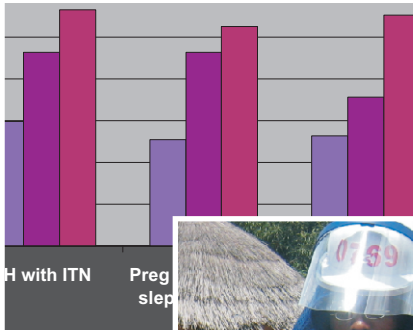




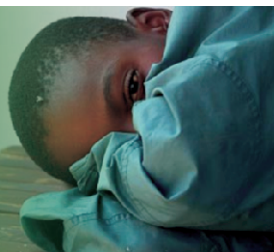
# STRATEGIC PLAN *for* MALARIA CONTROL *in* GHANA

2008-2015

REPUBLIC OF GHANA



Ministry of Health



## FOREWORD

Ghana foresees a promising future with regard to malaria control and the reduction of its burden. The Ministry of Health has worked tirelessly on developing a Strategic Framework that is consistent with its vision to improve life expectancy and change the course of health care provision through a focus on creating wealth through health. We are clearly focused on meeting the challenges of translating strategies into service delivery; a challenge that finally, is beginning to lead to an anticipation and expectation that we are clearly addressing inherent weaknesses in our health system.

Malaria is the leading cause of illness and death in the country. Furthermore, it impacts negatively on the different demographic and socio-economic groups. For instance, children under five years and pregnant women are known to be relatively more adversely affected. It contributes to the relatively high maternal mortality in the country as demonstrated by the estimates that 11% of mortality in pregnant women is related to malaria. Up to 30% of deaths in children less than 5 years are attributable to malaria. These trends are a major concern to the Government and people of Ghana.


In the past years, the health sector had been faced with some resource constraints, which had adversely affected the full and successful implementation of health interventions to achieve desired objectives. This situation had previously also effective sustainability of resources to priority diseases.

I am glad to note that in the last few years the resource landscape has partially changed for the better. In particular, during 2005, the resource situation improved significantly. This has been a collective collaboration of our health partners' and the Government of Ghana.

The increased levels of partnerships in the area of malaria control provide a solid foundation for sound coordination of malaria control within the context of planning and management. In order for impact to be achieved and the gains to be sustained, emphasis will be on the use of proven cost-effective interventions coupled with necessary local initiatives that will ensure success. The success of malaria control program is under-pinned in the principles of: rapid scale up and expansion of all relevant and proven interventions, universal access to proven and cost effective interventions, ensuring equity through community and gender based approaches that focus on hard to reach communities and the support of the health systems.

It is my conviction that this strategic plan will provide guidance towards the achievement of the national malaria goals.

I wish to take this opportunity to thank all our Health Partners and other Stakeholders, and assure the general public that Government of Ghana is committed to eliminating malaria and improve the health status of the Ghanaian population.



**Dr. George Sipa-Adjah YANKEY**  
**Minister of Health**

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Ghana Coalition of NGOs in Malaria

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Ministry of Agriculture

Ministry of Education

Ministry of Finance

Ministry of Local Government & Rural Development

Ministry of Science & Technology

NETMARK

Noguchi Memorial Institute for Medical Research

PLANGhana

Professional Associations (GMA, Pharmaceutical Society)

Public Health Directorate

School Of Public Health

UNITS/PROGRAMMES OF GHS INCLUDING: FAMILY HEALTH, HPD, EPI, PPME, ICD, NCDPCP

UNICEF

USAID PMI Implementing Agencies

WHO (Ghana, AFRO & Geneva)

World Bank

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# EXECUTIVE SUMMARY

## Introduction

Since 1998, Ghana has been implementing the Roll Back Malaria Strategy. In the year 2000, the 2000-2010 strategic plan was drawn which gave strategic direction to the Malaria Control Programme. Though Ghana has been making progress implementing its national malaria programme, there are still gaps in achieving the targets in the previous plan. Lessons learnt from the implementation of the previous strategic plan has informed this current plan.

The purpose of this document is to give strategic direction in order to attain the goal of reducing the current malaria disease burden by 75% by the year 2015 in line with the attainment of the Millennium Development Goals (MDGs). The specific objectives of the plan are as follows:

## Specific Objectives

The plan covers the areas of improving multiple prevention, improving access to prompt and effective treatment, strengthening health systems at all levels, and creating and sustaining partnership. The specific objectives are as follows:

- 100% of households will own at least one ITN
- 80% of the general population will sleep under ITNs
- Increase the number of children under-five and pregnant women sleeping under treated net from current levels to 85%
- 100% (All) pregnant women shall be on appropriate Intermittent Preventive Treatment (receive at least two or more doses of sulphadoxine-pyrimethamine under DOT)
- 90% of all structures in targeted districts will be covered through indoor residual spraying
- All (100%) health facilities will provide prompt and effective treatment using ACTs
- 90% of all patients with uncomplicated malaria will be correctly managed at public and private health facilities using ACTs
- All (100%) communities will have access to community-based treatment for uncomplicated malaria
- 90% of caretakers and parents will be able to recognize early symptoms and signs of malaria
- 90% of children under five years of age with fever will receive an appropriate ACT within 24 hours of onset.

## STRATEGIES

### Strategies to achieve these objectives include:

- \* Equip all health facilities with malaria diagnostic facilities (microscopes or RDTs) and provide effective antimalarial drugs.
- \* Strengthen human resource through in-service training of laboratory technicians and clinicians.
- \* Scale-up community based treatment of malaria in all districts through the home base care of malaria targeting children under five years living in rural areas and areas with limited access.
- \* ITM scale-up access to Long Lasting Insecticide Nets to achieve universal coverage - Insecticide treat.
- \* IRS. IRS will be scaled up rapidly, building on the models of IRS campaigns in Obuasi and the Northern Region.
- \* Strengthen the routine data collection system to capture reliable information, and undertake regular operational researches to provide evidence for decision making.
- \* Forge functional partnerships and mechanisms between departments, programmes within and outside the health sector.

### Expected Outcomes

When these strategies are implemented it is expected that the following outcomes will be achieved:

#### 1. Improved Malaria Prevention

- \* Increased use of ITMs by children and pregnant women
- \* Improved drainage, mosquito-proofing of houses and general sanitation
- \* Reduction of mosquito population through in-door residual spraying and larviciding

#### 2. Improved access to Prompt and Effective Treatment

- \* Early recognition of fever and early treatment with Artesunate-Amodiaquine especially at the home
- \* Appropriate referral of severe cases assured
- \* Quality of treatment for malaria improved
- \* Basic services accessible to the sick

#### 3. Strengthened Monitoring and Evaluation, and Operational Research

- \* Increased availability of funds for research and monitoring
- \* Capacity in malaria research and monitoring improved
- \* Routine monitoring of programme activities and outputs strengthened
- \* Operational research into malaria undertaken and results disseminated and utilized to improve program planning
- \* Periodic evaluation of programme outcomes and impact institutionalized,



- \* Safety and efficacy of drugs and insecticides monitoring institutionalized and strengthened
- \* Annual programme reviews conducted

#### **4. Strengthened Health Systems at all Levels**

- \* Human resource capacity built to deliver health (including malaria) interventions at all levels
- \* Infrastructure, logistics and communication systems improved
- \* Financial management improved at all levels
- \* Improved procurement and supply management
- \* Community systems strengthened

#### **5. Create and Sustain Partnerships for Malaria Control**

- \* Functional partnerships and mechanisms between departments and programmes within health
- \* Functional partnerships and mechanisms with and between development agencies
- \* Functional partnership and mechanisms with and between government sectors
- \* Functional partnership and mechanisms with and between NGOs, private sectors and informal sectors

## LIST OF ABBREVIATIONS AND ACRONYMS

5YPOW	Five-year Programme of Work
AA	Artesunate-Amodiaquine
ACT	Artemisinin Combination Therapy
ADRs	Adverse Drug Reactions
AGA	Anglo Gold Ashanti
ANC	Antenatal Care
ARI	Acute Respiratory Infection
ARV/ART	Anti-retroviral/anti-retroviral therapy
BCC	Behaviour Change Communication
CBAs	Community Based Agents
CBO	Community Based Organisation
CBS	Community Based Surveillance
CCM	Country Coordinating Mechanism
CDC	Centre for Disease Control
CDDs	Community Drug Distributors
CHIM	Centre for Health Information Management
CHNs	Community Health nurses
CBHW	Community Based Health Worker
CHO	Community Health Officer
CHPS	Community Health Planning Services System
CHPS-TA	CHPS-Technical Assistance Project
CMS	Central Medical Store
DANIDA	Danish International Development Agency
DFID	Department for International Development
DHMT	District Health Management Team
DHMTs	District Health Management Teams
DHS	Demographic and Health Survey
DMIS	District Management Information Systems
DOT	Directly Observed Therapy
EPA	Environmental Protection Agency

EM	Environmental Management
FBO	Faith Based Organisation
FDB	Food and Drugs Board
G6PD	Glucose 6 Phosphate Dehydrogenase Deficiency
GAVI	Global Alliance for Vaccine Initiative
GDHS	Ghana Demographic Health Survey
GFATM	Global Fund to Fight AIDS Tuberculosis and Malaria
GHS	Ghana Health Services
GIS	Geographic Information System or Global Positioning
GNDP	Ghana National Drugs Programme
GoG	Government of Ghana
GPRS II	Ghana Poverty Reduction Strategy
HBC	Home Based Care
HIPC	Highly-Indebted Poor Country
HIRD	High Impact Rapid Delivery
HIS	Health Information System
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HMIS	Health Management Information Systems
HPU-GHS	Health Promotion Unit of the Ghana Health Service
HRU	Health Research Unit
HR	Human Resource
ICT	Information and Communication Technology
ICD	Institutional Care Division
IDSR	Integrated Disease Surveillance and Response
IEC	Information, Education and Communication
IMCI	Integrated Management of Childhood Illnesses
IMVM	Integrated Malaria Vector Management Policy
IVM	Integrated Vector Management
IPTi	Intermittent Preventive Treatment for Infants
IPTp	Intermittent Preventive Treatment of Malaria in Pregnancy
IRS	Indoor Residual Spraying
ITM	Insecticide Treated Materials

ITN	Insecticide Treated Nets
KAP	Knowledge, Attitudes and Practices
LLIN	Long lasting Insecticide Treated Nets
LMIS	Logistics Management Information Systems
M&E	Monitoring & Evaluation
MDAs	Ministries, Departments and Agencies
MDBS	Multi Donor Budget Support
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in Pregnancy
MIS	Malaria Information System
MLGRD	Ministry of Local Government & Rural Development
MoE	Ministry of Education
MOH	Ministry of Health
MOUs	Memorandum of Understanding
MTHS	Medium Term Health Strategy
NGO	Non-Governmental Organization
NHIS	National Health Insurance Scheme
NMCP	National Malaria Control Programme
NMIMR	Noguchi Memorial Institute of Medical Research
OPD	Out-patient Department
OTC	Over-the-counter
PMI	President's Malaria Initiative
POW	Programme of Work
PPC	Personal Protective Clothing
PPE	Personal Protective Equipment
PR	Principal Recipient
QAP	Quality Assurance Programme
	Roll Back Malaria
RCHU	Reproductive and Child Health Unit
RDT	Rapid diagnostic test
RHMTs	Regional Health Management Teams

S/P	Sulfadoxine-pyrimethamine
SDHT	Sub-district Health Team
SMS	School of Medical Sciences
SOP	Standard Operating Procedures
SP	Sulfadoxine-pyrimethamine
SWAP	Sector-wide Approach
TB	Tuberculosis
TOR	Terms of Reference
TUC	Trades Union Congress
USAID	United State Agency For International Development
UNICEF	United Nations Children's Education Fund
WHO	World Health Organization
WHOPES	World Health Organization Pesticides Evaluation Schemes.

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## INTRODUCTION

Since 1998, Ghana has been implementing the Roll Back Malaria Strategy. In the year 2000, the 2000-2010 strategic plan was drawn which gave strategic direction to the Malaria Control Programme. Ghana has been making progress implementing its national malaria program. A comparison of the results in MICS 2006 survey report with 2003 Ghana Demographic and Health Survey shows there have been significant improvements in areas such as ITN ownership and usage though they are below the RBM targets of 60% coverage target set for 2005.

Since the previous strategic plan was drawn, new and effective interventions such as treating uncomplicated malaria with artemisinin-based therapy, malaria prevention in pregnancy through use of sulfadoxine-pyrimethamine and indoor residual spraying in hyperendemic countries have emerged. Moreover, the Abuja declaration of May 2006, aims at achieving and sustaining universal access to appropriate interventions for all populations at risk of malaria. To that end, the goal of malaria control in Ghana has been revised to reduce morbidity and mortality by 75% by 2015.

There is therefore the need to mobilize resources to support the scale up of interventions, sustain control and build health systems capacity to remove implementation bottlenecks.

This strategic plan has been developed to reflect these changing trends. It consolidates the achievements gained in the last seven years and builds on new interventions and strategies with support from a broader range of stakeholders including health partners, community members, research community, the academic sector and NGOs. It defines strategies to be implemented to achieve the goal set for the Malaria Control Programme in Ghana.

The purpose of this document is to create a framework, giving strategic direction in order to attain the goal of reducing the current malaria disease burden by 75% by the year 2015 in line with the attainment of the Millennium Development Goals (MDGs).

# CHAPTER I

## GHANA COUNTRY PROFILE



FIG. 1: MAP OF GHANA

## 1.1. BACKGROUND

### 1.1.1 Overview

Ghana is about 92,000 square miles (238,500 square kilometers) in area and most of the country falls between 5 and 11 degrees north latitude. It is bordered on the northwest and north by Burkina Faso, on the east by Togo, on the south by the Atlantic Ocean, and on the west by Côte d'Ivoire. The capital city is Accra (a metropolitan city with population of 3-4 million). Administratively, the country is divided into 10 regions (see map), and 170 districts.

In the undulating savannas of the north, a prolonged dry season occurs from September-November to March-April, with a rainy season that peaks in August. The mean annual rainfall is 45 to 50 inches. The north is drained by tributaries of the Volta River, which form the world's largest manmade lake behind the Akosombo Dam. The southern part of the country is mostly forested, and is traversed by ranges of low hills (max altitude 2,800 feet), with rainfall ranging 50 to 86 inches.

There are two rainy seasons (April-June and September-November) and two relatively dry periods that occur during the harmattan season (December-February) and in August. The Accra Plains are unusually dry for the coast, with a climate resembling that of the north. Temperatures vary relatively little throughout the country, with a mean annual temperature from 78° to 84° F (26° to 29° C). Average relative humidity ranges from nearly 100 percent in the south to 65 percent in the north; during the harmattan season the drier areas can fall as low as 12 percent.

### 1.1.2 Demography

Ghana population as at 2008 was approximately 22.4 million, 46 percent of which is below the age of fifteen. With a population growth rate of 2.7 percent per annum, Ghana's current population is expected to double in 26 years, placing enormous pressure on the economy and the environment with the swelling of urban centers.

### 1.1.3 Socio-economic situation

Available information indicates that provisional projection for real Gross Domestic Product (GDP) growth rate is 6.2 percent, slightly above the target of 6.0 percent. This is mainly driven by the significant growth experienced in industry and services sectors (PMI Assessment, 2007).

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 (though HIV seems to be rising in some most-at-risk populations). These positive trends may be due to the fact that the total expenditure on health has been rising over the past decade and, UNDP reported that in 2005, the total expenditure in health was 12% of the GDP.



**TABLE 1****Socio-economic and health indicators**

Indicator	Rate/Ratio	Source (and year)
Crude Birth Rate	33 per 1000	Facts and Figures 2007 from the Health sector in Ghana
Crude Death Rate	10 per 1000	Facts and Figures 2007 from the Health sector in Ghana
Growth Rate	1.93%	Demographic Health Survey 2008
Infant Mortality	50/1000 Live Births	DHS 2008
Child Mortality	38/1000 Live Births for males 28/1000 Live Births for females	Demographic Health Survey 2008
Neonatal Mortality	43/1000 Live Births	Facts and Figures 2007 from the Health sector in Ghana
Under Five Mortality	80/1000/ Live Births	DHS 2008
Maternal Mortality Ratio	197/100.000 Live Births	RCHU Annual report 2005
Women receiving antenatal care	95%	Demographic Health Survey 2008
Deliveries by professionals	59%	Demographic Health Survey 2008
Total Fertility Rate	4.0	Demographic Health Survey 2008
HIV prevalence in 14-49 cohort	1.8%	Demographic Health Survey 2008
Life expectancy	54 years	Facts and Figures 7 from the Health sector in Ghana
Literacy	63% women 77% men	Demographic Health Survey 2008
Poverty index	35	Facts and Figures 2007 from the Health sector in Ghana

In spite of these positive trends, poverty rates in Ghana continue to be high. One main reason is that a large majority of the 8 million Ghanaians estimated to be in employment are mostly rural

peasant farmers and small scale traders in the informal sector with irregular income. Such poor people are more likely to get sick and stay sick and consequently have low productivity and income. This point is further reinforced by the fact that over one in ten children die before the age of five, with malaria being the number one child killer (5YR Program of Work II, 2006).

## 1.2. THE HEALTH SECTOR

### 1.2.1 Organization of the Ministry of Health

The Ministry of Health is the ministry charged by law to be responsible for securing the health of the people of Ghana. Its mission is to contribute to national socio-economic development and wealth creation through (i) the promotion of health and vitality (ii) ensuring access to quality health and nutrition services, including those for malaria, and (iii) facilitating the development of a local health industry. The Ministry of Health and its agencies seek to achieve the mandate primarily through four strategic objectives:

- Address risk factors to health by promoting an individual lifestyle and behavioural model for improving health and vitality
- Rapidly scaling up high impact health, reproduction and nutrition intervention and services (including those for malaria), targeting especially the poor, disadvantaged and vulnerable groups
- Strengthen health systems capacity to expand access, manage and sustain high coverage of health services, and
- Promote good governance, partnerships and sustainable financing.

#### 1.2.1.1 Health Care System in Ghana

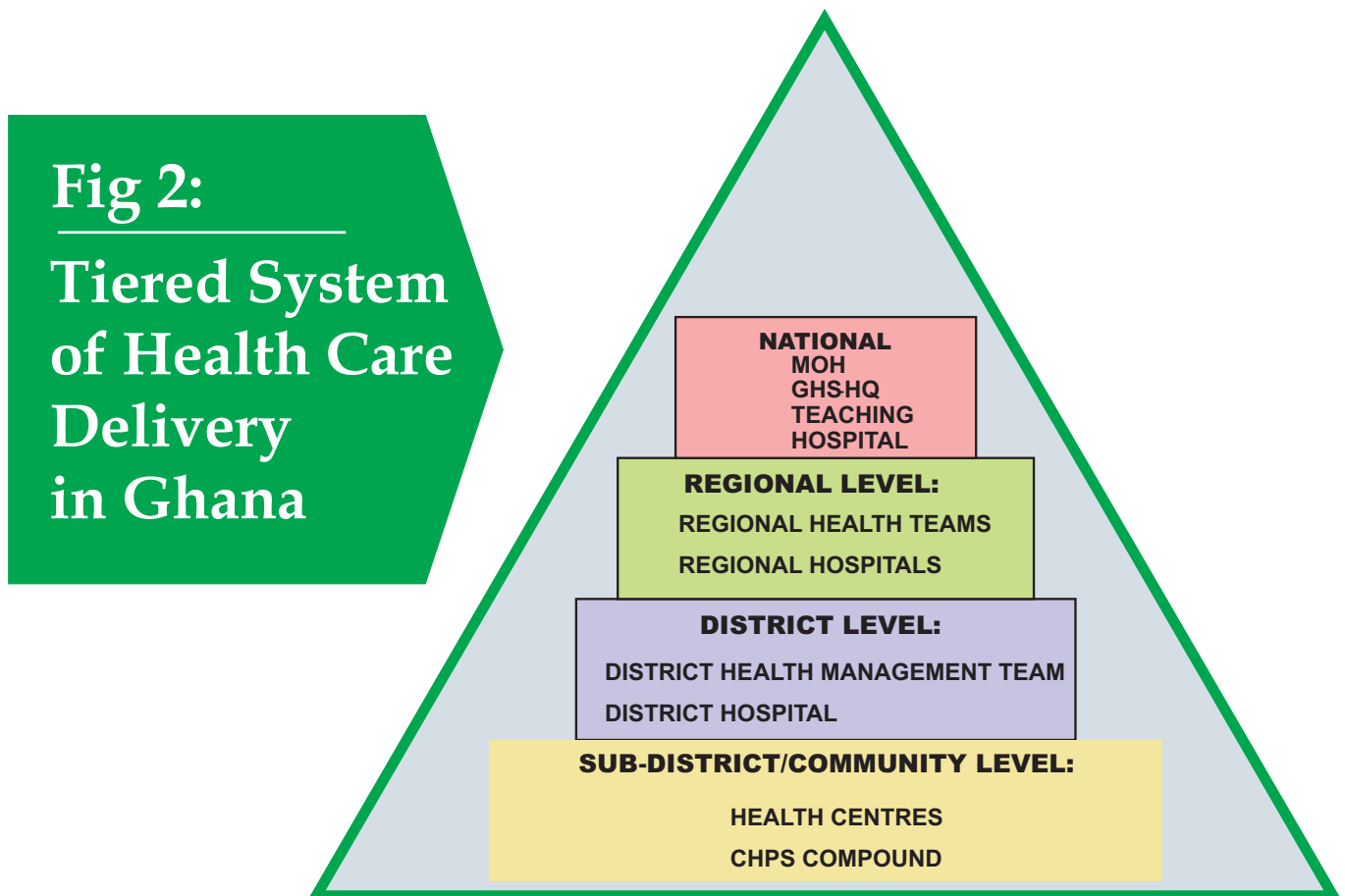
Health care delivery in Ghana is provided by both the public and private sectors. However, the Ministry of Health exercises the overall oversight control over the entire health system. Its primary responsibilities lie in policy formulation, monitoring and evaluation of progress in achieving set targets.

Ministry of Health is responsible for policy formulation and overall coordination of the different structures (both public and private) involved in the implementation of their policies. It has divisions responsible for policies, planning, monitoring and evaluation (PPMED), Human Resource Development (HRHD), Research and Information Management (RIM) together with administrative offices servicing the Office of the Chief Director and the Ministers. Its agencies consist of the Ghana Health Service, Teaching Hospitals, Health Training Institutions, and Health Regulatory Bodies.

The Ghana Health Service is one of the agencies responsible for service delivery and implementation of health policies and programmes, together with the private sector, faith-based health institutions and the Teaching Hospitals. It undertakes its responsibility by fostering partnership with private NGOs, Civil Society Organizations (CSO), the communities, and other

Ministries, Departments and Agencies (MDAs). Administratively, the Ghana Health Service is organized into a three-tiered system: national, regional and district levels but in terms of service delivery it is organized under five levels of national, regional, district, sub-district and Community Health Planning and Services (CHPS) zonal levels.

At the national level, the Ghana Health Service (GHS) is composed of ten main divisions. Each division has departments with responsibilities for carrying out the functions of the division. The NMCP is a programme within the Disease Control Department of the Public Health Division. The NMCP is responsible for technical leadership for malaria control.



Under the public health system, service delivery is undertaken largely by Ghana Health Service, and the teaching hospitals, both of which constitute the bulk of the Ministry of Health Institutions. In addition to that, other quasi-governmental institutions and statutory bodies are also involved in health service delivery.

### The national level is responsible for:

- \* Formulation of public health policies
- \* Development of strategic plans, protocols, standards and guidelines
- \* In-service training of trainers
- \* Provision of technical support to regions and districts,
- \* Advocacy, networking and additional resource mobilisation
- \* Monitoring, coordination and evaluation of health programmes
- \* Training health personnel

At the regional level, the regional hospitals deliver curative and public health services. The regional level is responsible for:

- \* Translation of national policies and programmes into implementable locally-relevant strategies and activities
- \* Development of regional plans of action and harmonisation of district plans of action
- \* Provision of technical support to districts
- \* In-service training at regional level
- \* Supervision and monitoring.

The regional level combines administrative, technical and curative services delivered at the Regional Health Directorates and Regional Hospitals under the leadership of the Regional Director of Health Services (RDHS). The regional hospitals serve as referral centers for district hospitals and in some areas serve as primary health care delivery facilities for the surrounding population.

The district health system consists of the district, sub-district and the CHPS zones. Public health services are delivered by the district health management team led by the District Director of Health Services. The district health administration provides supervision and management support to the sub-districts. Districts have an average of 4-6 sub-districts with each sub-district covering a defined population of 20,000-30,000. District hospitals also provide curative and public health services. Not all districts have district hospitals, so some private-not-for-profit hospitals may in some cases double up as a district hospital.

At the community level, the Community-Based Health Planning and Services (CHPS) provides basic preventive and limited 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 local community-based volunteers (less than 10% of the population is currently served by functional CHPS zones).

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 includes faith-based healing, herbalists, fetish priests and traditional birth attendants (TBA) (through whom a significant proportion of pregnant women deliver). It is estimated that over 70% of the population rely on traditional medicine, even though it still remains to be adequately integrated into the formal health sector.

### **1.2.1.2 Financial Management and Partnership Capacity**

The annual budget of the MOH for 2008 is US\$ 846,142,000. The MOH has a long history of working with partners. Since 1997, a sector-wide approach (SWAp) to health development has been pursued. Under this arrangement, the MOH prepares an annual programme of work covering the entire health sector, which is then funded with collective resources from Government of Ghana (GOG), internally generated and pooled or earmarked donor funds.

Through the SWAp, the health system has developed a robust financial management system that ensures transparency and accountability for all funds irrespective of their source and use. The Ghana health sector as part of the SWAp process ensures an independent assessment of service

delivery and financial performance of the sector.

On an annual basis, financial and procurement audits are conducted by an independent institution. These audits cover all sources of funds. The results of these reviews and the audits are discussed at an annual summit meeting of all stakeholders in health.

### 1.2.1.3 Experience with Funds and Grants

The Ministry of Health has been assessed by the Local Funding Agent (LFA) and found to be capable and efficient to handle a total of six Global Fund grants. The Global Fund has recognized Ghana's performance with MOH/GHS as the PR, as among the best managed GF grants worldwide. The MOH/GHS has also successfully managed funds (earmarked or 'pooled') provided through bilateral and multilateral agencies over the years. These include GAVI support for the introduction of new vaccines, World Bank Nutrition and Malaria project, Presidential Malaria Initiative of President of USA, UNICEF/GHS Accelerated Child Survival and Development (ACSD), and High Impact Rapid Delivery (HIRD).

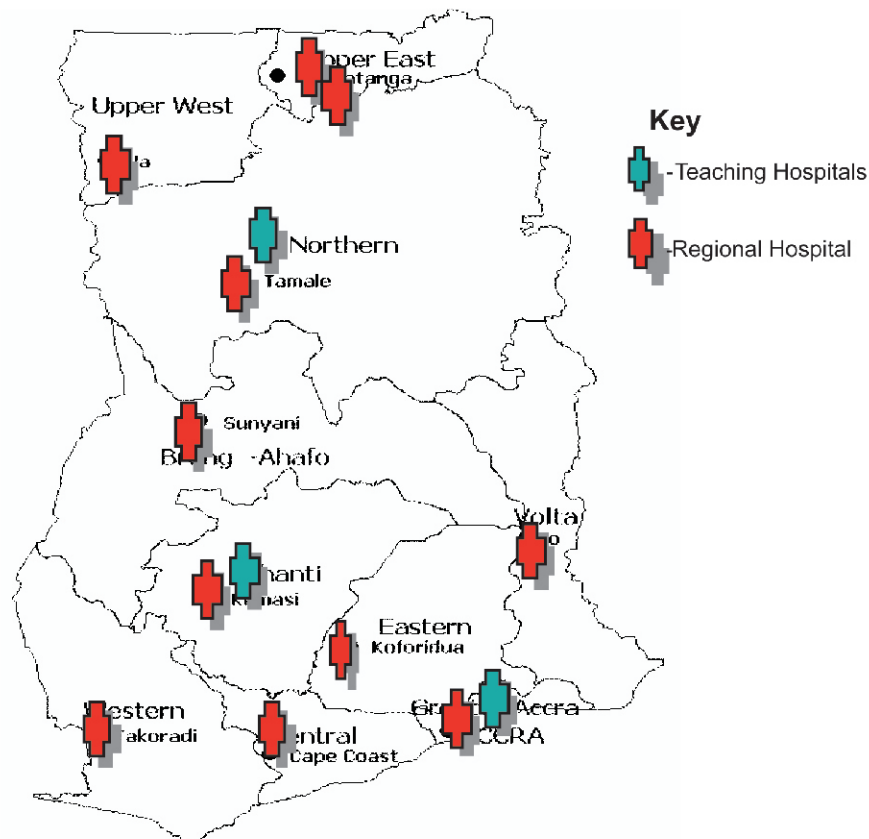
## 1.2.2 Health Sector Analysis

The government of Ghana is committed to improving the health of all people living in Ghana. Such a broad goal encompasses many specific objectives for individuals and populations e.g. increased life expectancy, reduction in avoidable deaths and improvement in quality of life. Recognizing that, there are never enough resources to make what is technically possible universally available, a rethinking and restructuring of priorities is inevitable at all levels.

Malaria has been identified as one of the priority diseases targeted for control in the medium term. The coverage of specific malaria control interventions has however been constrained by limited geographical and financial access to basic health services, inadequate quality of health services in both public and clinical care services, inadequate funding of health services, inefficient allocation of resources, and poor community, intersectoral and private sector participation.



**Fig 3. The Regional and the Teaching Hospitals In Ghana**



### 1.2.2.1 Human Resources in the Health Sector

About 83% of all health facilities in Ghana belong to the public sector, 9% to faith-based institutions and 7% to the private sector. The total workforce in the public health sector is 42,000, working in 2205 health facilities. These facilities are made up of 321 hospitals, 760 health centers and 1124 clinics. There are 2007 highly trained doctors (10,000 population per 1), 12,763 nurses (10,000 population per 6), 1321 pharmacists and 381 allied health professionals currently working in Ghana.

### 1.2.2.2 State Budget Allocation to Health

The Growth and Poverty Reduction Strategy (GPRS II), 2006 - 2009 seeks to accelerate the growth of the economy so that Ghana can achieve a middle-income status within a measurable planning period. The strategy has an important policy area: increasing the extent and quality of health care by bridging equity gaps, ensuring sustainable financing arrangements that protect the poor and enhance efficiency. Amongst the expected outputs is the prevention and effective treatment of malaria including ensuring the availability and use of Long Lasting Insecticide Treated Nets (LLIN).

The main sources of funding to the Ministry are Government Of Ghana (GOG), Health Fund, HIPC, Internally-Generated Fund (IGF) and National Health Insurance Fund. The government of Ghana continues to provide the bulk of the health budget. Other sources are from the health partners and the Internally Generated Funds. There is an act of Parliament that requires the use of 1% of the District Assemblies Common Fund for Malaria Control activities at the district level.

### 1.2.2.3 Sector-Wide Approach (SWAp) in Ghana

In the health sector reforms, Ghana adopted a sector-Wide Approach (SWAp) to financing the health system. This involved joint planning with a common fund "basket" arrangement. Overtime, the experience of SWAp has reformed into a sector budget support where some health partners support the health sector programme of work through central government budget. However, the management arrangements where joint planning and reviews remains.

### 1.2.2.4 National Health Insurance

The strategic objectives of the Ghana Health Sector five-year programme of work (2007-2011) include increased geographical and financial access to basic health services, better quality of care, and sustainable financial arrangements that protect the deprived and vulnerable. To this end, the Government of Ghana in 2003 passed the National Health Insurance Law (Act 650, 2003) that instituted a National Health Insurance Scheme to secure the provision of basic healthcare services to persons resident in the country through mutual and private health insurance schemes. The National Health Insurance Programme 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, August 2004). Financing is achieved primarily through a 2.5% levy placed on goods and services through the value added tax (VAT).

Health financing is of high priority on the socio-economic agenda in Ghana. The National Health Insurance Act mandates health insurance for every district with the objective of covering every resident of Ghana within the next five years. Statistics available at the National Health Insurance Commission as of December 2007 show about 43% of the population has been registered with the scheme. However, only 26.5% (5.4 million people) hold membership cards and thus are able to access services; with 25% having access to health services. This has greatly increased the number of people accessing health care.

### 1.2.3 Priority Programmes Implemented and their Synergy with Malaria Control

Ghana has showed continued commitment to the needs of women, children and the poor. Ghana was one of the first signatories to the Universal Declaration on the Right of the Child in 1990 and is a signatory to the Abuja Declaration of 2000 on Roll Back Malaria. Additionally, in 2000 Ghana participated in the 2000 African Development Forum in Abuja and signed the Abuja Declaration on HIV/AIDS, TB, Malaria and other Infectious Diseases.

The HIPC initiative of the government, which targets the poor and vulnerable groups, made provision for subsidies and exemptions for certain types of services. Ghana has since reached a completion point and has benefited immensely. Some of the benefits specific to malaria include the provision of LLINs, free treatment for vulnerable groups (pregnant women and children) and the poor.

Currently, malaria treatment is covered under the NHIS. In addition, the Government is scaling up the Community Health Planning Service (CHPS) which involves placing trained community health officers (CHOs) in communities to provide a package of essential health services.

## 1.3 INSTITUTIONAL FRAMEWORK FOR THE NATIONAL MALARIA CONTROL PROGRAMME

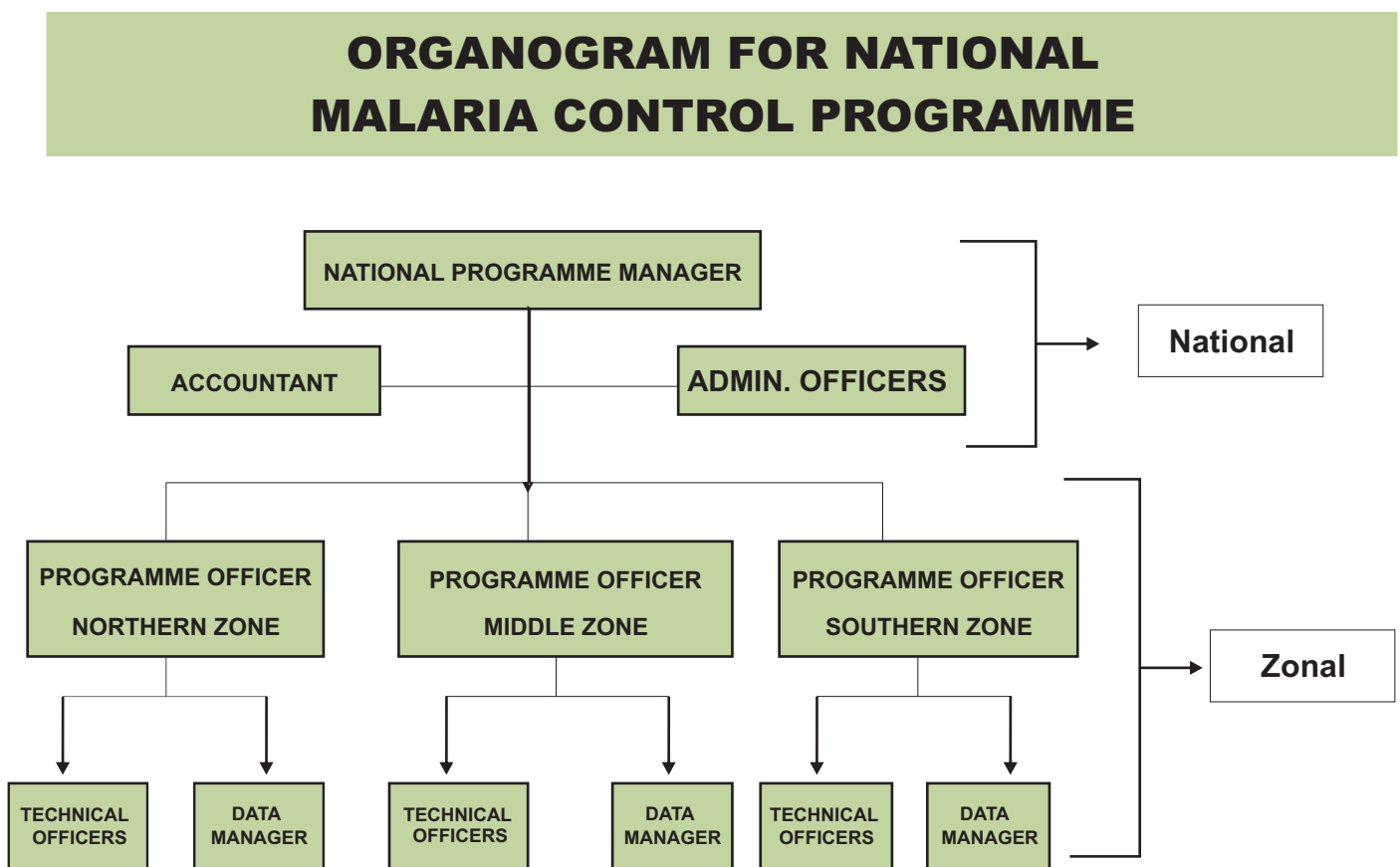
### 1.3.1 Management Of The National Malaria Control Programme(NMCP)

The NMCP's role is to formulate policy and strategies, translate these into interventions, and coordinate, supervise and monitor intervention.

There are no designated malaria specific disease control officers at regional or district levels. Focal persons for malaria in the regions and districts do not work solely on malaria alone but have other functions. This is in keeping with the national desire to provide integrated health services. The NMCP provides regional and district staff with guidelines, but it is ultimately up to the regional and district health teams to carry out programmes.

The NMCP is directed by a public health physician and has a staff including a deputy programme manager and three programme officers, an entomologist, three technical officers, a communications officer and three data managers. The NMCP/RBM Programme would benefit from increased human resources.

**Fig 4: Organogram of the National Malaria Control Programme**





### 1.3.1.2 Human Resources of National Malaria Control Programme

#### Background

To provide a favorable environment for the implementation of malaria interventions, the programme aims to strengthen the human resources at all levels including at the community level, and provide logistics including transportation and communication systems. Half of the NMCP staff are funded through external/soft money in the form of GFATM grants. At the national level, human resources for health have been difficult to oversee because of dual HR responsibilities in both the Ghana Health Service and the Ministry of Health.

The main concern is that, half of the technical and administrative staff are not permanent, but are paid from the GFATM grants. This situation is not sustainable. There are no dedicated personnel for malaria control below the National level. There are disease control staff at regional and district levels who handle an integrated package of responsibilities including malaria, but none are dedicated to malaria. They are often overburdened with competing program demands. Also there are no dedicated NMCP malaria staff at the regional and district levels, putting extra burden on NMCP staff to be in the field to supervise implementation and ensure proper data collection. At the front line, community health officers bring PHC including malaria closer to the community.

#### Strategic Approach

A first step would be for the national health authorities to guarantee the employment of all staff needed to make the NMCP function. The need for proper human resources for malaria control should not be dependent of 'soft money.' Although current health policy stresses integration of function among regional and district staff, everyone's responsibility becomes no-one's responsibility. At this crucial phase in the efforts to control malaria, it would help if some disease control officers who share malaria among their other duties could be officially recognized.

Working up from the grassroots, it will be important to expand the CHPS program within all regions and districts so that front line community health officers can deliver malaria interventions better. Advocacy models need to be expanded to all districts to ensure dedicated political and financial support to implement malaria interventions.

### 1.3.2 Programme Coordination and Planning

The program enjoys a relatively straightforward coordination with RCH, IMCI, EPI, etc. within the Public Health Directorate of GHS. The management for overall malaria medicine and commodity supply is mandated to different government agencies. Support is provided through government statutory bodies such as the Ghana Food & Drugs Board; the National Malaria Control Program; the Procurement and Supply Directorate of the Ministry of Health (Drug Policy Unit, Procurement Unit, Central Medical Stores); and regional health administrations, regional medical stores, facility medical stores/dispensaries etc. Certain support services are contracted out. There is good intra-sectoral coordination with MCH, EPI, Health Education/Promotion and IMCI programs and activities since all are located within the Public Health Directorate. Collaboration in the areas of conducting community surveys and working with community health workers are examples. There is also collaboration with other ministries such as Agriculture, Women and Children's Affairs, Finance and Local Government.

## 1.4. STAKEHOLDERS ANALYSIS

In malaria prevention and management, it is clear that the health sector cannot "do it alone." It is also evident that the activities of some sectors impact directly or indirectly on the health sector and if these activities are not well coordinated the impact to health would not be felt.

Linked to this is the concept of healthy collaboration which aims at establishing more effective working relations between the health sector and other sectors.

The concept also recognizes that effective and sustainable solutions can only be achieved if comparative strengths of stakeholders are recognized, harnessed, maximized and utilized.

Partnership exists at various levels: community, public sector, private sector, civil society, NGOs and development partners.

It recognizes that each partner has a role to play in implementation according to its comparative advantage.





# CHAPTER 2

## POLITICAL AND STRATEGIC ORIENTATION



## 2.1 POLITICAL ORIENTATION

The national vision is to attain middle income status with 1000 USD per capita by year 2015 by creating wealth. Evolving from this, the National Vision for health is to Create wealth through health and contribute to the national vision of attaining middle income status by 2015.

### 2.1.1 Health Policy

Latest reforms in the health sector started in 1996 with the enactment of GHS/TH Act 525 of 1996, which launched a restructuring of the health sector. As part of the institutional reforms roles and responsibilities were decentralised to different agencies. This culminated in the creation the Ghana Health Services (GHS) and Teaching Hospitals with the MoH as the policy body.

The health sector is currently implementing its third Programme of Work (2006-2011). The health policy outlines the long term goal of the health sector and provides the foundation for the current direction of the sector.

#### 2.1.1.1 Mission Statement - Ministry of Health

"The mission is to contribute to socio-economic development and wealth creation by promoting health and vitality, ensuring access to quality health, population and nutrition services for all people living in Ghana and promoting the development of a local health industry."

#### 2.1.1.2 Health Sector Goal

The ultimate goal of the Ministry of Health is to ensure a healthy and productive population that reproduces itself safely.

#### 2.1.1.3 Guiding Principles

Health is multi-dimensional in nature and requires partnerships. Programmes design and development will:

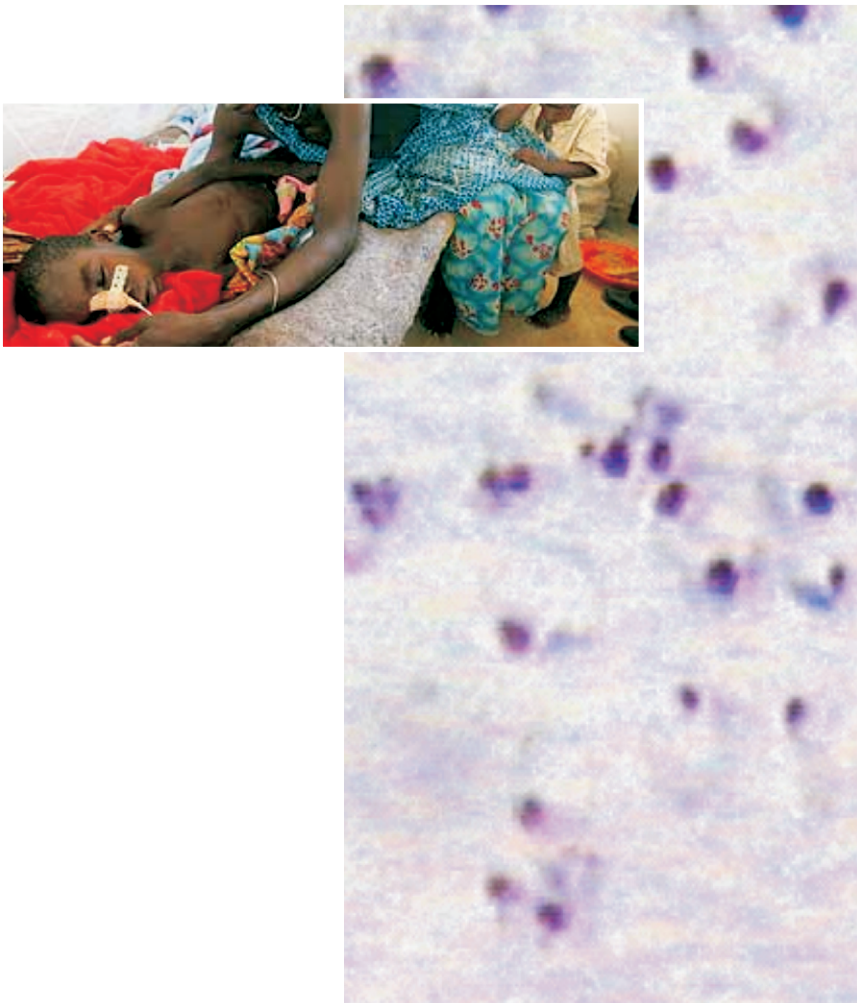
- \* Be people-centred focusing on individuals, families and communities in the life settings,
- \* Recognise the inter-generational benefits of health
- \* Reinforce the continuum of care approach to health development
- \* Be prioritized to ensure maximum health gains for limited resources

The community is encouraged and expected to be part of planning, implementation and evaluation of activities aimed at ensuring a healthy and productive population. This is with a view to ensuring effective community ownership and involvement - a key element towards sustainability. Planning, resource allocation and implementation is results-oriented paying attention to equity, efficiency, integration of services, gender-sensitivity and sustainability

## 2.2 STRATEGIC ORIENTATIONS

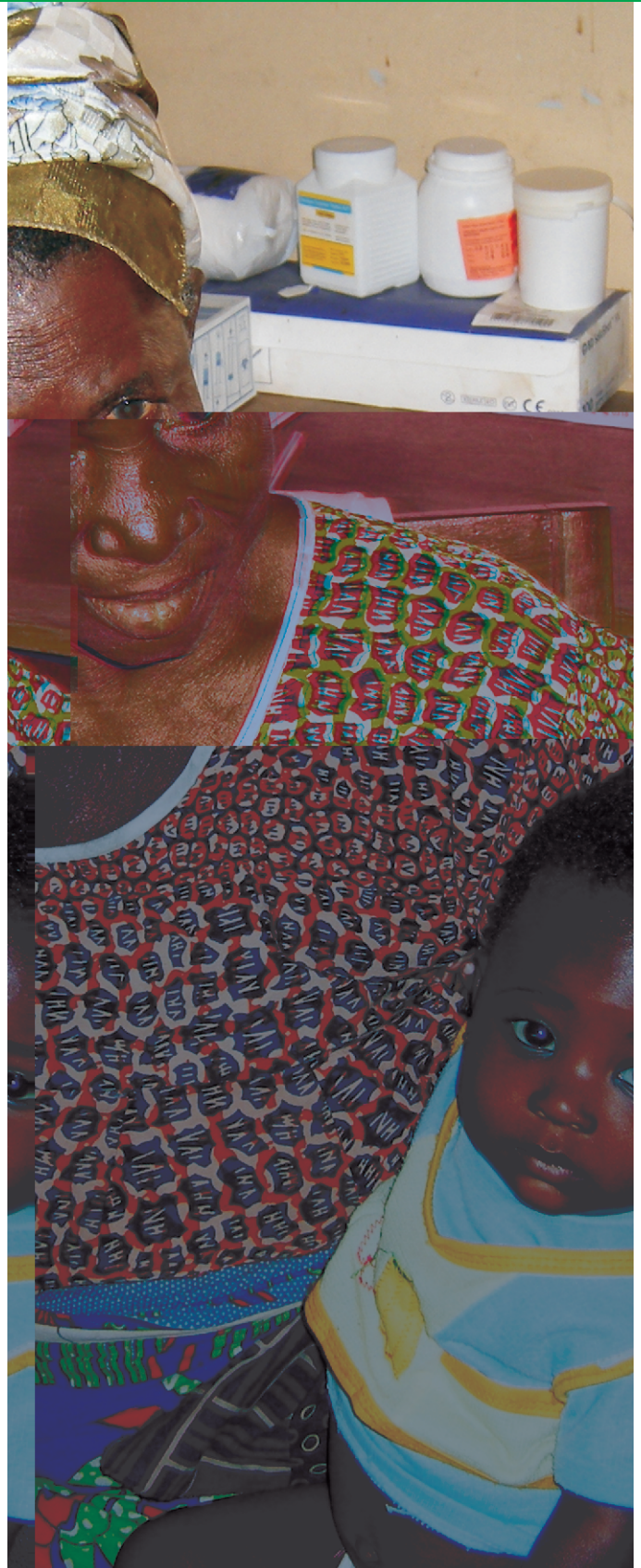
The strategies to be pursued to improve health status reduce mortality, morbidity and risk factors, and increase productivity and equity in the health sector are:

- Promoting an individual lifestyle and behavioural model for improving health and vitality
- Strengthening multi-sectoral advocacy and actions
- Rapid scaling up of high impact health, reproduction and nutrition interventions and services targeting the poor, disadvantaged and vulnerable groups and bridging the gap between interventions that are known to be effective and the current relatively low level of effective population coverage
- Investing in strengthening health system capacity to expand access, management and quality of health services and sustain high coverage
- Promoting governance and sustainable financing.



# CHAPTER 3

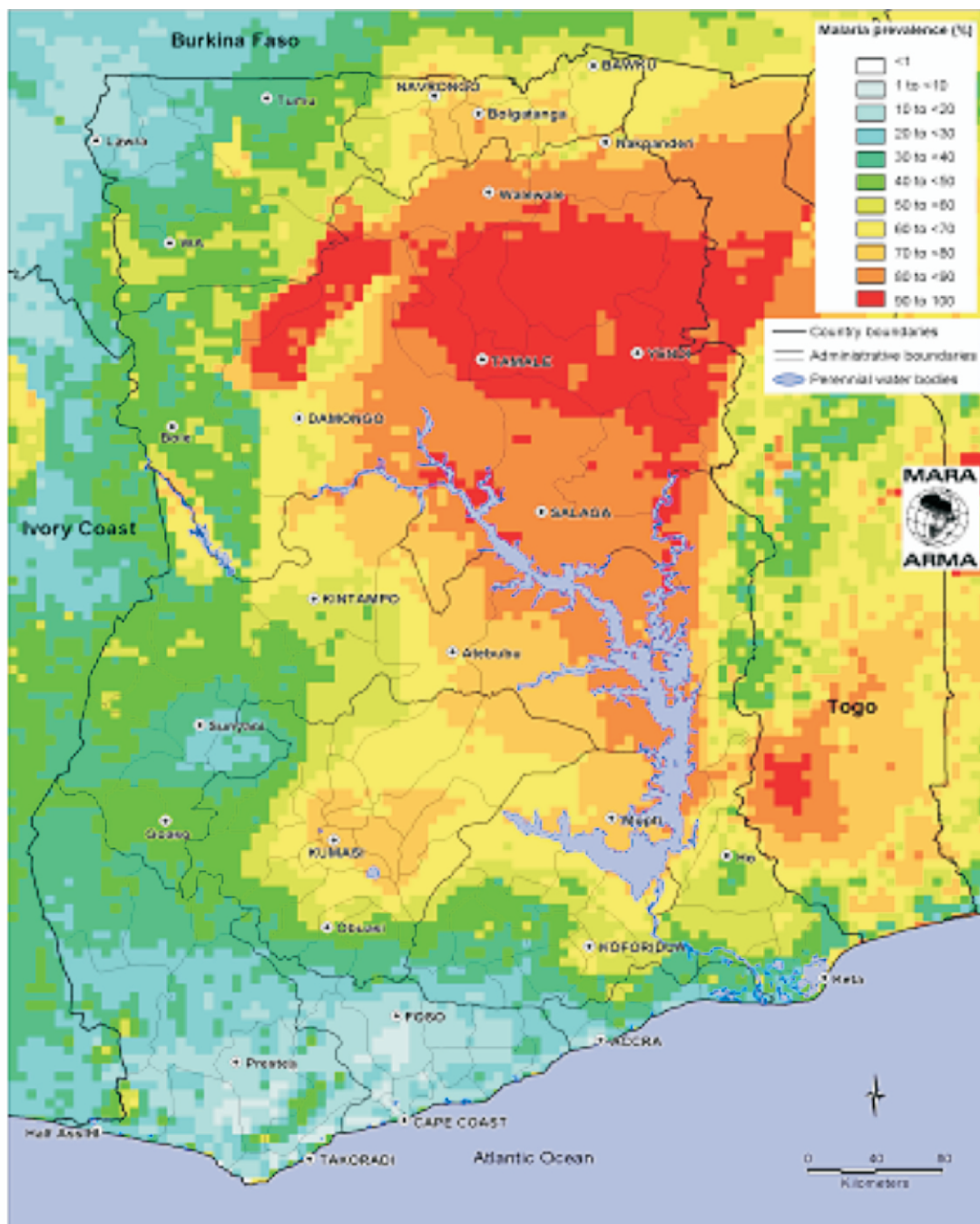
## MALARIA CONTROL UPDATE



### 3.1. EPIDEMIOLOGY

The malaria burden is a challenge to human development. It is both a cause and consequence of under-development. In Ghana, malaria is the number one cause of morbidity accounting for about 37.5% of all outpatients (OPD) attendance in 2006. It is also the leading cause of mortality in children under five years. A significant cause of adult morbidity, and the leading cause of workdays lost due to illnesses. Malaria is more than a health issue as the activities of other sectors may increase or decrease the malaria disease burden. In addition, malaria impacts adversely on productivity of all sectors of the economy. It would be beneficial to all sectors therefore to work together to reduce the social and economic impact of malaria.

**Fig 5: Malaria Prevalence Model for Ghana**



### 3.1.1 Population Exposed and Dynamics of Transmission

Malaria is hyperendemic in all parts of the country, with all the 22.4 million population at risk. Transmission occurs all year round with slight seasonal variations during the rainy season from April to July. The seasonal variation is marked in the northern parts of Ghana where there is a prolonged dry season from September to April. Figure 4 shows the distribution of malaria in the country. Over the past five years, between 3.1 and 3.5 million cases of clinical malaria are reported in public health facilities each year, of which over 900,000 cases occur in children under five years (NMCP Annual Report 2006). Presumptively diagnosed outpatient malaria cases, accounted for 37.5% of all outpatient illnesses, 36% of all admissions and 33.4% of all deaths in children under-five years in 2006. In that same year, amongst pregnant women it accounted for 13.8% of all OPD attendances, 10.6% of admissions and 9.4% deaths. Figure 6 below shows reported number of malaria cases from 2001 to 2007.

### 3.1.2 Plasmodia Species

The main parasite species causing malaria in Ghana are *P. falciparum* (80-90%), *P. malariae* (20-36%), and *P. ovale* (0.15%). Mixed infections of *P. falciparum* and *P. malariae* are not uncommon. Crude parasite rates ranges from 10 to 70%.

### 3.1.3 Main Vectors for Malaria Transmission

The principal vectors are the *Anopheles gambiae* complex and *Anopheles funestus*, accounting for 95% of all catches. *Anopheles gambiae* s.s. of the complex predominates and transcends across the country. *Anopheles arabiensis* and *Anopheles melas* also exist but in small proportions. Characteristically, these species are highly anthropophilic, biting mostly late in the night, and are commonly found in the rural and peri-urban areas where socio-economic activities lead to the creation of conducive breeding sites.

### 3.1.4 Estimation of Vulnerable Groups (Children and Pregnant Women)

The groups affected most by malaria are children under-five years and pregnant women who constitute 20% and 4% respectively of the general population. Table 2 below shows malaria attributable deaths in these vulnerable groups.

**TABLE 2: MALARIA ATTRIBUTABLE DEATHS IN CHILDREN AND PREGNANT WOMEN (2000-2007)**

	MALARIA ATTRIBUTABLE DEATHS BY AGE 2000 --- 2007												
	CHILDREN UNDER 5 YEARS OLD			5 YEARS OLD AND ABOVE			PREGNANT WOMEN			TOTAL			
	No. of Deaths	Malaria deaths	%	No. of deaths	Malaria Deaths	%	No. of deaths	Malaria Deaths	%	No. of deaths	Malaria deaths	%	Cerebral Malaria deaths
2000	8,872	3,952	44.5	9,139	2,102	23.0	312	54	17.3	18,323	6,108	33.3	1
2001	7,804	2,717	34.8	6,265	1,441	23.0	443	62	14.0	14,512	4,220	29.1	2
2002	8,713	2,914	33.4	5,913	1,360	23.0	453	59	13.0	15,079	4,333	28.7	-
2003	7,636	2,195	28.7	5,982	1,376	23.0	286	32	11.2	13,904	3,603	25.9	1
2004	5,727	1,380	24.1	5,886	1,354	23.0	564	78	13.8	12,178	2,812	23.1	-
2005	6,610	2,026	30.7	17,532	3,922	22.4	845	98	11.6	26,996	6,046	22.4	1
2006	3,305	973	29.4	8,766	3,461	39.5	422	45	10.7	13,498	4,479	33.2	1
2007	5,263	1,241	23.6	12,755	3,338	26.2	437	43	9.8	18,395	5,403	29.4	6



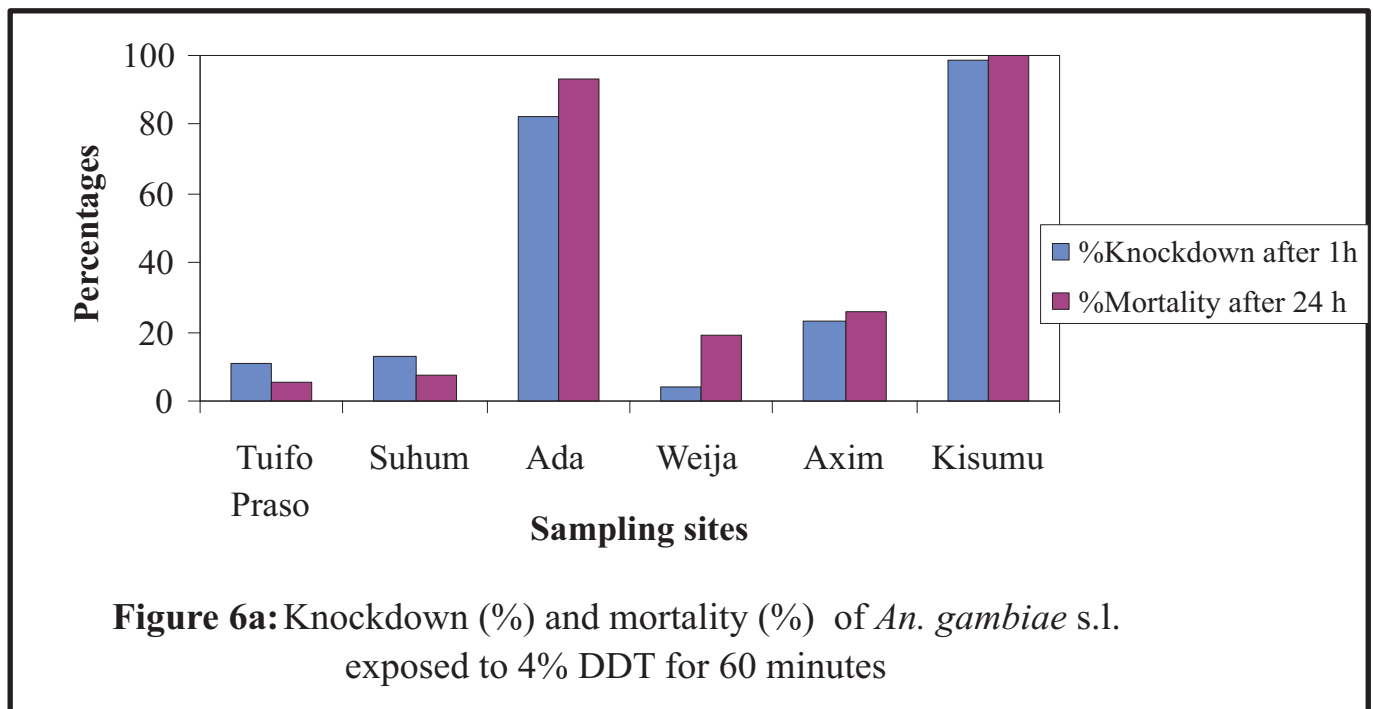
### 3.1.5 Resistance to anti-malarials and insecticides

The therapeutic efficacy of combinations of Artesunate-Amodiaquine given to children less than 5 years with uncomplicated *P. falciparum* malaria is being coordinated by Noguchi Memorial Institute for Medical Research in ten sentinel sites across the country.

Volunteers with confirmed cases of uncomplicated *P. falciparum* malaria and whose parents /guardians have willingly consented to allow their child /ward to be part of the study are given observed treatment over 3 days and then followed up for the resolution of the malaria over the next 25 days (a total of 28 days follow-up). The latest results show adequate clinical response to be 99%. Monitoring of efficacy will continue in order for the country to track drug resistance monitoring.

Vector susceptibility studies done recently by Prof Richard Hunt and the Noguchi Memorial Institute for Medical Research of the University of Ghana found high levels of resistance to DDT, Bendiocarb, and some pyrethroids in *A. gambiae* ss and resistance to DDT and Bendiocarb in *A. funestus* (reference). The resistance levels vary from district to district. Figure 7a and 7b give details of insecticide resistance results.

**FIG 6: PERCENTAGE KNOCKDOWN OF ANOPHELES GAMBIAE EXPOSED TO DDT AND PERMETHRIN**



## 3.2 BACKGROUND TO MALARIA CONTROL IN GHANA

In 1998, when the World Health Organisation (WHO) launched the Roll Back Malaria Strategy, Ghana adopted it and in 2000, a ten year Strategic Plan was drawn with a goal of reducing the burden of malaria by 50% by the year 2010 and achieving the Abuja targets: 60% of children under 5 years and pregnant women will sleep under insecticide treated nets, 60% of pregnant women would be on appropriate and effective chemoprophylaxis or Intermittent Presumptive Treatment (IPT), and 60% of children under 5 years and pregnant women will have access to prompt, affordable and appropriate treatment of uncomplicated malaria using effective anti-malarial drug within 24 hours of onset of symptoms; all by the year 2005.

Unfortunately, because of limited resources, the 60% targets was not achieved. Ghana received its first funds from the Round 2 call for proposals from the Global Fund for piloting proven interventions in 20 districts across the country. Within three years, key indicators had improved in these districts. In 2005, Ghana again received funds under the Round 4 Global Fund Grant, to scale up interventions country-wide, resulting in improved indicators across the country.

These relative successes have attracted support from other source including DFID, UNICEF, Japanese Government, and US President's Malaria Initiative (PMI).

### 3.2.1 Lessons Learnt Under the Previous Strategic Plan Implementation

#### 3.2.1.1 Case Management

Chloroquine used to be the drug of choice. However, with the change in policy, chloroquine could no longer be actively promoted for home management of malaria until operational research on the feasibility of home management using Artesunate-Amodiaquine was completed. Pilot studies undertaken in certain parts of the country show that mothers/care-takers can be entrusted with prepacked Artesunate-Amodiaquine for home management of malaria (Browne, 2006).

#### 3.2.1.2 Insecticide Treated Materials/Nets

In the first three years of the implementation of the 2000-2010 strategic plan, the Malaria Programme faced serious resource constraints and there was limited inflow of ITNs. Before 2003, just about 174,100 ITNs had been distributed to the vulnerable groups. In May, 2002, Ghana produced an Insecticide Treated Materials (ITMs) Policy which encouraged public-private collaboration. At that time, the policy identified that the demand for ITNs was very low and so to create demand, the strategy adopted was to distribute subsidized ITNs and when the demand was created there will be gradual removal of subsidies as commercial sale increased. The Government of Ghana showed its commitment to malaria control by removing the tax on imported insecticide-treated nets to bring down the price. Thus, public health facilities were used to distribute heavily-subsidized ITNs to target vulnerable groups (children under-five years, pregnant women and the financially-challenged). The commercial sector was also used as outlets to sell ITNs to the rest of the country. Gradually, four regions were supported to implement ITN Voucher scheme through public-private collaboration. This scheme ensures that, the face value of the voucher is reduced by four dollars.

Another strategy that has been adopted by the country to improve accessibility through the support of DFID is the treatment of locally sewn mosquito nets.

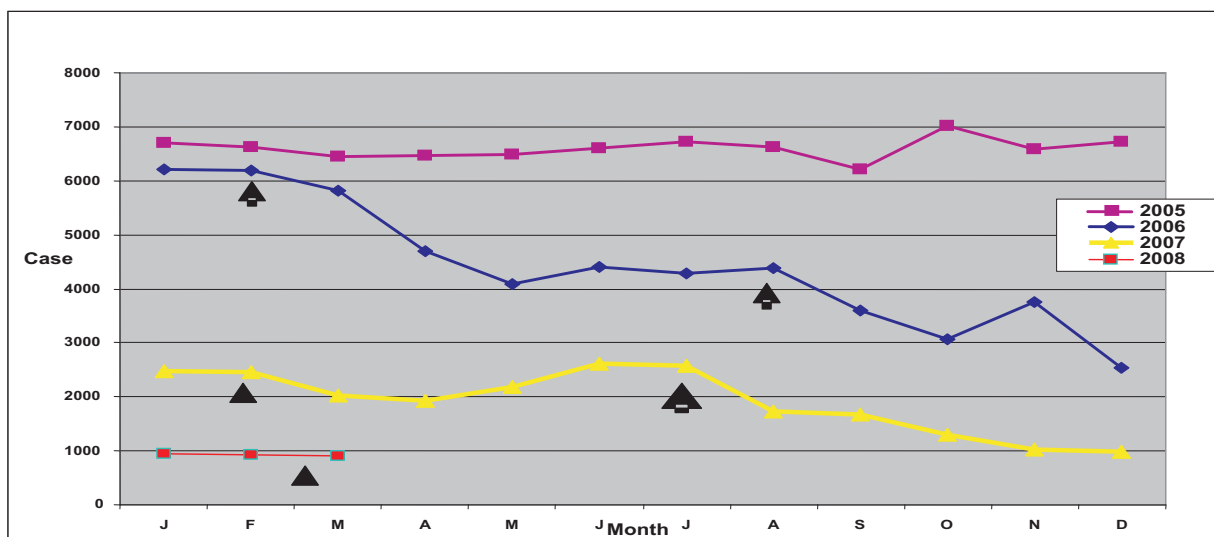
### 3.2.1.3 Adulticiding and Laviciding

Adulticiding, which involves the killing of adult mosquitoes, (hence breaking the human vector contact) results in a reduction in the transmission of malaria. This approach comprises methods such as Indoor Residual Spraying (IRS), space spraying, the use of repellents, (coils and creams). In the Integrated Malaria Vector Management (Revised 2009), all these interventions will be made available. However, there will be particular emphasis on IRS.

### 3.2.1.4 Indoor Residual Spraying (IRS)

The previous strategic plan did not give prominence to indoor residual spraying, but recent developments have shown its potential for scale-up to dramatically improve malaria control in Ghana. Since 2005, international interest has grown in implementing large scale IRS programs, and accumulating evidence support its appropriateness in areas of holoendemic, perennial transmission. In 2006, WHO issued a position statement on the application that supported the scaling up of IRS as one of the primary vector control interventions in countries such as Ghana. Recent experience with IRS pilots in Ghana has been promising. AngloGold Ashanti (a private mining company) initiated IRS activities with efficacious insecticide, within the Obuasi Municipal Assembly Area as part of its comprehensive Integrated Malaria Control Program. Results to-date shows over 74% reduction in malaria cases within a period of 2 years in the intervention area which comprises urban and rural communities (Fig 8). The experience gained in the Obuasi programme will be invaluable to IRS implementation proposed under the current Round 8 proposal.

**FIG 7: Reduction in Malaria Cases from 2005 to 2008 in Edwin Cade Hospital in Obuasi after introduction of Indoor Residual Spraying**



▲ and ▲ : represents when IRS was implemented

The U.S. President's Malaria Initiative (PMI) in Ghana has also implemented IRS operations in five districts in the Northern Region (north and east of Tamale). Spraying commenced in May, 2008 and valuable lessons have been learnt with regard to planning for the seasonal rains, as well as the feasibility of inter-sectoral collaboration with GHS districts (sharing of office and other facilities). As of January 2009, it was still too early to draw firm conclusions regarding the epidemiologic and entomologic impact of this new IRS program by PMI. However, implementation experiences have shown that Ghana has the capacity to support the anticipated scaling-up of IRS. PMI has also demonstrated the capacity of communities in the North to accept and support IRS programmes. These two IRS programmes demonstrate Ghana's potential for success in IRS scale up.

### 3.2.1.5 Chemical and Biological Larviciding

Limited Larviciding using chemicals and biological agents such as *Bacillus thuringiensis* (B.t.), *B. sphaericus* (B. s.) and fish(Guppies) as biological control agents was mentioned as an activity that would be carried out coupled with focused spraying. Larviciding has been used extensively by AngloGold Ashanti with Temephos (Abate) as the chemical and *Bacillus thuringiensis israelensis* and *Bacillus sphaericus* as the Biological agent.

### 3.2.1.6 Environmental Management

This includes environmental modification, environmental manipulation, and modification of human habitations and behaviour. In the previous strategic plan, the Ministry of Local Government, Ministry of Water and Sanitation were to carry out these interventions with Expanded Sanitary Inspection and Compliance Enforcement (ESICOME) programme being implemented as this was their core responsibility. The Ministry as at the beginning of 2007 has prioritized Environmental Sanitation and has re-launched the ESICOME programme which aims at vigorous inspections and law enforcement.

The World Bank-sponsored Urban Environmental Sanitation Project (UESP) has moved to the next phase with the construction of drains in addition to waste management and capacity building as its focus.

The government has given directive that 1% of the District Assembly Common Fund be used to support malaria control at district level. A lot of education and advocacy has been on-going to ensure that the Ministries, Departments and Agencies (MDAs) take informed decision regarding the correct malaria control activities to be implemented with this 1% allocation.

### 3.2.1.7 Malaria in Pregnancy

In 2003, amid growing concerns of resistance levels of chloroquine and the fact that only 11.6% of pregnant women were adhering to the policy of using chloroquine to prevent malaria in pregnancy, the country adopted Intermittent Preventive Treatment (IPT) using Sulfadoxine-Pyrimethamine (SP). A policy guideline was produced that addressed two elements: IPT and case management. IPT is being implemented in collaboration with the Reproductive and Child Health (RCH) Programme in the whole country. SP for IPT is given at no cost to the pregnant woman and as a Directly Observed Therapy (DOT) under the conditions of Focussed Antenatal Care.

### 3.2.1.8 Malaria Vaccine

In the 2000-2010 strategic plan, there was no discussion of a malaria vaccine because they were not available. Currently, these vaccines are being tested in sentinel sites (two of which are in Ghana). The final results will determine the steps that will be adopted.

### 3.2.1.9 Information Education and Communication (IEC)/Behavioural Change Communication (BCC)

The recent inflows of funds and the public communication campaigns have increased the attention on malaria. Malaria is now considered a disease of high priority in Ghana. Communication is a very expensive intervention but to effect the desired behavioural change, it should be sustained.

### 3.2.1.10 Surveillance, Monitoring and Evaluation and Research

For most part of the past seven years, the NMCP depended on Centre for Health Information Management (CHIM) (which collects monthly data) and the National Surveillance Unit (NSU) (which collects weekly data for 23 diseases by implementing WHO/AFRO's IDSR strategy) both of the Ghana Health Service to obtain yearly morbidity and mortality data. In the past two years, NMCP has been collecting morbidity and mortality data directly from the districts as an attempt to improve the timeliness and quality of data, build capacity. The NMCP also collects input, process, and output data directly from the districts. The NMCP has incorporated most of its indicators into the DHIMS software for data to be collected routinely.

Currently, attempts are being made to harmonise existing monitoring and evaluation (M&E) templates of various stakeholders involved in M&E such as Global Fund, RBM, and PMI. This is because different stakeholders have different templates that need to be filled. To this end, a draft National M&E Plan has been developed. This is being done in collaboration with CHIM and NSU and other partners. It is hoped that when the national plan is implemented CHIM will be able to collect not only data on the disease trends but also the input, process and output indicators.

### Surveys

NMCP collaborates with the Statistical Services for the five-yearly Demographic and Health Survey (DHS); in which data on ITN use among children and pregnant women are collected. Also in the Multiple Indicator Cluster Survey (MICS) carried out by UNICEF, information on malaria is analyzed. NMCP also undertakes surveys annually on ITNs availability, use by children under five and pregnant women; IPT coverage and knowledge of malaria interventions. All these surveys however did not collect data on parasitaemia prevalence. The Presidential Malaria Initiative (PMI) has noted this gap and intends to support the programme to address it.

Ghana also has three Demographic Surveillance Sites: Navrongo, Kintampo and Dodowa. These institutions carry out surveys; some of which include malaria indicators.

### Research

The NMCP also collaborates with a number of research institutions to carry out research. These include Noguchi Memorial Institute of Medical Research (NMIMR) which does efficacy testing of anti-malarials at ten sentinel sites. There were originally six sentinel sites that were used to assess the efficacy of the Chloroquine which have been increased to ten. Again, sentinel sites have been created in Navrongo, Dodowa and Kintampo to assess the prevalence of G6PD. Kintampo Health

Research Unit (HRU) has also recently carried out a Knowledge, Attitude and Practice study to assess the reaction of the populace to Artesunate-Amodiaquine.

Adverse drug reaction monitoring has been done by the Pharmacovigilance Unit of the University of Ghana Medical School (UGMS). The quality of anti-malarials on the markets is being assessed by the Food and Drugs Board. The NMCP in collaboration with Environmental Protection Agency (EPA) are assessing the long term impact of insecticides on the environment.

The Health Research Unit and the Community Health Department of the School of Medical Sciences (SMS) have assessed the feasibility of home management of malaria in Ghana, the feasibility of implementing IPT using SP, among others.

### 3.2.1.11 Summary of Lessons Learned

- \* The provision of adequate support systems helps achieve technical targets
  - \* Improved collaboration with Non-Governmental Agencies leads to scaling up of interventions
  - \* Ghana has gained some experience in indoor residual spraying based on the highly successful IRS programme in the Obuasi district and the newer PMI pilot program in the Northern Region. AngloGold Ashanti (a private mining company) initiated IRS activities with efficacious insecticide, within the Obuasi Municipal Assembly Area as part of its comprehensive Integrated Malaria Control Program. Results to-date shows over 74% reduction in malaria cases within a period of two years in the intervention area which comprises a township, urban and village (rural) communities
- Public-Private Partnership is key to malaria control  
Involvement of key stakeholders including community in malaria control accelerates attainment of targets

### 3.2.2 Funding and Specific Programmes for Malaria Control in Ghana

Ghana is a recipient of a US\$8.9 million Round 2 and a US\$ 38.8 million Round 4 malaria grant from the Global Fund for malaria control activities.

Ghana was listed as one of the countries to benefit from the US-President's Malaria Initiative in December, 2006 and the country is earmarked to receive an estimated US\$ 17million annually for at least next three years (i.e. 2008-2010). The expiry of this grant in 2010 implies the creation of a gap which will have to be filled.

Similarly, the World Bank's support for malaria control in Ghana is currently earmarked for the period 2008-2010. This also creates a gap between 2010 and 2013.

In spite of these anticipated funding gaps along the line, it is also expected that with increasing results demonstrating significant reduction of disease burden due to the impact of scale up of interventions nationwide, there may be increased financial commitment from the Government of Ghana.

### 3.2.3 Challenges for Universal Access

The key challenges facing the national health system in its efforts to scale up priority interventions

to achieve its health goals include poor access to quality basic health services, lack of health infrastructure and equipment for emergency management of the sick, limited human resource capacity (worsened by exodus of key technical staff in the formal sector), inadequate harnessing of potential of other human resources especially in non-formal and other non-health sector, large funding gaps for massive investment required to achieve MDGs, weak community support structures including NGOs, and weak management capacity including poorly developed HMIS and M&E systems. A human resource gap analysis has recently been done as part of an investment plan of the Macro-economics and Health Initiative to achieve the Millennium Development Goals (MDGs) in Ghana. Using the WHO human resource scenario model, the report indicated a need of additional costs for human resource to facilitate the scaling-up exercise to be equivalent to about 30% of total incremental costs of scaling-up health interventions during the period 2002-2015.

With the emergence of pandemic diseases and the cross border transmission of communicable disease, Ghana is just like many other developing countries faced with the fight to reduce and eliminate diseases. On the global front, unstable economic conditions especially in the prices of commodities like oil are undermining the progress made and pose a major threat. Though Ghana has benefited immensely from Global Health Initiatives like Global Fund support to fight HIV/AIDS, TB and Malaria, it is still faced with competing economies in accessing development funds.

Deficiencies in human resources for health and poor access to health services to most of the rural communities has a negative effect in the achievement of expected outcomes of the national malaria control strategy. These deficiencies impinge strongly on important interventions such as access to prompt diagnosis and effective treatment, intermittent preventive treatment in pregnancy and monitoring and evaluation of the programme activities. Various reviews have identified weaknesses in the monitoring and evaluation, information management and use and with community based surveillance systems which affect early and efficient collection, collation, analysis, reporting and use of information for decision making.



# CHAPTER 4

## STRATEGIC PLAN FOR 2008-2015





## 4.1 LOGICAL FRAMEWORK

Since the first Malaria Strategic Plan - 2000-2010 was developed, annual surveys supplemented by DHS 2003, MICS 2006, have been carried out to assess progress of implementation. In addition, a need assessment has been conducted, first by the PMI team in 2007 and then by a joint RBM/WHO/JHPIEGO/NMCP team in 2008. The output of these assessments was a report that spelt out the challenges, gaps, weaknesses, opportunities, strengths and threats to the program implementation. These findings have informed this current strategic document: its goal, objectives and strategies, with all partners and stakeholders' inputs.

### 4.1.1 Goal

The overall goal of the malaria control in Ghana is to facilitate human development by reducing the malaria disease burden by 75% by 2015 using 2006 as a baseline. This goal is to be achieved through overall health sector development, improved strategic investments in malaria control, and increased coverage towards universal access to malaria treatment and prevention interventions, including the community level.

### 4.1.2 General Objectives

The general objective of the national malaria control strategy is to contribute to improvement of the health of the population of Ghana by reduction of the malaria burden.

#### 4.1.2.1 Objective 1 - Deploy Multiple Prevention Methods

The overall objective is to reduce man-vector contact as much as possible and render the environment unsuitable for mosquito breeding. Promoting use of Insecticide-Treated Materials and Nets and Intermittent Preventive are the main pillars of prevention. Source reduction such as mass larviciding and outdoor residual spraying is not feasible in a hyperendemic country like Ghana, except in identifiable and targeted areas.

#### *Specific Objectives for Multiple Prevention:*

- \* 100% of households will own at least one ITN by 2015
- \* 80% of the general population will sleep under ITNs by 2015
- \* Increase the number of children under-five and pregnant women sleeping under treated net from current levels to 85% by 2015.
- \* 100% (All) pregnant women shall be on appropriate Intermittent Preventive Treatment (receive at least two or more doses of sulphadoxine-pyrimethamine under DOT) by 2015
- \* 90% of all structures in targeted districts will be covered through indoor residual spraying by 2015.

**Strategy 1.1: To scale-up access to Long Lasting Insecticide Nets to achieve universal coverage:** Insecticide treated net (ITNs) distribution has been targeting children and pregnant women, a significant increase in ITN coverage and use has been achieved over the past five years in these groups. The MOH applies different models for ITN distribution including free net distribution, subsidized net sales to targeted groups, net re-treatment campaigns, and commercial market access and promotion. Although ITN use in children under-five years and pregnant women has increased from 3.5% and 3.3% in 2003 to 22% and 46.5% in 2006, respectively, the coverage among adult population has been very limited. Recognizing that meaningful

reduction in malaria burden is best achieved through universal coverage of ITNs, the strategy has been revised to move from targeted approach to universal and comprehensive coverage, and currently, it is aiming at scaling-up ITNs coverage to all population groups.

**Strategy 1.2: At least 90% of all houses in targeted districts will be covered with Indoor Residual Spraying by 2011 and sustain until 2015:** Indoor residual spraying integrated with ITNs has recently been implemented in a small number of targeted districts. IRS will be scaled up rapidly, building on the models of IRS campaigns in Obuasi and the Northern Region. As capacity is built and experience is gained, additional districts will be covered. The pace and scope of IRS scale-up will be as rapid as feasible, in order to achieve the maximum feasible public health impact; yet the pace will be deliberate enough to assure quality, safety, and entomologic effectiveness. The aim is to cover at least one third of Ghana's districts with IRS by the end of 2015.

**Strategy 1.3: Intermittent Preventive Treatment (IPTp):** Ghana adopted IPTp with sulfadoxine-pyrimethamine (SP) as a policy in 2003, and the policy reserves SP for IPTp only. In 2003, only 20 selected districts were benefiting from this strategy, but in 2005, it was scaled up nationwide to all 138 districts. The objective of this intervention is to put 100% of all pregnant women on IPT by 2015. IPTp is being implemented by the Reproductive Health Division in collaboration with the NMCP in all public health facilities, including those managed by faith-based organizations (FBOs).

#### 4.1.2.2 Objective 2 - Improve Access to Prompt and Effective Treatment:

The overall aim is to ensure that symptoms and signs of malaria in the general population are recognized early and appropriate management is provided promptly at individual, family, community and facility levels. It seeks to ensure that caretakers/parents will be able to recognize symptoms and signs of malaria and respond appropriately and promptly within twenty-four hours of onset of fever. Health care workers should also have the knowledge and skills to manage all cases of malaria well, including complications, to reduce morbidity and mortality due to malaria.

#### Specific Objectives for Improve Access to Prompt and Effective Treatment:

*By December 2015, the following objectives are set forth:*

- \* All (100%) health facilities will provide prompt and effective treatment using ACTs
- \* 90% of all patients with uncomplicated malaria will be correctly managed at public and private health facilities using ACTs
- \* All (100%) communities will have access to community-based treatment for uncomplicated malaria
- \* 90% of caretakers and parents will be able to recognise early symptoms and signs of malaria.
- \* 90% of children under five years of age with fever will receive an appropriate ACT within 24 hours of onset

**Strategy 2.1: To improve early diagnosis and effective management of malaria in all health facilities:** The program aims to equip all health facilities with malaria diagnostic facilities (microscopes or RDTs) and provide effective antimalarial drugs. Moreover, to improve the management of malaria (including severe cases), the program aims to strengthen human resource through in-service training of laboratory technicians and clinicians.

**Strategy 2.2: To scale-up community based treatment of malaria in all districts to ensure 100% of under five children have prompt access and effective treatment of malaria:** It is known that the majority of children who die from malaria do so within 48 hours of onset of illness and referral to a health care facility can take several days. Studies have also shown that treatment for more than 70% of febrile illnesses are managed at home. Provision of malaria case management using ACTs had been limited to the health facility service level. Although physical access to formal health services reaches about 60% of the population, utilization of health services has been low. Moreover, the geographical distribution of the existing health services is biased towards urban areas. Thus, the marginalized people living in rural areas who are most affected by high malaria burden are not able to access the formal health services due to lack of physical access and socio-economic factors. To address the problem of physical and financial access, and to ensure prompt and effective treatment, this strategic document incorporates community-based malaria case management, targeting children under five years living in rural areas and areas with limited access.

#### **4.1.2.3 Objective 3 - Strengthen Monitoring & Evaluation and Operational Research:**

This is aimed at improving timeliness and completeness of data collection, interpretation of the collated data to inform and guide the program and provide basis for policy decision as well as monitoring progress and outcome of interventions.

**Strategy 3.1: To Strengthen Monitoring & Evaluation, and Operational Research:** Implementation of the primary strategies will be based on evidence, and results of monitoring of the efficacy of anti-malarial and insecticide resistance; use of ACTs through community volunteers, Knowledge Attitudes and Practice (KAP) studies on adherence to ACTs and G6PD deficiency monitoring, have all been informing the malaria control policy decision makers. The program aims to further strengthen the routine data collection system to capture reliable information, and undertake regular operational researches to provide evidence for decision making.

#### **4.1.2.4 Objective 4 - Strengthen the Health Systems at all Levels**

This aims at providing a favorable environment for the implementation of malaria interventions. This will be achieved through development of the capacities in the health system for health delivery. It includes a mix of technical, managerial and logistic capacities required to promote, protect and improve health. It will place emphasis on the creation, expansion or upgrading of capabilities in the health system in order to fill capacity and service gaps, improve individual and institutional performance, and achieve objectives of the health sector. The key result areas would include:

- \* Improved human resources (technical and managerial), Infrastructure, Equipment,

- \* Transport, Information Communication Technology, Drugs, Essential Logistics and Health Industry
- \* Improved planned preventive maintenance to increase equipment availability
- \* Resources to support the replacement of obsolete equipment.

#### 4.1.2.5 Objective 5- Create and Sustain Partnerships for Malaria Control

This seeks to mobilize society for a well coordinated national action against malaria so as to establish a social movement supported and owned by all stakeholders to roll back malaria.

**Strategy 5.1: To create awareness among the community as well as health workforce on malaria control and prevention activities:** It has been recognized that, as a pre-requisite for successful malaria interventions, substantial behavioural changes ought to take place in terms of health seeking, use of interventions like LLINs, IRS and adherence to treatment regimens. The programme therefore emphasizes interventions that would create and enhance awareness not only among community members but also among the health workforce. To achieve this, various measures are put in place to provide the required knowledge and information on the interventions of choice. Such measures include promotion of all interventions through radio and TV commercials, print materials, road shows, drama, promotional activities by the MoH network of facilities/ personnel and celebration of annual malaria day.

**Strategy 5.2: To forge functional partnerships and mechanisms between departments, programmes within and outside the health sector.** This will involve similar partnerships with development agencies, NGOs, private sector, communities with broader multi-sectoral integration.

#### 4.1.3 Expected Outcomes

##### 1. *Improved Malaria Prevention*

- Increased use of ITMs by children and pregnant women
- Improved drainage, mosquito-proofing of houses and general sanitation
- Reduction of mosquito population through in-door residual spraying and larviciding

##### 2. *Improved access to Prompt and Effective Treatment*

- Early recognition of fever and early treatment with Artesunate-Amodiaquine especially at the home
- Appropriate referral of severe cases assured
- Quality of treatment for malaria improved
- Basic services accessible to the sick

##### 3. *Strengthened Monitoring and Evaluation, and Operational Research*

- Increased availability of funds for research and monitoring
- Capacity in malaria research and monitoring improved
- Routine monitoring of programme activities and outputs strengthened
- Operational research into malaria undertaken and results disseminated and utilized to improve program planning

- Periodic evaluation of programme outcomes and impact institutionalized
- Safety and efficacy of drugs and insecticides monitoring institutionalized and strengthened
- Annual programme reviews conducted.

#### 4. *Strengthened Health Systems at all Levels*

- Human resource capacity built to deliver health (including malaria) interventions at all levels
- Infrastructure, logistics and communication systems improved
- Financial management improved at all levels
- Improved procurement and supply management
- Community systems strengthened

#### 5. *Create and Sustain Partnerships for Malaria Control*

- Functional partnerships and mechanisms between departments and programmes within health
- Functional partnerships and mechanisms with and between development agencies
- Functional partnership and mechanisms with and between government sectors
- Functional partnership and mechanisms with and between NGOs, private and informal sectors

### 4.1.4 Operational Approaches For Implementation of the Strategic Plan

#### 4.1.4.1 NMCP structure: decision-making authority and management

The NMCP does not extend below the national level as there are no designated malaria specific disease control officers at regional or district levels. This is in keeping with the national desire to provide integrated health services. The NMCP provides regional and district staff with guidelines, but it is ultimately up to the regional and district health teams to carry out programs as they like.

To facilitate communication and good relations with the regional and district health teams the NMCP utilizes emails, telephone, courier services and seminars as ways of conveying the intent of the national control program. Face-to-face communication is seen as best, but it was not until the GFATM grants that the NMCP had vehicles to visit the regions and districts.

#### 4.1.4.2 Internal linkages and coordination within Ministry of Health

There is reported to be good intra-sectoral coordination with MCH, EPI, Health Education/Promotion and IMCI programs and activities since all are located within the Public Health Directorate. Collaboration in the areas of conducting community surveys and working with community health workers are examples. There is also collaboration with other ministries such as Agriculture, Women and Children's Affairs, Finance and Local Government.

#### 4.1.4.3 Co-ordination roles of RBM partners at national and sub-national levels

A national Malaria Coordinating Committee meets regularly to give guidance to the NMCP and, as the name implies, coordinate among various partners. There is representation from the academic/research community, the Ministry of Health/Ghana Health Service, other key Ministries (e.g. Local Government), donors and their supported programs, NGOs and the private

sector. Meetings offer a chance for the NMCP to present plans and progress and get feedback and are used to review partner activities.

Coordination appears to work well in terms of information sharing. It is not clear that there is much in the way of joint budgeting and planning. This is evident in the diversity of ITN programs and varying coverage among districts of ITN implementation

## 4.2 DESCRIPTION OF STRATEGIES AND MODALITIES OF IMPLEMENTATION

### 4.2.1 Multiple Preventive Strategies

In line with the Roll Back Malaria strategy, Ghana has adopted two well proven approaches to the prevention of malaria, namely:

- (a) Integrated vector management (focusing primarily on insecticide treated nets and indoor residual spraying),
- (b) Intermittent preventative treatment in pregnancy (IPTp).

#### 4.2.1.1 Integrated Vector Management

In May, 2002, Ghana produced and printed the Insecticide Treated Material (ITM) Policy, which emphasized on Insecticide Treated Nets (ITNs). This policy was expanded in 2007 into an Integrated Malaria Vector Management Policy when there was growing demand to include other proven vector management interventions such as indoor residual spraying, limited larviciding, targeted space spraying and environmental management. This was done through collaboration with other partners.

#### *General Objective*

- \* To reduce the human - vector contact and ultimately reduce malaria morbidity and mortality among all age groups in Ghana.

#### *General Strategy*

- \* Harness and implement proven strategies that are available to the country
- \* Continue to collaborate with other sectors in malaria vector control
- \* Collaborate with other partners for effective implementation of public health regulation and legislation
- \* Mobilize human and financial resources to scale up these interventions.

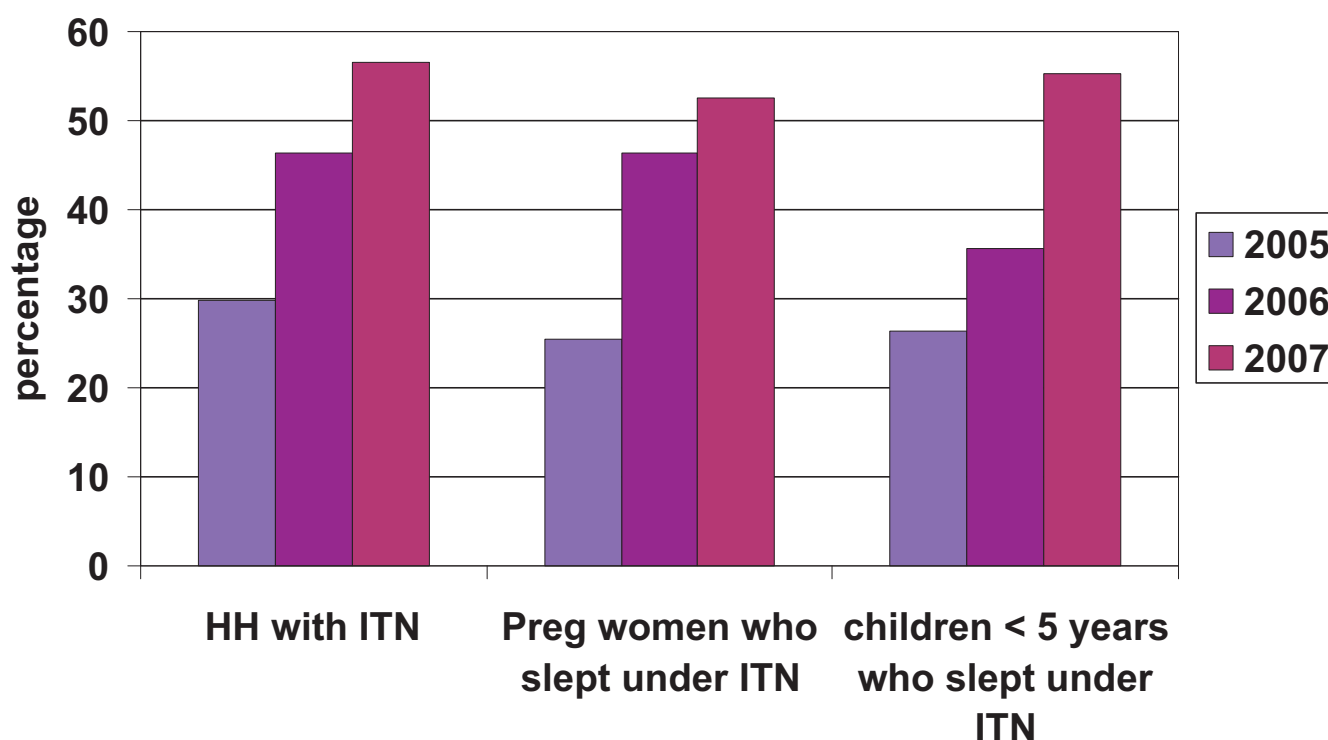
#### 4.2.1.1.1 Use of Insecticide Treated Bed Nets (ITNs)

##### Background

Ghana has pursued a mixed model for ITN distribution, including free net distribution, targeted subsidies, commercial market access, and bed net retreatment. The MOH policy has been to target the most vulnerable groups, namely pregnant women and children under five years. Mass scale up has begun with support from donors such as Global Fund, USAID, UNICEF, the World Bank, DfID and NGOs. Ghana has permanently removed Taxes and tariffs for ITNs.

In 2006, 2.1 million LLINs were distributed through an integrated child vaccination/ITN campaign. In 2007, 1.5 million ITNs were distributed through a similar campaign. In 2003, 17.6% of households reported owning at least one mosquito net with 3.2% of households owning at least one ITN. A higher percentage (24%) of rural households owned any kind of net compared with 10% of urban households (GDHS, 2003), ownership has increased to 56.5% in 2007 (GHS RBM/NMCP survey). ITN use in children under-five years was 3.5% in 2003 (GDHS) and this increased to 55.3% in 2006. ITN use in pregnant women was 3.3% in 2003 nationwide (GDHS) and also increased to 52.5% in 2007 in Global Fund focus districts (GHS RBM/NMCP survey) as shown in the figure 8 below.

**FIG 8: ITN HOUSEHOLD OWNERSHIP AND USE BY PREGNANT WOMEN AND CHILDREN UNDER FIVE YEARS FROM 2005-2007**



The National Strategy promotes LLIN ownership but allows retreatment of ITNs and locally sewn nets when necessary.

The 2008 RBM Needs Assessment identified challenges to net access as inadequate storage and distribution logistics, stock outs and competition among the various distribution channels.

The previous strategic plan recognized the potential value of insecticide treated materials (ITMs) beside ITNs (such as curtains, wallpaper, etc.). Although this remains of policy interest, there is minimal use of ITMs other than nets in the country as of yet. Universal coverage for ITNs has not been the focus of ITN promotions in Ghana. As a result, no locality has yet achieved the 85% coverage rates that would be necessary to attain the community-wide vector control benefits that are possible from ITNs.

### *Objectives*

The country aims to attain the following targets for ITN use by 2015, in line with the goals of global malaria control initiatives:

- \* To increase ownership of ITNs to at least one net per two persons in a household by 2015
- \* To increase the proportion of the general population sleeping under ITNs to 80% by 2015.
- \* To increase the number of children under-five years sleeping under treated net to 85% by 2015.
- \* To increase the number of pregnant women sleeping under treated net to 85% by 2015.

### *Strategies*

- Initial focus will be to improve coverage of the vulnerable groups (children under five and pregnant women)
- Continue retreatment of ITNs and locally sewn nets when necessary
- Sustain and improve partnership with the private sector and local communities in planning and implementation
- Intensify Advocacy, Communication, and Social Mobilisation (ACSM) to improve acquisition and usage of LLINs.

### *Operational Design*

The country will continue to promote a "mixed model" of distribution channels to the population:

- a. Subsidized distribution at health facilities/antenatal care clinics and outreaches
- b. Discount voucher scheme
- c. Commercial sales at full cost
- d. Mass free distributions through Child Health Week and/or other campaigns
- e. Free or subsidized nets through individual NGO programs
- f. Workplace distributions through large employers
- g. Work with the private sector to expand retail outlets for LLINs (marketplaces, lorry parks, etc)



- h. Procure only Long Lasting Insecticide Treated Nets (LLINs) and Long Lasting Retreatment kits
- i. Promote coordination and communication among suppliers of ITNs/LLINs
- j. Improve supply chain, storage and distribution management
- k. Improve ACSM to focus on challenges of ITN/LLINs use
- l. Promote and facilitate the consistent and correct use of ITNs in order to translate rising ownership rates into high use rates
- m. Promote use of other ITMs, such as treated curtains and wall paper.

### **Outcomes:**

- a. Increased proportion of households that own at least one ITN.
- b. Increased proportion of children under five years who sleep under an ITN.
- c. Increased proportion of pregnant women who sleep under an ITN.
- d. Increased proportion of the general population who sleep under an ITN.

#### **4.2.1.1.2 Indoor Residual Spraying**

### **Background**

To achieve the full entomological and epidemiological benefits of IRS, at least 90% of households in a particular community must be covered. Although IRS was part of the previous Strategic Plan, implementation was practically non-existent on a national scale until 2006, when a programme was initiated by the AngloGold Ashanti (AGA), a mining company within the Obuasi Municipality. The AGA IRS campaign targeted the Obuasi township and outlying communities, and employed a strategy of twice a year spraying. Monitoring over the first four spray rounds showed over 74% reduction in hospitalized malaria cases within a period of two years in the intervention area. In 2008, the U.S. President's Malaria Initiative (PMI) supported the launch of an IRS program in five districts in Northern Region, in collaboration with the Ghana Health Service, and drawing from the Obuasi experience. The PMI pilot targeted a largely rural area, used a strategy of once a year spraying, and relied on existing GHS infrastructure where feasible. Implementation experiences have shown that Ghana has the potential for success in implementing IRS, employing a variety of models.

### **Objectives**

- \* To cover forty five districts with IRS by the end of 2015.
- \* To spray at least 90% of all structures in each targeted district by 2015.

### **Strategies**

- \* Prior to IRS implementation in each district, vector identification and susceptibility to insecticide assessment will be carried out.
- \* Baseline parasite prevalence studies will be conducted at sentinel sites prior to IRS activities and repeated annually.
- \* Scale up IRS rapidly, building on the models of IRS programmes in Obuasi and the Northern Region and following WHO guidelines.
- \* Build local capacity for sustainability in IRS activities.

## *Operational Design*

- \* Technical criteria based on the WHO guiding principle will be used to select the districts for IRS. Spraying will occur at a frequency of at least twice a year. Scheduling will depend on epidemiological factors, the results of entomological monitoring, and technical requirements such as pesticide characteristics.
- \* Selection of insecticides will be based mainly on entomological susceptibility monitoring and logistic considerations.
- \* Implementation of activities will comply with NMCP and WHO guidelines for Indoor Residual Spraying (IRS) as well as other relevant international standards e.g., ISO 14001 [ref. to WHO manual for IRS (WHO/ CDS/ WHOPES/ GCD PP/2001.3)].
- \* During IRS operations, standard operating procedures will be adhered to including but not limited to :
  - Procurement and Logistics Management
  - Environmental/Safety/ Monitoring and Compliance
  - Entomological Surveillance
  - Sensitization and Mobilization of Communities
  - Information, Education and Communication (IEC) for all stakeholders
  - Spray Operations
  - Recruitment and Training of Spray Staff
  - Management Structures
  - Reconnaissance and planning
- \* Monitoring and Evaluation of the IRS through entomologic monitoring, epidemiologic and parasitological surveys as per the National M&E plan.
- \* An inter-sectoral IRS technical committee including EPA will be set up to provide ongoing technical guidance and oversight.

### *Outcomes/Output:*

- Increased proportion of people protected by IRS
- Increased proportion of districts covered by IRS
- Increased proportion of targeted structures which are sprayed
- Increased number of people trained in IRS
- Reduced vector density
- Reduced parasite prevalence in targeted populations.

#### **4.2.1.1.3 Other Vector Control Methods**

As an adjunct to ITNs and IRS, the NMCP will support other vector control measures such as limited larviciding, targeted space spraying, and environmental management.

### **Larviciding**

Limited larviciding of temporary and permanent water bodies will be an integral component of the Integrated Vector Management programme. Adult mosquitoes are highly mobile insects that

can readily detect and avoid many interventional measures whereas mosquito eggs, larvae and pupae are confined within relatively small aquatic habitats and cannot readily escape control measures. This makes larval control a reliable and effective measure for reducing mosquito population.

The natural preference of Anopheline species for human hosts and for breeding in areas that are near human settlements makes them an efficient vector; it also renders its larvae vulnerable to control because they are often relatively easy to locate in association with human settlements and activities.

### Space Spraying

Space spraying can be used as a knock-down intervention during malaria epidemics and periods of high vector densities. The goal is to rapidly reduce vector populations. Space spraying embraces the use of fogging, misting, aerosols and ultra-low volumes (ULV) applications, which although not recommended as permanent malaria intervention, can be used in emergencies as foci-spraying to immediately reduce the adult mosquito population. Ghana being hyperendemic for malaria does not intend to focus on space spraying.

### Environmental Management

Environmental management also known as Source Reduction is a control measure that aims at manipulating or modifying the environment in order to deprive the target vector population of its requirement for the survival in terms of breeding, feeding and resting thus reducing human-vector - pathogen contact and transmission risks. Though it goes on minor scales in the country, it is not a planned programme strategy.

#### 4.2.1.2 Prevention of Malaria in Pregnancy

Ghana adopted Intermittent Preventive Treatment in Pregnancy (IPTp) with Sulphadoxine-Pyrimethamine (SP) as a strategy to prevent malaria in pregnancy in 2003. IPTp uses three (3) doses of Sulphadoxine- Pyrimethamine. IPTp is being implemented by the Reproductive Health Division in collaboration with the NMCP in all public health facilities, Faith-Based Organizations (FBOs) and private maternity homes. In 2003, only 20 selected districts benefited from this strategy, but in 2005, it was scaled up nationwide to all 138 districts.

Different surveys have shown different coverage levels of IPT but generally the coverage rate of IPT1 is higher than IPT2 and IPT2 is higher than IPT3. In 2007, a survey by Ghana Health Service (GHS) put estimates at IPT2 coverage to be 58.5%, whilst QHP and MICS estimates were 34.4% and 28% respectively.

#### Objective/Target

- \* To ensure that all registrants at ANC are on appropriate Intermittent Preventive Treatment (receive at least two of more doses of Sulphadoxine-Pyrimethamine under DOT by 2015
- \* To ensure that 100% (All) pregnant women use at least one personal protective measure by 2015
- \* To reduce proportion of malaria cases in pregnant women from 16.1% to 8% by 2015.

### *Strategies:*

- \* All pregnant women will receive three doses of SP using the Directly Observed Therapy in the Antenatal Clinics. This will be at both static and outreach clinics in public, quasi-government, FBOs and private facilities.
- \* Promote use of other personal protective measures like the use of mosquito repellents and protective clothing.

### *Operational Design*

- IPT shall be given by Directly Observed Therapy (DOT) by health workers
- Community level education on issues pertinent to efficient delivery of IPT and other protective measures
- Increase access to IPT through Focused Antenatal Care
- Improve community participation in the delivery of ANC (e.g. collaboration with FBOs and TBAs)
- Improve supportive logistics to facilitate IPT
- Ensure adequate and timely supply of SP
- Training of non-midwifery health workers (community health officers/nurses, medical assistants, doctors) to offer IPT2 and IPT3 to pregnant woman
- Protect pregnant women against malaria by the use of ITNs and IRS. In addition, other personal protective measures against mosquitoes will be employed; for instance the use of protective clothing and repellants.
- Address pharmacovigilance issues.

### *Outcome/Outputs*

- \* Increased percentage of pregnant women receiving at least two doses of SP (IPT2)
- \* Increased percentage of pregnant women using personal protective measures
- \* Proportion of malaria cases in pregnant women reduced.

#### **4.2.2 Case Management**

Case management of malaria starts right from the community level through to the health facility. It involves the ability of people to recognize symptoms early and take the appropriate action. It is recommended that people should have access to ACTs within 24 hours of onset. At the health facility, the importance of using diagnostic tests to confirm cases cannot be overemphasized. In addition, giving the appropriate ACTs is also necessary to ensure the holistic management of people with malaria.

### 4.2.2.1 Diagnosis of Malaria

In 2006, malaria accounted for 37.5% of out-patients department (OPD) attendance, whilst in 2007 it accounted for 33.7%. Five percent of all clinically diagnosed cases were confirmed as malaria by laboratory testing. There is no data on the exact number of clinically diagnosed malaria cases which were sent for laboratory testing though it is known that not all cases get tested. The usual mode of diagnosis is by microscopy poor capacity for diagnosis due to inadequate numbers of laboratory technicians and technologists, equipments (RDTs, microscopes and reagents), inadequate laboratory infrastructure and weak quality control systems contribute towards the low rate of laboratory confirmation.

Although Rapid Diagnostic Tests (RDTs) has the potential for improving diagnosis of malaria, there is currently no international consensus on any particular brand and type. This notwithstanding Ghana has introduced RDTs into the health system for the diagnosis of malaria.

#### *Objective*

- To ensure that 70% of all clinically diagnosed malaria cases are confirmed to by laboratory testing by 2015.

#### *Strategies*

- Equip all health facilities with malaria diagnostic facilities (microscopes or RDTs)
- Strengthen the human resource through in-service training of laboratory technicians and clinicians.
- Strengthen laboratory quality control systems.

#### *Operational design*

- Train and equip health workers
- Make available guidelines and logistics
- Monitor the use of diagnostic test
- Ensure quality of diagnostics
- Improve quality laboratory control systems
- Provide infrastructure where needed
- Strengthen support supervision

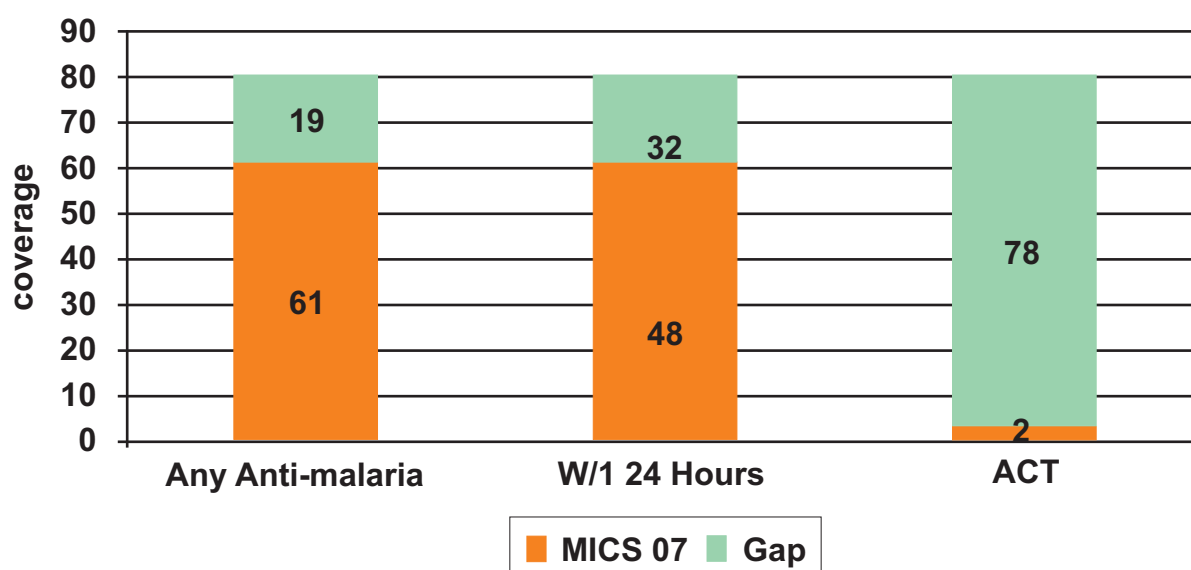
#### *Outcome/Outputs*

- Increase percentage of clinical cases of malaria confirmed by laboratory testing (RDT or microscopy).

### 4.2.2.2 Treatment of Uncomplicated Malaria

In 2007, 33.7% of OPD attendance was attributed to malaria. Of this proportion, only 51.8% were treated with ACTs. At the community or household level, only 2% of children receive appropriate treatment (MICS 2007) as shown in figure 8.

FIG 9: CHILD CASE MANAGEMENT INDICATORS, 2006

**General Objective:**

- To ensure that all patients with uncomplicated malaria receive prompt (within 24 hours) and appropriate treatment with ACTs by 2015.

**General Strategy**

- Provision of appropriate, prompt and effective ACTs at both the household and health facility level.

**4.2.2.2.1 Treatment of Uncomplicated Malaria: Home Based Care of Malaria**

Majority of children who die from malaria, do so within 48 hours of onset of illness and referral to a health care facility can take several days. Studies have also shown that treatment for more than 70% of febrile illnesses are managed at home.

Provision of malaria case management using ACTs had been limited to the health facilities service level. Existing health facilities are biased towards urban areas making it inaccessible to majority of the people in the rural areas. For that matter this strategy will be targeted at the rural areas. Currently, 16 districts in the Upper East and Upper West Regions of Ghana are implementing home based care. The scale-up of this intervention will be undertaken based on experiences and lessons learned and evidence from implementation.

**Specific Objectives:**

- Increase access to prompt and effective treatment of uncomplicated malaria at the community level in targeted districts
- To ensure that 90% of caretakers / parents of children under 5 years recognize early symptoms of malaria.

**Strategy**

- Use of Community-Based Agents (CBAs) and Community Drug Distributors (CDD) including Licensed Chemical Sellers (LCS) and community pharmacists, etc. to make available ACTs for children at the community level

- Scale-up home based care from the 16 implementing districts to all rural (123) districts in Ghana in phases.

### *Operational Design*

- Training of licensed chemical sellers and community pharmacists as CDD or CBAs
- Training of health workers as supervisors
- Education of the community on the availability, benefits and rational use of home based care
- Provision of supportive logistics to CDDs
- Provision of ACTs pre-packs and rectal artesunate to CDD in accordance with national policy
- Strengthening of the referral system
- Monitoring of side effects of ACTs used by CDDs.

### *Outputs/Outcomes*

- Increase proportion of districts implementing home based care for malaria in children increased.

#### **4.2.2.2 Treatment of Uncomplicated Malaria: Health Facility Level**

In 2004, Ghana changed its anti-malarial drug policy from the use of Chloroquine to Artesunate-Amodiaquine as first line for the treatment of uncomplicated malaria. Due to the initial negative public outcry against the drug, there were challenges in the uptake and use but this has been improving over the years. GHS 2007 Annual Report indicates 51.8% of all malaria cases reported at the OPD in public health facilities was treated with Artesunate-Amodiaquine. Oral quinine is recommended for the management of treatment failure.

### *Objectives*

- To ensure that all (100%) health facilities provide prompt and appropriate treatment for malaria using ACTs by 2015.
- To increase access of all patients with uncomplicated malaria who are correctly managed at public and private health facilities using ACTs from 51.8% to 90% by 2015
- To ensure that 90% of children age 3 months to five years of age with fever will receive an appropriate ACT within 24 hours of onset by 2015

### *Strategy*

- Provide prompt and appropriate management of malaria in health facilities

### *Operational Design*

- Training of health workers with emphasis on teaching hospitals, quasi- government institutions and private facilities on current anti-malarial drug policy
- Provision of ACTs at all health facilities
- Increased advocacy and resource support for the establishment of more functioning CHPS zones
- Pricing anti-malarials to make them affordable for the majority of the population.

- Encourage patronage of NHIS
- Strengthening of the LMIS to ensure continuous availability of ACTs at all health facilities
- Withdrawal of monotherapies for the treatment of uncomplicated malaria
- Strengthen clinical audit in health facilities.

### *Output/Outcome*

- Increase proportion of patients who have access to prompt and appropriate treatment for uncomplicated malaria.

#### **4.2.2.3 Management of Severe Malaria**

The case fatality rate for children under five years for malaria was 2.1% in 2007, as compared to 2.3% as in the reported in 2006. In 2007, nationally, 19% of all deaths were attributable to malaria amongst all ages, whilst among deaths in children under five years, malaria accounted for 31%. In the same year, admissions attributed to malaria were 22% of all admissions.

### *Objective*

- To reduce the admissions due to severe malaria from 22% to 11% by 2015
- To reduce the case fatality rate due to severe malaria from 2.1% to 1.0% by 2015

### *Strategy*

- Provide appropriate and prompt management to reduce the progression into severe disease and death
- Promote community recognition and prompt referral of severe cases.

### *Operational Design*

- Assessment of hospitals on their capacity to manage severe malaria
- Organization of facilities for managing severe malaria
- Train health staff in management of severe malaria based on WHO guidelines
- Advocate and support the provision of essential equipment medicines and other logistics based on the assessment of the hospitals
- Use antimalarial suppository at the community level for pre-referral
- Advocate the expansion ambulance services
- Train the public, CDDs and CBAs on recognition of symptoms of severe malaria.

### *Outputs/Outcomes*

- Proportion of admissions due to severe malaria reduced
- Proportion of deaths due to severe malaria reduced
- Referral from community level for severe malaria improved.

#### **4.2.2.4 Management of Malaria in Pregnancy**

In 2007, 16.1% of all OPD cases in pregnant women were due to malaria (suspected). In 2007, 13.1% of all admissions in pregnant women were attributed to malaria. In the same year, 9% of all deaths in pregnant women were attributed to malaria.



**Objective:**

- To reduce malaria cases in pregnant women from 16.1% to 8.0% by 2015
- To reduce admissions due to malaria from 13.1% to 6.0% by 2015
- To reduce deaths due malaria in pregnancy from 9.0% to 4.5% by 2015.

**Strategy**

- Provision of safe and appropriate case management of malaria in pregnant women.

**Operational Design**

- Training of staff in management of malaria in pregnancy
- Improve laboratory diagnosis of malaria in pregnancy
- Make medicines and other logistics for management of malaria in pregnancy available in all health facilities
- Improve on referrals from peripheral to higher levels.

**Outputs/Outcomes**

- Proportion of malaria cases in pregnancy reduced
- Proportion of admissions due to malaria in pregnancy reduced
- Proportion of deaths due to malaria in pregnancy reduced.

**4.2.2.5 Malaria in Special Groups****4.2.2.5.1 Malaria and HIV/AIDS**

In 2007, the NACP reported an estimated adult national HIV prevalence of 1.9%. This translates to an estimated 264,481 persons living with HIV out of which 58.2% (153,851) are women. Annually, some 2,959 babies are born with HIV and a total of 16,947 children are currently living with HIV.

All Ghanaians are at risk of malaria transmission because Ghana is hyperendemic for malaria and this includes persons living with HIV/AIDS. In 2003, Ghana initiated a comprehensive approach to HIV/AIDS service including the provision of clinical care services. There are about 65 sites currently providing ART services, and management of other clinical services for PLHW using national guidelines and these sites keep increasing. However, current HIV/AIDS clinical management guidelines are silent on issues related to the interaction between malaria and HIV. There is virtually no data on HIV-Malaria co-infection.

HIV-infected adults are also at a greater risk of developing clinical malaria and more severe malaria. Worse still, HIV reduces the effectiveness of anti-malarial treatment. Pregnant women who are HIV positive have a higher risk of malaria and more complications. There is also transient increase in placental HIV viral load during malaria co-infection and this poses an increased risk for mother-to-child transmission of HIV.

**Objective**

- To improve access to prompt and effective treatment of malaria among PLWAs by 2015.

**Strategies:**

Promote proper preventive measures and increase access to prompt and appropriate management of malaria in people living with HIV.

**Operational Design**

- Promote advocacy at all levels
- Promote collaboration between malaria and HIV stakeholders at all levels
- Integrate malaria prevention strategies into VCT and ART services
- Awareness creation on malaria in HIV among the PLHIV
- Strengthen health system response to HIV-Malaria co-infection.

**Outputs/Outcomes**

- Reduced proportion of PLWAs with malaria
- Increased ART centres with access to antimalarials
- Increased ART centres with access to ITNs.

**4.2.2.5.2 Malaria and Sickle Cell Disease**

In West African countries including Ghana, the frequency of the trait is estimated to be 15% to 20%, while the prevalence of sickle cell disease is about 20 per 1000 births . According to the World Health Organization, sickle cell anemia is responsible for 9% of under-five deaths in West Africa. Yet its management remains inadequate and systematic screening is not a common practice. Indeed, malaria infection poses a serious threat to sickle cell patients by tending to trigger sickle cell crises, worsening anemia, and increasing the rates of hospitalization and death. Scattered measures are currently in place to tackle the problem of malaria in sickle cell patients, but there are no concerted efforts to reduce malaria in sickle cell patients.

**Objective**

- To reduce malaria cases and deaths in sickle cell patients from current levels by 50% by 2015.

**Strategies**

- Promote proper preventive measures and increase access to prompt and appropriate management of malaria in sickle cell patients.

**Operational Design**

- Advocacy for improved malaria control in sickle cell patients
- Foster effective collaboration between the Non-communicable Disease Programme, Specialty Clinics, the NMCP, international health partners, and other stakeholders, to promote improved outcomes for sickle cell patients
- Develop guidelines on the control of malaria in sickle cell patients
- Training of health workers in the management of malaria in sickle patients
- Assess the malaria burden among sickle cell patients
- Carry out extensive educational programme
- Promote research on malaria in sickle cell patient.

**Outcomes/Outputs:**

- Reduced malaria cases among patients with sickle cell disease.
- Reduced deaths due to malaria among patients with sickle cell disease.

**4.2.2.2.5.3 Malaria in Non-immunes:**

It is estimated that internationally, the risk of non-immune travellers to malaria endemic countries acquiring malaria is 1-357 per 100,000 depending on endemicity of the country. The risk of non-immune travelers coming to Ghana is not known. In the 2000-2010 strategic plan, non-immunes were identified as a group that required prophylaxis. However, apart from developing fliers, there was no strategy or policy for this vulnerable group. Unfortunately, this policy was not implemented. Currently, most non-immunes visiting the country usually obtain their own antimalarial chemoprophylaxis from their countries.

**Objective**

- To reduce the incidence/prevalence of malaria in non-immunes visiting Ghana.

**Strategies:**

- Collaborate with embassies / partner agencies, companies to prevent and treat malaria in the non-immunes
- Develop guidelines for malaria prevention and treatment in the non-immunes
- Build capacity for management of malaria in the non-immunes.

**Operational Design**

- Appropriate and effective antimalarial prophylaxis
- Carry out multiple preventive strategies
- Provide timely and appropriate information for non-immune visitors at strategic points (points of entries, hotels, embassies, Ghana missions abroad etc.).

**Outcomes/Outputs**

- Improved case management for the non-immune
- Reduced malaria cases in non-immunes.

**4.2.3 Integrated Support Systems****4.2.3.1 Communications (IEC/BCC, Advocacy and Social Mobilization)**

The NMCP working in partnership with the GHS Health Promotion Department, the USAID, Ghana Sustainable Change Project, and other stakeholders has undertaken an evidence-based approach to developing a malaria communication campaign "Lets come together and drive malaria away," which is now being implemented. The goal of the communication campaign is to inform the general population, as well as promote the proper use of AS/AQ as the first-line drug for treatment of malaria as part of a comprehensive strategy for malaria control in Ghana. The Johns Hopkins University is supporting the "VOICES for "A Malaria-Free Future" campaign, which focused on mobilizing leadership in government and civil society; enhancing district level advocacy efforts; improving policy dissemination and reducing barriers to policy implementation and further advocating for increased funding for malaria. These interventions are intended to raise malaria control to a level of prominence on the list of priorities of government, civil society

and NGOs, thereby galvanizing increased support for the prevention and control of malaria in Ghana. District advocacy also is promoting the appropriate use of the district 1% common fund with District Assemblies. The RBM Coordinating Committee is also a major voice for malaria advocacy. Over 47 local Ghana NGOs are involved in Malaria Control, and most of their activities concern BCC.

The recent RBM Needs Assessment cited data which showed that the awareness on the use of ITNs among children under 5 years increased from 26% in 2005 to 55.3% in 2007. Also, the review also showed that more people are taking treatment for fever within 24 hours of onset: 57% in 2007 as compared with 54% in 2006. Coverage for IPTp2 was 28% and the use of ACT for children at community level was 2% (MICS, 2006).

*The following BCC/IEC gaps were noted:*

- \* The NMCP 2007 Survey indicates that while a large majority of people can state the role of mosquitoes in malaria transmission, many still hold additional and conflicting notions
- \* There is a need to reinforce understanding that may lead to acceptance of malaria interventions - for example reluctance to use AA/ ACTs, problems in bed net maintenance like washing too often with harsh detergents
- \* There is a special need to educate private providers, including the chemical sellers, on the appropriate malaria medicines
- \* More attention is needed to prepare mothers for home management of malaria responsibilities
- \* In IRS campaigns, it is well known that, a key determinant of success is community and household acceptance of the spray operations
- \* There is late and inconsistent ANC attendance by pregnant women leading to low uptake of malaria interventions

Against this background, there is need for intensive dissemination of IEC messages on malaria in order to significantly promote appropriate behaviour related to improved case management, ITN utilization, IRS acceptance, and other interventions.

*Behaviour Change Objectives*

- \* To increase the proportion of the general population sleeping under ITNs to 80% by 2015
- \* To increase the number of children under-five sleeping under treated net to 85% by 2015
- \* To increase the number of pregnant women sleeping under treated net to 85% by 2015

- \* Increase the number of people who practice full drug compliance in the treatment of malaria to 90% by the end of 2015
- \* To ensure that all registrants at ANC shall be on appropriate Intermittent Preventive Treatment (receive at least two of more doses of Sulphadoxine-Pyrimethamine under DOT by 2015
- \* To ensure that 100% (All) pregnant women use at least one personal protective measure by 2015
- \* Increase early attendance of ANC clinics such that 100% of pregnant women will take at least two doses of SP by 2015
- \* Promote community acceptance of IRS, such that at least 90% of structures in all targeted districts/communities are sprayed.

### *Communication Objectives*

The communication objectives that will contribute to the above behaviour change objectives are to:

- \* Generate demand for ITNs among the population;
- \* Increase awareness among the general population of the new combination drug for the treatment of malaria;
- \* Increase demand among the general population for the new treatment for malaria;
- \* Increase knowledge on the need for full drug compliance among the general population;
- \* Create awareness of IPT among pregnant women;
- \* Create awareness about the benefits of IRS in preventing and controlling malaria
- \* Create demand among the population for IRS;
- \* Promote community acceptance of IRS in the targeted districts;
- \* Stimulate dialogue about malaria control among members of the community.

### *Advocacy Strategies*

- \* Mobilise support for malaria control from political leadership, policy makers, opinion leaders (including chiefs), and the corporate (private sector).
- \* The National Malaria Communication Committee (NMCC) will coordinate and oversee the implementation of malaria communication interventions with all partners throughout the country. This may include input from a larger reference/advisory group

situated within other NMCP sub-committees. The NMCC will have decision-making powers.

### **IEC/BCC:**

- Institutionalize the process of engaging partners in IEC/BCC planning and implementation.
- Improve communication skills of health workers through orientation and supervision.
- Provide greater access to appropriate information on malaria prevention and control and facilitate demand for service through annual campaigns.
- Correct commonly held misconceptions regarding malaria infection and control.
- Make effective use of multiple channels to reach target audiences.
- Collaborate with relevant MDAs, NGOs, CBOs and other civil society groups to roll out the national communication campaign to the district and community levels.

### **Social/Community Mobilization:**

- Collaborate with relevant stakeholders in rolling out the National Communication Campaign.

### *Operational Design*

#### **Advocacy:**

- Constitute a National Malaria Communications Committee (NMCC) under the leadership of the NMCP to harmonise the design process for communication interventions
- Review and update the existing National Malaria Communication Strategy, guidelines and educational materials
- Present strategy and plans to Ghana leadership, policy makers, opinion leaders (including traditional leaders), and the private sector to mobilize support for proposed plans
- Engage the media practitioners as partners in supporting the communication campaign throughout the country
- Orient partners on the communication strategy and materials to improve their use IEC/BCC:
- Ensure the use of mass media and interpersonal channels at all levels to reach target audience.
- Publish timely progress reports which will include human interest stories, updates, etc., on national scale-up campaign for all key partners
- Strengthen the supervision system to provide constructive feedback to health workers about their interpersonal skills with clients.

#### **Social/Community Mobilization**

- Conduct planning meetings with partners to roll out the campaign to the district and community levels. Each partner will plan and conduct activities that favour each organization's comparative advantage and engage community members in the planning process to ensure ownership and commitment
- Ensure optimum utilization of available resources at the district and community level.

- This may require groups leveraging additional resources or identifying local resources. Partners will actively engage communities in joint community planning, i.e., developing hand in hand with the community an action plan so that there is ownership and commitment to the stated national goals.

### *Outcomes/Outputs*

#### **Advocacy:**

- Support mobilised from political leadership, policy makers, opinion leaders (including chiefs), and the private sector at all levels, especially the district level
- All stakeholders are informed on the progress/achievements of the National Malaria Strategic Plan implementation
- A national communication strategy for malaria well-coordinated by a functional NMCC under the leadership of the NMCP

#### **IEC/BCC:**

- A package of evidence-based, intervention-specific malaria IEC/BCC materials developed for use by implementing partners to ensure consistency of messages
- IEC/BCC activities ongoing and contributing to positive behavioral change
- Interpersonal skills of health workers improved
- Health workers are better equipped with accurate and up-to-date information.

#### **Social/Community Mobilization:**

- Communities actively involved in communication planning and implementation
- Civil society groups better equipped with accurate information to design and plan campaigns/health services, etc. towards achieving the national objectives and targets
- Resources leveraged for malaria control
- Overall Outcomes for Communications
- A formal structure is developed to engage partners in planning, design, development, dissemination and evaluation of effective IEC/BCC plans
- Support received from policy makers, political and opinion leaders at all levels, especially at district level
- A package of evidence-based intervention specific malaria information, education and communication materials is developed for use at the district level
- A communications plan is implemented that provides quarterly updates and information on the achievements of the National Malaria Strategic Plan that targets stakeholders, political and health system leaders and health development partners
- Awareness among health workers on malaria control intervention is increased
- Awareness among communities on malaria prevention action is increased
- Behaviour of target populations on malaria prevention and compliance to treatment is changed, sufficient to meet national objectives.

#### **4.2.3.2 Strengthening the Roll-Back Malaria Partnership for Impact**

A national RBM partnership was established in Ghana in 2001, with a national coordinating committee. This partnership included all relevant stakeholders. This coordinating Committee meets regularly to give guidance to the NMCP and provide updates on partners' activities. There

is representation from the academia/research community, the Ministry of Health, other key ministries (e.g. Local Government), NGOs and the private sector, and the development partners including WHO, UNICEF, USAID/PMI and others. There is an already established partnership among the major stakeholders. Within the Ministry of Health the NMCP collaborates extensively with other departments and units including:

- \* Family Health Directorate
- \* Surveillance Unit using the community-based surveillance volunteers (CBSV)
- \* GNDP, in respect of drug quality and other aspects of drug availability etc
- \* Health Promotion Department, for IEC component
- \* ICD, for quality assurance aspect and clinical support; and
- \* HRU, for research coordination.

The NMCP continuously engages a number of NGOs to extend malaria control activities to the remote communities. Furthermore, the NMCP collaborates with corporate bodies such as mining companies, financial institutions, and telecommunication providers to provide malaria control services. However, there still remains the need for more partners to be engaged.

### *Challenges*

- \* Inadequate coordination among various partners implementing malaria activities in the country.
- \* The current partnership is not all-encompassing, leaving out other relevant stakeholders.

### *Objectives*

- \* To sustain and expand functional partnerships for malaria control.
- \* To establish a social movement that is supported by a well-coordinated national action to roll back malaria.

### *Strategies*

- \* Revitalize the RBM Coordinating Committee to enhance effective coordination for all malaria activities.
- \* Foster functional partnerships and mechanisms between departments and programmes within health sector;
- \* Foster functional partnerships and mechanisms with and between development agencies;
- \* Foster functional partnerships and mechanisms with and between government sectors;
- \* Foster functional partnership and mechanisms with and between NGOs, private sectors and informal sectors; and
- \* Foster functional partnership with traditional health providers and the community.

### *Operational Design*

- \* The NMCP and the RBM Coordinating Committee will continue to identify other relevant partners; including community based organizations, to ensure effectiveness of interventions through provision of resources and sustained commitment.
- \* The NMCP will continue to sustain partnership with other department and programmes within the health sector.



- \* The NMCP will formulate coordinated mechanism (such as signing Memoranda of Understanding [MOUs]) between relevant ministries, departments and agencies to ensure holistic and sustained interventions
- \* Partnership with bilateral, multilateral and other development partners will be pursued
- \* Continue supporting NGOs, CBOs, etc (with funds, technical assistance, logistics, etc) for effective implementation of malaria control activities
- \* The NMCP will actively engage the private sector in all malaria control activities especially in areas where they have the comparative advantage
- \* GHS/NMCP will establish a well-coordinated and collaborative partnership with the traditional health providers.

### *Outcomes:*

- \* Functional partnerships and mechanisms between departments and programmes within the health sector
- \* Functional partnerships and mechanisms with development agencies
- \* Functional partnership and mechanisms with government sectors
- \* Functional partnership and mechanisms with Civil NGOs, private and informal sectors.

### **4.2.3.3 Strengthening Health Systems**

There has been significant increase in the financial contribution of development partners to address the many diseases that is affecting developing countries. This has raised concerns for country governments to commit to increasing national budget to address the seemingly weak health system. With increase support from Global Health Initiatives targeted to addressing disease areas, many weak health systems are unable to provide the level of support required to deliver to scale the health interventions. This has shifted the focus of many international partners and Global Health Initiatives in extending their support to strengthen country health systems.

Ghana is just like many other developing countries faced with the fight to reduce and eliminate diseases. On the global front, unstable economic conditions especially in the prices of commodities like oil are undermining the progress made and pose a major threat. Though Ghana has benefited immensely from many Global Health Initiatives, e.g. Global Fund (GF) support to fight HIV/AIDS, TB and Malaria, the Government's contribution to health development remains low and below the WHO/WB recommended minimum of about \$30 per capita. The weak health systems especially in low numbers in human resources for health, poor access to health services to most of the rural communities, weak logistics and distribution systems are having a negative effect on the effort of the National Malaria Control Programme. These deficiencies impinge strongly on important interventions such as access to prompt diagnosis and effective treatment, intermittent preventive treatment in pregnancy and monitoring and evaluation of the programme activities.

Various reviews have identified weaknesses in community based surveillance systems, information management and M&E all of which affect decision making.

There should be forging of stronger, integrated, effective, equitable and accountable health systems including improving access and strengthening financing, human resources management, capacity building, information management, M&E and private sector engagement. This will contribute to the success of malaria interventions

#### 4.2.3.3.1 Management of Malaria Commodities and Quality Assurance

##### Background

Ghana's health commodities supply system embraces all the requisite set of practices to ensure the timely availability and appropriate use of safe, effective and quality anti-malarial drugs and other products and services in the country's health care setting.

The Procurement Unit in collaboration with the NMCP forecasts and quantifies malaria commodities periodically. It is normally based on the projected number of target beneficiaries. The MOH has a network of storage facilities in all ten regions. There is a Central Medical Store and ten Regional Medical Stores. The Central Medical Stores (CMS) under the Procurement and Supply Directorate of the MOH is responsible for storage and distribution of pharmaceutical and health products in Ghana. The medical stores network has a pool of vehicles to support the supply chain systems. Facilities for cold storage are available at the Central and Regional Medical Stores.

Ghana has a vibrant private sector involved in the manufacture, importation and distribution of malaria commodities. However, the processes of ensuring availability of commodities do not take into consideration the needs of the private sector. The Food and Drugs Board could be strengthened to ensure availability of quality malaria commodities in the private sector.

##### Challenges

- \* Occasional stock-outs of malaria commodities at the service delivery points
- \* Continuous use of mono-therapies for the treatment of uncomplicated malaria
- \* Limited availability of quality anti-malarial medicines in the private sector
- \* Low adherence to rational use of anti-malarial medicines in both public and private health facilities
- \* Limited storage facilities and distributive assets for health commodities at the peripheries (district and sub-district levels)
- \* Absence of WHO pre-qualified local manufacturers of anti-malarial medicines.

##### Objectives

- \* To make accessible, safe, efficacious, quality and cost effective malaria commodities to all Ghanaians in a sustainable manner
- \* To develop and utilize innovative strategies to ensure appropriate use of anti-malarial medicines in line with the national treatment guidelines.

##### Strategy

- \* Improve geographical access to quality, efficacious and cost effective treatments in both public and private sector channels
- \* Improve and formalize private sector's role in the supply of malaria commodities at all levels
- \* Implement innovative financing mechanisms including subsidies to ensure affordability of malaria treatments in both public and private sectors
- \* Implement the procurement and supply management policies in both the public and the private sectors.

- \* Implement strategies to ensure rational use of anti-malarial medicines
- \* Facilitate the pre-qualification of locally produced anti-malarials to ensure the sustainable supply of affordable anti-malarial medicines.

### *Operational Design*

- \* A sub-committee will be formed to monitor needs, supplies and distribution challenges and also identify additional activities to strengthen the procurement and supply management. This group will report quarterly at the National RBM Coordinating Committee
- \* Support functional Drugs and Therapeutics Committees (DTC) in health facilities at all levels in both public and private sector
- \* Ensure the reduction of wastage in drug supply management
- \* Work with the FDB and institutional procurement units to implement the phase out plan for mono-therapies
- \* Training of health workers, including Medicine Counter Assistants, in the rational use of medicines
- \* Implement communication activities targeted at health workers and the general public to promote the rational use of anti-malarial medicines
- \* Work with statutory bodies to implement service delivery models that will enhance geographical access to anti-malarial medicines through the private sector
- \* Support the FDB to strengthen adverse events monitoring, post market surveillance and de-classification of anti-malarial medicines to over the counter status.
- \* Identify storage and distribution bottlenecks and collaborate with the relevant authorities to address these challenges.

### *Outcomes*

- \* Improved access to safe, efficacious, quality and cost effective malaria commodities to all Ghanaians in a sustainable manner
- \* Improved rational use of anti-malarial medicines.

#### **4.2.3.3.2 Health Information System:**

Integration of anti-malarials is limited and LMIS for both public and private sector is also a challenge. The objective is to ensure that health facilities shall be reporting regularly and accurately on age and sex-specific malaria morbidity and mortality as part of an integrated HIS. A key philosophy is to pursue evidence-based decision-making and action. The health information system is key to this and in the Ghanaian context needs to be strengthened to reflect the peculiar needs of malaria control.

The Health Information System will be strengthened by improving Health Management Information System and Logistic Management Information System. This will include training of health informatics personnel, data managers and supply chain managers and procurement of computers, accessories and soft wares. Such interventions will help in the provision of monitoring and supervision tools to capture data on patient and commodities.

#### 4.2.3.3.2 Laboratory Infrastructure:

As alluded to in the previous section on malaria diagnosis, significant investments in training of technicians, procurement of equipment and supplies, and posting of staff are envisioned. This is an area of health system strengthening that needs greater attention, to complement adoption of new treatment guidelines. Toward this end, in the first part of 2008, the Institutional Care Division carried out a national malaria laboratory assessment exercise and the NMCP convened a national laboratory policy working group. (Both supported by PMI). A National Guideline for Laboratory Diagnosis of Malaria has been drafted and is under review. When the results of the assessment are available and the guidelines have been clarified, a rational planning process can be undertaken to address the country's needs in this regard.

#### 4.2.3.3.3 Community Health System Improvement

As part of the strategy for increasing access to basic health services and improving equity for all, the Ghana Health service has adopted the CHIPS Initiatives. A functional CHPS system involves placing trained community health officers (CHOs) who are mostly Community Health Nurses, in communities (CHPS zones) to provide a package of basic health services including those targeted at HIV, TB and malaria, directly to households from a CHPS compound. The CHOs link the formal health system to a network of community-based volunteers and community structures to make them responsive to their own health.

The initiative started as a research project at Kassena Nankana district in Ghana and the results proved conclusively that access to health services and health outcomes improved considerably compared with traditional methods of provision of health services through fixed facilities and outreach services to communities. The research showed a 15% reduction in fertility, 50% reduction in odds of child mortality, increase in vaccination and antenatal clinic attendance. Currently, a total of 4,968 CHPS zones have been demarcated throughout the country. With funding from Government of Ghana, communities and health partners, only 100 of these are fully functional.

As mentioned in the Case Management section, the national malaria control strategy is placing increased priority on community based malaria case management targeting children under five living in rural areas. A massive scale-up of this intervention is envisioned. This implies significant strengthening of health systems at the community level to support the endeavour.

#### *Objective*

- \* To strengthen the Community-Based Health Planning and Services (CHPS) and other community level health service platforms in order to more effectively deliver multiple malaria control interventions.

#### *Strategies*

- \* Advocate for the mobilization of resources to invest in community health structures
- \* Invest in capacity building at the community level, focusing on human resources, infrastructure and logistics.

#### *Operational Design*

- \* Provide resources for the formation of mother support groups
- \* Provide for community-level referral systems and feedback

- \* Strengthen the CHPS system for effective monitoring and supervision of malaria case management
- \* Conduct orientation and sensitization of communities on malaria prevention and treatment methods
- \* Provide logistic support to CHPS systems and community volunteers

#### **Outcomes:**

- \* Increased number of functional CHPS compounds
- \* Strengthened community level health structures, even in areas outside of CHPS zones
- \* Improved supervision and support for CHOs and community volunteers
- \* Improved effectiveness of community health workers, NGOs, and community volunteers in supporting malaria control interventions
- \* Improved malaria prevention and treatment at the community level.

#### **4.2.3.3.4 Referral Systems**

Case management is considered one of the major interventions in the control of malaria. The focus has been to ensure that there is access to prompt diagnosis and effective treatment, improving health care and improving referral systems. It is envisaged that, health care at higher level will be assessed by a well laid down referral system from the community level (primary level) up to the teaching hospital (tertiary level).

With the introduction of the new drug policy caregivers and volunteers were only trained in recognition of signs and symptoms of severe malaria and appropriate referral. Caregivers should be given the skills and knowledge to detect cases which are above their competence. They should understand what to do before referring to the next level for further management and where to seek for such help.

*Necessary activities will include IEC targeted at caregivers on when to refer, including:*

- \* Communication for referral facilitated by activities of community surveillance volunteers
- \* Communication for referral improved by use of radio and other networks
- \* Communication for referral improved by use of an ambulance system.

### **4.3 MONITORING OF PERFORMANCE AND EVALUATION OF IMPACT**

#### **4.3.1 Monitoring of Performance/Indicators**

##### **Background**

The purpose of monitoring and evaluation is to define criteria for collecting data and information which can indicate progress in programme or project implementation, achievements and failures, such that the necessary remedial measures can be applied.

Ghana has good but rather fragmented systems for malaria surveillance and monitoring and evaluation. The main sources of routine surveillance information are the CHIM. This is supplemented by the IDSR and specific programme surveillance and monitoring systems. (e.g. NMCP surveillance system). Most impact and outcome data is taken from periodic surveys such as the MICS, DHS, and the Demographic Surveillance Sites (DSS).

The Ministry of Health and its agencies (e.g. Ghana Health Service) has a structured system of data collection and collation from the sub-district, to district, to region and, to national levels (headquarters). There is weekly, monthly and quarterly reporting depending on the level of service and the output involved. Monthly management meetings are held at district levels and quarterly performance reviews at regional and national levels of the health sector. These review sessions highlights progress made in programme implementation, outlines challenges, and provides the way forward.

The NMCP has three zonal M&E offices who conduct M&E visit to support national and regional health information system.

A variety of periodic surveys supplement the ongoing M&E efforts of the NMCP. The most recent Demographic and Health Survey (DHS) was conducted in the rainy season of 2003 (July - October). This survey included data on ITN use among children and pregnant women, malaria prophylaxis in pregnant women, treatment seeking behavior for malaria and anemia among children under five. The next DHS is planned for 2008. The UNICEF Multiple Indicator Cluster Survey (MICS) 2006 included the malaria module.

### ***Challenges:***

An annual M&E plan is developed as part of the National Malaria Strategic Plan. A written plan for overall monitoring and evaluation of malaria activities has been drafted and vetted with stakeholders. This plan is a result of focused efforts to develop a single, coherent M&E plan for malaria building on the Monitoring and Evaluation System Strengthening Tool (MESST) methodology promoted by RBM. The new plan attempts to harmonize existing monitoring and evaluation activities of the various malaria control initiatives such as Global Fund, RBM, and PMI and align it with the national GHS M&E system.

Despite the mechanisms described above, the collection of primary data, its collation, storage, and analysis is still a challenge. There are fundamental problems with the quality of diagnoses, recording of diagnosis, and analysis of data collected at the health facility level which also has adverse effects on the quality of data reported at other levels of the health sector. Apart from this, there is a huge challenge with reporting systems within the sector. Hence data is often not used in defining priorities, planning and resource allocation to control malaria especially at the district level. This creates a gap between data collection and the decision-making process.

In this strategy, the aim is to establish a monitoring and evaluation system that will provide timely, accurate, reliable and valid data for planning, management and decision making.

**Objectives:**

1. To improve upon timeliness, completeness and accuracy of data collected, as well as its analysis and interpretation, so as to more effectively guide policy decisions, assess progress, and outcomes of malaria control interventions
2. To establish and maintain effective data sharing at all levels using appropriate media.

**Strategies/Activities:**

To improve data collection, collation and processing at all service points, substantial support is required to:

- Complete the process of vetting and implementing the national M&E Plan
- Build capacity in data management processes at the districts and national level
- Develop, print and distribute M&E operational hand book and other policy documents to address problems on data entry, verification, missing data, etc.
- Provide logistics support (ICT) for connectivity
- Established a functional website for documentation and sharing malaria data/information which is updated and accessible nationally
- Support the Ghana Demographic Health Surveys (GDHS) in 2008 and 2013 to help evaluate malaria control activities for the period
- Advocate to include indicators for IRS in the national indicators.

**Expected Outcomes:**

- National Malaria Strategic M&E plan approved, distributed and implemented
- All partners in malaria control play their roles in the M&E as outlined in the National M&E plan
- Increased availability of funds for research and monitoring
- Routine monitoring of programme activities and outputs strengthened
- Periodic evaluation of programme outcomes and impact institutionalized
- Operational research into malaria undertaken and results disseminated and utilized to improve program planning
- Capacity in malaria research and monitoring improved
- Safety and efficacy of drugs and insecticides monitoring institutionalized and strengthened
- Periodic programme reviews conducted
- The Management Information System strengthened to capture community-based aspects of the programme as well as from the private sector
- M&E activities of the various malaria control initiatives, such as the GFATM, RBM, and PMI etc. harmonized.

**4.3.2 Surveillance**

Malaria surveillance has often been vertical and not very effective. The data generated are neither analysed nor utilised at the point of collection but rather at regional and national levels. In the Integrated Disease Surveillance and Response (IDSR) strategy, surveillance activities of various programmes including NMCPs are integrated in order to make best use of resources and also facilitate analysis and use of information at sub-national levels.

With the current limitations in information collected from routine information systems and the frequency and cost of household surveys, sentinel sites are an important source of information for malaria monitoring. A typical sentinel site is usually a health centre or hospital with a defined catchment population that provides out-patient and in some cases in-patients services.

Currently, sentinel sites are used for monitoring anti-malarial drug efficacy, insecticide resistance, G6PD for IPTp administration and tracking OPD cases. Studies that have been conducted include:

- A drug efficacy study.
- Entomological studies on bioassays to assess residual efficacy of insecticides used for ITNs and IRS.
- A survey on coverage of ITN use, access to effective treatment, and IPT for pregnant women in catchment area.
- Monitoring the management of severe malaria cases using standardized case definitions and management procedures.

There should be regular epidemiological, entomological and drug efficacy surveillance. However, the challenge is inadequate funding and logistics to sustain the quality of results. Surveillance activities could be effected through collaboration with:

- Development Partners
- Government of Ghana
- Research Institutions
- Community based agents
- Chemical sellers
- Other community based groups such as Mother Support groups and
- District Health Teams.

### 4.3.3 Research

The main role of research in the national malaria strategy is to provide evidence for decision making at programme level. Depending on the type of studies undertaken, research can help improve the effectiveness of established interventions in Ghana (such as ITN distribution), pave the way for the scale-up of newer interventions (such as RDTs or HBC), or refine and pilot experimental interventions for possible future scale-up (such as vaccines and sterile irradiation of mosquitoes technique).

Ghana has three Demographic Surveillance Sites at Navrongo, Kintampo and Dodowa. Among other functions, these institutions carry out health research, including studies on aspects of malaria control. Sentinel sites have been created in Navrongo, Dodowa and Kintampo to assess the prevalence of G6PD. Kintampo Health Research Unit (HRU) has also recently carried out a Knowledge, Attitude and Practice (KAP) study to assess the reaction of the populace to Artesunate-Amodiaquine.

In addition, The NMCP also collaborates with a number of research institutions, including the Noguchi Memorial Institute of Medical Research (NMIMR) at the University of Legon. For example, the Noguchi Institute carries out efficacy testing of anti-malarials at ten sentinel sites.



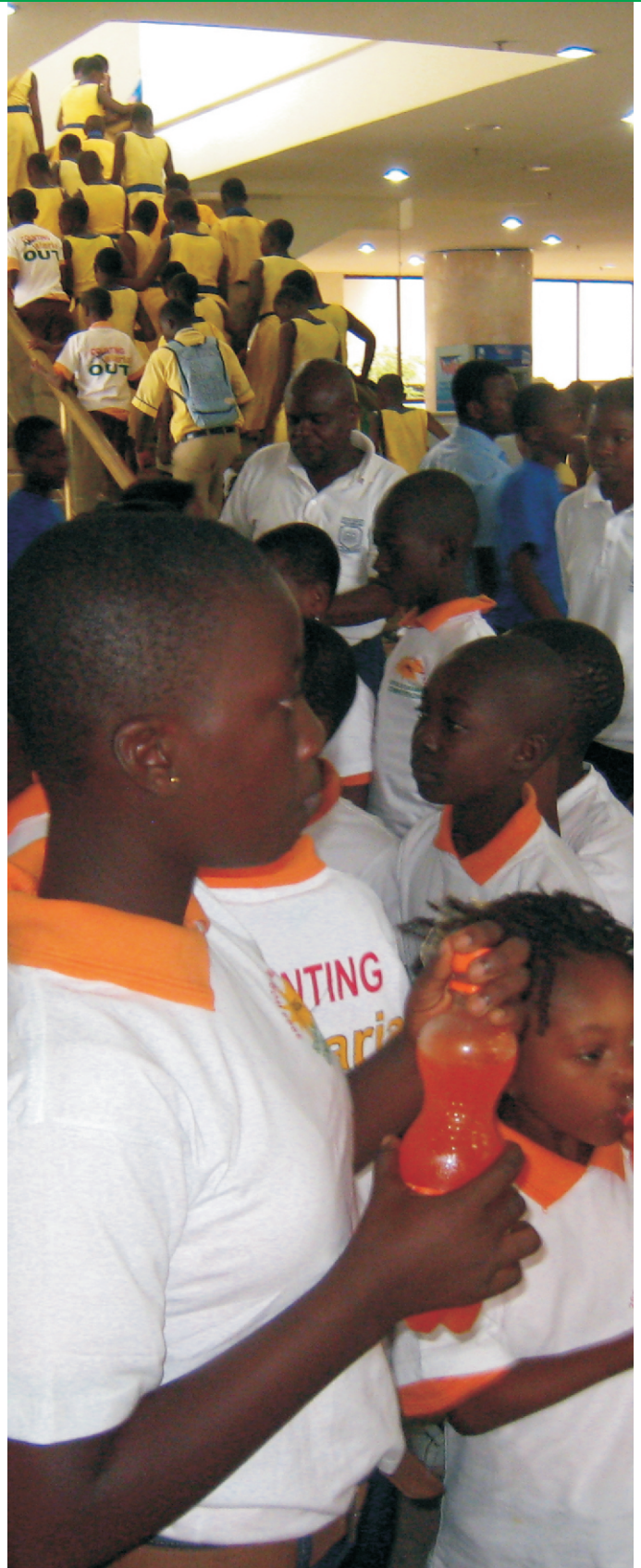
The following research topics are of strategic interest to the country at the present time. The list is not comprehensive and will certainly evolve over time:

- Morbidity studies including prevalence of malaria parasitaemia
- Age/sex-specific mortality and morbidity due to malaria
- RBM socio-economic evaluation analysis
- Efficacy studies of available insecticides
- KAP studies on use of ITNs
- Vector density and bionomics in Ghana
- Biological control of mosquitoes
- Sterile insect technique
- Efficacy studies of S/P for Intermittent Preventive Treatment in Pregnancy (IPTp)
- Intermittent Preventive Treatment for Infants (IPTi) research
- Evaluation of alternative drugs for IPTp
- Malaria vaccine research
- Efficacy studies of available anti-malarial drugs and implications for treatment policy
- Efficacy studies on herbal preparations
- Sentinel sites for G6PD deficiency.



# CHAPTER 5

## PLAN OF ACTION AND ESTIMATED COSTS



ACTIVITY	2008		2009		2010		2011		2012		2013		2014		2015		INSTITUTION/PERSON RESPONSIBLE	COMMENTS/REMARKS	
	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM			
<b>MULTIPLE PREVENTION METHODS</b>																			
<b>INSECTICIDE TREATED NETS (ITNs)</b>																			
Procurement of LLINs																	NMCP, UNICEF, PMI, WORLD BANK		
Procurement of long lasting treatment kis																			
Procurement of other ITMs such as treated curtains and wall paper																			
Distribution Of ITNs through free net distribution system																			Distribution would be done during campaigns
Distribution of ITNs through subsidized sale																			Distribution in non-voucher scheme areas
Distribution through commercial market																			
Distribution of ITNs through discount voucher scheme																			Carried out in only four regions of the country.
Re-treatment of Nets																			Applies to ITNs already in the system
Distribution of other ITMs																			
Improve Storage of ITNs at all levels																			
<b>INDOOR RESIDUAL SPRAYING (IRS)</b>																			
Capacity building at national and regional levels																			Anglogold Ashanti Malaria Control program to implement IRS activities in the country.
Build local capacity in IRS districts																			
Carry out entomological studies																			
Create sentinel sites to carry out parasite prevalence studies																			
Implementation of IRS																			
Carry out entomological monitoring, epidemiological and parasitological surveys																			
Operational Research in IRS																			
<b>LARVICIDING</b>																			
Carry Out limited larviciding																			
<b>INTERMITTENT PREVENTION TREATMENT FOR PREGNANT WOMEN (IPTp)</b>																			

ACTIVITY	2008		2009		2010		2011		2012		2013		2014		2015		INSTITUTION/PERSON RESPONSIBLE	COMMENTS/REMARKS
	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM		
Dissemination of Malaria in pregnancy guidelines																	NMCP	
Refresher training of ALL Health Staff on IPTp and laboratory diagnosis of malaria in pregnancy																	NMCP, PMI	
Training of CDDs in follow up of pregnant women																	NMCP, PMI	
Training of NGOs in follow up of pregnant women																	NMCP, PMI	
Procurement and distribution of SP																	NMCP	
<b>PROMPT AND EFFECTIVE TREATMENT</b>																		
<b>DIAGNOSIS</b>																		
Development and dissemination of Diagnostics guidelines																	NMCP	
Procurement and distribution of microscopes and RDTs																	NMCP, PU, PMI	The health centres and CHPS compound would have at least an RDT
Procurement and distribution of reagent, microslides etc																	NMCP, PU, PMI	
Training of laboratory technicians on malaria microscopy																	NMCP, PMI	
Training of health personnel on RDT use																	NMCP, PMI	
<b>TREATMENT AT HEALTH FACILITIES</b>																		
Dissemination of Antimalarial Drug Policy																	NMCP	
Training of Health Staff on antimalarial drug policy																	NMCP, PMI	Includes both private and public sector
Training of private health workers on the antimalarial drug policy																	NMCP, PMI	
Procurement of ACTs																	NMCP, PU	
Procurement of antimalarial suppositories																	NMCP, MS	
Distribution of ACTs and suppositories																	NMCP, MS	
Strengthen LMIS																	NMCP	This would ensure that stock outs are not recorded
Collaborate with FDB to institutionalise phase out plan of monotherapies																	NMCP, FDB	
Collaborate with FDB to strengthen adverse events monitoring																	NMCP, FDB	
<b>HOME MANAGEMENT OF MALARIA (HMM)</b>																		

ACTIVITY	2008		2009		2010		2011		2012		2013		2014		2015		INSTITUTION/PERSON RESPONSIBLE	COMMENTS/REMARKS
	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM		
Finalise and disseminate guidelines for HMM																	NMCP, Partners	
Print training manuals and treatment charts																		
Training of CDDs and CHO's																	NMCP, NGOs, Partners	
Procure AS-AQ for HMM and rectal artesunate for pre-referral treatment																	NMCP, PU	
Procure drug storage boxes																	NMCP, PU	
Procure incentives for CDDs																	NMCP, PU	
Roll out of HMM																	NMCP, CBA, CDD, CHO	
<b>MALARIA IN SPECIAL GROUPS</b>																		
Integrate malaria prevention into VCT and ART																	NMCP	
Develop guidelines on the control of malaria in sickle cell patients																	NMCP	
Train health workers in the management of malaria in sickle cell patients																	NMCP	
Improve access to antimalarial prophylaxis																	NMCP	
Provide information on malaria at strategic points for non-immunes																	NMCP	
<b>MONITORING AND EVALUATION</b>																		
Complete, Disseminate and implement the M&E plan																	NMCP	
Build capacity in data collection and interpretation of data																	NMCP	
Training of national, regional and district health workers in computers and data management																	NMCP	
Procurement of computers and printers at national, regional and district levels																	NMCP, PU	
Revision and dissemination of data collecting formats																	NMCP	
Establish a website																	NMCP	
Include IRS indicators in national indicators																	NMCP	
Monitoring of side effects of drugs (SP, ACTs)																	FDB, NMCP	
Commission a research unit to undertake Rapid Needs Assessment in 10 Health Facilities to ascertain quality of malaria case management.																	ACADEMIC INSTITUTION	
Malaria Indicator Survey																	MOH	
<b>OPERATIONAL RESEARCH</b>																		

ACTIVITY	2008		2009		2010		2011		2012		2013		2014		2015		INSTITUTION/PERSON RESPONSIBLE	COMMENTS/REMARKS
	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM	1ST SEM	2ND SEM		
Undertake Study on Cost-effectiveness of Home Based Care of malaria																	ACADEMIC INSTITUTION	
Study on Linking Home Based Care with National Health Insurance for sustainability																	ACADEMIC INSTITUTION	
Study on Community ownership and utilization of LLINs (including compliance with HBC)																	NM,CP	
Study on the use of RDTs by CBAs																	NM,CP	
Study on efficacy of Antimalarials																	NMCP, WHO	
Study on insecticide Resistance																	NMCP, WHO	
Study on insecticide susceptibility																	NMCP, WHO	
KAP Analysis on adherence to ACTs																	NMCP, NMIMR, PMI	
G6PD deficiency monitoring																	NMCP, NMIMR, PMI	
Study to identify interventions for improving IPT uptake																	NMCP, NMIMR, PMI	
Study on Community ownership and utilization of LLINs (including compliance with HBC)																	NMCP, NMIMR, PMI	
Undertake insecticide susceptibility studies on ITNs																	NMCP, NMIMR, PMI	
Malaria Indicator Survey (including prevalence of malaria and anaemia)																		
<b>HEALTH SYSTEM STRENGTHENING</b>																		
Build human resource capacity at all levels																	NMCP	
Improve preventive maintenance of equipments																	NMCP, MU	
Replacement of obsolete equipments																	NMCP, MU	
Improve the procurement and supply management system																	NMCP, PU	
Strengthen Community systems																	NMCP, DHMTs, CHPs	
Formation of PSM sub-committee																	NMCP	Meetings half yearly
<b>PARTNERSHIP CREATION AND SUSTENANCE</b>																		
Promotion of interventions through radio and TV commercials, print media, road shows, drama etc																	NMCP, CC	
Celebration of World Malaria Day																	NMCP, RHMTs, DHMTs	Annually, 25th April
Promote partnership among departments in the health service																	NMCP, CC	
Promote partnership among the government sectors																	NMCP, CC	
Promote partnership with development agencies, NGOs and the private sector																	NMCP, NGOs, CC	
Promote partnership with NGOs and the private sector																	NMCP, NGOs, CC	

**TABLE : RESOURCES REQUIRED, AVAILABLE AND GAPS IN FUNDING FOR MALARIA INTERVENTIONS**

Year	Amount Required(a)	Government of Ghana (b)	Ghana's Private Sector (c)	Sources (d)	Total Amount Available (e)= b+c+d	Funding Gap
2008	40664189	3,235,000	300,000	28,949,295	32484295	8,179,894
2009	86990617	8,700,000	300,000	15,624,550	24624550	62,366,067
2010	98278115	10,542,000	350,000	14,299,000	25191000	73,087,115
2011	108947096	16,709,000	350,000	8,899,000	25958000	82,989,096
2012	149,442,343	21,783,880	360,000	8,899,000	31042880	118,399,463
2013	128,849,945	28,482,722	360,000	8,899,000	37741722	91,108,223
2014	131,286,792	35,663,340	360,000	1,900,000	37923340	93363452
2015	136,221,298	40,669,240	360,000	1,900,000	42929240	93292058
Total	880680395	165785182	2740000	171,265,182	339,790,364	511,055,546

The strategic plan covers the period 2008-2015. The total budget required for malaria control interventions for the period 2008 to 2015, is \$US 880,680,395. However, funds available from Government amount to US\$165785182; this is made up of the planned and committed. Other sources include private sector (US\$2740000) and other partners. When all committed and projected sources are put together, there is still a funding gap of US\$511,055,546 for the period. It is hoped that this will be sourced from various partners and donors including the Global Fund.



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## ANNEX:

### INDICATORS FOR MALARIA CONTROL MONITORING & EVALUATION

#### Impact of Roll Back Malaria

#### Outcome indicators for malaria case management

##### *Early recognition and treatment of fever*

Indicators	Means of verification	Frequency	Baseline	Relevant level
% Reduction in malaria Mortality	Review of hospital records	Annual Monitoring of Trends from sentinel sites. Comprehensive Assessment every 3-5 yrs		All levels  National Level
% Reduction in severe malaria in children <5 yrs on admission.	-do-	-do-		-do-
% Reduction in severe malaria In pregnancy	-do-	-do-		-do-

#### Process indicators for malaria case management

Indicators	Means of verification	Frequency	Baseline	Relevant level
Proportion of health facilities with IEC materials and training materials on home-based care.	Review of records	Annually		National
Number of materials/adverts produced on mass media.	Review of records	Monthly or quarterly		All level
Number of advocacy activities carried out.	Review of records	Monthly or quarterly		
Proportion of targeted CBHW's trained in malaria Case management	Review training reports	Annually		All levels
Proportion of targeted teachers, extension officers etc, who were trained in malaria case management	Review training reports	Annually		All levels
Proportion of government mid-level district health centers capable of laboratory diagnosis of malaria	Health facility survey	Annually		Districts
Number of health workers trained in laboratory Diagnostics	Review of training report	Annually		All levels
Proportion of malaria cases confirmed with Laboratory diagnostics	Review of records	Annually		All levels

## Ensuring Appropriate Referral

Indicators	Means of verification	Frequency	Baseline	Relevant level
Proportion of health facilities with the appropriate Logistics (ambulance, communication system etc.) for referral.	Review of records	Annually		National

## Improving Quality of Care

Indicators	Means of verification	Frequency	Baseline	Relevant level
Proportion of health facilities with training materials (on simple and severe malaria case management)	Review of records	Annually		National
Percentage of targeted health workers (doctors, pharmacists, nurses, medical assistants, laboratory technicians) given in service training on malaria management (simple and severe)	Review of records	Annually		National
Number of health facilities with national drug policy and treatment guidelines on malaria	Review of records	Annually		National
Proportion of trained health workers who can correctly apply criteria for diagnosing and treating patients in target group	Review institution reports/ records	Annually		National
Proportion of health facilities with no stock-out of anti-malaria drugs in the previous three months	Review institution reports/ records	Annually		National
Proportion of health facilities with user-friendly reporting formats for capturing malaria data	Review institution reports/ records	Periodically		National
Proportion of the health facilities with user-friendly forms, whose monthly reports are received at the next higher level of health systems within 10 days after end of the report month	Institutional survey, exit interviews of parents	Two-yearly		

Indicators	Means of verification	Frequency	Baseline	Relevant level
% of mothers/ caretakers who know signs and symptoms of severe malaria	Community Surveys	Annual		All levels but Coordinated by the national level
% of children <5 years with fever treated correctly at home	Community Surveys	Annual		All levels but coordinated by the national level

## Improving quality of care

Indicators	Means of verification	Frequency	Baseline	Relevant level
% Severe malaria cases treated according to Policy	Review of hospital records	Annual		All levels but coordinated by national level
% of health workers managing fever according to Policy	Institutional Survey	Annual		- do -
Proportion of facilities by category with adequate equipment, drugs and logistics to assure quality of care	Institutional Survey	Annual		- do -

## Increase access to health services

Indicators	Means of verification	Frequency	Baseline	Relevant level
Proportion of patients among those for whom anti-malaria drugs were prescribed and were able to obtain full treatment	Survey	Annually		All levels coordinated by national level
Proportion of patients among those for whom anti-malaria drugs were prescribed and were able to afford cost of treatment	Survey	Annually		All levels
Proportion of communities with a source of anti-malaria drugs accessible within less than one hour's walk	Survey	Annually		All levels coordinated by national Level

## Process indicators for multiple preventions

Indicators	Means of verification	Frequency	Baseline	Relevant level
Availability (or not) of Policy on ITNs			In preparation	
% of children <5 yrs sleeping under ITNs	Household surveys	Annual	21.8% (MICS 2006)	All levels but coordinated by the national level
% of pregnant women sleeping under ITNs	Household surveys	Annual		
Number of ANC health workers trained in IPTp	Training reports	Annual		All levels
Total number of pregnant women receiving IPT1, IPT2 and IPT3 through antenatal clinic visits, listed separately for IPT1, IPT2, IPT3	Record reviews	Annual	27.5% (MICS 2006)	All levels
Number of targeted hotels, public places carrying out Indoor residual spraying	Survey	Annual		All levels
Proportion of targeted breeding sites with larviciding carried out	Special survey	Annual		National
Availability/coverage of nets, insecticides and net treatment sites	Market Surveys	Quarterly		All levels but coordinated by national level
% of health facilities providing IPT during ANC According to policy	Institutional Survey	Annual		All levels but coordinated by national level
Number of people trained to deliver IRS	Review of training reports	Annual		All levels
Number of houses sprayed with IRS and frequency.	Household	Annual		All levels
Proportion of targeted houses sprayed with a residual insecticide	Review of training report	Annual		All levels

## Process indicators for focused research

Indicators	Means of verification	Frequency	Baseline	Relevant level
Availability of research agenda	Review of Annual Plans	Annually		National level
Availability of research fund	Review of RBM budget and expenditure returns	Half annually		National level

## Outcome indicators for focused research

Indicators	Means of verification	Frequency	Baseline	Relevant level
% of planned research commissioned and carried Out	Review of minutes and TORs for research	Half annually		National Level
Proportion of completed researches disseminated through forum, publications review meeting etc	Review publications. Interview researchers.	Bi-annually		National level

## Process indicators for partnership building

Indicators	Means of verification	Frequency	Baseline	Relevant level
% of scheduled coordinating committee meetings held	Review of minutes of meetings	Quarterly		National Level
Proportion of health talks (notably malaria), delivered by identified key community Personnel	Review reports	Annually		District and sub-district levels, coordinated by national level.
Number of Unit committee and assembly meetings deliberating on health issues (notably malaria)	Review minutes of meetings of committees	Annually		- do -

## Outcome indicators for partnership building

Indicators	Means of verification	Frequency	Baseline	Relevant level
% of targeted partnership committees established (for year one only)	Review of reports	Monthly		National level
% of partners achieving their RBM targets in MOU	Review of partners reports	Monthly		All levels
Resources mobilized through the partnership by source	Review of records	Annually		All levels and aggregated at national level
Types/categories of partnerships/linkages Established	Review of MOUs and minutes	Half yearly		All levels and aggregated at national level
Number of established CBHI's still functioning	Community Survey	Annually		All levels and aggregated at national level
Number of functioning CBHI's with community support of any type.	Community Survey	Annually		All levels but aggregated at national level

## Stakeholder Analysis of Partners:

### Community:

Name	Role in Malaria Control	Comparative Advantage	Potential Benefits to Malaria Control	Potential Benefits to Stakeholder
<b>Individuals and Households</b>	Primary Stakeholders, take individual level action	Early detection and Management at home. Early detection of danger signs and appropriate referral.	Acceptance to control malaria. Willingness to take part in malaria control activities Demand for malaria control interventions Community knowledge and resources	Reduction in malaria burden Increase productivity and reduced poverty Increased knowledge of malaria control
<b>Unit Committees</b>	Political authority, explain to community, and social mobilization	Surveillance, monitoring and multiple prevention, enforcement of legislation	Increased community political support and commitment to malaria control,	Visible successes at tackling community problems, recognition and enhanced image of committee
<b>Opinion Leaders, chiefs and elders</b>	Traditional authority and their role is Social mobilization	Social mobilisation	Product champions, power to influence community thinking	Same as above
<b>Groups e.g. employees, religious groups</b>	Social authorities and social mobilization	Peer pressure and education	Facilitate access to target groups and community participation in malaria control activities	Knowledge, Information and Empowerment of group, increased interest in group and increased membership activities



## Public Sector:

Name	Role in Malaria Control	Comparative Advantage	Potential Benefits to Malaria Control	Potential Benefits to Stakeholder
<b>MDAs national, regional including NADMO and security agencies</b>	Policy formulation, Integrate Malaria Control into Planning framework, M&E, regulation, resource mobilisation and allocation	Give direction and legitimization, create enabling environment for decentralised institutions	Institutionalising Intersectoral approach to malaria control, Policy and strategy linkages	Improved intersectoral linkages, improved attainment in the case of MOE attendance and educational e.g. increased enrolment and outcomes etc. benefits and improved Each MDA to identify potential illness, reduced staff time lost. productivity, reduced burden of objectives of MDAs, increased effectiveness in achieving stated
<b>District Assemblies and decentralised departments</b>	Implementing agencies , translating national policy into district plans , coordinating effective district level response, enact bye laws, resource mobilisation and M&E	Resource mobilisation, political commitment	Effective coordination, facilitate Institutionalising malaria control activities at district level, support to MDAs, more resources for malaria control	Enhanced image of district assemblies, Improved performance of their statutory functions, catalyst for actions on other health and environmental issues, enhanced performance may attract more resources
<b>Parliament</b>	Enact laws and approve loans and budgets, allocate MPs fund	Political commitment, agent of change	Legislations favorable to malaria control e.g. the Exemption of nets and insecticides from taxes and tariffs, Catalyse community based activities, increase access to different sources of resources including MPs fund	Improved health of constituency, an issue for consultation in constituency
<b>Media (Public and Private)</b>	Analysis, Dissemination, advocacy and public education	Access to information channels	Improved access to information channels and agenda setters, source of adverts	Reputation as RBM advocate, enhanced knowledge of health and environmental issues, advertising revenue
<b>Health Care Providers</b>	Provision of health care including health education	Wide network of health facilities; Large manpower resource.	Advocates and product champions, delivery of malaria control interventions, favorable budgetary/ resource allocation to RBM	Knowledge and skills, improved job satisfaction from improved outcomes



## Private sector, civil society and NGOs:

Name	Role in Malaria control	Comparative Advantage	Potential Benefits	Potential Benefits to Stakeholder
<b>Providers</b>	Provide environmental and medical services, make resources available for health	Good quality health services	Increase institutional and financial resources for malaria control	Recognition for people centered activity/ investment in people
<b>Industry</b>	Product development, manufacturing distribution Provision of services, marketing	Innovative and client centered	Strategic investments in Malaria prevention and control activities	Profits and enhanced corporate image on being socially minded
<b>Research Org (Public and private)</b>	Knowledge generation and product development, basic and operational research	Wide skills and expertise	Development of new drugs and materials, market research, systems and social research, needs assessment	Industry sustainability, national and international credibility
<b>NGOs</b>	Advocacy, Service provision, mobilize resources	Innovative at targeting & implementation e.g. gender, comm. participation	Participatory skills, extra funding, access to network of expertise	Access to funding, improved results, recognition

## Development Partners:

Name	Role in Malaria Control	Comparative Advantage	Potential Benefits to Malaria Control	Potential Benefits to Stakeholder
<b>Development Partners</b>	Resource mobilisation, facilitate policy development, information on best practices and access to network of expertise	Flexible, muscle in policy agenda, international perspective	Increase resources, focus on results, and poverty focus	Improved outcomes, increased development and poverty reduction, accomplished missions



<b>SUMMARY OF REQUIRED BUDGET TO UNDERTAKE MALARIA CONTROL INTERVENTIONS</b>								
<b>INDICATOR /YEAR</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>To provide early diagnosis and effective treatment of malaria using ACTs in all health facilities</b>								
<b>Prompt, effective antimalarial treatment</b>	10,556,296	15839400	18976340	18043190.3	20311637.7	18039867.6	19843854.3	23812625
<b>Malaria diagnostics</b>	3061641.06	2708326.1	3371619	3794975.67	4240898.14	3952046.57	4347251.23	5216701
<b>Strengthen drug supply management</b>	1185790	975000	975000	975000	975000	975000	1072500	1287000
<b>TOTAL FOR DIAGNOSIS AND TREATMENT IN HEALTH FACILITIES</b>	<b>14,803,727</b>	<b>19522726</b>	<b>23322959</b>	<b>22813166</b>	<b>25527536</b>	<b>22966914</b>	<b>25263606</b>	<b>30316326</b>