



**SOMALIA - NATIONAL MALARIA PREVENTION & CONTROL
MONITORING AND EVALUATION PLAN
2011 - 2015**

List of Abbreviations

ACT	artemisinin-based combination therapy
ANC	antenatal clinic
AQ	amodiaquine
CFR	case fatality rate
CSO	Central Statistics Office
CSZ	Central South Zone
CQ	chloroquine
DDT	dichlorodiphenyltrichloroethane
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
HANMAT	Horn of Africa Network for Monitoring Antimalarial Therapy
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
LLIN	Long-lasting Insecticide-treated mosquito net
MDG	Millennium Development Goal
M&E	monitoring and evaluation
MARA	Mapping Malaria Risk in Africa
MERG	Monitoring and Evaluation Reference Group
MICS	multiple-indicator cluster survey
MIS	malaria information system
MoH	Ministry of Health
NGO	non-governmental organization
RBM	Roll Back Malaria
RH	Reproductive Health
SP	sulfadoxine-pyrimethamine
SWAp	Sector-wide Approach
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WHOPES	WHO Pesticide Evaluation Scheme

PREFACE	5
1 INTRODUCTION	5
1.1 Background	5
1.2 Country Profile	5
1.2.1 Demography	5
1.3 Malaria Epidemiological Profile	6
1.3.1 Trends in the burden of malaria	7
1.3.2 Parasite & Vector species composition	8
1.4 Malaria Control in Somalia	9
1.5 Theoretical framework for M&E	10
1.6 Global Malaria Control Goals and Targets	11
2 GOAL, OBJECTIVES, AND INDICATORS FOR MALARIA PREVENTION AND CONTROL	12
2.1 Goal and Objectives	12
2.2 Impact measures	12
2.3 Outcome measures	13
2.4 Input, Process, and Output measures	14
2.5 Indicators	15
2.6 Data Sources	19
2.6.1 Health Information System	19
2.6.2 Sentinel districts for HMIS	19
2.6.3 Interval surveys	20
2.6.4 Insecticide monitoring studies	22
2.6.5 Drug efficacy monitoring studies	22
2.6.6 Activity and Performance Reports	22
2.6.7 Supervision Reports	22
2.7 Data Flow and Use	23
2.8 Expected Information Products	24
3 IMPLEMENTATION ARRANGEMENTS OF M&E	24
3.1 Overview	24
3.2 Coordination of M&E activities: Roles and responsibilities	25

3.3	Monitoring of malaria programme	25
3.4	Evaluation of the Malaria Programme	26
3.5	Required reporting for M&E	27
3.5.1	Annual Malaria Report	27
3.5.2	GFATM reporting	28
3.5.3	WHO reporting	28
3.6	Financing for the Monitoring and Evaluation plan	28
	<i>REFERENCES</i>	36

Preface

1 Introduction

1.1 Background

1.2 Country Profile

Somalia (Somali: *Soomaaliya*; Arabic: الصومال *aṣ-Ṣūmāl*), officially the Republic of Somalia (Somali: *Jamhuuriyadda Soomaaliya*, Arabic: جمهورية الصومال *Jumhūriyyat aṣ-Ṣūmāl*) and formerly known as the Somali Democratic Republic, forms the largest part of Horn of Africa. It is bordered by Djibouti to the northwest, Kenya to the southwest, the Gulf of Aden with Yemen to the north, the Indian Ocean to the east, and Ethiopia to the west.

1.2.1 Demography

Population estimates for Somalia are contentious. The last population census was conducted in the 1970s. All population estimates have therefore been derived through a mixture of projecting from these figures as well as operational experience in delivering services and/or household surveys (for example national polio vaccination campaigns).

Somalia is currently (2009) estimated to have a total population of roughly 9.3 million people, although estimates range from 6 – 11 million. Conflict within the country has resulted in considerable displacement making population quantification and distribution even more difficult to assess.

A UNDP survey (2002) indicated that the average household in Somalia consists of 5.8 persons with nearly 50% of the population under the age of 15 years. Over 80% of the population were estimated to be illiterate (65% urban and 89% rural). And roughly 38% were living in an urban environment (62% rural). This differs by zone with Somaliland having an estimated 45% of the population living in urban settings, Puntland 38% and central South zone an estimated 36% in urban settings.

The most recent population estimates (UNICEF, 2008) largely concur with polio data (developed through nationwide polio vaccination strategies) and are thus judged to the best population estimates at present.

Table 1: Demographic indicators for Somalia

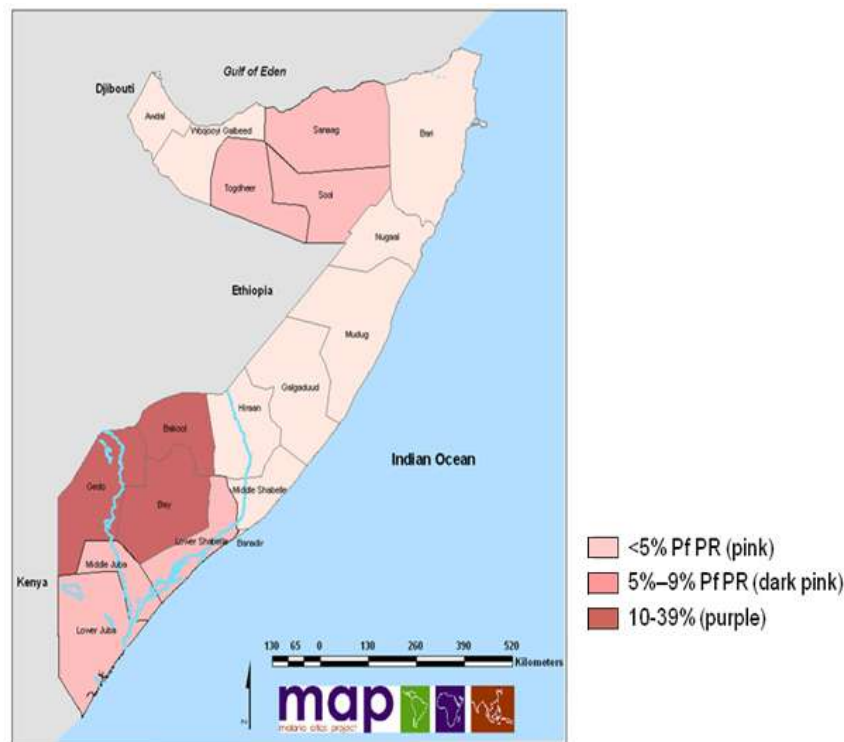
Indicator	Estimations	Source (year)
Total population	9.3 million	UNICEF, 2008
South Central Zone	5.5 million	
Somaliland	2.0 million	
Puntland	1.8 million	
Population growth	2.9%	World Bank, World Development Indicators (last updated, 2010)
Estimated # Internally	Approximately 1	UNHCR, 2008

Displaced People (IDPs)	million	
Average per capita income	226 \$/ppp	World Bank, 2002 http://go.worldbank.org/79I6OT35O0
% Living below \$1/day	43.2%	World Bank, 2002 http://go.worldbank.org/79I6OT35O0
Life expectancy at birth	48.1 years	World Bank, World Development Indicators (last updated, 2007)
Primary School Enrolment CSZ Somaliland Puntland	22% 16% 24% 33%	UNICEF - UIS and UNESCO, including the Education for All 2000 Assessment, Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS).

1.3 Malaria Epidemiological Profile

The earliest malariometric surveys undertaken in Somalia were in the Northwest (Puntland) in 1946 which reported a highly varying prevalence distribution of *P. falciparum* ranging from 0 to 17% across three clusters of villages [1]. Between the 1940s and 2005 there were only three malaria infection surveys across five villages in the Lower Shabelle area of the south-central zone [2-4].

Figure 1: Prevalence of *Plasmodium falciparum* in different regions as taken from FSNAU surveys 2004-2007



This equates to unstable and epidemic transmission in Somaliland and Puntland, moderate transmission in central Somalia and high transmission in the South.

Table 2: Summary of PfPR survey data among 21,436 people examined in 363 communities between 2004 and 2007 in Somalia

Region	No. of surveys	Mean PfPR %	No. surveys PfPR=0	PfPR Range	Overall PfPR n/Slides examined
Bari	32	4.65	10	0-38	4.28% (133/3104)
Galguduud	1	0.00	1	0	0% (0/35)
Mudug	13	2.35	8	0-20	3.1% (30/968)
Nugaal	14	0.00	14	0	0% (0/832)
Awdal	NA	NA	NA	NA	NA
Sanaag	6	6.76	2	0.30	7.97% (29/364)
Sool	7	8.32	2	0-27	8.46 % (49/579)
Togdheere	12	9.34	5	0-30	5.66% (34/601)
Woqooyi Galbeed	2	1.35	1	0.3	1.15% (1/87)
Bakool	8	10.16	1	0-18	11.01% (50/454)
Banadir	11	1.29	7	0-9	1.03% (12/1163)
Bay	121	21.92	15	0-78	21.90% (1368/6248)
Gedo	39	15.95	11	0-65	16.31% (345/2115)
Hiran	9	1.86	6	0-8	2.42% (10/413)
Lower Juba	4	9.04	2	0-32	6.59% (12/182)
Lower Shabelle	40	6.64	12	0-42	6.16% (124/2013)
Middle Juba	6	8.35	0	3-15	9.15% (26/284)
Middle Shabelle	38	1.80	25	0-14	2.06% (41/1994)

1.3.1 Trends in the burden of malaria

There are different estimates of the burden of disease in Somalia. In 2008 the HMIS reported 45,826 uncomplicated malaria cases (both confirmed and unconfirmed) and 4,456 severe malaria cases. As HMIS has not been rolled out to all health facilities this is probably an underestimate of the actual burden of disease. The World Malaria Report (2008) [5] estimated that there were 608,831 cases of uncomplicated malaria (lowest predicted: 311,038- highest predicted: 1,981,438) and 3,491 malaria deaths. However, based on a modelled approach undertaken by Snow *et al* (2007) using epidemiological data approximately 770,000 (IQR, 464,000 – 1,700,000) clinical attacks of *P.f.* are estimated to occur per year. The burden of disease is predicted to vary considerably across the country depending upon the dominant transmission patterns and human population density. In addition approximately 4,500 deaths each year are estimated to occur as a direct result from *P. falciparum* infection [6].

Figure 2: Epidemiological profile per zone in Somalia

	Somaliland	Puntland	Central Zone	Southern Zone
Epidemic potential	High	High	Moderate	Moderate-Low
Populations at risk	All age groups	All age groups	All age groups, but particularly pregnant women and children under 5	Pregnant women and children under 5
Mosquito vectors	<i>An arabiensis</i>	<i>An arabiensis</i>	<i>An. Arabiensis</i> <i>An. funestus</i>	<i>An. Arabiensis</i> <i>An. funestus</i>
Plasmodium species (in order of assumed prevalence)	<i>P. falciparum</i> <i>P. vivax</i> <i>P. malariae</i>	<i>P. falciparum</i> <i>P. vivax</i> <i>P. malariae</i>	<i>P. falciparum</i> <i>P. vivax</i> <i>P. malariae</i>	<i>P. falciparum</i> <i>P. vivax</i> <i>P. malariae</i>

1.3.2 Parasite & Vector species composition

The dominant species of malaria throughout Somalia is thought to be *P. falciparum*. However, there have been limited investigations into the prevalence of *P. vivax* – which has been found to be one of the predominant parasite species (40%) in neighbouring Ethiopia (PMI, 2009). There is patchy evidence of *P. vivax* infections in Somalia among peace-keeping and US soldiers in the 1990s [7-9]. In addition, seroprevalence in Somaliland have demonstrated a relatively high prevalence (19.3%) of antibodies to *P. vivax* [10]. However, there is conflicting evidence, for example, reports from the CSZ zone indicate that *P.f.* prevalence is 98% and *P.v.* 2%. Further investigation is needed. Worryingly, studies during the 1990s also demonstrated resistance of *P. vivax* infections in soldiers at that time to primaquine treatment [9].

Based on limited entomological data, malaria transmission is thought to be supported almost entirely by *An. arabiensis* in the Northern zones of Somalia, and by both *An. funestus* and *An. arabiensis* in CSZ. *An. arabiensis* are most commonly associated with clean, sunlit pools – especially small, ephemeral habitats such as footprints, borrow pits, streambed pools and roadside ditches, irrigation canals and birkits in Somaliland and Puntland [7, 46-48]. *An. Arabiensis* and *An. funestus* are more commonly found in lower rainfall zones or in less moist climates [11-13].

An. funestus are highly anthropophilic [14-17] and are generally classified as endophilic [15, 18-20] and endophagic. *An. arabiensis* is markedly exophilic, exophagic and is a more catholic feeder than *An. funestus* [19]. Studies have shown that *An. arabiensis* can be diverted from feeding on humans where large numbers of cattle or livestock are present [21-24]. In addition, using zooprophyllaxis in areas where *An. arabiensis* is the dominant vector decreases human biting [25], and has been associated with a significant reduction in malaria transmission to humans [26]. Contrary evidence from Southern Ethiopia has shown that *An. arabiensis* are inherently anthropophagic, and will feed on humans and livestock in spite of an increased ratio of animals to humans [27].

1.4 Malaria Control in Somalia

Somalia faces significant challenges because of ongoing conflict and the resulting weakened public health system. Given the overwhelming constraints, it is difficult to envision that the country will be able to fully embrace SUFI goals. However, progress towards targets in the country have been steady and partners working there are experienced in the context and committed to improving on current successes. Since 2005, over three-quarter of a million nets have been distributed in Somalia and mass distribution campaigns are ongoing. In 2006, first line antimalarials therapy was changed to ACTs, on the basis of evidence from drug efficacy studies and diagnostic and treatment capacity is continually being strengthened through training at MCH level. Training has been carried out for vector control personnel and epidemic response mechanisms are in place in some areas of the country. The country is supported by committed partners with strong technical expertise and long country experience.

In short, there is a good foundation on which further progress can be made in reaching targets for malaria control and prevention in Somalia. The National Strategic Plan outlines how those targets will be achieved, and this plan outlines how they will be measured.

Major resources have been secured, through the Global Fund to support a move towards universal coverage of key malaria interventions by the end of 2010. Somalia will continue to aim for SUFI targets during the initial phase of this National Strategic plan and will aim to move from SUFI to sustained control in the second phase in certain geographical areas. These are key steps towards malaria elimination within the next two decades in Somalia. In the coming years, Somalia needs to build up its weakened health system from community level upwards in order to ensure absorption of malaria interventions. Interventions need to be implemented in a more selective manner, targeting areas with interventions where the impact on malaria morbidity and mortality will be greatest.

These steps will form part of the roadmap for sustained control in both areas of focal transmission and higher transmission by 2015 (see figure 2). The 2011-2015 NSP will focus on achieving SUFI targets, building on achievements from the NSP 2005 – 2010, and moving to sustained control by 2015.

The 2011-2015 NSP will achieve this ambitious goal by targeting appropriate prevention tools and strengthening community level health posts and higher level MCHs in areas with highest malaria morbidity and mortality. Interventions will be delivered within the overall health system while building up community involvement in health care. Supporting strategies, such as M&E, HR development and Operational Research will contribute to achieving the Plans objectives.

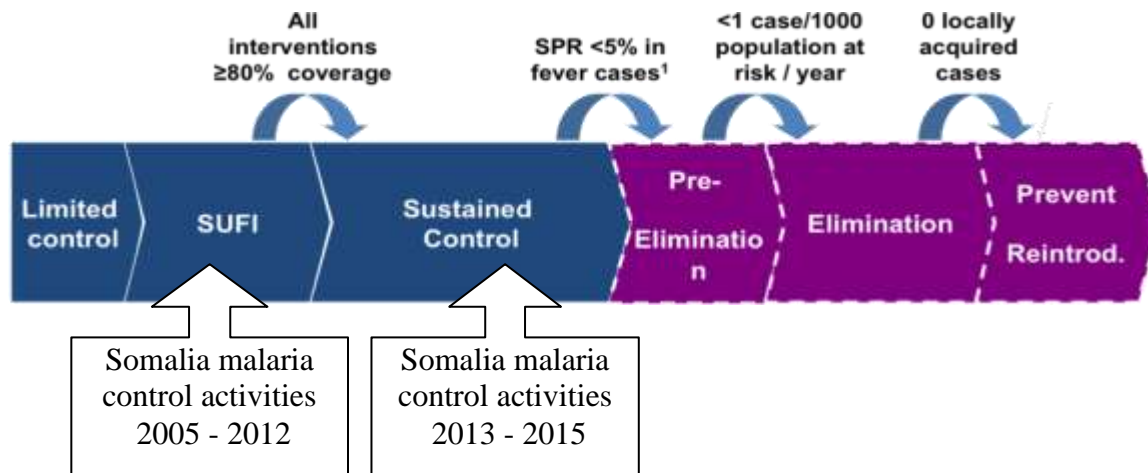
The Roll Back Malaria Global Malaria Action Plan defines malaria control as a continuum consisting of two main stages with different, although complementary, objectives:

- Scaling-Up for Impact (SUFI) with a goal to rapidly reach universal coverage for all populations at risk with locally appropriate malaria control interventions, supported by strengthened health systems.

- Sustained Control with a goal to maintain universal coverage with interventions by continued strengthening of health systems until universal coverage

This National Strategic Plan will run in two phases. Phase I (2011 – 2012) during which SUFI will continue to be rolled out. Phase II (2013 – 2015) which will move into sustained control of all interventions.

Figure 3: Malaria Control and Prevention activities in Somalia relative to the Global Malaria Action Plan



1.5 Theoretical framework for M&E

Definitions

It is important to clearly differentiate between monitoring *and* evaluation as they serve different purposes in an M&E system. In essence, monitoring is a routine activity that tracks the performance of a programme. Monitoring reports provide information on progress made in the implementation of planned activities and the constraints and/or bottlenecks that have been faced in implementation of those activities. On the other hand, evaluation refers to periodic assessments of progress made towards attaining the intended results.

Monitoring is the *routine tracking* of the key elements of a programme performance through record keeping, regular reporting, surveillance systems and periodic surveys. Monitoring assists programme managers to determine which areas require greater effort and may pinpoint areas that might contribute to an improved response. In a good M&E system, monitoring contributes greatly to evaluation. Indicators selected for monitoring will be different depending on the reporting level within the health system and the epidemiological situation of the country. At the global level, the main focus of the monitoring process are *outcome indicators* to monitor trends in coverage of recommended interventions, as elaborated above. At the national and sub-national levels, the emphasis will be on monitoring of inputs and processes.

Evaluation is the *periodic assessment* of the change in targeted results that can be attributed to a programme. Evaluations can be conducted to link various aspects of the M&E framework, such

as a particular health impact with an intervention after a period of time. It helps determine and document the value or worth of a particular programme.

1.6 Global Malaria Control Goals and Targets

It is expected that improved monitoring and evaluation within the next 5 years (2011-2015) will facilitate documentation in future reports of progress made towards the achievement of Somali targets and the prospects for reaching the overall RBM goal by 2010 and the targets of the United Nations Millennium Development Goals (MDGs) by 2015 (Box 1.1)

Box 1.1 Key Malaria Control Goals and Targets

RBM Partnership

- To eliminate malaria as a public health problem and obstacle to socio-economic development

Millennium Development Goals

- Goal 6: Combat HIV/AIDS, malaria and other diseases
Target 8: to have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.
Indicator 21. Prevalence and death rates associate with malaria
Indicator 22. Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures

Abuja coverage targets, from the African Summit on Roll Back Malaria, April 2000: by 2005:

- At least 60% of those suffering from malaria should be able to access and use correct, affordable and appropriate treatment within 24 hours of onset of symptoms.
- At least 60% of those at risk of malaria, particularly pregnant women and children under 5 years of age, should benefit from suitable personal and community protective measures such as LLINs.
- At least 60% of all pregnant women who are at risk of malaria, especially those in their first pregnancies should receive IPT

Somalia National Malaria Control and Prevention goals

- By 2015, achieve near zero (<1% parasite prevalence) malaria prevalence within areas of historically low transmission (Somaliland, Puntland and Central parts of Central South Zone)
- By 2015, achieve and sustain universal coverage resulting in 50% reduction of malaria prevalence in malarious areas of the country (Southern parts of Central South Zone)

2 Goal, objectives, and indicators for Malaria Prevention and Control

2.1 Goal and Objectives

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

The specific *objectives* of a national monitoring and evaluation system for malaria control in Somalia are as follows;

- To collect, process, analyse and manage malaria data
- To verify whether malaria control and prevention activities have been implemented as planned to ensure accountability and address problems that have emerged in a timely manner
- To provide feedback about progress and data collected to authorities and partners to improve future planning
- To document periodically whether planned strategies have achieved expected outcomes and impacts

2.2 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. At the national level, surveys such as MICS are useful for measuring changes in all-cause child mortality and coverage of interventions, but are not designed to reliably 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. In Somalia, four core impact indicators will be used; All-Cause Childhood Mortality, number of uncomplicated malaria cases and malaria, number of severe malaria cases and parasite prevalence (see table 2.1).

Malaria transmission in Somalia is low relative to more intense areas of transmission in some neighbouring countries. Rowe[28] predicted that a decrease of 50% in malaria-related mortality would see an equivalent decrease of $\approx 17\%$ in All-Cause Childhood Mortality (ACCM) in intense transmission areas. Standard methods for assessing all-cause child mortality are found with national household surveys, such as MICS, which rely on complete birth histories and well established estimation methods for determining child deaths [29]. These surveys provide reliable measures of child deaths for determining impact [30].

In low transmission areas such as Somalia, using ACCM as a measure by which to evaluate malaria the malaria program may result in an underestimation of the impact of the program. As such, while ACCM will be retained as a core impact indicator for Somalia, an additional indicator, recommended in sub-Saharan Africa or regions where *P. falciparum* is either common or re-emerging as a problem, is the number of cases of uncomplicated (probable or confirmed) reported per year which is considered a good indirect measurement of the effective treatment of uncomplicated malaria both at health facility and community level [31].

The third core indicator that will be used to understand impact of interventions on malaria is malaria parasite prevalence, another useful measure impact for interventions targeting reductions in malaria transmission.

Table 2.1: Factors to consider in measuring malaria impact

Measure	Source	Description
All-cause, under-5 mortality	Representative household surveys such as MICS or FSNAU	Retrospective, ideally measured every 5 years, to be integrated alongside trends in intervention coverage
Percentage OPD visits attributed to malaria	Estimation methods, sentinel sites, special studies (e.g. health facility assessments), malaria reported from health information system and/or malaria information system	Quarterly basis
Percentage admissions attributed to severe malaria admissions	Estimation methods, sentinel sites, special studies (e.g. health facility assessments), malaria reported from health information system and/or malaria information system	Quarterly basis
Malaria parasite prevalence in children <5 years (and total population)	Representative household surveys such as Malaria Indicator Survey and FSNAU surveys	Cross-sectional, ideally measured every 2 years with impact detectable within 1-2 years, survey to be conducted during the transmission seasons

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 theoretically available through HMIS, however, in reality 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.

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 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 LLINs, 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 Somalia use these five core outcome measures as the basis of gauging successful scale-up efforts.

Table 2.2: Core outcome indicators for malaria interventions

RBM Technical Strategies	Indicator of Population Coverage
Vector control: LLINs & IPTp	<ol style="list-style-type: none"> 1. Percentage of households with at least one LLIN 2. Percentage of children under 5 years old (and total population) who slept under an LLIN the previous night 3. Percentage pregnant women who slept under LLINs the previous night 4. Proportion of women who received intermittent preventive treatment for malaria during their last pregnancy.
Vector Control: IRS	<ol style="list-style-type: none"> 5. Percentage of households who residents report household was sprayed during previous 12 months
Prompt access to effective treatment	<ol style="list-style-type: none"> 6. Proportion of children (and total population) with suspected malaria given diagnostic test (microscopy/RDT) 7. Proportion of children (and total population) with confirmed malaria receiving ACT 8. Proportion of severe malaria cases in children under 5 (and total population) presenting at health facilities receiving appropriate case management as per guidelines
Epidemic detection and response	<ol style="list-style-type: none"> 9. Proportion of malaria epidemics responded to within two weeks of onset

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 Somali 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.

2.4 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 Somalia, 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 Somalia, monitoring the district-level implementation of select interventions is important for understanding progress of national scale up in all three zones.

Table 2.3 provides an overview of the *impact, outcome, output and process* indicators discussed above. These indicators are the basis of monitoring and evaluation efforts for scaling up malaria control interventions in Somalia. 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.

2.5 Indicators

In order to monitor the performance of the national malaria control programme in the country, the following indicators will be used by all partners (depending on their area of relevance). Detailed definitions and measurement intervals and methods are shown in Table 5 (annexed).

Table 2.3: Summary table of core indicators for monitoring and evaluation of the Somalia National Malaria Control Program 2011-2015

Evaluation Indicators	
Impact	
All-cause, under 5 mortality rate	1
Percentage OPD visits attributed to malaria	2
Percentage admissions attributed to severe malaria	3
Malaria (<i>P.f</i>) parasite prevalence	4
Outcomes	
Component 1: Case Management	5
- Percentage children under 5 years (and total population) with clinical malaria who received confirmatory diagnosis (RDT or microscopy)	5.1
- Percentage children under 5 years (and total population) with confirmed malaria who received ACTs according to guidelines	5.2
- Percentage of children under 5 years of age (and total population) with fever in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of onset of fever	5.3
- Percentage of pregnant women who receive appropriate IPTp2 according to national policy	5.4
Component 2: Prevention	6
- Percentage of households with at least one LLIN in targeted areas	6.1
- Percentage of households with at least two LLIN in targeted areas	6.2
- Percentage of children under 5 years of age (and total population) who slept under an LLIN the previous night in targeted areas	6.3
- Percentage of pregnant women who slept under an LLIN the previous night in targeted areas	6.4
- Percentage of households whose residents report house structures sprayed in previous 12 months in targeted areas	6.5
Component 3: Epidemic Preparedness and Response	7
- Proportion of malaria epidemics detected and responded to within 2 weeks of onset	7.1
Component 4: Information, Education and Communication/Behaviour Change Communication	8
- Percentage of mothers/caregivers who know that children under 5 with fever should be seen by a health care provider	8.1
- Percentage of household representatives who know that malaria should be diagnosed with RDT or microscopy	8.2
- Percentage mothers/caregivers who know that it is rank LLINs or IRS as one of the main methods of preventing malaria	8.3
Monitoring indicators – Process and outputs	
Component 1: Case Management	9
- Number of Rapid Diagnostic Tests (RDTs) distributed	9.1
- Number of ACTs distributed to health facilities	9.2
- Number & % of MCH using ACT & having diagnostic facilities	9.3
- Number & % of Health Posts using ACT & having diagnostic facilities	9.4
- Number of malaria microscopy slides taken	9.5
- Number of malaria Rapid Diagnostic Tests (RDTs) done	9.6
- Number of malaria cases (patients) treated (with ACTs after diagnosis) for uncomplicated malaria	9.7
- Number of malaria cases (patients) treated for severe malaria	9.8
- Percentage of health care providers involved in patient care trained in malaria case management as part of integrated training package	9.9
- Number of laboratory technicians trained (including refresher trainings)	9.10
- Cumulative number & % of private sector laboratories trained in, and provided with malaria diagnostic guidelines	9.11
- Cumulative number & % of private sector clinics trained in, and provided with ACT treatment guidelines	9.12
- Number & % of health facilities with no reported stock-outs of ACTs (one month)	9.13
- Number of studies of drug efficacy completed according to WHO protocols	9.14
Component 2: Prevention	10

- Number of LLINs distributed	10.1
- Number of households sprayed during indoor residual spraying activities	10.2
- Number of personnel trained in IRS	10.3
- Number of sentinel sites established for monitoring insecticide resistance	10.4
- Number of SP doses distributed to ANCs	10.5
Component 3: Epidemic Preparedness and Response	11
- Number of sentinel Health Facility teams trained in epidemic detection and response	11.1
- Number of sentinel Health Facilities using epidemic monitoring charts based on diagnostically-confirmed cases	11.2
- Number of Health Zones and regions adequately prepared for epidemics	11.3
Component 4: Information, Education and Communication/Behaviour Change Communication	12
- Number of IEC/BCC materials produced	12.1
- Number of villages receiving Communication toolkits materials	12.2
- Number partner personnel trained in IEC/BCC participative communication package	12.3
- Number of CSOs trained on participative community education	12.4
- Number of CHWs trained on participative community education	12.5
- Number of CHWs provided with IEC/BCC toolkits	12.6
- Number of sessions of IEC/BCC undertaken by CHWs	12.7
- Number of radio spots developed	12.8
- Number of radio spots aired	12.9
Component 5: Health System Strengthening	13
- Number & proportion of all partners delivering health services in Somalia who have updated fever management, diagnosis and case management and EPR guidelines	13.1
- Number & proportion of other sectors actively involved on malaria activities	13.2
- Number & proportion of health facilities receiving standardized supervision per quarter	13.3
- Number & proportion health facilities submitting timely report	13.4
- Number & proportion of laboratories undergoing Quality Control	13.5
- Number of Operational Research studies undertaken (with attached OR response plans)	13.6
- Number of management level staff who received training on project cycles, performance indicators and reporting	13.7

Table 4: Justification for Key impact and outcome indicators

Impact	Justification	Caveats
All-cause, under 5 mortality rate	Should reflect the efficacy, effectiveness and efficiency of the malaria elimination project in the island especially malaria case management.	Possible that interventions will not impact on all-cause mortality if malaria-related is already low relative to other causes
Percentage OPD visits attributed to malaria	Reflects burden of disease in Somaliland, Puntland and CSZ	Current data collected from Public Health facilities only, therefore not properly reflecting true burden of disease
Percentage severe malaria admissions attributed to malaria	Indicative of overall success of expansion of ACT to all health facilities	Current data collected from Public Health facilities only, therefore not properly reflecting true burden of disease
Malaria parasite prevalence	Easily captured through FSNAU survey. Will allow for monitoring of impact of interventions, if any.	

Outcomes		
Component 1: Case Management		
- Percentage children under 5 years (and total population) with clinical malaria who received confirmatory diagnosis (RDT or microscopy)	Reflects diagnostic capacity of health facilities'	Depends on availability of diagnostics to health facilities
- Percentage children under 5 years (and total population) with confirmed malaria who received ACTs according to guidelines	Reflects correct treatment of malaria at health facilities	Depends on availability of diagnostics and ACTs to health facilities
- Percentage of children under 5 years of age (and total population) with fever in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of onset of fever	Indicates proportion of attendances of at public health facilities relative to burden of fever	Few fevers caused by malaria
- Percentage of pregnant women who receive appropriate IPTp2 according to national policy in targeted areas	Reflects current status of IPTp coverage at health facilities	Few women attending ANC, thus coverage at ANC will not reflect true coverage among all pregnant women
Component 2: Prevention		
- Percentage of households with at least one LLIN in targeted areas	Indicates minimal LLIN coverage	Depends on continued support for distribution campaigns
- Percentage of households with at least two LLIN in targeted areas	Indicates ideal LLIN coverage	Depends on continued support for distribution campaigns
- Percentage of children under 5 years of age (and total population) who slept under an LLIN the previous night in targeted areas	Reports LLIN coverage in key target group	Depends on continued support for distribution campaigns
- Percentage of pregnant women who slept under an LLIN the previous night in targeted areas	Reports LLIN coverage in key target group	Depends on continued support for distribution campaigns
- Percentage of households whose residents report house structures sprayed in previous 12 months in targeted areas	Indicates IRS coverage in epidemic-prone hotspots	
Component 3: Epidemic Preparedness and Response		
- Proportion of malaria epidemics responded to within 2 weeks of onset	Reflects detection and response capacity	Dependent on strong sentinel site surveillance
Component 4: Information, Education and Communication/Behaviour Change Communication		
- Percentage of mothers/caregivers who know that children under 5 (and total population) with fever should be seen by a health care provider	Proxy for general malaria knowledge and treatment seeking behavior	
- Percentage of mothers/caregivers who know that malaria should be diagnosed with RDT or microscopy	Reflects population knowledge of need for diagnosis of malaria (in public or private sector)	
- Percentage mothers/caregivers who know that it is rank LLINs or IRS as one of the main methods of preventing malaria	Reflects caregivers knowledge of malaria prevention	

2.6 Data Sources

2.6.1 Health Information System

The primary source of data for monitoring the functioning of the National Malaria Control program in Somalia is the Health Information System. This is a facility-based system where each facility reports input, outputs, and outcomes. These are then collated and reported at the beginning of each financial quarter and annually and form the content of the quarterly performance-based reporting.

Key malaria information reported and disaggregated by age (less than five years and over five years) by the HMIS includes;

- Clinical malaria cases at OPD
- Number of suspected malaria cases
- Number of Laboratory or RDT tests undertaken
- Number of RDT/slide positives
- Number of confirmed in-patient malaria cases,
- Antenatal attendance,
- IPTp1 and IPTp2

HMIS also collects information on stock-out of first and second line antimalarials disaggregated by duration of stock out period (less than one week and more than one week).

Many recognized problems exist with the current Somalia HMIS stemming from accessibility to health facilities, human resource capacity, and different data demands for specific programs and from different partners. However, improvements in quality and completeness of data have resulted from the sustained effort to strengthen the HMIS. The extent to which reporting completeness and data quality are reflected in routine reporting remains problematic in the ability for use the end user to understand from the malaria information generated through HMIS.

Further strengthening of capacity at zonal level and within health facilities is required.

2.6.2 Sentinel districts for HMIS

Sentinel districts to monitor HMIS indicators, were established in Somalia in 2008 and they continue to collect information on a monthly basis.

Initially three pilot regions (NWZ, NEZ, CSZ) were planned but to date only NWZ has been accessible, thus there are currently two sentinel districts in Somaliland. However unlike originally planned where there was one tech specialist per zone, all 3 tech specialists have been based in Somaliland. Of the 3 one is following up much more on the hospital side (also in NEZ and CSZ). By the end of Phase 1, the assistance to Somaliland should be scaled back to 1 (or 0.5 person) particularly if work can go ahead in Puntland.

This system collects total number of patients seen per month, number of patients suspected of malaria, number of patients treated for malaria, number of patients with blood smear or RDT

done and proportion of patients parasite-positive for malaria at all sentinel sites. Data gathered will improve quality, quantity and efficiency of data collection, and serves to further complement the HMIS system.

2.6.3 Interval surveys

Many surveys relevant for malaria monitoring and evaluation are conducted in Somalia (Table 2.6.1). Surveys provide useful measures of population- and facility-based coverage indicators for gauging progress in scale-up efforts on a national or zonal level. Methods for conducting surveys vary greatly and some are hindered by security issues.

Table 2.6.1: Surveys planned or conducted in Somalia relevant for malaria M&E

Type	Source	Scale	Timing	Time frame	Indicator collection	Issues
Sentinel surveillance study	WHO	22 sentinel sites	Every 2 years	2007	Treatment coverage	
EPI and Polio HH coverage surveys	WHO, UNICEF	~ 9,000 subjects	Annual	2009	LLIN coverage	
Health facility assessment	WHO	National		2007	Treatment coverage	
Outbreak Surveillance	WHO	Somaliland & Puntland	Case reporting	2009	Epidemic response	
Health facility Inventory	WHO	National	Monthly	2009	Treatment supply	
Malaria KAP	UNICEF/ GFATM	National	One-time	2005	IEC/BCC	
Antimalarial drug resistance survey	WHO/ GFATM	3 sentinel sites	Annual	2008	Treatment	Aborted in 2007 due to lack of cases
Malaria Prevalence survey	WHO/ Merlin/ GFATM	National	One-time	2005	Impact	Low sample size because of security constraints. Unnecessary for further studies because of FSNAU incorporation of malaria prevalence
Treatment seeking behavior, LLIN use and malaria prevalence	KEMRI- Wellcome trust/ UNICEF/ WHO/ GFATM	3 sentinel sites	One-time	2007 /2008	Diagnosis and Case management in public and private sectors	
Insecticide resistance study	WHO/ GFATM	??	One-time	2008	Insecticide efficacy	Replace with Molecular studies?
Nutrition surveys	FAO/ FSNAU/ UNICEF	National	5-15 per annum	1998- 2015	LLIN utilization Treatment seeking behavior	
MICS HH survey	UNICEF/ UNFPA/ PAFPAM	National ~9,000 subjects	Every 5 years	2006	LLIN Utilisation, treatment	

2.6.3.1 Population surveys

Population surveys provide data on coverage of the core outcome indicators for gauging progress in scale up efforts on a national, zonal and occasionally district level. In Somalia, there are two types of population surveys that are conducted periodically. They are the Food Security Assessment Unit surveys and Malaria Indicator Survey (MIS).

FSNAU undertake an estimated 40 surveys per annum throughout Somalia, sampling 1,250-1,500 per survey. Surveys measure malaria parasite prevalence and key indicators: crude mortality rates and under-5 mortality rates, LLIN utilization and treatment seeking behavior.

At the household level, Roll Back Malaria has recently developed a standardized Malaria Indicator Survey package and guidelines for assessing core global malaria coverage indicators at the household level¹. 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 prevention of malaria during pregnancy. Household surveys also provide a reliable method for understanding trends in all-cause child mortality.

These indicators and methods are incorporated in large-scale survey mechanisms such as the EPI and Polio surveys, Malaria Prevalence surveys and the Multiple Indicator Cluster Surveys (MICS) for standardized cross-country comparability and global monitoring efforts.

The most recent MIS was undertaken in 2006 and the next scheduled MIS is planned for 2015.

2.6.3.2 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.

A survey on the management of outpatient malaria was conducted by WHO in 2006 health facilities. Those surveys need to be re-instated, complemented by supervision and quality control visits undertaken by partners and MoH

2.6.3.3 LLIN monitoring systems

An LLIN database and the corresponding digital map is being used to monitor LLIN partner activities and coordinate future LLIN distributions to fill coverage gaps in specific districts where nets should be targeted. Currently, the database collects information on LLIN distributions per district, estimated population, number of LLINs distributed, partner, and date/year.

Standardised forms are available for partners to carry out LLIN tracking surveys post-distribution.

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

2.6.4 Insecticide monitoring studies

Insecticide Resistance studies were carried out in Somalia in 2008 by WHO. However, these have been carried out in the Somliland only as a result of insecurity in CSZ and mosquito numbers were insufficient to run all susceptibility tests.

2.6.5 Drug efficacy monitoring studies

Studies have been conducted to assess the efficacy of various antimalarial drugs among young children. The results from these studies have been used to assess policies and monitor current first line drug efficacy. However, there have been serious challenges in undertaking drug efficacy studies such as low numbers of malaria cases, and lack of access to stable sites due to security.

2.6.6 Activity and Performance Reports

Implementing partners are expected to submit quarterly progress reports to UNICEF within 15 days of the end of each quarter. Each indicator which the partner reports on is included in the report. An annual narrative report is also submitted by partners which describes the programmes achievement over the year citing achievements reached. The key activities that took place to reach the results are described and any constraints encountered are explained.

Standardised formats (annexed as attachments) for reporting, monitoring and supervision of the programme, these include;

- Annex 1: HMIS MCH reporting form
- Annex 2a: MCH ACT consumption forms
- Annex 2b: MCH RDT consumption forms
- Annex 2c: MCH ACT & RDT separate tally sheets
- Annex 2d: MCH collation tool (example 2009)
- Annex 3: MCH supervision checklist
- Annex 4: MCH laboratory supervision checklist
- Annex 5: LLIN HH monitoring form
- Annex 6: LLIN community distribution report form
- Annex 7a: FSNAU survey questionnaire
- Annex 7b: FSNAU RDT data collection form
- Annex 8: MICS survey questionnaire
- Annex 9: Overall monitoring of malaria activities
- Annex 10: GF malaria training_event reporting format
- Annex 11: Guidelines malaria report template

2.6.7 Supervision Reports

Monitoring visits to health facilities is carried out by NGOs in conjunction with zonal malaria coordinators where possible.

Standardised supervision checklists are available for both MCH and HF levels and is theoretically carried out on a monthly basis from zonal to health facility level. In practice, monitoring supervision of the health facilities is not systematic or routine. This is partly to do with geographical access where centres closer to towns are visited more regularly than more distant areas. Security also creates an enormous problem and can prevent partners from accessing health facilities regularly. Monitoring and supervision of all health facilities on quarterly basis is challenging since it requires at least 11 working days per month. There is a need for a team of supervisors trained to undertake visits to health facilities and health posts where possible and provide supervision and mentoring possible.

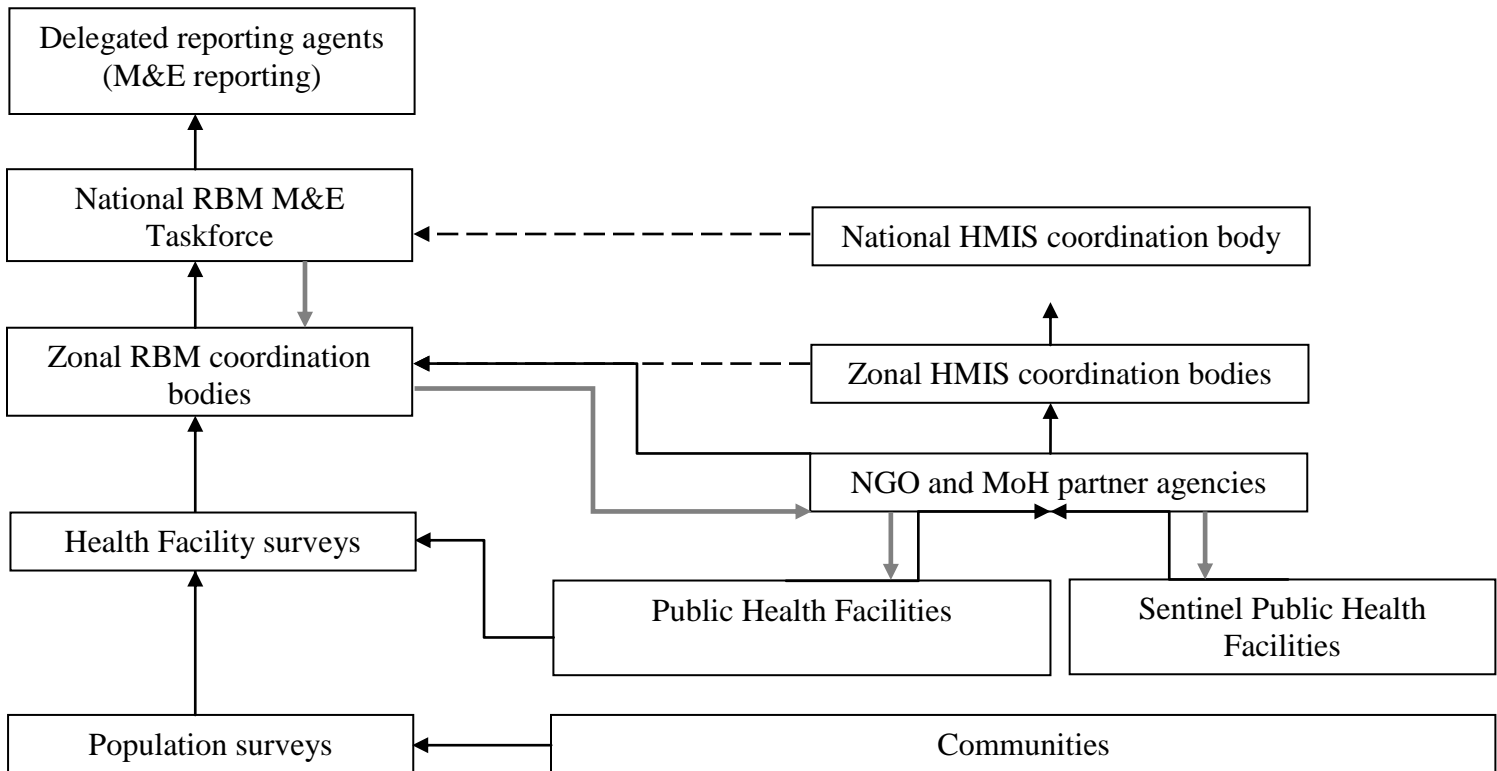
2.7 Data Flow and Use

Data flows through the health system, utilizing the newly improved HMIS system. At the health facility level reporting is carried out on a monthly basis from health facilities to regional level in Somaliland, from health facility directly to UNICEF in Puntland and directly from partners to UNICEF in CSZ. As of October 2009, reporting from health facilities for the HMIS system is upwards of 70% (in most areas 90-95%). HMIS reports are dispatched from health facilities on the 7th of each month and to the HMIS unit on the 15th.

In Somaliland and Puntland feedback is carried given at the zonal level. In CSZ partners are given feedback on a 6-monthly basis. Feedback sessions include overall reporting of statistics as well as reporting and data quality issues. HMIS data is currently available only through UNICEF and is shared with partners through feedback forums. Current improvements mean that all health facilities and regions will be using a standardized database and form in the coming year. The RBM partnership and MWG will advocate for data from that database to be made available on the HSC website.

Data for indicators which are not relevant to health facilities will be collected during health facility surveys, exit surveys and population surveys. Population surveys will include smaller level LLIN monitoring, IRS monitoring and larger-scale FSNAU and MIS. Data collection is therefore dependent on the Supervision visits and without supervision the tally sheet will not be captured. This becomes a major impediment to the timeliness of data collection.

Figure 4: Data Flow for Monitoring and Evaluation



2.8 Expected Information Products

With the implementation of the M&E plan, the following information products are expected:

- a) Monthly/quarterly malaria situational reports
- b) Programme quarterly reports
- c) Annual malaria prevention and control progress reports

3 Implementation arrangements of M&E

3.1 Overview

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

3.2 Coordination of M&E activities: Roles and responsibilities

Monitoring and Evaluation will be coordinated by the RBM partnership taskforce. Partners roles in M&E will be to report on malaria control and prevention activities that they are undertaking according to standardized reporting set out by the partnership. Standard reports will be follow requirements of GF reporting.

Data and M&E technical issues will be handled by the RBM taskforce sub-committee for M&E (coordinated by UNICEF and WHO) and reports presented to the health secretariat and CCM.

Main tasks and activities of the Somalia national malaria M&E system will include the following:

1. Advocate for evidence-based planning at all levels of the health system
2. Review public health goals as well as malaria control plans at all levels of the health system to determine the monitoring and evaluation needs.
3. Coordination of monitoring and evaluation processes in country including relevance of data collected
4. Identify and harness possible sources of data for these selected indicators. This could be done through establishment of formalised links with other departments within the MoH, line ministries and national research institutions with a view of enhancing operations research efforts.
5. Establish and maintain a multi-sectoral working group or network to provide input and achieve consensus on indicator selection and various aspects of M&E design and implementation.
6. Assess data quality in terms of collection, reproducibility, and quantitative and qualitative data collection techniques.
7. Collect/collate, process and analyse data, and interpret and report.
8. Disseminate progress reports on a regular basis.
9. Maintain a good record keeping and filing system as well as an electronic database for all information gathered.

3.3 Monitoring of malaria programme

Monitoring is outputs is crucial for determining the levels of service delivery that are achieved during implementation efforts. The outputs that will be monitored are shown in table 2. Zones are the operational level for implementing malaria control interventions. Within the zones health teams there are malaria focal points appointed to track the implementation of activities. With regards to special projects, zonal level reports are received and processed by the zonal RBM taskforce.

UNICEF in each zone will be responsible for tracking activities and will track indicators with collaboration and support from the zonal RBM task force. Relevant reports and information products will be produced and presented to relevant fora. Channeling information through the zonal RBM taskforce should reduce parallel M&E systems.

3.4 Evaluation of the Malaria Programme

Table 5: Projected targets for core impact and outcome indicators

Indicator	Baseline	Year, source	Targets			
			2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
<i>Impact</i>						
U5 all-cause mortality	225/ 1,000					112/ 1,000
Percentage OPD visits attributed to malaria						
Proportion of admissions attributed to severe malaria						
U5 parasite prevalence	*	FSNAU, 2009				**
<i>Outcome</i>						
			2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
% of suspected malaria cases in under 5s (and total population) diagnosed using RDTs/microscopy at public health facilities	20%	Supervisor reports	30%	50%	60%	80%
% of suspected malaria cases in under 5s (and total population) diagnosed using RDTs/microscopy at public health facilities	20%	Supervisor reports	30%	50%	80%	100%
% households own at least one LLIN in malarious areas	40%	FSNAU, 2009	60%	75%	85%	100%
% households own at least two LLINs	40%	FSNAU, 2009	60%	75%	85%	100%
% Under 5s slept under LLIN previous night	30%	FSNAU, 2009	45%	60%	70%	80%
% pregnant women slept under LLIN previous night	17%	FSNAU, 2009	45%	60%	70%	80%
% population in epidemic-prone/focal transmission areas sprayed in previous 12 months	0	WHO	70%	85%	90%	100%
% people living in malarious areas recognize the importance of owning an LLIN, having IRS done, seeking treatment and diagnosis before treatment of malaria	40%	Estimated based on LLIN coverage	50%	70%	80%	90%

*Estimated prevalence of *P.f.* malaria is 5% in Somaliland, Puntland and Central parts of CSZ and between 10-40% in Southern parts of CSZ.

***P.f.* prevalence will be reduced to <1% in Somaliland, Puntland and Central parts of CSZ and by 50% (i.e. 5-10%) in Southern parts of CSZ.

3.5 Required reporting for M&E

To be successful, the Somalia national malaria M&E system must produce periodic timely reports of the status and progress in malaria control in the country. These reports will include:

- Baseline Report for 2005
- Annual Malaria Prevention and Control Reports
- GFATM-required quarterly reports
- RBM/WHO Regional and Global Reports

In addition to these periodic information products, the NMCC will also respond to specific and ad hoc information needs of its stakeholders. Each of the periodic information products and the process for accessing *ad hoc* information is described below.

3.5.1 Annual Malaria Report

The RBM taskforce will produce Annual Reports on progress in malaria prevention and control as of 2011. These reports will provide information on coverage of interventions and status and changes in malaria risk, malaria morbidity and the benefits achieved during the year. The reports will also identify gaps and needs for the coming annual planning exercises.

Purpose of Report

The purpose of these reports is to provide a summary of the service coverage achieved in annual interval to inform implementers and funders of the progress and gaps and to facilitate focused and strategic planning for subsequent annual plans of action.

Data Sources

The report will draw on all available sources of data as noted in Section X.X above. Sentinel site data will be used, especially during the first 2 years of the National strategic plan while HIS continues to be strengthened. This data will provide trends in malaria diagnosis, treatment and morbidity. Results from population-based surveys undertaken throughout the year will be aggregated from January- October for inclusion into the December Annual report. Any specific studies, or ongoing research will be included as it becomes available.

Data Analysis

Data analysis will be coordinated by the M&E committee of the RBM taskforce and will engage partners and possibly contractors as needed.

Report Format

The format of this report will be developed by the RBM task force and their partners based on the format used for the baseline report noted above.

Report Compilation

This report will be compiled in the interval of October-December each year and will be available by the first quarter of the subsequent year.

Report Dissemination

The annual reports will be disseminated widely within the health sector (to regional, zonal, and National groups) as well as partners and donors both inside and outside Somalia (e.g. WHO, UNICEF, bilateral donors, and the RBM community).

3.5.2 GFATM reporting

As part of successful proposals to the GFATM, the RBM task force through the Country Coordinating Mechanism (CCM) is responsible for submitting quarterly reports on progress in implementing services and activities outlined in agreed work plans. Reports for successful proposals from rounds 2 and 6 are based on the finalized indicators of performance as reflected in table 5.

3.5.3 WHO reporting

In its attempts to monitor and evaluate regional and global malaria situation in countries in Africa, RBM and WHO periodically request information on various aspects of malaria intervention coverage, malaria control activity implementation and malaria disease burden. These are collected and reported through RBM and WHO headquarter and regional offices including EMRO/WHO Regional Office for Somalia. Standard reporting and profiling forms exist for these efforts which contribute the consolidation of pertinent M&E information.

3.6 Financing for the Monitoring and Evaluation plan

The attached budget for the M&E plan is an indicative one, pending a full financial gap analysis.

Annex 1: Monitoring and Evaluation Indicator Reference Matrix

	Indicators	Operational Definition	Data Source	Frequency	Level of measurement	Responsible entities
1	All-cause Under 5 mortality	The probability of dying before the 5 th birthday, expressed per 1,000 live births	MICS FSNAU	Every 5 years Annually	National	WHO & partners FSNAU
2	Percentage OPD visits attributed to confirmed <i>Plasmodium falciparum</i> malaria	Numerator: Number of confirmed <i>Plasmodium falciparum</i> malaria cases in all age groups Denominator: All OPD attendances	Sentinel sites HMIS	Ongoing 6-monthly	Sentinel sites National	WHO UNICEF/partners
3	Percentage admissions attributed to severe malaria	Numerator: Number of severe malaria cases admitted to hospitals Denominator: Total patients admitted	Hospital HMIS	Ongoing 6-monthly	National	UNICEF/partners
4	Malaria parasite prevalence	Numerator: Number of children < 5 years (and total population) with malaria parasites, tested through either microscopy or RDTs Denominator: Total number of children under 5 years (and total population) surveyed	FSNAU MICS	Annually Every 5 years	National National	FSNAU/FAO WHO/UNICEF/partner
	Outcome indicators					
5.1	- Percentage children under 5 years (and total population) with clinical malaria who received confirmatory diagnosis (RDT or microscopy)	Numerator: Number of children under 5 years old with fever (and total population) in the last two weeks who received diagnosis and treatment within 24 hours of fever onset Denominator: Total number of children under 5 who reported fever (and in total population) in two weeks prior to survey	MICS and FSNAU	Every 5 years	National	MoH, partners, UNICEF
5.2	- Percentage children under 5 years (and total population) with confirmed malaria who received ACTs according to guidelines	Numerator: Number children under 5 years old (and total population) with a positive <i>Plasmodium falciparum</i> malaria diagnosis, who received antimalarial treatment as per guidelines (ACTs) Denominator: Total number of children under 5 (and total population) presenting to health facilities	HMIS	Quarterly	National	MoH, partners, UNICEF
5.3	- Percentage of children under 5	Numerator: Number children under 5	MICS and FSNAU	Every 5	National	UNICEF and partners

	years of age (and total population) with fever in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of onset of fever	years old (and total population) with clinical malaria who received confirmatory diagnosis (RDT or microscopy) Denominator: Total number of children under 5 with clinical malaria		years		
5.4	- Percentage of pregnant women who receive appropriate IPTp2 according to national policy in targeted areas	Numerator: Total number of pregnant women receiving 2 or more doses of IPTp at ANC Denominator: Total number of women presenting to ANC for 2 nd visit	HMIS	Quarterly	National	MoH, partners, UNICEF
6.1	Percentage of households with at least one LLIN	Numerator: Number of household surveyed with at least 1 LLIN Denominator: Total number of households surveyed	FSNAU MICS	Annually Every 5 years	National National	FSNAU/FAO WHO/UNICEF/partner
6.2	Percentage of households with two LLINs	Numerator: Number of household surveyed with at least 2 LLIN Denominator: Total number of households surveyed	FSNAU MICS	Annually Every 5 years	National National	FSNAU/FAO WHO/UNICEF/partner
6.3	Percentage under-5s (and total population) who slept under an LLIN the previous night	Numerator: Number of under 5s (and total population) who slept under an LLIN the previous night Denominator: Total number of under 5s (and total population) surveyed	FSNAU MICS	Annually Every 5 years	National National	FSNAU/FAO WHO/UNICEF/partner
6.4	Percentage of pregnant women who slept under an LLIN the previous night	Numerator: Number of pregnant women who slept under an LLIN the previous night Denominator: Total number of pregnant women surveyed	FSNAU MICS	Annually Every 5 years	National National	FSNAU/FAO WHO/UNICEF/partner
6.5	Proportion of households whose residents report that their household was sprayed in the last 12 months	Numerator: Number of heads of household/household representatives reporting that their house structures were sprayed in last 12 months Denominators: Total number of households surveyed	FSNAU MICS	Annually Every 5 years	National National	FSNAU/FAO WHO/UNICEF/partner

7.1	Proportion of malaria epidemics detected and responded to within 2 weeks of onset	Numerator: Number of epidemics detected through sentinel site facilities (where onset is defined as the first week when alert thresholds were reached) and responded to (where response includes epidemic investigation, movement of resources to outbreak areas and mass screening and treatment undertaken) Denominator: Number of epidemics detected according to sentinel site system.	Sentinel sites Health authority and partner reports	6-monthly	National	WHO, MoH, UNICEF, partners
8.1	Percentage of mothers/caregivers who know that children under 5 with fever should be seen by a health care provider	Numerator: Number of caregivers who correctly state that children under 5 with fever should be brought to a health care provider Denominator: Total number of households surveyed	MICS KAP surveys	Every 5 years Annually		
8.2	Percentage of household representatives who know that malaria should be diagnosed with RDT or microscopy	Numerator: Number of respondents who know that malaria should be diagnosed with a test Denominator: Total number of respondents	Health facility exit surveys MICS	6-monthly Every 5 years		
Process and output indicators						
9.1	Number of RDTs distributed		UNICEF reports	Quarterly	National	UNICEF and partners
9.2	Number of ACTs distributed to health facilities for treatment of malaria		UNICEF reports	Quarterly	National	UNICEF and partners
9.3	Number and proportion of MCH using ACT & having diagnostic facilities	Numerator: Number of MCHs to which ACTs and RDTs have been supplied (post HW training) Denominator: Total number of MCHs which are 'functional' (as defined in health system audit)	HF database Partner reports	Quarterly	National	UNICEF and partners
9.4	Number of Health Posts using ACT & having diagnostic facilities	Numerator: Number of health posts to which ACTs and RDTs have been supplied (post HW training) Denominator: Total number of Health posts which are 'functional' (as defined in				

		health system audit) and targeted for ACT/RDT supply				
9.5	Number of malaria microscopy slides done		HMIS Partner reports	Quarterly	National	Health service delivery partners
9.6	Number of malaria RDTs done		HMIS Partner reports	Quarterly	National	Health service delivery partners
9.7	Number of malaria cases (patients) treated (with ACTs after diagnosis) for uncomplicated malaria		HMIS Partner reports	Quarterly	National	Health service delivery partners
9.8	Number of malaria cases (patients) treated for severe malaria		HMIS Partner reports	Quarterly	National	Health service delivery partners
9.9	Number and proportion of health care providers (HWs) involved in patient care trained in malaria case management	Numerator: Number of health care providers involved in patient care trained in malaria case management Denominator: Total number of health care providers involved in patient care working in functional MCHs or HPs targeted for ACTs/RDT supply	Partner reports Training and HF database	Quarterly	National	UNICEF, WHO, MoH & Health service delivery partners
9.10	Number of laboratory technicians trained (including refresher trainings)		Partner reports Training and HF database	Quarterly	National	UNICEF, WHO, MoH & Health service delivery partners
9.11	Cumulative number and proportion private laboratories trained in, and provided with guidelines on confirmatory diagnosis of malaria	Numerator: Number of private sector laboratories trained in, and provided with guidelines on confirmatory diagnosis of malaria Denominator: Number of private sector laboratories identified for training in, and provided with guidelines on confirmatory diagnosis of malaria	MoH and Partner reports	6-monthly	National	UNICEF, WHO, MoH & Health service delivery partners
9.12	Cumulative number and proportion of private sector clinics trained in, and provided with ACT treatment guidelines	Numerator: Number of private sector laboratories trained in, and provided with ACT treatment guidelines Denominator: Number of private sector laboratories identified for training in, and provided with ACT treatment guidelines	MoH and Partner reports	6-monthly	National	UNICEF, WHO, MoH & Health service delivery partners
9.13	Number & proportion of health facilities with no reported stock-outs	Numerator: Number of health facilities (MCHs and HPs) reporting no stock outs	HMIS	Quarterly	National	UNICEF

	of antimalarials drugs in previous month	in the month previous to report Denominator: Total number of health facilities (MCHs and HPs) targeted to receive ACTs//RDTs				
9.14	Number of drug efficacy studies undertaken according to WHO protocols		WHO reports	Annually	National	WHO and MoH
10.1	Number of LLIN distributed		LLIN database Partner reports	Quarterly	National	NGO partners
10.2	Number of household structures sprayed during indoor residual spraying activities		IRS database Partner reports	Quarterly	National	WHO and NGO partners
10.3	Number of personnel trained in IRS		Partner reports	Quarterly	National	WHO, MoH and NGO partners
10.4	Number of studies undertaken on vector susceptibility		Partner reports	Annually	National	WHO, MoH
10.5	Number of SP doses distributed to ANCs		Partner reports	Quarterly	National	WHO, MoH
11.1	Number of sentinel Health Facility teams trained in epidemic detection and response		Partner reports	Quarterly	National	WHO, MoH and NGO partners
11.2	Number of sentinel Health Facilities using epidemic monitoring charts based on diagnostically-confirmed cases		Partner reports	Quarterly	National	WHO, MoH and NGO partners
11.3	Number of Health Zones and regions adequately prepared for epidemics		Partner reports Warehouse manifests	Quarterly	National	WHO, MoH and NGO partners
12.1	Number of IEC/BCC materials produced		Partner reports	Quarterly	National	NGO partners
12.2	Number of villages with communications toolkit materials		Partner reports	Quarterly	National	NGO partners
12.3	Number of partner personnel trained in participative communication package		Training reports and HF and training database	Quarterly	National	NGO partners
12.4	Number of CSOs trained on		Training reports and	Quarterly	National	NGO partners

	participative community education		HF and training database			
12.5	Number of CHWs trained on participative education package		Training reports and HF and training database	Quarterly	National	NGO partners
12.6	Number of CHWs provided with IEC/BCC toolkits		Training reports and HF and training database	Quarterly	National	NGO partners
12.7	Number of sessions of IEC/BCC undertaken by CHWs			Quarterly	National	NGO partners
12.8	Number of radio spots developed		Partner reports	Quarterly	National	NGO partners
12.9	Number of radio spots aired		Partner reports	Quarterly	National	NGO partners
13.1	Number and proportion of all partners delivering health services in Somalia who have updated fever management, diagnosis and case management and EPR guidelines	Numerator: Number of health partners providing support to either MCHs or HPs in Somalia with guidelines relevant to their area of work Denominator: Total number of health partners supporting health facility structures in Somalia	Partner emails/communication confirming receipt of guidelines	Annually	National	RBM taskforce secretary
13.2	Number of other sectors actively involved in malaria activities			Annually	National	RBM taskforce secretary
13.3	Number and proportion of health facilities receiving standardized supervision per quarter	Numerator: Number of health facilities targeted for provision of ACTs/RDTs who received supervision visit Denominator: Total number of health partners being provided with ACTs/RDTs	Partner reports	Quarterly	National	RBM taskforce chair/UNICEF
13.4	Number and proportion of health facilities submitting timely reports	Numerator: Number of health facilities targeted for provision of ACTs/RDTs who submitted reports within one month Denominator: Total number of health partners being provided with ACTs/RDTs	Partner reports	Quarterly	National	RBM taskforce chair/UNICEF

13.5	Number and proportion of laboratories undergoing quality control	<p>Numerator: Number of laboratories in which personnel have been trained or provided with microscopy or RDT supplies which have received a QC visit in the last quarter</p> <p>Denominator: Total number of laboratories in which personnel have been trained or provided with microscopy or RDT supplies</p>	Partner reports	Quarterly	National	RBM taskforce chair/UNICEF
13.6	Number of operational research studies which have been undertaken (with attached OR response plans)		Technical Partner reports	Quarterly	National	RBM taskforce chair/UNICEF
13.7	Number of management level staff who received training on project cycles, performance indicators and reporting		Partner reports	Quarterly	National	RBM taskforce chair/UNICEF

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