected in prescribing habits of physicians in teaching hospitals and private practice. Branded originator drugs have a reputation of better quality and higher "potency" – a widespread perception among professionals and patients in developing countries in which trust in regulatory systems is lacking. Major multinational firms have offices in Ghana and they market and distribute their leading brands in collaboration with local partners but do not have manufacturing plants.

In summary, the Ghanaian market is becoming increasingly attractive for suppliers, given the overall economic growth and increased availability of financing through NHIS. As in many African countries, Indian and Chinese firms dominate the import business with their branded generics. The domestic industry has an estimated market share of around 30%[4], which means 70% are imported. Some of the domestic market share is protected – import of certain generics that are domestically manufactured is not permitted.

Illicit market and drug quality

According to officials at the FDB and confirmed by private pharmacists, Ghana seems to have less problems with the illicit drug market that is rampant in other countries in the region, exposing in particular poor people to the risk of buying counterfeit or substandard drugs from licensed or unlicensed sellers. This does not mean that such a market does not exist in Ghana. According to FDB and other local sources, it is a continuous challenge to suppress illegal selling of prescription drugs in unlicensed outlets as well as selling of unregistered drugs, smuggled into the country, in pharmacies and chemical seller's shops. Estimates place the share of illegally circulating drugs at 10-20% but this could be higher since there are no confirmatory data, which is quite disturbing. It is plausible to assume that among those drugs are counterfeits as well. Sampling of malaria drugs in different parts of the country revealed a significant number of different brands available in pharmacies and drugstores, several of which were not registered in Ghana[7].

The FDB is making an effort to ensure quality of the drugs that are legally marketed, for example through inspections of manufacturing facilities even in countries of origin and through occasional sampling and testing studies done mostly for malaria drugs. A study from 2005 showed that there were significant problems with certain physical specifications of ACTs (dissolution of the Amodiaquine component)[5], demonstrating deficits in manufacturing standards and/or distribution/storage conditions. A new, seven-country study led by WHO (QAMSA) is underway and results are expected shortly. According to initial, unconfirmed information[6] based on screening tests done with the GPHF Minilab, the percentage of malaria drugs that failed this first line of tests is significantly lower than it was in previous studies. With support of the President's Malaria Initiative (PMI) and technical assistance from USP DQI, five sentinel sites at FDB locations will be equipped with GPHF Minilabs to provide continuous monitoring of malaria drug quality. Training of staff is planned for early 2009; tests will start in the second quarter 2009 according to schedule[7].

Overall, it is clear that in a resource-constraint market environment quality problems will be more prevalent, even if one assumes that all players have good intentions, than in developed markets that spend far more on drugs and on their regulatory systems. The way the FDB is trying to improve standards among domestic manufacturers is by introducing grades (A to E, with A standing for full adherence) for achieving different levels of GMP compliance and raising the requirements over time to give manufacturers a chance to make necessary investments. By 2011, all manufacturers are expected to meet critical GMP requirements (passing at least Grade B). The FDB has set up an industry support unit and provides GMP training for manufacturers to assist them in meeting stricter requirements. Another factor that serves as an incentive to increase quality is the WHO prequalification system that sets the bar for participation in major international tenders for drugs to treat priority diseases. One Ghanaian manufacturer is currently seeking technical assistance to reach WHO prequalification and be able to participate in international tender business. According to an informed source within the FDB, up to four Ghanaian manufacturers may have the capacity to achieve WHO Prequalification in the foreseeable future.

Private Sector Manufacturing and Distribution

In terms of quantity (value and most likely also units) the private sector is dominant in the supply chain for pharmaceuticals in Ghana. Data show that even public buyers in the periphery are increasingly bypassing the Central Medical Stores by procuring directly from private providers.

The Ghanaian association of pharmaceutical manufacturers has 38 members[8]; 11 of them are active manufacturers, of which 6 can be considered major producers in the national context (Ayrton Drugs, Danadams Ltd, Ernest Chemists Ltd, LaGray Chemical Company, Kinapharma, Phyto Riker). Most of the major manufacturers have an integrated distribution business with fixed distribution points in several regions and mobile vans that make scheduled tours to deliver drugs to more remote locations. Some others are mainly wholesalers/distributors with a limited and sometimes specialized manufacturing business (example Kama Group, one of the leading wholesalers that is also operating a manufacturing plant with a focus on syrups).

Capacity utilization is estimated at 50% on average[4]. Domestic manufacturers are facing a number of conditions that limit their profitability and ability to expand:

- Small scale, limited size of the domestic market
- Limited availability of qualified personnel
- Lack of funding for and access to professional training
- Taxes on imported raw materials (although certain materials are tax exempt)
- High transaction costs and time lost for bureaucratic procedures
- Limited access to capital – local banks charge interest rates up to 30%
- High prices for utilities and unreliable supply of water and electricity
- Limited transport infrastructure and administrative barriers making export to neighboring countries difficult
- Land acquisition is difficult due to a mix between traditional and modern land ownership concepts
- Raw materials need to be imported and small African manufacturers don't have bargaining power to get good prices or ensure speedy delivery, meaning they may have to hold relatively large stocks. They also lack capacity to assess manufacturing standards of the API producers
- Participation in international tender business would require quality standards that domestic manufacturers cannot meet without significant investment
- Malaria portfolio threatened by the AMFm (see box on page 20)

In addition to the manufacturers with integrated distribution businesses or national distributors with integrated manufacturing, there are about 60 importers that sell to local distributors or run their own distribution network. Another 150 companies are licensed as pure national or regional wholesalers, many of them covering only a small segment of the market. A retail pharmacy may for example act as well as a wholesaler providing drugs to a network of local chemical sellers or a local hospital. The total number of businesses active in drug import and distribution is between 200 and 300, which points to fragmentation and low efficiencies in private sector distribution. Attempts of a larger West African drug distribution company with more advanced management systems (Gokal Laborex Ltd, affiliated with Eurapharma, which belongs to a large French industrial conglomerate) to set up shop in Ghana have met resistance from local players, who appear to be aware that their fragmented business model is not very competitive in a global market. A good description of the private (and public) sector supply chain can be found in a recent report sponsored by Rockefeller Foundation[9].

At the retail level there are currently around 1600 licensed pharmacies and 10000 licensed chemical sellers all over Ghana. Chemical sellers are limited by law to selling OTC drugs (which includes drugs against malaria such as ACTs that were granted OTC status in recognition of the fact that malaria is hyper-endemic and home-based care is recommended by the national treatment policies). By law, new pharmacies or chemical sellers need to respect a minimum distance to existing businesses, but it is not clear whether this rule is enforced consistently. The

density of retail businesses is very high in urban areas such (Greater Accra and Ashanti Region account for > 80% of all drug retail outlets in Ghana), while citizens in rural areas may have to travel some distance to find a licensed pharmacy/chemical shop. The Pharmaceutical Society together with the Pharmacy Council are working on a model that would make it mandatory for pharmacy graduates to serve in a rural community first before they can set up a shop in more affluent areas. However, this would require funding for investment into local shops and supplies in addition to the pharmacist's salary. Without an ongoing subsidy such small shops in poor rural areas may not be financially viable.

In addition to licensed pharmacists, doctors and midwives in private practice are also selling drugs to patients. Self-dispensing doctors have been associated with over-prescribing, given the financial incentives: the current gross margin for a branded ACT can be 2-4 GHC per prescription – making drug sales a significant source of income for these dispensing doctors.

The Public Sector Supply Chain

Drugs are distributed through a public sector system (described and assessed in a recent report by the MOH[10]) and several private sector channels. These channels intersect in various ways and on all levels as explained below. Public sector and major donors use the CMS/RMS system that has not changed much over the years. It is being fed mainly by deliveries of drugs procured through the Procurement Unit of the MOH or from the supplies for disease-specific programs brought in through logistics contractors hired for example by PMI. These donors tend to who work with proprietary systems for procurement but make partial use of the existing public infrastructure for distribution, even though they may request a separate space in the warehouse and separate management system for their programs. The public warehouse and logistics management is still paper based without an integrated logistics management system. There is no logistics support from the donors who use CMS/RMS infrastructure for distribution for vertical programs.

Central procurement for the CMS is done on a yearly (for some items semiannual) basis by the MOH Procurement Unit; deliveries to the CMS tend to come in large amounts at a time and clients such as the RMS need to travel to the CMS in Accra in order to pick up their deliveries. Quantification is done on all levels mainly based on consumption data versus stock on hand; cash shortages limit procurement volumes and lead to purchasing of smaller increments more frequently. The main procurement methods used at the central level are ICB, LIB and NCB. On RMS level, NCB and Shopping are used while SDPs don't have procurement capacity and use mainly shopping to buy the drugs that are not available at the nearest RMS[10]. At the RMS and SDP level, a high percentage of purchases (in several cases over 80%) are made directly from the private sector rather than from the CMS or RMS[10,11]. Officially, private sector purchases are only possible after the entity that experiences the stock-out has received a notice of unavailability from the next higher level (RMS from CMS for example). In practice, the fact that a drug that was ordered has not been delivered is used in many cases as justification to purchase it from the private sector.

Based on these data, one can say that the public sector supply chain in Ghana is not sufficient for supplying all the drugs and related commodities that are needed at the service delivery points. On the other hand, the flexibility of the system prevents major stock-outs because all gaps can quickly be filled by the private sector as long as cash is available. In early 2008, availability rates at public facilities were between 80% in urban areas and 40% in rural areas[17] for a number of tracer drugs (on average), which is an improvement over 2004 when the last survey was done[16]. In 2004, availability rates in public pharmacies for a subset of essential drugs including for example ampicillin, hydrochlorothiazide, atenolol and glibenclamide were only between 15 and

40%. A stock-out in a public facility does not necessarily mean that the patient does not get the prescribed drugs; in urban areas patients may have the option to get drugs from private pharmacies that have better inventory management and not necessarily higher prices than the public sector. The situation is different in the rural areas, where the public facility may be the only potential source for medicines in reach of the patient.

Financing and flow of funds in the public sector supply chain have been a problem for quite some time. Originally the system was set up as revolving funds on each level. Over time, these funds tend to run out of money due to leakage, forecasting problems with partial oversupplies of drugs that cannot be sold, losses due to storage conditions, unforeseen financing costs, delayed payments from insurance schemes etc. Increasing indebtedness leads to creative problem solving behavior among managers, who may decide to raise sales prices over the officially permitted levels in order to stay afloat. The situation has been described by some observers as "crippling levels of indebtedness" in the entire public sector supply system. Public entities cannot take each other to court, therefore it appears that arrears are just carried on and for example facilities that owe large amounts to the CMS stop buying there because they know they would have to pay down their debt first before they would receive additional supplies.

In order to understand the reality on the ground and its policy implications better, the following is a list of standard criteria applied by managers of peripheral distribution centers that have to make decisions on budget allocation, procurement and pricing of drugs:

- Price
- Availability and delivery lead time
- Access to funds and payment terms
- Quality (based on inspection. reputation and perception; only in a few cases there will be testing facilities such as GPHF Minilab available)
- Logistics costs (time and expenses for a trip to the next distribution center versus delivery to the doorstep, storage costs and risk of loss due to expiration)
- Selection – local physicians may prescribe drugs that are not on the EML and therefore not procured by the CMS

Given all these criteria, it is easy to understand that managers of hospital pharmacies, RMSs or SDPs turn to the private sector in many cases although prices tend to be higher. Many institutions are short of cash and therefore cannot buy significant amounts of drugs at a time. Private sector wholesalers and manufacturers with integrated distribution operations offer the convenience of delivery and allow the buyer to purchase smaller amounts more often, matching the cash flow pattern better than the once-a-year purchasing cycle in the public supply chain.

All the factors mentioned above are sufficient to explain why the public sector supply chain in Ghana is already heavily dependent on the supplies of a more flexible private sector, just by assuming that all managers of RMSs and SDPs are honest individuals acting within their framework of rules, options and incentives. If one adds in the potential element of temptation and personal greed, there are of course possibilities for rent seeking behaviors for anyone who makes buying decisions on behalf of health institutions. A borderline case would be if a supplier offers bonus goods instead of lower prices - the facility for example would pay for 80 packs and receive 100 - and the 100 packs then be sold to patients for the full price instead of passing on the discount. The proceeds then are shared as a cash bonus among the staff. In the private sector such behavior would be seen as acceptable, in the public sector it is at least questionable.

A clear case of corrupt behavior would be if a decision maker on the public side demands or accepts a financial kickback from the supplier or a kickback in form of a gift or free service. Every decision point in procurement creates a potential entry point for corruption. The solution is not to centralize all procurement (which can create the problem of high level corruption with much larger sums involved) but to increase transparency of prices paid decentrally or to negotiate framework contracts in which price ranges and terms are fixed for all participants in a national or regional purchasing cooperative.

The problems with the public sector supply chain have led to a number of initiatives, such as a push from the GHS providers (supported by NHIA) to open up the market and let them freely chose where to buy. If GHS facilities would purchase together and negotiate framework contracts, they could get attractive prices and better service than they have today. Suggestions were made to introduce better customer service in the CMS/RMS system with scheduled supplies[12] – but so far not adopted. According to the CMS management, plans exist for introducing a computerized logistics management system but implementation has been slow..

Special Role of the Teaching Hospitals

Teaching hospitals are independent in their procurement and factually also in their drug policy. Korle Bu as the biggest of the teaching hospitals procured drugs worth close to 2 million USD in 2007 for dispensing through the hospital pharmacy. Drug selection for procurement is under control of a Drugs and Therapeutics Committee. 70% is procured from the private sector, the rest from the CMS. Retail margins are kept at 10-15%, giving Korle Bu a reputation of a fairly cheap source of quality drugs for patients. The downside is that Korle Bu charges NHIS members cash for medicines although it accepts insured patients for other services. Insured patients have the option to obtain drugs for free at private pharmacies close to the hospital, which have contracts with regional NHIS schemes. To fulfill the obligation of providing emergency care without discriminating against the poor, inpatients are credited the costs of the first three days of drug treatment. As some of these patients are not able to pay their debt after discharge, the pharmacy revolving drug fund runs a deficit and has arrears with suppliers. In addition to the public pharmacy, Korle Bu runs its own private pharmacy that carries a range of higher priced imported brands and is apparently very profitable. To some extent, profits from this pharmacy can be used to fill financing gaps in the public pharmacy.

Overall, Korle Bu doctors write 2000 prescription per day, making this hospital probably the single largest provider in terms of prescription volume in Ghana. Unfortunately, earlier efforts to ensure adherence to rational use criteria could not be sustained, although the central pharmacy is still monitoring prescription habits in the outpatient clinic and provides feedback to physicians. In the inpatient setting, consultants (the highest ranking specialists) tend to prescribe according to their own preference, which in many cases will mean that expensive originator drugs are preferred. Korle Bu has its own drug formulary, which is more extensive than the EML or the NHIA list. However, it appears that there is no mechanism in place to ensure that all departments adhere to this formulary. Given its role as a teaching facility, there is a risk that the next generation of physicians acquires prescribing practices that are not necessarily rational from a public health and cost perspective. On the positive side, the pharmacy is collecting a lot of data on prescribing habits, which could be used for evaluation purposes and to make a new effort to ensure adherence to principles of evidence based medicine.

The Drug Supply Chain of the Faith-Based Health Service Providers (CHAG)

The Christian Health Association of Ghana (CHAG) runs a network of 144 hospitals and health centers, predominantly located in rural areas and serving an estimated 35-40% of the Ghanaian population[13]. CHAG receives between 45 and 60% of its funding from the Ghanaian government budget and collaborates with GHS in health policy planning and implementation, but is otherwise autonomous in its decision making. In 2003 CHAG had implemented a pooled procurement system designed by MSH through the Catholic Drug Center (CDC) in Accra, with tendering for high volume drugs and direct deliveries from suppliers to five peripheral distribution centers in different parts of Ghana. These centers were equipped with GPHF Minilabs and able to test drugs on arrival in order to assure quality. The promising model failed unfortunately after about two years as payment terms proved to be too tight for the purchasers[14]. Hospitals and health centers managing drug purchases on the basis of revolving funds are collecting these funds by selling drugs to patients and do not usually have cash reserves to pay the bill upfront. Unfortunately there was no way to come up with bridge financing to cover the gap between delivery and recovery of the funds from end users, so that suppliers refused to renew the contracts. The volume of purchases done by CDC dropped from close to a million New Cedi in 2003/4 to about 150,000 New Cedi in 2007. Currently CDC operates on the basis of pre-paid pooled purchasing with an average 10% volume discount, half of which is being passed on the facilities. The bulk of supplies used in CHAG facilities are purchased decentrally either through the public supply chain or directly from private manufacturers and wholesalers –similar to the situation in Ghana Health Service facilities. More recently, Health Action Network (HAN - a NGO that supports the mission sector but works also with WHO, the MOH and NHIA) set up a pooled procurement system for about 15 mission hospitals. Funds come from a Dutch NGO and drugs are procured mainly from IDA Foundation. Drug availability in CHAG hospitals is also monitored by HAN; performance varies significantly between facilities whereby access to cash and proper inventory management seem to be the main parameters influencing drug availability.

In summary, it appears that the Ghanaian market is supplied with sufficient amounts of essential and non-essential drugs, the limit and reason for continuing stock-out problems being availability of funding (long term and cash at hand), insufficient planning and lack of professional supply chain management skills mainly at the periphery. Performance and flexibility problems in the public supply chain are partially compensated by contracting with private providers on all levels of this chain, from the CMS down to the facilities that find ways to order directly from a private manufacturer or wholesaler, getting delivery to the facility sometimes even at lower prices than at the public regional medical store (the RMS may buy from the same source but has to add a margin in order to cover overheads). This model may be sub-optimal from an economic viewpoint (purchases are not pooled yet) and it raises questions regarding the quality of drugs purchased form the private sector, as neither buyers nor the FDB have the capacity to enforce quality controls at all levels of the market. But experience in Ghana and elsewhere make it questionable whether reforms of and more investment into the public supply chain would reverse the situation to the extent that it can fulfill all demands of its public sector clients.

Prices of Essential Medicines in Ghana

Price Components

There is no effective enforcement of existing regulation on public sector margins and little reliable information about margins and mark-ups at different levels in the private supply chain. According to a paper from 2005[15], typical profit margins for manufacturers are in the range of 10-40%; wholesalers add another 10-20% and average retail margins are 20-50%. But there is also

anecdotal evidence that in some cases margins in particular at retail level can be much higher, up to several hundred percent. Margins in the public sector tended to be lower than in the private sector, but the picture is inconsistent and it appears that public sector providers are increasingly managing their pharmacies for profit and benchmark their retail prices against the NHIA Medicines List's reimbursement levels or the local private competition, rather than applying a consistent margin on top of the acquisition costs they have to pay. A recent MOH/GHS study found that real margins charged by RMSs and SDPs are more in the range of 30-50% that the officially permitted 10-15% [10]

The following table shows price components that are applied at manufacturer/importer level before wholesale and retail margins are added.

Table3: Price Components

Import Duty	10%	on CIF price
VAT+NHIL	15%*	(exemptions for 66 basic raw materials)
Port Inspection	1%*	
ECOWAS levy	0.5%*	
Export Development levy	0.5%*	
Network Charges	0.5%*	

*Source: Ministry of Health , World Health Organization and Health Action International (HAI), "Medicine Prices in Ghana", 2004 survey; * numbers are based on post-import duty price*[16]

Price Survey Data

Various institutions have done retail price surveys during the last years, using different methodologies for different purposes. The latest drug price survey was done in 2008 by HAN, using the WHO/HAI methodology[17]. It found that on average, Ghanaian patients pay about three times the international reference price as defined through MSH's Drug Price Indicator Guide. This reference price is based on procurement data from larger institutions that organize international competitive bidding, therefore it is to be expected that retail prices are higher. For certain drugs, such as Fluconazole and Cotrimoxazole, Ghanaian prices are at 15-10 times international reference price, for reasons that are not well understood and may have to do with formation of supplier cartels in a relatively small and up to now not very competitive market. Prices between different sectors (public, private and mission) showed large differences for malaria drugs (which are provided for free to the public sector by donors) but small differences for antihypertensives. Interestingly, in urban areas the private sector tends to have lower prices than the public sector, while in rural areas the public sector has the lowest and the mission sector the highest prices. Availability was highest in private facilities in cities and in mission facilities in rural areas. Price variability between different facilities is still considerable, demonstrating the entrepreneurial freedom providers have in pricing drugs.

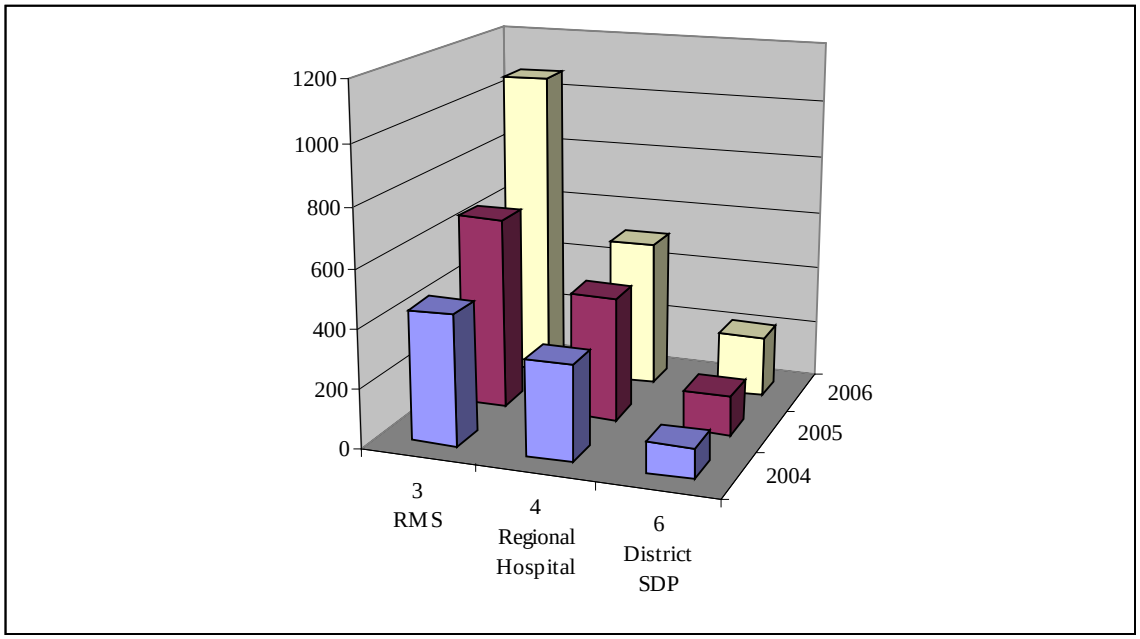
Overall, price surveys can only provide a static snapshot of what tends to be a dynamic situation. NHIA used price survey data in 2007 to set fixed reimbursement prices in its Medicines List[18]. The NHIA reimbursed amount is set at the median price level found in the survey, with no differentiation between public and private providers. Anecdotal evidence suggests that at least in private sector facilities that have a contract with a scheme (a district entity of health insurance that operates autonomously but under the NHIS regulatory framework), managers or pharmacists procure brands that can be sold profitably at the NHIA defined maximum reimbursement level. This should lead to a higher degree of price uniformity. A potentially negative consequence of a general regression to NHIA list prices is reduced price competition leading to a situation in which

providers start competing through bonuses (giving free drugs on top of those that are purchased) to distributors in order to crowd out competitors. In this case, distributors (in particular retailers) would benefit while manufacturer-wholesalers would see their margins shrink and buyers would keep paying the same price without benefiting from efficiency gains.

Demand Side: How much is being spent on pharmaceuticals? By whom? What is the money buying? How are payments made? What are trends in demand?

The total MOH budget for procurement of medicines in 2008 is about 31 million USD (38 million Ghc), including funds from Global Fund and other donor agencies for priority disease programs (HIV/AIDS, TB, malaria) but without the malaria drugs provided through PMI [19]. Data found in the literature suggest that in previous years (2005 and earlier) 50% of drug expenditure came from public sources or donor funds, 50% out of private pockets[4]. However, this rough division appears to be not meaningful given the fact that people were paying out of pocket at the facility even for most of those drugs that were procured by MOH. The introduction of health insurance changed the picture significantly by offering third party payment for a rather complete list of essential medicines. Health insurance funds are "new money" from various sources (social insurance reserves, VAT increase, donors and to a small extent contributions) that flow into the pool available for buying medicines, partially replacing cash payments made by patients at the service delivery points. Utilization of health facilities, a good proxy for drug consumption as most visits end in a prescription, increased significantly in line with insurance coverage, suggesting success of the insurance model in increasing access to health care for the poor. This increase is reflected in a fast growth of turnover of revolving drugs funds at all levels between 2004 and 2006 (later data not available)[10]:

Figure 2: Increase in turnover of revolving drug funds after introduction of health insurance



The increase in turnover of revolving drug funds in the periphery is impressive and in line with reports that utilization of facilities went up a lot after health insurance cards were distributed to a significant percentage of the population. That suggests that NHIS led to a major increase in total

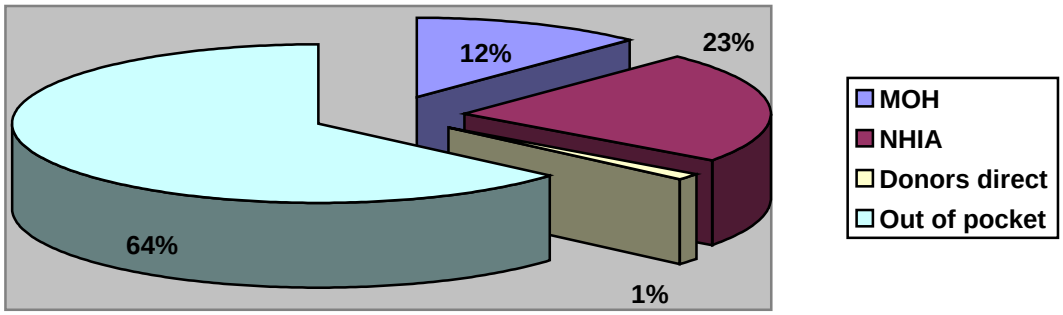
funds available for buying drugs in Ghana, not just a replacement of cash payments with NHIS reimbursement.

NHIA's total annual spending was approximately 140 million USD in 2008[20]. About 40% of expenditure is on drugs, meaning that NHIS is the biggest institutional payer for prescription drugs.
There are also a few private insurers offering health insurance with drug coverage in Ghana. However, their size and impact on policy or market dynamics is still limited and may not be very relevant for achieving medicine policy goals. Clients for private insurance are people working for larger corporations (who may offer employer sponsored health plans), foreigners living and working in Ghana and wealthy individuals who buy insurance for themselves and their families. Income from private insurance does not factor as a measurable amount in the revolving drugs funds of public or mission hospitals. Most transactions financed by private insurers are likely to take place in the private sector provider networks; there may also be coverage for out-of-country treatment of certain conditions.

Table 4: Sources of funding for prescription drug purchases in 2008s (includes MOH purchases of non-drug items such as bed nets, syringes etc); values in million USD

Payer	**Spending**
MOH including pooled donor funds	31
PMI ACT procurement[21]	2
NHIS	57
Donors to CHAG for buying drugs (assumption)	1
Out of pocket spending	160
Total	**251**

Figure 3: Share of different funding sources for purchases of drugs in Ghana (estimated). Out-of-pocket payments estimate based on household survey; some double-paying is possible for centrally procured drugs that are sold at facilities with a profit



NHIS Reimbursement and Payment Mechanism

Under NHIS, payments to providers (clinics, hospitals, contracted private pharmacies) are made based on claim forms submitted by the provider that are reviewed by the scheme to which the insured patient belongs. If a claim appears incorrect or not in line with treatment policies, claim officers may seek clarification from the provider and reduce the claim amount based on the underlying rules. These rules are generally based on the Standard Treatment Guidelines (STG) published by GNDP, although NHIA issued its own abbreviated version of the guideline that lists treatment options for certain conditions and may differ from STG in some details. The NHIA Medicines List defines which drugs (listed by INN) can be prescribed and how much is reimbursed for each drug. It is generally based on the EML but again differs in some details and includes more drugs than the EML.

Patients do not need to make any copayments under the current regulation. However, there is a Copayment of GHC 5.00 for patients that participate in the HIV/AIDS testing and treatment program provided by the NACP (National Aids Control Program). This program is managed outside NHIA and the NHIA Medicines List does not include ARVs (although it covers medicines used for treatment of opportunistic infections and AIDS related symptoms). There are discussions whether ARV treatment should come under the NHIA umbrella, which then would also require that funds for this program would have to be transferred to NHIA. The same question has been asked regarding a central program for the procurement of psychotropic drugs, which is currently administered by the MOH but could also be transferred to NHIA. Several of these psychotropic drugs are already covered by the NHIA Medicines List.

NHIA has recently changed its payment system to a DRG model (Diagnosis Related Groups), but drugs are not included and still reimbursed based on prescription cost according to the NHIA reimbursement list. New claim forms use a coding system for diagnoses and for drugs as well. These forms are linked to a new IT system that allows NHIA to create reports from claims data for management purposes. The system is currently being tested and has already pointed to a number of examples of wasteful spending by providers and claim processing errors that can cost schemes significant amounts of money.

Claim processing times vary; delays in claim processing have been a subject of concern for providers that are chronically short of cash, leading to situations in which NHIS patients were denied treatment unless they paid out of pocket[22]. A change in the procedure allowing for a pre-payment of 40% of the claimed amount upon receipt of the claim was implemented in 2007 and may have improved the situation somewhat, but according to insider estimates about half of the schemes currently have significant arrears with providers. If providers do not get paid, they subsequently also run up arrears and will experience problems in procuring drugs or are driven to creative methods to shore up their finances, such as charging insured patients cash for drugs. Possible explanations for persistently bad payment discipline by many schemes are:

- Schemes do not get their allocation from NHIA in time; this possibility is ruled out by NHIA – allegedly there is now a pre-payment mechanism in place that should make sure that all schemes get their allocation in time to pay all claims fully
- Aggregated claims value exceeds the financial allocation the scheme gets from NHIA, for example based on a shift to more expensive procedures for diagnosis and treatment
- Schemes use the money they receive to invest on the capital markets or for other purposes and then have problems to find the liquidity to pay claims in time
- Schemes are slow in processing claims due to inefficiency, low morale, internal challenges

- Individuals with control over the process deliberately delay payments in order to extract kickbacks from providers (an allegation made by private sector suppliers)

Prior to the December election, a public debate about performance problems of the NHIS understandably was not politically convenient, therefore NHIA management may have tolerated some practices that are not sustainable. However, in 2009 NHIA started addressing the causes of bad performance; currently, the health insurance law is being reviewed and there is hope that ongoing reforms will address the perceived weaknesses. Otherwise, if a significant number of insured patients experience system failure and perceive their entitlements increasingly as worthless, it could undermine the viability and sustainability of the NHIS model as a whole, which would be a major setback for the health sector in Ghana.

Role of Malaria Drugs for Overall Drug Expenditure

Malaria is estimated to account for about 40% of outpatient visits in Ghana, although recent facility surveys suggest that interventions such as distribution of ITNs/LLINs, indoor residual spraying and case management with more effective drugs have led to a drop in new malaria episodes. In the past, malaria treatment was cheap. However, for several years now the first line treatment for malaria in Ghana are ACTs, which are priced in the range of GHC 3-4 on the NHIA reimbursement list (median retail price as observed in the country). The switch from cheap to expensive drugs for the most prevalent disease that requires drug treatment together with introduction of insurance coverage for these drugs must have had a profound impact on the market in terms of a rapid increase of total sales (volume and value) of prescription drugs, even though treatment reality in the field did not follow recommendations as fast as one would have hoped[23].

One could argue that most of the ACTs used in the public sector are paid by donors, which neutralizes the effect of the policy changes mentioned above in terms of local costs to the Ghanaian health system and patients. However, although ACTs are provided (within limits) for free or at a small distribution charge to facilities, they are still claimed with the full price allowed in the NHIA reimbursement list (about 3 USD, although international procurement prices for ACTs financed by the Global Fund and PMI are only around 1 USD). Facilities generate additional funds this way that in a National Health Account would show up as pharmaceutical expenditure funded from in-country resources. NHIA and donors are aware of this "double-dipping" by facilities and the National Malaria Control Program has taken steps to address this by asking facilities to pay for full cost recovery at the Central medical stores.

Affordable Medicines Facility – malaria (AMFm): what's in it for Ghana?

In November 2008 the Global Fund Board decided to implement the AMFm, a financing mechanism for ACTs that is based on high level co-payments from a central fund for purchases of quality assured ACTs. In this model, the buyer (public or private sector should have equal access) pays only a small amount somewhere in the neighborhood of 0.05 USD per treatment. The supplier then sends a second invoice to the central fund, which pays the difference between the USD 0.05 and the negotiated ex-factory price. Ghana will be among the first countries to benefit from this innovative financing mechanism and it will have major impact on various stakeholders once quality ACTs will become available at prices comparable to chloroquine. For patients and payers the impact will be beneficial, as they have to spend significantly less for ACTs. For providers, who currently profit from relatively high margins on the expensive ACTs, the impact on cash flow might be negative, although it can be expected that the sales volume

increases significantly once ACT prices fall. Local manufacturers and importers of ACTs that do not comply with the quality standards set by the AMFm will most likely lose their franchise as they will not be able to compete at the low price levels.

Out of Pocket Spending for Medicines

About half of the Ghanaian population does not yet have an NHIS insurance card and therefore still has to pay cash for all medicines. Some wealthier individuals have a form of private or employer-based insurance that includes a drug benefit, but the majority of those outside the NHIS can be considered poor. It is not easy to estimate the aggregated spending for drugs for this part of the population. Preliminary results of a recent household survey[24] suggest relatively high out of pocket expenditures for medicines (with a mean of 14 Ghc per month per reporting household, which equals about 2 Ghc per capita per month or 24 Ghc per capita per year), despite availability of health insurance. However, the data come from a sub-sample (one third) that reported drug expenditure, whereas two thirds of interviewed households did not give a specific number for drug expenditure. Correcting for this potential selection effect and assuming that the households that did not report did not spend significant amounts on drugs, the per capita expenditure per year would be about 8 Ghc, which adds up to a total of 160 million Ghc paid out-of-pocket in 2008 for drug purchases.

Another question is how much NHIA patients are still paying out of pocket for medicines. Reports from treatment facilities suggest that many patients have already tried some form of self-medication before they make the effort to go to a clinic or hospital and seek professional treatment. Ghanaian traditional medicine knows many herbs and spiritual healing methods that are tried by healers and herbalists in villages or applied by relatives in a first attempt to cure symptoms of a disease. Chemical sellers and pharmacists are in practice free to advice patients and sell prescription drugs over the counter. Patients may rely on advice from these professionals or from family members or simply buy the same drug that they had used during an earlier episode[25].

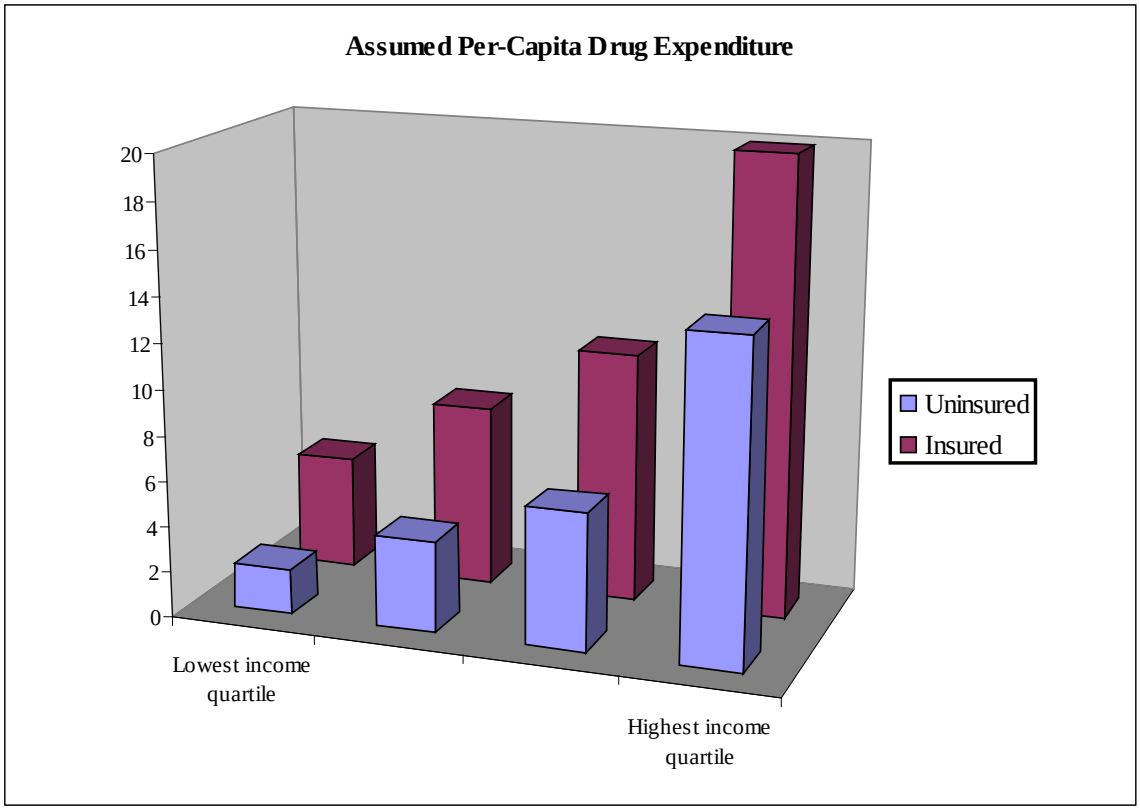
A specific problem is the alleged need for insured patients to pay for drugs in NHIA contract facilities despite their entitlement to a co-payment free drug benefit based on the NHIA Medicines List. As pointed out in other chapters, there are various potential explanations why the owner of a valid insurance card might still get charged for drugs:

- The provider does not honor the contract with the NHIS scheme either in blunt violation or because the scheme owes too much money
- The provider defrauds the system by charging the patient AND claiming the cost of the drug to the insurance scheme
- The provider is out of stock for the particular brands that are offered at a price under the reimbursement ceiling and charges either the full price of a more expensive equivalent or the difference between reimbursement level and full price, depending on the interpretation of the “no copayment” policy of NHIS
- The physician prescribed a drug that is not on the NHIA Medicines List with or without discussing this with the patient

Per Capita Drug Expenditure

Overall, the average per capita expenditure for prescription drugs from all sources including malaria medicines in Ghana can roughly be estimated at 12 USD[3] over the entire population if assumptions about market size are correct. As pointed out above, the average is probably higher for insured patients and the distribution less income dependent[4].

Figure 3 *shows how the distribution of per-capita annual drug expenditure could look like, based on the following assumptions: self-selection of less healthy people into insurance; higher utilization driving up drug expenditure among insured patients; remaining but minor access issues for poor patients under insurance (affordability is only one of the factors determining access); remaining access problems but also better average health status among the uninsured; wealthier patients preferring more expensive private sector and paying more out of pocket for originator drugs even if they have insurance*



Supplier-Induced Demand

Health insurance was introduced in Ghana because many people could not afford treatment and health facilities were under-utilized in the past; the rapid increase in utilization and subsequent growth of pharmaceutical consumption is a desired outcome. However, availability of third party funding for drugs that are profitable to sell for facilities is creating incentives to increase demand beyond the medically necessary. There is ample anecdotal evidence for such a trend from schemes under NHIA, which fight abuse of the system on a daily basis. All health insurance funds are facing such problems and sooner or later end up introducing a range of policy measures to reduce irrational prescribing of drugs that otherwise threatens financial viability and

[3] Total estimated expenditure of 251 million USD divided by total population of 20-22 million
[4] NHIS has not been very successful yet in signing up the urban middle class in particular in Accra

sustainability of the schemes. Drug overuse is also a negative factor for health outcomes, as discussed below.

The brands available under the NHIA ceiling price may not be the preferred brands from a reputation/perception viewpoint. We know that in many countries professionals and patients have a prejudice against drugs imported from India and China, sometimes also against local generics, whereas originator brands or generics coming from Europe or North America are in high regard. Even poor patients are sometimes willing to pay high prices (this could mean several times the price of the cheaper generics) in order to obtain their preferred brand.
In Ghana, public sector physicians are required to use the INN (International Non-propriety Name) name when they prescribe a drug. However, a study on prescriber and patient attitudes shows that this is not the reality in many cases, due to several reasons[25]:

- Brand names are better known and faster to write for doctors who have little time per patient (example Flagyl versus metronidazole)
- Patients may express a preference for certain brands
- Senior physicians (consultants) prefer certain brands and become role models for their staff
- Doctors think that the risk of a mix-up in the pharmacy or chemist shop is lower if they prescribe by brand name (dispensing staff may not be well trained)

A worrying observation in the public sector is that in some cases drugs priced under the permitted limit were not available and insured patients have been asked to pay the full price of a more expensive brand – in adherence to the rule that there can be no copayments under health insurance. This behavior of public sector pharmacies can undermine the health insurance concept. NHIA is aware of it and looking into the matter. As said above, private providers appear to be more flexible and do not interpret the "no copayment" rule in an overly strict sense that was probably unintended by those who developed it. Overall, the interactions between price, reimbursement and availability, and their consequences for access to medicines need close observation as it appears that the situation might be changing for the worse as a result of providers learning to play the system in their favor.

Rational Use of Medicines: What are doctors prescribing? How does perception influence choices made by professionals and patients?

One parameter for assessing rational drug use is adherence to the Standard Treatment Guidelines and Essential Medicines List. Demands created by physicians for drugs that are not on the EML are frequent, although central drug policy discourages such diversity of treatment approaches in favor of a standardized approach to rational drug therapy. Health facilities surveyed by the MOH showed significant deviations from the EML in their procurement (for example five RMSs surveyed adhered to EML only in 40% of their procurements)[10]. Potential explanations are

- Non-availability of the EML drug leading to a replacement with a similar molecule
- Non-EML choices pushed by private suppliers (for example by giving favorable conditions) in an attempt to influence treatment habits
- Non-EML choices may be more expensive and therefore carry a higher margin for the facility

- Treatment preferences of physicians working at the facility: if the pharmacy does not stock the requested drugs it loses business to neighboring private providers

GNDP recently did a study in 20 facilities in 5 regions on Knowledge, Attitudes, Beliefs and Practices, with in-depth interviews of 60 health workers and 200 patient exit interviews. Key data are summarized in the table below. It becomes clear that current treatment practices leave significant room for improvement. Compared with previous surveys, the average number of drugs per prescription had gone up while the adherence to the EML showed a decline. The only positive trend was the reduced use of injections (2002 value was 35%)[25]

Table 5: Rational use parameters

Parameter	Value (average), rounded
Percentage of prescriptions where generic name (INN) was used	56%
Number of drugs prescribed per patient	3.96
Percentage of patients receiving antibiotics	48%
Percentage of patients receiving injections	31%
Percentage of prescribed drugs from EML	79%

NHIA has recently started to collect claims data through a new IT system, which should allow a much better analysis of prescribing patterns at contract facilities. Anecdotal reports and spot checks of claims have shown sometimes severe violations of rational use guidelines, such as polypharmacy, parallel use of various delivery forms of the same drug in one patient, use of expensive drugs where cheaper options would be sufficient etc. Facilities generate revenues by selling drugs. The controlling element of a patient's limited ability to pay is irrelevant if there is a third party payer. This apparently leads to a profit maximizing behavior of some facilities that can put the financial sustainability of NHIS at risk and also threatens the health of patients. NHIS schemes are trying to counteract such tendencies by providing feedback if prescribing habits at a contract facility deviate from the expected pattern; if the deviation leads to additional expenses, claims may be adjusted downwards and the facility has to absorb the costs. However, in reality the power of individual schemes is limited as they lack medical or pharmaceutical expertise. Not even NHIA has a pharmaceutical expert on staff who would be able to back schemes with evidence if they are in an argument with providers about adequate treatment.

A specific problem for Ghana is lack of adherence to treatment guidelines for malaria, which is more a problem in the private sector (which provides about 60% of first line treatments) than in public facilities[21]. The National Malaria Control Program, supported by major donors such as GFATM and PMI, has programs in place to reach out to patients, providers and communities in order to increase adherence to treatment guidelines.

Within the Ghanaian health system, various strategies have been pursued to enhance treatment quality and increase rational use of medicines. GHS physicians and pharmacists were trained regularly by programs that are supported from GNDP and WHO. Unfortunately, funding for these programs has run out so that currently there is no more training provided. The same is true for Korle Bu Teaching Hospital, which had its own monitoring programs in place and gave feedback to doctors during their daily conferences. It had to reduce these activities and appears now to be giving in to personal treatment preferences of consultants rather than taking the lead in championing evidence based treatment. The situation is slightly better on the NGO side, where Health Access Network (HAN) is currently planning a training program for 50-60 mission

hospitals on rational use, pharmacy management and procurement. This activity is relying on funding from WHO.

Example: Claims processing and provider interaction in a mid-size District Mutual (Dodowa, Dangbe West District, June 2008)

Situated about an hour drive away from Accra in the transition zone from peri-urban to rural area, Dodowa is the administrative center of the district and home of the insurance scheme as well as a district hospital and district medical store. The scheme had in June 2008 about 40,000 members; it processed over 60,000 claims in 2007. It has contracts with 35 providers and spent a total of 573,000 Cedis in 2007. Drug expenditure was 307,000 – about 54% (270,000 for out-patients, 37,000 for in-patients). The share of drug expenditure was on a slight downward trend line (below 50% in the first quarter of 2008), potentially because there was an increasing emphasis on diagnostic measures (for example in the case of suspected malaria).

Review of some claim forms demonstrates the problems that schemes are facing. One particular provider routinely treats patients with a range of injections before prescribing the same or similar drugs for oral follow-up treatment. A typical malaria case would receive an injection with artemether, a painkiller, diazepam (a tranquillizer) and possibly a tonic or vitamin. This is followed by a full course of oral ACT treatment, oral pain or antipyretic medication, more vitamins and in many cases also an oral antibiotic. Such poly-pharmacy is expensive, potentially dangerous for the patient and has no advantages in terms of treatment success. Injections with anti-malaria drugs are only indicated in the most severe cases and if patients suffer from vomiting and diarrhea so that oral or rectal application of the drug is not possible.

The scheme has limited means to restrict such practices. As long as a drug is on the NHIA reimbursement list, it has to be reimbursed. The scheme manager was not aware of the new treatment guidelines issued by NHIA. Discussions with providers reportedly have some success, pointing out the importance of a personal relationship between the claims processing unit and the provider. The situation appears to be better in the public (GHS) district hospital. The pharmacist reported that she had received training from GNDP on rational prescribing practices.

Conclusions: What are Key Issues/Risks for Achieving Five Year Program Goals? What Policy Options are Available? How can Progress be Measured?

Key Issues and Policy Options - Regulation and Enforcement

Ghana has made progress in setting up a modern regulatory system for the food and drugs sector. Remaining key challenges are

- Monitoring of the entire territory for unregistered, sub-standard and counterfeit drugs
- Enforcing GMP standards (also standards for distribution) for domestic and importing companies, combined with assistance to capable manufacturers to reach standards needed to be competitive in international tenders
- QCL operates under physical conditions that prevent WHO prequalification and may have negative impact on quality of testing

Actions to address these key challenges are already underway, summarized in Table 6 below. Most of these actions are not controversial and the main barriers to overcome are limited resources and a lack of communication and coordination between players in Ghana. Regulatory action that put pressure on industry will lead to complaints to politicians, who should be aware that stricter standards may bring down individual firms but are required to improve the odds of survival for the entire industry in the country and to reduce public health risks from sub-standard

drugs. The MeTA initiative should provide a platform on which the communication/coordination issue can be addressed successfully.

Table 6 – Regulation and Enforcement

Key issue	Policy Option/Action
Insufficient monitoring for substandard/counterfeit drugs	Strengthening the monitoring capabilities in the market and fighting the constant threat from counterfeit, substandard and illegally marketed medicines. FDB needs more resources for that and it will also need support from law enforcement to effectively intervene in cases in which severe violations have been found. The ongoing collaboration with USP DQI could be expanded from malaria drugs to cover other drugs as well. The efforts in this area should be augmented by a visible outreach effort to bolster public confidence in the quality of all drugs in circulation (whether they were made in Europe, India or in Ghana).
Enforcing GMP and GDP standards	Increasing pressure on manufacturers to adhere to GMP, using the A to E classification system implemented by FDB. This effort could be supported by WHO or through technical assistance from donors. A similar approach could be introduced for distributors. Stricter quality criteria in donor financed procurement could help to bring standards up and prevent market distortion. Consolidation of industry and distribution should be seen as an inevitable step towards building capacity and improving odds for success of those that survive. It is not in the public interest to protect weak businesses.
Improving physical conditions for QCL	Completing the new drug quality control lab building and moving the lab, followed by an effort to achieve WHO prequalification – donor assistance and technical assistance from WHO may be required

Some typical parameters for monitoring and evaluation of progress in the field of regulatory oversight are listed below:

- Achieving certification levels such as ISO standards, WHO standards (for example prequalification of drug quality control labs)
- Successful participation in proficiency tests for labs
- Number of samples tested (can be broken down by types of tests depending on strategic objectives)
- Number of inspections done
- Number of manufacturers that achieve defined GMP standard and distributors that achieve defined GDP (Good Distribution Practices) standard
- Percentage of illegally imported, sub-standard and counterfeit drugs found in standardized repeat surveys
- Numbers of successful participants in internal or external training programs

Key Issues and Policy Options - Procurement and Supply Chain Management

Pharmaceutical supply in Ghana is de facto fairly decentralized and largely privatized, with central procurement and supply management having lost "market share" due to different factors pointed out further above. Public sector employees in particular in the periphery increasingly act

like private entrepreneurs and modify formularies and prices based on local incentives and preferences. Nevertheless, the public system still plays an essential role in several vertical treatment programs with high public health relevance and it is a backbone of the EML concept, which gets increasingly lost if regional hubs or facilities procure at their own discretion.

A study by Bossert et al, published in 2006[26], comes to the conclusion that decentralization of supply chains has mixed impacts on performance: in terms of planning, budgeting and payment, decentralized systems appear to work better, whereas centralized systems with standardized processes and tools are superior with regard to logistics and inventory management. The question is which steps in the supply chain benefit from central planning and pooling and which from local knowledge. These findings are in line with the overall observations that the public sector supply chain in Ghana alone has never been able to guarantee supply of all essential medicines, while increased availability of funding at regional and local level (mainly due to NHIS) combined with local entrepreneurship appears to lead to higher availability of drugs – purchased predominantly from private sector suppliers. The potential downside of this situation is

- Uncertainty regarding the quality of drugs procured
- Deviation from the EML concept with negative consequences for rational use
- Loss of purchasing power that exists if procurement is pooled, leading to economic inefficiency
- More decision points on financial transactions meaning that there is more potential for in-transparent dealings between suppliers and individuals making procurement decisions, although there is no evidence that corruption in general is more prevalent in decentralized systems

Any policy choice addressing these issues needs to take into consideration the funding and cash flow problems that have led to high indebtedness at all levels. The following table tries to summarize some policy options that could be considered to address the problems in the supply chain, together with a discussion of pros and cons of each option. In reality, these options are not mutually exclusive and for each of them some variations could be conceived, possibly addressing the weaknesses that each option has.

Table 7 – Supply Chain

Option	Implementation	Pros and Cons
Refinance and retool public supply chain	Donors or government step in to pay down arrears between SDPs, RMSs and CMS; a modern logistics management system is installed and investments are made into HR, training and management systems to improve performance of public supply chain. CMS may or may not get more managerial independence ("corporatization" model) but remain a publicly owned entity	Pro: easy buy-in from public sector; donors also may prefer centrally controlled system Con: debt forgiveness may reinforce bad payment discipline; no guarantee that providers return to EML based treatment; high upfront investment with limited chance of success given historic experiences
Privatization of supply chain	MOH contracts with one or more private firms selected through bidding process; private firm takes over CMS and RMSs and is responsible for delivery of drugs	Pro: Turnkey solution in which the only responsibility of MOH remains to manage contract and monitor performance Con: no Ghanaian firm may be

	to facilities.	strong enough to provide this service; foreign firms winning contract might put local suppliers out of business; political support for such option might be difficult to obtain
CMS focus on program drugs and large volume supplies; MOH or NHIA negotiate framework agreements for all providers	Starting with limited pilots, MOH or NHIA negotiate agreements with suppliers of assured quality, setting prices and terms for all facilities covered. Facilities draw on agreements as needed and as they are able to pay. Vendor managed inventory is possible, ending the need for precise forecasting. CMS provides support/storage capacity if needed and handles larger lots for vertical or routine programs that are well implemented already	Pro: maintains flexibility while ensuring quality and price consistency; savings likely in particular for smaller facilities; less corruption risk; stock-out rates should go down (only if funding is sufficient); good chance for domestic players to compete and grow business. Con: not much experience in Ghana, technical assistance needed for contracting/ monitoring; EML adherence not guaranteed, will need additional measures; some facilities could undermine concept if it goes against their financial interests (IGF) or treatment habits

Some typical parameters for monitoring and evaluation of progress in supply chain performance are listed below:

- Stock-out rates at different levels for tracer drugs; stock-out duration (depends also on available funding, therefore not necessarily a reliable parameter for supply chain effectiveness)
- Availability of adequate inventory management system, SOPs for planning, ordering
- Percentage of days during which inventory was within pre-defined range
- Order fulfillment and timely delivery by suppliers
- Turnover of tracer drugs, for example those for which framework agreements are negotiated
- Value of drugs that need to be destroyed because they are expired or physically damaged

Key Issues and Policy Options – Industrial Policy

The domestic drug industry has been growing over the last years due to a preference for local buying and an increased availability of domestic funding through NHIS. Nevertheless, the sector is still fragmented and individual players have not reached efficiencies needed to be competitive on the international market. As pointed out further above, there are several barriers to profitable growth for local businesses, whether its focus is on manufacture or distribution, such as

- Limited size of the domestic market
- Limited availability of qualified personnel
- Taxes, transaction costs and time lost for bureaucratic procedures
- Limited access to capital – local banks charge interest rates of 25-30%
- High prices for utilities and unreliable supply of water and electricity

- Participation in international tender business would require quality standards that domestic manufacturers cannot meet without significant investment

Manufacturers and distributors that make a larger share of their profits with malaria drugs will be facing a major challenge once the AMFm is implemented and high quality ACTs can be purchased at subsidized prices from foreign companies. Local manufacturers will have to be able to meet quality standards defined by the Global Fund (host of the AMFm) and lower their manufacturing costs to the level offered by larger international competitors. Otherwise they may lose most of their malaria business in manufacturing. A sharp reduction in ACT ex-factory prices will also lead to lower margins for wholesalers, retailers and dispensing facilities.

Another market factor that can be opportunity and threat at the same time for the domestic industry is the likely consolidation of purchasing power. Current price levels in Ghana are relatively high compared to international reference prices and buyers are increasingly aware of that. The supply chain discussion shows that there are thoughts on the payer and provider side to pool demand and contract with suppliers for larger volumes to get lower prices.

All the above factors will likely create consolidation pressure on manufacturers and wholesalers, who will need to invest into quality and increase sales volumes to maintain profitability. This requires capital and clear regulatory guidance, combined with a systematic reduction of bureaucratic hurdles. The following table shows a potential outcome of a thoughtful industrial policy over a five year period. It is based on the assumption that better health outcomes and access to affordable essential drugs are primary objectives for Ghana, meaning that keeping prices artificially high and isolating domestic businesses from market pressures is not a desirable option.

Table 8 – Industrial Policy Vision

Industry/business	Five Year Scenario
Drug manufacturing	After consolidation and with assistance of foreign investors, a few Ghanaian manufacturers are left over; they have grown to a size of >50 million sales p.a. They have sold their distribution business to one of the distribution specialists, specialized on a limited number of drugs and grown a significant export business in ECOWAS countries (about half of their sales). Ghanaian ACTs and ARVs are prequalified by WHO and sold through the AMFm respectively procured under GFATM grants
Wholesale and distribution	After consolidation and foreign investment, there are a few (less than five) major distributors left in Ghana, who operate countrywide with modern systems and provide vendor managed inventory service to their clients in the public and private sector. The distributors collect market data that are shared with industry (for a fee, potentially managed through an international market research firm such as IMS). From their systems, they also provide data on stock levels and other relevant parameters to the MOH, donors and other interested not-for-profit stakeholders

Key Issues and Policy Options – Financing and Payment

The main driver for change in the Ghanaian health system has been additional funding availability through NHIS. Empowering citizens by giving them a health insurance card with an entitlement for reimbursement rather then having to pay cash for health services and goods greatly improves access and leads to higher utilization of facilities. More purchasing power stimulates the supply side of the market, increasing availability of drugs. To secure the achievements and allow for further improvements over time, sustainability of the NHIS model needs to be assured. At the moment there are several threats to this model that should not be underestimated – the archives of development history know many examples of failed health insurance models.

Pharmaceuticals account for about 50% of NHIS expenses, which makes management of pharmaceutical expenditure a prime policy issue. The following table lists key issues and ways to address them. In some cases there are well established strategies, in others NHIA may have choices between different options.

Table 9 – Financing and Payment

Issue	Policy Responses/Options
Fraud, abuse by providers	Combination between claims management system that monitors prescribing patterns and targeted investigation of suspicious claims or claim clusters. Artificial intelligence can help identify patterns in raw data (technical assistance needed?). Accountability and sanctions need to be clear; NHIA and schemes need political backing for enforcement. NHIA legal may need to work with prosecutors and courts to educate them on the subject matter. Savings potential is significant and usually leads to immediate amortization of system costs.
Over-prescribing, non-fraudulent irrational use of medicines	Claims management system should pick up patterns and trigger a combination of feedback to providers; "blame and shame" as step two; sanctions/fines possible as further escalation but hard to enforce and possibly leading to lawsuits or providers abandoning the scheme. Incentives such as bonuses awarded for positive changes of pre-defined rational use parameters are more likely to be accepted and should work better. Detailed implementation can be pilot tested before rolled out nationally.
Patient expectations supporting over-prescribing	NHIA could re-consider introducing copayments for prescriptions – but impact on access for the poor needs to be evaluated. Copayments can be a percentage or flat rate, per prescription or per drug. Exemptions can be applied for drugs with high public health relevance, chronic treatments, life saving drugs, the first two drugs on each prescription or in other ways to limit negative impact on access. Copayments can also be limited in total amount per patient per year. Actual design of a copayment system also needs to consider NHIA's ability to monitor and prevent patients or providers from "gaming" the system.
Inefficiency in procurement forces NHIA to pay more for drugs than	NHIA could pioneer a framework agreement model that sets fixed prices for all participating providers, ensures quality at

necessary (it is assumed that the median price currently reimbursed could easily be undercut if procurement were more efficient)	the source and defines service standards. Depending on decisions made by MOH and others, NHIA could either partner with a public institution or pilot the model with private providers to test its viability and develop contracting know-how.
Demands for inclusion of additional drugs into the reimbursement list	NHIA will need political and scientific backing, for example through a multi-disciplinary panel or committee that evaluates all suggested additions to the list based on rigorous criteria and in a very transparent process, leading to a recommendation that then NHIA can follow if funds are sufficient and/or use to negotiate prices with manufacturers. The NICE (UK) model could provide guidance how to set up such a body in Ghana. This could be hosted at GNDP, where currently the responsibility for STG and EML is located
Maximize savings potential from AMFm	The AMFm, when launched in summer 2009, will provide a massive one-time savings opportunity for NHIA. All wholesale buyers, public or private, should then be able to procure prequalified ACTs from manufacturers at subsidized prices around 0.05 USD per treatment (compare to the current reimbursement level of around USD 3.20). The AMFm will pay the difference to the centrally negotiated ex-factory price directly to the manufacturer. During the transition phase, confusion levels could run high and a proactive management of this transition may be necessary. NHIA could assist providers to get access to subsidized ACTs and subsequently cut its reimbursement price to the new established retail price (estimated at around 0.30-0.50 USD depending on supply chain efficiency). Technical assistance may be required.

Progress in the financing and payment dimension can be measured for example by the following parameters:

- Levels of indebtedness of facilities, intermediate suppliers
- Value/cost per prescription to NHIA, broken down by diagnosis or facility
- If framework agreements are chosen as a tool to lower prices, adherence of facilities to these agreements can be measured by the quantity they purchase under these agreements compared to purchases of interchangeable drugs from other sources
- Another way to monitor impact of framework agreements would be by using claims data to measure % of prescription of contracted brands versus other brands in the same therapeutic category. Such a measure should include all interchangeable drugs (different molecules). The question is whether the current claims data input form supports such an analysis
- Parameters to monitor implementation of a copayment system need to be designed specifically around the chosen model, considering in particular the question of impact on access for the poor
- See Rational Use parameters – the dimensions of financing and rational use are overlapping

Key Issues and Policy Options – Medicine Prices

Price surveys show consistently that there are major differences in prices for equivalent drugs at different outlets. Private sector pharmacies tend to charge higher prices, but even among public sector providers there can be major price differences that may be due to different margins, payment terms, brand preferences, choice of supplier in the regional market or other factors. The NHIA Medicines List with defined reimbursement rates can be expected to reduce price variability: suppliers that currently charge higher prices may consider lowering prices to not lose market share. Suppliers with lower prices will realize that they can increase their profit margin if they close the gap to the listed limit. Additional pricing policy options are discussed in the table below.

Table 10 – Medicine Prices

Option	Discussion
Administrative price regulation by setting ceiling prices for drugs in retail	This is the only measure that immediately helps people who pay out-of-pocket, but it needs significant enforcement power that is not available in the case of Ghana. The AMFm may provide an opportunity to test administrative price regulation (if legally permitted) for one class of drugs with high public health and fiscal relevance, which would make monitoring and enforcement less of a challenge.
Indirect price regulation through framework agreements	See discussion in the section on the supply chain – in this case prices for selected high volume drugs are controlled through private contracts that create a win-win situation: the suppliers with lower prices get in exchange higher market shares
Increasing transparency of prices to empower buyers and consumers	The MeTA initiative is built on the assumption that it should be possible for stakeholders in the pharmaceutical sector to increase transparency on quality and prices of drugs in the market and thereby reduce market failure. The concept is new in this form and needs to prove that it is able to achieve measurable outcomes. An immediate benefit of MeTA is that it provides a national and international platform for dialogue on drug policy issues, together with funding for limited research or outreach activities.

Parameters to monitor drug prices are well established in Ghana; continuity in the monitoring approach should be ensured

Key Issues and Policy Options: Rational Use of Medicines

All data, reports and individual observations point to a consistent picture of drug utilization in Ghana, characterized by

- "Polypharmacy", meaning use of too many drugs per case

- Overuse of injections, which have a higher placebo effect and therefore are anchored deeply in the belief system of physicians and patients as more "potent" than oral drugs
- Overuse of antibiotics in the absence of means or time for proper diagnosis
- Increased tendency to use drugs not on the EML and prescribe specific brands rather than using the INN (generic) name

Non-rational use has an economic and a public health dimension. NHIS schemes and individual patients spend more on drugs than necessary, while, in the current system, providers benefit economically when they sell more drugs. From a public and individual health perspective, treatment outcomes are likely to be sub-optimal due to several factors:

- Patients may not fill all prescriptions for cost reasons and may end up not taking some of the essential medications
- Serious side effects are more likely if more drugs are taken in combination
- In an environment in which it is not easy to assure quality of drugs in circulation, exposure to potentially harmful drugs (counterfeits) or ineffective drugs is increased
- Patients may get confused and mix up drugs or fail to follow instructions
- Overuse of injections is likely to create significant numbers of unnecessary complications like abscesses or severe allergic reactions to injected antibiotics. Some of these complications can be fatal
- Overuse of antibiotics is likely to lead to the loss of first line antibiotics as effective treatments due to development of resistance
- Also, inadequate treatment of malaria for example with artesunate monotherapy increases the risk of resistance development against the only remaining effective first line treatment

Providers and doctors are not alone to blame - patient expectations add to the problem as long as quality of treatment is judged by the number of drugs prescribed. Policy options to curb overuse and inadequate use of are listed in the table below.

Table 11 – Rational Use of Medicines

Policy Option	Discussion
Policy leadership	Creation of a scientific body (under MOH leadership) that provides guidance for the medical community – see also the discussion on "Demands for inclusion of additional drugs into the reimbursement list" under the policy options for Financing and Payment. Teaching hospitals should be challenged by the MOH to provide a responsible leadership role rather than claiming an "above the system" status and training young doctors on treatments that are not affordable for Ghana as a whole
Education and training	It should be possible to build on previous programs and use knowledge about effective interventions. Collaboration between GNDP and NHIA necessary: NHIA systems could provide data for monitoring and evaluation of measures. Donor funding would help but NHIA may find that investment into rational use pays for itself through reduced drug expenditure

Patient copayment	Discussed under financing
Provider accountability and incentives for rational use	Discussed under financing

Parameters to monitor rational use are well established in Ghana and monitoring should continue using the same parameters. Some additional parameters could be introduced by NHIA to support incentive systems. Such systems can be set up in campaign style – focus in one year could for example be on the treatment of diabetes, another year the focus is on hypertension. "Percentage of prescriptions that contain first line anti-hypertensive drugs from the EML" could then be used as a parameter and a defined bonus payment be linked to an improvement over a given time period.

Training on rational use should be linked with facility surveys (using standard parameters or specific ones if the training is disease specific) before and after, in order to measure impact of the chosen training method.

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