



# MALAWI MALARIA PROGRAM PERFORMANCE REVIEW

JULY 2010

NATIONAL MALARIA CONTROL PROGRAMME  
MINISTRY OF HEALTH  
MALAWI

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## Foreword

Malaria is a major public health problem in Malawi. It is the leading cause of morbidity and mortality in children under five years of age and pregnant women. It is the most common cause of outpatient's visits, hospitalization and death. Malaria is also a development problem as it has serious socio-economic consequences for families and the nation, through loss of work, school absenteeism and expenditure on treatment and treatment seeking.

The government of Malawi through the Ministry of Health and its partners are committed to controlling malaria in the country. As part of ensuring successful delivery of malaria control strategy, the Ministry through NMCP conducted a National Malaria Program Review (MPR). The purpose of the review was to identify achievements, progress and performance of current National Malaria Control Programme as well identify major emerging critical issues and priority problems. It also attempted to investigate the causes of the problems and proposed some solutions aimed at improving programme performance.

I am hopeful that the implementation of the MPR recommendations will lead to strengthen the performance of the national program towards achieving and sustaining universal coverage in line with the MDG 2005 goals and targets.

Secretary for Health

Ministry of Health

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Willie Samute  
Secretary for Health  
Ministry of Health

## Acronyms

ACTs	Artemisinin-based Combination Therapy
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
ARI	Acute Respiratory Infection
ASAQ	Artesunate Amodiaquine
CCM	Community Case Management
CDC	Centre for Disease Control
CHAM	Christian Health Association of Malawi
CHMT	Central Hospital Management Team
CHSU	Community Health Sciences Unit
CHWs	Community Health Workers
CMERD	Central Monitoring, Evaluation and Research Division
CMS	Central Medical Stores
CPAR	Canadian Physician for Aid and Relief
DHMTs	District Health Management Teams
DHO	District Health Officer
DMC	District Malaria Coordinator
GOM	Government of Malawi
HIV	Human Immune Deficiency Virus
HMIS	Health Management Information System
HIS	Health Information System
HSA	Health Surveillance Assistants
IDSR	Integrated Diseases Surveillance & Response
IEC	Information Education and Communication
IFMIS	Integrated Financial Management Information System
IMCI	Integrated management of Childhood Illness
IPTp	Intermittent Preventive Treatment of Malaria in Pregnancy
IRS	Indoor Residual Spraying
ITNs	Insecticide treated nets
JICA	Japanese International Cooperation Agency
AL	Artemether Lumefantrine
LMIS	Logistics Management Information System



LLINs	Long-Lasting Insecticide-treated Nets
MAC	Malaria Alert Centre
MACEPA	Malaria Control and Evaluation Partnership in Africa
MBC	Malawi Broadcasting Cooperation
MSF	Medicine sans Frontier
MIP	Malaria in Pregnancy
MOH	Ministry of Health
MPR	Malaria Program Review
MPS	Making Pregnancy Safer
M & E	Monitoring and Evaluation
MSH	Management Sciences for Health
NGOs	Non-governmental Organizations
NMCC	National Malaria Control Committee
NMCP	National Malaria Control Program
NPO	National Professional Officer
OPD	Out-patient Department
PAMIS	Physical Assets Management Information System
PMI	President's Malaria Initiative
PPE	Personal Protection Equipment
PPPMIS	Personal Pension Payroll Management Information System
PRMIS	Patient Record Management Information System
PSI	Population Services International
PMPB	Pharmacy Medicines and Poisons Board
RBM	Roll Back Malaria
SADC	Southern Africa Development Community
SARN	Southern Africa Regional Network
SWAp	Sector-wide Approach
TVM	Television Malawi
UN	United Nations
UNC	University of North Carolina
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WVI	World Vision International

## Executive summary

The National Malaria Control Programme with the assistance from partners conducted a Malaria programme review. The review helped to identify achievements, progress and performance of current National Malaria Control Programme as well as identify major emerging critical issues and priority problems. The review helped to investigate the root cause of problems and proposed solutions aimed at redesigning the program to achieve better performance. The review also provided a platform to align the program towards implementation of universal coverage of malaria control interventions and move towards elimination. The MPR also provided an opportunity to understand the country's situation of malaria and inform development of the new malaria strategic plan 2011 – 2012.

The main finding of this review was that the malaria control partnerships with various developmental agencies and technical organizations have been key to the successful implementation of various strategies and interventions. The major interventions which have been scaled up are LLIN through routine and mass campaigns, piloting of IRS introduction of artemisinin -based combination treatment (ACT) and prevention of malaria in pregnancy with Intermittent Presumptive Treatment (IPT). These interventions have been supported by mass communication and information, education.

This MPR has shown that:

- There are 6.1 million cases and 8,800 deaths attributed to malaria. There is an increase in suspected outpatient and inpatient malaria cases. There has been an increase of about 50% in the incidence of malaria from 305/1000 population in 2005 to about 459/1000 population in 2009. There is also a noticeable decline in malaria admissions and deaths in some districts and an increase in other districts.
- Overall case fatality rate has declined from 7% in 2006 to 3.5% in 2009 (HMIS – bulletin).
- Routine distribution of free LLIN through health facilities and two yearly mass campaigns since 2006 has increased household ownership of ITNs from 38% in 2006 (MICS) to 60% in 2010 (MIS). The ITNs usage has increased from 25% in 2006 (MICS) to 57% in 2010 (MIS) for under five children and 26% in 2006 (MICS) to 50% in 2010 (MIS) for pregnant women.
- IRS has been introduced in one district and 300, 000 people were protected with a coverage of over 90%
- Malaria combination therapy has been introduced in 2007. Only 28% of children under five years of age have access to AL within 24hours of onset of symptoms (MIS, 2010).
- Uptake of second dose of Intermittent Preventive Treatment of malaria among pregnant women has greatly increased from 46% (MICS 2006) to 60% (MIS 2010).
- There is low coverage of parasite based diagnosis due to lack of microscopes at health centres level and even where it is available; it is not used for routine management of malaria. Laboratory equipment and microscopes are available in districts, central hospitals and few private and CHAM facilities. The quality control and quality assurance system for RDT and malaria microscopy is weak.
- There is no proper induction for District Malaria Coordinators (DMC) on their responsibilities, regular supervision and follow-up as well as dedicated funds to conduct key activities
- The human resources situation at the NMCP has improved from 4 in 2005 to 12 in 2010. Despite this increase there is only one established position in the NMCP.

- The program requires more staff at the central level ( such as the BCC focal person, more case management focal persons) to support district implementation and supervision especially in the areas of case management and vector control
- Sometimes there is interrupted supply of malaria drugs and supplies leading to stock outs.
- There is inadequate capacity for data collection, analysis and use at levels and there is no regular feedback to the lower levels.
- Only about 10% of malaria cases are confirmed with majority treated presumptively and at the 4 sentinel sites only 25% of malaria cases are confirmed due to inadequate human resources and shortage of reagents and slides.

The adoption and implementation of the foregoing key recommendations will facilitate scaling up of interventions towards universal coverage.

### **Recommendations:**

- The government should adopt a policy for universal coverage with LLINs for all populations at risk of malaria in the new malaria strategic plan and develop an integrated vector management strategy that includes IRS and larval source control.
- The treatment policy should be updated to include parasitological confirmation for all suspected malaria cases. Strengthen the quality assurance and quality control system for laboratory diagnosis and rapidly expand the use of RDT as primary tool for malaria diagnosis at all level.
- There is need to intensify BCC messages aimed at increasing use of malaria control interventions and services in line with universal coverage and improve collaboration between the Health Education Officer and the DMC at the district level. The NMCP should Strengthen collaboration with reproductive health unit on scaling up malaria in pregnancy interventions and mobilize more resources for the implementation of the same.
- Strengthen the capacity of the district malaria coordinators through provision of regular training on their responsibilities and strengthen support supervision at all levels with consistent use of supervision guidelines and ensure regular feed back
- Improve collaboration with other programmes within the MOH and strengthen partnership coordination at all levels through ensuring that the malaria advisory groups as well as the technical working groups are functional and meet on a regular basis.
- Review the logistics system for distribution of malaria commodities to eliminate stock-outs of malaria commodities.
- There is need to strengthen data collection, analysis and reporting skills at all levels through constant training, supportive supervision and institution of feedback mechanisms

## 1.0 Introduction

This report presents the findings of the malaria programme review that was a joint collaborative evaluation of the performance of the National Malaria Control Programme (NMCP). The report outlines the key findings in each of the thematic areas of case management, malaria in pregnancy, integrated vector control, surveillance, monitoring and evaluation and operations research, behavioural change communication and programme management. It also details the challenges and makes recommendations for policy makers and implementers in order to achieve universal access to these interventions. It also details the challenges faced and makes recommendations that will lead to improved programme performance towards universal coverage and eventual elimination of malaria.

Malaria is a major public health problem in Malawi, especially among children under the age of five years and pregnant women. The 2008-2009 HMIS Bulletins indicate that about 6.1 million episodes of malaria were reported in the outpatient departments (OPD) in 2009. According to the HMIS Bulletin for the same period, malaria accounts for 30% of all OPD visits, 52% of under five in-patients had malaria and anaemia combined and nearly 60% of all hospital deaths in children under five are due to malaria and anaemia.

There are three major malaria vector species in Malawi; *Anopheles gambiae*, *Anopheles funestus* and *Anopheles arabiensis*. Malaria transmission occurs throughout the year in most places in Malawi; however, there is variation in intensity of transmission from low, medium and high based on season and topography. Transmission is highest during the rainy season and along the low-lying areas.

### 1.3 Malaria programme performance review

The malaria programme performance review (MPR) is a periodic joint programme management process for reviewing progress and performance of a malaria programme within the context of the national health and development plans with the aim of improving performance and/or redefining the programme's strategic direction and focus. Malaria control programme includes the NMCP as well as all key players and partners in malaria control at the national, sub-national and community levels.

#### 1.1.3 Rationale for conducting the Malaria Programme Review (MPR)

Malawi has successfully implemented two generations of strategic plans 2000-2005 and 2005 – 2010. As the current strategic plan was coming to an end, there was a need to develop the 3rd generation strategic plan 2011-2015. Before the development of the NSP 2011 - 2015, it was felt necessary to conduct a comprehensive and in-depth Malaria Programme Review (MPR) in order to assess the current strategies and activities with a view of strengthening the malaria control program performance and redefining the strategic direction and focus. This was the first of its kind to be conducted in Malawi that was meant to enable the programme to timely identify what is working and what is not and why and propose solutions to major problems or barriers to scaling up program implementation. It would identify activities required to enhance rapid scale up of malaria control in the context of a national public health system. The results would be used for planning and resource mobilization for scaling up delivery of malaria control services towards universal coverage

by 2015. Key partners would use the malaria program review to get consensus on problems, identify gaps and suggest improvements in programme performance.

## **1.2. Objectives of the Review of the National Malaria Control Programme**

### **1.2.1 Overall Objective**

The purpose of the review was to identify achievements; progress and performance of current National Malaria Control Programme as well identify major emerging critical issues, priority problems, and investigate the cause of problems and propose solutions with a view of program redesign to achieve better performance.

### **1.2.2 The specific objectives**

- To review the structure, organization, and management framework for policy and programme development within the health system and the national development agenda in Malawi
- To review the malaria epidemiology in Malawi
- To assess progress towards achievement of national, regional and global targets
- To review the current programme performance by intervention thematic areas and by service delivery levels
- To define the next steps for improving Programme performance and redefine the strategic direction and focus including revising policies and strategic Plan

### **1.2.3 Methodology of the MPR**

This review followed the WHO guidance for MPR. The process has four distinct phases with several steps and activities for each phase were as follows:

#### **Phase I- Planning Phase**

In this phase, consultations with relevant stakeholders were made on the need of conducting the MPR in Malawi. During the Malaria Technical Working group meeting held in January 2010, a consensus was built to conduct the review followed by appointment of the Malaria Programme Manager as a review coordinator. A checklist to track activities and a costed proposal were developed. The proposal was submitted to WHO, RBM, SADC-SARN including national partners for resource mobilization in February 2010

#### **Phase II- Thematic Desk Review**

The NMCP together with partners constituted an internal review team that conducted systematic thematic reviews from March 2010 to June 2010 to identify achievements, progress, challenges and make recommendations. The focal persons at NMCP on each thematic area facilitated the assembling of information from published and unpublished reports and other documents. The technical working groups working on different thematic areas reviewed their thematic areas. A three days retreat which took place from 7 to 9 June

at Hippo View lodge at Liwonde in Machinga district was organised for the teams to come up with draft thematic reports. In addition during this retreat, tools for field work were adapted and sites for the field visits selected.

### **Phase III-Field Visits**

In phase 3, the internal review team was joined by an external review team from neighbouring countries (Mozambique, Botswana and Tanzania) and WHO-IST and AFRO that further re-examined available documents, reports and also conducted interviews and field visits to validate the findings of the thematic groups. The joint field visits to the districts and at national level were conducted by four teams that consisted of internal and external experts in malaria from Malawi, neighbouring countries as well as WHO. Interviews as well as focused group discussions with communities were conducted in selected districts hospitals, health facilities and communities.

One team interviewed government authorities and partners at national level while the other three teams visited the North, Central and South regions of the country. The field visits were conducted from 21<sup>st</sup> June – 3<sup>rd</sup> July, 2010. Upon arrival at each district, the review team met with the District Health Management Team (DHMT) to inform them about the aim, objective and outcome of the review. Table 1, in the annex B shows the facilities and institutions that were visited by each team during the field visits.

The end of field visit in each district, the DHMTs were debriefed on the findings and a report of each team was compiled. The findings and recommendations from all the field visits and the thematic reports formed the basis of the thematic review report. At the national level the findings and recommendations were presented at a high level meeting of senior management of Ministry of Health and partners. The presentation was in form of power point presentation, aide memoire and draft report.

#### **1.2.4 Lessons learnt**

The following are some of the key lessons learnt in the process of conducting malaria programme review:

- It is a very critical to have a review coordinator based at the NMCP secretariat whose role is to make sure that review materials are assembled, to manage review meetings and all other logistical needs of the programme review;
- It is important to plan well in advance to ensure availability of financial resources, logistics and internal and external reviewers. Prior planning and scheduling of meetings is very important to avoid conflicting schedules. This also helps in ensuring that engaged consultants complete the report in time for reviewing by other members of the review team;
- It is important to have a lead national consultant with appropriate skills and expertise and ensure that he/she is provided with clear terms of references and expected outputs;

- Outputs of the internal and external review teams need to be clearly spelt out at the beginning of the review and the review coordinator should evaluate each step to make sure that all the planned outputs are met.

## 2.0 Progress in Malaria Control

### 2.1 History of Malaria Control Program in Malawi

In 1970's a national malaria control policy was developed by the MOH that consisted of three main strategies

1. Chloroquine prophylaxis of children under five years through under five clinics,
2. Treatment of symptomatic malaria among children and adults with chloroquine
3. Vector control with residual spraying (usually with DDT) and larvacides in certain urban areas.

In 1973, the World Health Organisation (WHO) mission determined malaria to be meso-to hyper endemic in Malawi, except in isolated higher altitudes mountainous regions.

In 1984, *Plasmodium falciparum* resistance to chloroquine was first suspected. In response to this, the MOH established the National Malaria Control Committee (NMCC) to systematically study the efficacy of chloroquine and other anti-malarial drugs and to develop evidence based malaria treatment guidelines. In the same year the first National Malaria Control Programme Manager was appointed to manage national malaria control activities including the control of diarrhoea diseases with assistance from the Africa Child Survival Initiative-Control of Communicable Childhood Diseases, a project funded by the United States Agency for International Development (USAID). Before 1984 there was no clear programme and malaria was treated like any other disease.

In 1999, the Ministry of Health through the National Malaria Control Program embraced the Roll Back Malaria global strategy as an initiative to scale up malaria control activities in Malawi. The World Health Organization supported the inception process of the RBM initiative through fielding a technical support mission in guidance and resource mobilization.

### 2.2. Progress, performance and challenges on malaria control

The goal of the malaria strategic plan 2005-2010 was to halve malaria morbidity and mortality by the year 2010 with further reduction of morbidity and mortality figures of 2001 by 75% by 2015. The specific intervention targets were 80% access to appropriate treatment by all at risk of malaria; 80% access to malaria prevention by pregnant women; as well as 80 % of children under 5 years and pregnant women sleeping under ITNs.

Over the years Malawi has made tremendous progress in malaria control through scaling up of interventions such as: distribution of ITNs/LLINs through health facilities and mass campaigns, change of treatment policy from SP to ACTs, malaria in pregnancy through IPTp and introduction of Indoor Residual Spraying (IRS).

Malawi changed its policy of net distribution from heavily subsidized to free distribution to under five and pregnant women in 2006 through health facilities. Long Lasting Insecticides Treated Nets (LLINs) were introduced in 2007 and a time limited mass distribution campaign was conducted in 2008 to boost up ITN coverage. With regards to treatment, the country changed its treatment policy in December 2007 from SP to ACTs in particular



Artemether-Lumefantrine as first line with Artesunate - Amodiaquine as the second line for uncomplicated malaria with quinine for severe malaria. Currently ACTs are available in all public, CHAM and private health facilities for free. IPTp is being implemented in all health facilities through directly observed therapy (DOT).

The results of the 2010 MIS indicate progress in intervention coverage as follows: household ITN possession has increased from 6% in 2000 to 60% in 2010; use of ITNs by children aged less than 5 years and pregnant women has increased from 8% in 2000 to 54% and 60% respectively. Treatment seeking behaviour in children with fever in the last 2 weeks who received an appropriate antimalarial drug has increased from 24% in 2004 to 28% in 2010.

In terms of funding, there has been an increase in financial resources through various partners such as Global Fund, PMI, and UN system including Malawi government as well. Despite these achievements and progress in the programme performance, there are still some challenges faced by the programme. The net ownership and utilization is still low compared to set target of 80% by 2010.

On case management, despite introduction of ACTs at health facility level, access to treatment is a challenge at community level where people have to travel long distance to get treatments. There is also a challenge in terms of diagnosis because presumptive treatment is still being done in all facilities only few have microscopes although there are plans of introducing Rapid Diagnostic Tests (RDTs) to ease the problem at facilities without microscopy. There have been some challenges in data management such as collection, analysis, interpretation and feedback mechanism at all levels of health service delivery.

### **2.3 Malaria control within the national health development agenda**

The mission of ministry of health is to promote health, reduce diseases and illnesses, and also seek to protect life and the well being of all Malawians. In order to achieve this mission, the Malawi health sector has developed strong Sector Wide Approach (SWAp) governed by the secretariat placed under the department of planning and policy development to finance the health sector. The health SWAp Programme of Work (POW) 2004-2010 outlines the priority health activities to be implemented by ministry of health (MoH), development partners and major not-for-profit organizations within the health sector.

The SWAp Programme of Work consists of various components. The National Malaria Control Program as one of the key components of the Essential Health care Package (EHP) utilizes the various policies, guidelines and systems including human resource, monitoring, procurement, and reporting activities established and harmonized under the SWAp governance structure. Furthermore SWAp rationalizes scarce resources and maximizes the efficient use in the health sector in Malawi

One of the guiding principles of SWAp is the delivery of health services through a decentralized health care delivery system that contributes to the achievement of sustainable poverty reduction through the enhancement of human capital development, and improved access to the Essential Health Package (EHP) and other health-related activities. In this case, malaria control programme benefits from this arrangement positively.

## 2.4 National Development Plan

The government of Malawi is undertaking unequivocal efforts in reducing poverty and improving the welfare of its people. This dedication is manifested through the formulation of Malawi Growth and Development Strategy (MDGS) in 2006 whose main goal is to improve the health status of all people of Malawi by reducing the risk of ill health and occurrence of premature deaths. This will be done through utilization of Essential health care package and other services thereby reducing the incidence of HIV and AIDS, malaria tuberculosis and other communicable and non communicable disease.

## 2.5 Key strategies for malaria control

The main malaria control interventions are prompt diagnosis and effective treatment of malaria cases, IPTp, Integrated Vector Control through ITN and IRS and other cross cutting strategies such as Information Education and Communication (IEC), Surveillance Monitoring and Evaluation and programme management. These major interventions are discussed in details in subsequent sections.

## 2.6 Key partners in Malaria control

Since introduction of Roll Back Malaria in Malawi in 2000 Year several partners have joined the fight against malaria. These include WHO, UNICEF, World Bank, UNDP and DFID, USAID/CDC, PMI, JICA, Research Institutions, the College of Medicine (Malaria Alert Centre) and NGOs such as CHAM, Africare, MSF, WVI, PSI, Plan Malawi, MSH, Action Aid, CPAR, Malawi Red cross, Anglican Church, Project HOPE, Mulli Brothers and Nkhoma and Livingstonia Synods.

**Table 1: Main Contribution to malaria Control in Malawi**

Partner	Programme management	Case management	Vector Control	MIP	IEC and Advocacy	M & E
WHO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
World Bank,						<input checked="" type="checkbox"/>
UNDP						
UNICEF,		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DFID						
USAID/CDC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PSI			<input checked="" type="checkbox"/>			
Malawi Red Cross			<input checked="" type="checkbox"/>			
MACEPA/PATH						<input checked="" type="checkbox"/>

## 2.7 Linkages and coordination

The National Malaria Control Programme works in collaboration with line ministries and government departments such as Education, Environmental Affairs, Fisheries, Defence, Internal Security, Information, Finance, Malawi Broadcasting Corporation and other Media Houses. The work is coordinated through the malaria technical working groups and its sub committees. The sub committees include case management, Vector control, IEC and

Advocacy, M & E and malaria in pregnancy. In all these groupings, NMCP takes the leadership role and are expected to meet on quarterly basis and when need arises. However participation of other line ministries in malaria control meetings is irregular coupled with lack of malaria focal person in these ministries.

Within the ministry of health as part of sector coordination, NMCP work closely with Epidemiology Unit, Reproductive Health Unit, Health Education Unit, Planning Unit , Research Unit, HTSS (Pharmaceuticals), Central Medical Stores (CMS), Pharmacy Medicines and Poisons Board (PMPB), IMCI, HIV/AIDS and ARI.

Collaboration with other units/departments in the MOH is key activity this mainly done through regular departmental meetings and once a week Monday morning meeting at Ministry headquarters which involves all departments in Ministry of Health. The districts have established partnerships at both district and community levels for implementation of malaria control activities with the guidance of the National Malaria Policy. See Annex D NMCP Coordination Structure.

The Ministry has a malaria task force which meets quarterly and Strategic plans and any further developments are also discussed on the larger inter ministry and national forums.

### 3.0 Epidemiology of malaria

#### 3.1 Geographical distribution of malaria

Malaria is hyper-endemic and transmission occurs throughout the year in most places in Malawi, except in the mountainous areas in the north and south. Transmission is greatest during rainy season from November to April and along the low-lying areas. However the whole population of Malawi is at risk of malaria.

Limited studies have been done to map the risk of Malaria in Malawi. A spatial analysis and risk mapping of malaria in Malawi for children 1-10 years (Kazembe et al 2007) indicates that higher risk areas are in the central and northern region districts as well as along the lakeshore districts on the east central side of Malawi. The same pattern of distribution of malaria prevalence is expected for all age group. Other notable areas with relatively higher risk are in the south-western region (parts of Ntcheu, Zomba, Mwanza and Balaka districts). Low rates of between 0.7–16 percent are around the southern region over the highland ranges of Zomba, Blantyre, and Mwanza and parts of Chikwawa. Other areas with low rates are on the north-western regions, such as districts of Mzimba, Rumphu and Chitipa which are predominantly at high altitude (1, 260–2,400 m above seas level.) See map of Malawi in figure one below.

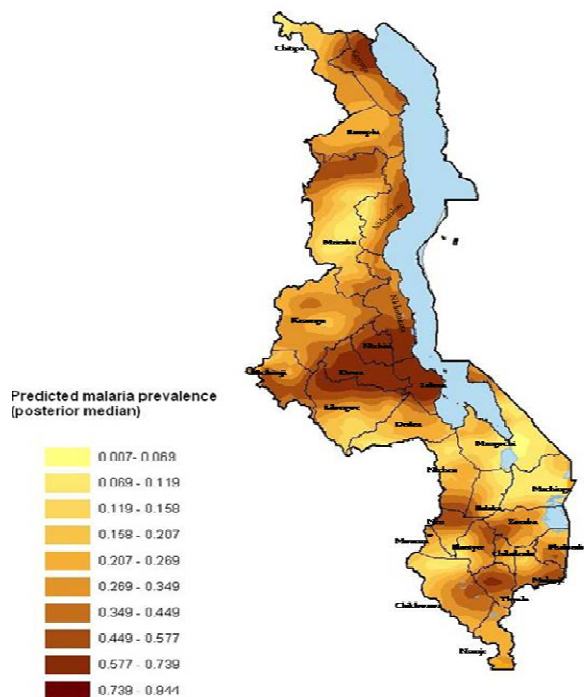
#### 3.2 Population at risk

The whole population of Malawi 13.07 million is at risk of malaria. The distribution of malaria infection is discussed in section 3.1. Like in other malaria endemic countries, Malawian children from age three months to about five years are at the greatest risk.

#### 3.3 Stratification and risk map

Stratification and risk mapping of malaria in Malawi is shown in the figure 1 below.

Figure 1: map of malaria showing malaria stratification.



Source: Kazembe et al 2007

### 3.4 Malaria parasites

*Plasmodium falciparum* is by far the commonest species, accounting for 98% of the infections. *P. falciparum* is responsible for severe disease and most deaths. Other species, including *P. malariae* and *P. ovale*, account for up to 2% of cases. *P. vivax* is very rare.

### 3.5 Malaria prevalence

The results from the 2010 MIS indicates that malaria prevalence among under five children is high at 43% nationally and 47% in rural areas. The results also indicate regional variation with the central region having the highest prevalence at 50% seconded by the southern region at 42%. The Northern region had the lowest malaria prevalence rate at 23 % compared to the other two regions.

### 3.6 Malaria vectors

Vector control is one of the key malaria control strategies in Malawi. The three primary malaria vectors in Malawi are: *Anopheles arabiensis*, *Anopheles gambiae* and *Anopheles funestus*. This partly explains the high burden of malaria in Malawi

### 3.7 Disease trends

In Malawi most of the suspected malaria cases especially under five children are treated presumptively with very little parasitological confirmation. Data from HMIS show an increase in the number of suspected malaria cases from 2005 to 2009 as shown in table 2 below.

**Table 2: New malaria cases 2005- 2009:**

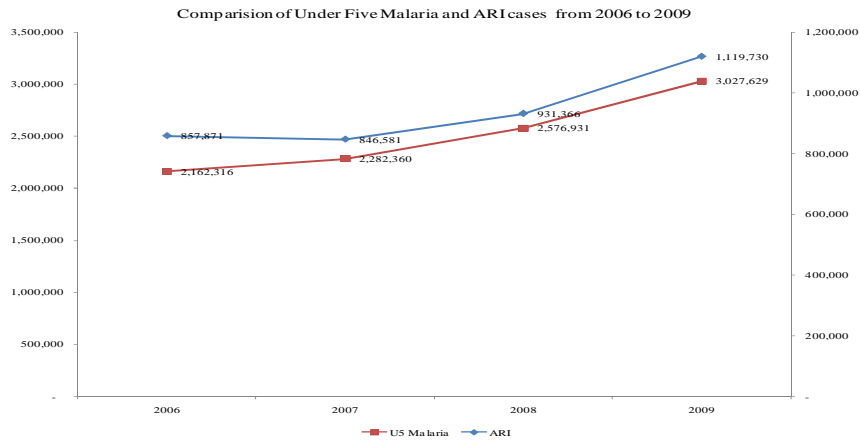
Year	Total population	New Malaria Cases (OPD)			Malaria incidence per 1000 population
		< 5 years	>= 5 years	All ages	
2005	11,999,585	1,686,040	1,977,451	3,663,491	305
2006	12,345,253	2,162,316	2,339,219	4,501,535	365
2007	12,700,877	2,282,360	2,505,346	4,787,706	377
2008	13,066,746	2,576,931	2,608,151	5,185,082	397
2009	13,432,615	3,027,629	3,133,792	6,161,421	459

**Source: HMIS**

The number of suspected malaria cases has almost doubled from a value of about 3.7 million cases in 2005 to about 6.1 million cases in 2009 as shown in table 2.1 below. In all the years children less than five years constitute about 50% of the total suspected malaria cases. There has been a 40% increase in under five malaria cases from the 2006 to 2009. A similar increase (30%) has also been observed in Acute Respiratory Infection (ARI) over the same period as shown in figure 2 below. Some of the possible reasons for an increased number of reported cases despite scaled up of interventions are increased reporting rate,

increased uptake of health services and the fact that ACTs can only be accessed at health facilities.

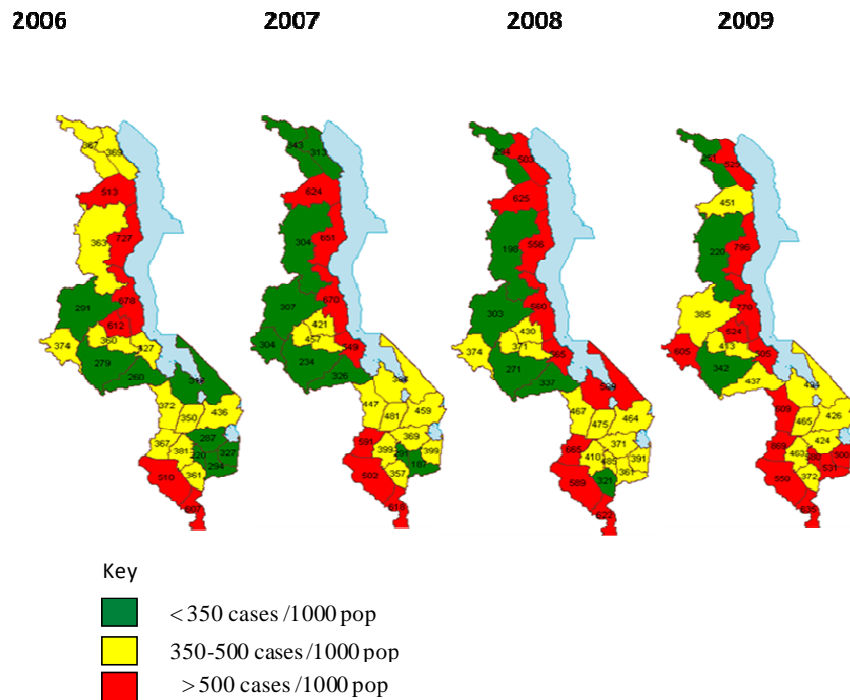
**Figure 2: Comparison of under five malaria and ARI cases from 2006 to 2009**



**Source: HMIS**

An analysis of the trends at district level shows that while the number of suspected malaria cases has been increasing nationally, there has been a decline in the number of cases in some districts. The maps below show the trend in the number of cases per 1000 population by district from 2006 to 2009. The red colour indicates districts with higher number of new suspected cases while districts with yellow indicate moderate problematic districts. As it can be noted from the maps some districts have moved from yellow to green, other have moved from red to green and others from green to yellow from 2006 to 2009.

**Figures 3: Map on trend in the number of cases per district**



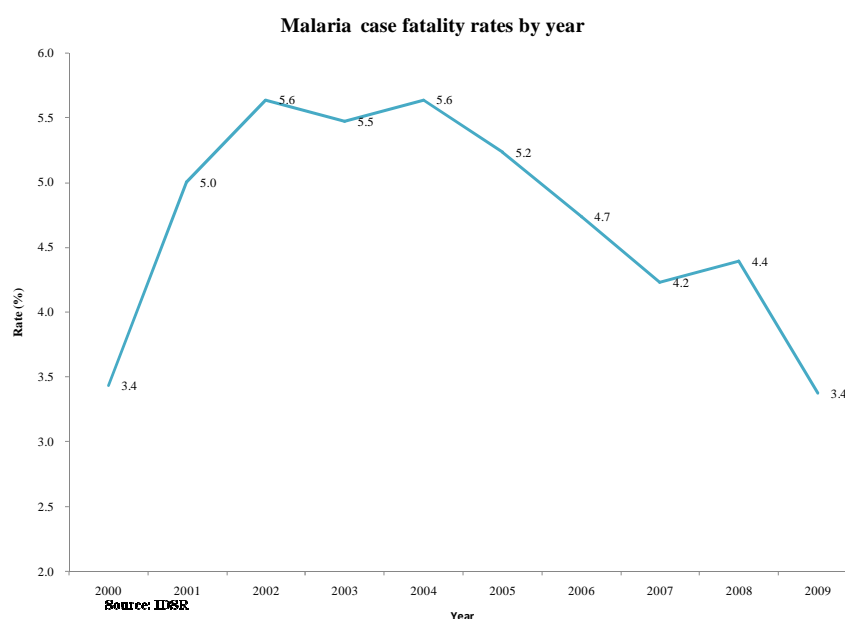
**Source: HMIS**

**Table 3: Case of fatality rates**

Case Fatality Rates			
YEAR	< 5 years	>5 years	All ages
2004	5.6%	5.8%	5.6%
2005	4.8%	6.0%	5.2%
2006	4.3%	5.7%	4.7%
2007	4.0%	4.6%	4.2%
2008	3.7%	5.7%	4.4%
2009	2.8%	4.5%	3.4%

Source: IDSR Malawi

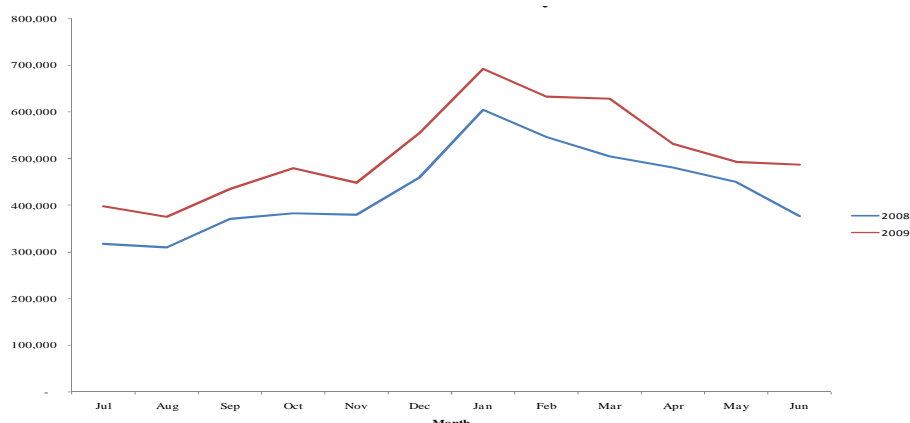
**Figure 4: Malaria Case Fatality Rates over years**



Despite an increase in the number of inpatient and outpatient malaria cases, data from IDSR show that malaria case fatality rate has been decreasing over the years. There has a decrease in case fatality rate from 5.6% in 2004 to 3.4% in 2009. There was a slight increase in case fatality in 2008 (possibly due to the 2007 change in treatment policy). However, it is observed that there is a tremendous decrease in malaria death in both under five and above five years old despite an increase in malaria new cases.

The figure below indicates the number of malaria cases by month. In terms of seasonal variation, the highest number of malaria cases is experienced in January of every year. The number of malaria cases starts to rise in November and starts to drop in May when the rainy season is over.

**Figures 5: New cases of malaria by month.**



### **3.8 Conclusion and recommendations**

The malaria burden still remains very high with overall parasite prevalence level as high as 43% nationally and 47% in rural areas. Data from both HMIS and IDSR show increasing malaria cases and deaths by about 50% between 2005 and 2009. However, these are suspected cases from HMIS and IDSR with varying levels of completeness. The increase could also be due to other febrile illnesses that were not malaria. This calls for accelerated scale up of confirmation of all suspected malaria cases so as to accurately depict the epidemiological situation for malaria.

Lack of sound data systems affects programme monitoring, there is need to put systems in place to ensure timely and consistent availability of quality routine data. One way of ensuring timely and consistent data is use of sentinel sites. Currently the available sentinel sites are experiencing challenges in terms of human resources and supplies hence the need of strengthening them. The programme needs to work close with planning unit at MoH (HMIS) to include more indicators in their reports. Therefore the programme recommends the following;

- All suspected malaria should be tested with RDT to ensure that there is good reporting on parasite confirmed cases.
- Inpatient reporting of malaria admission and deaths should be analysed
- Malaria prevalence surveys sampling should be adjusted to show prevalence levels at district level.
- There is need for detailed analysis and triangulation of the various data sources to determine the current epidemiological situation and there after update the malaria epidemiology map.
- Decisions on scaling up malaria control should be based on the analysis arising out of data triangulation.



## **4.0 Programme performance by thematic areas**

### **4.1 Program Management**

#### **4.1.1 Introduction**

The vision of National Malaria Control Programme is to eliminate malaria in Malawi. According to the malaria policy 2009, the mission of the NMCP is to reduce the malaria burden to a level where it is no longer of public health significance in Malawi. The goal of the malaria control programme is to reduce by half the 2000 levels of malaria morbidity and mortality in Malawi by the year 2010 and to reduce this burden further by 50% by 2015. The overall objective of the NMCP is to co-ordinate and support the delivery of effective malaria control interventions that will prevent and greatly reduce morbidity and mortality due to malaria leading to the possible elimination of the disease.

#### **4.1.2 Policy**

The National Malaria Control Programme developed a malaria policy (2009) that covers the main intervention areas of malaria control and prevention, namely effective case management, use of LLINs, IRS, IPTp as well as operational research and information, education and communication. The policy also addresses cross-cutting issues such as management, financing and human resources; without improvement in these areas, enhanced malaria control and prevention efforts will not succeed. This malaria policy was developed within the context of essential health care package and sector-wide approaches. Since the policy has just been launched, it is too early to determine its effectiveness and usefulness.

The 2009 Malaria Policy was based on an in-depth analysis of malaria and its control in Malawi and was adopted throughout the country to serve two purposes. The first purpose is to guide the Government of Malawi (GOM), multilateral agencies, bilateral agencies, non-governmental organisations (NGOs), research institutions, civil society, the private sector, service providers and communities as a basis for decisions and actions based on a shared protocol and consistency of approach. The second purpose of this policy is to provide broad priorities and criteria for malaria interventions in the health and other sectors in Malawi. Following this review and the development of the new malaria strategic plan, the malaria policy will be reviewed and updated in line with new policy directions.

#### **4.1.3 Guidance**

The following policies and guidelines were developed and are aligned to WHO policies and guidelines.

- Malaria Policy (revised 2009)
- Guidelines for Health surveillance assistants for delivery of sulfadoxine pyrimethamine for intermittent preventive treatment (2006)

- Guidelines for the management of Insecticide Treated Nets (ITNs) Program (2007)
- National Malaria Monitoring and Evaluation Plan 2007-2011 (2007)
- Trainers manual on case management (2007)
- National malaria treatment guidelines (2007)
- National malaria Communication Strategy (2009)
- Guidelines for Indoor Residual Spraying (2008)

There are some guidelines that are still under development/printing such as Pharmacovigilance guidelines, IRS training manual and RDT guidelines.

However, some of these guidelines will need revision after the MPR and development of the new malaria strategic plan. In particular, the malaria case management guidelines require a major revision in the following areas: the necessity of a second line anti-malarial medicine which is currently Artesunate-Amodiaquine; strengthening malaria diagnosis through the rolling out of RDTs; the operationalization of ACTs at community level and innovative methods to deliver subsidized ACTs through the private sector.

#### 4.1.4 Organisation

The NMCP was established under the Directorate of Preventive Health Services within the Ministry of Health. The National Malaria Control programme is located at the Community Health Sciences Unit (CHSU), which also houses other disease control programmes. The programme is being lead by the Deputy Director of Preventive Health Services. The Programme Manager reports directly to the Director of Preventive Health Services.

NOTE: There are no established posts at the national malaria control programme that makes it difficult for programme staff to have a substantial career path.

**Table 4: showing the current staff of the National Malaria Control Programme**

Establishment	Number currently in place	Comment
Programme manager	1	
Entomologist	1	
Vector Control	2	(ITN and IRS specialists)
Case Management	2	
Malaria In pregnancy	1	
IEC and Advocacy	1	
Monitoring and Evaluation	2	Technical Assistant supported by PMI through MSH and one deployed by MOH
Diagnosis	1	Technical Assistant supported by PMI through IMaD
Zone coordinators	3	Not very functional
District coordinators	29	(one in each district)

The NMCP is charged with setting policies and support supervision of the district level which is responsible for implementation. During the annual review and planning meeting, the NMCP uses this opportunity to guide the districts on the malaria control priorities for the respective year. The districts then incorporate some of the activities into their district implementation plans (DIPs). Under the SWAp arrangement, the DHMT receive funding from the treasury for the implementation of their DIPs. Since districts have the mandate to prioritize activities at their level, malaria control may sometimes not be included on the priority list. As a result, some planned malaria activities maybe skipped that year. As such there is a need for greater advocacy for prioritising malaria control activities at the district level. Regular training as well as supervision of the District Malaria Coordinators to ensure that they proactively plan for and implement malaria control activities will be essential.

At district level, the district malaria coordinators are appointed by the District Health Officer (DHO) and do not devote 100% of their time on malaria control. The district malaria coordinators are usually clinicians or nurses charged with overseeing malaria case management. Each district also has an ITN focal point to oversee the ITN programme distribution through the ANC and MCH clinics. They are responsible for malaria trainings at the district level and receive earmarked funding from the NMCP every year to conduct supervision activities. Due to the DMC having other responsibilities apart from malaria, they are unable to devote adequate time to malaria control activities. In addition, though they have been facilitated with a motor-cycle, they depend on the district funds for maintenance and fuel. Also there is no systematic approach for new staff inductions as well as regular supervision by the NMCP to enhance their performance. Although the programme has planned to conduct quarterly review meetings involving the DMCs, they are not regular.

#### **4.1.5 Strategic and annual planning**

The Malaria Strategic Plan for 2001 to 2005 encompassed renewed efforts to reduce malaria morbidity and mortality in the context of multi-sectoral implementation of malaria control activities. The Malaria Strategic Plan for 2005 to 2010 focused on “scaling up” of malaria control activities in the context of the Essential Healthcare Package (EHP) and sector -wide approaches.

The main strategic areas that were identified for the scale-up of malaria control activities include, Malaria Case Management, Intermittent Preventive Treatment (IPT) of pregnant women with SP and malaria vector prevention with special emphasis on the use of Insecticide Treated Mosquito Nets (ITNs). The plan also addressed the need to develop human resource capacity, strengthen information, education and communication and behaviour change communication (IEC/BCC) and advocacy for malaria control. Furthermore it highlighted operational research, and development of systems to strengthen monitoring and evaluation to track progress and measure results. The 2005-2010 National malaria strategic plan is expiring and he NMCP is in the process of updating it.

#### **4.1.6 Financing**

The NMCP receives financial support through the SWAP arrangements. Funds from the government, the Global Fund and other development partners are placed in a common basket and are disbursed in the line with the annual work plans. The Sector Wide Approach (SWAp) is guided and governed by a code of conduct and Memorandum of Understanding (MoU), amongst the stakeholders in the joint programme of Work (PoW); the initial signatories were DFID, World Bank, Norway and Ministry of Health. In addition, the UNFPA, the Global fund and the German Government has now signed on the pooled fund.

Some of the grants are channelled towards procurement of pharmaceutical and Medical supplies, Systems Support and Development – non-district level operations: Zonal support offices, training institutions, CHSU, central administration, Central Medical Stores (CMS) Health services Commission, Routine Operations at service delivery level and human resource. The NMCP also gets some discrete funding from USAID/PMI for specific malaria control activities.

Ongoing negotiations on the consolidated Global Funds grant for rounds 2 and 7 worth US \$ 36 over the next 3 years , as well as round 9 worth 94 million US \$ over 5 years will enable the country to scale up the universal coverage of malaria control and prevention interventions.

#### **Summary of progress and performance**

Since the NMCP was established, there has been improvement in program performance. The program has policies and guidelines for malaria control that will require updating alongside the development of the new malaria strategic plan. The human resources situation at the NMCP has improved from four professional staff members in 2005 to 12 professionals in 2010 including the appointment of a substantive NMCP Manager and an M&E Officer seconded by MSH. There is a marked increase in funding for malaria control by government and partners. The current financial arrangements through the SWApS have enabled the program to scale up interventions.

#### **Summary of key issues and challenges**

Despite this increase there is only one established position in the NMCP. Furthermore the program requires more staff at the central level to support district implementation and supervision especially in the areas of case management and vector control.

District Malaria Coordinators (DMCs) that are appointed by the District Health Office (DHO) work with the Health Surveillance Assistants (HSAs) on malaria control. However, these District Malaria Coordinators spent only one third or less of their time on malaria control activities. In addition, because of high staff attrition rates within the health sector, DMCs are sometimes appointed without proper induction on their roles hence compromising their quality of work. The programme should intensify training of malaria coordinators regarding their responsibilities and conduct regular supervision and follow-up as well as allocate dedicated funds for them to conduct key activities.

#### **Summary of suggested solution for action**

- Review the staffing situation at the NMCP and increase staff to adequately cater for the demands on the programme.

- The NMCP should have a defined staff establishment with clear post descriptions and career paths since malaria is a priority disease control programme.
- Improve collaboration with other programmes within the MOH such as Child Health and Maternal health which are responsible for certain aspects of malaria control.
- Strengthen coordination and timely implementation through quarterly and annual review and planning meeting with district malaria coordinators.
- Strengthen partnership coordination at all levels through ensuring that the malaria advisory groups as well as the technical working groups are functional and meet on a regular basis.
- Strengthen the capacity of the district malaria coordinators through provision of regular training on their responsibilities. The government should consider making the DMCs fulltime dedicated to malaria.
- Strengthen support supervision at all levels with consistent use of supervision guidelines and ensure regular feed back
- Accelerate the negotiations and signing of Round 9 to ensure sustainable funding for universal coverage

## **4.2 Malaria Vector Control**

### **4.2.1 Introduction**

Vector control is one of the key malaria control strategies in Malawi. The three primary malaria vectors in Malawi are; *Anopheles arabiensis*, *Anopheles gambiae* and *Anopheles funestus*. This partly explains the high burden of malaria in Malawi.

The key vector control interventions include ITNs/LLINS, IRS and integrated vector management (IVM). The main focus of IVM is to minimize exposure to malaria vector bites through universal access of the proven interventions. The role of the bed net is to physically separate people at risk from the bites of infective mosquitoes. IRS uses chemical insecticides sprayed on the walls of dwellings to kill mosquitoes, thus reducing the malaria vector population. Each of these key interventions will be discussed in turn. This section will review the implementation of the three main vector control interventions.

### **4.2.2 Policy and Guidelines**

The policies and guidelines under vector control interventions were developed within the framework of The Malaria Strategic Plan (2005 – 2010). The goal is to maximize reduce malaria transmission through appropriate use of ITNs and other vector control measures. The main strategies are;

- Scaling up of ITN distribution
- Introduce IRS in selected rural areas
- Effective monitoring of malaria vectors

Malawi changed its policy of net distribution from heavily subsidized to free distribution to under five and pregnant women in 2006 through health facilities. Long-lasting Insecticide-treated nets (LLINs) were introduced in 2007 and a time-limited mass distribution campaign was conducted in 2008 to boost ITN coverage.

#### 4.2.3 Organisation structure

The National Malaria Control Programme has one national entomologist, a National ITN Officer and a district focal person for IRS who is based at Nkhota-kota District hospital. In addition; there is a functioning national malaria vector control sub-committee.

There are Officers/focal points responsible for malaria vector control at community level, district provincial and national levels.

#### 4.2.4 Human resource training and capacity development

The District Health Offices have a focal person for ITN. The focal person works in collaboration with the District Malaria Coordinator. The distribution of LLINs is conducted by nurses in health facilities. The nurses are trained on guidelines for the management of Insecticide Treated Nets.

In 2002, NMCP established six entomological sentinel sites in the districts of Karonga, Rumphi, Nkhota-kota, Lilongwe, Mangochi and Chikhwawa. Two entomological assistants' receives training at each sentinel site in the district. In addition the sites are used to conduct studies on mosquito vector susceptibility and mapping of malaria vector species.

#### 4.2.7 Procurement in Vector Control

There are two sources of funds for procuring vector control items. The procurement of LLINs is done by UNICEF using global funds, while PMI funds are channelled through John Snow International (JSI) which is responsible for LLINs procurement. Distribution of LLINs is done by PSI and Mulli Brothers, these institutions are subcontracted by the Ministry of Health to carry out LLINs to all public health facilities. Procurement of insecticide, spray pumps and Personal Protective Equipment (PPE) is done through tender where the best bidder is subcontracted by the Ministry of Health.

#### 4.2.8 SWOT Analysis

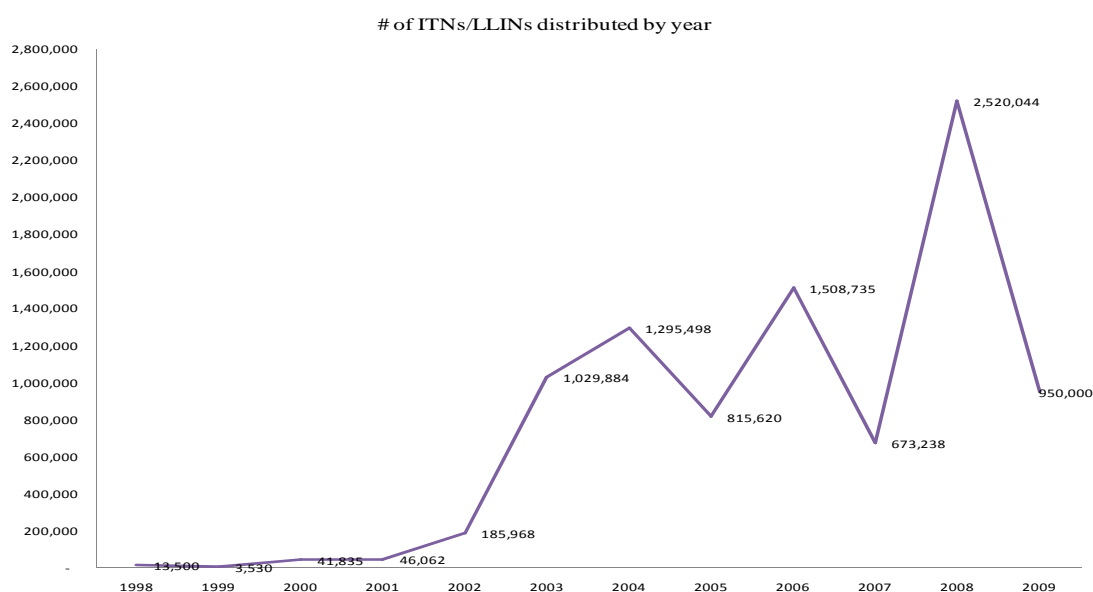
STRENGTHS	WEAKNESS
<ul style="list-style-type: none"> <li>• Existence of strong partnership especially in implementation of LLINs</li> <li>• Availability of guidelines and policies for key interventions</li> <li>• Extensive experience in distribution of nets</li> <li>• Annual review and planning meetings and reports</li> <li>• Significant increase in LLIN coverage and use.</li> <li>• Availability of vector control technical working group</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate information on vector behaviour and/or distribution</li> <li>• Inadequate entomologists in NMCP</li> <li>• Inadequate resources to carry out IRS i.e. vehicles, few partners involved, human resource)</li> <li>• Lack of disposal system for old and torn LLINs</li> <li>• Little involvement of communities in Integrated Vector Management programs</li> <li>• Interrupted supply of nets leading to stock outs</li> <li>• Lack of experience in other IVM activities such as larvaciding and biological control</li> </ul>

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• Availability of local capacity to produce LLINs within the country</li> <li>• High demand for LLINs</li> <li>• Availability of partners in implementation of IVM</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence of insecticide resistance to pyrethroids in some parts of Malawi</li> <li>• Increased incidents of net misuse</li> <li>• Lack of consensus on use of DDT for IRS</li> </ul>

#### 4.2.9 Summary of progress and performance

All of achievements have been made in the area of vector control. Over the past five years the programme has managed to distribute over 6 million ITNs and over 2 million especially to vulnerable groups.

**Figures 6: ITNs/LLINs distributed by year.**



IRS has been piloted in Nkhota-kota district since 2007 and will soon be expanded to six more districts with highest incidence. The coverage for spraying has been over 90% in Nkhota-kota with about 300,000 people protected each year. The districts earmarked for the expansion are; Mangochi, Karonga, Nkhatabay, Chikhwawa, Nsanje and Salima. Guidelines for IRS adapted from WHO guidelines and also developed by RTI will be adapted for use in the new districts.

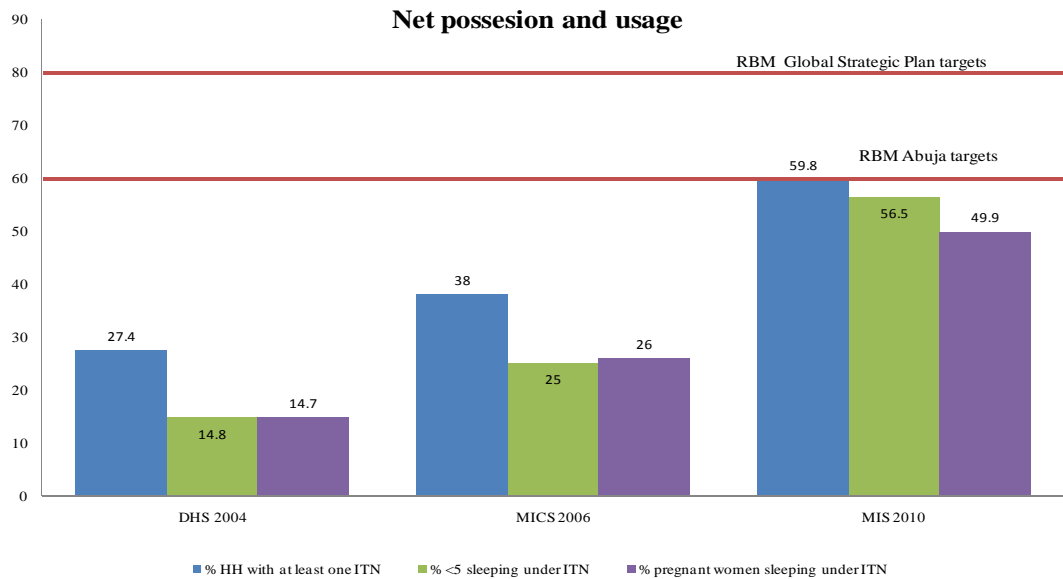
In order to monitor vector control interventions the MoH established 6 entomological sentinel sites, namely; Chikhwawa, Mangochi, Salima, Nkhota-kota, Rumphu and Karonga. Results from the sentinel sites indicate that mosquitoes are susceptible to Pyrethroids.

The figure below indicates trends in ownership and use of ITN over the years. There has been a significant increase in the use of nets for both under five children and pregnant women. The results from 2010 MIS indicate that 56.5 % of under five children sleep under an ITN and 50% of pregnant women sleep under an ITN an improvement from the 2006 value of 25% and 26% for children and pregnant women respectively. Overall, household ITN possession has increased from 6% in 2000 to 58% in 2010; use of ITNs by children

aged less than 5 years and pregnant women has increased from 7.6% in 2000 to 55.4% and 49% respectively.

Even though there has been an increase in usage of ITNs/LLINs among high risk groups, this increase is less than the targets need for moving the country to pre elimination phase. The programme will need to rapidly scale up the interventions in order to reach the RMB targets of 80% coverage.

**Figure 7: Net possession and usage**



#### 4.2.10 Key issues and challenges

While the programme would like to scale up IRS to six more districts there is suspected vector resistance to the current pyrethroids as shown in the table below. The programme needs to continue monitoring insecticide resistance. The pyrethroids currently used have a potent life of about six months yet the programme intends to spray once a year. This is likely to impact on the effectiveness of the insecticide. Related to this is the slow expansion of IRS to other districts. The programme will need to consider rapidly scaling IRS to more districts to be in line with universal coverage. There is no up to date information for Malaria vector bionomics as no studies have been in the recent past. There has also been reported case of misuse of ITNs especially in the lake shore districts of the country. There has been reported frequent stock out of LLINs in some health facilities. The recent report from the susceptibility study conducted in Nkhotakota, show that there is growing resistance to the commonly used insecticides especially deltamethrin, Lambdacyhalothrin as well as Permethrin as shown in table 4 below.



**Table 5: Insecticide resistance in Nkhotakota 2010**

Site	Species	Insecticide	n	%mortality
Nkhotakota	<i>An. Funestus</i>	Deltamethrin 0.05%	132	39
Nkhotakota	<i>An. funestus</i>	Permethrin 0.75%	155	71
Nkhotakota	<i>An. funestus</i>	Lambdacyhalothrin 0.05%	156	35
Nkhotakota	<i>An. funestus</i>	Bendiocarb 0.1%	110	69
Nkhotakota	<i>An. funestus</i>	Malathion 5%	125	100
Nkhotakota	<i>An. funestus</i>	DDT 4%	102	99
Nkhotakota	<i>An. funestus</i>	PY-Control	100	0

Malawi does not have an Integrated Vector Management (IVM) strategy that includes other vector control interventions such as larvaciding and environmental control that could be appropriate for urban areas. Although high usage of ITN's is rising, net misuse was also noted in some areas.

#### 4.2.11 Summary of suggested solution and priorities

- Adopt universal coverage with LLINs for all at risk of malaria in the new malaria strategic plan
- Review ITNs/LLINs logistic arrangements to eliminate stock outs and in preparation of the upcoming universal coverage campaign.
- Explore ways of introducing longer-acting insecticides for IRS which would ensure that IRS is more effective and cheaper to implement
- Develop an integrated vector management strategy that includes other vector control interventions.
- Verify the results of the study on vector resistance from one site. Similar studies should be done at other sentinel sites to confirm the magnitude of the problem and take action.
- Intensify studies on vector resistance & update vector bionomics & stratification

### 4.3 Malaria Diagnosis and Case Management

#### 4.3.1 Introduction

Malaria continues to be the main cause of admission and death especially in children aged less than five years. Malaria case management is therefore one of the key malaria control interventions in reducing malaria burden to the level of no public health importance through access to prompt and effective ant malarial drugs. This section will review the programme performance regarding diagnostics and treatments of malaria at all levels of the health system.

#### 4.3.2 Policy and guidance

The malaria case management strategy is reflected in a number of policies and guidelines.

##### I. Diagnosis of malaria: clinical and parasitological diagnosis, microscopy, RDTs.

The malaria diagnostic policy recommends that parasitological diagnosis of malaria is done in all persons with signs and symptoms of malaria. However, presumptive treatment for

febrile illness suspected to be malaria in children under five years of age and pregnant women is encouraged. About 25% of health facilities in the country have diagnostic facilities (microscopy) and the programme rolled out ACTs (LA) in December 2007 to implement this policy. With the limited diagnostic facilities, Malawi is in the process of preparing for the introduction and roll out of RDTs. Guidelines on the use of RDTs and the roll out plan have already been developed. According to recent WHO recommendations regarding parasitological confirmation for all cases before treatment, calls for another review of the current diagnostic policy.

## **II. Treatment of uncomplicated malaria**

The treatment of malaria is in line with the National Malaria Treatment Guidelines using anti-malarial drugs that are of good quality, safe and efficacious in line with the Malawi National Drug Policy in 2007. Accordingly, the following treatment policy has been adopted:

The first line treatment for malaria changed in December 2007 from SP to ACT (AL). All government and CHAM health facilities have access to first line treatment ACTs (AL). ACTs have also been introduced at community level. About a quarter of the targeted 4000 hard to reach villages across the country have access to ACTs through village health clinics. Malawi is in the process of developing policies for banning oral Artemisinin based monotherapies. This is in line with the current WHO recommendation on the ban of monotherapies for oral artemisinin based antimalarials.

The second line treatment is Artesunate-Amodiaquine (ASAQ). Orientation of health workers to this new treatment policy was done in 2007 but treatment was introduced in October, 2009. Introduction was accompanied with strict conditions for use of second line treatment mainly after laboratory confirmation of malaria. However, because of inadequacy of microscopy facilities in all health facilities, data on consumption of the second line treatment is not available. In addition there is a risk of overstocking the second line drug and expiry, hence wastage of scanty resources. There is therefore urgent need to review the utility of the second-line treatments in Malawi.

## **III. Management of Severe Malaria**

Intravenous quinine is the recommended treatment of severe malaria. This treatment is mainly delivered at hospitals where there are facilities for supervised treatment and other supportive care. At peripheral level of health care, the policy recommends health workers to refer patients with severe malaria to the nearest hospital after administering quinine IM as pre-referral treatment according to the national treatment guidelines.

## **IV. Treatment of Malaria in pregnancy**

As indicated under the section on malaria in pregnancy, Intermittent Preventive Treatment through administration of SP to pregnant women during the second trimester after quickening (first foetal movement) and third trimester is recommended. For treatment of uncomplicated malaria the policy stipulates that Oral quinine should be used in the first trimester, while ACTs (AL) should be used in second and third trimesters. Quinine injectable is recommended as treatment for severe malaria.

### **4.3.3 Organisation of Case Management**

The capacity to deliver malaria case management is mainly through public health services which constitutes central and district hospitals, health centres and village clinics. In total there are 24 hospitals, about 600 health centres and about 4000 village clinics. The latter are mainly in hard to reach areas and are manned by Health Surveillance Assistants (HSAs) a cadre of community health workers within the Ministry of Health. Community Case Management (CCM) is a service delivery package at village clinics that includes treatment for malaria, pneumonia, diarrhoea and eye infections among others. This services which was only accessible to children under the age of five years is now extended to all age groups in line with the universal coverage policy.

Private, not-for profit health facilities under CHAM are also sources providing services at a nominal cost recovery basis and their services cover for about 30% of the population.

There is malaria Case Management sub-committee at national level that meets quarterly. The core function of this committee is to serve as an advisory committee on all malaria case management issues. The committee also provides guidance on changes of policy on malaria treatment and is charged with the generation of evidence for any of the issues that may require further investigation. This committee plays a key role in the guidance and implementation of treatment and diagnostic policies. Membership of this committee consists of; national malaria laboratory specialist, malaria case management specialist, national treatment focal point person working on malaria case management: paediatrician, obstetrician, general physician, pharmacist who allow discussion on a wide spectrum of issues. In addition experts from other departments are called as and when required.

At national level, there is a malaria focal point person for case management and focal point in charge of malaria control services at zonal level. However, he/she is charged with additional responsibilities within the health department. This procedure has seemed to compromise the progress of malarial work at the health facility.

### **4.3.4 Malaria treatment and diagnosis**

Currently ACTs are available in all public, CHAM and private health facilities for free. IPTp is being implemented in all health facilities through directly observed therapy (DOT). This policy has been rolled out to the public health facilities and all Christian Health Association of Malawi (CHAM) facilities. The second line treatment is hardly prescribed even where laboratory services are available, probably because of the effectiveness of the first line treatment.

The treatment policy also recommends confirmation of malaria cases before treatment among those aged over 5 years while children under 5 years are treated presumptively according to the IMCI protocol. However, there is limited capacity for laboratory confirmation of malaria due to limited number of laboratory technicians, microscopes and reagents. The rapid diagnostic tests for malaria have not been rolled out yet.

Access to malaria treatment at community level is still a challenge for some people due to long distances, geographical terrain and other factors. The MOH identified about 4000 hard to reach villages where CCM services are targeted to improve access to treatment. However, rational use of these ACTs remains one of the major challenges due to limitation in

diagnostic facilities. Only 25% of health facilities in Malawi have the capacity to confirm malaria diagnosis with microscopy and RDTs have not yet been introduced due to lack of funding. As part of strengthening malaria diagnostics, the MOH plans to introduce and roll out RDTs to all health facilities and at community level.

This program performance review has shown that overall; access to effective malaria treatment is still a challenge since a small proportion (22%) of children with fever has access to treatment with an appropriate anti malaria (ACTs) within 24 hours of onset of fever.

#### 4.3.5 Malaria prophylaxis

The guidelines on malaria prophylaxis recommend that people who are at risk to develop malaria such as internal travellers & tourists should receive chemoprophylaxis medicines with Doxycycline, Proguanil, Mefloquine or Malarone. However, availability of such medicines in government health facilities is a challenge.

#### 4.3.6 Procurement in Case Management

The commonly procured items in case management are RDTs, medicines and Microscopes. Procuring procedures depend on the source of funding: Global fund procurement is done by procurement agents i.e. UNICEF while For PMI funds John Snow International facilitates the procurement process. UNICEF sources cost estimates from the suppliers and then submits them to NMCP. These are then forwarded together with the funding request to the GF Local Funding Agent (LFA) for vetting. These documents are then further forwarded to the Global Fund secretariat for approval and funding. Funds for procurement of malaria health commodities are sent straight to the procurement agent while funds for procurement of non health commodities such as vehicles, computers and other accessories are sent to the Ministry of Health as PR. Distribution is normally done by Central Medical Stores for all Health products and the NMCP does distribution of microscopes to areas where they are needed.

#### 4.3.7 SWOT Analysis

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>• Policies for management of malaria are in place</li> <li>• Availability of up-to-date treatment guidelines</li> <li>• Availability of strong partnership among the stakeholders through the case management subcommittee.</li> <li>• The presence of comprehensive future plans for rolling out diagnosis with RDT.</li> <li>• Strong collaboration with other programmes such as with IMCI &amp; ARI</li> </ul>	<ul style="list-style-type: none"> <li>• Only 25% of health facilities have capacity to conduct malaria diagnosis</li> <li>• Over reliance on presumptive treatment resulting in over prescription and irrational use of drugs</li> <li>• Lack of diagnostic equipments in health centres</li> <li>• Inadequate human resource capacity for malaria microscopy such as microscopists, laboratory assistants, laboratory technicians</li> <li>• Limited capacity at reference laboratory</li> <li>• Inadequate infrastructure such as laboratory space as well as microscopes</li> <li>• Lack of good system for maintenance and repair of microscopes and hemocues</li> <li>• Poor correlation between consumption and supply data</li> <li>• Unavailability of ACTs in private sectors</li> <li>• Poor adherence to guidelines (quinine overuse in private practice against resistance)</li> </ul>

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• Availability of RDTs to support diagnosis</li> <li>• Existence of national policy and strategic plan for laboratory services</li> <li>• Existence of village clinics that will facilitate expansion of community case management</li> <li>• Ongoing pilot of community case management will help inform better case management practices</li> <li>• Trucking of commodities such as drugs and RDTs through the supply chain system that is in place</li> </ul>	<ul style="list-style-type: none"> <li>• Policies colliding (over the counter treatment against requirement for confirmed case management)</li> <li>• Case management practice by private sector</li> </ul>

#### 4.3.8 Summary of progress and performance

A lot of advancement has been done in malaria control in Malawi. The change of treatment policy for malaria from SP to ACTs (LA) in 2007 is noteworthy and Amodiaquine-Artesunate as Second line treatment with Quinine reserved for severe cases. This policy has been rolled out to the public health facilities and all Christian Health Association of Malawi (CHAM) facilities. The second line treatment is hardly prescribed even where laboratory services are available. In the facilities visited, management of severe malaria in children under-five is done in accordance with the national treatment policy in the hospitals. The new treatment policy has not been fully implemented at the community and in the private sector. About 4000 hard to reach villages are targeted for community case management. However, only 2971 villages have an HSA to run the clinics. About 1022 HSAs have already been trained in CCM and are running the village clinics. All the 28 districts but four are implementing CCM.

Treatment seeking behaviour in children with fever in the last 2 weeks who received an appropriate antimalarial drug has increased from 24% in 2004 to 28% in 2010. It should however be noted that in 2004 Malawi was deploying SP as 1<sup>st</sup> line treatment compared to use of ACTs in 2010.

#### 4.3.9 Summary of key issues

Despite having diagnostic policies in place, there is weak capacity to confirm all suspected malaria cases mainly due to inadequate human resource to carry out tests for all suspected cases according to the national policy. There is poor system of quality control and quality assurance resulting in some health workers neither trusting nor adhering to test results when making treatment decisions. Although the laboratories performing malaria tests are keeping records, there is a weak system of reporting and analyzing data. Confirmed malaria cases are not captured by HMIS. Most of the health facilities have inadequate infrastructure in terms of space and diagnostic tools. Malaria diagnostic are expected to be strengthened with the introduction and scale up of RDTs planned by the NMCP. The RDTs have not been rolled out yet. There is observed non-adherence to tests results by clinicians, over consumption of ACTs compared to number of cases reported and ACT stock-outs in some facilities. Lastly some health workers have not been trained on the new treatment policy.

Implementation of the second line treatment policy for malaria is highly hampered by low access to microscopy by 75% health facilities. However, plans are in place by NMCP to procure 56 microscopes every year for the next 9 to 10 years with funding from GF Round 9 and the consolidated grant of Round 2 and 7. Other challenges include complicated dosing for ASAQ (regular tablets) as the fixed dose is not yet registered with PMPB.

During the field visits to selected health facilities, misuse of quinine was noted in some facilities where it is given as first line treatment. In other cases especially in CHAM facilities, administration of quinine is preferred to Artemether-Lumefantrine (AL) because it is paid for unlike ACTs that are given free of charge. In some instances clinicians prefer to give quinine as they have more confidence in efficacy of quinine than AL. At times they succumb to patients' demands for quinine because they believe that quinine is better than LA. This could be addressed through continuous training of clinicians on the guidelines and putting measures in place to ensure adherence. The Ministry of health should also consider subsidising quinine supplied to the CHAM facilities. The CHAM facilities are also charging for microscopy and consultation limiting access to appropriate anti malaria drugs by patients attending them.

Community management of malaria: Artemether- Lumefantrine is currently a prescription medicine only. Access to AL at community level is only through community case management, however not all the targeted hard-to-reach areas have been covered. In addition, some of the partners feel that there is inadequate coordination with the relevant departments on community case management and that the programme has not readily availed ACTs at this level. Currently, NMCP is working with its partners to expand the target for CCM from under five children to include all age groups in line with the universal coverage to malaria intervention policy

#### **4.3.10 Summary of suggested solution and action points**

The introduction of ACTs coupled with massive scale up of RDTs and strengthening of malaria microscopy is likely going to positively impact on improved case management and reduction in malaria cases in Malawi. However, there is need for increasing resources towards strengthening diagnostic facilities if Malawi is to overcome the high consumption of ACTs that is currently being experienced and avert potential ACT drug resistance.

- Update the treatment policy to include parasitological confirmation for all suspected malaria cases.
- MOH to strengthen laboratory capacity by introducing and rapidly scale up RDTs
- Strengthen the quality assurance and quality control system for laboratory diagnosis that should include RDTs.
- Strengthen the strategy for ensuring access to ACTs and RDTs at community level.
- More refresher training of the prescribers on the new treatment policy including diagnostics.
- Review the logistics system for distribution of malaria commodities to eliminate stock-outs of malaria commodities.
- There is need to establish a system for documentation of antimalarial stock-levels quarterly at all levels.
- There is need to intensify BCC on the new treatment policy

- The MOH should develop a policy banning artemisinin based monotherapies and other antimalarial monotherapies in the community.
- There is a need for an in-depth review of the utility of the second line treatment for malaria in Malawi.

#### **4.4 Advocacy, BCC, IEC and social mobilization**

##### **4.4.1 Introduction**

The National Malaria Control Programme recognizes the BCC/IEC approach as one of the important strategies to address malaria burden in Malawi. The approach addresses areas of advocacy for change, creating demand for malaria services and giving information that is necessary for changing people's behaviour. Different communication channels are being used to reach the masses and these include; drama performances in communities, airing of radio/television jingles and programmes on malaria, health talks at health facility, outreach clinics and community gatherings, and home visits through Health Surveillance Assistants (HSAs) and village volunteers who also organise the communities establish radio listening clubs.

The NMCP gets a lot of good support from partners and non-governmental organisations (NGOs) in the area of BCC/IEC. With funds from government through SWAp and the Global Fund, NMCP supports all district health offices and Health Education Unit to conduct various BCC/IEC activities. Population Services International (PSI) is engaged in BCC/IEC activities such as production of and airing of radio jingles, production and distribution of poster and leaflets. Several NGOs with grants from USAID/BASICS project are implementing BCC/IEC through various communication channels country wide.

##### **4.4.2 Policy and guidance**

The guiding principles for Advocacy, BCC, IEC and social mobilization are contained in the 2009- 2014 malaria communication strategy. The overarching goal of the communications strategy is to promote adoption of the three recommended malaria prevention and control interventions by addressing issues that prevent behaviour change. There is need to intensify media and performing arts campaigns in rural areas to advertise the use of nets and drugs to combat malaria through community forums. Inclusion of health talks in schools through public health talks.

##### **4.4.3 Organisation**

Within the Ministry of Health there is a Health Education Unit, which has been mandated to coordinate and provide technical guidance on development, implementation and evaluation of BCC/IEC activities. The unit works in collaboration with the National Malaria Control Programme at all levels. BCC/IEC is implemented as a crosscutting issue in all three thematic areas of case management, malaria in pregnancy and vector control. There is an IEC/BCC Technical Working Group made up of representatives from the National Malaria Control Programme, National Health Education Unit, media (radio, TV, journalists, Malawi News Agency), CPAR, MSH, CDC/PMI, PSI, UNICEF, World Vision, and other agencies and NGOs. The group meets on an ad hoc basis.

#### 4.4.4 Human resource training and capacity development

Malaria programme partners have also trained local leaders and community groups (drama groups and other community volunteers) on malaria interventions. Refresher trainings on the same will continue being administered to health workers.

#### 4.4.5 Service delivery, outputs and analysis

The NMCP and partners have provided various interventions to the communities. These interventions include case management, vector control and malaria in pregnancy. BCC/IEC activities are centred on these and as such they have played an important role in the following;

- Improved awareness on Malaria control, prevention and treatment
- Empowered communities, families and individuals on malaria prevention and control
- increased demand for information and services on malaria prevention and control
- Increase community Participation and involvement on malaria prevention and control
- Increased number of people seeking treatment for malaria in health services within 24 hours.
- Increased number of people who use treated mosquito nets

#### 4.4.8 SWOT Analysis

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>• There is a i.e. Malaria Communication Strategy (2010-1014)</li> <li>• Commemoration of Malaria Days and SADC Malaria weeks</li> <li>• The steady availability of various service commodities being promoted through IEC.</li> <li>• Improved collaboration with partners has contributed to expansion of BCC/IEC activities to the districts.</li> <li>• Trained health personnel on malaria issues such as development of messages, production and dissemination of IEC materials in all thematic areas i.e. posters radio/TV messages, brochures, t-shirts, etc.</li> <li>• Involvement of community structures and networks that have been oriented in malaria prevention and treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of an IEC focal point in the national program</li> <li>• Limited funds for production of IEC materials</li> <li>• There are no monitoring mechanisms to collect data on IEC indicators</li> </ul>
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• There is a health education unit mandated to develop IEC materials and provide technical support</li> <li>• The good collaboration with partners in the IEC sub group</li> <li>• IEC has been accepted as an activity in the ministry of health.</li> <li>• The current members of IEC working group are dedicated and interested in the fight against malaria.</li> <li>• Malaria is not only a health problem but it's also a social economic problem hence there is an opportunity that the IEC materials can be mainstreamed in every government ministry, companies, media, NGO's, religion etc.</li> <li>• Mushrooming of media outlets i.e. radios (community radio stations) is an opportunity for dissemination of the IEC messages</li> </ul>	<ul style="list-style-type: none"> <li>• Partners may pull out due to limited funding in their respective organisation</li> </ul>

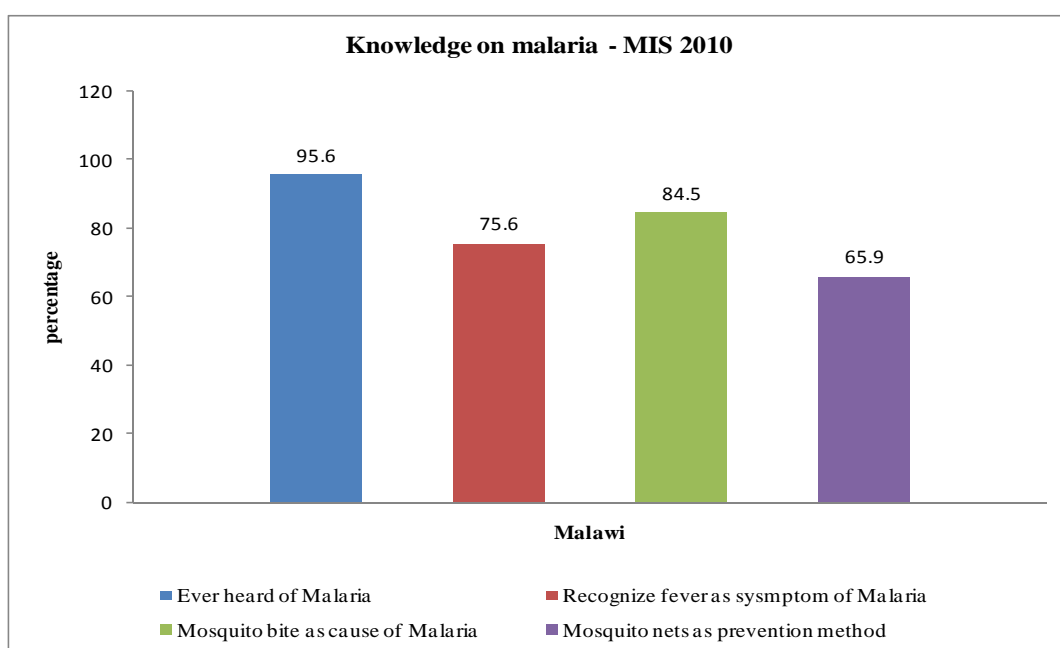


#### 4.4.9 Summary of progress and performance

The NMCP recognises the significance of BCC/IEC as a way to best communicate malaria messages to the community hence the development of a communication strategy that has been that has guided BCC activities over the years. BCC/IEC activities at district level are managed by the district health education officers. There has been an increase in BCC initiatives mainly focusing on under fives and pregnant women, resulting in greater awareness of malaria at community level. Some of the notable initiatives are the commemoration of Malaria Days and SADC Malaria weeks and disseminating information through these commemorations

The community IEC programme has been scaled up in almost all parts of the country. For example the BASICS IEC community programme is reaching 20 districts now. The direct involvement of the media in Malaria IEC is a success story as the messages have been able to reach a wide range of people through them. As shown in figure 8 below, there is high knowledge on what causes malaria 85% with 76% familiar with symptoms and only 66% who are aware that INTs could prevent them from getting malaria.

Figure 8: Knowledge on malaria



#### 4.4.10 Summary of key issues and challenges.

The uptake of malaria treatment and prevention services is negatively affected by community attitudes such as late-treatment seeking behaviour, myths and misconceptions about IPT, ITNs and LA. Collaboration between the district malaria coordinator and the district health education officer on malaria BCC/IEC is minimal. The systems to monitor and evaluate IEC interventions are not adequate. Funds for the production of IEC/BCC materials are still limited and malaria interventions are not mainstreamed into other programs.

#### **4.4.11 Summary of suggested solution and action points**

The following need to be the focus of the programme in order to improve uptake of malaria interventions at all levels.

- Intensify advocacy by involving political and civic leadership at all levels
- Intensify production of BCC/IEC messages aimed at increased use of malaria control interventions.
- Update and implement the malaria communication strategy in line with the new malaria strategic plan
- Improve coordination and collaboration between the Health Education Officer and the DMC at district level

#### **4.5 Malaria in pregnancy**

##### **4.5.1 Introduction**

Malaria in pregnancy is one the main malaria key interventions being implemented in Malawi. As such use of Intermittent Preventive Treatment through administration of SP to pregnant women during the second trimester after quickening (first foetal movement) and third trimester is part of the 2005-2010 National Strategic Plan. In Malawi malaria is endemic and most pregnant women are at risk and primigravidae are at higher risk. Malawi recommends that pregnant women should receive at least two doses of SP to protect them from malaria and that Long Lasting Insecticidal Nets (LLINs) provided free at Government and Cham facility. The activities are centred on promoting pregnant women for early antenatal attendances and promote uptake of SP

##### **4.5.2 Policy and Guidelines**

There are guiding policies for the Malaria Programme. These include: guidelines on case management, insecticide treated nets, indoor residual sprays (IRS), and malaria in pregnancy, malaria treatment, training guidelines, and the Malaria Communication strategy 2009-2014 that have been discussed elsewhere.

##### **4.5.3 Organisation**

The NMCP has an MIP Focal person who is responsible for planning and coordinating and provides technical guidance on development, implementation and evaluation of malaria in pregnancy activities. The National Malaria Control Programme work in collaboration with several key partners at all levels World Health Organisation (WHO), UNICEF, and PMI in scaling up malaria in pregnancy interventions in the country. The programme works in collaboration with the Reproductive Unit through a day to day consultation and the Malaria in pregnancy technical working group.

##### **4.5.4 Human Resources, Training and capacity development**

Few health workers have been trained in the past two years on issues of malaria in pregnancy as part of Focused Antenatal Care, disease management, vector control including insecticide treated nets (ITNs). Thus capacity building on malaria management has been done although it is inadequate and irregular. Malaria programme partners have also trained

malaria district & safe hood motherhood coordinators in monitoring and evaluation of malaria in pregnancy indicators.

#### **4.5.6 Performance indicators and targets**

The malaria in pregnancy performance indicators and targets as shown in the Malaria Strategic Plan and the National Malaria M&E plan. These indicators are used to monitor and evaluate malaria in pregnancy interventions. The programme targets in malaria in pregnancy are as below.

- To scale up uptake of second dose for IPT from 59% to 90% by 2010.
- To increase net ownership in pregnant women 41% to 90% by 2010.
- To increase net usage in pregnant women from 31% to 80% by 2010

Currently Health Management Information System (HMIS) does not have indicators in malaria in pregnancy. Therefore measurement of MIP achievement is currently through population based surveys.

#### **4.5.7 Service delivery outputs and Outcomes**

The National Malaria Control Programme in collaboration with its key partners has supported the scaling up of malaria in pregnancy interventions to the communities. These interventions on malaria in pregnancy centred on these;

- Training of nurses midwives/clinicians in the management of malaria.
- Procurement and distribution of SP to all health facilities offering Antenatal services
- Distribution of DOT equipment to support SP administration to all health facilities both from government and Cham.
- Conduct efficacy study to determine effectiveness of SP as IPT
- Distribution of gestational wheel calendars& Job aids for nurses midwives

These activities have played an important role in the following;

- Improved awareness on Malaria control, prevention and treatment.
- Empower pregnant women to sleep under LLINs
- Increased demand for information and services on malaria prevention and control
- Increase community Participation and involvement on malaria prevention and control
- Increased number of pregnant women seeking treatment for malaria in health services within 24 hours.
- Increased number of pregnant women using treated mosquito nets

#### **4.5.8 Procurement in Malaria in Pregnancy**

UNICEF is subcontracted by the Ministry of Health to do procurement of SP. Once SP is procured it is sent to Central Medical Stores, who responsible for storage and distribution to various health facilities where there is need. Procurement of other supplies i.e. Cups, buckets, trays is done by MOH partners such MSH with funds from PMI. There are no major issues in commodities stock of SP in most of the facilities.

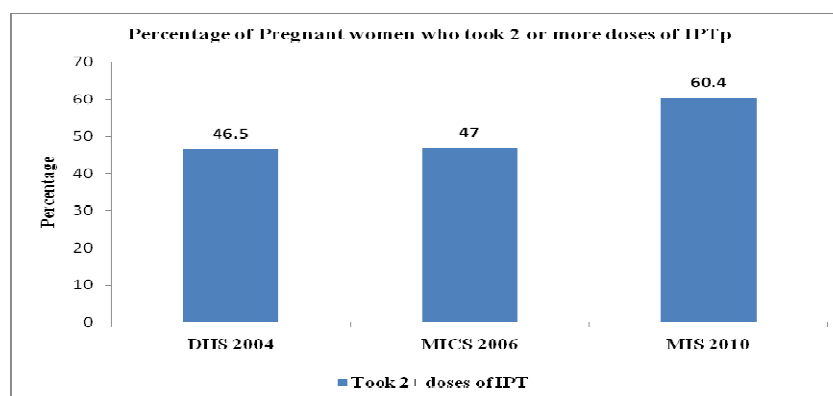
#### 4.5.9 SWOT Analysis

STRENGTHS	WEAKNESS
<ul style="list-style-type: none"> <li>Expansion of DOT for IPTp through provision of equipment such buckets, trays &amp; cups</li> <li>No stock out of SP for IPTp</li> <li>Incorporation of Focused Antenatal Care module into pre-service curriculum in training institutions</li> </ul> <p>Availability of Malaria In Pregnancy technical working group</p>	<ul style="list-style-type: none"> <li>Inadequate number of health workers trained on malaria in pregnancy</li> <li>Lack indicators for routine monitoring of malaria in pregnancy</li> <li>Low uptake of 2<sup>nd</sup> dose of SP, nationally at 60% despite higher ANC attendance</li> <li>Low utilisation of LLINs amongst pregnant women, nationally at 49% despite targeted distribution</li> </ul>
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>There is strong commitment from partners</li> <li>The research currently being conducted to determine effectiveness of SP for IPTp is an opportunity as it will promote evidence based management.</li> </ul> <p>Presence of District Malaria coordinators and Safe motherhood Coordinators who could collaborate in their functions.</p>	<ul style="list-style-type: none"> <li>Over reliance on donors for MIP</li> <li>Late attendance for antenatal care</li> <li>Mixed messages about the use of SP for IPTp against efficacy of SP for treatment of malaria</li> </ul>

#### 4.5.10 Summary of progress and performance

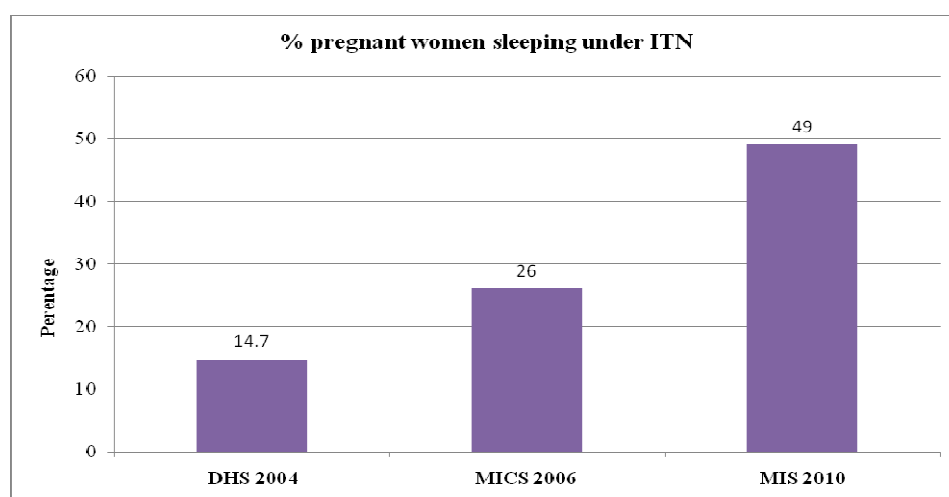
Malaria in pregnancy interventions are part of the focused antenatal care package that has been rolled out in collaboration with the reproductive health unit. It has also been incorporated into the training of the health surveillance assistants. To expand and increase the uptake of SP, the National Malaria Control Programme with support from its key partners JHPIEGO, Access to clinical and community maternal, neonatal and women health services and UNICEF supported all the districts with directly observed therapy equipment for SP. Figure 9 below shows the trend of uptake of second or more doses of IPTp. There is an increase from 46% in 2004 to 60% in 2010. Although this is below the set target however this increase reflects a 30% increase.

**Figure 9: Percentage of women who took two or more IPTp doses**



On use of ITNs by pregnant women, figure 10 below clearly show that there has been a significant increase of over 80% from 26 % in 2006 to 49% in 2010.

**Figure 10: Percentage of pregnant women who slept under an ITN the previous night.**



#### **4.5.11 Summary of key issues and problems**

Despite the progress recorded in Malaria in Pregnancy, it's been noted that there is inadequate knowledge of treatment of malaria episodes in pregnancy as very few health workers have been trained in malaria in pregnancy (about 22%). This results into non adherence to treatment policy as in some health facilities quinine and SP are being used to treat uncomplicated malaria in pregnancy in the second and third trimester. Non adherence to treatment protocol also occurs due unavailability of guidelines and due to the fact that in some facilities pregnant women have to pay for quinine. Finally, even though there has been improvement in the uptake of IPTp from 45% to 60% although it is still below the target of 80%. Similar increase has been noted in the ITN use from 15% in 2004 to 49% in 2010 that way below the target as shown in the strategic plan of 80%.

#### **4.5.12 Summary of suggested solution and action point**

In order to scale up the uptake of IPTp, the following needs to be addressed:

- Strengthen collaboration with reproductive health on scaling up malaria in pregnancy interventions.
- Mobilize more resources for the implementation of MIP activities
- Build capacity of health workers at all levels in MIP
- Review IPTp policy based on findings of the efficacy studies
- Strengthen BCC IEC for MIP interventions

### **4.6 Surveillance, Monitoring and Evaluation**

#### **4.6.1 Introduction**

The goal of the national monitoring and evaluation system for malaria control in Malawi is to provide reliable and regular information on the progress made in preventing and controlling malaria in the entire country.

#### **4.6.2 Policy, guidance and coordination**

The National Malaria Monitoring and Evaluation Plan was developed through a consultative process with various stakeholders and is in line with SWAP Monitoring Evaluation and Research Framework and the National Malaria Strategic Plan 2005-2010. The plan adopted the key regional and international goals and targets such as RBM, MDGs and Abuja declaration. The malaria monitoring and evaluation activities are coordinated by NMCP Malaria M&E working group and the major stakeholders are UNICEF, WHO, JICA, NORWAY, USAID, DFID, SIDA, World Bank, European Union, NGOs, other bilateral agencies, research and training institutions and the private sector.

#### **4.6.3 Human resource training and capacity development**

With support from PMI through MSH the programme now has a Monitoring and Evaluation Officer whose role is to have oversight of the monitoring and evaluation processes of the programme. The MoH will soon designate a substantive Monitoring and Evaluation Officer to work with the PMI recruited officer. At district level there are HMIS and IDSR focal persons. Although there have been efforts to improve the capacity of health workers through World Bank Malaria Booster programme for HMIS and IDSR, NMCP has also contributed in training health workers on Malaria data management through the Global Fund. However, the system still has inadequate capacity for data collection, management and analysis. In addition, the programme conducts joint quarterly monitoring supervisory visits to the districts with other stakeholders in Malaria.

#### **4.6.4 Routine information systems**

The primary health services monitoring system for the Ministry of Health in Malawi is the Health Management Information System (HMIS). The role of HMIS fits within the larger context of health sector monitoring and evaluation efforts under SWAp and EHP in Malawi and consists of seven functional components or sub-systems: Integrated Disease Surveillance and Response (IDSR), Health Information System (HIS), Personal Pension Payroll Management Information System (PPMIS), Integrated Financial Management Information System (IFMIS), Logistics Management Information System (LMIS), Physical Asset Management Information System (PAMIS) and Patient Record Management Information system (PRMIS).

Implementation of the current comprehensive and integrated Malawi Health Management Information System (HMIS) started in January 2002. It collects and reports data on 74 core indicators only two of which are malaria specific indicators. The two indicators are the new outpatient suspected malaria cases and inpatient malaria deaths. The national malaria control programme is advocating for inclusion of more malaria indicators in the HMIS. These are the number of confirmed malaria cases, the number of inpatient malaria cases, and indicators related to commodities and supplies. Data is collected from the community health facilities, districts, and national levels through routine reports, for use in planning and management of health services including the use in monitoring and evaluation of health sector performance in the country. Central Monitoring, Evaluation and Research department (CMERD) synthesises information collected from different sub-systems, prepares and publishes half-yearly and annual reports. Quarterly feedbacks are expected to be provided to the zones, central hospitals and districts during the quarterly zonal review meetings.

The Integrated Disease Surveillance and Response (IDSR) is another source of malaria data and has been implemented in the country since 2002. Its core objective is to improve communicable disease surveillance and response. The specific objectives are to improve case detection, investigation and confirmation of outbreaks, reporting, analysis, epidemic preparedness, response and providing feedback. Therefore IDSR is one of the main collaborators for malaria data collection from the districts for surveillance, detection and response. Quarterly feedback bulletins and weekly reports of epidemics are produced by the central level team and distributed to districts, health facilities and partners as a source of malaria data. Data is normally validated by the district health office before being communicated to the Epidemiological Unit from which the Malaria Programme collects its surveillance information on monthly basis. Since the Disease Surveillance and Response systems are integrated, there is no stand alone surveillance system for malaria. Routine outpatient fever cases, inpatient cases and deaths are all reported through IDSR every month.

One of the major shortfalls of HMIS is that data on other service delivery outputs such as LLINs/ITNs, IRS, commodities stock control and malaria slides tests processed is not reported. This will need to be addressed in the near future as it makes very difficult for the programme to monitor progress at process and output level.

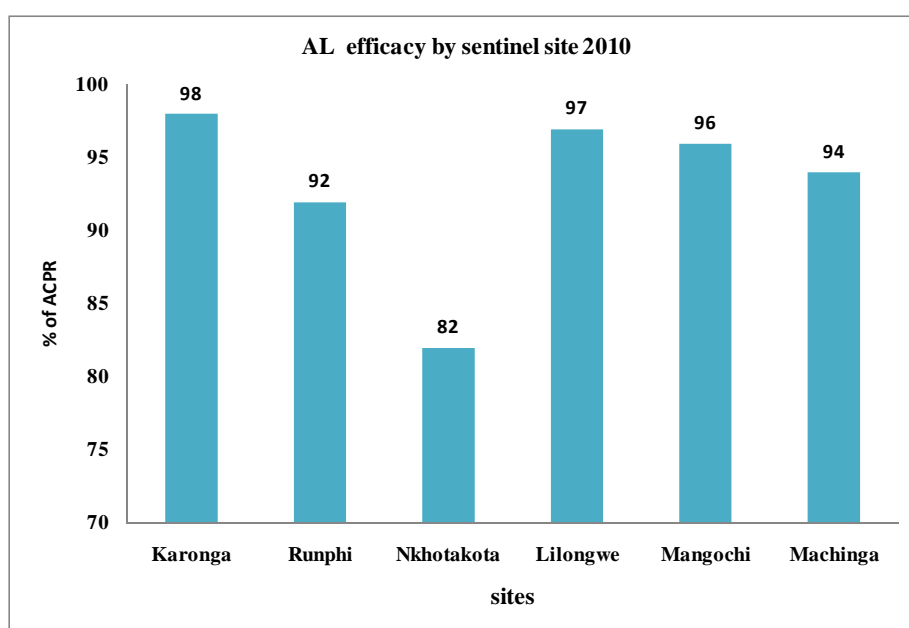
Other challenges with IDSR and HMIS include timeliness in submission of reports and use of data from these systems at lower levels. The other major challenge is lack of capacity for data collection and management at district and health facility level. Posts for key staff have been vacant for a number of years which impacts negatively on both HMIS and IDSR data to effectively inform decision makers

#### **4.6.5 Sentinel Surveillance Systems**

The NMCP has maintained 8 sentinel surveillance sites of which six are used for monitoring drug efficacy, six are used for monitoring vector susceptibility and 4 are used for monitoring malaria intervention coverage.

The sites for monitoring drug efficacy were established in the early eighties and have been maintained throughout the years and these are Karonga and Rumphi in the northern region, Nkhota-kota and Lilongwe in the Central Region and Mangochi and Machinga in the Southern Region. The aim of the established sites is to monitor resistance of malaria parasites to anti-malaria drugs. The studies are conducted at least at an interval of 2 years. Figure 11 below shows the results of the recent study conducted in all six sentinel sites. The efficacy of the first line is above 90% in all sites except one where it is around 82%.

**Figure 11: Percentage of adequate clinical and parasitological response by site.**



The vector susceptibility monitoring sites are Chikwawa and Mangochi in the Southern region, Karonga and Rumphi in the Northern region and Nkhota-kota and Lilongwe in the Central region. The main purpose is to monitor malaria vector susceptibility to commonly used insecticides.

Monitoring expanded malaria intervention coverage has been implemented since 2008, in collaboration with the Malaria Alert Centre (MAC) with funding from PMI in order to document accurately trends in malaria mortality and morbidity rates. The sentinel sites were also meant to be used to monitor and evaluate the impact of malaria programs and intervention coverage. The general aim of the sites is to create a high-quality database capable of informing policy makers about trends in malaria morbidity and mortality. To date four sites are operational and these are Bolero Rural Hospital in Rumphi, Mitundu Community Hospital in Lilongwe, Mwanza District Hospital and Matiki Health Centre in NkhotaKota.

The data elements reported through the system include the number of fever cases and those that were tested for malaria for both under five and over five years. These are reported in the monthly sentinel surveillance reports from each of the four sentinel sites to the NMCP.

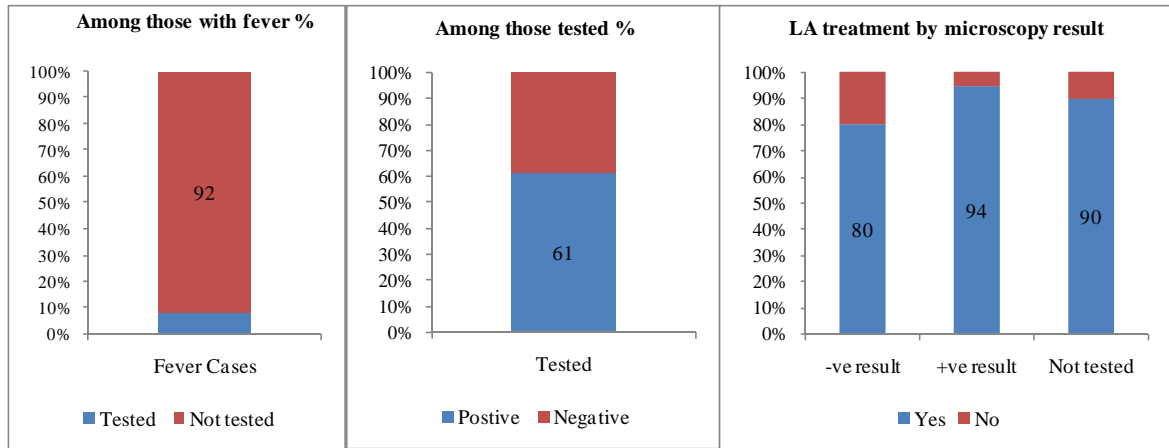
However there are some challenges such as quality of data generated, inadequate supplies as well as funding to sustain the operation of the sites. Some of the challenges faced in the running of the sentinel sites include the fact that not all fever patients are tested for malaria due to low utilisation of malaria diagnostic services and constrained laboratory capacities. In addition, a greater proportion of patients with malaria positive results are not treated according to treatment protocol and clinicians do not adhere to test results resulting in patients with negative test results still getting treated with LA. Lastly against the clear objectives of the sentinel sites to parasitological confirm all patients before commencing treatment, a lot of patients seen in the sentinel sites are treated presumptively as such



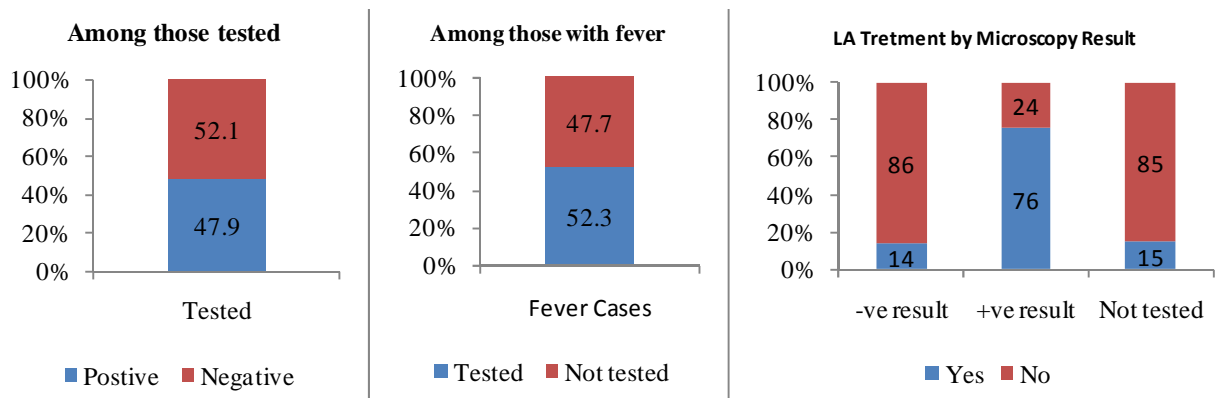
patients that have not been tested for malaria and sometimes even those tested with negative results are given the first line of treatment treated as shown in figure 12 below from three sentinel sites.

**Figure 12: Total number of fever cases, microscopy test results and LA treatment by site 2010.**

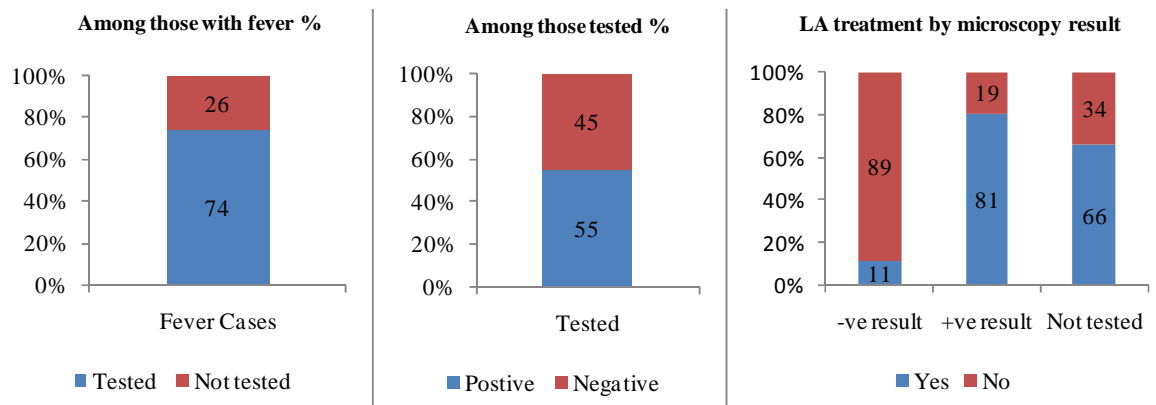
**Mwanza district hospital in Mwanza**



**Matiki Health centre in Nkhotakota district**



**Bolero Health centre in Rumphi district**



#### 4.6.6 Monitoring and Evaluation Plan

The National Malaria control Programme has a Malaria Monitoring and Evaluation Plan (2007-2011) that spells out the key functions and actions of the malaria M&E system in accordance to National Malaria Strategic Plan (2005 -2010). The plan provides the foundation for measuring progress through the identification of goals, objectives and indicators across malaria intervention strategies. The Malaria M&E plan also outlines the available and desired data sources, the strategies for quality control and validation of data and identifies the role of key malaria stakeholders in M & E.

#### 4.6.7 Malaria surveys

The other sources of information on malaria are gathered from periodic surveys such as MICS, DHS and MIS. These are population based surveys and collect information on Anaemia, parasitemia, ITN/LLIN possession and usage, IPTp, and case management. The most recent surveys done are the DHS 200, DHS 2004, MICS 2006 and MIS 2010. The results for key indicators from these surveys have been presented in the appropriate thematic area. Both DHS and MICS are done every five years while MIS is done every two years. Health facility surveys that are conducted on a need basis are a source of information on the quality of services. The results from the most recent MIS which was conducted in 2010 have been presented in appropriate thematic areas in this document. The 2010 MIS was the first of its kind in Malawi and will close the data gap since DHS and MICS are conducted at longer intervals.

#### 4.6.8 Malaria reporting

The reports produced by the programme include monthly surveillance reports from sentinel sites, quarterly supervisory reports, annual malaria programme reports and drug and insecticide resistance surveillance reports.

#### 4.6.9 Malaria database and information system

Currently there is no Malaria database. The only databases that exist are part of HMIS and IDSR. The programme will soon embark on strengthening Malaria data collection and management and intends to use the WHO malaria database.

#### 4.6.10 SWOT Analysis

STRENGTHS	WEAKNESS
<ul style="list-style-type: none"><li>• Availability of several sources of information malaria such as HMIS, IDSR, HIS, (PPPMIS), IFMIS, LMIS, PAMIS and PRMIS.</li></ul>	<ul style="list-style-type: none"><li>• Inadequate capacity for data management and analysis at all levels especially at district and health facilities</li><li>• Non availability of robust monitoring and surveillance system.</li><li>• Posts for key staff have been vacant for a number of years which impacts negatively on both HMIS and IDSR data to effectively inform decision makers.</li><li>• Lack of equipments for data collection</li><li>• Un standardized tools for monitoring</li><li>• Poor record keeping and report writing-From</li></ul>

	zones, Districts and Regional offices to the Ministry of Health Head Offices. <ul style="list-style-type: none"> <li>• Lack of timeliness and completeness of reporting</li> <li>• Few malaria indicators are collected routinely</li> </ul>
<b>OPPORTUNITIES</b>	<b>THREATS</b>
<ul style="list-style-type: none"> <li>• Availability of the WHO database which can be adopted by the program.</li> <li>• Availability of technical support from the M &amp; E working group</li> <li>• Availability of M &amp; E officers within the NMCP seconded by other partners as well deployed from government.</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate sharing of information for timely decision makers.</li> </ul>

#### 4.6.11 Summary of progress

The NMCP has developed an M & E plan 2007-2011. There is a system available that collects data on commodities i.e. LLINs/ITNs delivered. The data is collected by Central Medical Stores, Mulli Brothers and PSI as well as from routine supervision by NMCP staff. Data for malaria cases and deaths is obtained from the Integrated Diseases Surveillance and Response (IDSR) and Health Management Information System (HMIS). IDSR collects data on in-patient malaria cases, suspected and confirmed outpatient malaria cases, malaria cases and deaths in pregnancy and anaemia but not the number tested. HMIS collects data on OPD cases and deaths. Although data are not always complete or timely, they are useful for decision-making if analysed routinely by the NMCP.

Malawi has successfully conducted several surveys that have provided information on trends in coverage and impact. Some of the surveys are MICS 2006 and MIS 2010. The MIS survey has just been completed, see Annex G for results. In 2009 malaria research dissemination conference was held and another one is planned for 2010

#### 4.6.12 Summary of key issues and challenges

There is however inadequate capacity for data collection, analysis and use at different levels. Moreover there is no regular feedback to the lower levels. The collected data is only used by/ at the MoH level and no feedback is given back to either district/health facilities that are the sources. Data from IDSR show that about 10% of malaria cases are confirmed with majority treated presumptively. At the 4 sentinel sites only 25% of malaria cases are confirmed due to inadequate human resources and shortage of reagents and slides

#### 4.6.13 Summary of suggested solution and action points

In order to strengthen surveillance, monitoring and evaluation, the following needs to be taken into account.

- Update the malaria M & E plan as soon as the new malaria strategic plan is done.
- Conduct frequent training for health workers on data management at the district and health facility level
- Need to strengthen the linkage between the NMCP and IDSR/HMIS to ensure timely access to data to guide decision making.
- Need to institute periodic analysis and reporting of data from IDSR/HMIS to guide decision making.

- Strengthen the sentinel sites through provision of more human resources, reagents and slides as well as regular supervision. The data should be used by the NMCP for action.
- The NMCP should strategically engage with the ongoing HMIS review and IDSR to ensure that core malaria indicators are included
- There is a need for more engagement between monitoring and evaluation technical working group and malaria research community to prioritize the research agenda.

## Annex A: References

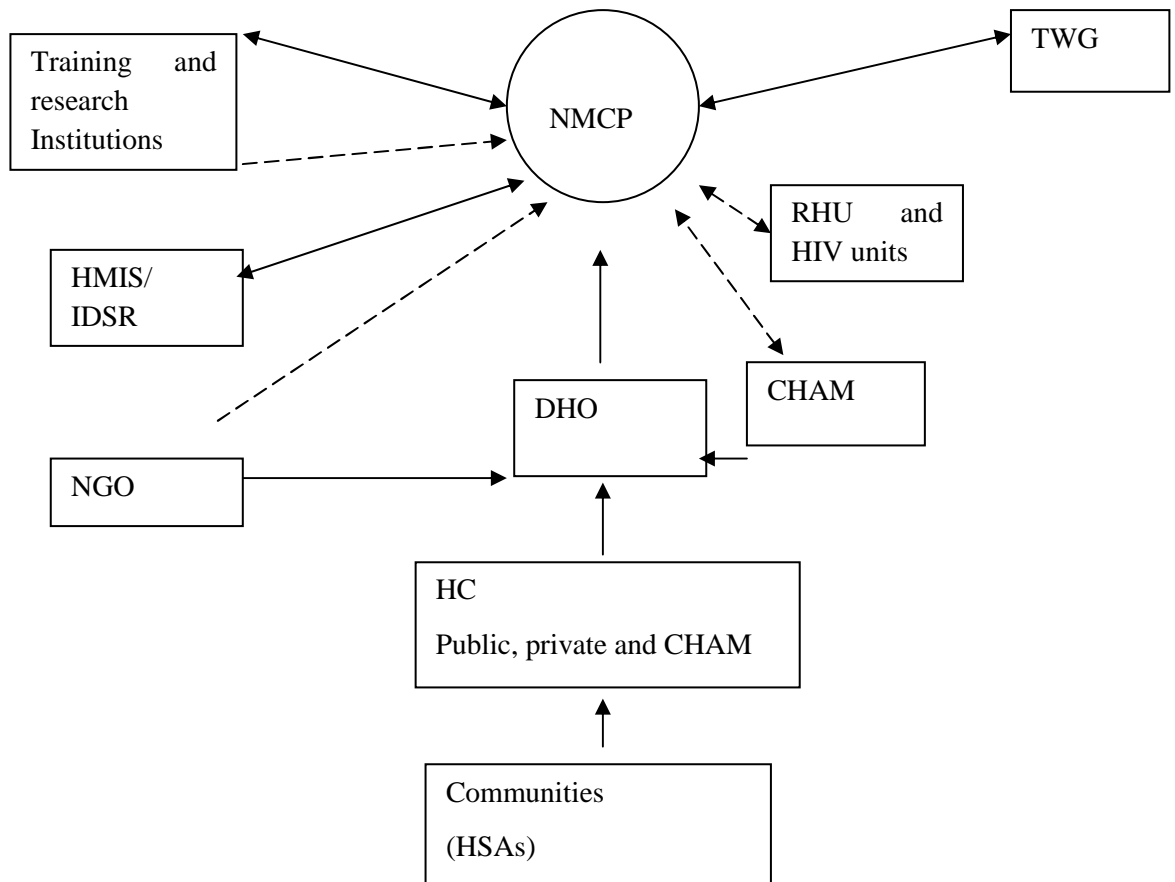
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## Annex B: Districts and places visited during MPR Field Trips

Table 1: Field Sites Visit-update and take it to the annex

Level	Place visited	Team
National level visits	<ul style="list-style-type: none"> <li>• Lilongwe</li> <li>• Government institutions</li> <li>• Implementing partners</li> <li>• Multilateral organizations</li> </ul>	<ul style="list-style-type: none"> <li>• Nathan Bakyaita</li> <li>• Samson Katikiti</li> <li>• Killy Sichinga</li> <li>• Josephine Namboze</li> <li>• Doreen Ali</li> <li>• Wilfred Dodoli</li> <li>• Misheck Luhanga</li> </ul>
Northern Region	<ul style="list-style-type: none"> <li>• Nkhata bay District hospital</li> <li>• Mzuzu Central Hospital</li> <li>• Mzimba District Hospital</li> </ul>	<ul style="list-style-type: none"> <li>• Eva De Carvacho</li> <li>• Dubulao Moyo</li> <li>• Astrida Moyo</li> <li>• Tobias Kumkumbira</li> <li>• Nyirenda</li> </ul>
Central Region	<ul style="list-style-type: none"> <li>• Dedza District Hospital</li> <li>• Lilongwe District Health Office</li> <li>• Nkhota-kota District Hospital</li> </ul>	<ul style="list-style-type: none"> <li>• Boitshoko Seretse</li> <li>• John Chiphwanya</li> <li>• Austin Gumbo</li> <li>• Charles Yuma</li> </ul>
Southern Region	<ul style="list-style-type: none"> <li>• Blantyre District health office</li> <li>• Mangochi District Hospital</li> </ul>	<ul style="list-style-type: none"> <li>• Ritha J. A Njau</li> <li>• Allan Jumbe</li> <li>• John Zoya</li> <li>• John Sande</li> </ul>

## Annex C: NMCP Coordination Structure, Ministry of Health, Malawi



KEY	
SH	Secretary for Health
DP	Development Partner
DPHS	Director Preventive Health service
NMCP	National malaria Control Programme
DHO	District Health Office
HSAs	Health Surveillance Assistants
NGO	Non Governmental Organization
CMS	Central Medical Stores
TWG	Technical Working Group
NMPAC	National Malaria Policy Advisory Committee
ICC	Interagency Coordinating Committee
MoH RU	MoH Health Sciences Research Unit
RH	Reproductive Health Unit
HIV	HIV Unit
----	Liaison / Consultative reporting
-----	Direct Reporting

## Annex D: Status of results on key malaria indicator in Malawi

Intervention area	Target	Actual
Case management	<ul style="list-style-type: none"> <li>90% of the population have access to appropriate antimalarial drug (ACT) within 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>21.9% of children under five have access to anti-malarial drug within 24 hours. (MICS 2006)</li> </ul>
Vector Control	<ul style="list-style-type: none"> <li>90% of households owning at least one ITN/LLIN</li> <li>90% of net usage in under5</li> <li>90% of net use in pregnant women</li> </ul>	<ul style="list-style-type: none"> <li>60% household owning an ITN (MIS 2010)</li> <li>ITN use in under 5 is 56.54% (MIS 2010)</li> <li>ITN use in pregnant women 50% (MIS 2010)</li> </ul>
Control of malaria in pregnancy	<ul style="list-style-type: none"> <li>95% of pregnant women receiving first dose</li> <li>80% of pregnant women receiving second dose</li> </ul>	<ul style="list-style-type: none"> <li>Coverage for 1<sup>st</sup> dose of SP-IPT is 82.7%</li> <li>Coverage for 2<sup>nd</sup> dose of SP-IPT is 60%</li> </ul>

## Annex E: Lists of members of the review team

### Annex E 1: External Review Team

Name(s)	Country/organisation
Ritha J. A Njau	WHO-TZ (Team Leader)
Eva De Carvacho	WHO-MZ
Boitshoko Seretse	Min. Local Govt. Botswana
Samson Katikiti	WHO-IST/ESA
Josephine Namboze	WHO-IST/ESA
Nathan Bakyaita	WHO/AFRO



## Annex E 2: Internal Review Team

<b>Name</b>	<b>Country/organisation</b>
Doreen Ali	NMCP-Programme manager
Wilfrid Dodoli	Malaria Programme Officer, WHO-Mw
John Chiphwanya	Entomologist, NMCP
Charles Yuma	PSI
Austin Gumbo	NMCP
Petros Chirambo	NMCP
John Zoya	NMCP
Andrew Likaka	District Health Officer
John Sande	NMCP
Allan Jumbe	NCMP
Jones Moyenda	MSH/BASICS
M. Lemerani	RHU
Tobias Kumkumbira	HEU
Dabulao Moyo	Malaria Officer, NMCP
Atsrida Moyo	District Malaria Coordinator
Lucy Nyirenda	CMS
Mr. Misheck Luhanga	NMCP
<b>Local Consultants</b>	
Killy Sichinga	Institute of research & statistics for economic growth (IRESE)
Dan Lole	Management Sciences for Health

## Annex F: Lists of individuals interviewed

<b>Name</b>	<b>Designation</b>	<b>Dept./organisation</b>
Mzinganjira	DHO	MoH-Mzimba DHO
S. Nkwate	MC	MoH-Mzimba
S. Kondowe	DNO	MoH-Mzimba
. A. Somalilani	DEHO	Mzimba
H. Sikalamwa	Malaria Coordinator	MoH-Nkhatabay
Grace Malenga	Member; Malaria Technical Working group	Nkhota kota
Kaseha	District Nursing Officer	Nkhatabay
Mkandawire	Administrator	Nkhatabay
Mwamlima	Administrator	Nkhatabay
Elen Matope	ITN Coordinator	Nkhatabay

## Annex G: Lists of stakeholders

<b>Name</b>	<b>Organization</b>
Astrida Moyo	Zonal Malaria Officer North
Katherine Wolf	USAID
Erick Haraman	Min. of Agriculture & Food Security
Delia Mabedi	DHO-Malawi
P. Teleka (SACP)	Malawi Police (HQs)
S.Nyondo	Malawi College of Health Sciences
Juwo Sibale	Environmental Affairs Dept.
Steve Chizimbi	LFA(Global Fund)
Tobias Kunkumbira	HEU (MoH)
Marshal Lewrorani	RHU/MoH
Pius Nakoma	USAID-Malawi
Joby George	Save the Children
William Chiputu	CPAR Malawi
Patrick Tembo	MSH/SPS –Malawi
Grace Nachiola	Zodiak Broadcasting Station
Lucy Nyirenda	PMPB
Tapiwa Mupereki	Sunrise Pharmaceuticals /Mulli Brothers
Regina Mandere	World Vision International
Annie Malunga	Health Net