Republic of Uganda
Ministry of Health

National Malaria Prevention and Control Monitoring and Evaluation Plan
2007-2012

National Malaria Control Program

DRAFT

Table of Contents

List of Abbreviations

ACT	artemisinin-based combination therapy
AIS	AIDS indicator survey
ANC	antenatal clinic
AQ	amodiaquine
AIDS	acquired immunodeficiency syndrome
CBoH	Central Board of Health
CFR	case fatality rate
CSO	Central Statistics Office
CQ	chloroquine
DDT	dichrlorodiphenyltrichloroethane
DfID	United Kingdom Department for International Development
DHS	demographic and health surveys
DSS	demographic surveillance system
EANMAT	East African Network for Monitoring Antimalarial Therapy
EARN	East African RBM Network
EDP	Essential Drugs Programme
EPI	Expanded Programme on Immunization
GFATM	Global Fund to Fight AIDS, TB and Malaria
GIS	geographic information system
HMIS	health management information system
HIV	human immunodeficiency virus
IDSR	Integrated Disease Surveillance and Response
IMCI	Integrated Management of Childhood Illness
IPTi	intermittent preventive treatment in infants
IPTp	intermittent preventive treatment in pregnancy
IRS	indoor residual spraying
ITN	insecticide-treated mosquito net
JICA	Japanese International Cooperation Agency
LLIN	long-lasting ITN
MDG	Millennium Development Goal
M&E	monitoring and evaluation
MARA	Mapping Malaria Risk in Africa
MERG	Monitoring and Evaluation Reference Group
MICS	mulitiple-indicator cluster survey
MIS	malaria information system
MIS-MERG	Malaria Indicator survey from the RBM MERG
MoH	Ministry of Health
NGO	non-governmental organization
NMCC	National Malaria Control Program
NMCP	National Malaria Control Programme
PMTCT	Prevention of mother to child transmission
PRSP	Poverty Reduction Strategy Paper
PSI	Population Services International
RBM	Roll Back Malaria
RH	Reproductive Health
SAMC	Southern Africa Malaria Control
SFH	Society for Family Health/PSI
SP	sulfadoxine-pyrimethamine
SWAp	Sector-wide Approach
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WHO-AFRO	WHO-African Regional Office
WHOPES	WHO Pesiticide Evaluation Scheme

Preface

Acknowledgements
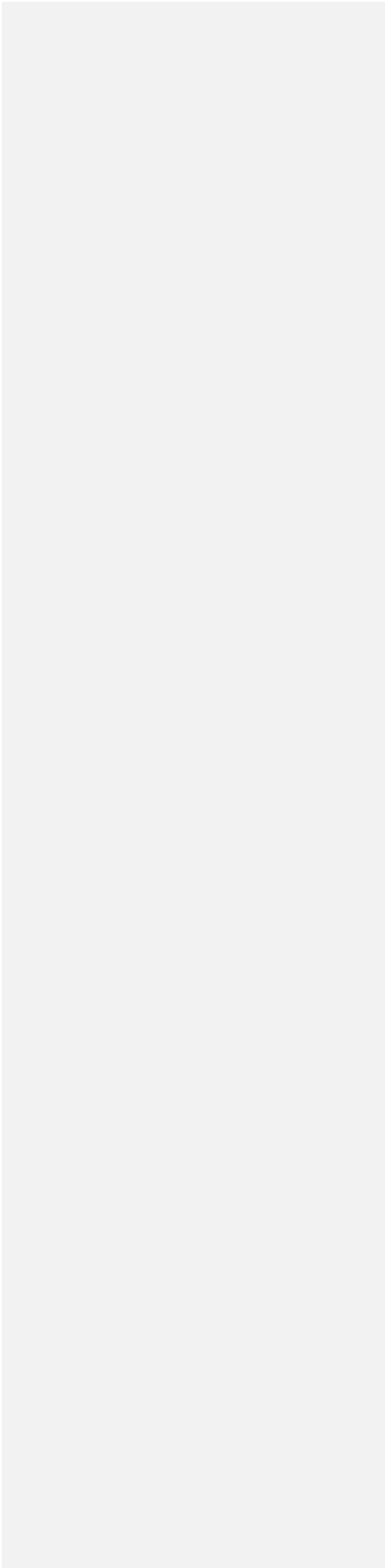
Summary

The National Malaria Prevention and Control Monitoring and Evaluation Plan 2007-2012 of Uganda has been produced in order to assess needed modifications and expansion of malaria monitoring and evaluation (M&E). Further this plan describes an expanded effort to monitor the scale up of interventions and additional evaluation to document the consequences and benefits of the effort.

This Plan provides a detailed review of the following aspects:
- Existing information on malaria epidemiology and malaria risk in Uganda demonstrating that the endemicity of malaria varies throughout the country.
- Existing control strategies
- Goals and targets for malaria control in Uganda
- Data sources that can be used for monitoring of malaria control efforts which currently exist in Uganda
- Recent, current, and planned population-based surveys that are particularly relevant to obtaining evaluation information on the consequences and benefits of enhanced malaria control.
- Opportunities to utilize a spectrum of health facility-based and population-based methods and tools for malaria M&E
- Details on aspects of:
  - Monitoring the inputs, processes, and outputs of the scale-up systems.
  - Evaluating the outcomes and impact of scale-up efforts
  - Operations research to focus on specific detailed examination of scale-up consequences and to explore key challenges in the process of scale-up
- Details specific plans for information collection – all informed by the global consensus from groups like the Roll Back Malaria Monitoring and Evaluation Reference Group (RBM-MERG) and from Uganda opportunities and experiences.
- Identifies example time frames for data collection, analysis and planned reporting.
- Describes capacity strengthening requirements to respond to the expanded needs for M&E in the context of national scale-up.

Strategies for M&E

- Systems will be strengthened and/or developed to collect, process, analyze and manage malaria transmission and disease data

- Programme management capacity assures that all strategic programmes have been implemented as planned to ensure accountability and address problems that have emerged in a timely manner

- Monitoring and evaluation systems are capable to provide feedback to programme implementers, RBM partners and relevant authorities to improve programme planning, management, and accountability.

- The National Malaria Control Program and partners document on a timely basis how the planned strategies and resource allocations have achieved expected outcomes and impacts

1. Introduction

1.1 Background

Sound monitoring and evaluation of Roll Back Malaria (RBM) at country level is critical if the malaria community is to demonstrate progress in achieving outcomes and impact in control efforts. A common, comprehensive and coherent M&E system has several advantages. Importantly, it contributes to more efficient use of data and resources by ensuring that indicators and sampling methodologies are comparable over time and by reducing duplication of effort. Further, such as system encourages coordination and communication between different groups involved in the national response to malaria and helps collaboration among other national disease control efforts, such as with HIV/AIDS and TB   This is imperative as Uganda has received funding from various partners including the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria (GFATM), the President's Malaria Initiative (PMI) and other bilateral sources.

Malaria prevention and control strategies, including vector control utilizing insecticide-treated mosquito nets (ITNs) and indoor residual spraying (IRS), prompt and effective case management, and intermittent preventive treatment in pregnancy (IPTp) will be scaled up nationally in Uganda. Tracking coverage and measuring the impact of this intervention scale up and making effective use of this information for continued planning will require considerable capacity building across the country.

This document identifies the key functions and actions of the Uganda malaria M&E system within the context of general health and disease M&E systems, reviews current issues and opportunities that exist at national, provincial, and district level, and summarizes M&E planning and the necessary capacity to be built to fulfill these functions. This document also lays the foundation for measuring progress through the identification of the goals and objectives across malaria intervention strategies. Further it provides guidance on specific indicators against which progress will be measured. Finally this document outlines reviews the available and desired data sources and identifies the role of key malaria M&E stakeholders that contribute to measuring progress.

1.2 Malaria Epidemiology and Control Strategies in Uganda

In most parts of Uganda, temperature and rainfall are sufficient to allow a stable, year round (perennial) malaria transmission at high levels with relatively little seasonal variability. Malaria ranks as the number one reported disease, causing high morbidity and is highly endemic in 95% of the country, representing approximately 90% of the population of 29.4 million. The remaining 5% consists of seasonal epidemic-prone malaria transmission areas in the highlands of the southwest, midwest, and along the eastern border with Kenya and northeastern border of Sudan, and represents approximately 10% of the population.

Figure 1.2:
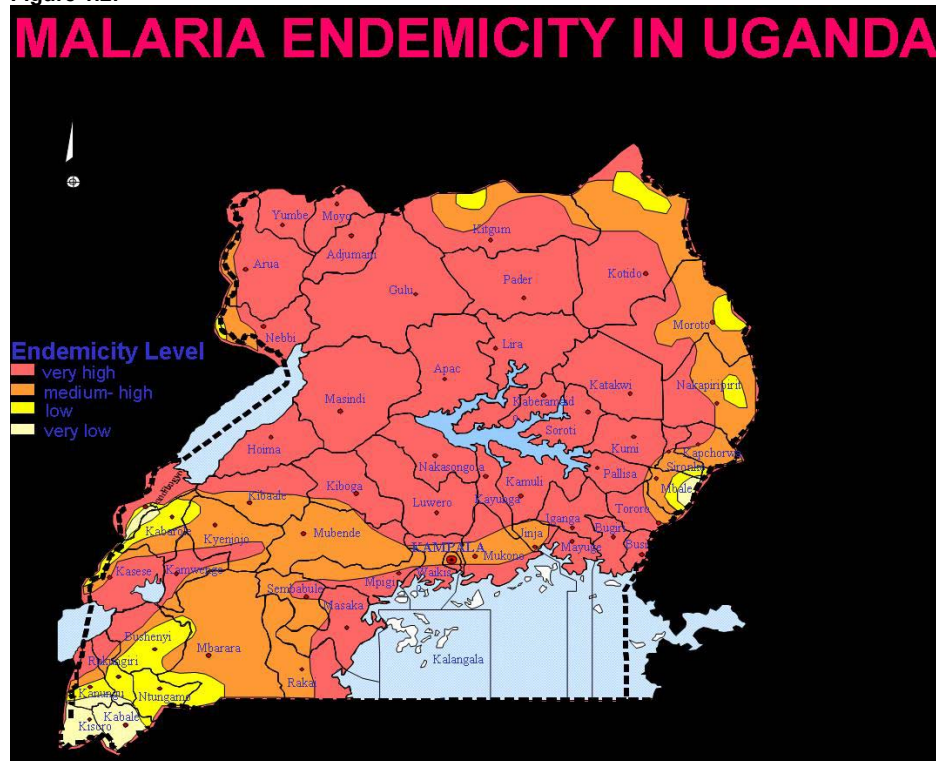
1.2.1 Malaria Epidemiology in Uganda

Malaria Vectors: The most common vectors are *Anopheles gambiae* s.l. and *Anopheles funestus* with *A. gambiae* being the dominant species in most places. Only during the short dry seasons when permanent water bodies often are the most common breeding sites and in higher altitude areas is *A. funestus* found more frequently. The *A.bwambae* sibling species of the *A. gambiae* complex is only found near the Semliki Hot Springs in Bundibugyo District and other species such as *A. pharaoensis* or *A. moucheti* - although identified occasionally - do not seem to play any significant part in malaria transmission

Parasite Species: All four human plasmodia species occur in Uganda but *Plasmodium falciparum* is by far the most common, responsible for 90-98% of all malaria cases. This parasite has shown increasing resistance to both chloroquine and sulfadoxine pyremethamine (SP) when used separately as single therapy and more recently as a combination. Both *P. vivax* and *P.ovale* are rare and do not exceed 1-1.5% of malaria cases.

The subsequent Figures provide the details of climate-based MARA maps and population distribution maps for Ugnada. (may use MARA maps or may use more recent and updated maps as available)

Comment [z1]: Check for more recent data. Possibly Heidi Hopkins study

9

1.2.2 Malaria control interventions in Uganda

The National Malaria Control Strategy 2005/06-2009/10 has recently been finalized. The vision of the NMCP as stated in this strategic plan is that by 2010, malaria will no longer be the major cause of illness and death in Uganda and families will have universal access to malaria prevention as well as treatment. The goal is to control and prevent malaria morbidity and mortality so as to minimize related social ill effects and economic losses attributable to malaria in the country.

Specifically ,the NMCP aims to go to scale nationally achieving rapid and sustainable high coverage levels with the following proven interventions

• Malaria prevention through ITNs with special emphasis on LLINs in highly-endemic areas;
• IRS with focus on low and epidemic-prone areas (prevention of malaria epidemics) and environmental management where this is feasible and effective;
• Universal access to ACT and improved diagnosis as well as severe malaria management;
• Emphasis on treatment and prevention of malaria in pregnancy including IPTp;

In order to achieve sustainable progress intensive information, education and communication (IEC) efforts and social mobilization at all levels and the integration of malaria control into a balanced health system development with emphasis on human resource development is necessary.

1.3 Goal and objectives of a national malaria M&E system

The *goal* of the national monitoring and evaluation system for malaria control in Uganda is to provide reliable information on progress in controlling malaria.

The specific *objectives* of a national monitoring and evaluation system for malaria control in Uganda is as follows:
- To collect, process, analyse and manage malaria data
- To verify whether activities have been implemented as planned to ensure accountability and address problems that have emerged in a timely manner
- To provide feedback to data providers and relevant authorities to improve future planning
- To document periodically whether planned strategies have achieved expected outcomes and impacts

Figure X below shows a basic M&E framework that clearly outlines the inputs, outputs, processes, outcomes and impact. All these should be tracked in a good M&E system.

Figure X   Monitoring & Evaluation Basic Framework
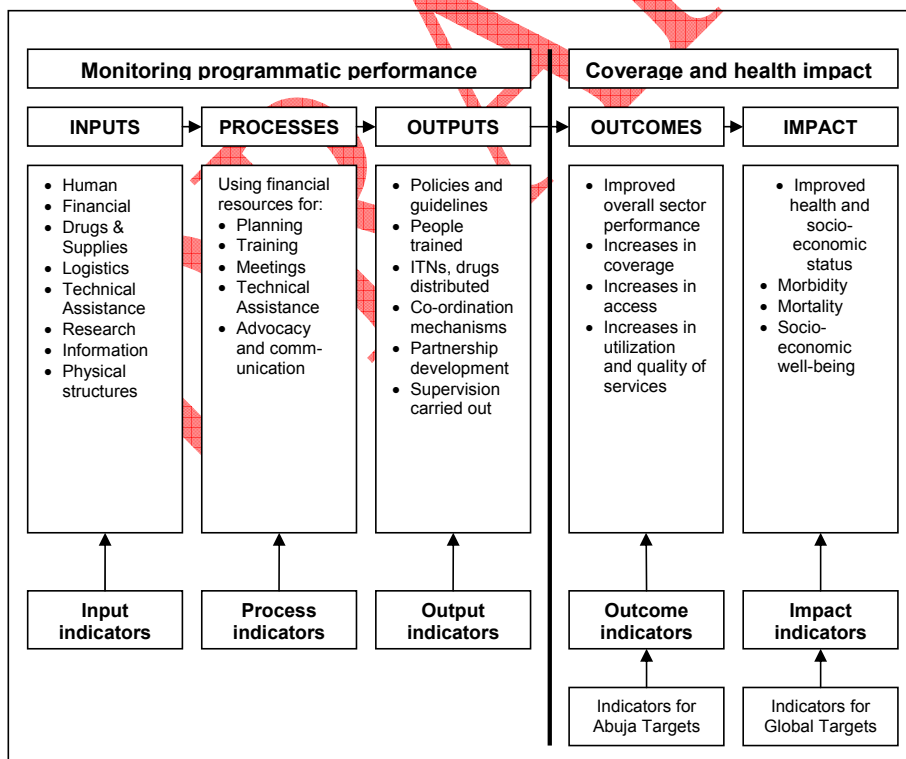
Adopted from basic RBM M&E Framework

It is expected that improved monitoring and evaluation will facilitate documentation in future reports of progress made towards the achievement of Uganda targets and the prospects for reaching the overall RBM goal to halve malaria-associated mortality by 2010 and to have halted by 2015 and begun to reverse the incidence of malaria and other major diseases as specified in the United Nations Millennium Development Goals (MDGs).

In order to facilitate this process, the M&E and Research Desk of the National Malaria Control Program aims to do the following:

- To improve collection, quality and utilization of routine data to monitor the implementation of malaria related interventions through the HMIS and other sources including DSS, sentinel sites and private sector.
- To strengthen links between the research community and RBM partners in order to ensure that on-going research is oriented towards the key operational questions and can provide the necessary evidence to continuously improve interventions for malaria control.

2. National Malaria Prevention and Control M&E Plan
2.1 Overview

Relevant information for monitoring and evaluating progress in national malaria control comes from many sources and stakeholders encompassing governmental, non-governmental, private, and international agencies. Collecting, analyzing, interpreting, and reporting on the strategic information from stakeholders forms a crucial part of national M&E activities. Several efforts to define and standardize relevant indicators exist. Understanding the role of stakeholder agencies in defining, collecting, disseminating and reporting strategic information is important for coordinating national malaria M&E needs. This sections reviews available sources of malaria monitoring and evaluation information and outlines key indicators for measuring progress in disease burden impact, coverage of malaria interventions, and program performance in implementing malaria control.

2.2 Data Sources

To provide a comprehensive account of strategic information for malaria monitoring and evaluation, several sources of data and information are used. These sources include standard reports from the National Malaria Control Program and other government line ministries, routine reporting from national surveillance systems, and periodic household and facility surveys. An overview of these sources and the resulting information flows are presented below.

2.2.1 Routine reporting systems relevant for malaria monitoring

Health Management Information System

The primary clinical services monitoring system for the Ministry of Health in Uganda is the Health Management Information System (HMIS) and is part of the monitoring and evaluation framework for the public health sector .

Malaria information collected as part of the HMIS includes malaria cases and deaths for children less than five years of age and above is reported monthly. However, compilation of data, analysis, and availability of information for decision making is generally quite delayed. Further, malaria cases represent clinical diagnosis which is usually non-specific fever cases. Malaria laboratory confirmation of clinical diagnosis is conducted in health centers 3, health centers 4, and hosptials but reporting through HMIS of laboratory confirmation is not always done. The HMIS does allow for reporting of lab-confirmed malaria cases, however, this information is provided on a separate form.

> **Comment [z2]:** Please confirm the details of the HMIS for this section.

Health facility based surveillance via sentinel sites

Sentinel sites were first established by the Uganda Malaria Surveillance Project (UMSP) and the MOH in 2001 to determine the efficacy and safety of antimalarial drugs in epidemiologically different sites. The number of sentinel sites has now expanded to 10, and they have developed the capacity to monitor and collect high quality data on malaria indicators. The sites are located in seven districts (Kabale, Kanungu, Arua,Tororo, Mubende, Apac, and Jinja). Data is collected on several indicators reflecting malaria morbidity and mortality from outpatient departments, and inpatient wards, including:

> **Comment [z3]:** Please confirm the locations of the sites

• total number of patients seen per month
• number of patients diagnosed with malaria
• number of patients treated for malaria
• number of patients with blood smear or rdt done
• proportion of patients with a malaria positive blood smears

UMSP also collects data on treatment practices of health care workers and prescription of antimalarials. Data will be collected at the hospitals in the districts with sentinel sites to capture inpatient data on morbidity and mortality. In addition, a pilot electronic data management system is established at four of the sentinel sites in Apac district. Data gathered will improve the quality, quantity, and efficiency of data collection, and to further support Uganda's HMIS. If the four pilot sentinel sites are successful with the electronic data management system then all sentinel sites will incorporate this system.

Additional indicators on deaths attributed to malaria, blood transfusions, and administration of IPT are being further considered.

Table X: Sentinel districts for malaria monitoring

Figure X: Sentinel districts used for intensified malaria reporting.

2.2.2 Other data sources relevant for malaria monitoring and evaluation

Population surveys

Population surveys provide useful measures of household-based coverage indicators for gauging progress in scale up efforts on a national, regional or district level.. In 2006, the Demographic and Health Surveys (DHS) was conducted in Uganda which obtained a host of malaria specific indicators; results were released in August 2007. DHS are nationally representative household surveys that focus on reproductive and child health issues. . Because the questionnaires are standardized and structured and change little between surveys, DHS results are comparable between countries and over time. Since 1998 specific questions on malaria prevention and treatment have been included in DHS, where relevant. In 2001 these questions were grouped into a standard malaria module which is to be added to DHS conducted in malarious countries. In addition to providing information on the major outcome indicators, the DHS are a primary source of information on all-cause under-5 mortality rates, obtained by the direct estimation technique , e.g., from birth histories. The recently completed DHS in Uganda (2006), included standardized questions on coverage of key interventions including fever treatment among children under five with antimalarial drugs and possession and use of insecticide-treated nets, as well as all-cause child mortality. Another DHS is planned for 2011.

Roll Back Malaria has developed a standardized Malaria Indicator Survey (MIS) package and guidelines for assessing core global malaria coverage indicators at the household level[1]. The survey package contains standard methods and questions for measuring household level possession and usage of insecticide-treated mosquito nets, treatment of febrile children with antimalarial medicines, and use of intermittent preventive treatment for the

---

[1] The RBM Malaria Indicator Survey Package is available from RBM Monitoring and Evaluation Reference Group (MERG) website http://rbm.who.int/merg.

prevention of malaria during pregnancy. In Uganda, the MIS is planned for the end of 2008 or beginning of 2009.

Table X: Surveys planned or conducted in Uganda relevant for malaria M&E

Type	Source	Scale	Details	Coverage issues included
Planned				
Household	MIS 2008 - 2009	national		Mosquito net/ITN possession and usage, U5 fever treatment with antimalarials, IPT
Completed or Ongoing				
Household	DHS 2006	national		Mosquito net/ITN possession and usage, U5 fever treatment with antimalarials, IPT, all-cause U5 mortality
Facility	SPA Health Facility survey -2008	national		Availability and quality of reproductive and child health care and infectious disease services

Health Facility Surveys

Health facility surveys are useful for determining quality of care delivered by health professionals for outpatient and inpatient or severe case management, stock outs and levels of malaria-related drugs, commodities and laboratory equipment as well as capacity at health facilities for delivering adequate care and diagnosis.

In 2007, the Uganda Service Provision Assessment (SPA) Health Facility Survey was undertaken. This assessment is a nationwide facility-based survey designed to collect information on the availability and quality of reproductive and child health care, infectious disease (malaria TB and HIV/AIDS) services provided to Ugandan men, women and children. It is currently underway in September 2007, sampling 630 public, private and not-for-profit health facilities throughout the country. The sample of facilities will be designed to allow for national and regional conclusions on key indicators. Results of this survey will be disseminated in early 2008.

Other surveys/studies

Pharmacovigalence:

Over the past decade, studies have been conducted to assess the efficacy of various antimalarial drugs in specific populations, particularly among young children. The results from these studies have been used to assess existing and changing policies for antimalarial drug use across the nation, including the recent changes to adopt artemisinin-based combination therapy for acute malaria illness. The pharmacovigilance system in Uganda is not well developed. Based on the WHO model, the National Drug Authority of Uganda (NDA) has designed a generic form to collect passive reporting data on all medicines; however, this system only reports limited numbers of adverse drug reactions. In 2005, the Uganda Malaria Surveillance Project (UMSP) began a pharmacovigilance project focused on antimalarial treatments provided at health facilities and within the community. In order to roll out an improved system, the NDA will require additional training, supervision, and

community sensitization. Also, adverse event reports will need to be collected, analyzed, and acted upon.

Beginning in August 2007, UMSP will pilot a pharmacovigilance system developed with input from the NDA and other stakeholders at the UMSP sentinel site in Jinja. The site will collect data from the community, public and private sector, using enhanced passive reporting of adverse events associated with antimalarial drugs. Health care workers and key community members will be trained on the importance of pharmacovigilance, recognition of adverse events, and methods of reporting. The NDA's form for reporting adverse drug reactions will collect data from the public and private health facilities, and a specialized form will be used to collect information from the community. UMSP will collect and analyze adverse event reports and will report to the NDA and other stakeholders.

Verbal Autopsy Survey and Validation Study

Uganda Bureau of Statistics, with the assistance of partners, conduct a verbal autopsy survey as a follow-on to the 2006 DHS. This survey provided estimates of causes of mortality and malaria-attributable mortality for deaths to children under five years old that were reported for the three years prior to the 2006 DHS. Information was collected on 724 deaths, among which 80 were stillbirths. The final analysis is pending.

Although verbal autopsies (VA) have been advocated as a method of ascertaining cause of death, the sensitivity and specificity of this method likely varies in different epidemiological settings. An evaluation of the VA is being conducted in Uganda to assess its diagnositic accuracy in ascertaining cause of death in children under five in different epidemiological settings.

Electronic database for tracking ITNs

In 2007, the NMCP, in collaboration with PMI and PEPFAR, developed and implemented an electronic database for tracking ITNs that enter Uganda. This collaborative project has developed a composite database tool with various sources of relevant information. The database harmonizes the reporting requirements of the NMCP, Ministry of Health, and also the Health Sector Strategic Plan 2005-2010. The central database itself was designed to be flexible enough to address prospective future needs and is prepared to link with multiple relational databases for HIV/AIDS and other diseases, as well as interventions. The database and its corresponding digital map is an integrated approach to streamline all relevant malaria-related activities within the country to conform to standard indicators, monitor ITN partner activities, and coordinate future ITN distributions to fill coverage gaps in specific sub-counties.

2.3 Goals, Objectives, and Indicators for Malaria Prevention and Control

Describe and update as relevant. Developing adequate and appropriate goals and objectives for achieving results in national malaria control efforts in Uganda is the first step toward measurable indicators and results. Since the launch of Roll Back Malaria in 1998, Uganda has moved to adopt several key regional and international goals and targets including the overall RBM Goals, the Millennium Development Goals, and the Africa-specific Abuja Summit Declaration. These call for the reduction of malaria morbidity and mortality through the scaling up of key malaria interventions to at least 60% of at risk populations. In 2006, Uganda was one of the first three countries selected for inclusion in the President's Malaria Initiative (PMI). The goals of PMI include increasing malaria interventions coverage targets to 85% of affected population

Following these various efforts, the goals of the 5 year Health Sector Strategic Plan II Uganda 2005/06-2009/10 (MOH) are :
1. Increase the proportion of pregnant women who have completed IPTp2 from 34% to 80%
2. Increase the proportion of households having at least one ITN from 15% to 70%
3. Increase the proportion of targeted structures for IRS in epidemic areas from 0 to 80%
4. Increase the proportion of children under five getting correct treatment within 24 hours of onset of symptoms from 25% to 80%
5. Reduce the case fatality rater among malaria in-patients under fiver from 4% to 2%
6. Reduce malaria incidence by X% and deaths due to malaria will be significantly reduced by the end of 2010;
7. Reduce all cause mortality by Y% in children under five; and

These goals will be obtained through a unified approach to strengthening the rapid scale up of malaria interventions that target reducing the malaria disease burden……

In order to measure progress toward achieving these goals and objectives, appropriate indicators for measuring progress are needed. The following sections review the relevant indicators and measures of impact, outcomes, and program performance that will be used for monitoring and evaluation of local, national, regional and international goals and targets.

Comment [z6]: I couldn't find the specific information regarding these goals. Please include if available

Structure	Objectively verifiable indicators	Means of verification	Assumptions	
Goal				
To control and prevent malaria morbidity and mortality, minimize social effects and economic losses attributable to malaria in the country	Infant Mortality Rate Under Five Mortality Rate	Population Surveys	Political support & Donor Community commitment is maintained	
Overall Objectives				
To go to national scale with a package of effective and appropriate interventions to promote positive behaviour change and to prevent and treat malaria	Proportion of children under 5 having slept under an ITN the previous night	National and local household surveys		
To rapidly achieve and sustain high coverage levels for this intervention package				
Specific Objectives				
Prevention				
Objective 1: To rapidly go to national scale with insecticide treated nets in areas of moderate to very high malaria transmission using a mix of distribution mechanisms and to sustain high coverage rate with a continuous "replacement" distribution	Proportion of households with at least 1 ITN	National and local household surveys	Donor support and commitment maintained	
Objective 2: To increase the proportion of LLIN among all mosquito nets to a level that makes further re-treatment campaigns unnecessary.	Proportion of LLIN among all distributed and sold nets	Commercial sector data, output from public sector and CS	Commercial sector Participation accelerated	
Objective 3: Establish and sustain a system of at least annual, high quality IRS services that cover at least 85% of all targeted structures, in areas of unstable transmission, whilst piloting in stable malaria transmission areas and scaling up where feasible.	Number of households sprayed Proportion of districts sprayed	Implementation reports	Community acceptance of IRS programs	
Objective 4: Complement ITN and IRS with selective environmental management where a significant proportion of breeding sites can be identified and targeted and where measures can be sustained.	Number of settings identified for environmental management	Implementation reports		
Case Management				

Structure	Objectively verifiable indicators	Means of verification	Assumptions
Objective 5: Ensure access by all to Artemisinin-based combination therapy (ACT) including those accessing treatment through the commercial sector	Proportion of patients using ACT for malaria treatment (by sector)	Household surveys	Accelerated Policy of ACTs implementation at community level
Objective 6: Enhance the prompt treatment of children under 5 within 24 hours of fever onset through the provision of home-based management of malaria fever using ACT	Proportion of U5 with adequate treatment within 24/48 hours	Household surveys	
Objective 7: Reduce case fatality of severe malaria by establishing a system to provide highly effective pre-referral treatment (e.g. rectal Artesunate) and improve the management capacity for severe malaria at health facilities and hospitals	Case fatality rate of malaria patients by age group	HMIS records	
Objective 8: Increase the proportion of malaria cases confirmed by high quality clinical and parasitological diagnosis guided by feasibility and cost-effectiveness	Proportion of clinically suspected malaria confirmed by microscopy or RDT	HMIS records	Results from Pilot studies on RDTs
Malaria in Pregnancy			
Objective 9: Increase coverage with at least two doses of intermittent preventive treatment (IPT) among pregnant women attending public as well as private sector health services as part of a comprehensive reproductive health package implemented during focused ANC services	Proportion of pregnant women attending ANC services (new visits) receiving 2 doses of IPT	HMIS records	
Objective 10: Emphasize the prevention of malaria with ITNs among pregnant women by including distribution mechanisms suitable for this target group and promote the regular and correct use of the nets	Proportion of pregnant women having slept under an ITN the previous night	Household surveys	
Malaria Epidemics			

Comment [z7]: If this table will be included (it is from Myers' plan) it will be helpful to be more specific about the specific indicators (including numerator and denominator) and how to achieve the objectives.

Structure	Objectively verifiable indicators	Means of verification	Assumptions
Objective 11: Prevent epidemics of malaria in areas of very low and/or unstable malaria through regular application of IRS and strengthen the system of early detection and prompt response in those epidemic prone areas where IRS is not yet established	Proportion of reported outbreaks of fever in epidemic prone areas that are investigated and responded to within 5 working days	District records and reports	Increased malaria surveillance sites
IEC & Social Mobilization			
Objective 12: Raise the profile of and demand for malaria control interventions through targeted, well designed communication campaigns and activities with special emphasis on the biologically and economically vulnerable	Proportion of households with adequate knowledge on malaria control interventions (by SES)	Household surveys	
Objective 13: Support active community participation in malaria control activities	Number of community initiatives	Best practices documentation	
Health System			
Objective 14: Strengthen the leadership role of the NMCP to promote partnership and coordination for malaria control at all levels of the health system	Proportion of planned Inter-agency Coordination Committee for Malaria (ICCM) that have taken place	Minutes of meetings and quarterly reports	Increased stakeholders' recognition of the 3 ones (Planning, coordination, implementation
Objective 15: Contribute to the strengthening of a decentralised health system that can deliver quality services and effectively manage supplies through the NMCP and malaria zonal coordinators.	Health League Table scores by district	HMIS and local government records	Increased funding from government & donors
Objective 16: Strengthen capacity of district malaria focal persons and zonal coordinators to promote and coordinate malaria control activities at district, health sub-district, sub county and community levels .	Proportion of functional zonal coordinators and active district coordinators	Supervision records	

Comment [z7]: If this table will be included (it is from Myers' plan) it will be helpful to be more specific about the specific indicators (including numerator and denominator) and how to achieve the objectives.

Structure	Objectively verifiable indicators	Means of verification	Assumptions
Objective 17: Strengthen capacity of regulatory bodies such as National Drug Authority and the National Bureau of Standards to monitor the quality of malaria medicines, ITN and insecticides used for malaria control	Number and proportion of quality tests undertaken	Annual reports of agencies	Increased funding from government & donors
M&E and Research			
Objective 18: Improve collection, quality and utilization of routine data to monitor the implementation of malaria related interventions through the Health Management Information System and other sources including Demographic Surveillance Sites (DSS), sentinel sites and the private sector	Completeness of HMIS records	Resource Centre MOH reports	Increased funding from government & donors
Objective 19: Strengthen links between the research community and RBM partners in order to ensure that ongoing research is oriented towards the key operational questions and can provide the necessary evidence to continuously improve interventions for malaria control	Number of coordination meetings between programme and research community	Minutes of meetings	Increased funding from government & donors

Comment [z7]: If this table will be included (it is from Myers' plan) it will be helpful to be more specific about the specific indicators (including numerator and denominator) and how to achieve the objectives.

2.3.1 Impact measures

Measuring impact of malaria interventions determines the extent to which malaria or its associated disease burden changed as a result of implementing and scaling up recommended interventions and control efforts. All established goals developed for malaria control efforts in Uganda are based on reducing malaria morbidity and mortality. Measuring malaria morbidity and mortality and overall impact of malaria control interventions are complex due to inherent weaknesses in routine reporting systems, access to antimalarial treatment, treatment seeking behaviours, as well as vector-parasite-host dynamics of malaria transmission. This is further complicated by the use multiple interventions simultaneously and problems associated with deciphering the effect single and multiple interventions over time and geographic distribution.

Roll Back Malaria, through the Monitoring and Evaluation Reference Group (MERG), has developed as series of recommendations to assist countries, especially those in stable, highly endemic malaria transmission settings, such as Uganda, in prioritizing measures of malaria impact. For areas of high stable malaria transmission and where the burden of malaria deaths is seen in children and where malaria deaths are thought to account for a large percentage of all-cause child deaths, the RBM MERG recommended the use of all-cause child mortality for measuring impact of the malaria interventions. Standard methods for assessing all-cause child mortality are found with national household surveys, such as DHS and MICS, which rely on complete birth histories and well established estimation methods for determining child deaths (UNICEF 2005). These surveys provide reliable measures of child deaths for determining impact (Korenromp, Arnold et al. 2004).

Additional measures which are currently being used to understand impact of interventions on malaria include estimated malaria incidence, malaria-related mortality, and malaria-related anemia (Korenromp and for the RBM MERG Task Force on malaria morbidity 2005), (Rowe, Rowe et al. 2005), (Korenromp, Armstrong-Schellenberg et al. 2004). Change in malaria parasite prevalence is another useful measure impact for interventions targeting reductions in malaria transmission.

At the national level, surveys such as DHS useful for measuring changes in all-cause child mortality and coverage of interventions, but are not designed to reliable evaluate changes in disease- or malaria-specific morbidity or mortality. For impact, several factors are useful to consider when measuring the impact of control measures on changes in malaria disease burden. Many of these issues have been outlined in detail by the RBM Monitoring and Evaluation Reference Group (MERG).

Factors to consider in measuring malaria impact

Measure	Source	Description
All-cause, child mortality	Representative household surveys such as DHS or MICS	Retrospective, ideally measured every 5 years, to be integrated

		alongside trends in intervention coverage
Malaria morbidity including clinical incidence	Estimation methods, sentinel sites such as DSS, special studies, malaria reported from health information system and malaria information system	
Malaria mortality	Sentinel sites, DSS, special studies	
Malaria anaemia in children <5 years of age	Representative household surveys such as DHS or Malaria Indicator Survey	Cross-sectional, ideally measured every 2 years with impact detectable within 1-2 years, haemoglobin below 11 g/dl or 8 g/dl
Malaria parasite prevalence in children <5 years	Representative household surveys such as DHS or Malaria Indicator Survey	Cross-sectional, ideally measured every 2 years with impact detectable within 1-2 years, survey to be conducted during the transmission season

Many malaria control programs tend to rely heavily on routinely reported malaria cases and deaths from HMIS or other reporting systems for monitoring disease events. While reported malaria cases and deaths are often easily accessible through HMIS, information is often unreliable because of incomplete and untimely reporting. Further, treatment seeking behaviour among those with fever or malaria and especially caregivers of children with fever or malaria varies greatly with many children with signs of malaria never reaching a facility for care and treatment (Baume, Helitzer et al. 2000). Strategies such as home management of malaria present further obstacles to the use of HMIS data as reliable information on trends disease or in evaluating impact of malaria interventions.

Improvements in the quality and reliability of HMIS information are needed in order to improve their use in assessing impact of malaria. However, HMIS is useful in other ways. At the local level such as within districts or health facilities, where a better understanding of the reporting completeness can be determined, understanding trends in presentation of fever cases may be useful for planning of antimalarial drug supplies and malaria laboratory and diagnostic supplies.

2.3.2 Outcome measures

Outcomes are the result of successful program and project implementation efforts to deliver interventions to those who need them. Outcome measures generally refer to population-level coverage of interventions. At the population level, outcomes measures are useful for relating implementation efforts to changes in disease burden and health impact. Outcomes measures, because they are population based and most often directly related to reductions in disease burden, are often developed as strategic objectives to obtain overall goals.

Roll Back Malaria has defined five core population level indicators to be used for measuring coverage of possession and use of ITNs, access to prompt antimalarial treatment among children under age five with fever and use of IPT among pregnant women. These indicators are designed to measure population level changes in the core RBM interventions that can be used to determine impact of scaling up malaria control efforts. Malaria monitoring and evaluation efforts in Country X use these five core outcome measures as the basis of gauging successful scale-up efforts.

Table X: Core coverage indicators for malaria interventions

RBM Technical Strategies	Indicator of Population Coverage
Insecticide-treated nets (ITNs)	1. Proportion of households with at least one ITN. 2. Proportion of children under 5 years old who slept under an ITN the previous night.
Prompt access to effective treatment	3. Proportion of children under 5 years old with fever in last 2 weeks who received antimalarial treatment according to national policy within 24 hours from onset of fever.
Prevention and control of malaria in pregnancy	4. Proportion of pregnant women who slept under an ITN the previous night. 5. Proportion of women who received intermittent preventive treatment for malaria during their last pregnancy.

In addition to these five core RBM indicators, the national M&E strategy includes X additional outcome indicators, X of which are also assessed from representative household surveys. These will provide an indication of progress on BCC and community level information, communication and education initiatives undertaken by stakeholder agencies. Others are best assessed through facility based surveys.

Ensuring quality methods for measuring population level indicators is essential for extrapolating scale-up efforts to coverage in the general population or those at risk. For its five core outcome indicators, RBM recommends population-based household surveys to obtain valid and reliable results. Working with the Uganda Bureau of Statistics (UBOS), Ugnada RBM partners conducting household

surveys can improve the quality of survey results by linking existing household listings and enumeration areas with targeted sampling frames for population-based results.

2.3.3 Input, Process, and Output measures

Monitoring and evaluating inputs, processes and outputs are important for improving program and project-level performance, ensuring adequate financial resources and creating the appropriate policy environment in which implementation efforts can successfully operate. For a program or project to achieve its goals, inputs such as money and staff time must result in outputs, such as stocks and delivery systems for drugs and other essential commodities, new or improved services, trained staff, information materials etc. These outputs are often the result of specific processes, such as training sessions for staff that should be included as key activities aimed at achieving the outputs.

Monitoring outputs is crucial for determining the levels of service delivery that are achieved during implementation efforts. Further with increasing demands on reporting to donors and stakeholder agencies, monitoring services delivered to populations provides more timely information than less frequent assessments of, for example, household survey-based intervention coverage indicators. With multiple partners contributing to malaria control efforts in Country X, understanding programmatic outputs allows greater coordination of service delivery and for comparison of each partner's relative contribution to population-level outcomes and intervention coverage.

In Uganda, monitoring the district-level implementation of select interventions is important for understanding progress of national scale up in all 81 districts. At the district level, the following indicators will be used monitor progress in district scale up:

Number of districts using IRS
Number of districts receiving BCC materials

Table X provides an overview of the IMPACT, OUTCOME and OUTPUT indicators discussed above (redo relevant to the country). These indicators are the basis of monitoring and evaluation efforts for scaling up malaria control interventions in Uganda. These indicators will be measured through the sources of information described in the previous section and will be reported on for gauging progress across implementation and scale up efforts. The definition of each of these indicators, and the source from which these indicators will come from is listed in Appendix X.

Comment [z9]: I used these as examples but please include as relevant to Uganda.

Comment [z10]: Please include as relevant to Uganda.

Table X: Indicators for monitoring and evaluating malaria control in Uganda

Impact
All-cause, under 5 mortality rate
Malaria (clinical) incidence rate
Percentage of children aged 6-59 months with anemia
Malaria parasite prevalence

Outcomes
Malaria prevention
Percentage of households with at least one ITN
Percentage of children under 5 years of age who slept under an ITN the previous night
Percentage of targeted structures sprayed
Percentage of pregnant women who receive appropriate IPT according to national policy
Percentage of pregnant women who slept under an ITN the previous night
Malaria treatment
Case fatality rate
Percentage of health facilities with diagnostic equipment to provide confirmation of clinical malaria
Percentage of clinical malaria cases with laboratory diagnosis
Percentage of children under 5 years of age with fever in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of onset of fever
Percentage of health care providers correctly diagnosing and treating malaria
Supportive Environment
Percentage of mothers/caregivers with appropriate malaria knowledge
Percentage of mothers/caregivers of children under five with appropriate recognition of signs and symptoms of malaria
Percentage of mothers/caregivers with appropriate health-care seeking behavior

Outputs
Malaria prevention
Number of insecticide-treated nets sold or distributed
Number of nets retreated
Number of structures sprayed during indoor residual spraying activities
Volume of insecticide used for malaria prevention (according to WHO protocol)
Number of sentinel sites established for monitoring insecticide resistance
Malaria treatment
Number of malaria cases treated
Number of health facilities with diagnostic equipment to provide confirmation of clinical malaria
Number of malaria microscopy slides taken
Number of malaria Rapid Diagnostic Tests (RDTs) taken

Number of health facilities with no reported stockouts of antimalarial drugs (15 days or one week?)

Number of studies of drug efficacy completed according to WHO protocol

Supportive Environment

Number of IEC/BCC materials produced

Number of districts receiving BCC materials

Process

Malaria prevention

Number of districts trained in IVM

Number of districts implementing IRS

Number trained in IRS

Number trained in net retreatment

Number of sentinel sites established for monitoring insecticide resistance

Malaria treatment

Number of antimalarial drugs distributed to health facilities for treatment of malaria

Number of health care workers trained in malaria treatment and diagnosis

Number of community health workers trained in malaria treatment and diagnosis

Number of Rapid Diagnostic Tests (RDTs) distributed

Number of first-line antimalarial drugs distributed in health facilities for treatment of malaria

Number of health care providers trained in malaria diagnosis and treatment

Number of sentinel sites established for monitoring antimalarial drug resistance

Supportive Environment

Number trained in IEC/BCC

2.4 Time frame for M&E Measurements

Ensuring timely and appropriate frequency of measurement and reporting for malaria monitoring and evaluation goals, objectives and indicators is important for demonstrating progress and providing feedback to stakeholders and donors. The frequency of measurement will depend on the place of the indicators within the M&E conceptual framework – taking into account a reasonable time frame for an expected change and program capacity for M&E.

In general, measurement and availability of information for evaluating disease or health impact can take several years to deduce. Further measures of impact such as estimated malaria incidence often require multiple data sources that vary in frequency of collection and time span. In addition, while routine HMIS data may provide frequent measures of health facility attendance for malaria cases, evaluating the timeliness and completeness of reporting may require longer.

Type of indicator	Recommended frequency of measurement
Input	Continuously
Process	Quarterly, semi-annually, or annually
Output	Quarterly, semi-annually, or annually
Outcome	1 to 3 years
Impact	2 to 5 years

2.5 Information Products

To be successful, the national malaria M&E system in Uganda must produce periodic timely reports of the status and progress in malaria control in the country. These reports will include:
- Baseline Report for 2006
- Annual Malaria Prevention and Control Reports
- GFATM-required quarterly reports
- RBM/WHO Regional and Global Reports
- Other donor required reports (World Bank, PMI, etc.)

In addition to these periodic information products, the NMCP will also respond to specific and ad hoc information needs of its stakeholders.

3. Capacity Building in M&E

The NMCP recognizes existing gaps in M&E skills and infrastructure and will facilitate the development and strengthening of existing M&E systems to support the realization of the M&E plan. The strategy will include institutional capacity building, strengthening of existing structures and systems, building linkages between ongoing systems, and development of procedures and guidelines for implementation. Measures to assure the long-term sustainability of a good malaria control M&E system will include technical guidance, close supervision, periodic and continued capacity building through on-site mentoring and coaching.

3.1 Staffing and Competencies
A first step to assuring good malaria control M&E systems will be to examine staffing needs and needed staff competencies. The NMCC/NMCP will examine the full set of M&E tasks to be done, identify personnel terms of reference for the sets of tasks, examine existing staff capacity and establish a plan for strengthening current staff capacities and identifying additional competent staff to fill needed positions.

3.2 Infrastructure, Tools and Technologies
The NMCP will assess its current infrastructure and identify gaps and needs for a fully operational M&E unit to undertake the necessary primary or secondary collection, management, analysis and dissemination of information.

References

Baume, C., D. Helitzer, et al. (2000). "Patterns of care for childhood malaria in Country X." Soc Sci Med **51**(10): 1491-503.

Korenromp, E. L., J. R. Armstrong-Schellenberg, et al. (2004). "Impact of malaria control on childhood anaemia in Africa - a quantitative review." Trop Med Int Health **9**(10): 1050-65.

Korenromp, E. L., F. Arnold, et al. (2004). "Monitoring trends in under-five mortality rates through national birth history surveys." Int J Epid **33**(6): 1293-301.

Korenromp, E. L. and for the RBM MERG Task Force on malaria morbidity (2005). Malaria incidence estimates at country level - proposed estimates and draft report. Geneva, World Health Organization, Roll Back Malaria.

Kusanthan, T., Sachingongu, N. (2001). Malaria prevention and insecticide treated net survey - 2001. Lusaka, Society for Family Health.

Millennium Assembly of the United Nations (2000). Millennium Development Goals. **2003**.

Ministry of Health Country X (2005). A 5-year Strategic Plan. A road map for RBM impact in Country X 2006-2010; Rapid scale up for malaria control interventions for impact in Country X. Lusaka, National Malaria Control Centre, RBM Task Force.

Ministry of Health Country X, W. (2005). Service Availability Mapping (SAM) 2004 (Draft Report). Geneva, Ministry of Health Country X, WHO.

Nabarro, D. and E. Taylor (1998). "The 'Roll Back Malaria' campaign." Science **280**: 2067-2068.

NetMark (2001). Netmark baseline survey on insecticide-treated materials (ITMs): cross-national summary of findings., NetMark, a regional partnership for sustainable malaria prevention**:** http://www.netmarkafrica.org/research/quantitative/CrossCountryQuan2001.pdf.

Phiri, F., Tien, M. (2004). Country X National Health Accounts 2002: Main Findings. Bethesda, Maryland, Country X Ministry of Health, Abt Associates, Partners for Health Reform Plus.

Roll Back Malaria (2000). The African summit on Roll Back Malaria. Abuja, World Health Organization.

Roll Back Malaria Country X (2001). Baseline study undertaken in ten (10) sentinel districts: July to August, 2001. Lusaka, Roll Back Malaria Country X.

Rowe, A. K., S. Y. Rowe, et al. (2005). "The burden of malaria mortality among African children in the year 2000." submitted (January 2005).

UNICEF (2005). State of the World's Children 2005. New York, UNICEF.

UNICEF, C. S. O. (2000). Multiple Indicator Cluster Survey in Country X, 1999. Lusaka, New York, UNICEF, Central Statistical Office.

World Health Assembly (2005). Malaria control resolution, Eighth plenary meeting. **WHA58.2**.

Formatted: English (U.S.)

31

.

DRAFT

Appendix 1 Key findings of 2006 DHS (baseline) or midterm evaluation as appropriate

Appendix 2 Logical framework, indicators, baselines, targets, data sources

The National Malaria Strategic Plan outlines a series of goals, objectives and indicators that will merit monitoring and evaluating. These are summarized below and include the indicators and expected outputs of the Nation-wide Scale-up for Impact effort.

The Goals

1. As a result of implementation of the Health Sector Strategic Plan II Uganda 2005/06-2009/10 (MOH), there will be a reduction of malaria incidence by % and deaths due to malaria will be significantly reduced by the end of 2011.

2. Through the attainment of a % reduction, malaria control will ultimately contribute to the reduction of all cause mortality by % in children under five.

3. Malaria control will not only improve the main health prognostic indicators, but also provide economic payoffs at household and national levels.

> **Comment [z14]:** Please specify- I couldn't find this information

Objective—ITNs

Increase the proportion of households having at least one ITN from 15% to 70%

Outputs

> **Comment [z15]:** Please make these outputs specific to Uganda

- # of new ITNs distributed to households

- # of nets retreated

- # of nets replaced

Objective—IRS

Increase the proportion of targeted structures for IRS in epidemic areas from 0 to 80%

Outputs

- Number of targeted households sprayed.

- Quality assurance scheme

- Environmental safeguards in place.

Objective—Prevention in pregnancy

Increase the proportion of pregnant women who have completed IPTp2 from 34% to 80%

Outputs

- # of FANC points functional

Objective—Diagnosis

Outputs

- All health facilities are providing diagnosis either through RDTS or microscopy

Objective—Prompt and Effective Case Management

Increase the proportion of children under five getting correct treatment within 24 hours of onset of symptoms from 25% to 80%

35

.

Outputs

- Service points providing ACTS according to Malaria Treatment Policy

Objective—Information, Education, and Communication for Behaviour Change:

Outputs

- A formal structure is developed to engage partners in planning, design, development, dissemination and evaluation of effective IEC/BCC plans.

- An annual national multi-media malaria information, education and outreach campaign is conducted—first in 2006 and maintained thereafter..

- A package of evidence-based intervention specific malaria information, education and communication materials is developed for use at the district level.

- A communications plan is implemented that provides quarterly updates and information on the achievements of the National Malaria Strategic Plan that targets stakeholders, political and health system leaders, donors and key partners.

Objective—Mobilizing Community Response

Outputs

- Number of NHC coordinating and implementing malaria plans

Comment [z20]: Please include output specific to Uganda

Comment [z21]: I could not find this. Please include

Comment [z22]: Please include output specific to Uganda

Comment [z23]: I couldn't find this. Please include

Comment [z24]: Please include output specific to Uganda

Objectives—Monitoring and Evaluation

- To improve collection, quality and utilization of routine data to monitor the implementation of malaria related interventions through the HMIS and other sources including DSS, sentinel sites and private sector.

- To strengthen links between the research community and RBM partners in order to ensure that on-going research is oriented towards the key operational questions and can provide the necessary evidence to continuously improve interventions for malaria control.

Outputs

-

Objective--Research

To develop and strengthen national capacity for developing evidence base for programming

Outputs

- Research findings influencing policy formulation and decision making

Research findings influencing programming

Appendix 3 Indicators of coverage of RBM technical strategies

RBM Technical Strategies	Indicator of Population Coverage
Insecticide-treated nets (ITNs)	1. Proportion of households with at least one ITN. 2. Proportion of children under 5 years old who slept under an ITN the previous night.
Prompt access to effective treatment	3. Proportion of children under 5 years old with fever in last 2 weeks who received antimalarial treatment according to national policy within 24 hours from onset of fever.
Prevention and control of malaria in pregnancy	4. Proportion of pregnant women who slept under an ITN the previous night. 5. Proportion of women who received intermittent preventive treatment for malaria during their last pregnancy.

Evaluation Indicators – Impact	Definition	Data source	Dates for data collection	Frequency of reporting
All-cause under-five mortality rate	All-cause child mortality rate, ages 0–4 years, expressed as deaths per 1000 live births, or $_5q_0$	DHS survey, or census	*2006 and 2011*	*Every 5 years*
Proportion of deaths attributed to malaria among children under five nationally	Number of deaths to children under five attributed to malaria through verbal autopsy for the period three years prior to survey/Deaths to children under five reported for the period three years before survey	*UBOS*	*2006*	*Every 5 years*
Proportion of deaths attributed to malaria among children under five in a demographic surveillance site	Number of deaths to children under five attributed to malaria through verbal autopsy according to DSS protocol/Deaths to children under five within a demographic surveillance site	*DSS*	*On-going*	*Annually*

Evaluation Indicators – Impact	Definition	Data source	Dates for data collection	Frequency of reporting
Proportion of children 6–59 months old with moderate or severe anemia	Children aged 6-59 months with moderate anemia (hemoglobin 7.0 – 9.9 g/dl) or severe anemia (hemoglobin < 7.0 g/dl)/Children aged 6-59 months who had hemoglobin measurements from nationally representative survey	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of children under five with malaria infection	Children under five with malaria infection detected by microscopy/Children under five tested for parasitemia from nationally representative survey	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Evaluation Indicators – Outcome				
Proportion of households with at least one ITN	Number of households that own at least one ITN/Number of households surveyed	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of households with a pregnant woman or children under 5 with at least one ITN	Number of households with a pregnant woman or child < 5 that own at least one ITN/Number of households with a pregnant woman or child <5 surveyed	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*

40

Evaluation Indicators – Outcome	Definition	Data source	Dates for data collection	Frequency of reporting
Proportion of population of all ages who slept under an ITN the previous night	Number of household residents and visitors who slept under an ITN the previous night/Total number of residents and visitors who slept in surveyed households the previous night	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of children under five years old who slept under an ITN the previous night	Number of children under 5 years old who slept under an ITN the previous night/Total number of children under 5 years who slept in surveyed households the previous night	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of pregnant women who slept under an ITN the previous night	Number of pregnant women who slept under an ITN the previous night/Total number of pregnant women who slept in surveyed households the previous night	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of households reporting that their compound/household was sprayed with a residual insecticide in the last 12 months	Number of households that report that their house/compound/unit was sprayed with a residual insecticide in the last 12 months/ All households in the survey area	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*

Evaluation Indicators – Outcome	Definition	Data source	Dates for data collection	Frequency of reporting
Proportion of targeted houses adequately sprayed with a residual insecticide in the last 12 months *(adequately to be defined according to MERG criteria)*	Number of occupied houses in the IRS program target area adequately sprayed with a residual insecticide in the last 12 months/Total number of occupied houses in target area	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of children under 5 who slept under an ITN the previous night or in a house sprayed with IRS in the last 6 months	Number of children under 5 years old who spent the previous night under an ITN or in a house that was sprayed with IRS in the last 6 months/Total number of children under 5 years who slept in surveyed households the previous night	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of pregnant women who slept under an ITN the previous night or in a house sprayed with IRS in the last 6 months	Number of pregnant women who spent the previous night under an ITN or in a house that was sprayed with IRS in the last 6 months/Total number of pregnant women who slept in surveyed households the previous night	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*

42

Evaluation Indicators – Outcome	Definition	Data source	Dates for data collection	Frequency of reporting
Proportion of women who have received two or more doses of IPTp during their last pregnancy in the last two years	Number of women who received two or more doses of recommended antimalarial drug treatment as IPTp during their last pregnancy that led to a live birth within the last two years/Total number of women surveyed who had a live birth in the last two years	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset of fever	Number of children under five who had a fever in the two weeks prior to a survey who received ACTs for treatment within 24 hours of onset of fever/ Total number of children under five who had a fever reported for the two weeks prior to a survey	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*
Proportion of children under five years old with fever in the last two weeks who received treatment with an antimalarial according to national policy within 24 hours of onset of fever	Number of children under five who had a fever in the two weeks prior to a survey who received an antimalarial according to national policy at the time of survey for treatment within 24 hours of onset of fever/ Total number of children under five who had a fever reported for the two weeks prior to a survey	*DHS, MIS*	*2008-9 and 2011*	*Every 3-5 years*

Sentinel Site Indicators	Definition	Data source	Dates for data collection	Frequency of reporting
Number of outpatients	Total number of outpatients, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of clinical outpatient cases of malaria	Number of clinical outpatient cases of malaria, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of blood slides examined for malaria from outpatients	Total number of blood slides examined for malaria from outpatients, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of slide-confirmed outpatient cases of malaria	Number of slide-confirmed outpatient cases of malaria, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of RDTs examined for malaria from outpatients	Total number of RDTs, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of RDT-confirmed outpatient cases of malaria	Number of RDT – confirmed outpatient cases of malaria, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of inpatients	Total number of inpatients, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of clinical inpatient cases of malaria	Number of clinical inpatient cases of malaria, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*
Number of blood slides examined for malaria from inpatients	Total number of blood slides examined for malaria from inpatients, for <5 and 5+ separately	*Sentinel sites*	*On-going*	*Monthly*

Sentinel Site Indicators	Definition	Data source	Dates for data collection	Frequency of reporting
Number of slide-confirmed inpatient cases of malaria	Number of slide-confirmed inpatient cases of malaria, for <5 and 5+ separately	Sentinel sites	On-going	Monthly
Total number of RDTs examined for malaria from inpatients	Total number of RDTs examined for malaria from inpatients, for <5 and 5+ separately	Sentinel sites	On-going	Monthly
Number of RDT-confirmed inpatient cases of malaria	Number of RDT – confirmed inpatient cases of malaria, for <5 and 5+ separately	Sentinel sites	On-going	Monthly
Number of inpatient deaths	Number of inpatient deaths, for <5 and 5+ separately	Sentinel sites	On-going	Monthly
Number of inpatient slide-confirmed malaria deaths	Number of inpatient slide-confirmed malaria deaths, for <5 and 5+ separately	Sentinel sites	On-going	Monthly
Number of inpatient RDT confirmed malaria deaths	Number of inpatient RDT confirmed malaria deaths, for <5 and 5+ separately	Sentinel sites	On-going	Monthly
Number of pregnant women who received IPTp-1	Number of pregnant women who received IPTp-1	Sentinel sites	On-going	Monthly
Number of pregnant women who received IPTp-2	Number of pregnant women who received IPTp-2	Sentinel sites	On-going	Monthly
Total number of pregnant women who attended first ANC visit	Total number of pregnant women who attended first ANC visit	Sentinel sites	On-going	Monthly

Sentinel Site Indicators	Definition	Data source	Dates for data collection	Frequency of reporting
Number of antimalarial treatments	Number of antimalarial treatments prescribed by drug, for <5 and 5+	*Sentinel sites*	*On-going*	*Monthly*
Number of children <5 receiving a blood transfusion	Number of children <5 receiving a blood transfusion	*Sentinel sites*	*On-going*	*Monthly*
Monitoring Indicators - Process and Output				
Number of ITNs distributed nationally	Number of ITNs distributed nationally	*ITN database*	*Quarterly*	*Quarterly*
Number of ITNs sold nationally	Number of ITNs sold nationally	*ITN database*	*Quarterly*	*Quarterly*
BCC/IEC activities to promote ITN use		*Activity reports*	*On-going*	*Quarterly*
Number of nets retreated	Number of bednets retreated	*ITN database*	*Quarterly*	*Quarterly*
Number of people trained to deliver IRS	Number of people who have been trained with to deliver IRS according to protocol	*Activity rate*	*On-going*	*Quarterly*

Monitoring Indicators - Process and Output	Definition	Data source	Dates for data collection	Frequency of reporting
Proportion of targeted houses sprayed with a residual insecticide	Number of occupied houses in the IRS program target area sprayed with a residual insecticide/ Total number of occupied houses in the IRS program target area	DHS, MIS	2008-9 and 2011	Every 3-5 years
BCC/IEC activities to promote IRS participation		Activity reports	Quarterly	Quarterly
Number of pregnant women receiving IPTp 2	Number of women who received second dose of recommended antimalarial drug treatment as IPTp	HMIS	Quarterly	Annually
Number of ANC health workers trained in IPTp	Number of ANC heath workers trained in intermittent prevention of malaria in pregnancy	Activity reports	Quarterly	Quarterly

Monitoring Indicators - Process and Output	Definition	Data source	Dates for data collection	Frequency of reporting
BCC/IEC activities to promote IPTp		*Activity reports*	*Quarterly*	*Quarterly*
BCC/IEC activities to promote antenatal care use		*Activity reports*	*Quarterly*	*Quarterly*
Number of treatment courses for severe malaria purchased	Number of treatments w/ drugs for severe malaria purchased	*Activity reports*	*Quarterly*	*Quarterly*
Proportion of government health facilities with ACTs available for treatment of uncomplicated malaria	Number of health facilities with no reported stockouts of nationally recommended ACTs lasting one week or longer at any time during the past three months/total number of government health facilities	*Facilty records*	*Quarterly*	*Quarterly*

Monitoring Indicators - Process and Output	Definition	Data source	Dates for data collection	Frequency of reporting
Number of children under five receiving ACTs	Number of children under five years old who received ACTs for treatment of uncomplicated malaria	*HMIS*	*Quarterly*	*Quarterly*
Number of people aged 5+ receiving ACTs	Number of people aged 5 or over who received ACTs for treatment of uncomplicated malaria	*HMIS*	*Quarterly*	*Quarterly*
Number of health workers trained in case management with ACTs	Number of heath workers trained in case management with ACTs	*Activity reports*	*Quarterly*	*Quarterly*
BCC/IEC activities to promote prompt care seeking for fever and recognition of severe malaria by caregivers		*Activity reports*	*Quarterly*	*Quarterly*
Number of health workers trained in home-based management of fever	Number of heath workers trained in home-based management of fever	*Activity reports*	*Quarterly*	*Quarterly*

DRAFT

DRAFT

52

DRAFT

DRAFT