GHANA: PMI ASSESSMENT OF SUPPLY CHAIN AND PHARMACEUTICAL MANAGEMENT FOR ANTIMALARIALS AND ITNS

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PRESIDENT'S MALARIA INITIATIVE

GHANA: PMI ASSESSMENT OF SUPPLY CHAIN AND PHARMACEUTICAL MANAGEMENT FOR ANTIMALARIALS AND ITNS

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Abstract
In February 2008, the USAID|DELIVER PROJECT and Management Sciences for Health (MSH)/Strengthening Pharmaceutical Systems (SPS) Program conducted a review of the strengths and weaknesses of Ghana's health commodity supply system, particularly antimalarials and ITNs. With the Ghana National Malaria Control Program, the Procurement and Supply Directorate (Drug Policy Unit, Procurement Unit, and Central Medical Stores), and the Food & Drugs Board, they confirmed gaps and identified issues during the January 2007 President's Malaria Initiative (PMI) assessment. The aim of the activity was to develop a joint 2008 implementation plan for the two PMI implementing partners and to support the strengthening of the supply chain management of antimalarials and some aspects of insecticide-treated bed net (ITNs) in Ghana. Possible activities were also listed for 2009 and 2010 to follow the activities of 2008 and to fill gaps that impact commodity availability. .

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ACRONYMS

ACT	artemisinin-based combination therapy
ADDO	Accredited Drug Dispensing Outlets
ANC	antenatal care
AS/AQ	artesunate-amodiaquine
BCC	behavior change communication
CDC	Centers for Disease Control and Prevention
CFW	Child and Family Wellness
CHAG	Christian Association of Ghana
CHPS	Community-based Health Planning Services
CHPS-TA	CHPS–Technical Assistance project
CMS	Central Medical Stores
CS	commodity security
CSFranchise	CAREshop Franchise
CQ	chloroquine
DFID	Department for International Development
DHMT	District Health Management Team
DHS	Demographic and Health Survey
DMIS	District Management Information System
ECOWAS	Economic Community of West African States
EML	essential medicines list
EPI	Expanded Programme on Immunizations
FDA	Food and Drug Administration
FDB	Food & Drugs Board
FEFO	first-to-expire, first-out
FHI	Family Health International
GF	Global Fund
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHS	Ghana Health Service

GMP	good manufacturing practices
Gogh	Government of Ghana
HIV	human immunodeficiency virus
HMIS	health management information system
HR	human resources
IEC	information, education, and communication
IMCI	integrated management of childhood illness
IPT	intermittent preventive treatment
IPTp	intermittent preventive treatment of pregnant women
IRS	indoor residual spraying
ITN	insecticide-treated bed net
JSI	John Snow, Inc.
LCS	local chemical shops
LIAT	Logistics Indicators Assessment Tool
LLIN	long-lasting insecticide-treated bed net
LMIS	logistics management information system
LSAT	Logistics System Assessment Tool
MBH	Micro Business for Health
M&E	monitoring and evaluation
MDAs	ministries, departments and agencies
MOF	Ministry of Finance
MOH	Ministry of Health
MOP	Malaria Operational Plan
MSH	Management Sciences for Health
NCHS	National Catholic Health Secretariat
NGOs	nongovernmental organizations
NMCP	National Malaria Control Program
OTC	over-the-counter
PHD	Public Health Division
PLWHA	people living with HIV/AIDS
PFP	private-for-profit
PMI	President's Malaria Initiative
PMM	Pharmaceutical Management for Malaria

PNFP	private not-for-profit
PPME	policy, planning, monitoring and evaluation
PPP	private-public partnership
PRACTON	Private Practitioner Treatment Improvement
QA	quality assurance
RCC	Rolling Continuation Channel
RDHS	Regional Director of Health Services
RDT	rapid diagnostic test
RHD	Regional Health Directorate
RHMT	Regional health management teams
RIRV	requisition, issue and receipt voucher
RMS	Regional Medical Stores
RPM	Rational Pharmaceutical Management
S/P	sulfadoxine-pyrimethamine
SDPs	service delivery points
SEAM	Strategies for Enhancing Access to Medicines (SEAM) project
SOP	standard operating procedures
SPS	Strengthening Pharmaceutical Systems Program (MSH)
SSDM	Stores, Supply and Drug Management
SWAp	sector wide approach
TBA	traditional birth attendants
TOT	training-of-trainers
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
VAT	value-added tax
WHO	World Health Organization
WHOPES	WHO Pesticide Evaluation Scheme

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The authors would like to thank particularly the Ministry of Health (MOH) Ghana, Ghana Health Service (GHS), the National Malaria Control Program (NMCP), international donors and cooperating agencies, the staff of the Central Medical Stores (CMS), the Regional Medical Stores (RMS), and health facilities that participated directly in the assessment for their involvement and collaboration. Special thanks are also extended to operators of the pharmacy and chemical shops we visited. Many individuals in these organizations deserve special thanks, including Dr. Constance Bart-Plange, National Malaria Control Program Manager; and Dr. Paul Psychas, Infectious Diseases Advisor at USAID. Their assistance and support was instrumental in this assessment. In addition, special thanks go to the officers of the NMCP responsible for the Northern, Middle, and Southern Zones, (Sylvester Segbeya, James Frimpong, and Naa Korkor Allotey), respectively, for their immense contribution to planning, discussions and writing of the findings, and the issues and recommendations section of the report.

The authors wish to express their profound gratitude for this effort from all of you and state that the success of the health system in Ghana especially in areas of commodity logistics system improvements and pharmaceutical management will continue to depend on the collaboration, goodwill and hard work, to overcome the myriad of challenges.

The continued positive attitudes will help Ghana realize the aim of equitable distribution and use of antimalarials at every facility, pharmacy, and chemical shop in the country, so that every citizen will have access to the necessary malaria commodities required for proper prevention and treatment of malaria.

EXECUTIVE SUMMARY

The efforts of the Government of Ghana to control the incidence of malaria and reduce the associated morbidity and mortality were increased when the country was included in the President's Malaria Initiative (PMI). This initiative aims at scaling up coverage of vulnerable groups by up to 85 percent, with four highly effective interventions: artemisinin-based combination therapies (ACTs), insecticide-treated bed nets (ITNs), intermittent preventive treatment (IPT) of pregnant women, and indoor residual spraying (IRS).

An earlier assessment team from USAID, Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), Rational Pharmaceutical Management (RPM) Plus, and the National Malaria Control Program (NMCP) after looking at malaria control and prevention activities in Ghana, noted the strengths and identified the gaps that needed to be filled to ensure optimum care. An outcome of that report is this assessment activity that looks at Ghana's malaria commodities supply system and pharmaceutical management system.

Ghana integrated supply system includes all health commodities, including antimalarials, for service providers. In addition, standard operating procedures (SOPs) for the logistics management of health commodities are in place, with a scheduled delivery system that currently supports commodity delivery in five of the ten regions.

This joint assessment, with the USAID | DELIVER PROJECT, Strengthening Pharmaceutical System (SPS) Program, and NMCP of the Ghana Health Service (GHS), examined the supply systems and the pharmaceutical management systems in Ghana to identify gaps; the team proposed a work plan that contains recommended strategies/activities to optimize the performance of these systems.

The team used stakeholder meetings, interviews with key participants, system review, work planning workshops, and visits to public and private sector health facilities. The workshops, stakeholder meeting, and the final work plans included the following: policy, product selection, drug regulation, quality assurance (QA), rational use, quantification and procurement planning, warehousing, storage, transportation and distribution, inventory control system, and logistics management information system (LMIS), organizational support, finance and donor coordination/commodity security, and public-private partnership (PPP).

Implementation plans were prepared for 2008 and anticipated activities were listed for 2009 and 2010. The plan for 2008 indicates the activities, implementation time frame, responsible implementing mechanisms, supporting stakeholders, and performance indicators. The possible activities for 2009 and 2010 are suggested as a follow-on to the activities of 2008 and as gap filling measures for challenges that impact on commodity supply. The activities for 2008 are based on the expected support under PMI; the suggested activities for 2009 and 2010 are wider in scope for other organizations to contribute their quota.

Activities are focused nationally to enable the initiative to reduce the reported 13 percent mortality attributable to malaria to 7 percent in the shortest possible time, with the four interventions outlined above.

1.0 INTRODUCTION

1.1 BACKGROUND

The President's Malaria Initiative (PMI) selected Ghana as one of their 15 focus countries. In collaboration with other partners, PMI works with African countries to rapidly scale up to 85 percent coverage of vulnerable groups, using four highly effective interventions: artemisinin-based combination therapies (ACTs), insecticide-treated bed nets (ITNs), intermittent preventive treatment (IPTp) of pregnant women, and indoor residual spraying (IRS).

Malaria is a major cause of morbidity and mortality in Ghana and the government considers control of the disease a high-priority activity. Ghana has received a U.S.$9 million Round 2 and $38 million Round 4 malaria grants from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). With support from WHO, UNICEF, and other national and international partners, the scaling up of malaria prevention and control interventions has already begun, with satisfactory Global Fund performance results.

In early 2007, PMI conducted a needs assessment in Ghana to identify areas of PMI support within the context of the national malaria policy and strategic plan that would complement Roll Back Malaria (RBM) partner interventions in Ghana. The findings fed into the development of the 2008 PMI Malaria Operational Plan (MOP) for Ghana. The assessment identified a number of critical issues related to the management and use of antimalarials and ITNs, which if addressed, would move toward attaining the national, donor, and international targets. These issues included quantification and procurement planning, warehousing, training in drug management at all levels of the distribution system, inventory control and information management, training in malaria case management (pre-service and in-service), behavioral change communication for proper management and use of ACTs, ACT management and use in the private sector (chemical sellers), and quality assurance.

Two PMI partners, USAID's Strengthening Pharmaceutical Systems (SPS) Program, the follow-on to the Rational Pharmaceutical Management Plus project (RPM Plus), and the USAID | DELIVER PROJECT (thereafter referred to as "the project"), have provided support in Ghana for adopting appropriate malaria treatment and prevention policies and malaria commodity management. RPM Plus has, in the recent past, worked with the National Malaria Control Program (NMCP) to develop its new malaria treatment policy and implementation plan, revise the standard treatment guidelines, develop a successful malaria proposal to the Global Fund (GF) Round 4 with its Procurement and Supply Management Plan, and participated in the 2007 PMI assessment. SPS is one of the selected PMI implementation partners in Ghana. The USAID | DELIVER PROJECT has been working with the Ministry of Health (MOH) to strengthen supply chain management of health commodities, including antimalarials. The project has also been mandated by USAID to procure antimalarials and some ITNs in PMI-supported countries. Both partners bring unique strengths to supply chain management and pharmaceutical management; together, they offer an excellent resource for the MOH and the Ghana NMCP.

In support of PMI planning, it was agreed that the SPS Program and the USAID | DELIVER PROJECT would conduct a joint assessment and develop an implementation plan in January 2008, building on the findings of the 2007 PMI assessment. The scope of work was limited to antimalarial medicines and bed nets, because another PMI partner had recently conducted a malaria diagnostics assessment in December 2007.

1.2 PURPOSE AND OBJECTIVES

Jointly with the NMCP, the Procurement and Supply Directorate (Drug Policy Unit, Procurement Unit and Central Medical Stores), and the Food & Drugs Board (FDB), the USAID| DELIVER PROJECT, and the SPS Program reviewed the strengths and weaknesses of Ghana's pharmaceutical system as it pertains to the management and use of antimalarials and ITNs, confirmed gaps and issues identified during the January 2007 PMI assessment, and developed a joint implementation plan.

The objectives were to—

1. Review the strengths and weaknesses in the management and use of antimalarials and ITNs in the public and private sectors of Ghana and identify gaps for technical assistance support.
2. Develop a joint implementation plan for two PMI implementing partners—USAID |DELIVER PROJECT and the SPS Program—to address the identified gaps.

The implementation plan lists the activities, required inputs, specific partner roles and responsibilities, resource needs, and timelines and performance indicators; it outlines potential areas of support by other donors to complement PMI's efforts.

1.3 COUNTRY PROFILE

Ghana has a population of approximately 23 million, 46 percent under the age of 15. In 2005, the total expenditure on health represented 12 percent of the gross domestic product (GDP); it has been steadily rising during the last decade (UNDP 2005). Ghana's key development trends are generally positive:

- the poverty incidence is 35 percent, down from 52 percent in 1992
- life expectancy increased to 57 years
- HIV/AIDS overall adult prevalence remains under 3 percent
- national primary school enrollment level is approximately 80 percent.

Despite these positive trends, Ghana faces major development challenges; it ranked 138 out of 177 countries on the 2005 United Nation's Human Development Index, which measures life expectancy, adult literacy, and per capita income. Although the total fertility rate dropped to 4.4 children per woman, from 6.9 in 1970–1975, women continue to have more children than they want, primarily because they cannot obtain contraceptive services and commodities. With a population growth rate of 2.7 percent per year, Ghana's current population will double in 26 years; this will place enormous pressure on the economy and the environment. It is estimated that one in ten children die before the age of 5, with malaria being the primary child killer; HIV is rising with some of the most-at-risk populations (PMI 2007).

Malaria is endemic throughout Ghana. As the leading cause of morbidity and mortality, especially among pregnant women and children under the age of 5, it continues to be a major public health concern. The MOH estimates that during the past ten years, Ghana had 2–3 million cases of malaria each year, representing 40 percent of outpatient cases; severe malaria accounts for 33–36 percent of all in-patients. Malaria also accounts for 25 percent of the deaths in children under the age of 5 (DHS 2003).

Administratively, Ghana is divided into ten regions: Western, Central, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, Northern, Upper East, and Upper West. The regions are sub-divided into 138 districts (DHS 2003).

NATIONAL HEALTH SYSTEM

Parliament reorganized the MOH in Ghana in 1996 into a Ministry-Agency relationship. The roles and responsibilities were decentralized to different agencies. A Minister heads the MOH and is responsible for national health policy formulation and coordination, while the GHS and the teaching hospitals are responsible for implementing public health services. GHS is composed of eight main divisions, one being the Public Health Division (PHD), which has a department for Disease Control Unit where the NMCP and other disease programs are located. The NMCP is responsible for technical leadership for malaria control. Other arms of the MOH consist of regulatory bodies of the Ghana FDB and Pharmacy Council.

Health Care Delivery

Both the public and private sectors provide health care delivery in Ghana. However, the MOH exercises the overall oversight control for the whole system, as well as policy formulation, and monitoring and evaluation of progress in achieving set targets. Under the public health system, the GHS largely undertakes the service delivery and teaching hospitals, both of which constitute the bulk of the MOH institutions. In addition, other quasi-government institutions and statutory bodies are also involved in health service delivery.

Health service delivery is a four-tiered system: regional, district, sub-district, and community. At the regional level, the regional hospitals deliver curative services and public health services. At the district level, the district hospitals also provide curative and public health service. Not all districts have districts hospitals, so some private not-for-profit hospitals may double as a district hospital (PMI 2007).

The Regional Health Management Teams (RHMTs) and the District Health Management Teams control the management of health services at the regional and district levels. The Regional Director of Health Services (RDHS) heads the RHMT, who has direct oversight of the public health services in the region. At the regional level, the regional hospital is the point of referral for district hospitals, as well as the primary health care delivery service for the surrounding areas. At the district level, district hospitals provide curative services. The district health management team delivers public health services, and is led by the district director of health services. The district hospital also has a public health unit. The district health administration provides supervision and management support to the subdistricts.

At the subdistrict level, health centers provide both preventive and curative services, as well as outreach services to the communities within their catchment areas. Basic preventive and curative services for minor ailments are addressed at the community and household level within the Community-based Health Planning and Services (CHPS) strategy.

At the community, the Community-Based Health Planning Services (CHPS) provides basic preventive and curative services for minor ailments at the community and household levels. CHPS is a concept that places a Community Health Officer within the community, supported by the local community-based volunteers

According to the National Malaria Strategic Plan, the second largest provider of orthodox health care services comprises the private-for-profit and the private not-for-profit health institutions. The traditional system also exists and is made up of religious spiritualism, (in which faith-based healing is practiced) herbalists, fetish priests, and traditional birth attendants (TBA), which a significant percentage of pregnant women use. The operations may involve the use of herbs and invocation of spiritual powers of a deity in diagnosis and treatment of diseases. It is estimated that over 70 percent of the population rely on traditional medicine, even though it is adequately integrated into the formal health sector.

Self-medication or self-prescription without consultation or any expert advice is also popular (especially with increased advertisements of medications). Again, using drugs suggested by a drug store operator, who might not be a pharmacist, is on the increase. In both cases, the patient avoids the paying a consultation fee to a medical expert and the costs to travel to a health facility (Ghana Malaria Strategic Plan 2008–2015).

SWAp

Since 1996, donor funding for the Ghana's Health Sector has been channeled through the sector wide approach (SWAp), which includes joint planning and management by all stakeholders, as well as common funding arrangements. Five-year and annual planning and assessment exercises involve all major stakeholders; costs are shared among donor partners. Donor partners finance the health sector through three funding mechanisms: budget support, sector support through a basket funding mechanism, and direct or project support. JICA and USAID jointly manage and plan health sector activities, but do not contribute directly to basket funding.

National Health Insurance Scheme

In 2003, the Government of Ghana (GOG) passed the National Health Insurance Law (Act 650, 2003) that instituted the National Health Insurance Scheme (NHIS) to secure basic health care services to residents in the country using mutual and private health insurance schemes. The NHIS' design is based on the principles of equity, risk equalization, cross-subsidization, solidarity, quality care, efficiency in premium collection, community/subscriber ownership, partnership, reinsurance, and sustainability (MOH 2004). Financing is primarily through a national levy collected with the value-added tax. Reports indicate that in 2007 about 43 percent of the population had registered with the scheme; 25 percent of the population has access to health services.

Health financing is a high priority on the socioeconomic agenda in Ghana. The National Health Insurance Act (NHIA) mandates health insurance for every district, with the objective of covering every resident of Ghana within the next five years. Statistics at the NHIA, as of December 2006, show approximately 137 DMIS have been established in the 138 total districts in Ghana; all are at various stages of implementation. Thirty-four percent of the population (6.8 million people) is presently enrolled; this is considered a tremendous achievement. However, only 26.5 percent (5.4 million people) hold membership cards that enable them to access services. There are many challenges to scaling up the NHIS, including the timely issuing of identity cards to enrollees and the sustainability of financing the extensive package of services covered. Most enrolled individuals are children under 18 and thus exempt from any co-payments (PMI 2007).

Malaria Situation in Ghana

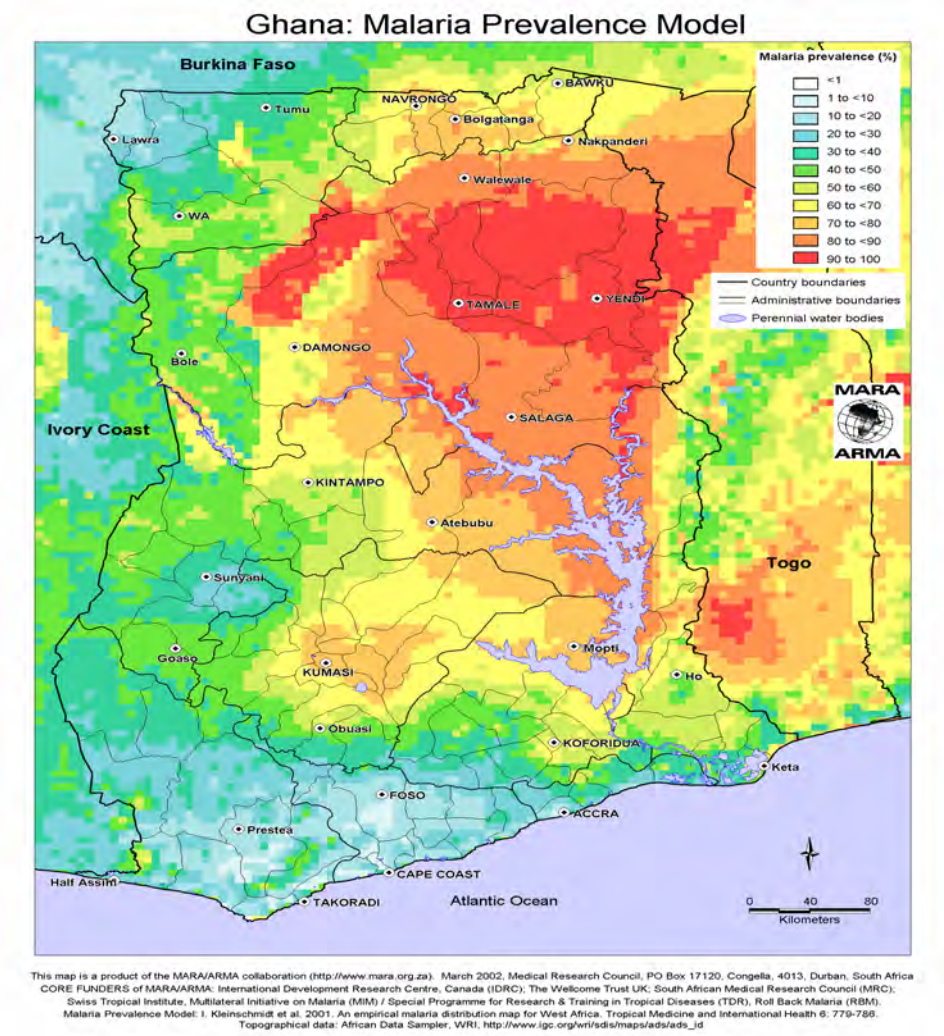
Malaria, a major cause of morbidity and mortality in Ghana, directly contributes to poverty, low productivity, and reduced school attendance. Between 3–3.5 million cases of malaria are reported each year; more than 900,000 are children under 5. Malaria accounts for over 44 percent of all outpatient visits, approximately 21 percent of total hospital admissions, 61 percent of under-five admissions, and 8 percent of hospital admissions of pregnant women. Malaria is responsible for approximately 15 percent of all-cause mortality, an estimated 22 percent of under-five mortality, and 9 percent of maternal deaths in Ghana (WHO 2005). Malaria prevalence per 1,000 in Ghana is estimated at 172 (2005 report).

Malaria is hyper-endemic in Ghana, with year-round transmission throughout the country. However, there is a seasonal variation in certain parts of the country, especially the northern third of the country where there is a prolonged dry season from October–May. The entire population is at risk; the most vulnerable are children under five, pregnant women, and people living with HIV/AIDS. In Ghana, the crude parasite rates range from 10–70 percent. *Plasmodium falciparum* accounts for about 90–98 percent; it is associated with significant morbidity and mortality. *Plasmodium malariae* occurs between 2 to 9 percent and *Plasmodium ovale*, which is very rare, at around 1 percent or less of all blood slides screened for malaria parasites.

With respect to malaria transmission, the country can be stratified into three epidemiologic zones: the northern savannah, the tropical rainforest, and the coastal savannah and mangrove swamps (see appendix 4 for a map of the three epidemiologic zones and predominant Anopheles species).

Malaria entomological surveys carried out in the 1990s established that the vectors are predominantly *Anopheles gambiae* and *An. funestus*. Characteristically, these species are highly anthropophilic, bit late in the night, are indoor resting, and commonly found in the rural and peri-urban areas where socioeconomic activities result in breeding sites, especially for the anopheline species. Whereas, *Anopheles melas* is found in the mangrove swamps of the southwest, *An. arabiensis* is found in savannah areas of northern Ghana (PMI Needs Assessment Report 2007).

Figure 1. Malaria Prevalence in Ghana



1.3 METHODOLOGY

The joint assessment used a multi-pronged methodology that included background document review; central-level discussion groups; key informant interviews at central, regional, and district levels; as well as public and private sector facility visits. This enabled the team to further investigate logistics management practices, physical inventory checks, as well as prescribing and dispensing practices

See annex 2 for a list of the documents reviewed for this report.

Workshop 1: Stakeholder Workshop on Strengthening Malaria Commodities Supply Chain and Pharmaceutical Care Management (January 9, 2008)

Fifty-seven stakeholders involved in the management of the Ghana malaria commodities supply chain and pharmaceutical management attended this workshop. After a brief introduction by the National Malaria Control Program Manager and USAID's presentation on behalf of the Ghana PMI team, the team facilitated group discussions to (1) understand the malaria commodities supply chain

and the issues that impact efficiency and (2) understand pharmaceutical care management for the use of antimalarials and insecticide-treated bed nets (ITNs). The joint team adapted the Logistics System Assessment Tool (LSAT), a qualitative diagnostic tool developed by the DELIVER project for Ghana; it guided the group discussions. Based on their expertise, stakeholders were divided into five groups for in-depth discussions on the strengths, weaknesses, and recommendations for the various components of supply chain management and pharmaceutical care management. Assessment team members from the USAID | DELIVER PROJECT and the SPS Program, with MOH stakeholders, facilitated group discussions on the following topics:

1. Policy, product selection, drug regulation, quality assurance, rational use
2. quantification and procurement planning
3. warehousing, storage, transportation, and distribution
4. inventory control system and logistics management information system
5. organizational support, finance and donor coordination/commodity security, public-private partnership.

Each group listed above agreed on the strengths, weaknesses, and recommendations for antimalarials and ITNs.

Key Informant Interviews (January 14–15, 2008)

The assessment team held a number of one-on-one meetings with stakeholders at the central level to gather additional information on the issues/challenges that they may faced when planning an efficient supply chain management and pharmaceutical care for malaria in both the private and public sector. See annex 5 for a list of stakeholders interviewed for this report.

Facility Visits (January 10–11, 2008) The Logisitics Indicators Assessment Tool (LIAT), a quantitative data collection instrument developed by the DELIVER project and the Pharmaceutical Management for Malaria (PMM) manual, an indicator-based assessment tool developed by the RPM project. The LIAT assessed the antimalarial commodities logistics system performance and commodity availability; the PMM

The assessment team used two tools to conduct public and private facility-level assessments of the availability of antimalarials and ITNs and the use of antimalarials: the LIAT assessed rational prescribing, dispensing, and medical records review, health worker observations, exit poll interviews, and simulated purchases. These assessments clarified the issues impacting malaria treatment policy implementation at the service delivery level. See annex 6 for a list of facilities visited.

Workshop 2: Implementation Plan Development Workshop (January 16, 2008)

Following the findings on strengths, weaknesses, and recommendations related to the various components of supply chain management and pharmaceutical care management, the assessment team worked with the NMCP to develop a three-year joint implementation plan for the two President's Malaria Initiative (PMI) implementing partners—the USAID |DELIVER PROJECT and the SPS Program. The plan includes activities to improve the management and use of antimalarials and ITNs and outlines potential areas of support that need attention from other donors to complement PMI's efforts.

During the workshop, the relevant stakeholders validated and prioritized the proposed activities within the implementation plan.

Workshop 3: Stakeholder Debriefing Meeting (January 18, 2008)

The assessment team disseminated the overall findings, issues, recommendations, and proposed activities to the stakeholders. The team and stakeholders then discussed the next steps; the PMI team validated the activities and the report was finalized.

2.0 FINDINGS

The findings presented in this report are drawn from workshop group discussions, one-on-one interviews, and facility-level assessments; they are structured around the same five thematic areas:

1. policy, product selection, drug regulation, quality assurance, rational use
2. quantification and procurement planning
3. warehousing, storage, transportation, and distribution
4. inventory control system and logistics management information system
5. organizational support, finance and donor coordination/commodity security, public-private partnership

2.1 POLICY AND PRODUCT SELECTION

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

The documented emergence and spread of *P. falciparum* resistance to Ghana's first line treatment, CQ, led to a consensus in 2002 for changing the malaria treatment policy to include an affordable artemisinin-combination therapy (ACT) for first line treatment. Since 2004, Ghana has been implementing its new malaria treatment policy, which recommends artesunate-amodiaquine (AS/AQ) as the first line therapy for uncomplicated malaria cases. Table 1 summarizes the current malaria treatment policy being implemented in Ghana.

Table 1. Antimalarial Drug Policy for Ghana

Condition	Recommendation
Uncomplicated malaria (First line treatment)	artesunate + amodiaquine 50 mg + 153 mg (3x3) artesunate + amodiaquine 50 mg + 153 mg (6x6) artesunate + amodiaquine 50 mg + 153 mg (12x12)
Uncomplicated malaria* (Alternate treatment)	artemether + lumenfantrine 20 mg/120 mg 5-14kg (6tabs) artemether + lumenfantrine 20 mg/120 mg 15-24kg (12 tabs) artemether + lumenfantrine 20 mg/120 mg 25-34kg (18 tabs) artemether + lumenfantrine 20 mg/120 mg >35 kg (24tabs)
Uncomplicated malaria * (Alternate treatment)	dihydroartemesinin piperaquine (DHP)
Home management of uncomplicated malaria for children under 5	artesunate + amodiaquine 50 mg + 153 mg (3x3)
Treatment failure for uncomplicated malaria	quinine

Condition	Recommendation
Severe malaria	**Quinine (Adults)** quinine dihydrochloride amp 300 mg/ml quinine sulphate 300 mg **Quinine (Children)** quinine dihydrochloride amp 300 mg/ml quinine sulphate 300 mg **Artemether (Adults)** artemether 80 mg amp **Artemether (Children)** artemether 20 mg amp
Pre-referral treatment	rectal artesunate (for children)
Treatment of uncomplicated malaria in pregnancy	**First trimester** quinine sulphate 300 mg **Second and Third Trimester** quinine sulphate 300 mg (oral) artesunate + amodiaquine 50 mg + 153 mg (12x12) artemether + lumenfantrine 20 mg/120 mg >35 kg (24 tabs)
Prevention of malaria in pregnancy	sulphadoxine-pyrimethamine (SP) 500/25 mg

** Product selected but awaiting MOH approval and adoption of amendment*

Antimalarials are exempt from import duty (10 percent), but other taxes levied are VAT (15 percent) + Economic Community of West African States (ECOWAS) (0.5 percent) + Reconstruction/Development (0.5 percent).

Stakeholder discussions during the assessment revealed that following the occurrence in 2005 of adverse events due to the use of certain combinations of AS/AQ from the local market, the MOH recommended instituting an alternative first line ACT; they selected a committee to oversee the selection of appropriate medicines for use. Subsequently, AL and dihydroartemisinin-piperaquine (DHP) were included and written into an amended policy document; however the Ministry has not yet signed off on the policy.

In addition, NMCP is of the opinion that an options analysis for financing the recurrent incremental cost for procuring selected alternate ACTs should be developed. Within this financial options analysis process, departments within the country and donors will need to make a commitment before the implementation process begins. Presently, the availability of ACT is usually low in both private and public sector.

Field visits confirmed that the malaria treatment policy should be amended immediately to include alternate ACTs. In some public sector facilities visited, reports showed that some patients are still apprehensive about taking AS/AQ, due to perceived adverse effects of the amodiaquine component of the ACT. In many cases where patients refused to be prescribed AS/AQ, artesunate monotherapies or AL was prescribed and dispensed. Following this negative publicity on AS/AQ, the NMCP has embarked on a campaign for AS/AQ usage.

In the private sector, many different combinations of ACTs are available. Simulated purchases carried out by the assessment team in private sector pharmacies and chemical shops showed that artemether-lumefantrine was already being prescribed and dispensed as a first line treatment for uncomplicated malaria, based on its well-known efficacy.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

The primary aim of the ITN policy in Ghana is to increase the population's use of ITNs, especially in children under 5 and pregnant women; to ensure the safety and effectiveness of ITNs that are supplied, distributed, and used; and to ensure the correct disposal of insecticides.

The ITN policy is based on three key principles: large-scale use of ITNs, the essential partnership of the private sector and communities as essential partners in the planning and implementation processes, and active support and promotion of public private partnership for sustainable marketing of ITNs in Ghana—this will involve nongovernmental organizations (NGOs), ministries, departments and agencies (MDAs), as well as communities.

Taxes and tariffs for ITNs have been permanently removed; however, they remain on insecticides used for net retreatment. An assessment of the availability of ITNs at pharmacies visited indicated that they had them in stock, unlike the licensed chemical shops.

From the findings and discussions held, rapid progress has been made in the implementation of this policy—in supply and distribution of the nets, as well as in the actual use. However, there is still need for expanded behavior change communications (BCC) strategies to address gaps toward a closer alignment of distribution and coverage to actual use.

The brands of long-lasting insecticide-treated net (LLINs) registered in Ghana include the following: PermaNet, Olyset, IconLife (which is a brand extension of NetProtect), DAWA Plus*, and Interceptor. However PermaNet, Olyset, and DAWA Plus* are in commercial circulation. The manufacturers of these products are Vestegaard Frandsen, Summitomo Chemicals, Tana Netting, Syngenta, and BASF. In 2007, NetMark, through its private sector partners, distributed 592,320 LLINs made up of PermaNet, Olyset, and DAWA Plus*. At this time, there is limited data on what really influences consumer preference for net types in Ghana.

2.2 DRUG REGULATION AND QUALITY ASSURANCE

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

Ghana has a policy and legal framework to support the antimalarial medicine and bed net supply chain and logistics. Stakeholder meeting discussions confirmed that, except for the newly selected alternate ACTs, all ACTs and other antimalarials recommended by the treatment policy are registered by the Food and Drug Board (FDB), which is Ghana's drug regulatory authority. All new antimalarials registered in the last six months have been ACTs. However, the FDB is still issuing limited permits for monotherapy.

In 2005, the FDB began declassifying AS/AQ to allow over-the-counter (OTC) sales, with the aim of increasing access to the recommended first line ACTs. Following the large-scale adverse events associated with AS/AQ use, the FDB suspended the process of declassification pending a request from the NMCP to continue the process. They have not declassified the newly selected alternate ACTs. Only ACTs listed within the malaria treatment policy will be declassified.

The team observed that many brands of AS/AQ and AL are available in public-sector and private-sector facilities. Findings from the field visits revealed that AS/AQ and AL are currently being dispensed outside the formal public sector as OTC treatments. DHP, the other newly selected

alternate ACT, was available at the CMS, but it had not been tested for quality—after testing, it will be sent to health facilities for use.

Adherence in the public sector to ACT policy is high, approximately 60 percent, which was verified from clinical records and zonal officers inspection checklists. However, in the private sector, adherence is low. The private sector needs to strengthen its response to the antimalarial policy and product selection. Generally, it was observed that the private facilities were not adhering to the recommended malaria policy guidelines: private pharmacies and chemical sellers represented had in stock a wide range of AS monotherapy. Stakeholder discussions confirmed the low availability of AS/AQ at the private not-for-profit (PNFP) facilities, which was attributed to supply gaps at the central medicine stores and the National Catholic Health Secretariat (NCHS). By contrast, a visit to the CHPS zone revealed a high availability of AS/AQ. Visits to some private hospitals also showed the unavailability of ACTs. Some had recorded stockouts of the government-supplied AS/AQ and ITNs for over two months. However, they had stocks of the monotherapy dihydroartemisinin (Alaxin). At the pharmacies, a rapid availability check for antimalarials revealed a wide range of non-policy compliant ACTs. The local chemical shops (LCSs) visited did not have any ACTs. The LCSs attributed this to the higher price of ACTs, which prevented them from being stocked. The LCSs had stocks of AS monotherapies, as well as SP (for treatment purposes).

With the exception of a training-of-trainer activity (TOT), no detailed training or behavior change communication (BCC) campaigns has been targeted at the private sector. As a whole, pharmacies, LCSs, private clinics, and maternity homes need effective training on the new policy and supported job aids, etc., to enhance adherence to policy.

A visit to one of the manufacturing sites—the owner is the vice president of the Pharmaceutical Manufacturers Association—highlighted the following:

- The private manufacturing industry in Ghana is not convinced that CQ is universally resistant in the country. Nevertheless, they do not produce chloroquine-containing dosage forms; the powder cannot be imported.
- There are plans to produce quinine—tablets and injections.

Following a quality assessment of antimalarials on the Ghanaian market survey done by MSH, the NMCP-provided funds to FDB to undertake quality assurance tests on all antimalarials medicines in-country. These tests are also done on the MOH/GF–funded procurements. At this time, reports indicate a high level of quality. Currently, with the support of the NMCP, the FDB carries out scheduled tests on antimalarials. More funding is needed for this activity.

Stakeholders discussed the need for continued quality assurance for antimalarial medicines. To prevent a repeat eruption of adverse events from policy-recommended malaria medicines, some of the quality assurance activities planned include product efficacy, product safety (pharmacovigilance), and post-marketing product quality surveillance.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

Ensuring the quality of bed nets starts with ensuring that the type and strength of netting materials meet WHO's standards and subsequent approval, or disapproval, by the MOH and the Ghana

Standards Board, whether the nets are imported, or produced locally. Each ITN is stamped with a logo on the label of the product, which indicates the MOH's approval.

To procure ITNs, private-sector retailers follow regulatory framework, such as the WHO pesticide and evaluation scheme (WHOPES), which recommends insecticides and pesticides.

2.3 RATIONAL PRESCRIBING, DISPENSING, AND USE

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

Stakeholders that attended the assessment workshop named poor provider adherence to the national malaria treatment policy as a major challenge. The clinical records and zonal officers' inspection checklist indicate that adherence in the public sector to ACT policy is approximately 60 percent. However, available evidence shows that in some public facilities adherence is low, usually in the private sector. Field visits confirmed this.

Within the public sector poor adherence to the policy was attributed to a limited supply of ACTs and quinine, provider apprehension with regard to quinine use, weakness in supervision of policy implementation, and the abundance of artemisinin and other monotherapies on the open market.

The president of the Pharmaceutical Society of Ghana, during an interview, highlighted the following statistics for malaria cases within the private sector—

- fewer than 10 percent are diagnosed microscopically
- more than 45 percent are still using monotherapy
- fewer than 40 percent are using AS/AQ.

Poor provider adherence to the policy in the private sector was due to—

- inadequate engagement of the private retail sector
- low impact of sensitization trainings of the private sector on the new policy in real practice
- drive to sell more profitable antimalarials
- pressure from the patient/caregiver for products without adverse events.

In 2005, the NMCP organized a TOT in anticipation of a full roll-out of the new AS/AQ policy in the private sector. However, large-scale adverse events associated with AS/AQ use prompted the NMCP to suspend the training and BCC campaigns that targeted the private sector.

The low level of laboratory diagnosis and an over-reliance on the clinical diagnosis of malaria contributed to the suspension. To improve rational use in the private sector, where laboratory services may be readily available to private clinics, it would be appropriate to supply rapid diagnostic test (RDT) kits to clinics, maternity homes, and pharmacies. Also, no standardized referral formats in malarial management exists between the private-sector clinics and the public sector, as well as between the pharmacies, LCSs, and the public health district health management teams.

The providers' generally poor adherence to the malaria treatment policy was confirmed by medical records reviews conducted at the outpatient clinics of public sector facilities, visits to antenatal clinics, and simulated purchases conducted at private-sector drug outlets (pharmacies and chemical shops). The patient cards examined in the records departments in public and mission facilities to identify cases treated over a period of three months confirmed that most patents diagnosed with malaria were prescribed AS monotherapy. Two out of 25 patient cards randomly surveyed in one facility had prescriptions for a chloroquine injection as a start dose, followed by AS.

Rapid simulated client surveys were done in some pharmacies and LCSs. In most pharmacies visited, the simulated client was given the branded drug, Coartem (AL), as the first recommendation; later interviews of the pharmacists by other members of the team revealed a reluctance to recommend AS/AQ because, at least in part, from the perceptions of adverse side effects of AQ. Almost all pharmacies had stocks of AL (Coartem and Lonart), as well as DHP (P Alaxin).

The use of SP treatment of malaria in non-pregnant women is high in both the private and public sector. Even at the level of the RMS, large stocks of SP were discovered, with some demarcated as program drugs (for prevention of malaria in pregnant women) and another set for treatment. In at least one RMS, the SP in these two categories was from the same manufacturer. Similarly, most public and private health facilities store SP for treatment of malaria—as a monotherapy alone, or sometimes as adjunct treatment to the AS monotherapy.

Rational use of antimalarial medicines is dependent on effective dispensing. Direct observation of dispensing of AS/AQ in both the public and private sectors showed that instructions given in many instances were accurate, but the instructions were not passed on efficiently; subsequent exit interviews of the patients, or the care givers (such as a mother of a young child), showed that both groups were unable to accurately state the dosage schedule. Additionally, the mother could not remember the instructions on how to break AS/AQ tablets; this highlights the need for appropriate pediatric formulations of the recommended ACTs. The absence of ACT oral liquid formulations has encouraged irrational use of amodiaquine syrup and quinine syrup as monotherapy. The northern regions showed an initially high use of quinine syrup, but this has dropped significantly. The high use was attributed to the lack of an appropriate ACT pediatric formulation. Caregivers also complained about breaking and crushing AS/AQ tablets. Investigations reveal that large quantities of amodiaquine galenicals are available for the local production of AS/AQ and they could be used for syrup production, if acceptable production processes were developed.

The stakeholder workshop participants determined that there were inefficient systems of accountability and supervision, job aids, quality assurance, and appraisal; in addition, the public and private sectors needed training and retraining of providers, using different approaches for improvement.

A medical officer in one of the large urban hospitals visited remarked that pharmacovigilance, although currently ongoing, needs further strengthening because adverse events forms were not readily available. He also stated that, in his view, provider training was also lacking on the management of adverse events.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

Ghana has seen a remarkable increase in ITN coverage over the last five years. ITN use in children under-5 increased from 3.5 percent in 2003 (DHS) to 38.7 percent in 2006 (MICS). ITN use in

pregnant women increased from a low 3.3 percent in 2003 (DHS) to 46.5 percent in August 2006 (GFATM survey in focus districts). Since those surveys, coverage has increased by an additional 1.9 million LLINs, which were distributed in November 2006 through an integrated child vaccination/ITN campaign.

However, these coverage figures do not match the figures for correct and regular use of ITNs. The targets of malaria control will be achieved earlier and in a more sustainable way by introducing acceptable ways of incorporating bed net use into the life habits of the at-risk population.

2.4 FORECASTING/QUANTIFICATION AND PROCUREMENT PLANNING

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

The NMCP officers forecast and quantify ACTs once a year, in February–March; during this time, the estimation of needs and costs for the antimalarials is projected for the upcoming 12-month period. In March 2007, NMCP presented their ACT requirements to the WHO Ghana country office for the GFATM procurement. The quantification was based on an estimated population of 3.56 million cases/year (Global Fund, Round 4 proposal). The ACT quantities, scheduled to arrive in May 2007 for the 12-month period, represented only 60 percent of the nationally required ACT quantities. The Government of Ghana (Gogh) is to provide the remaining gap of 40 percent; although to date, these quantities have not yet been procured under the Gogh mechanism.

The supply system at the CMS level has been plagued by stockouts that lasted 5–6 months; further analysis of the LMIS revealed shortages of AS/AQ that lasted 4–5 months. In some health facilities, this has lead to drug substitutions and a supply-driven provision of services.

The 2007 forecasting and quantification exercise for first line ACTs was based on the projected number of patients to be treated. The forecast included the estimated number of patients expected to receive AS/AQ during the 12-month forecast period. The same principle was applied to the forecasting and quantification of SPs for use in IPTp. The Ghana NMCP's quantification method accounts for the providers' adherence to malaria treatment guidelines, the quantity required of each product to meet the needs of patients on AS/AQ, and SPs during the forecast period.

No additional funds are available for procuring antimalarials under the Global Fund Round 4 funding. The new Global Fund Round 8 and/or the Rolling Continuation Channel (RCC) may not be approved or finalized in time for the next procurement, due to start by July 2008. Table 2 illustrates the funding gap for the procurement of antimalarial drugs from 2008–2010. The USAID | DELIVER PROJECT collected this information during the quantification exercise conducted in April 2008.

Table 2. Available Funding for Procurement of Antimalarial Drugs 2008–2010

Source	Amount (in $U.S.)	Products
Govt. of Ghana (GOG)	500,000	ALL
Global Fund Round 2	0	SP only
Global Fund Round 4	0	SP only
UNITAID	1,074,150	ACT (AS/AQ)
Global Fund Round 4	0	ACT (AS/AQ)
PMI	1,200,000	Alternate ACTs for pediatrics (AL), rectal ACTs, and severe malaria treatment

There is no central procurement mechanism in the private sector for malaria medicines and ITNs.

Private facilities determine their requirements and sources individually; in the case of malaria medicines, they purchase either directly from the local manufacturer, or directly from the local retail outlet. Typically, quantities to procure are budget-driven and the number of purchases per year differs greatly among different providers. Private facilities do not always adhere to the malaria treatment guidelines, or consider the quantity required of each product to meet the needs of patients on AS/AQ and SPs.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

NMCP officers prepare the forecasting and quantification for bed nets; it is based on the projected number of pregnant mothers and children under 5 years of age. The number of women of reproductive age per region was projected from the 2000 census; it was multiplied by total fertility rate from the Demographic Health Survey (DHS) survey 2003 to determine births per region. This was then multiplied by the antenatal care (ANC) attendant rate to give the total ANC attendances. A number of children under-5 from 2000 census per region was multiplied by the rate of fully immunized children from 2003 DHS survey; this gave the number of fully immunized children per region. A total ANC attendance was then added to the total number of fully immunized children under-5 to give the total number of beneficiaries per region. This number was adjusted for the regions using the voucher system at the 70 percent redemption rate; this was the total number of ITNs to be distributed per year.

The Procurement Unit of the MOH is the procurement agent for bed nets under the GFATM-funding mechanism. Procurement of bed nets under GFATM uses international competitive bidding process; the procurement lead time is six months.

UNICEF is the main partner of the NMCP for ITN promotion and distribution in the three northern regions. UNICEF is also a procurement agent on behalf of the World Bank and DFID; they provide funding for the bed nets in Ghana's MOH immunization programs. Similar to what is available for malaria medicines, a limited number of staff at the central level are available to conduct forecasting and quantification for national needs. In addition, it is difficult to accurately quantify for ITNs without an established inventory control system and an LMIS.

In the private sector, local retailers and distributors do direct importation from manufacturers overseas. As with malaria medicines, the budget determines and limits the quantities that can be procured.

Although a task force within the procurement unit has the mandate to coordinate the process, there is no mechanism to effectively coordinate procurements from the different donors and the government. At the central level, a limited number of staff are available to effectively analyze and use LMIS data to inform forecasting, procurement, inventory management, and distribution decisions. At the regional and district level, the staff strength is insufficient for both number and skills to provide necessary data input to inform the central level.

2.5 STORAGE AND WAREHOUSING

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

Discussions with the key stakeholders with expertise in storage and warehousing for antimalarials and ITNs indicated that adequate space is available to store antimalarials at the CMS; at the RMS, 50 percent of the space is available. Standard operating procedures (SOPs) are available at all levels of the system (CMS, RMS, and the health facilities). The CMS is in compliance with the correct storage guidelines, including using the correct shelving and racking system, separating expired products from usable inventory, following first-to-expire, first-out (FEFO), and providing the correct temperature control, among others. It is also well equipped with the handling equipment, including pallet racks, trolleys, and forklifts. However, additional handling equipment is needed at the RMS level. Similarly, maintenance and refurbishment (including expansion) is needed at the some of the RMS. Most health facilities had adequate storage space to store antimalarial medicines.

Overall, skilled staff are available, at various levels, within all levels of the system. Most have training in logistics management. However, only a limited number of staff are available, especially at the lower levels that are responsible for commodity and supply chain management. Results from the assessment indicate that, to ensure optimal storage conditions, efficient pharmaceutical management, and malaria commodity availability, the new staff need to build capacity and the existing staff need refresher training.

The CMS and some RMSs have computerized the inventory control system for logistics management for their respective stores. However, the flow of information is paper-based from the health facilities to the RMS and from RMS to the CMS. Electronic data management from the RMS to the CMS and the CMS to the RMS would lead to better information flow and more efficient logistics data management.

The assessment team also visited one of the local manufacturers for antimalarials. Storage conditions at this facility followed the standard storage guidelines, including the use of the correct shelving and pallets, adequate handling equipment, availability of fire safety equipment, and insurance coverage for the storage facility. Similarly, pharmacies and chemical shops also adhere to the correct storage guidelines. Health commodities, including antimalarials, were stored on shelves that face the clients; excess commodities are stored in cupboards and storerooms using FEFO guidelines.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

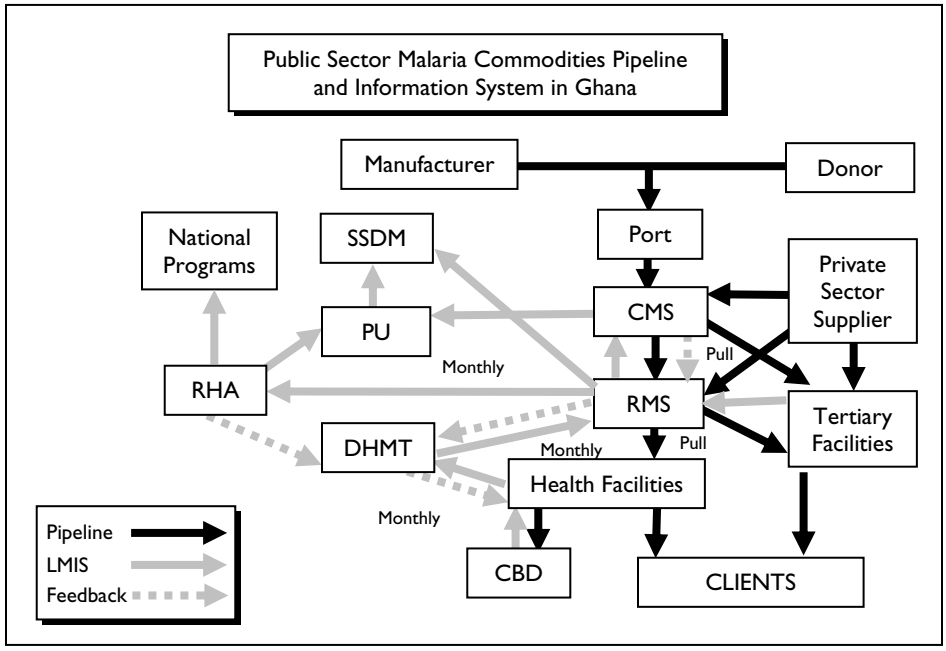
By contrast to antimalarials, discussions revealed that because they are bulky, most health facilities did not have adequate space to store ITNs within the existing space. For the same reason, after the CMS clears the ITNs, they are sent directly to the regions for distribution to the districts and health facilities. Most health facilities distributed ITNs to the vulnerable population soon after receiving them, primarily because of their bulk and the lack of storage space. With one exception, none of the health facilities visited had bed nets available on the day of the visit. Currently, there is no policy that outlines ITN disposal.

2.6 TRANSPORTATION AND DISTRIBUTION

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

Figure 2 shows the distribution system and information flow for health commodities for the Ghana public health sector. The current pipeline has a three-tier system—the products flow from the CMS to the RMS and to the health facilities (district hospitals, sub-district hospitals, health centers, health posts). After the MOH/donor–funded antimalarials and/or ITNs clear customs at the port of entry, the products are transported to the CMS for storage; from there, they are distributed to the RMS, based on a quarterly requisition system; and monthly, from the RMS to the health facilities. The RMS and facilities tend to procure from importers and local manufacturers when they are required to fill gaps in supply from the CMS. Distribution is done using a pull system, which follows the initial push by the CMS for ACTs and other antimalarials. They accommodate the interim or emergency orders outside the regular schedule.

Figure 2. Public Sector Distribution System for Antimalarials



The transportation and distribution network have established routes and procedures in place. The CMS has enough vehicles available to ensure the delivery of health commodities to the RMS. However, discussions with the stakeholders and the field visits confirmed the need for functioning vehicles to distribute antimalarials and/or ITNs at some of the RMS and health facilities. In addition, because of an insufficient budget, facilities cannot replace vehicles or purchase fuel.

To address the limited transportation, the stores use the pooling system—all vehicles are *pooled* to maximize the existing resources for transporting health commodities. For example, health facility personnel use the same vehicles used to transport health commodities to conduct supervision visits or other official visits; this creates additional demand for the same vehicles. At one of the district-level health facilities visited, only one of the five available vehicles was usable, which had resulted in delays in transporting the health commodities. Similarly, many of the RMS are unable to adhere to the distribution schedule because of limited availability of vehicles, or competing priorities for the use of those vehicles. Implementation of the scheduled delivery system in five out of ten regions (where the higher level is responsible for delivering health commodities to health facilities) has been delayed, in part due to transportation constraints. The other five regions that are currently implementing the scheduled delivery system are stretching their resources, particularly because the MOH has not provided the stipulated 3.5-ton covered trucks.

According to the PMI needs assessment conducted in 2007, Ghana has approximately 1,100 pharmacies; most are located in the densely populated regions—Greater Accra and the Ashanti regions have more than 85 percent. In addition, the urban and rural areas of Ghana have approximately 9,500 chemical shops.

The pipeline for the private-sector distribution begins with importers and manufacturers that supply antimalarials to wholesalers and retail outlets, including pharmacy and chemical shops. Similar to the public sector, transportation networks link the manufacturers to the various wholesale and retail outlets. For example, a local manufacturer (M&G Pharmaceuticals Ltd.) visited during the assessment has a regional depot that serves various outlets in the northern part of Ghana (in Kumasi). Similarly, many other manufacturers and wholesalers also have sales depots in various regions of the country. The manufacturers use sales vans to actively canvas the market for new business and to serve their existing clients. Private practitioners, pharmacies, and chemical shops usually receive their health commodities directly from the wholesalers.

There are local manufacturers for antimalarials, but none are on the WHO prequalified list, which makes them ineligible for GFATM- and PMI-procured ACTs. However, the local manufacturers continue to supply the private market with ACTs and antimalarial monotherapies. In the event of a stockout at the RMS level, public health facilities can use their funds to purchase antimalarials in the private market. The supplier usually ships them to the ordering facility.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

Over the last five years, Ghana has significantly increased its use of ITNs—from 3.5 percent in 2003 to 22 percent in 2006, in part due to the *mixed model* that uses both the public and private sector for ITN distribution, including—

- *Commercial sales at full cost with seven brands of ITNs registered for commercial sale in Ghana, each with their local agents and distribution systems.* These ITNs are sold at retail outlets (pharmacies, chemical shops, stand-alone points, and convenience shops–filling stations) that primarily target the general population that are willing to pay for them. Storage and distribution for the commercial ITNs are handled directly by various local distributors. Commercial nets are generally sold in the price range of approximately 6 Ghana Cedi–9.5 Cedi. The last five years has seen a surge in the number of retail outlets that commercially sell ITNs.
- *Targeted subsidies using the discount voucher scheme, with support from the NetMark Project that operates in five regions.* This scheme provides discounted bed nets to pregnant women, or to a mother with a child under 5. Vulnerable populations are given vouchers to purchase ITNs of their choice at retail outlets or special depots. NetMark's commercial partners do all the logistics functions, including ordering, stocking, storing, and distributing ITNs.
- *Subsidized sales of MOH-procured ITNs through ANCs and other health facilities, as well as community health worker schemes.* After the CMS receives the ITNs, CMS transports them to the RMS for distribution to the health facilities and ANCs. The facilities sell the nets to the vulnerable population at a lower price than the ITNs sold through targeted subsidies. This national program aims to supply ITNs to all ANCs and health facilities.
- *Free mass distributions during integrated maternal and child health campaigns/immunization campaigns.* The distribution mechanism for ITNs is similar to the mechanism for subsidized sales; CMS transports the ITNs to the RMS soon after receiving clearance. The RMS then transports the ITNs to the health facilities for mass distribution during campaigns. Sometimes the nets are also stored close to the immunization centers; for example, in schools and cocoa/sheanut storage sheds. Approximately 1.5 million ITNs were distributed during a recent ITN campaign in late 2007.
- *Free or subsidized distributions through either individual or NGO programs.* These nets are procured through both the public and the private sector. After the NGOs receive the nets, they are responsible for the actual distribution.
- *Workplace distributions through large employers, such as mines, factories and plantations.* In most cases, these are commercially procured nets; the employers are solely responsible for their distribution.

In summary, the commercially sold ITNs and the targeted subsidies using the voucher program are distributed through the private sector; meanwhile, the ITNs used in campaigns and at public health facilities are distributed through public transportation and distribution mechanism.

2.7 INVENTORY CONTROL SYSTEM AND LMIS

ANTIMALARIAL MEDICINES: PUBLIC AND PRIVATE SECTOR

Antimalarial commodities are included in the essential medicines list (EML); they are part of the existing inventory control system for all essential medicines. The current system has written guidelines and SOPs that are distributed to all levels of the system. To ensure at least one year's worth of supply of all commodities, the current maximum-minimum inventory control system for essential drugs is 3–2 months at health facilities, 6–3 months at the RMS, and 12–6 months at the CMS.

Requisitions Issues and Receipt Vouchers (RIRV) are used to capture logistics data for essential drugs (stock on hand, consumption, and losses/adjustments). It is a report to the next level, and facilities use it to order resupplies for the facility. Currently, it is out of print due to funding constraints. Limited human and financial resources were often cited as primary reasons why the current inventory control system and LMIS are not operating at an optimal level.

Further discussions during the stakeholders meeting and field visits indicate that, although the inventory control system is in place for antimalarials, many health facilities are either not following or have limited knowledge of the maximum-minimum system. Because of weak monitoring and supervision, it is difficult to effectively implement the existing policies and procedures. Another reason cited during the stakeholders meeting for not maintaining antimalarial commodities within the established maximum-minimum level is inadequate supply of antimalarials at the RMS.

The current RIRVs (pre-printed) list antimalarial drugs, including AS/AQ; it does not include the alternate ACTs or ITNs. However, in the next review prior to printing, all approved ACTs and ITNs should be incorporated. Stakeholder meetings and the facility visits further confirmed weak feedback mechanisms and poor data management flow from the health facility to the central level, making it difficult to keep track of consumption patterns and stock availability. Maintaining accurate stock cards is an integral part of an efficient logistics management. Usually, there is a direct correlation between health facilities that keep and regularly update stock cards and the availability of commodities. Stock card use observed during the site visits was sporadic, at best. Only a few of the visited health facilities maintained and regularly updated stock cards for all antimalarials.

For the antimalarials sold in the private sector, each chemical shop, pharmacy, or private hospital/clinic has their own system (both informal and formal) for tracking quantities sold. However, no standardized system is in place to track consumption, stock on hand, and losses and adjustments; these would provide a comprehensive overview of the consumption patterns at the national level. At some of the private health facilities visited, no LMIS and inventory control system was in place. The practitioners purchased antimalarials directly from the manufacturers or from wholesalers, as needed; inventory volumes were for a few weeks or a month.

INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTOR

Unlike antimalarial drugs, there is no maximum-minimum inventory control system in place for the public sector ITNs. ITNs are brought into the country as needed, without accounting for usage or consumption. According to NetMark, commercially sold ITNs are tracked through a proof-of-purchase sticker and retailer reimbursement process; meanwhile the ITNs sold through the voucher scheme are tracked by numbered vouchers. The weak feedback mechanisms and poor data management flow from the health facility to the central level makes it difficult to track consumption patterns and stock availability.

The current RIRVs (pre-printed) does not include the ITNs. However, in the next review prior to printing, all approved ITNs should be incorporated. With the exception of one facility visited during the assessment, facilities do not keep stock cards for ITNs. The lack of an LMIS for nets distributed at health facilities and during campaigns creates a challenge for accurately monitoring consumption and stock levels of ITNs in the country and underscores the importance of having an LMIS.

There will be many benefits when an LMIS is developed for ITNs. It will improve the tracking of the total consumption and stock on hand for ITNs; it will also improve forecasting accuracy to

inform decisions on the quantities of bed nets to procure for the national program and to determine the correct quantities of ITNs to be distributed to the regional warehouses.

2.8 ORGANIZATIONAL SUPPORT

ANTIMALARIAL MEDICINES AND ITNS: PUBLIC AND PRIVATE SECTORS

The sector has a high level of professional staff attrition. However, the CMS and the 10 RMSs have the critical mass of personnel available to support the management of bed net and antimalarial commodities at the current service delivery levels. The central level has a proven track record for handling large scale logistics, including the Global Fund and the Expanded Programme for Immunizations (EPI).

However, at the lower levels, human resource capacity to undertake quantification, forecasting, ordering, receiving, data and information management, and inventory control management is less than optimal. The supply system is decentralized and has support from the USAID | DELIVER PROJECT, GOG, and other partners. They have developed SOPs and are currently applying job descriptions. The MOH/GHS project supports SOPs and LMIS training at various levels of the supply chain.

The supervisory relationships include the MOH-HQ, SSDM, CMS, RMS, and facilities, as well the regional and district pharmaceutical officers. The team observed that even with the district-level medical stores no longer functioning, the district pharmacists or others acting as district pharmacy officers could be charged to support the facility level supervision.

Stakeholders indicated that existing supervision processes were not only weak, but different supervisory tools are being used at different levels. The stakeholders meetings and one-on-one interviews recommended strengthening the monitoring and evaluation (M&E) capacity at all levels, as well supporting the establishment of a centralized inventory control systems at the central, regional, and district levels.

Holistically, a vigorous integrated supportive supervision and monitoring mechanism with appropriate tools is advocated; the roles of stakeholders or facilitators should be clear from the very beginning.

A supervisory checklist exists and is applied during supervisory visits by central-, regional-, or district-level management. However, the routine supervisory schedules are not always followed. Presently, malaria activities have separate supervisory tools for the public sector, but none for the private sector. The public sector supervisory checklist can be adapted for supervision visits to the private clinics, pharmacies, and LCSs. Presently, the supervisory checklist is being revised and support will be needed to integrate other programs, such as integrated management of childhood illness (IMCI) issues, into the final version.

With the current policy change and the anticipated increase in resources to reduce the malaria burden by 50 percent, the work load for the staff will probably increase, which will require additional staff support from the MOH and GHS. In the private sector, however, there is no overarching organizational support structures for supervision. What is available are regulatory institutions that usually focus on regulatory clearance of products and ethical professional practice, not the availability of medicines.

2.9 FINANCE AND DONOR COORDINATION

ANTIMALARIAL MEDICINES AND INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTORS

The donor communities' coordination mechanism in Ghana provides support in key areas, including resource mobilization, facilitation of policy development, and information on best practices; it also provides access to experienced professionals. The health sector has organized its donor financing relations using a multi-donor support approach. The Ministry of Finance (MOF) provides the multi-donor financial support to the health sector (including direct or earmarked support). USG provides earmarked or project-based support.. The NMCP, with support from donors and GOG, developed a strategic plan that highlights the resource availability and needs until 2015.

Discussions with stakeholder revealed that a sound financing strategy does exist, but there is no cost recovery or fund-building strategy that impacts the sustainability of current funding arrangements. If they do exist, there is no clear policy on the use of funds recovered from the sale of antimalarials and ITNs within the public health sector system. ACTs from the GFATM are supplied though the public systems at cedi 3, but there is no collection system to recover these funds. At the facility level, it was observed that the National Health Insurance Scheme is reimbursing ACTs at cedi 3.60. A large pool of unrecovered funds is accumulating at the peripheral/facility level with no defined guidelines on how these funds should be tracked and recovered to ensure sustainability. Currently, it is not clear how sustainable the NHIS will be if the full cost of ACTs and malaria commodities are passed on to the scheme.

Models do not need to be developed to ensure the supply of ACTs to the private sector, which will guarantee subsidies for patients and regular supervision. Examples of such private sector models include the Accredited Drug Dispensing Outlet (ADDO) project in Tanzania (now Uganda), Child and Family Wellness (CFW) shops and clinics in Kenya, the CAREshop (CS) franchise project in Ghana, as well as the Blue Star Network for maternity homes and pharmacies in Ghana. Currently, antimalarials procured through the private sector do not attract the 10 percent import duty imposed on other essential medicines, but they do attract the 15 percent VAT, plus development levies; these fees impact the pricing, affordability, and uptake of ACTs in this sector.

2.10 PUBLIC PRIVATE PARTNERSHIP (PPP)

ANTIMALARIAL MEDICINES AND INSECTICIDE-TREATED BED NETS: PUBLIC AND PRIVATE SECTORS

The Ghanaian health care system has two primary sectors:

1. public sector
2. private sector.

The public sector includes the MOH, which is in charge of the overall policy direction of the nation's health strategy development; and the GHS, the main service provider for health facility-based services across the nation.

The private-health sector includes a diversity of participants—from orthodox practitioners to traditional healers, and nongovernmental organizations (NGOs) to for-profit health care entities.

Their activities cut across areas that include, but are not limited to, financing, prevention, pharmaceutical distribution, and treatment. Ghana has a vibrant private sector that includes private not-for-profit (PNFP) and private for-profit providers (PFP). The PNFPs are mainly faith-based health facilities and NGOs. The largest PNFPs are the National Catholic Health Services (NCHS) and the Christian Health Association of Ghana (CHAG); between them, they have more than 120 hospitals, clinics, and health centers. Most PNFP facilities receive direct support from the government and are usually seen as public-sector organizations. This support includes personnel cost, training, supply of equipment, subventions, and tax exemptions.

The PFPs includes manufacturers; wholesalers; pharmacies, registered and unregistered; licensed chemical shops (LCS); registered and unregistered private clinics, hospitals, and maternity homes; and a plethora of mobile medicine vendors.

The overview of the local pharmaceutical manufacturing sector revealed two large-scale (Phyto Riker and Ernest Chemist) manufacturers, two medium-scale (KinaPharma and Danpong), and a number of small-scale manufacturers. Ghana has 133 wholesale pharmaceutical companies and 316 that are wholesale and retail (Pharmacy Council December 2007[1]). Three have initiated the local manufacturing of AL, while the local manufacturers produce AS/AQ. Despite these achievements, because none of the local Ghanaian manufacturers is WHO pre-qualified, they are unable to supply ACTs under the Global Fund.

The Pharmacy Council of Ghana's data confirms that Ghana has 108 pharmaceutical wholesalers; FDB records show that as of December 2007, there were 20 brands of ACTs currently registered and marketed in Ghana, including five brands of AL, 13 brands of AS/AQ, and two brands of DHP phosphate. However, the survey showed that most private pharmacies and clinics dispensed AL as the first choice. The price of AL was between $U.S.6–9 for the brand name (Coartem) per course and $U.S.3–5 for generic. The AS/AQ was sold for $U.S.1–2 , the DHA-Piperaquine was priced between $U.S.3–5 per adult dose, and $U.S.0.5–2 per course for children under 5.

Ghana has a total of 183 private not-for-profit hospitals and clinics. They have 350 private for-profit hospitals. There are over 1,300 pharmacies and 8,500 LCSs in Ghana. More than 85 percent of the private clinics and pharmacies are located in Greater Accra, Ashanti region, and Western region. The LCSs are distributed more equitably. Recent surveys by MSH and the FHI-Pfizer MAM project confirm that the pharmacies and LCSs are the used first by approximately 60 percent Ghanaians. Most of the 7,500 cases a day of malaria recorded in Ghana are in the public sector, which does not include private-sector data. There is no system to capture effectively treated malaria cases in the private sector. However, for essential medicines, including antimalarials, each private clinic, pharmacy, and chemical seller has their own system (both formal and informal) for tracking quantities prescribed and dispensed.

Approximately 60 percent of Ghanaians seek malaria fever treatment through the private sector because of convenience and distance. Therefore, the private sector (clinic, pharmacies, drug shops, etc.) is the most important source of antimalarial medicines for patients and caregivers. Effective antimalarial medicines must be available close to patients' homes to ensure access within the critical 24–48 hour window.

The adoption of ACTs as treatment for uncomplicated malaria has introduced new challenges, including the full-scale distribution of new, but costly medicines, with more complex regimens;

[1] From a personal conversation with the Pharmacy Council Registrar, Mr. J. K. Nyoagbe.

instead of the familiar, cheap, and widespread CQ and SP. Presently, there is high level of non-compliance with the antimalarial policy in the private sector. This has led to inadequate case management (misdiagnosis and over-diagnosis of malaria) at almost all levels, characterized by a wide availability/use of CQ, SP, and monotherapies. The financial, human resources (HR) capacity building, and supply chain ramifications of this change and the roll-out of the new policy are enormous for the public and private sectors of the health care system. Therefore, innovativeness and collaboration within and between the public and private sectors may be the key to ensure the successful deployment of ACTs and ITNs in the country.

The government and the NMCP will participate with the private sector in delivering ACTs and ITNs. However, for ACTs, no clear operational guidelines have been established for the private sector involvement in promoting ACTs. To rapidly deploy ACTs in the private sector, it is important to create an enabling policy environment for stakeholders.

Pricing and financing ACTs in the private sector remains a challenge. Because of the deterrent high cost of ACTs in the private sector, one strategy to promote ACTs widely in Ghana could be based, at least in part, on providing subsidies, either by government, local health insurance agencies, or multilateral donor organizations. Presently, the MOH 's pricing strategy to support ACTs is specific only for the publics sector. Could Ghana look at the distribution of Global Fund–procured ACTs in the private sector?

To do this, it will be critical to do a detailed assessment that includes understanding the existing incentive, cost structures, and mark-ups; and the private-sector supply chain. Ultimately, the aim will be to set the maximum recommended retail price for subsidized ACTs in the private sector. The added advantage of this strategy for the private sector will be to set the subsidized ACTs at the same price as the existing monotherapies, or at the price of the SPs and CQ; this will make it undesirable to recommend SP, CQ, or monotherapy, and will aid their rapid phase out.

As laudable as the idea is of subsidizing ACTs so that their cost to the patient is similar to that of CQ or SP, it will be a challenge to ensure that the patients receive subsidized medicines at the intended cost. In the private sector, varied commercial margins and incentives ensure performance along this chain. However, if this information is not transparently shared, the introduction a single source government-sponsored ACTs into this well-guarded supply chain will not come without challenges. Because of this, a price monitoring system that tracks prices for ACTs is recommended. Long term, the financing of ACTs in Ghana should aim for parity in both public and private sector prices by redirecting both private and public sector subsidies toward strengthening local production and working out appropriate cost-sharing arrangements with local health insurance programs as they evolve. To avoid leakage between the private and public sectors, rebranding or repackaging can be done at the CMS before redistribution.

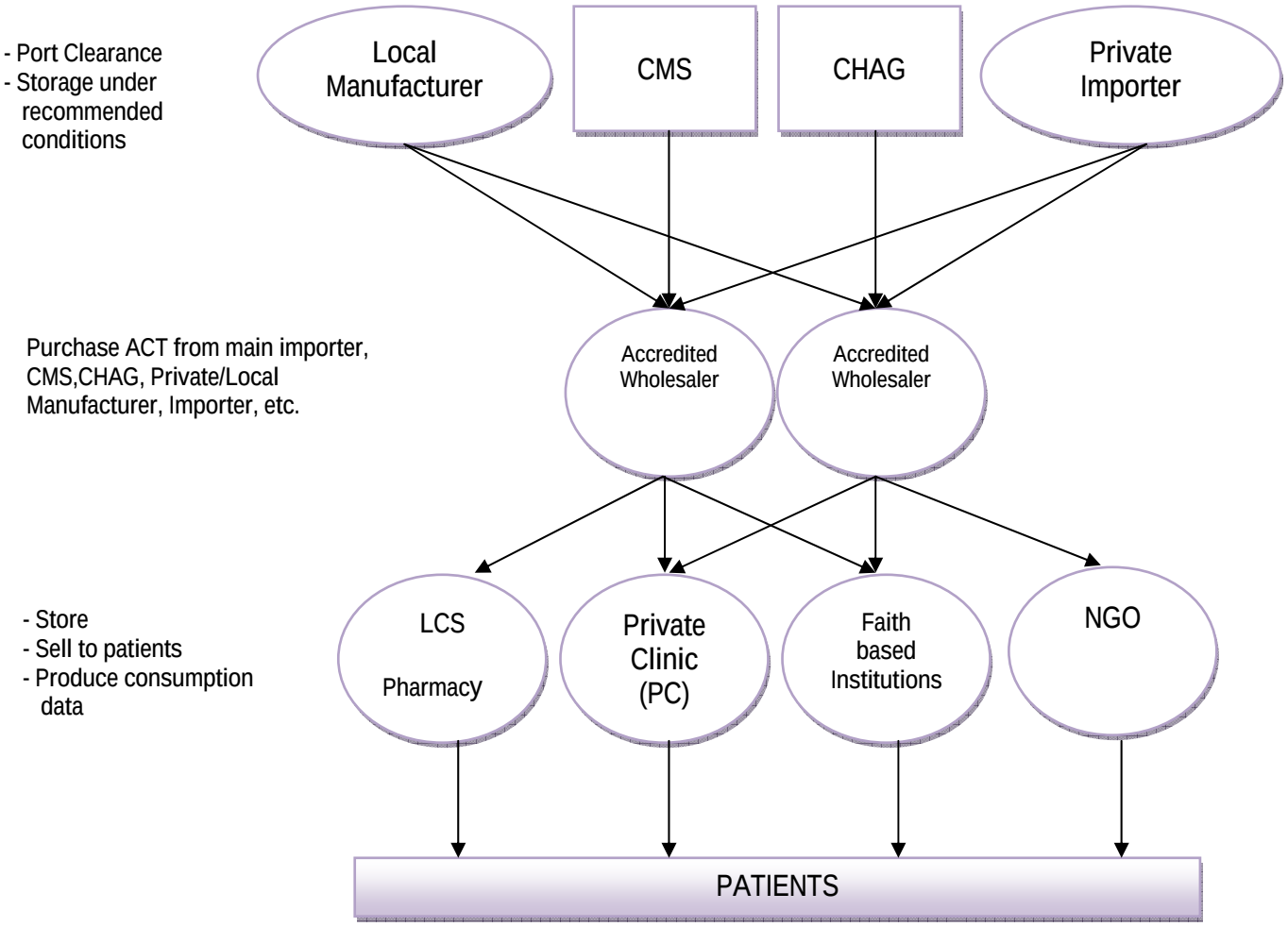
Selection and Use of Accredited Wholesalers

One option to improve access to ACTs in the private sector is to provide subsidized GFATM or donor-funded ACTs through the private sector. Subsidies could be at two different levels—in-country subsidies or ex-country subsidies. In-country, the proposal will be to transparently accredit a number of geographically well-placed private pharmaceutical wholesalers to work on the inherent administrative and logistics challenges to distributing subsidized ACTs to the large number of drug shops, pharmacies, private clinics, and mission hospitals. These accredited wholesalers will receive MOH-procured ACTs and ITNs and distribute them at agreed-upon subsidized prices to the accredited private clinics, pharmacies, LCS, etc. The MOH-accredited private wholesaler will manage

the supply chain risks; for example, accounts receivable management and poor reporting on consumption data. Using the ex-country subsidy, the accredited wholesaler will receive a subsidy similar to the Affordable Medicines Facility (AMFm) or Global ACT approach when they order directly from WHO-prequalified manufacturers.

To further reduce these risks, it is recommended that the MOH-NMCP encourages the formation of networks or branded malaria franchises that will purchase for and on behalf of a group of LCS, pharmacies, or clinics that have met a nationally reviewed pre-determined selection criteria. These groups will be the umbrella organizations that will deal with the suppliers on behalf of the providers. Examples of such networks include the CAREshops franchise of LCS, a 3,320-member network of LCSs in the Volta and Eastern region and the 50-member FHI-MAM-Pfizer LCS group in the Ashanti region. The local manufacturer could also contract directly with network or group purchasers; the controls on practices, retrieval of data, and training and supervision can be done effectively through accredited wholesalers, or the group purchasers for the accredited private clinics, pharmacies, or LCSs.

Figure 3. Possible ACT Supply Approach in the Private Sector



Therefore, in engaging the private sector to increase access to ACTs, the MOH-NMCP must consider interventions that try to address the following;

- availability
- affordability
- geographical access
- quality assurance (training and accreditation, monitoring and evaluation, pharmacovigilance– good reporting systems).

This requires a phased approach at the national level with accredited private sector providers. Engaging the private sector will also require supporting the development of SOPs and an LMIS strategy for the private sector; developing clear costing and pricing structure for the private sector, based on the global fund subsidized ACTs; and developing a financial sustainability plan beyond the current global fund facility.

To address the issues of supervision and quality assurance in the private sector, stakeholders recommended that Ghana take advantage of lessons learned from previous models undertaken in Ghana and elsewhere in Africa to enhance access to essential medicines through the private sector. These models include the CareShop Franchise in Ghana; the ADDO Accreditation Model in Tanzania, funded by the Gates Foundation under the Strategies for Enhancing Access to Medicines (SEAM) project; FHI's Ghana's Rainbow ART Network (private clinics treating HIV/AIDs); the PRACTON Model for private clinics in Tanzania; and the Freedom from Hunger Micro Business for Health (MBH) projects in Ghana.

It is important to stress, however, that no one model may be suitable for the whole country; several models or combination of models may be more appropriate. Awareness of the limitations of each model within the local environment would enable stakeholders to adopt the most feasible options. The following section discusses models that could improve private-sector involvement in ACT deployment.

Private Practitioner Treatment Improvement (PRACTON) Model

This model includes negotiations with private practitioners, with the goal of improving clinical care; it also considers complex factors that influence private providers' practice.

If the PRACTION model is adopted, the MOH will encourage the signing of individual contracts between the MOH and/or its NGO partner and the private practitioners. The contract will try to ensure that the private practitioner will adopt the discussed practices, which will be followed by regular monitoring and support visits, including on-site face-to-face educational interventions.

Accreditation Model

In this model, the NMCP, with the MOH, will provide an accreditation based on maintaining an established set of standards with the private sector. The accredited outlets would be branded and would be supported with marketing activities to create public awareness of services. An effective accreditation model of drug shops or clinics should be preceded by a mapping of private practitioner outlets in selected districts, development of criteria for accreditation, and training and roll-out, while ensuring full stakeholder participation.

Franchising Model

This model establishes a franchisor organization that will, in turn, select clinics, pharmacies, or drug shops as franchisees [2].The franchisor's tasks would include the distribution, facilitation of training, and QA assurance of ACT promotion in the private sector. The franchisor could arrange for micro-credit for franchisees to ensure adequate and regular stocking of ACTs .The franchisor could be a district-wide or regional franchisor; they will have a contract to follow the franchise regulations; for example, selling at recommended prices, submitting monthly consumption data, attending scheduled training, performing pharmaceutical management tasks, including recordkeeping[3]. The MOH, through the DHMTs and its agencies would supervise the franchisors that will serve as an umbrella organization over the franchisees.

The MOH knows that changing private sector knowledge and practices is slow and difficult, and that no one intervention is effective alone. They will need to use a combination of education, community awareness, regulations, and supervision. If professional associations, such as medical and pharmaceutical societies, would become involved, success with private providers would be more likely.

Antimalarial Medicines and Insecticide-Treated Bed Nets: Public and Private Sector Partnership

The wide geographic reach and available resources of the private sector are an excellent opportunity to increase access to antimalarials and related commodities in Ghana. However, the private sector remains under-utilized; highly fragmented; and difficult to access for data on consumption, rational use, and pharmaceutical management. Stakeholder discussions revealed that although there is a private sector health policy, its implementation for malaria programming remains unclear.

The need to increase affordability and ensure the presence of quality and efficacious antimalarials, while ensuring the rational use of ACTs within the private sector, was one key challenge cited by the stakeholders.

Local manufacturers have produced ACTs, namely AS/AQ. However, low use of the local manufacturers is a major challenge due to their present inability to attain WHO certification; this has led to a predominance of imported ACTs needed for the program. Currently, some local manufactures do supply to most private sector institutions, as well as some government and private not-for-profit sectors, which are willing and able to buy them whenever they have stockouts.

Interactions with representatives of manufacturers during the workshops revealed that, currently, none of the local manufacturers are WHO-accredited, and therefore, are not supplying officially to the MOH, which was applying GF funding to procure nationally. A subsequent visit to one of the manufacturing sites also highlighted the following:

- *Constraints of the local industries in attaining WHO certification.* For now, Ghana does not have the infrastructure demanded for WHO certification, or in most developing countries. A strong hope for the local manufacturing sector is to obtain assistance in setting up a national bio-equivalence center (shared by all manufacturers) through soft loans, grants, or the assistance of yet-to-be identified donor(s). This, in addition to good manufacturing practices (GMP) now being

[2] Dmensah Ebruce, Keghan. Careshop Franchise Ghana

[3] Liza, Kimbo. 2005. Network of Franchised Drug Shops in Kirinyaga and Mbeere Districts, Kenya. N.p.: Strategies for Enhancing Access to Medicines (SEAM).

adopted, may ensure the pre-qualification of a select number of local manufacturers; this should enable them to take advantage of the supply opportunities presented by the GF, PMI, and other health commodity funding sources.

- *Call for the government (as the biggest buyer) to include the added costs of ensuring that quality goods into the choice of the bidder, as the lowest bidder (and sometimes preferred bidder) may not be performing the extra tests that add to the final costs.*
- *Requests for soft loan facilities to industries to improve facilities for quality production and quality control—the current interest rate is 22 percent.*
- F*DB should consider the advantages of buying from the local industry*— flexibility, growth of the national economy, and improved quality assurance The Global Fund today only allows 15 percent for domestic preference, thus limiting capacity utilization.
- *Increase in the number of private clinics that could purchase from the CMSs.* In line with the NMCP policy of working closely with the private sector, some clinics have stock of AS/AQ supplied from the RMS; a review of the stock records showed a consistent restocking. During stakeholder discussions, representatives of private-sector clinics called for an increase in the number of private clinics that could purchase from the CMSs. The field visit to the CMS showed that a number of private institutions did procure ACTs from the CMS, when they were available.
- *Consider cost as a major factor in public-private partnerships.* Interviews conducted by the assessment team with the private pharmaceutical sector highlighted cost as a major factor in public-private partnerships. The private sector asked to have institutionalized engagement arrangements, with clear conditions and terms. For them, the present arrangement is unsatisfactory, although the MOH has a structure for them. In addition, the budget for M&E of the private sector should be clear—the data capture system needs to be restructured, strengthened, and linked across all. The 2007 PMI needs assessment had highlighted the various partnerships and coalitions for the distribution of ITNs, which the NMCP coordinates.

3.0 ISSUES AND RECOMMENDATIONS

This section presents the highlighted issues from the assessment and recommendations made by major stakeholder at the meetings—the center was the Ministry of Health/Ghana Health Services, in general; and the National Malaria Control Program, in particular. The following statements are from the meetings; they condense the identified needs of the supply chain and logistics system across both public and private sectors.

The recommendations from the discussions, which are summarized in the Findings section of this report, include those that will form under the PMI; they are the main building blocks for the construction of the nine objectives later captured in the 2008 Implementation Plan. Other recommendations outside the scope of the PMI are later represented as suggested activities for consideration by the GOG and/or partners and other donors, whether or not they were already identified for that gap.

Two sections that follow delineate the recommendations into those that PMI can potentially fund (see section 4) and those that other partners will fund (see section 5).

3.1 POLICY AND PRODUCT SELECTION

ISSUE

Despite the urgent need by the malaria control program for an MOH sign-off on the amended malaria treatment policy, its endorsement has been delayed. Consequently, implementing a myriad of malaria control activities is stalled.

RECOMMENDATION

- Activities to support the adoption and endorsement of the proposed amendments to the policy should be drafted with urgent timelines attached. A stakeholder workshop should be held to build consensus for and finalize the amended policy. Following the stakeholder sign-off, the amended policy should be presented by the Program Manager, NMCP; to the Director General of the GHS and; subsequently, receive endorsement and adoption by the MOH.

ISSUE

There is widespread non-compliance, particularly with the ACT recommendation within the malaria treatment policy in both public and private sectors. It appears that consumer concerns generated by the earlier adverse reactions to AS/AQ still linger.

RECOMMENDATION

- Efforts should continue to reassure the health providers in all sectors—public, academics, private (physicians, pharmacists, nurses, and trainees), as well as consumers of the safety of AS/AQ.

ISSUE

Adherence to the ACT policy in public and private sectors is sub-optimal due to many factors—one factor is that the printed job aids cannot be disseminated because of the delay in approval of the newly proposed amendments to the treatment policy.

RECOMMENDATION

- A much faster policy adoption is recommended; it should be accompanied by the institution of better practices for monitoring and supervising policy implementation, in both public and private sectors.

ISSUE

There is an over-arching need to strengthen the PPPs and appropriate activities to support the malaria policy implementation.

RECOMMENDATION

- The public provider support for implementation of the recommended antimalarials within the policy should be strengthened, and the full potential of private sector participation incorporated.

3.2 DRUG REGULATION AND QUALITY ASSURANCE

ISSUE

The current ACT in the policy (AS/AQ), and other selected ACTs, needs to be declassified from prescription-only medicines to over-the-counter.

RECOMMENDATION

- The FDB should fast-track the declassification of the three first line recommended ACTs. This is especially crucial for the planned use of these ACTs at the community level and in the home-based management of fevers.

3.3 RATIONAL PRESCRIBING, DISPENSING, AND USE

ISSUE

Access to recommended antimalarials, ACTs in particular, is still below optimal.

RECOMMENDATION

- To ensure its successful implementation, cost analyses and strategies should incorporate all necessary scenarios and models into the malaria treatment policy. The Health Insurance Scheme practices should increase adherence to the policy, geographic access to antimalarials, and ITNs, as well as consumer affordability for ACTs and ITNs in the private sector.

ISSUE

The availability of antimalarial monotherapies in the public sector facilities is still a major challenge as it compromises rational prescribing and dispensing. Private sector health facilities have many antimalarial monotherapies.

RECOMMENDATION

- Incorporate aggressive dissemination and training on malaria treatment guidelines with interventions for behavior change among prescribers, care givers, and patients—in both the public and private sectors—with monitoring and accountability built in for the handlers of training and behavior change activities.

ISSUE

The misdiagnosis and over-diagnosis of malaria at all levels and within both the public and private sector of health care poses a substantial limitation to implementing the new ACT policy.

RECOMMENDATION

- Renew the emphasis on appropriate case management, starting with proper diagnosis for malaria—policy and implementation.

3.4 FORECASTING/QUANTIFICATION AND PROCUREMENT PLANNING

ISSUE

The current procurement lead time for antimalarial medicines are unclear. In addition, the GOG has not procured 40 percent of the ACT quantities promised under the GOG mechanism.

RECOMMENDATIONS

- Advocate with GOG and other stakeholders to secure the funding required to meet patient needs and to fill the supply pipeline (including lead time and buffer stock) from May 2008–April 2009. The estimated funding need is U.S.$13,299,154 (from quantification exercise conducted by the USAID | DELIVER PROJECT in May 2008).
- Strengthen capacity for quantification and procurement at all levels for antimalarials.
- Conduct a six-month review and update the antimalarial forecast to ensure that assumptions made during the forecast are replaced by actual data from the previous six-month period; this will capture changes in demand and patient needs over time. The forecast should include data on

actual consumption (quantities of ACTs dispensed), all shipment quantities received, and any losses/adjustments to inventory that occurred during the six-month period.

- Reinforce an integration of antimalarials into an existing maximum-minimum inventory control system for essential drugs; institutionalize use of the PipeLine software to ensure that sufficient quantities of commodities are procured to cover uncertain procurement lead times and buffer stocks are available to maintain an uninterrupted supply of antimalarials.
- Strengthen the coordination, monitoring, and evaluation capabilities of GOG stakeholders for malaria commodities supply and use.

ISSUE

The lack of established maximum and minimum stock levels for ITNs makes routine monitoring of consumption and stock on hand difficult and it affects forecast accuracy.

RECOMMENDATIONS

- Establish a standardized inventory control system for bed nets to correctly calculate the order quantities for procurement, to plan shipment schedules, and to determine the correct quantities of ITNs to be distributed to each of the regional warehouses.
- To improve commodity availability and use, train staff to use the inventory control system appropriately.

ISSUE

Inadequate mechanism to coordinate procurement activities from various donors can result in duplication and/or gaps in product availability.

RECOMMENDATIONS

- Use information sharing among GOG and different donor agencies to harmonize procurement plans from different funding sources. This can be done through the already existing Procurement Task Force.
- The procurement unit of GHS should use PipeLine software as a procurement planning tool to complement the stock management software used in the CMS. PipeLine software will be particularly useful in maintaining stock within the desired levels and for planning appropriate shipments.

3.5 WAREHOUSING AND STORAGE

ISSUE

Storage conditions at five of the ten of the RMSs need improvement (Western, Central, Ashanti, Brong Ahafo, and Eastern). There is also an urgent need for refurbishment and regular maintenance at the select RMS, including handling equipment.

RECOMMENDATIONS

- Provide support for maintenance and refurbishment at selected regional and facility stores. This is essential to ensure the RMSs are well-functioning. Although all five RMS cannot be refurbished at the same time, concerted efforts should be made to improve the overall storage conditions at the RMS to prevent expiry and damage of antimalarials, ITNs, and other commodities.
- Ensure that funds are allocated to purchase handling equipment at select RMSs. At present, no funding is available for purchasing handling equipment, such as forklifts.

ISSUE

Some of the RMS and health facilities have limited storage capacity; this can be a problem when storing bulky items, such as ITNs.

RECOMMENDATIONS

- Secure funding to expand storage space at selected regional and facility stores. However, because availability of needed funds to implement this recommendation remains a challenge, it is essential to look for other solutions to address storage space constraints. For example, when ITNs arrive at the port, instead of being transported to the CMS, they can be sent directly to the various RMSs and onward to the health facilities for immediate distribution. This will bypass the CMS and storage at the RMSs for long periods.
- Design an inventory control system for public sector ITNs that also considers storage space constraints at both the regional and the health-facility level. The inventory control system should also consider the maximum-minimum levels at both the regional and the facility level. Due to limited storage space, health facilities should either maintain smaller inventory, or transportation should be provided to accommodate for smaller stock delivered more often.

3.6 TRANSPORTATION AND DISTRIBUTION

ISSUE

Inadequate transportation can cause bottlenecks in the system, resulting in distribution delays of antimalarials and other essential health commodities. This problem is further compounded by limited resources for purchase of fuel and on-going maintenance of vehicles.

RECOMMENDATIONS

- Ensure that adequate transportation is available for scheduled distribution of antimalarials and ITNs. Funding limitations can prevent the purchase of the much-needed vehicles (distribution vans with 3.5 metric capacity are the recommended vehicles). However, stores should continue using the pooling system to maximize existing resources.
- Emphasize active involvement of the storekeepers at all levels in the planning process to ensure that everyone knows the distribution schedule. To that effect, refresher training for storekeepers on the scheduled delivery system will empower and encourage them to take an active role in staying informed about the scheduled delivery system.

3.7 INVENTORY CONTROL SYSTEM AND LMIS

ISSUE

Integration of antimalarial commodities is limited, including some ACTs in the current essential drugs inventory control system and LMIS.

RECOMMENDATION

- Make revisions to the existing inventory control system and the LMIS to fully integrate all antimalarial commodities, including ACTs.

ISSUE

Staff responsible for supply chain management of both public sector antimalarials and ITNs have limited knowledge about inventory control procedures, such as recordkeeping and how best to maintain inventory within the established maximum-minimum system.

RECOMMENDATIONS

- Conduct training and refresher courses on commodity management on the inventory control system and the use of RIRV for the staff responsible.
- Upon completion of training and the refresher course, support monitoring efforts to ensure staff can apply their knowledge for managing antimalarial commodities. For efficient logistics system management, it is essential to train the right personnel and ensure they have regular monitoring and supervision that ensures compliance and correct use of the LMIS (RIRV). These efforts will promote long-term sustainability of the system.

ISSUE

There is limited information flow and poor feedback mechanism between different levels of the system.

RECOMMENDATIONS

- Strengthen the paper-based LMIS system to better capture the essential logistics data for antimalarials and ACTs. After the training is complete, the provisions should be made to ensure consistent supply of RIRV to facilitate information flow. As the findings showed, a stockout of RIRV can also result in the breakdown of the feedback loop.
- Automate (if feasible with the available resources) the central level and the regional level LMIS; this will allow for the CMS and the RMS to effectively communicate, which will ensure commodity availability and an alert if there is an imminent stockout.

ISSUE

There is lack of LMIS for ITNs, both in the public and private sectors.

RECOMMENDATIONS

- Integrate ITNs into the existing LMIS to provide essential logistics information for effective commodity management and for future procurement planning, because ITNs are transferred from the stores to the districts and health facilities for immediate distribution.
- Expand LMISs for ITNs to the private sector. Because approximately 60 percent of the Ghanaians use the private sector for health care, expanding the LMIS to the private sector will provide them with information to that received by the public sector.
- Improve the NMCP database for ITN distribution and use.

3.8 ORGANIZATIONAL SUPPORT

ISSUE

Policies must be enforced to assist program objectives throughout the country. Multiple supervisory tools are used at various levels in the public system. Monitoring and evaluation activities need to be rigorous and regular.

RECOMMENDATIONS

- Provide support for NMCP supervisory activities, as well as support for the supervision of facilities ,by district health management team (DHMT) and regional health directorate (RHD) for antimalarials and ITNs by harmonizing supervisory tools.
- Help the program and other stakeholders implement policies that will create an enabling environment for meeting objectives.

ISSUE

Absence of supervisory tools for the private sector on pharmaceutical management, in general, and for malaria, in particular.

RECOMMENDATIONS

- Support NMCP to adapt and implement the integrated supervisory tools in the private sector starting with private clinics that procure ACTs from the CMS.
- Make an effort to collaborate with the health professional bodies to strengthen existing regulatory supervision by including pharmaceutical care management activities.

3.9 FINANCE AND DONOR COORDINATION / COMMODITY SECURITY

ISSUE

Based on the current strategic plan of the NMCP, there is a funding gap for the funding of malaria commodities (specifically medicines and bed nets) in Ghana.

RECOMMENDATION

- Advocate for more focus of MOH (GOG)-funding mechanisms to strengthen and close existing gaps for the funding of malaria commodities. Enforce the implementation of proposed activities to ensure commodity security strategy for antimalarials, ITNs, and other malaria program–related commodities.

ISSUE

The public sector is procuring and distributing ACTs and ITNs at a subsidized price.

RECOMMENDATIONS

- Include strategies to ensure long-term sustainability of funding for ITNs and antimalarials in the GOG (MOF/MOH) budgeting and planning.
- Develop and implement a set price policy to ensure long-term sustainability.

ISSUE

Pricing for malaria commodities is unclear; the NHIS reimbursement rates are not properly reconciled with the ACTs pricing in the country.

RECOMMENDATIONS

- Engage a health economist to help with malaria treatment pricing.
- Conduct a feasibility study to determine sustainability of malaria treatment pricing within national health insurance scheme and to develop a set pricing policy to ensure long-term sustainability.

3.10 PUBLIC PRIVATE PARTNERSHIP (PPP)

ISSUE

- There is lack of data and information flow on consumption and practices on antimalarials and commodities in the private sector. The sector, though catering to a large number of Ghanaians, does not contribute much information to the malaria program for planning purposes; a strong effort must be made to encourage the private sector to implement national program policies.
- The private sector does not have a national strategy on pricing of ACTs.

RECOMMENDATIONS

- Examine the feasibility of introducing subsidized government procured ACTs in the private sector.
- Conduct a further assessment of the key needs of the private-sector supply chain components. Disseminate the findings so that they can guide broader decisions on how to enhance the promotion of the ACTs in the private sector compared to the issues on subsidies, etc.

- Support the accreditation of private wholesalers and or private clinics, pharmacies, and LCS in selected geographical areas to assist in the rapid deployment of ACTs in the private sector.
- Support the design and implementation of tools for the private sector to collect information on the number of people treated for malaria and quantities of drugs dispensed to patients. This requires a phased approach at the national level with accredited private-sector providers.
- Support the development of SOP and LMIS training strategy for the private sector.
- Support advocacy for greater collaboration with the private sector to assist them in implementing national program policies, appropriately.

ISSUE

Lack of involvement of local manufacturers in the overall supply system of ACTs and other malarial commodities in the public sector.

RECOMMENDATION

- Support activities to establish systems to support achievement of pre-qualification status for some local manufacturers, e.g., the establishment of a national bioequivalence center.

4.0 RECOMMENDATIONS TO BE POTENTIALLY COVERED BY PMI

Proposed Activities for PMI/USAID Programs 2008: USAID | DELIVER PROJECT and MSH | SPS PROGRAM

Proposed Policy Activities

- Support finalization and adoption of the amended malaria treatment policy.
- Support implementation of the old and amended portions of the finalized treatment policy.
  - registration, declassification, guidelines, training, and rational use
- Support monitoring of malaria treatment policy implementation.

Proposed Quantification and Procurement Activities

- Technical assistance to build capacity for national forecasting, quantification, and procurement planning.
- Procure limited quantity of second line ACTs, rectal artesunate, and drugs for severe malaria.
- Procure ITNs for the public sector subsidized net distribution.
- Strengthen the coordination mechanism among various donors and NMCP to ensure that different procurement plans for antimalarial medicines and ITNs are harmonized.

Proposed Activities—Warehousing and Distribution

- Conduct refresher training in the original five regions (Western, Central, Ashanti, Brong Ahafo, and Eastern) to strengthen the management capacity in the scheduled delivery system.
- Conduct training in the remaining five regions (Upper West, Upper East, Volta, Greater Accra, and Northern) to strengthen the management capacity in the scheduled delivery system.

Proposed Activity—Organizational Support

- Review and update supervisory tools in line with new malaria policy.
- Support harmonization of supervisory tools at all levels for—
  - case management/rational use
  - supply chain management.
- Strengthen supervisory bodies (both public and private) to conduct supervision.

Proposed Activities—Information Management

- Conduct training and regular monitoring to re-enforce the maximum-minimum inventory control system for antimalarial commodities.
- Update LMIS forms (e.g., RIRV to incorporate antimalarials not currently on the LMIS).
- Help design and implement a tool for selected private-sector facilities to collect information on the number of people treated for malaria and quantities of drugs dispensed to the patients.
- Develop information system and ITN database at NMCP.

Proposed Activities—Rational Use

- Strengthen prescription procedures and dispensing practices for the rational use of antimalarials.
- Support phaseout of monotherapies that are not recommended in malaria treatment policy.
- Provide BCC and other appropriate interventions to ensure compliance to antimalarials (for another PMI partner other than the previously mentioned two).

Proposed Activities—Human Resources

- Capacity building activities for the following:
  - quantification and procurement
  - LMIS
  - inventory control
  - storage
  - rational prescribing and dispensing.

Proposed Activities—Private Sector

- Support the establishment of feedback mechanisms that link NMCP to institutional sales of ITNs to mines/agriculture groups and special distributions of PLWHA to inform on the quality of services and ITN availability.
- Help develop the LMIS for the private and mission sector.
- Help establish supervisory systems for the private-sector clinics currently procuring from the GF procured ACTs from the CMS.

5.0 SUGGESTED ACTIVITIES FOR CONSIDERATION BY GOG AND/OR DONORS/ PARTNERS

Warehousing and Distribution—Gaps

- Support SSDM to review and expand available storage space at six regional stores (Greater Accra, Upper West, Northern Region, Brong Ahafo, Volta region, and Ashanti region).
- Provide vehicles, including purchase and maintenance for distribution and monitoring.
- Provide handling equipment at some of the RMSs.

Information Management and Use—Gaps

- Automate the LMIS for central and regional level stores.

Financing—Gaps

- Mobilize resources to close the funding gap of antimalarial commodities (estimated at U.S.$13,299,154) in 2008–09.
- Conduct a feasibility study to determine sustainability of malaria treatment pricing within national health insurance scheme.
- Develop and implement a price policy for antimalarials to ensure long term sustainability.
- Develop commodity security strategy for antimalarials, ITNs, and other malaria program related commodities.

Human Resources—Gaps

- Additional human resources needed for the following:
  - procurement
  - logistics management
  - supervision
  - quality assurance and pharmacovigilance
  - rational use (front line medical personnel)

Private Sector—Gaps

- Explore options for capturing malaria data from the private sector and link it to the Private Sector Unit within MOH, e.g., PMR in private pharmacies, chemical sellers, maternity homes, and private medical practices.
- Investigate the possibility of increasing malaria products and ITN availability using the existing private sector models, such as the CAREshops, Blue Star Network, and the MBH.

6.0 IMPLEMENTATION PLAN 2008

INTRODUCTION

The 2008 implementation plan presented here provides for the start-up of activities to be carried out through the work plans produced by the two USAID implementing partners that participated in this assessment. Suggested activities for 2009 and 2010 represent necessary activities that are essential for continuation and scale up, as well as for monitoring and evaluation. These activities (2009 and 2010) need to be further refined for clarity and feasibility into implementation and work plans; it is expected that they will be funded by a combination of donors and partners, with the Government of Ghana.

The outline of the 2008 Implementation Plan provides under each objective—

- *activities*
- *time frame*
- *the responsible project*
- *stakeholders*
- *funds needed*
- *performance indicators.*

The 2008 Implementation Plan has nine main objectives:

1. Support the finalization, adoption, and implementation of new amendments in the malaria treatment policy and strengthen implementation of overall policy in public and private sector.
2. Promote and ensure rational use of antimalarials in public and private sector.
3. Strengthen and coordinate the mechanism for public-private partnership for malaria control.
4. Strengthen capacity for quantification and procurement at all levels for antimalarials and ITNs.
5. Strengthen monitoring and evaluation capacity for quantification and procurement at all levels for antimalarial commodities.
6. Improve storage conditions and distribution for antimalarials and ITNs at all levels.
7. Strengthen use of the existing inventory control system and LMIS for essential drugs (including antimalarials) and ITNs at all levels.
8. Strengthen organizational support for the supply chain of antimalarials and ITNs at all levels.
9. Strengthen financing for the supply chain of antimalarials and ITNs at all levels.

To ensure that the implementation objectives are achieved, the implementation plans must be maintained as *living* documents that will be used to manage responsibilities, i.e., stakeholders are to regularly monitor and review the plans, make changes as needed to ensure that key milestones are being reached on time and within budget, and to ensure that risks are being appropriately managed. It is important to note that targets for the key milestones have not been established within the implementation plan. The USAID | DELIVER PROJECT and the SPS Program will collaborate with NCMP and PMI-Ghana to develop set targets based on available resources.

IMPLEMENTATION PLAN
JANUARY–DECEMBER 2008

Objective 1. Support the finalization, adoption, and implementation of new amendments in the malaria treatment policy and strengthen implementation of overall policy in public and private sector.

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Support the finalization and adoption of updated malaria treatment policy	Q2	Q3	SPS	NMCP MOH/GHS-PPME WHO	• Malaria treatment policy updated, signed, and available
Provide support to update malaria treatment guidelines and harmonize with relevant medicines lists and other guidelines	Q3	Q3	SPS QHP	NMCP NHIA MOH-GNDP IMCI WHO	• Malaria treatment guidelines updated and harmonized
Provide support for the review and update of drug management components of job aids, communication, and BCC messages for new medicines	Q3	Q4	SPS GSCP	NMCP GHS	• Job aids developed with relevant drug management inputs • Communication material for BCC developed with relevant drug management inputs
Provide support for the update of malaria treatment policy training curriculum and training material with relevant drug management inputs	Q2	Q4	SPS QHP	NMCP MOH/GHS Pharmacy Council Medical & Dental Council	• Training curriculum updated with relevant drug management content

Key: Q1 = (Jan–March 2008); Q2 = (Apr–Jun 2008); Q3 = (Jul–Sept 2008); Q4 = (Oct–Dec 2008)

Objective 2. Promote and ensure rational use of antimalarials in public and private sector

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Undertake rapid assessment on the use of antimalarials	Q3	Q4	SPS	NMCP PSGh SPMDP MOH/GHS NHIA LCS	• Report on use of antimalarials available showing indicator-based results
Provide support to strengthen prescription procedures with links to good diagnostic practices for malaria	Q4	Q4	SPS	NMCP PSGh SPMDP MOH/GHS NHIA LCS	• Protocol for link developed • Guidelines and standard operating procedures (SOPs) for good prescription practices developed • Updated pharmacy training curriculum

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Provide support to strengthen dispensing practices in relation to antimalarials	Q4	Q4	SPS	NMCP PSGh SPMDP MOH/GHS NHIA LCS	• Guidelines and standard operating procedures (SOPs) for good dispensing practices developed • Updated pharmacy training curriculum
Provide support to the development of BCC and other appropriate interventions to ensure compliance to antimalarials	Q3	Q4	SPS GSCP QHP CHPS-TA	NMCP PSGh SPMDP MOH/GHS NHIA LCS	• BCC materials on compliance available for dissemination • Compliance to antimalarials incorporated into in-service trainings

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Provide support for the institution and enforcement of legal arrangements for phasing out antimalarial monotherapies	Q3	Q4	SPS	NMCP PSGh SPMDP MOH/GHS NHIA LCS	• Instituted legal arrangements for enforcing phase out in place

Objective 3. Strengthen and coordinate the mechanism for Public-Private partnership for Malaria Control

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Assess the key supply chain needs of the various private sector malaria activity partners	Q3	Q3	SPS	NMCP, PSGh, GMA, GRMA, GNCSA, Industry (mines, factories, hotels etc)	• Assessment report available
Based on assessment findings provide recommendations for priority areas of intervention	Q3	Q4	SPS	NMCP, PSGh, GMA, GRMA, GNCSA, Industry (mines, factories, hotels etc)	• Proposal developed for implementing
Develop information system and ITN database at NCMP : - assess current situation and propose appropriate system - prepare a database - train personnel and initiate use of system	Q2	Q4	USAID | DELIVER PROJECT	NMCP NETMARK	• System architecture available • Database parameters outlined • Database established and in use

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Establish feedback mechanisms linking NMCP to institutional sales of LLINs to mines/agriculture groups and special distributions of PLWHA to inform on quality of services and ITN availability	Q2	Q3	USAID | DELIVER PROJECT	NMCP, NETMARK, Users (mines, agric groups, PLWHAs)	• MOU for feedback mechanism signed • Feedback reports received • ITNs availability and usage rate determined

Objective 4a. Strengthen capacity for quantification and procurement at all levels for antimalarials

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Facilitate regular meetings between policy makers & relevant stakeholders to address procurement delays and related challenges	Q1	Q2	USAID | DELIVER PROJECT	1.National Procurement Board 2..Procurement unit MOH 3. Food and Drugs Board 4. Ghana Health Service Procurement Unit 5. Ghana Standards Board 4. WHO 5.NMCP 6.USAID 7. UNICEF 8. Ghana National Drug Program	• Procurement bottlenecks identified and listed • Coordination mechanism instituted • Procurement delays minimized

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Provide technical assistance to upgrade the capacity for national forecasting, quantification, and procurement planning for malaria commodities	Q2	Q2	USAID | DELIVER PROJECT	1.CMS 2. NMCP 3.Director of Pharmacy in Teaching Hospitals 4. Regional Medical Stores Pharmacists 5. WHO 6. UNICEF 7. Procurement unit of GHS 8.Supply Division - MOH	• Number of key people trained in quantification and procurement planning methodologies
Provide technical assistance to build capacity for facility-level forecasting and quantification	Q2	Q4	SPS	1.District and Facility Pharmacist 2. District and Facility Storekeeper 3. Regional Stores Director	• Number of facilities with trained staff members

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Prepare a two-year quantification for antimalarials	Q2	Q2	USAID | DELIVER PROJECT	1.CMS 2. NMCP 3.Director of Pharmacy in Teaching Hospitals 4. Regional Medical Stores Pharmacists 5. WHO 6. Ghana national Drugs Program/ Pharmacy Unit 7.Procurement unit of MOH 8.Supply Division - GHS	• Quantification results and the procurement plan available
Procure second line ACTs, rectal artesunate, and drugs for severe malaria	Q3	Q4	USAID | DELIVER PROJECT	1.NMCP 2.Procurement unit MOH 3.Ghana Health Service, SSDM	• Procured products available in the country

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Support NMCP to advocate for funds from MOH and development partners for implementation of the procurement plan for antimalarial medicines	Q2	Q3	USAID | DELIVER PROJECT	1. USAID 2.NMCP 3. Procurement unit MOH 4.Ghana Health Service, SSDM	• Over 80% availability of antimalarials • Number of facilities experiencing stockouts on the day of the supervisory visit *(contingent upon availability of resources)*
Assist NMCP and Procurement Unit to negotiate long-term contracts with suppliers for scheduled deliveries and monitor scheduled deliveries	Q2	Q2	USAID | DELIVER PROJECT	1.NMCP 2..Procurement unit MOH 3.Ghana Health Service Procurement Unit	• Long-term contracts with the provision for scheduled deliveries available
Review the Procurement Plan every six months to respond to emerging challenges	Q4	Q4	USAID | DELIVER PROJECT	1.NMCP 2.Procurement unit MOH 3.Ghana Health Service Procurement Unit	• Revised Procurement Plan

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Organize annual refresher courses for regional- and district-level personnel and quantification of antimalarials	Q2	Q4	SPS	1.District and Facility Pharmacist 2. District and Facility Storekeeper 3. Regional Stores Director	• Number of people trained on quantification of antimalarials by level
Strengthen the coordination mechanism among various donors and NMCP to ensure different procurement plans for antimalarial medicines are harmonized	Q2	Q4	USAID | DELIVER PROJECT	WHO UNICEF WB NMCP MOH/GHS	• Procurement plans from GOG and various donors available and harmonized
Support NMCP to advocate for recruitment of procurement officers (2) under favorable development partner conditionalities	Q3	Q4	USAID | DELIVER PROJECT UNICEF WHO	Ghana Health Service ,SSDM MOH, Supply and Procurement Division	• Procurement officers recruited

Objective 4b. Strengthen capacity for quantification and procurement at all levels for ITNs

Planned Activities	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Procure at least 350,000 LLINs for the public sector subsidized net distribution through ANC and other public health facilities	Q2	Q4	USAID | DELIVER PROJECT	NETMARK NMCP CMS	• Nets available for distribution in ANCs and other public health facilities
Organize a training course for central-level personnel in forecasting and quantification of ITNs and provide a two-year plan for ITNs	Q2	Q3	USAID | DELIVER PROJECT	1.CMS 2. NMCP 3. Procurement unit of GHS 4.Supply Division - MOH 5.Director of Pharmacy in Teaching Hospitals 6. Regional Medical Stores Pharmacists 7. WHO 8. UNICEF 9. NETMARK	• Number of people trained • Two-year quantification and procurement plan for ITNs available for implementation

Planned Activities	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Support NMCP to advocate for funding to be made available for implementation of the Procurement Plan for ITNs	Q2	Q2	USAID | DELIVER PROJECT NETMARK Other Donors	1. USAID 2.NMCP 3.Procurement unit MOH 4.Ghana Health Service, SSDM	• ITNs are available for distribution
Review the Procurement Plan every 6 months to respond to emerging challenges	Q4	Q4	USAID | DELIVER PROJECT	1.NMCP 2.NETMARK 3.Procurement unit MOH 4.Ghana Health Service Procurement Unit	• Reviewed procurement plan available
Develop a two-year quantification plan for retreatment kits	Q2	Q3	USAID | DELIVER PROJECT	1.NMCP 2.NETMARK 3.Procurement unit MOH 4.Ghana Health Service Procurement Unit	• Two-year plan available
Support NMCP to advocate for funding for implementation of the Procurement Plan for retreatment kits	Q2	Q2	USAID | DELIVER PROJECT	NMCP NETMARK	• Retreatment kits are available for use

Objective 5. Strengthen monitoring and evaluation capacity for quantification and procurement at all levels for antimalarial commodities

Planned Activities 2008	Timeframe		Responsible PMI-Funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Assist the Procurement Unit/ MOH to coordinate quantification and procurement of antimalarial commodities with different donor organizations	Q1	Q4	USAID | DELIVER PROJECT	1.NMCP 2.NETMARK 3.Procurement unit MOH 4.Ghana Health Service Procurement Unit	• Procurement plan available (developed in coordination with different donors and MOH/PU)
Develop procurement indicators to fit into malaria commodities M&E matrix	Q1	Q2	USAID | DELIVER PROJECT	1.NMCP 2.NETMARK 3.Procurement unit MOH 4.Ghana Health Service Procurement Unit	• Indicators developed with participation of procurement staff from various levels
Quarterly monitoring of implementation of procurement plans			USAID | DELIVER PROJECT	1.NMCP 2.NETMARK 3.Procurement unit MOH 4.Ghana Health Service Procurement Unit	• Quarterly review updates available (funds utilization, supplier performance etc)

Objective 6. Improve storage conditions and distribution for antimalarials and ITNs at all levels

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Support SSDM to review and expand available storage space at regional and facility levels where applicable	Q1	Q4	SPS	SSDM, P&S Div, MOH	• Number of refurbished facilities
Improve temperature control systems in regional and facility levels where applicable	Q1	Q4	SPS	SSDM, P&S Div, MOH	• Number of temperature control systems improved
Strengthen the management capacity to schedule transport in line with requirements from the lower-level facilities	Q1	Q4	USAID | DELIVER PROJECT	SSDM, P&S Div, MOH	• Number of personnel trained in scheduled delivery
Support advocacy for provision of required trucks at regional level for scheduled delivery system	Q1	Q4	USAID | DELIVER PROJECT	SSDM, P&S Div, MOH	• Number of regions with required trucks for scheduled delivery

Objective 7. Strengthen use of the existing inventory control system and LMIS for essential drugs (which also include antimalarials) and ITNs at all levels

Planned Activities 2008	Timeframe		Responsible PMI Project	Stakeholders	Performance Indicators
	Start	Finish			
Conduct training to re-enforce the maximum-minimum inventory control system for antimalarial commodities	Q1	Q4	USAID | DELIVER PROJECT	SSDM, NMCP, RHD	• Number of personnel trained by level on inventory control management
Conduct regular supportive monitoring to re-enforce the maximum-minimum inventory control system for antimalarial commodities	Q1	Q4	USAID | DELIVER PROJECT	NMCP, SSDM, Pharmacy unit	• Number of supportive supervisory visits conducted in collaboration with NMCP *(contingent upon available resources)*
Conduct refresher training on correct use of LMIS and logistics management at all levels	Q1	Q2	USAID | DELIVER PROJECT	NMCP, SSDM, Pharmacy unit, RHD	• Number of personnel trained on LMIS and logistics management by level
Update LMIS forms (e.g., RIRV to incorporate antimalarials that are not currently on the LMIS)	Q1	Q2	USAID | DELIVER PROJECT	NMCP, SSDM, Pharmacy unit	• Updated LMIS forms in use
Print revised LMIS forms	Q1	Q2	USAID | DELIVER PROJECT	SSDM	• Required forms available for use nationwide

Planned Activities 2008	Timeframe		Responsible PMI Project	Stakeholders	Performance Indicators
	Start	Finish			
Update SOPs for logistics management of public health commodities.	Q3	Q4	USAID | DELIVER PROJECT	PPME, SSDM	• Revised SOPs in use • Number of facilities that have SOPs for management of malaria commodities
Develop training strategy for logistics managers	Q1	Q1	USAID | DELIVER PROJECT	NMCP, SSDM, RHD	• New training strategy available for implementation

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Develop/Update training curriculum	Q1	Q1	USAID | DELIVER PROJECT	SSDM, NMCP Pharmacy Unit	• Updated curriculum available for use
Assist with automation of LMIS for central and regional level	Q1	Q3	USAID | DELIVER PROJECT	P&S, CMS, RHD, SSDM	• Plan for automation is available
Strengthen the role of district pharmacist or a designated officer (pharmacy technician etc) playing that role	Q3	Q4	USAID | DELIVER PROJECT	SSDM, Pharmacy Unit, GHS	• Number of defined activities performed by the designated officer
Improve coordination of stakeholders at all levels	Q1	Q4	USAID | DELIVER PROJECT	NMCP, SSDM, Procurement Unit	• Number of coordination meetings held • Number of decisions implemented
Design and implement a tool for private sector to collect information on the number of people treated for malaria and quantities of drugs dispensed to the patients in all regions	Q3	Q4	SPS	PSG GMA NMCP	• Tool available and used routinely

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Design LMIS for the private sector	Q2	Q3	SPS	QHP PSG GMA NMCP	• LMIS adopted and in use • Data on commodity stock status available
Develop LMIS training strategy for the private sector	Q3	Q3	SPS	QHP PSG GMA NMCP	• Training strategy available for implementation
Develop LMIS training curriculum for the private sector	Q3	Q3	SPS	QHP PSG GMA NMCP	• Training curriculum available for use
Conduct training on LMIS and SOPs for the private sector (antimalarials and ITNs) in all regions	Q3	Q4	SPS	QHP PSG GMA NMCP	• Number of providers trained

Objective 8. Strengthen organizational support for antimalarials and ITNs supply and use at all levels

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Provide support for incorporating logistics and drug management checklists into supervisory tools at all levels	Q2	Q4	SPS USAID | DELIVER PROJECT	NMCP, IMCI-GHS, PPME, SSDM, Pharmacy Unit	• Harmonized tool is available for use
Provide logistics and drug management checklists for central-level agencies to use for supervision support	Q3	Q4	SPS USAID | DELIVER PROJECT	PHD, ICD, NMCP, RHD, SSDM, Pharmacy Unit	• Number of facilities receiving supervisory visits • Number of reports available
Provide support for use of harmonized tool for supervision of facilities by district level (DHMT) and regional health directorate (RHD)for antimalarials and ITNs	Q3	Q4	SPS USAID | DELIVER PROJECT	NMCP, RHD, DHMT, SSDM, Pharmacy Unit, Netmark	• Number of facilities that receive supervisory visits • Number of reports available

Objective 9. Strengthen financing for antimalarials and ITNs procurement and supply at all levels

Planned Activities 2008	Timeframe		Responsible PMI-funded Project	Stakeholders	Performance Indicators
	Start	Finish			
Engage health economist to lead the process of appropriate malaria treatment pricing	Q3	Q4	SPS	NMCP, WHO, WB, GF, P&S Div, MOFEP, NHIA	• Pricing strategy report available
Conduct a feasibility study to determine sustainability of malaria treatment pricing within national health insurance scheme	Q3	Q4	SPS	NMCP, WHO, WB, GF, P&S Div, MOFEP, NHIA	• Feasibility study is available
Hold a stakeholders meeting to disseminate the findings of the feasibility and funding study of the malaria treatment pricing	Q4	Q4	SPS	NMCP, WHO, WB, GF, P&S Div, MOFEP, NHIA	• Meeting held and reports available

7.0 PROPOSED ACTIVITIES—2009 (JANUARY–DECEMBER 2009)

Policy, Product Selection, Drug Regulation, Quality Assurance (QA), Rational Use

- Support to policy implementation
- Monitoring and evaluation of malaria treatment policy implementation
- Support the establishment of a national bioequivalence center
- Strengthen drug quality monitoring capacity
- Support post-market surveillance for antimalarials
- Strengthen pharmacovigilance
- Monitoring the availability and use of appropriate antimalarials
- Strengthening prescription and dispensing procedures for the rational use of antimalarials
- Provide BCC and other appropriate interventions to ensure compliance to antimalarials

Quantification and Procurement Planning

- Organize refresher courses for central-, regional-, and district-level personnel in forecasting and quantification of antimalarials, ITNs, and retreatment kits
- Review Forecast and Procurement Plans every six months to respond to emerging challenges
- Organize meeting between policymakers and relevant stakeholders to discuss how to address the updates on issues of procurement harmonization for ITNs
- Procure LLINs for the public sector subsidized net distribution through ANC and other public health facilities
- Quarterly monitoring of implementation of procurement plans and funds flow
- Maintain system for undertaking a monthly monitoring of emergency requests
- Evaluation of suppliers performance
- Quality evaluation of products

- Support to established multi-sectoral M&E committee for updating indicators from various sectors and fitting in procurement indicators to fit into malaria commodities M&E matrix
- Training of personnel in M& E

Warehousing, Storage, Transportation, and Distribution

- Support SSDM in ongoing strengthening of the management capacity to schedule transport in line with requirements from the lower-level facilities
- Support transportation for the distribution of ITNs
- Support ITN voucher printing and distribution

Inventory Control System and Logistics Management Information System (LMIS)

- Conduct training and regular monitoring to reinforce the maximum-minimum inventory control system for antimalarial commodities
- Conduct refresher training on correct use of LMIS and logistics management at all levels
- Automate LMIS for central- and regional-level (pending resources availability)
- Strengthen the role of district pharmacists or a designated officer playing that role ++
- Implement a tool for private sector to collect information on the number of people treated for malaria and quantities of drugs dispensed to the patients
- Conduct training on LMIS and SOPs for the private sector (antimalarials and ITNs)

Organizational Support, Finance, and Donor Coordination/Commodity Security, Public Private Partnership (PPP)

- Support supervision of facilities by district-level (DHMT) and regional health directorate (RHD) for antimalarials and ITNs
- Implement a price policy for antimalarials to ensure long term sustainability
- Initiate the development of commodity security for antimalarials, ITNs, and other malaria program–related commodities
- Advocate for a reserve fund program based on results of studies
- Establish a patients medication record system in the private sector and link with MOH to monitor quality of services, prescription and dispensing habits, and quantities of antimalarial drugs dispensed to patients
- Develop information system and database to automate patient medication record system
- Support NMCP to maintain and regularly update ITN database

8.0 PROPOSED ACTIVITIES–2010 (JANUARY–DECEMBER 2010)

Policy, Product Selection, Drug Regulation, Quality Assurance (QA), Rational Use

- Support to policy implementation
- Monitoring and evaluation of malaria treatment policy implementation
- Strengthen drug quality monitoring capacity
- Support post-market surveillance for antimalarials
- Strengthen pharmacovigilance
- Monitoring the availability and use of appropriate antimalarials
- Strengthening prescription and dispensing procedures for the rational use of antimalarials
- Provide BCC and other appropriate interventions to ensure compliance to antimalarials

Quantification and Procurement Planning

- Organize refresher courses for central-, regional-, and district-level personnel in forecasting and quantification of antimalarials, ITNs, and retreatment kits
- Review of forecast and procurement plans quarterly to respond to emerging challenges
- Support NMCP in monitoring various donors procurement plans to ensure different procurement plans for antimalarial medicines, retreatment kits, RDTs, and laboratory commodities are harmonized
- Procure second line ACTs, rectal artesunate, and drugs for severe malaria
- Procure LLINs for the public sector subsidized net distribution through ANC and other public health facilities
- Quarterly monitoring of implementation of procurement plans and funds flow
- Maintain system for undertaking a monthly monitoring of emergency requests
- Evaluation of suppliers performance and quality evaluation of products
- Support to established multi-sectoral M&E committee for updating indicators from various sectors and incorporating procurement indicators into malaria commodities M&E matrix

Warehousing, Storage, Transportation, and Distribution

- Support SSDM in ongoing strengthening of the management capacity to schedule transport in line with requirements from the lower-level facilities

- Support transportation for the distribution of ITNs
- Support ITN voucher printing and distribution

Inventory Control System and Logistics Management Information System (LMIS)

- Conduct training to re-enforce the maximum-minimum inventory control system for antimalarial commodities
- Conduct regular monitoring to re-enforce the maximum-minimum inventory control system for antimalarial commodities
- Conduct refresher training on proper use of LMIS and logistics management at all levels
- Update (if needed) SOPs.
- Automate LMIS for central and regional level
- Strengthen the role of district pharmacist or a designated officer playing that role
- Implement a tool for private sector to collect information on the number of people treated for malaria and quantities of drugs dispensed to the patients in the last three out of ten regions
- Conduct training on LMIS and SOPs for the private sector (antimalarials and ITNs) in the last three out of ten regions
- Improve coordination of stakeholders at all levels

Organizational Support, Finance, and Donor Coordination/Commodity Security, Public Private Partnership (PPP)

- Support supervision by NMCP
- Support supervision of facilities by district level (DHMT) and regional health directorate (RHD)for antimalarials and ITNs
- Implement the commodity security strategy for antimalarials, ITNs, and other malaria program–related commodities
- Ongoing reserve fund program monitoring
- Develop program sustainability plan
- Monitoring of quality of services, prescription and dispensing habits, and quantities of antimalarial drugs dispensed to the patients
- Support the maintenance and regular update of patients medication records in the private sector
- Support NMCP to maintain and regularly update ITN database

ANNEX 1. ASSESSMENT TEAM TIME-TABLE

2008		January			2008	
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	1	2	3	4	5	6
7 **Morning & afternoon** **9am**-Review meeting schedules, SOW and assessment tools ***Conf room GRMA*** **Afternoon** **3pm** - In brief with USAID and the assessment team	8 **Morning + Afternoon** **11 am**- Joint meeting JSI/MSH/GOG to agree on the workshop facilitation and assign the roles and responsibilities ***NMCP conf room***	9 **Morning + Afternoon** Ghana Malaria Assessment (Workshop) ***-La Palm Beach Hotel-*** *Gogh, international agencies, Can's, GHS regional, district and facility level staff, private sector*	10 **Morning** Data analysis (based on workshop findings), scheduling follow-up visits **Afternoon** ***Facility visits***	11 **Morning + Afternoon** Facility visits ** *– 2 teams made up of equal members from SPS, USAID | DELIVER PROJECT, NMCP, USAID if available. One each for the east and west of Accra. They will visit stores, public and private SDPs.*	12 **Morning + Afternoon** Data analysis (based on findings from facility visits) and preparations for implementation plan development workshop *- Team activity at Novotel (includes the NMCP counterparts)*	13 **Morning + Afternoon** Data analysis and preparations for implementation plan development workshop *- Team activity at* ***Novotel***
14 **Morning + Afternoon** Follow up visits* *-these will be determined from the outcome of the assessment*	15 **Morning + Afternoon** Follow up visits* *- these will be determined from the outcome of the assessment*	16 **Morning + Afternoon** Implementation plan development workshop ***_Novotel Hotel*** *Gogh, international agencies, Can's, GHS regional, district and facility level staff, private sector*	17 **Morning + Afternoon** Implementation plan development workshop ***_ Novotel Hotel*** *- Same -*	18 **Morning** **8.30 am** – Mission Debriefing - US Embassy Compound **10.00am** - Stakeholders debriefing ***- Novotel Hotel*** *- Same -*	19	20

**Follow-up visits will be conducted with partners where we may still need further clarification on the collected information.

ANNEX 2. DOCUMENTS CONSULTED

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ANNEX 3. STAKEHOLDER WORKSHOP ON STRENGTHENING MALARIA COMMODITIES SUPPLY CHAIN & PHARMACEUTICAL CARE MANAGEMENT, JANUARY 9, 2008

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ANNEX 4. STAKEHOLDER WORKSHOP GROUP PRESENTATIONS ON STRENGTHS, WEAKNESSES & RECOMMENDATIONS

GROUP 1: POLICY, RATIONAL USE, AND QUALITY ASSURANCE

Strengths and Weaknesses:

Strengths	Weaknesses
• Strong political commitment: 1% District Assembly common fund for malaria; Minister good advocate. • Strong intersectoral collaboration that fosters consensus building • Strong national program with motivated staff • Use of research to inform policy	• Delayed approval of draft malaria policy due to Comments from Ministry of Health • Financing of ACTs • Involvement of stakeholders • Poor provider adherence to malaria treatment regimen • Alternative ACTs not declassified • Limited supply of ACTs and Quinine • Poor attitude of prescribers to use of quinine • Wide availability and use of monotherapy; poor prescriber practice • Trainings conducted in the private sector not being translated into practice (Public and private) • Weak capacity of local manufacturers to produce ACTs • Low actual use of ITNS

Recommendations

- **Antimalarial medicines:**
  - Revise policy to address concerns of MOH
  - Find an appropriate advocate to move the policy forward
  - Government should provide funds fro the procurement of ACTs and Quinine
  - Develop financing scenarios or options

- Implement phasing out plan for monotherapies
- Declassify all program ACTs
- Conduct a study into prescription habits of providers for use of quinine in first trimester
- Assess to see if multiple interventions are needed, and plan for such immediately
- Training and re-training of providers (may need different approaches for public and private sectors)
- Improve systems of accountability: supervision, job aids, quality assurance, appraisal
- Support local manufacturers to
  - conduct human studies
  - improve quality of products

- Bed Nets
  - Develop appropriate technology for hanging ITNs in the homes

GROUP 2: PROCUREMENT

Strengths and weaknesses

Strengths	Weaknesses
• Existence of a public procurement law • Procurement process for malaria drugs are institutionalized and operational • Reporting system for monitoring stock status and other logistics data is available	• Procurement of malaria drugs did not include sufficient quantities to cover procurement lead times and buffer stocks. • Inadequate mechanism to coordinate procurement activities from various donors • Limited human resource to manage adequately the procurement process

Recommendations

- Establish minimum/maximum inventory control system to ensure sufficient quantities are procured to cover for uncertain procurement lead times and buffer stocks to maintain an uninterrupted supply of anti-malaria drugs
- Pursue flexible framework contracts with suppliers which will allow adjustment in shipment quantities and schedules in response to programme demands, patient needs, drug consumption and stock levels over time
- Institutionalize coordinating mechanisms for procurement from various donors
- Recruit and train more procurement officers to support increase workload

GROUP 2: FORECASTING AND QUANTIFICATION

Strengths and weaknesses

Strengths	Weaknesses
• Human resources available for forecasting at the national level • Systems available for forecasting	• Short term forecasting and procurement planning causes challenges for procurement planning especially with external donors • Inadequate mechanisms for standardized forecasting

Recommendations

- Standardize methodology for forecasting and quantification for malaria commodities to introduce long term forecasting, quantification and procurement planning.
- Provide technical assistance to build capacity for forecasting and quantification.

BED-NETS (FORECASTING AND PROCUREMENT)

Strengths	Weaknesses
• Systems exist for procurement of bed-nets.	• Inadequate capacity to forecast the national needs. • No established minimum/maximum inventory control system and logistics management information system necessary to support forecasting and quantification for bed-nets

Recommendations

- Establish minimum/maximum inventory control system to ensure sufficient quantities are procured to cover for procurement lead times and buffer stocks to maintain an uninterrupted supply of bed nets.

GROUP 3: WAREHOUSING AND STORAGE

Strengths and weaknesses for antimalarials

Strengths	Weaknesses
• Storage system is in place (CMS, RMS) • Policy on good storage • Skilled staff is in place	• Capacity building is needed • Data management is weak • Refurbishment and regular maintenance at the RMS • Finance for storage facilities should be improved

Recommendations

- Provision of transportation and handling equipment for storage facilities
- Computerization and networking of stores– electronic data interchange
- Capacity building for new staff.

Strengths and weaknesses for ITNs

Strengths	Weaknesses
• Policy is in place • Proper storage exists at CMS and some RMS • Provision for re-treatment of bed nets	• Net pricing- standardization of voucher schemes and public sector nets • Not adequate storage capacity at lower levels • Lack of electronic data for tracking

Recommendations

- Strengthening Of Planning/Forecasting of ITNs
- Standardization Of Information On The Labels
- Standardization Of Voucher Scheme
- Provision Of Shelters For Storage At Lower Levels
- Design Special Packaging For GHS Nets
- Capacity Building On Storage Practices
- Electronic Networking Of Stores For Data On ITNs
- Need For Specific Policy On Net Disposal

GROUP 3: TRANSPORTATION AND DISTRIBUTION

Strengths and weaknesses for antimalarials

Strengths	Weaknesses
• Storage system is in place (CMS and RMS) • Policy is in place • Pooling system is in place to maximize use of resources • Prioritization of cargo	• Not sufficient transport for distribution and monitoring • Insufficient budget for replacement of vehicles • Insufficient budget for fuel

Recommendations- Antimalarials

- The need for replacement of old vehicles to enhance distribution
- Need for a budget dedicated for antimalarial activities (for distribution)
- Appropriate distribution vans (3.5 metric tons capacity)

Strengths and weaknesses for ITNs

Strengths	Weaknesses
• Established routes for distribution exist • Established procedures for distribution available • Handling outreach for ITNs combined with other commodities	• Lack of adequate handling equipment • Lack of transport for outreach activities • High operational cost of transportation • Packaging for private sector similar to public sector (e.g. GHS) subsidized nets • High distribution costs

Recommendations- ITNs

- Elimination of discrepancy in cost between public and private sector voucher schemes.
- Financial assistance in the areas of transportation and distribution overheads.
- Ensure adequate means of transportation are available for scheduled distribution of nets.
- Involvement of storekeepers at all levels in the planning process to ensure awareness of scheduled distribution.

GROUP 4 – INVENTORY CONTROL

Strengths and weaknesses

Strengths	Weaknesses
• Guidelines are available • Structures for information exist	• Poor supply so procedures and guidelines are inapplicable • Lack of knowledge of some personnel about programs they are supposed to be managing in the regions • Poor feedback mechanisms • Non-use of information provided

Recommendations

- Hold and transfer money to accredited suppliers to fasten response to supply request
- Keep up training schedules
- Increase awareness about guidelines and policies
- Involve DDPS (deputy director of pharmaceutical services) in management of program commodities
- Encourage local manufacturers to fill supply gaps rapidly
- Institute community level M& E to improve ITN use
- M&E should be robust as the one for EM under DDPS
- Strategically reduce free push quantities to stimulate reporting and appropriate use
- Use innovative methods to improve ITN distribution and use e.g. distribution during voting and using local unit committees for M&E.

GROUP 4 – LMIS

Strengths and weaknesses

Strengths	Weaknesses
• Policy and guidelines available • established pathway for information flow • LMIS for ITNs in the private sector (NetMark)	• Lack of resources for implementation • Poor capacity of staff to manage logistics activities • Lack of enough staff to manage logistics activities • Poor ability to enforce policy and guidelines • Lack of training and re-training programs • Lack of LMIS for ITNs in public sector • Poor capacity of central level training level unit to enforce regional training. They should do better coordination

Recommendations

- Train staff for logistics functions
- Create greater awareness of policies and guidelines
- ITN LMIS to serve the public and private sector
- Involve RHD (regional health directorate) in more program management and M&E.
- Provide resources (regional and district) for program implementation.

GROUP 5 – FINANCE AND DONOR COORDINATION

Strengths and weaknesses – public sector

Strengths	Weaknesses
• Infrastructure is in place • Critical mass of human resources at CMS and RMS • SOPs in place per guidelines • Proven track record for handling large scale logistics- like the Global Fund, EPI • Funding at current level is adequate • Decentralized system • Basic institutional structures are in place 1. Store supplies and drugs management 2. PNS?? • Regular HAS/Clinical Care group	• Forecasting done at central level • Inadequate M&E capacity 1. Different tools being used 2 Supervision- inadequate 3. Data management • Sub optimal storage facility • HR capacity at peripheries is low • Inadequate distribution systems

Recommendations

- Strengthen training for use of SOPs
- Good forecasting techniques
- Centralized inventory control system at central, region and district levels
- Strengthen M&E capacity at all levels

Strengths and weaknesses – private sector

Strengths	Weaknesses
• Regulatory structures are in place • Existing models to learn from SEAM-MSH, MBH Pharmacy outlets • Geographic reach is far and wide the facilities have good HR and mostly well trained • Vibrant private sector with under utilized capacity	• Highly fragmented • Financing • Tariffs and taxes (15% VAT) • Lack of data from private sector- consumption, quantifications

Challenges

- Affordability
- Quality
- Physical access
- Rational drug use
- Unclear PPP arrangements

Recommendations

- Increased engagement with the private sector
- PMI to sponsor a study on the private sector to see areas of cooperation e.g. Manufacturing distribution etc
- Improving capacity for surveillance and monitoring of the private sector

GROUP 5: FINANCING

Strengths and weaknesses

Strengths	Weaknesses
• Sound strategy is in place –, GOG internally generated funds, basket funding private financing • Cost Recovery- strategies with subsidies—sustainability	• National Health insurance scheme—will it be able to survive in the long term. Does not cover full costs of ACTs now

Recommendations

- Implement realistic pricing policy at this stage for anti malarial and ITNs' which would ensure long-term sustainability.
- Increase engagement of private sector.
- Deploy distribution of District Assembly Common Fund for malaria prevention
- Clear cut policies on cost recovered so far and its use at the facilities.

ANNEX 5. LIST OF STAKEHOLDERS WITH WHOM ONE-ON-ONE INTERVIEWS WERE HELD

Azeez, Jocelyn (Mrs.), Head, Procurement Unit, Directorate of Procurement and Supplies Unit

Bart-Plange, Constance (Dr.), National Malaria Control Program Manager

Boateng, Samuel, Mr. (Director, Procurement and Supplies Unit

Dodoo, Alex (Dr.), President, Pharmaceutical Society of Ghana and Head, Centre for Tropical Clinical Pharmacology and
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Gopal, Mr., M&G Pharmaceuticals

Gyimah, Peter (Mr.), Head, Central Medical Stores

Marius de Jong, (Dr.), Fund Secretary, Royal Netherlands Embassy

ANNEX 6. FACILITIES VISITED DURING ASSESSMENT

Facility Name	Level	Sector	Facility Type	Location
Central Medical Stores (CMS)	Central	Public	Medical Store	Accra
Greater Accra Regional Medical Stores (RMS)	Regional	Public	Medical Store	Accra
Ridge Hospital, Accra	Regional	Public	Hospital	Accra
Dangbe East District Hospital	District	Public	Hospital	Ada
Dangbe East Health Center	Health Facility	Public	Health Centre	Ada
Nyame Bekyere Maternity Home	Health Facility	Public	Maternity Clinic	Ashiaman
Apam Catholic Hospital	Health Facility	Mission	Hospital	Apam
Winneba Government Hospital	Health Facility	Public	Hospital	Winneba
Okyereko CHPS Zone	Community Program	Public	Community Program	Winneba
St. Joe's Clinic	Health Facility	Private	Private Clinic	Kasoa
Tulip Pharmacy, Tema	Private Pharmacy	Private	Private Drug Outlet	Tema
Cantonment Pharmacy, Accra	Private Pharmacy	Private	Private Drug Outlet	Accra
Jucad Pharmacy, Kasoa	Private Pharmacy	Private	Private Drug Outlet	Kasoa
Adom Chemical Shop	Chemical Shop	Private	Private Drug Outlet	Kaneshie

ANNEX 7. PMI/GHANA IMPLEMENTATION PLANNING WORKSHOP, JANUARY 16, 2008

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