Republic of Kenya

Towards a malaria-free Kenya

Kenya Malaria Programme Performance Review 2009

Komesha Malaria
Okoa Maisha

Division of Malaria Control
Ministry of Public Health and Sanitation
August 2009

Mbu nje! Sisi ndani!

Nahakikisha kuwa mimi na jamii yangu, kila mmoja, kila usiku, analala ndani ya neti. Sasa boma yangu ni eneo bila Malaria.

MALARIA ISHINDWE!

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Editors
Elizabeth Juma
Kalu Akpaka
Shiva Murugasampillay
Charles Obonyo
Stephen Munga
Andrew Wamari
Willis Akhwale
S.K. Sharif

World Health Organization

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Kenya Malaria Programme Performance Review - 2009

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PO Box 19982 KNH
Nairobi 00202, Kenya
Email: head.domc@domckenya.or.ke

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Abbreviations and Acronyms

ACSM	Advocacy, communication and social mobilization
ACT	Artemisinin-based combination treatment
AED	Academy for Educational Development
AMFm	Affordable Medicines for Malaria
AL	Artemether-lumefantrine
AMREF	African Medical and Research Foundation
AOP	Annual operational plan
AQ	Amodiaquine
BCC	Behaviour change communication
C-Change	Communications for change
CBO	Community-based organization
CDC	Centers for Disease Control and Prevention
CHAK	Christian Health Association of Kenya
CHEW	Community health extension worker
CHW	Community health worker
CIDA	Canadian International Development Agency
CQ	Chloroquine
CSO	Civil society organization
DCAH	Division of Child and Adolescent Health
DDPC	Department of Disease Prevention and Control
DDSR	Department of Disease Surveillance and Response
DEH	Division of Environmental Health
DFID	(United Kingdom) Department for International Development
DHP	Department of Health Promotion
DHS	Demographic and Health Survey
DHT	District Health Team
DOMC	Division of Malaria Control
DPHO	District public health officer
DRH	Division of Reproductive Health
DSS	Demographic surveillance system
DVBD	Division of Vector-Borne and Neglected Diseases
EDL	Essential Drugs List
EIA	Environmental impact assessment
EPI	Expanded Programme on Immunization
EPR	Epidemic preparedness and response
FGD	Focus group discussion
FY	Financial year
GF	Global Fund
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GOK	Government of Kenya
HFS	Health facility survey
HIMAL	Highland Malaria Project
HMIS	Health management information system
HSSP	Health Sector Strategic Plan 1999-2004
ICPAC	IGAD Climate Prediction and Application Centre
IDA	International Development Association
IDSR	Integrated disease surveillance and response
IEC	Information, education and communication
IMCI	Integrated management of childhood illness
IPTp	Intermittent preventive treatment in pregnancy
IRS	Indoor residual spraying
ITN	Insecticide treated net
IVM	Integrated vector management

JHPIEGO	Johns Hopkins Program for International Education in Gynecology and Obstetrics
KAP	Knowledge, attitudes and practices
KDHS	Kenya Demographic and Health Survey
kdr	Knockdown resistance
KEBS	Kenya Bureau of Standards
KEMRI	Kenya Medical Research Institute
KEMSA	Kenya Medical Supply Agency
KeNAAM	Kenya Network of NGOs against Malaria
KMD	Kenya Meteorological Department
KMLTTB	Kenya Medical Laboratories Technologists and Technicians Board
KNBS	Kenya National Bureau of Statistics
KNPP	Kenya National Pharmaceutical Plan
LBW	Low birth weight
LLIN	Long lasting insecticidal nets
LMIS	Logistics management information system
LMU	Logistics Management Unit
M&E	Monitoring and evaluation
MBP	Malaria business plan
MCH	Maternal and child health
MCS	Malaria Communications Strategy
MCU	Malaria Control Unit
MDGs	Millennium Development Goals
MEDS	Mission for Essential Drugs
MEWS	Malaria Early Warning System
MIAS	Malaria Information Acquisition System
MICC	Malaria Interagency Coordinating Committee
MICS	Multiple indicator cluster survey
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
MPR	Malaria Programme Performance Review
MSH	Management Sciences for Health
NCAPD	National Coordinating Agency for Population and Development
NEMA	National Environmental Management Authority
NGO	Non-government organization
NHPLS	National Public Health Laboratory Services
NHSSP II	National Health Sector Strategic Plan 2005–2010
NMCP	National Malaria Control Programme
NMS	National Malaria Strategy
NPTC	National Pharmacy and Therapeutics Committee
NQCLS	National Quality Control Laboratory Services
OIT	Open international tender
OPD	Outpatient department
PCPB	Pest Control Products Board
PHT	Provincial Health Team
PMI	United States President's Malaria Initiative
PPB	Pharmacy and Poisons Board
PSCMC	Procurement and Supply Chain Management Consortium
PSI	Population Services International
PSM	Procurement and supply chain management
QA/QC	Quality assurance/Quality control
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
RTI	Research Triangle International
SM&E	Surveillance monitoring and evaluation
SOP	Standard operating procedure
SP	Sulphadoxine pyrimethamine
SPR	Slide positivity rate
SWOT	Strenghts, weaknesses, opportunities and threats
TWG	Technical working group
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme
WMR	World Malaria Report

Foreword

Every so often, one must step back and take stock of one's accomplishments – or the lack thereof – in efforts to reach a particular goal. This detailed report is the result of such a stock-taking. The report presents the major findings of the 2009 Kenya Malaria Programme Performance Review, one of the first malaria programme reviews to be conducted in Africa. The Performance Review has provided information and guidelines that should be useful for many other countries in conducting their own reviews.

The main objective of the review was to evaluate the performance of the National Malaria Control Programme in Kenya with the aim of improving malaria control in the country. The recommendations from this report will help all partners in malaria control to improve strategies and refocus their energies for efficient programme implementation to enable us to achieve our goals of eliminating illness and death due to malaria.

This report documents a number of modest gains, most reassuringly in the declining trends in malaria morbidity and mortality. But the achievements are limited, constrained by both inadequate human capacity and insufficient financial resources. Kenya is therefore far from meeting its Abuja targets, and the available funding is made possible largely through donor support. Clearly, the efforts to date deserve our applause, but just as clearly much remains to be done if Kenya is to achieve the Millennium Development Goals and its over-arching ambitions spelled out in Vision 2030.

I would like to acknowledge the efforts of a number of organizations that contributed immensely to the success of this review. First, I would like to acknowledge financial assistance from the United Kingdom's Department for International Development (DFID) and the Roll Back Malaria Partnership. I would especially like to thank the World Health Organization for spearheading the process and providing the necessary technical inputs.

I would also like to acknowledge all our other partners: United Nations Children's Fund (UNICEF), the President's Malaria Initiative of the United States Agency for International Development (USAID/PMI), Population Services International (PSI), the Kenya Medical Research Institute (KEMRI), the Centers for Disease Control and Prevention (CDC), Wellcome Trust, Management Sciences for Health (MSH), and the many non-government and civil society organizations that walk with us.

Besides these I am grateful for the support of the Provincial and District Health Teams, the departments and divisions of my ministry and our sister ministry, the Ministry of Medical Services, along with the ministries of Education and Agriculture and the provincial administration, plus the Prisons Medical Service, Kenya Medical Training College (KMTC), the University of Nairobi, Kenyatta University and Moi University.

To all of you, and to the many individuals who made this review a reality, I say thank you for a job well done. But I also remind you that the job is really only just beginning if we are to make our vision of a malaria-free Kenya a reality.

Hon. Beth Mugo, EGH, MP
Minister for Public Health and Sanitation

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We specially thank the chairpersons and the consultants of the various thematic groups for the important roles they played in this process. The complete list of membership of the various thematic groups is included as an annex to the report. We particularly appreciate the vital contributions of the Malaria Programme Review Secretariat, especially Enock Odhiambo, Caroline Maina, Eunice Njeru and Regina Karonji, for administrative and logistics support.

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Finally, we thank the United Kingdom's Department for International Development and the Roll Back Malaria Partnership for their generous support for the Malaria Programme Review and our partners in malaria control for providing technical assistance for the review process.

Executive Summary

The Kenya malaria programme review was undertaken to evaluate the overall performance of the National Malaria Control Programme (NMCP). The review also served as a situational analysis of malaria and malaria control in the country and an assessment of strengths, weaknesses, opportunities and threats. The programme review was thus an opportunity to develop a new malaria control strategy.

Among the findings of this review was that the NMCP is strong in its structure and functioning at the central level, but it has a weak coordinating capacity at provincial and district levels. This translates to a lack of support for the delivery of malaria control interventions, as well as for monitoring and evaluation.

The malaria control partnerships with various donors and technical organizations have been key to the successful implementation of various strategies and interventions, including mass net distribution, indoor residual spraying, prevention of malaria in pregnancy, the implementation of artemisinin-based combination treatment (ACT) for uncomplicated malaria, and information, education and communication campaigns. Malaria surveillance and the monitoring and evaluation indicators in line with the National Malaria Strategy have been integrated with the overall health sector monitoring and evaluation plans through the integrated disease surveillance and response (IDSR) and the health management information system (HMIS).

Along with these strengths, the Division of Malaria Control – the entity charged with implementing the malaria programme – faces several challenges. In particular, there is need to improve the human resource capacity at national level, but more especially at provincial and district levels. This will improve programme implementation and management where it is most needed. Moreover, during the past decade of malaria control, there has been little investment in the diagnosis of malaria, with most cases diagnosed clinically and treated presumptively. The effect is to make routine monitoring of the impact of malaria control interventions on disease trends impossible.

Lack of resources and the unpredictability of the resources that are available have delayed the implementation of some interventions, effectively ensuring that targets remain unmet. Strengthening the resource base for malaria control interventions to provide predictable and stable financing is important for the timely and successful implementation and the sustainability of gains made in malaria control. There is also need to beef up monitoring and evaluation for malaria control, including strengthening routine surveillance and routine reporting to supplement survey and sentinel site data. This information also needs to be analysed, reported and disseminated to various stakeholders.

The adoption of recommendations and action points from the findings of the Malaria Programme Performance Review will pave the way towards the scaling up of interventions leading to the achievement of the vision of a *Malaria-Free Kenya*.

1. Introduction

Periodic malaria programme performance reviews (MPR) constitute an important joint programme management process for assessing the progress and performance of country programmes within the national health and development agenda. The aim of such reviews is to improve performance and/or redefine the strategic direction and focus. This was the motivation behind the decision by the Government of Kenya (GOK) in collaboration with the Malaria Interagency Coordinating Committee (MICC) to undertake an in-depth review of Kenya's malaria control programme to provide the evidence for reorienting its strategic direction and approaches, improving performance, and thereby achieving greater impact.

The decision was made in the context of the observed declining burden of malaria in Kenya and the low malaria transmission intensity in most parts of the country. The context also encompasses moderate to high transmission intensity in the endemic zones, and the average but improving level of coverage of malaria prevention and control interventions. And, it is consistent with the global drive for scaling up malaria prevention and control interventions to universal access by 2010. Among global initiatives are the Millennium Development Goals (MDGs), Affordable Medicines for Malaria (AMFm) and the Global Fund to Fight AIDS, TB and Malaria (GFATM), which has adopted a policy on international competitive bidding.

A new vision of a *Malaria-Free Kenya* is emerging, one that may require a new mission with comprehensive partnership relationships and values in DOMC.

Moreover, the decision recognized the compelling need for greater integration and collaboration among all programmes and organizations within or outside the health sector that play a role in malaria control. All together, these aim to enhance the attainment of MDG 6: "Combat HIV/AIDS, malaria and other diseases", with its relevant targets.

1.1 Objectives

Besides reviewing malaria epidemiology in Kenya and assessing progress towards achievement of the global Roll Back Malaria (RBM) targets, the objectives adopted for the MPR were to:

- Review the policy and programming framework within the context of the health system and the national development agenda.
- Review the current programme service delivery systems, their performance and challenges.
- Define the next steps to improve programme performance and/or redefine the strategic direction, approaches and focus, including revising the National Malaria Strategy and operational plan.

1.2 Methodology

In response to the GOK's request to the World Health Organization (WHO) to provide technical assistance for the review of the National Malaria Strategy, 2001–2010, WHO proposed that

Milestones set for the thematic review process included: MPR orientation meeting for members of the thematic teams; meetings and retreats of the various thematic teams; and MPR thematic review reports harmonization and finalization meeting.

a comprehensive malaria programme performance review (MPR) be undertaken as a step towards the revision and updating of the strategy. Kenya adapted the WHO draft guidelines for MPR with three phases: preparation and planning, conducting the review; and follow up. These are described in detail in what follows.

1.2.1 Phase 1 – Preparation, Planning, Organization and Management

The need for the MPR arose from the observed changes in the epidemiology of malaria in the country. Thus the Division of Malaria Control (DOMC) in the Ministry of Public Health and Sanitation (MOPHS) made a presentation to the Malaria Interagency Coordinating Committee (MICC) on 26 November 2008 in the context of the development of a revised national malaria control strategy. The MICC was urged to consider the following options for developing a new strategy:

- ***Option 1:*** Evaluation of the current strategy followed by development of a new strategy to be ready by January/February 2009.
- ***Option 2:*** Desk review (prepare desk/systematic review papers, studies and surveys) plus develop a new strategy, with the new strategy to be ready by February/March 2009.
- ***Option 3:*** Phase 1 of in-depth review plus development of a draft strategy plus phases 2 and 3 of the in-depth review process, in which case a draft strategy would be ready by March/April 2009 and finalized by July 2009.
- ***Option 4:*** In-depth review process followed through from Phase 1 to Phase 2, to yield a new strategy by July 2009.

MICC chose option 3 in the light of the need for a new Malaria Control Strategy to be used as the basis for the Global Fund's Round 9 grant application. In addition, MICC further decided that the MPR would commence in January 2009, with the Head of DOMC serving as the MPR Coordinator and the malaria technical working groups (TWGs) serving as MPR thematic review teams. Moreover, DOMC would set up a MPR secretariat, with the secretariat and the heads of the thematic teams constituting the MPR task force. A number of actions flowed from these decisions.

Development of MPR Protocol and Resource Mobilization. At its inception meeting of 6 January 2009, the MPR task force along with members of the malaria TWGs reviewed and adopted a draft protocol and budget for the MPR. The total budget for the MPR was Ksh45 million.

Thematic Review and Reporting. At that same meeting the MPR task force determined that six thematic groups be constituted: Malaria programme management; malaria epidemiology, surveillance, monitoring and evaluation (M&E), and operational research; malaria parasite control including diagnosis, treatment and prevention of malaria in pregnancy; malaria vector control including epidemic preparedness and response (EPR); malaria advocacy, communication and social mobilization; and malaria procurement and supplies management (PSM).

MPR interview

The meeting also identified members of thematic teams and drew up a one-month timeline of activities for the thematic or desk review of the Kenya National Malaria Control Programme (NMCP). Consultants were recruited to facilitate and serve as rapporteurs of each of the thematic teams. These consultants worked with the respective thematic team members and the secretariat to assemble reference documents, undertake the literature review and produce the thematic reports. Specific milestones set for the thematic review process included the following: MPR orientation meeting for members of the thematic teams (6 February 2009); meetings and retreats of the various thematic teams (9 February to 6 March 2009); and MPR thematic review reports harmonization and finalization meeting (12–19 March 2009).

Other MPR Phase 1 Preparatory Activities. Other activities carried out during this phase included the following: Setting up and regular meetings of the MPR secretariat; appointment of the Malaria Goodwill Ambassador; orientation of other health sector programmes on their role in the MPR (17 April); updating of the malaria stratification map; updating of the malaria database; and updating of the national and provincial malaria profiles.

As part of this phase, the lack of data on malaria parasite prevalence in some districts prompted a malaria parasite survey in arid and semi-arid parts of Kenya in April. The survey findings were used to supplement available malaria parasite prevalence data from other districts to update the Kenya malaria stratification map. No other survey was commissioned, since data collection for the 2008 Kenya Demographic and Health Survey (KDHS) was still going on, besides which a malaria therapeutic efficacy study and nationwide school-based malaria parasite survey were planned for later in 2009 and a malaria indicator survey (MIS) and a health facility survey (HFS) were scheduled for 2010.

Planning of Phase 2 of the MPR. The activities carried out included the development of phase 2 timelines and agenda, recruitment of internal and external review consultants, mobilization of other MPR review team members from other MOPHS programmes, and orientation of provinces and districts selected for the MPR phase 2 field visits and logistical planning. The provinces and districts selected for the review were Nyanza Province (Kisumu district), Western Province (Bungoma district), Rift Valley Province (Nandi North district) and Coast Province (Kwale district).

1.2.2 Phase 2 – Conducting the Review

Phase 2 lasted for two weeks, from 24 May to 5 June. This phase consisted of four components:

- ***Technical briefings:*** These included a general briefing of the MPR team by the secretariat covering MPR objectives, phases, outputs and outcomes; briefings on policies and structures of the national health system; an overview of policies and structures of the NMCP; and an overview of phase 1 of the MPR processes.

- ***Review and finalization of thematic reports:*** Thematic group reports prepared in phase 1 were reviewed by a team of experts on the basis of a framework considering objectives and methods; information

From left: Mark Bor, Permanent Secretary Ministry of Public Health and Sanitation, Dr. David Okello, WHO Kenya Country Representative, and Mark Rotich, representing DFID, at the signing of the aide mémoire on 5 June 2009.

gaps; programme progress and performance based on national and global targets thereby defining key issues; and challenges, problems and lessons learnt.

- ***Preparation for field visits:*** This included the constitution of the teams for national level consultative meetings with specific national level organizations, teams, institutions and partners; formation of provincial teams; and adaptation of MPR tools.

- ***Conduct of field visits:*** The national level consultative meetings took place in a day, while the provincial field visits took place over three days.

Feedback was provided to malaria programme TWGs and members of the MICC, senior ministry officials from both Ministries of Health, and malaria control stakeholders. Finally, an *aide mémoire* summarizing the review findings and commitment of the government and the partners to implement the recommendations was signed by representatives of MOPHS, the Department for International Development (DFID), the United States Agency for International Development (USAID), WHO and UNICEF.

1.2.3 Phase 3 – Follow-Up of MPR Recommendations

Activities for this phase are contained in the recommendations of this report. They are the logical consequences of the MPR and inform the strategic directions for the National Malaria Control Programme.

1.3 Structure of the Review Report

Following this introduction, the report proper opens with an overview of the state of malaria epidemiology in Kenya, with discussion reviewing the types of parasites and vectors responsible for malaria disease in Kenya, trends in prevalence, and other relevant issues. This is followed by a brief summary of the place of malaria control in Kenya's development agenda.

The findings of the field reviews make up the bulk of the report, and are presented according to the thematic areas identified by the MPR Task Force. Each of these sub-reports is in turn organized around a common framework that includes management, policy and guidance, human resources and structure, achievements, challenges, and other pertinent topics.

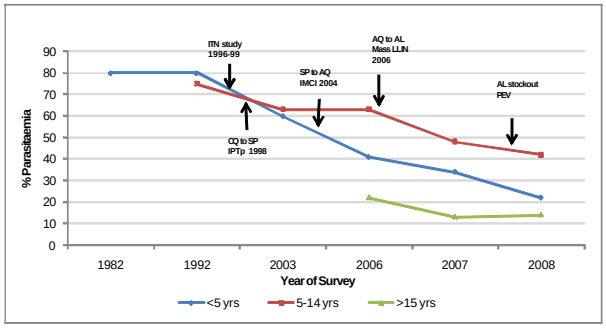
Conclusions and recommendations wrap up the presentation, with a list of suggested actions that are both comprehensive and practical. The full text of the *aide mémoire* signed by MOPHS, DOMC and the development partners is attached as Annex A. The members of the review teams, steering committee, consultants, advisers and others are listed in Annex B, and Annex C contains the terms of reference for the reviewers. Annex D then presents the schedule of the review, clearly revealing the meticulous planning and wide range of input into the process.

2. The Epidemiology of Malaria in Kenya

Data from the HMIS, surveys, sentinel sites, special studies and operational research contribute to a better understanding of malaria epidemiology in Kenya. These data show declines in parasite prevalence, malaria trends, vector densities and other entomological indexes in areas where insecticide treated nets (ITNs) and indoor residual spraying (IRS) have been scaled up.

The impact of the trends is illustrated in Figure 2.1, with data from the annual community-based parasitaemia surveys by the Kenya Medical Research Institute/Centers for Disease Control and Prevention (KEMRI/CDC) in Nyanza Province showing a steady decline in parasitaemia among children under 5, from 60 per cent in 2003 to 22 per cent in 2008.

Figure 2.1: Nyanza Province demographic surveillance site malaria trends



Source: KEMRI/CDC DSS.

2.1 Malaria Parasite Prevalence

The MIS 2007 found a parasite prevalence of 7.6 per cent by rapid diagnostic test (RDT) and 3.5 per cent by microscopy. Children under five years of age residing in rural areas (8 per cent) are twice as likely as their urban counterparts (4 per cent) to be infected with malaria. There are other variations in malaria parasite prevalence across the country among children below 5 years of age: 17 per cent in endemic areas, 1.4 per cent in areas of seasonal malaria transmission (arid and semi-arid lowlands), 1 per cent in epidemic prone areas and 0.4 per cent in malaria-free low risk transmission areas (DOMC et al., 2009).

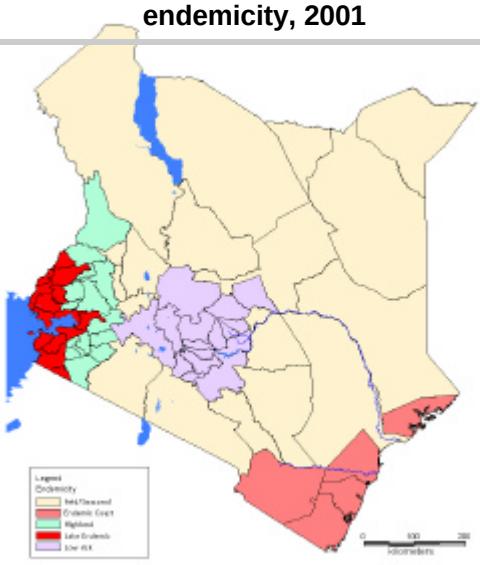
This reduction in parasite prevalence is confirmed by data from a demographic surveillance site in western Kenya where parasite prevalence is now highest (42 per cent) in children aged 5–15 years. In children less than five years, prevalence had dropped significantly – from a high of 80 per cent in 1996 to 22 per cent in 2008.

Plasmodium falciparum is the predominant parasite species at 98.2 per cent; *P. malariae* represents just 1.8 per cent. *P. vivax* is occasionally detected in North Eastern Province, although its prevalence has not been clearly documented. As the prevalence of *P. falciparum* falls, there is increasing need to evaluate the epidemiology of *P. vivax* in Kenya and develop appropriate treatment strategies for infections with this parasite species.

2.2 Malaria Vectors

In Kenya, the main malaria vectors include the *Anopheles gambiae* complex (*An. gambiae s.s*, *An. arabiensis* and *An. merus*) and the *Anopheles funestus* complex. *An. gambiae* breeds

Figure 2.2: Map of malaria risk and endemicity, 2001



in temporary, sunlit pools, puddles, hoof prints and other larger water bodies. *An. funestus* breeds in permanent water bodies (which sustains malaria transmission during dry seasons). *An. merus* is found is the coastal areas and breeds in brackish waters.

An. gambiae feeds primarily on humans (anthropophagic) and rests indoors (endophilic), while *An. arabiensis* feeds on humans and other animals and mainly rests outdoors (exophilic). Members of *An. funestus* complex feed on both humans and other animals.

Reduced vector density has been reported in the western Kenya highlands. This has been attributed, at least partly, to the scale up of vector control interventions, thus reducing the force of malaria transmission. Densities of *An. gambiae* peak during rainy seasons, while those of *An. funestus* are higher during dry seasons.

Generally, malaria vector densities are higher in lowland areas compared with highlands and semi-arid areas. With the scaling up of vector control there is evidence of declining vector densities, but as ITN and IRS coverage increases, behavioural adaptation by malaria vectors remains a future possibility. Therefore there is need to have routine and standardized entomological monitoring in the different malaria eco-epidemiological zones to document declining vector densities.

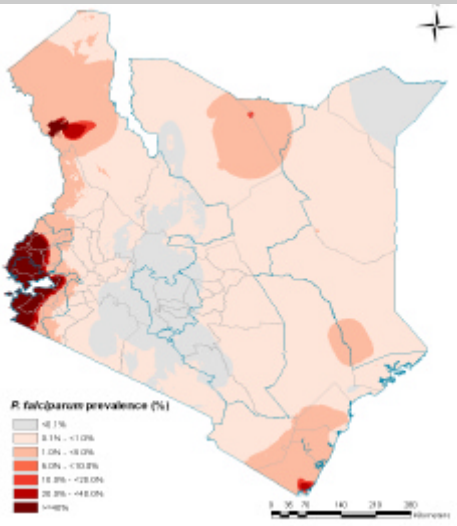
A comparison of previous and recently updated maps of malaria prevalence shows the shrinking of malaria endemic areas and expansion of low transmission zones. Data show declines in parasite prevalence, malaria trends, vector densities and other entomological indexes in areas where insecticide treated nets (ITNs) and indoor residual spraying (IRS) have been scaled up.

2.3 Malaria Endemicity

Levels of endemicity of malaria in Kenya vary from region to region and there is diversity in risk largely driven by altitude, rainfall patterns and temperature. Increasing evidence shows that the epidemiology and risk of malaria in Kenya are declining. A comparison of previous malaria maps and recently updated maps on malaria prevalence shows the shrinking of malaria endemic areas and expansion of low transmission zones. There is also a decline in the level of endemicity in endemic areas.

In 2001, the malaria endemicity map (Figure 2.2) was revised on the basis of parasite prevalence and climatic conditions depicting four zones of malaria transmission risk. The zones are: 1) Endemic: including parts of Western, Nyanza and Coast provinces with malaria transmission occurring all year round and community parasite prevalence exceeding 50 per cent; 2) Epidemic prone: including highland districts in Western, Nyanza and the western Rift Valley, and the arid and semi-arid lowlands of northern and south-eastern Kenya; 3) Arid/Seasonal: Including the north Rift Valley and parts of Central, Eastern, Coast and North Eastern provinces where malaria risk is generally low but transmission occurs along water bodies; 4) Low risk: including Nairobi and parts of Central and central Rift Valley province.

Figure 2.3: Map of malaria risk and endemicity, 2009



The map in Figure 2.3 shows the distribution of malaria infection risk in Kenya in 2009 and was produced from 2,682 survey data points, 51 per cent of which were random school surveys and the remainder were community household surveys. The map indicates that the majority of the country's surface area falls into malaria risk classes of <1 per cent *P. falciparum* parasite prevalence. The lowest risk class (<0.1 *per cent* parasite prevalence) covers most of Nairobi and Central provinces and some parts of Eastern and Rift Valley provinces. The second lowest malaria risk class of 0.1 per cent to <1 per cent covers most of the North Eastern, Eastern, Rift Valley and Coast provinces. The areas in Coast Province along the Indian Ocean and the Western Highlands are under low to moderate transmission risks of between 1 per cent to <20 per cent and appear to have transitioned from previously high transmission. High transmission areas, i.e., those of ≥40 per cent parasite prevalence, are now mainly districts of Nyanza and Western provinces along the shores of Lake Victoria (DOMC et al., 2009)

2.4 Trends in Malaria Morbidity and Mortality

Malaria remains a major cause of morbidity and mortality in Kenya. Clinically diagnosed malaria is responsible for 30 per cent of outpatient consultations (Figure 2.4), 15 per cent of hospital admissions and 3–5 per cent of inpatient deaths. In 2007, there were 9.2 million reported clinically diagnosed malaria cases.

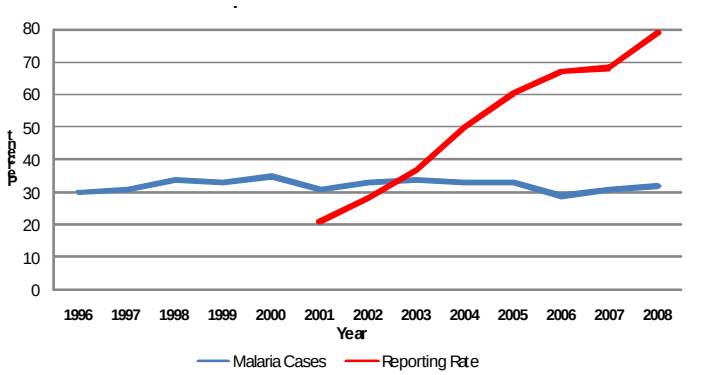
Objective evaluation of true malaria trends is not possible as confirmed malaria outpatient, inpatient and mortality data are not routinely collected by the health information system. Data available from sentinel surveillance and demographic surveillance sites in various parts of the country, however, provide useful information on malaria trends. There is documented decline in mortality in children less than five years in sentinel districts attributed to the use of ITNs, while at the coast there is a documented 28–63 per cent decline in slide positive paediatric admissions. Kilifi District Hospital also registers a shift in the mean age of clinical cases between 1992 and 2006 (O'Meara, Bon et al., 2008).

Clinically diagnosed malaria has remained constant over the past 12 years, averaging 30 per cent of all outpatient visits owing to presumptive treatment for malaria. Laboratory data are currently not reported through the HMIS. Moreover, diagnosis of malaria is often not possible or feasible in most cases. With interventions in place and evidence of declining prevalence and transmission, strengthening malaria diagnosis as part of case management, as well as improving reporting for confirmed malaria, will present a truer picture of disease trends.

2.4.1 Admissions

Inpatient data from the HMIS show that malaria is responsible for about one-fifth of admissions nationally. The completeness of HMIS inpatient data has consistently been less than 50 per cent between 2000 and 2008, however, thus making it difficult to show country trends in inpatient morbidity and mortality due to malaria. Data from Siaya District Hospital in Nyanza Province

Figure 2.4: Outpatient clinically diagnosed malaria



Source: HMIS: Annual Health Sector Statistics Report, 2008.

show that on average 40–50 per cent of patients admitted have malaria parasites, while deaths due to malaria are just under 3 per cent (Figure 2.5). The malaria case fatality rate at the hospital dropped to 2.5 per cent in 2008, from 5.6 per cent in 2003 (Figure 2.6)

2.4.2 Malaria in Pregnancy

Approximately 1.5 million women become pregnant each year in Kenya, and up to 70 per cent live in areas of moderate to intense transmission of malaria. The disease contributes about 2–15 per cent of severe anaemia and 8–14 per cent of low birth weight (LBW) in Kenya. Studies in malaria endemic areas estimate that 19 per cent of LBW births and 6 per cent of neonatal deaths are due to malaria.

2.5 Conclusion

Although data on malaria epidemiology, surveillance and interventions are available from different sources, they are often not nationally representative. Previous malaria epidemiology maps have been generated on the basis of community parasitaemia surveys and clinical data. The current epidemiology map includes modelling for risk of malaria transmission based on data generated over the past 25 years. Reporting of malaria morbidity and mortality data through the HMIS and IDSR is fraught with challenges including accuracy, timeliness and completeness of data, making the generation of national disease trends difficult.

2.6 Recommendations

Because of the spatial distribution of epidemiological data and varying study methodologies, it is difficult to ascertain definitive changes in malaria epidemiology in Kenya. More representative trend data are needed to validate an apparent epidemiological transition and the definitions of populations at risk. Among other actions this would entail:

- Updating and validating the malaria epidemiological map based on parasite prevalence and other criteria as appropriate.
- Improving reporting of malaria cases at all levels of the health care system.
- Using confirmed malaria cases for effective surveillance.
- Finalizing and updating the vector map and vector profile.
- Completing the country malaria profile with the latest data collected for World Malaria Report (WMR) 2009.

2.7 Malaria Epidemiology Performance

The performance of the malaria control programme on surveillance, monitoring and evaluation is summarized in Table 2.1. Further details on this area are contained in Section 4.6.

Figure 2.5: Slide positive admissions and deaths at Siaya District Hospital, 2002–2008

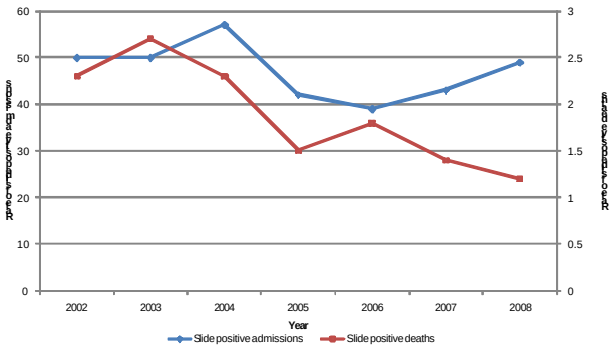


Figure 2.6: Malaria case fatality rate at Siaya District Hospital, 2002–2008

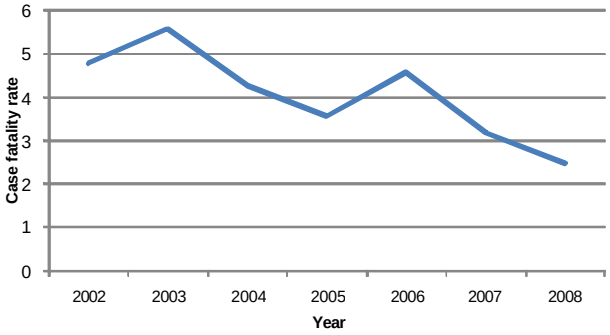


Table 2.1: Performance rating for surveillance, monitoring and evaluation

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization		✓			Epidemiological data are generated in collaboration with various partners, particularly the KEMRI/Wellcome Trust programme.
Governance and partnership		✓			Well coordinated.
Guidance				✓	No guidelines exist for the updating of epidemiological maps.
Human resources and training		✓			Partnership with various organizations such as DVBD, KEMRI and WHO provide adequate support.
Planning and budgets			✓		Planning and budgeting are ad hoc. There is need for prior planning and resource mobilization.
Performance indicators and targets			✓		2 malaria epidemiological maps have been produced since 2001. Only the 2009 map models malaria risk.
Reporting and monitoring and evaluation			✓		Parasitaemia surveys for the continuous monitoring of risk are not performed regularly.
Operational research					Not evaluated.
Overall			✓		Partnerships are well established. Plans for regular monitoring and updating of malaria risk in Kenya need to be established.

3. Malaria in the National Development Context

As a health and development concern of international dimensions, malaria is on the agenda of the MDGs and has featured in a number of continental initiatives, including the Abuja Declaration and the Roll Back Malaria campaign. In Kenya, suffering and death aside, an estimated 17 million person-hours are lost annually to malaria illness (MOH, 2001b). Labour in all sectors is affected.

Nationally, the focus on malaria is captured in Kenya's second National Health Sector Strategic Plan (NHSSP II, 2005–2010; MOH, 2005b) and Kenya Vision 2030, which aims to make Kenya a middle income country by 2030 (Kenya National Economic and Social Council, 2008). NHSSP II was formulated with the aim of reversing the downward trends in health indicators observed during the course of the first strategic plan 1999–2004. Vision 2030 builds on three pillars – economic, social and governance. In recognition of the importance of a healthy populace to a thriving economy, improvements in the health status of Kenyans form a major plank in the "social" pillar of the Vision (Office of the PM, 2008).

The health goals underlined the need to pursue the principles of primary health care in improving the health status of the Kenyan population. In this regard, the Government in collaboration with partners developed the ten-year National Malaria Strategy 2001–2010 (NMS) launched in April 2001. The NMS adopted the Abuja targets in line with the Roll Back Malaria movement as benchmarks for measuring progress towards reducing malaria morbidity and mortality in the country (MOH, 2001b).

Similarly, malaria control is directly captured in the Economic Recovery Strategy for Wealth and Employment Creation (ERS). The ERS targets under the health sector for malaria are translated from Target 8 of MDG 6: *Have halted by 2015 and begun to reverse, the incidence of malaria and other major diseases*. The ERS pledges to "Reduce malaria morbidity and mortality by 50 per cent by 2010" (MPND, 2003). And in its strategic plan for 2008–2012, MOPHS commits to *Reduce malaria incidence to 15 per cent*. (MOPHS, 2008c).

In 2009, the Government vision of a ***Malaria-Free Kenya*** emerged as a result of the development of a multisector malaria control strategy 2009–2017 with clear and focused strategic approaches and objectives.

Through the multisector approach, the line ministries (education, water, agriculture, local authorities, public works and regional development) are expected to identify the key malaria control roles and activities in which they are involved. These include integrated vector management (IVM), indoor residual spraying (IRS), environmental impact assessment (EIA) and training of health workers. Early planning with clear definitions of roles and work plans for activities is essential and includes review meetings for all partners to evaluate progress against set targets.

The Millennium Development Goals

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender equality and empower women.
4. Reduce infant mortality.
5. Improve maternal health.
6. ***Combat HIV/AIDS, malaria and other diseases.***
7. Ensure environmental sustainability.
8. Develop a global partnership for development.

4. Findings from the Field Review

Progress and achievements – or lack thereof – of the National Malaria Control Programme (NMCP) are presented in this section. The section takes an in-depth look at the various thematic areas set out by the MPR Task Force:

- Malaria programme management
- Procurement and supply chain management
- Malaria vector control
- Malaria case management in Kenya
- Malaria in pregnancy
- Surveillance, monitoring and evaluation, and operations research
- Epidemic preparedness and response
- Advocacy, behaviour change communication (BCC), and community and social mobilization

To ensure uniformity across the thematic areas, the discussions take a common approach to a wide range of issues and observations. These include policy, guidelines, organization, human resources, training and capacity building, and governance and partnerships. Among other issues that may be detailed are strategic and annual planning, delivery structures, information, education and communication (IEC), BCC and community mobilization, performance indicators and targets, reporting, reviews, evaluations, and research.

Finally, most of the sections also delve into key issues, challenges and problems arising from the review, success stories and best practices and enablers, conclusions, recommendations, and a performance rating.

> Kenya's malaria programme goals are aligned to the African regional and global goals to reduce malaria infection and death levels by 50 per cent by 2010 and to reverse the trends by 2015 (MDG 6).

4.1 Malaria Programme Management

Overall, the goal of the National Malaria Strategy 2001–2010 (MOH, 2001b) is to reduce the level of malaria infection and consequent deaths in Kenya by 30 per cent of the current levels and to sustain that improved level of control to 2010.

4.1.1 Programme Goals and Objectives

In order to realize the programme goal, DOMC works with partners and provincial and district health management teams to facilitate the effective implementation of the NMCP. This is to be achieved by providing a supportive policy environment through a technically sound and result-oriented "business plan" in conformity with the NMS at all levels involved in malaria control. In addition, DOMC supports districts to increase the scale and coverage of cost-effective interventions as well as to improve the quality of care provided by basic health services.

DOMC also assists the districts to develop technically sound annual health plans and expand the capacity to implement and scale up delivery of health services through strategic alliances and partnerships that provide evidence-based data for further strategic developments through operational research. DOMC provides feedback

to all management levels and the malaria partnership through timely and effective M&E, as well as mobilizing funding from different sources for malaria control and prevention.

Kenya's malaria programme goals are aligned to the African regional and global goals to reduce malaria infection and death levels by 50 per cent by 2010 and to reverse the trends by 2015 (MDG 6). Progress towards achieving these goals is slow, however, and unless interventions are scaled up and efforts refocused towards these targets, they will not be achieved in time.

4.1.2 Policy

Clear defined policies on the structures, systems and management of the NMCP particularly at provincial and district level are lacking. The downward flow of authority in fact ceases at the national level: That is, where malaria-specific activities are concerned, there are no focal persons below the national office.

In most districts designation of malaria control activities is largely ad hoc, but in others a designated person is available whose responsibilities are broader than malaria. In 2000, the MOH established a new institutional framework for malaria control. The NMS introduced in April 2001 is still in use as the overall policy document. New policies have evolved with changing needs and context but have not been documented.

The major strategies in the NMS were:

- Strategic approach 1: Clinical management: providing prompt, effective treatment
- Strategic approach 2: Prevention of malaria in pregnancy
- Strategic approach 3: Vector control using insecticide-treated nets and other methods
- Strategic approach 4: Epidemic preparedness and response
- Supporting structure A: IEC
- Supporting structure B: Monitoring, evaluation and research

This strategy had gaps within the strategic approaches. The strategy on case management, for example, does not focus on malaria diagnosis. Although health promotion through IEC is an intervention, it does not place adequate emphasis on behaviour change and community/social mobilization.

The Kenya Health Policy Framework of 1994 (MOH, 1994).[1] and the first National Health Sector Strategic Plan (NHSSP I – 1999–2004; MOH, 1999b) had laid out the overall policy context within which the Division of Malaria Control and the National Malaria Control Programme (NMCP) now operate. Malaria control is one of the six essential health packages defined by NHSSP I.

☛ There is need to bring together all key malaria policies that are embedded in the malaria strategy and guidelines into one document.

4.1.3 Guidance

At present, various guidelines exist but some are outdated in terms of the current malaria epidemiology. More importantly, some of these guidelines are not available at provincial and district level where they are most needed for implementation of effective control of malaria.

[1] The policy framework paper is still valid and functional, but a new policy paper will be in place in 2010 together with NHSSP III.

The thematic areas of the review were:

- Malaria programme management
- Procurement and supply chain management
- Malaria vector control
- Malaria case management in Kenya
- Malaria in pregnancy
- Surveillance, monitoring and evaluation, and operations research
- Epidemic preparedness and response
- Advocacy, behaviour change communication (BCC), and community and social mobilization

The framework "Towards a Malaria Free Kenya" was introduced in 2009 as a vision for achieving a Kenya without malaria. Otherwise, the following guidelines were found:

1. *National Guidelines for Diagnosis, Treatment and Prevention of Malaria for Health Workers* (1998, updated in 2006 and 2008).
2. *National Guidelines Support for Laboratory Diagnosis of Malaria in Kenya – Lab User's Manual* (2007).
3. *National Guidelines for Laboratory Diagnosis of Malaria in Kenya – Lab Trainers Guide* (2007).
4. *Effective Management of Antimalaria Medicines - Curriculum & Implementation Guide* (2008).
5. *National Guideline for Epidemic Preparedness and Response in Kenya* (November 1999). This was never published; it should be updated, published and disseminated.
6. *Preventing Malaria and Anaemia in Pregnancy – Way Forward* (October 2000). Malaria in pregnancy guidelines have to some extent been incorporated into the 2006 guidelines for diagnosis, prevention and treatment for health workers and into the guidelines *Focused Antenatal Care* (4th Edition, 2007) in the Division of Reproductive Health.
7. *Malaria Communication Strategy* (2006) guidelines for malaria IEC and BCC.
8. *Manual for Indoor Residual Spraying for Malaria Vector Control* (November 2008). This manual provides detailed guidance on implementation and training for IRS.
9. *Integrated Vector Management Policy Guidelines* (2009). This is in draft.
10. ITN/LLIN Implementation Framework (2008 unpublished) is an updated version of the *Insecticide Treated Net Strategy: 2001-2006* (February 2001). It was developed to support the mass net re-treatment campaign and the three-yearly free LLIN mass campaigns.
11. Trainers and participants manuals for training health workers in diagnosis, management and prevention of malaria in Kenya (2008).

Various job aids are also available, for example for "Treatment of fever", "Quinine dosing", "Treatment of severe malaria" and "AL dosing chart". The different objectives of guidelines, implementation plans and training manuals are not clearly defined. Guidelines for vector control, M&E and programme management are lacking, while some existing guidelines, like those for EPR, require updating.

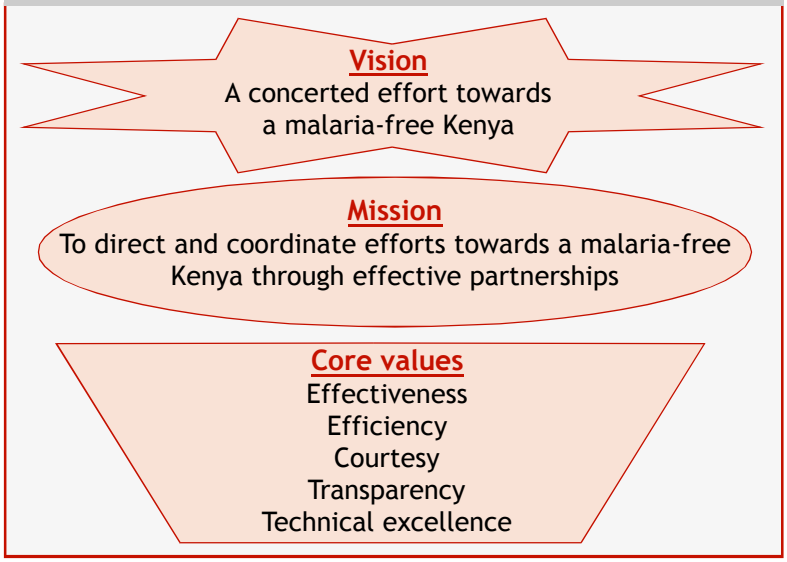
4.1.4 Organization

In 2001, the Ministry of Health, recognizing malaria control as a priority, established the Division of Malaria Control (DOMC) under the Department of Preventive and Promotive Services. The DOMC is currently strategically placed within the Department of Disease Prevention and Control in the Ministry of Public Health and Sanitation (MOPHS), two levels from the Director, Public Health and Sanitation, and three levels from the Permanent Secretary for Health.

The Division has had no recurrent budget line that caters for vital items like human resources, commodities and general expenditure. A budget for recurrent expenditure will be introduced in the financial year 2009/2010. DOMC staff are seconded from other departments and divisions from both Ministries of Health.

In 2009, the DOMC unveiled its vision, mission and core values (Figure 4.1). These crystallize

Figure 4.1: DOMC vision, mission and values



the Division's overall mandate, which is the planning and coordination of inputs and activities for malaria control activities at all levels. The Division's specific functions are to:

- Play a leading role in defining and disseminating the NMS and setting annual milestones for its implementation.
- Provide relevant links within the health ministry and liaison with other ministries, development partners, UN agencies and NGOs to coordinate actions and inputs.
- Develop a critical mass of resource persons at the provincial and district levels for capacity building to facilitate implementation of the NMS.
- Be the primary source for technical advice for the provincial and district levels. (Information for this task is generated through the various TWGs, which are constituted by the MOH to advise DOMC and coordinate partners in specific components of the strategy.)
- Identify areas for technical support and solicit expertise available through RBM via WHO/AFRO to support capacity building work.
- Participate in research, monitoring and evaluation of malaria activities.

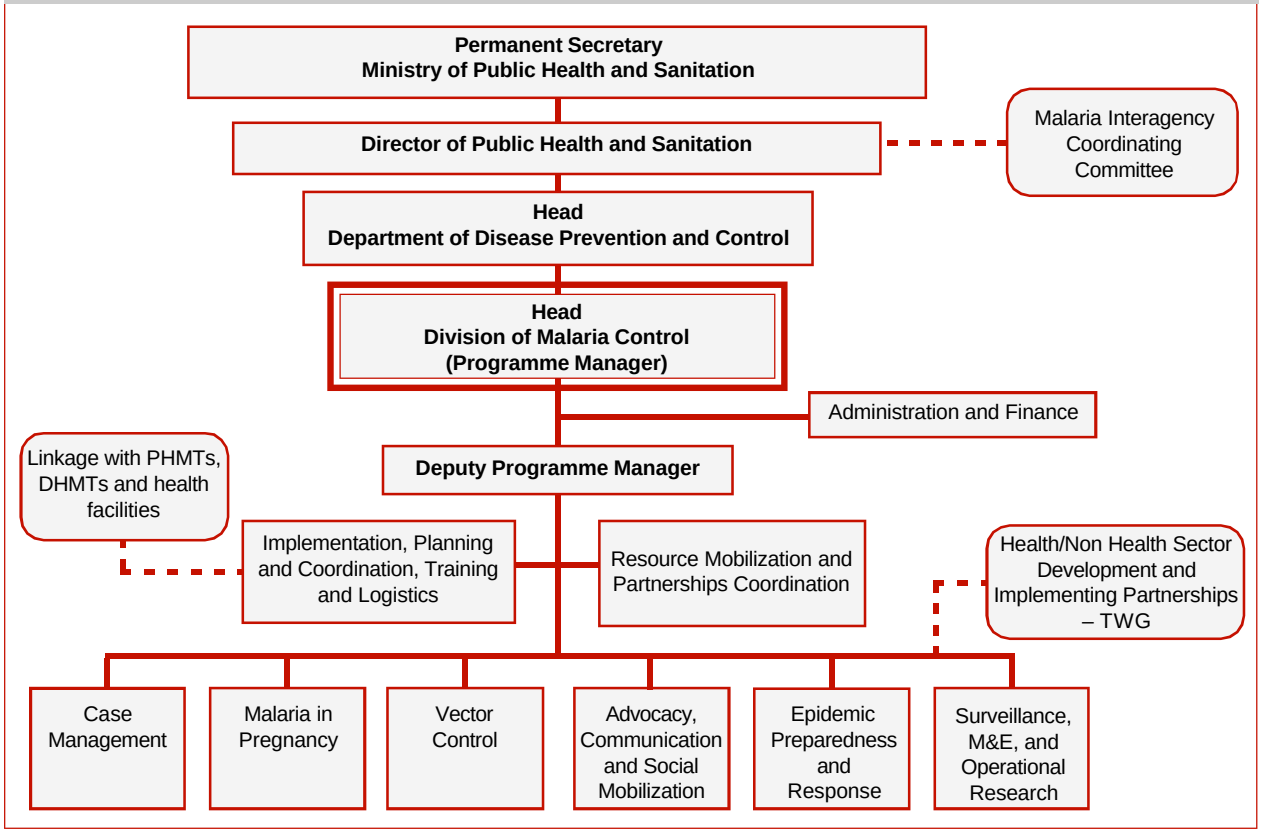
DOMC's programme planning and management includes general administration, planning and resource mobilization, and partnership coordination. In addition, the Division has six technical units: 1) vector control, 2) diagnosis and case management, 3) malaria in pregnancy, 4) epidemic preparedness and response, 5) advocacy, communication and social mobilization, and 6) surveillance, monitoring and evaluation (SM&E), and operations research. Each unit has a focal point with one or more technical officers and a lot of work is done across units. The case management and SM&E units are the largest, with seven technical officers each.

The Global Fund malaria project management is currently run by the M&E unit. The M&E unit lacks the skills mix to effectively manage GF and other grants. There is no procurement officer/logistician to coordinate follow up of malaria commodity specification, procurement and stock control across all units. There are no sub-units under each unit to establish functional work areas or to build functional staff capacity and continuity.

While there are clear definitions in DOMC regarding roles and responsibilities, key positions such as a Deputy Manager and a Planning Officer to facilitate day-to-day operations and follow up implementation are lacking. Within the Department of Disease Prevention and Control (DDPC) there are divisions that relate directly to DOMC; these are Department of Disease Surveillance and Response (DDSR), Division of Vector Borne and Neglected Diseases (DVBD), and National Public Health Laboratory Service (NPHLS). There is also close collaboration with other divisions under the Department of Family Health, including Child and Adolescent Health (DCAH), Reproductive Health (DRH), Environmental Health and Sanitation (DEH), Department of Health Promotion (DHP), and Department of Primary Health Care (DPHC).

The coordination with other divisions and departments is through the malaria TWGs and the MICC. The steps in strengthening the DOMC are ongoing, with identification and redeployment of required personnel based on the proposed new organogram (Figure 4.2).

Figure 4.2: DOMC organogram



☛ Coordination may need to be strengthened directly with quarterly inter-department meetings on malaria with designated malaria liaison officers in key departments.

4.1.5 Human Resources, Training and Capacity

The training conducted by DOMC is specific to intervention areas but is not addressed systematically across all levels. A number of training modules in the area of diagnosis, case management and IRS focus on particular trainee targets. Other intervention areas lack training modules. Training on malaria in Kenya is not institutionalized in specific training centres, but various academic and training institutions support the malaria programme in the training of health workers. These include Kenya Medical Research Institute (KEMRI), local universities, the Kenya Medical Training College (KMTC), the African Medical and Research Foundation (AMREF), and Mission for Essential Drugs (MEDS).

Future trainings may be subcontracted to these organizations on a regular rather than ad hoc basis. DOMC will serve to train trainers or faculty who will be responsible for conducting trainings, providing and regularly updating the training curricula, and ensuring training quality through M&E. Kenya has no national training course in malaria programme management, and DOMC sends participants to the annual WHO International Malaria Management Training Course hosted in Nazareth, Ethiopia.

☛ DOMC needs to recruit a training officer under the programme planning and management unit to take the lead in defining learning objectives, developing course curricula and mainstreaming malaria courses in pre-service curricula for health workers – including regular annual in-service refresher trainings. There is also need to ensure comprehensive training of future designated provincial and district malaria focal persons.

4.1.6 Governance-Partnership

The NMCP has a well-established national coordinating body, the MICC, chaired by the Director of Public Health and Sanitation with the DOMC as secretariat. Membership of the committee comprises various government ministries, departments and divisions of both ministries of health, civil society and faith-based organizations (CBOs/FBOs), and development partners. The MICC meets quarterly but the representation at the meeting is more at a technical level and is

Table 4.1: Roles of major partners in malaria control

Partner	Role	Coverage/implementation capacity
WHO	Technical assistance with malaria policies (new drug policy and strategies, especially case management/ diagnosis, ITN implementation framework, IRS, IEC) Fund agent for DFID contribution Capacity building in malaria control interventions Partner coordination and resource mobilization	National
UNICEF	TA on malaria strategies (especially IEC, IMCI) Implementation of interventions, e.g., LLINs Support to fill gaps at district level	National, Northeast emphasis Emergency response
Global Fund	Major donor across all areas	National
USAID/PMI	Major donor across all areas	National
DFID	Major donor in implementation of NMS	National
KeNAAM + member NGOs	NGO coordination; service provision in all areas of malaria control, IEC	National, provincial representative
Population Services International (PSI)	Social marketing of ITNs (commercial, routine), IEC, training in case management	National, distribution network
Management Sciences for Health (MSH)	M&E, supply management	National
AMREF	Operational research, M&E, epidemic detection	National with satellite offices in endemic areas
Kenya Red Cross	Operational research on home management of malaria in hard to reach areas Social mobilization and distribution of LLINs during "malezi bora" (child survival initiative) open days	District level District (community level)
Private sector (ICIPE, Kenya Pyrethrum Board)	Support for commemoration of open malaria days, e.g., World Malaria Day Operational research on vector control options	National
Research and institutions of higher learning	Basic and operational research on traditional medicines, testing quality of RDTs, sensitivity testing of antimalarials, capacity building (e.g., training in microscopy)	National

aimed at providing policy and strategic guidance in malaria control. Some weakness in coordination of donors and other sectors and their malaria related activities persists.

A number of steady, long-term development partners (DFID, USAID/President's Malaria Initiative [PMI], GFATM) provide direct and indirect technical support and funding for activities (Table 4.1). It appears that there is still inadequate sharing of information and coordination towards building the system of "One implementation structure" and the capacity of DOMC under ONE national malaria control programme.

Although the key departments outside the DOMC chair various TWGs, collaboration between health departments and the NMCP is still not sufficient to jointly accelerate and scale up malaria control services particularly at community and health facility levels. DOMC does not have a malaria partners' database or mapping particularly at district level. Although national malaria stakeholders' meetings are regular, malaria specific coordination meetings are mostly ad hoc at provincial and district level.

Currently, all the operational malaria service delivery of BCC, LLINs, IRS, EPR, and malaria diagnosis and treatment at individual, household and community level and within the health care levels 1, 2 and 3 fall are implemented by both health ministries (MOPHS and MOMS).

4.1.7 Strategic and Annual Planning

In 1994, the Ministry of Health (MOH) launched the five-year National Malaria Plan of Action – 1992–1997 (MOH, 1992). This plan provided for setting up the Malaria Control Unit (MCU) under the Division of Vector Borne and Neglected Diseases, as the operational arm of the NMCP. In the same year, the MOH put in place a Health Sector Policy Framework (MOH, 1994). In 1998, the Ministry of Health conducted the study, "Malaria: A Situational Analysis for Kenya" (MOH, 1998a). Then, in 1999, the first Health Sector Strategic Plan (HSSP) defined malaria as the highest priority disease for prevention and treatment (MOH, 1999b).

The situational analysis revealed that despite the acknowledged importance of malaria control and research, there was considerable fragmentation and duplication of efforts. The analysis highlighted the need for effective dialogue and clear responsibilities for the different partners within and outside the ministry. Following this, Kenya proceeded to:

- Galvanize donor support.
- Set up consensus-building forums and implement evidence-based policies.
- Put greater emphasis on wide stakeholder coordination.

NMS 2001–2010 objectives

- To ensure a supportive planning and implementation environment for partners
- To mobilize funding for malaria control interventions
- To ensure effective performance management and accountability for national malaria control deliveries
- To strengthen institutional capacity for malaria control

- Clearly define roles and responsibilities for each player.
- Formulate a National Malaria Strategy to achieve these objectives.

The National Malaria Strategy 2001–2010 (MOH, 2001b) was designed to create an enabling environment for implementing malaria control by:

- Focusing national commitment on malaria control.
- Coordinating stakeholders and efforts.
- Strengthening partnerships.
- Integrating systems for malaria control.
- Advocating for the allocation of priority resources to malaria control.
- Designing national guidelines for malaria control.

Currently, the two health ministries (MOPHS and MOMS) use one health sector strategy – the second National Health Sector Strategic Plan (NHSSP II – 2005–2010). There is a clear system in the DOMC whereby malaria strategies, five-year business plans and annual operational plans are developed, fully costed and mainly linked to the various development partners' fiscal years. From FY 2009/10, following the articulation of Kenya Vision 2030, these plans will be linked more closely to the country's financial planning cycle.

The NMS 2001–2010 was followed up in 2003 with the development of a costed malaria business plan. Development of a new costed malaria strategy for 2009–2017 is under way. This new strategy is based on the new vision of a malaria-free Kenya. The strategy is informed by this programme review process and has supported the development of Kenya's proposal for GFATM Round 9. The new malaria strategy will have to be aligned to the health sector plan 2010–2015, which is also under development.

The Malaria Business Plan (MBP). The concept of the business plan was started in 2002/03 to incorporate activities for three years with the first year detailed and the next two tentative. The plans follow the government financial period (July–June). The current MBP is for the year 2008/09 and covers activities across all partners (GFATM, DFID, USAID). Some of the activities are funded while others are not; thus the document also serves as a resource mobilization tool to advocate for funding where gaps exist.

All units within the division outline their activities for the year. The draft undergoes reviews and reports, which are expected to be generated to indicate the status of malaria control interventions. Although the business plan is the budgeting and planning tool for the malaria division, it does lack some operational targets for programme performance. The malaria business plan feeds into the health sector's annual operational plans (AOP 3, 4, 5,), which also follow the Government's July–June financial planning. And even though the USAID/PMI has an annual planning cycle of September to August, it also feeds into the Kenya annual operational planning. GFATM Round 4 project implementation planning is based on work plans linked with disbursements and quarterly performance reporting.

At district and provincial level, malaria is part of the overall health sector planning, but because of the lack of full time malaria officers, malaria and its various thematic areas are not fully addressed in the annual district health plans. The budgets for implementation of the malaria plans in districts and provinces are also inadequate.

There are no simple malaria planning and management guidelines at either district or provincial level to strengthen malaria planning and budgeting, nor is the process supported by scheduled quarterly and annual review and planning meetings.

On the other hand, annual malaria planning is supported through ad hoc meetings with provinces to monitor implementation. Annual malaria review and planning conferences at the end of the malaria season in August-September with provinces, selected districts, and other stakeholder and partners are useful for widening participation and consultation and further strengthening the programming.

- It is important to strengthen the planning process with scheduled quarterly and annual review and planning meetings for proper coordination of planning, sustained implementation and timely reporting.

4.1.8 Delivery Structures

Malaria control in Kenya is not a vertical programme. Below the national office the programme becomes horizontal. There is no clear policy for malaria control coordination and management and the service delivery expected by different levels of the health system. The NMCP at present remains highly centralized, with the DOMC directly following up implementation at district and health facility levels through the provincial/district health teams (PHT and DHT) with no full time designated malaria coordinators or focal persons in the provinces and districts.

The lack of effective decentralization to districts is a serious barrier to accelerating and scaling up to achieve high coverage and sustained malaria service delivery. At health facility and community levels there is an integrated approach to malaria control and the community health extension workers (CHEWs) and community health workers (CHWs) are the front-line persons for the programme (MOH, 2006c, 2007d).

4.1.9 Supervision

Annual operational service delivery targets are in place, although it is not clear whether they are put into practice. Checklists for supervision are available, but defined supervision schedules are ad hoc in nature.

- There is need for regularly scheduled supervision to provinces and target districts.

4.1.10 Infrastructure, Equipment and Logistics

An office to house the NMCP was built with DFID support in 1999. The current space for DOMC - catering for about 25 professional staff - is inadequate. The Division continues to expand, which calls for further infrastructure development. Office facilities and equipment such as computers and photocopiers are currently not adequate, and efforts are under way to improve equipment through support from partners.

DOMC vehicles were donated by partners (WHO, Global Fund and DFID). The total fleet has five functional vehicles plus two others that are used in Nyanza and Western provinces to support provincial malaria control efforts. The number of vehicles is insufficient for the routine demands in the division: an additional eight vehicles of similar specifications are required to address the gap. The DOMC gets support with logistics from the central transport office during malaria campaigns and other activities that require more vehicles. All vehicles are normally serviced and maintained in approved garages.

Malaria equipment specifications are mainly restricted to IRS equipment. Specifications for spray pumps and protective gear are adapted from WHO specifications and manuals. For other equipment, like microscopes and haemoglobinometers, the respective laboratory units and National Public Health Laboratories develop specifications before procurement is undertaken. The equipment and protective materials are procured by the district teams and in turn at the national level after the annual spraying cycle or during a needs assessment. DOMC does not have an inventory and does not maintain equipment. District/provincial users with support from DOMC maintain equipment where possible. The quantity of equipment and protective gear for IRS is not sufficient.

A laboratory needs assessment completed recently will inform the Division of the actual gap in laboratory diagnostic equipment.

4.1.11 Performance Indicators and Targets

The 2001-2010 NMS provides M&E indicators and targets under the four strategic approaches. Moreover, the programme's M&E plan is currently under revision in order to guide DOMC operations. The plan is also a condition precedent to the GFATM Round 4 Phase 2 funds disbursement. The progress and performance in programme management in achieving strategic and annual targets can be found in the ministry's annual business

Table 4.2: Malaria business plan 2008/09

Objectives	Output	Results
Objective 1: To ensure a supportive planning and implementation environment for partners	Output 1: National malaria operational plan implemented Output 2: Technically sound and result oriented malaria component of comprehensive district health plans	Performed well
Objective 2: To mobilize funding for malaria control interventions	Output 1: Funded National Malaria Business Plan	Performed well
Objective 3: To ensure effective performance management and accountability for national malaria control deliveries	Output 1: Malaria control agenda prioritized in national and international forums	Did not perform well
Objective 4: To strengthen institutional capacity for malaria control	Output 1: Effective programme support and audit including quarterly Monitoring of staff work plans and AOPs Output 2: Programme management and accountability-administrative costs for GFATM met Output 3: Programme management and accountability – effective DOMC administration, management, IT and data analysis	Performed well

plan (2008/09). Whereas there are no specific indicators for management of malaria control interventions, the plan does indicate activities that can be used to gauge the achievement and progress. These are summarized in Table 4.2.

4.1.12 Financing Malaria Control

DOMC's annual business plans are important tools for budgeting the financing required for it to undertake its mandate. Kenya has not yet reached the Abuja target of 15 per cent of overall country budget for financing the health sector (Table 4.3). The current level in 2008/09 financial year was 9 per cent (Table 4.4). At this level of investment, there is the concern that the country may not attain the MDGs by 2015. That notwithstanding, bilateral and multilateral partners contribute significantly to the overall health budget and malaria is one of the beneficiaries of this support.

The contribution of Government to malaria control has been mainly to support the health infrastructure and salaries of health workers engaged directly as part of the overall service delivery mandate of the health sector (Table 4.5).

Financing for malaria control has continued to increase steadily and is mainly supported under the development budget with the bulk of the funds coming from the Global Fund. Among other partners providing support are DFID, USAID and UNICEF. For 2008/09, the budget allocation to malaria control was approximately 4.78 per cent of the MOPHS budget. To date the DOMC is dependent on donor funding for its operations.

4.1.13 Malaria Economics

Malaria sub-accounts have not been conducted as part of the national expenditure framework, but malaria's influence on the economy is negative at both household and national levels. It is estimated that over 17 million person-hours of work are lost to malaria illness (MOH, 2001b), affecting sectors that are the backbone of the economy including agriculture and manufacturing. Current economic studies on the cost of malaria to families and the economy are not available, but it is estimated that 50 per cent of household expenditures on health may go to malaria.

4.1.14 Reporting

There is no routine reporting of malaria service delivery or on programme management from the districts to national level. DOMC prepares quarterly central reports (Q1/Oct, Q2/Jan, Q3/Apr, Q4/Jul), which are required as part of the monitoring of the health sector AOPs. The last annual malaria control report (incomplete/unpublished) was for 2006/07. GFATM Quarterly Performance reports are produced with difficulty because of delays in service delivery and receipt of commodity consumption reports from the district level.

The lack of a comprehensive M&E strategy and framework, as well as non-adherence to supervision schedules, leads to poor overall programme reporting.

- DOMC should develop simple district and provincial reporting formats, which should then enable the timely preparation, production and dissemination of comprehensive quarterly and annual reports.

4.1.15 Monitoring and Evaluation

A malaria monitoring and evaluation plan is currently being finalized together with the new

Table 4.3: Malaria budgetary allocation (Ksh billions)

Year	Budget	Allocated	Gap
2006/07	6.2	3.8	2.4
2007/08	6.0	2.7	3.2
2008/09*	3.7	2.5	1.2

*DOMC draft business plan.

Table 4.4: Financing of malaria control by the Government of Kenya (Ksh millions)

	2006/07	2007/08	2008/09
Development	6,870	7,743	9,293
Recurrent	22,256	22,770	23,273
	29,126	30,513	32,566
Malaria specific	1,932	2,838	1,551
Percentage	6.63	9.30	4.76

Table 4.5: Sources of current malaria financing by year, 2008–2012 (US$)

Organization	2008	2009	2010	2011	2012
Ministry of Health	In-kind (human resources)	In-kind (human resources)	In-kind (human resources)	In-kind (human resources)	In-kind (human resources)
GFATM (Round 2)[a]	1,974,167				
GFATM (Round 4)[b]	35,569,631	34,002,866	34,774,298		
USAID (incl. PMI)[c]	6,009,885				
DFID[c]	3,996,970				
Pfizer Foundation[d]	500,000	500,000	500,000	500,000	500,000
Total funds available	46,076,485	34,502,866	35,274,298	500,000	500,000

Source: a) DOMC business plan; b) GFATM R4 Phase 2 work plan and budget; c) DOMC business plan and interviews; d) Support through PSI.

national malaria strategy. Development of this plan is also a condition precedent to Global Fund Round 4 Phase 2 disbursements. Programme monitoring could be strengthened with simple quarterly and annual review meetings with provinces and districts. The new strategy will be reviewed every three years. This MPR is actually the first comprehensive review or evaluation of the malaria programme.

4.1.16 Malaria Inter-Country and Cross Border Collaboration

It was noted that this is being pursued at ministerial level in the East African Community.

☛ In this globalized era, cross-border collaboration is an area that needs more serious attention as Kenya moves towards malaria-free status.

4.1.17 Success Stories, Best Practices and Enablers

- Increased human resource at national level.
- Increased political will and financing for malaria control.
- Updated malaria diagnosis, treatment and prevention guidelines with the development of trainer and participant training modules and nationwide roll-out of artemisinin-based combination treatment (ACT).
- Introduction of RDT for malaria diagnosis.
- Mass LLIN distribution campaign targeting children under five years and pregnant women as an integrated campaign with measles, as well as stand-alone LLIN mass campaigns in endemic and epidemic areas (highland and seasonal zones), plus mass net retreatment campaigns nationwide to convert traditional nets into LLINs.
- IRS extended to all epidemic prone zones in 2007 and 2008.
- First Malaria Indicator Survey 2007 conducted to measure outcomes in service delivery.
- Successful resource mobilization to support malaria interventions from GFATM, DFID and USAID/PMI (Table 4.6).

An estimated 50 per cent of household expenditures on health may go to malaria.

4.1.18 Lessons Learnt

- Accurately costed annual business plans are important for identifying financing gaps and for guiding a programme towards its goals.
- Coordinated partnership mechanisms have good potential for positive impact in malaria control, e.g., LLIN and measles campaigns.
- Multiple malaria control interventions yield positive impact, especially in endemic areas like Coast and Nyanza provinces.

4.1.19 Key Issues and Challenges

The following constraints were identified:

- Donor funding continues to be conditional and with the global economic crisis, sustained funding for malaria control interventions may become uncertain.
- Lengthy procurement procedures make supply chain management unreliable, while the high cost of commodities threatens sustainability.

Table 4.6: Organizations and areas of support

Organization	Area of Support									
	ITNs	IRS	Larvae control	IPT	Diagnosis	Treatment	IEC/BCC	Epidemics	M&E	Programme management
Ministry of Health	X	X	X	X	X	X	X	X	X	X
GFATM	X	X		X	X	X	X	X	X	
DFID	X	X		X	X	X	X	X	X	X
USAID/PMI	X	X		X					X	X
World Bank				X						
UNICEF	X					Some emergencies				
Pfizer Foundation							X			

- Shortage of personnel at facility level has an impact on the quality of malaria service delivery.
- Progress to universal coverage, particularly LLINs and IRS, is slow.
- Monitoring and supportive supervision at all levels are weak.
- Logistics support and infrastructure at DOMC are inadequate.
- Procurement and supplies management including distribution logistics for malaria commodities is not well coordinated.
- There are frequent stock outs of ACTs.
- Technical capacity among the key players is inadequate for core malaria functions at district, provincial and national levels.
- Progress towards the achievement of goals has been slow, including universal coverage with malaria interventions.
- Sustainable funding for malaria control is not assured.

4.1.20 Conclusion

In the decade that the DOMC has been in existence, it has succeeded in its role of development, dissemination and implementation of strategies for malaria control and the coordination of partnerships. These partnerships, in turn, have been successful in resource mobilization to support the various control interventions and also provide technical advice for their successful implementation.

DOMC continues to provide for implementation activities in districts, although this function should have devolved and the Division taken on the role of technical advisor and to support capacity building for implementation, monitoring and evaluation at this level. Monitoring and evaluation of the various interventions at national level also faced several challenges.

4.1.21 Recommendations

- For GOK, provide budgetary support for sustainable malaria control.
- For MOPHS, develop one policy document for malaria control.
- Appoint malaria focal persons with clear TORs at provincial and district levels to coordinate the implementation of malaria control activities.
- Appoint or designate the following skilled personnel for the DOMC: programme planning officer, training officer and logistician to coordinate PSM of malaria commodities.
- Establish malaria reference laboratories to support quality assurance/quality control (QA/QC) of malaria diagnosis across Kenya.
- Strengthen collaboration with the DVBD to support entomologic and malaria surveillance for the malaria programme.
- Address issues surrounding procurement and particularly distribution of malaria commodities to avert frequent stock outs at user level.
- In collaboration with training centres and universities, formalize malaria pre-service and in-service training for public and private health care providers.
- Review TORs and membership of MICC and TWGs to redefine roles of all stakeholders and partners in line with the new NMS.
- Initiate collaboration with regional NMCPs through the Department of International Health to enhance coordination and sharing of best practices, lessons learnt and challenges.

Table 4.7: Programme management performance rating

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization		✓			Case management well established but needs focal points at lower levels.
Governance and partnership			✓		Not well coordinated at lower levels.
Guidance		✓			Guidelines not widely distributed, staff not trained. Private sector not involved.
Human resources and training			✓		Gross understaffing and requires more training on laboratory diagnosis.
Planning and budgets		✓			Planning and budgeting promptly done. Low funding.
Performance indicators and targets			✓		AL access within 24 hours for children with fever is too low (4.3%).
Reporting and M&E			✓		Laboratory results do not reach central level. No mortality data.
Operational research				✓	Inadequate OR at national level.
Overall			✓		Strengthening needed in policy, coordination at lower levels, outcome indicators and training on diagnosis.

4.1.22 Performance Rating

Table 4.7 presents a summary of the overall performance rating in the area of programme management.

4.2 Procurement and Supply Chain Management

Appropriate procurement and supply chain management are critical to the uninterrupted supply of commodities for the prevention, control and treatment of malaria. The key objectives of DOMC in this area include ensuring that effective commodity procurement and supply management (PSM) systems and standard operating procedures (SOPs) are developed and disseminated nationwide.

The objectives also aim to fully integrate the malaria PSM into the existing health sector procurement system, and to ensure an uninterrupted supply of antimalaria commodities within the supply chain. In addition, the Division endeavours to support training of health workers on malaria PSM in all public and faith-based health facilities and to carry out a PSM audit every 3-5 years. The malaria commodity management performance standards are well defined, but the programme lacks a logistician to coordinate the stock control system along the entire supply chain.

4.2.1 Policy

The National Malaria Strategy 2001–2010 did not have an action plan on procurement and supply chain management for malaria commodities. However, all procurements are governed by the Kenya Public Procurement and Disposal Act (2005), and annual procurement plans for essential drugs and commodities are prepared by KEMSA and various health departments. A PSM plan for malaria commodities to be procured under the GFATM Round 4 is in place.

4.2.2 Registration

Registration of medicines for malaria is carried out by the medicines regulatory authority in Kenya, the Pharmacy and Poisons Board (PPB), while that of insecticides and insecticide treated nets is the responsibility of the Pest Control Products Board (PCPB). Specifications for diagnostics are provided by the National Public Health Laboratories and the DOMC.

4.2.3 Guidelines for Selection

The National Malaria Guidelines for Diagnosis, Treatment and Prevention of Malaria (2008), the Kenya National Pharmaceutical Policy (KNPP - 2008), and Guidelines on Essential Medicines Supply Management for Rural Health Facilities (2008) inform the selection of medicines for malaria. The KNPP gives guidelines for prescribing and dispensing the appropriate drugs; the selective support for the local pharmaceutical industry; pricing policies and control of drug donations; public education and information; and medical and pharmacy education including in-service training programmes for health professionals. The newly developed Integrated Vector Management (IVM) policy provides for the selection of RDTs, IRS and LLINs.

Sustained availability of antimalaria medicines and other malaria commodities in public health facilities can only be assured through a supply chain that procures commodities of the right quality at the right price, and delivers them in the right quality and quantity to the right place at the right time.

Selection of Malaria Medicines. The Kenya Essential Drug List (KEDL; MOH, 2003) and the Standard Treatment Guidelines (STGs; MOH. 2008b) are the two documents that guide the selection of essential medicines for malaria. The KEDL includes the selection of SP and quinine (oral and injectable) medicines, but does not provide for ACTs.

The KEDL is updated as needed according to prevailing national and international guidelines – and is undergoing revision in 2009 – but the yet to be launched Kenya National Pharmaceutical Policy (KNPP; MOH, 2008a) and Guidelines on Essential Medicines Supply Management for Rural Health Facilities (2008) advocate that KEDL updates should be scheduled regularly – at least once every two years – by the National Pharmacy and Therapeutics Committee (NPTC). The Malaria Drug Policy Technical Working Group advises the DOMC on policy guidelines related to malaria case management. The revision is based on the therapeutic efficacy, safety and quality of antimalaria medicines.

Selection of Diagnostic Materials. The selection of diagnostic materials, which include microscopes, RDTs, stains, slides and buffers, is currently user-driven. The technical staff at DOMC work in collaboration with the laboratory subcommittee to provide technical advice on the selection of diagnostic materials. Among other members this subcommittee includes the Kenya Medical Laboratory Technicians and Technologists Board (KMLTTB) and the National Public Health Laboratories (NPHL). Evaluation of these products is based on WHO guidelines, International Standards and the results of field-testing. The Standards Committee of the KMLTTB has established structures to start the registration of diagnostic materials.

Selection of Long-Lasting Insecticide-Treated Nets. The ITN Technical Working Group conducts the selection of long-lasting nets according to WHO guidelines (World Health Organization Pesticide Evaluation Scheme, http://www.who.int/whopes/quality/en/) and the results of field-testing. The insecticides commonly used for net treatment are pyrethroids (permethrin, alphacypermethrin and deltamethrin). They are chosen for their low toxicity to humans, rapid insecticidal/knockdown effect, long residual effects and safety (WHO, 1985).

The insecticides are available in liquid formulation, capsule suspension or microencapsulated, emulsion-oil-in-water, and emulsifiable concentrate. WHO guidelines define a LLIN as a factory-treated mosquito net expected to retain its biological activity for a minimum number of 20 washes and a minimum period of three years under field conditions (WHO/CDS/WHOPES, 2005). The netting materials may be made of cotton or synthetic fibres (polyester, nylon or polyethylene) and are typically 40, 75, 100 or 150 denier, the strongest being 100 or 150 denier. In 2001, WHO agreed that the colour of nets (white, jungle green, light green, light blue or pink) be determined by the users (RBM, 2001).

Selection of IRS and Larvicide Commodities. This is carried out by the Vector Control TWG in accordance with the WHO Pesticide Evaluation Scheme (WHOPES) and in consultation with the National Environmental Management Authority (NEMA) and the Pest Control Products Board (PCPB).

Table 4.8: Five-year forecast for AL – Annual projected number of treatment doses adjusted for age groups, 2008–2012

Weight category	2008	2009	2010	2011	2012
5–14kg	4,766,584	5,147,911	5,559,744	6,004,523	6,484,885
15–24kg	2,271,059	2,452,744	2,648,964	2,860,881	3,089,751
25–34kg	990,288	1,069,511	1,155,071	1,247,477	1,347,275
Over 35kg	5,175,903	5,589,975	6,037,173	6,520,147	7,041,759
Projected total number of treatments	13,203,834	14,260,140	15,400,952	16,633,028	17,963,670

Source: PSM plan for GFATM Round 4.

Table 4.9: Performance against set targets for access to AL

Indicators		2006/07	2007/08	2008/09	2009/10
1. No. of AL treatment doses procured since the new policy roll out	Target	10 million	16.8 million	14.2 million	
	Achieved	12 million	24.4 million		
2. No. of adults receiving AL as per standard treatment guidelines	Target			6.5 million	
	Achieved			3,998,225	

Source: DOMC 2009.

Chemicals for use in larva or adult vector control are those officially recommended by WHOPES and officially registered in Kenya through the PCPB with technical advice from the DOMC, the DVBD and the Division of Environmental Health.

Specification for IRS insecticides and pumps used for IRS in Kenya are those recommended by WHOPES. The following insecticides have been approved for IRS: pyrethroids (alphacypermethrin, bifenthrin, cyfluthrin and deltamethrin), carbamates (propoxur, bendiocarb) and organophosphates (malathion, pirimiphos methyl).

Hand-operated compression sprayers are used and it is recommended that a sprayer consist of a tank, usually cylindrical, equipped with a hand-operated air pump with a two-handed handle and locking device, separate from the tank lid, a pressure-release safety device, and a hose attached at the top of the tank to a dip-tube. In addition, the sprayer should have a trigger valve with locking-off device, lance, control flow valve and nozzle, along with other accessories (WHO/WHOPES, 2006; MOPHS, 2008b).

4.2.4 Specifications

The specifications for malaria commodities are provided by the respective TWG for the different commodities. However, DOMC requires manufacturers to give proof of the following:

- Real-time temperature stability data on the product and accelerated data on the lot/batch.
- Evidence of successful operational use or good quality field trial data on the product.
- Evidence of Global Malaria Programme (GMP) systems/ISO certification.
- Provision of sample products for assessment and testing for ease of use.
- Agreement for replacement of products that fail agreed QC procedures.
- Long-term viability of manufacturer (staff size, financial statement and/or track record).

4.2.5 Quantification

The different TWGs under the respective strategic interventions usually undertake an annual quantification and a five-year forecast of malaria commodities. This process informs the Ministry's procurement plan (Table 4.8).

Donor conditions as well as seasonal and emergency situations may require the TWGs to conduct piecemeal quantification exercises. The DOMC has a modus operandi to guide annual quantification of malaria medicines but does not have a strategic plan to guide forecasting and quantification for other malaria commodities. The drug management subcommittee of the Drug Policy TWG focuses mainly on quantification of antimalaria medicines rather than diagnostic requirements such as slides and reagents for microscopes and RDT.

Quantification Methods. Quantities for malaria commodities are estimated centrally using three main methods:

- ***Consumption method:*** Focuses on the use of inventory control tools to establish usage through the amounts ordered and consumed and the duration of stock out for the quantification period, which is normally one year (Table 4.9).
- ***Morbidity method:*** Uses the number of malaria cases reported in the country over a given period. HMIS reports are used to estimate the commodity requirements.

Table 4.10: Budget and sources of financing for malaria commodities in Kenya

Commodity	Annual budget (US$)	Percentage	Source of funds
Quinine injection	322,173	1.16	GOK
Quinine tablets	750,989	2.71	GOK
SP	430,345	1.50	GOK
AL	17 million	61.43	GFATM
	43,000	0.15	PMI
RDTs	128,000	0.46	GFATM, DFID/WHO
LLINs	6 million	18.05	GFATM
IRS	3 million	10.83	PMI, GFATM
Total	27,674,507	100	

Source: DOMC, 2008/09.

- ***Demographic method:*** Focuses on population and targeted groups such as children under five years and expectant mothers.

The first two of these methods are mainly used for the estimation of essential medicines and diagnostic commodities. The third method is typically applied to IRS commodities, SP for IPT and LLINs.

Budget and Sources of Financing for Malaria Commodities. The budget and sources of financing for malaria commodities in Kenya are summarized in Table 4.10. It can be seen in the table that only 5.4 per cent of the total funding comes from the Government; the rest is from donors. This poses a serious sustainability challenge for malaria control in Kenya.

4.2.6 Procurement and Distribution

The national annual procurement plan is an integral part of the DOMC annual business plan, which forms the basis for resource mobilization. GOK allocates funds for medicines for complicated malaria such as quinine and adjunct therapies, but ACTs, IRS and LLINs are almost exclusively donor funded. Domestic GOK core or SWAp health sector funds are insufficient to support malaria control interventions. This limits the sustainability of the supply of malaria commodities. The Public Procurement Oversight Authority Act (2005) guides the procurement of malaria commodities. Delays in fund disbursements because of donor performance monitoring requirements have had serious ramifications for the national malaria procurement cycle, resulting in national stock outs of essential medicines such as AL. A multiple partner approach results in uncoordinated procurement of malaria commodities.

The procurement method selected also affects the stock situation for the commodities. A comparison between direct procurement in FY 07/08 and open international tender (OIT) in FY 08/09 showed that direct procurement took four months while OIT took 12 months. OIT has therefore been associated with delays. In addition, there has been a delay in AL delivery as a result of poor enforcement of supplier contracts and lack of a PSM audit of the Procurement and Supply Chain Management Consortium (PSCMC).[2]

Procurement and distribution of AL, pumps and insecticides for IRS and LLINs is financed mainly by GFATM. The PSCMC was contracted by GFATM to do procurement, warehousing and distribution of all malaria commodities. KEMSA is a member of the consortium in charge of warehousing and distribution of commodities. All health facilities receive SP and quinine from KEMSA and can supplement stocks by buying from other suppliers such as MEDS (among others) using cost sharing funds if they run out of stock.

KEMSA distributes AL alongside the other essential medicines for health facilities provided in medical kits. Delivery of AL may be delayed if medical kits are not available for distribution. Similarly, if AL is out of stock at the central level during the normal cyclic distribution, then deliveries of other essential commodities are carried out in the absence of AL.

Currently 5 per cent of cost is paid to distribution agencies for AL distribution. These

[2] The Ministry of Finance is currently working with the Global Fund to publish an Operations Manual for Global Fund Grants in Kenya, which should help to reduce confusion and delays in procurement.

Table 4.11: Percentage of facilities reporting no stock outs for more than seven days against target, 2006–2008

Indicator		2006	2007	2008
Percentage of facilities reporting no stock outs for morethan seven days against target, 2006–2008	Target	60%	70%	80%
	Achieved	-	63%	71%

funds are inadequate to support parallel or stand-alone distribution of AL. A possible solution to this is separation of the distribution budget from procurement or provision of funds for vertical distribution of AL. These options would allow for separation of kit distribution from that of AL whenever the essential medical kits are delayed.

Storage. Storage and warehousing of malaria commodities is presently undertaken by KEMSA for public health facilities and designated mission facilities, and by MEDS for faith-based health facilities. Distribution of malaria commodities is done by KEMSA, MEDS and development partners to facility level for malaria medicines and to district stores for LLINs and laboratory commodities.

Quality Control. Quality control procedures at national level are implemented through relevant regulatory bodies, including National Quality Control Laboratory Services (NQCLS), Kenya Bureau of Standards (KEBS), National Environmental Management Agency (NEMA), Pharmacy and Poisons Board (PPB), and Pest Control Products Board (PCPB).

Stock Control (Inventory Management). Poor inventory management at all levels has resulted in expiry and stock outs. Of concern has been the late trigger to central level when stock outs occur. Frequent stock outs of malaria commodities – especially ACT for treatment and SP for IPTp – appear to be a major issue affecting the success of malaria control services. The stock control system in place since the implementation of the 2006 malaria treatment policy faced challenges of low reporting rates, plus incomplete and inaccurate data. Currently the DOMC has revised its logistics management information system (LMIS) and is training health workers countrywide on inventory and information management. The stock control system focuses on the use of electronic tools at central and district levels and manual tools at facility level.

The tools have been distributed to all health facilities and staff have been trained. The pharmacist in charge at the facility fills the AL register and sends a monthly summary to the district pharmacist who then aggregates all the data and sends them to the Logistics Management Unit (LMU) at KEMSA. LMU sends the aggregated data for the whole country to DOMC. KEMSA and MEDS compile monthly issues data (quantity and facilities supplied) and stock-on-hand data and forward these to DOMC (Table 4.11). No real-time consumption data are available.

Comparative National and International Unit Costs of Malaria Commodities. Purchase price comparisons of medicines allow the programme to show whether the system is getting maximum benefit from procurement funds and if not how much will be saved with alternative procurement practices. One potential source of this information is the International Development Association (IDA) Price Indicator Guide, which has a list of international prices.

The review team compared prices of a few products as indicated in Table 4.12. Procurement prices for AL tablets 20mg/120mg and quinine injection 300mg/ml have been below IDA Price Indicator (October 2008) levels, while those for other malaria control commodities such as LLINs, quinine tablets, SP tablets and artemether injections are higher. Comparative prices for IRS chemicals are not available.

Table 4.12: Price comparison analysis for malaria commodities

Commodity	Unit pack	National price in USD	International prices (IDA Price Indicator October 2008)
AL tablets 20mg/120mg	6's	0.24	0.36
	12's	0.46	0.73
	18's	0.69	1.09
	24's	0.91	1.38
Quinine sulphate tablets 300mg (loose)	1,000's	51.4	37.55
Quinine injection 300mg/ml	1 vial	0.17	0.19
Artemether injection 20mg/ml	1 vial	0.70	0.19
SP tablets	1,000s	27.2	23.79
LLINs			
130x180x150cm, polyester	1 pce	5.96	4.09
160x180x150cm, polyester	1 pce		4.46
190x180x150cm, polyester	1 pce	*(Comparative prices not*	4.78
130x180x150cm, polyethylene	1 pce	*available)*	4.84
160x180x150cm, polyethylene	1 pce		5.34
190x180x150cm, polyethylene	1 pce		5.78
Malaria P. falciparum RDT	1 test	1.08	0.64
Deltamethrin 62.5ml	Sachet	5.54	*(Comparative price not available)*
IRS Insecticides			
Hudson Xpert steel spray pump – 10 litres	Pump	341.06	*(Price not available*

4.2.7 Success, Best Practices and Enablers

An appropriate quantification system for malaria commodities is in place. In addition, an elaborate distribution system is established that involves bimonthly distribution to hospitals and quarterly distribution to rural health facilities. Faith-based facilities are supplied on the pull system through MEDS. Revised LMIS tools have been developed and disseminated to all health facilities, and health workers countrywide are being trained on effective management of malaria medicines. Monthly electronic reporting of AL consumption through LMIS commenced in June 2009. Diagnostics will be added to this system in 2010. Distribution of LLINs to the end users is currently captured through the HMIS monthly reports.

4.2.8 Lessons Learnt

- Enforcement of supplier contracts, M&E of the PSCMC and a PSM audit need to be carried out routinely to prevent delivery delays and stock outs of malaria commodities.
- In addition, the availability of stocks at the central level does not always translate to availability at facility level since AL is usually distributed by KEMSA alongside other drug kits, which could be delayed or unavailable.

4.2.9 Key Issues and Challenges

- Lack of a procurement supply management component within the NMS 2001–2010.
- Lack of a DOMC logistician to coordinate procurement and distribution of malaria commodities.
- Lack of real-time stock management including data on commodity usage, non-availability of inventory management tools and inadequate storage space for LLINs and IRS commodities.
- Inadequate government funds allocation for malaria commodities.
- Frequent stock outs of medicines, test kits and LLINs.
- Shortage of health workers and inadequate numbers trained on inventory management.

4.2.10 Conclusion

Procurement and supplies management of malaria commodities is currently handled by KEMSA and the PSCMC with input from the DOMC and various partners. Health workers are currently trained on various aspects of stock management reporting, but distribution challenges contribute to stock outs of commodities particularly at point of use. Stock management and reporting for most commodities are weak or totally lacking. The LMIS, which is expected to be operational in August 2009, will eventually improve management of all malaria commodities.

4.2.11 Recommendations

- Deploy a logistician at the DOMC to coordinate malaria commodities supplies management with various departments.
- Address procurement, warehousing and distribution bottlenecks to avoid delays and stock outs, particularly concerning the delinking of procurement costs from distribution costs.
- Ensure close monitoring and supervision of the procurement and supplies management system, which are critical to management of the procurement cycle.

Table 4.13: Performance rating for the procurement and supplies management for malaria commodities

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization				✓	There is no PSM coordinator for malaria commodities.
Governance and partnership		✓			DOMC partners well with stakeholders in developing policies, quantifying exercises, procuring and distributing malaria commodities.
Guidance					Guidelines for procurement and supplies for commodities exist.
Human resources and training			✓		Logistics personnel handling malaria commodities at programme, provincial and district level are not well trained in logistics management.
Planning and budgets		✓			Quantification, budgeting and planning for procurement/distribution of malaria commodities are adequate.
Performance indicators and targets				✓	Lack of timeliness in the procurement and distribution of commodities result in stock outs and poor performance.
Reporting and M&E			✓		Malaria commodities LMIS is not functional.
OR					Not rated.
Overall			✓		There is need to improve the coordination, supply chain management, and monitoring and evaluation of PSM for malaria commodities.

4.2.12 Performance Rating

Table 4.13 summarizes the assessment of performance in the area of procurement and supplies management.

4.3 Malaria Vector Control

Anopheles gambiae s.s., An. funestus and *An. arabiensis* are the main vectors of malaria in Kenya. The primary vector control interventions in the country are insecticide treated nets (ITN) and indoor residual spraying (IRS). In the current NMS, ITNs are the preferred tool. ITN coverage after the 2006 mass campaign indicated that 52 per cent of under-5s and 58 per cent of pregnant women had ITNs. However, MIS survey results (DOMC et al., 2009) show a gap between ownership and utilization of ITNs.

DOMC and partners have been implementing IRS campaigns in highland malaria epidemic districts under Global Fund Round 4 and with the support of DFID and PMI. While these campaigns have been successful, skills have been developed and lessons learnt, their effectiveness is limited by the high transmission found in adjoining fringe endemic malaria districts. The DOMC intends to address this weakness by shifting to more focused spraying in epidemic districts (coupled with more intense surveillance) and apply targeted spraying in endemic districts under a phased campaign. This strategy will be complemented with universal coverage of ITNs.

☛ There is need for more effective and targeted BCC to translate ITN ownership into ITN usage.

4.3.1 Policy

National policy on vector control (2001) states:

> The GOK will increase access to insecticide treated net services amongst people at-risk of malaria in Kenya, especially young children and pregnant women. The GOK will promote alternative approaches to vector control in accordance with special ecological risks.

Given the emphasis on the use of ITNs for vector control in the NMS 2001-2010, an ITN implementation strategy was developed for the country in 2001 (MOH, 2001a) with a goal of maximizing ITN ownership and use. At that time, the objective was to ensure that 60 per cent of the population at risk of malaria (pregnant women, children under five years of age and people living with HIV/AIDS) were using ITNs in line with the Abuja targets and the RBM objectives.

In 2006 one mass ITN distribution campaign was conducted targeting children less than five years. This first campaign was integrated with measles and polio immunization and vitamin A supplementation, while the follow up was a stand-alone campaign carried out by DOMC. In 2008 an ITN implementation framework was developed (although not published) to guide net retreatment and mass distribution campaigns. The focus for coverage by ITNs has since changed to achieve universal coverage (one LLIN for two

persons) of all at-risk populations with LLINs. For IRS the focus has changed from using IRS for epidemic prevention and response to applying it to vector control in malaria endemic areas. All insecticides that are used in Kenya for malaria vector control are those recommended by WHOPES and registered in Kenya by PCPB. An integrated vector management (IVM) policy guideline was developed in 2009 encompassing implementation of all vector control methods (MOPHS, 2009).

4.3.2 Guidance

An IRS training manual/guidelines (MOPHS, 2008b) and a draft ITN implementation framework (MOPHS. 2008a) were developed in 2008. The framework outlines strategies towards universal coverage with ITN, but it has not been officially adopted, published and disseminated. Universal coverage was to be achieved and maintained through mass distribution of LLINs to all those at risk and to maintain it through distribution to pregnant mothers and children under one year in all health facilities.

The ITN framework stipulates the methods of increasing coverage through resource mobilization, training, product taxation, partnership and coordination, pricing and equitable access, advocacy, and social mobilization. The guidelines also outline the product standards and methods of monitoring and evaluating the performance. The framework takes cognisance of the problem of safe mechanisms for the disposal of net materials. It does not address issues of a post market delivery survey and adherence to net use, which are key to the success of insecticide treated materials.

4.3.3 Organization

Currently, a vector control unit exists at the national level in DOMC. It consists of one focal point and two technical officers and is tasked with advising on overall policy direction and technical support for all aspects of vector control operations. There are no focal point persons at the provincial and district level in charge of malaria vector control activities; these activities are jointly coordinated by public health and environmental health officers in the districts. The DOMC has established formal linkages with KEMRI to carry out research on vector surveillance and insecticide resistance monitoring. DOMC also has linkages with DVBD and DEH for entomological surveillance and conducting IRS.

- The technical composition of the vector control team needs to be strengthened with an entomologist and entomology technicians. There is further need to strengthen the existing collaborative efforts with other partners: PCPB and NEMA for technical support in registration, safe use and disposal of insecticide and insecticide products.

4.3.4 Human Resource Training and Capacity Building

In collaboration with KEMRI, WHO, PSI and PMI through Research Triangle International (RTI), DOMC conducts training and retraining for technical staff involved in malaria vector control, entomology and IRS. To date 16 entomological technicians and over 68 entomology trainers have been trained. DOMC and PSI have also developed training modules for malaria control using insecticide treated nets.

4.3.5 Governance and Partnerships

Nationally, there is a Vector Control TWG, formerly known as the ITN TWG, chaired by the Director of Preventive and Promotive Health Services. Membership includes: DOMC, DDSR, DRH, Department of Primary Health Care, Department of Health Promotion, private sector representatives, DVBD, PCPB, PSI, UNICEF and DEH. The vector control TWG meetings are currently chaired by the head of DOMC; the meetings are held quarterly. In addition, DOMC has established formal collaborations with KEMRI, DVBD and DEH for research and surveillance. Collaboration is also in place with PMI and PSI for technical and material support for vector control activities – specifically for conducting IRS and net distribution.

4.3.6 Strategic and Annual Planning

DOMC has an overall strategic plan and an annual operational plan. Complementing this, the vector control unit prepares a business plan that outlines the annual vector control budgets and activities. Districts prepare annual vector control plans that are submitted to provinces for onward submission to national level. The information from the targeted districts is used to prepare annual plans and to calculate and procure commodities for IRS, while for LLINs the targets for universal

The GOK will increase access to insecticide treated net services amongst people at-risk of malaria in Kenya, especially young children and pregnant women. The GOK will promote alternative approaches to vector control in accordance with special ecological risks.

- 2001 Vector Control Policy

coverage are used. DOMC, in collaboration with partners, conducts annual retraining on supervision and spraying before the transmission season. At the end of the spraying season a review and planning meeting of participating districts and stakeholders is conducted. Pre and post IRS entomological and parasitological surveys and contact bioassays are not done routinely.

☛ Routine geographical reconnaissance and vector surveillance should be included in plans.

4.3.7 Delivery Structures

The primary vector control delivery mechanisms are the LLIN programme, IRS programme and larviciding. These are discussed in turn.

LLIN Programme. LLIN distribution intends to reduce malaria transmission by reducing human-vector contact. The distribution of ITNs began in 2001 as a social marketing strategy by the GOK through PSI. In 2004 this was expanded to include distribution in health facilities and clinics at a subsidized fee. With increased funding for vector control from the Global Fund, LLINs are now given free of charge. Mass distribution campaigns are conducted every 3-4 years; the campaigns in 2006 provided LLINs to populations at risk in endemic and epidemic prone areas through EPI clinics and CHEWs linked to the nearest EPI clinics. The delivery of LLINs through health facilities targeting pregnant women and their infants will continue so as to maintain universal coverage.

Local partnership involvement, collaboration with NGOs and strong CSOs, increased political commitment globally and nationally, incorporation of LLINs into government malaria control plans and budgets are opportunities towards achieving universal coverage. Inadequate human resources and lack of clear organizational structures for mass net distribution are challenges that need to be addressed.

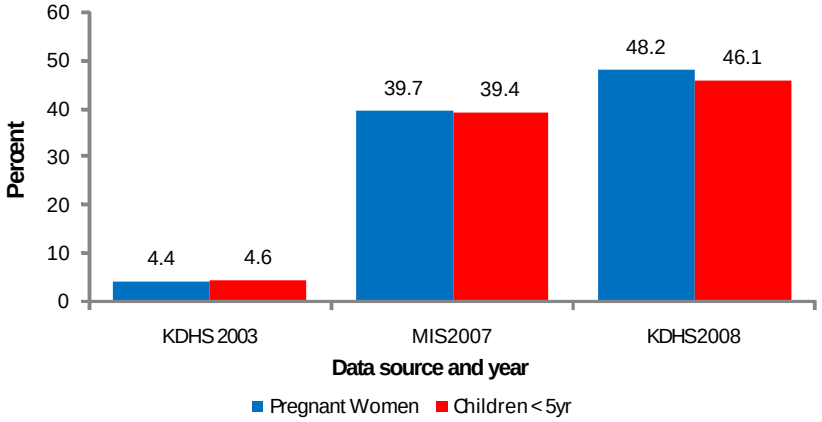
☛ Other distribution mechanisms need to be explored, such as LLIN distribution to institutions including schools, hospitals, prisons and displaced persons, as well as campaigns in hard to reach areas.

IRS Programme. IRS has been implemented annually to prevent malaria epidemics in epidemic prone highland districts since 2005 with support from DFID (2005-2009), Global Fund (2006-2009) and PMI (2007-2009). District public health officers (DPHOs), their divisional PHOs and PHTs supervise IRS activities. Locally recruited and trained spray operators in each targeted district carry out the IRS with support and supervision from DOMC and the DPHO. DOMC, in collaboration with KEMRI, DVBD, WHO, USAID and other partners, provides IRS training and retraining for field technicians.

Although there are no routine parasitological and entomological evaluations, the declining trends in vector densities in sprayed districts suggest that IRS is an effective means of vector control. Increased public awareness and demand for malaria prevention and treatment services, and government and partner commitment to support IRS activities are strong IRS enablers.

With increased support from the Global Fund, LLINs are now given free of charge.

Figure 4.3: Trends in net use, 2003–2008



- Weak monitoring and evaluation and lack of sustainability plans are serious challenges to IRS. In this regard, there is need to routinely carry out entomological and parasitological surveillance to monitor IRS efficacy to guide selected targeted IRS campaigns. However, in the face of malaria elimination there is still need to expand IRS to endemic areas for vector control.

Larviciding. In Kenya, larviciding as malaria vector control strategy has largely been experimental and maps of mosquito breeding sites are available only for Malindi, Kakamega and Mwea. Evidence-based data from two sites have shown that malaria vectors are highly susceptible to *Bacillus thuringiensis* var. *Israelensis* and *B. sphaericus*. Larviciding significantly reduced vector densities (Fillinger and Lindsay, 2006; Kahindi et al., 2008). Larviciding has higher potential for use in the context of IVM in areas with defined epidemiological settings and where the principal vector breeds in well-defined habitats and is a component of the draft IVM policy.

4.3.8 Involvement of Communities in Preventive Interventions

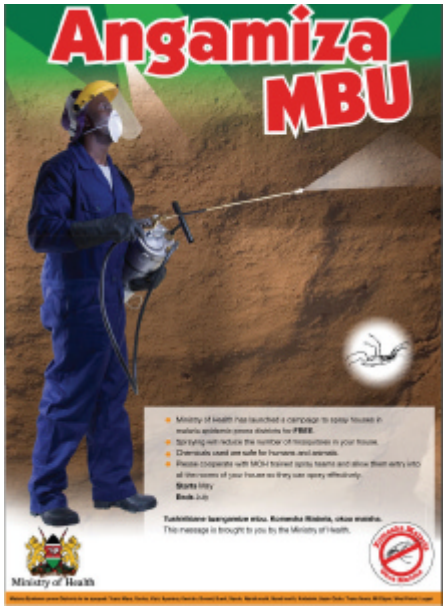
Community acceptability and ownership aspects are essential elements of the implementation and sustainability of any vector control programme. Currently, communities are involved in vector control promotion and operational activities through IEC and BCC processes. This includes clinic health talks, women's group discussions, chiefs' *barazas* and market promotional activities. Other effective vehicles are community drama sessions, school programmes, road shows and special events (e.g., World Malaria Day). The use of local NGOs and CBOs is also important. For the IRS programme, advocacy is done annually in the targeted districts/communities before and after the control operations. IEC materials for LLIN mass distribution and IRS are obtained from DOMC and distributed to the targeted areas.

4.3.9 Performance Indicators and Targets

This section looks at vector control performance in the main areas of LLINs, indoor residual spraying and larva control.

LLIN Programme. ITN ownership increased from 5.9 per cent in 2003 to 50.2 per cent in 2006. The target for ITN distribution was 60 per cent, so the set target was nearly reached. Some 3.4 million LLINs were distributed in 2006 alone, plus 2,788,342 in 2008. An ITN implementation framework was developed in 2008, and there are plans for mass ITN distribution of 11 million LLINs in 2010 and 2011 as part of efforts to achieve universal coverage (one LLIN for two persons) of all people at risk of malaria.

Results from the 2007 KMIS indicated that overall, 63 per cent of households owned nets and 34 per cent had more than one net. Of children under five, 51 per cent slept under any net the previous night and 39 per cent slept under an ITN. About 51 per cent of pregnant women slept under a net the previous night (DOMC et al., 2009). On average, ITN ownership per household is 0.8, compared with an average of 1.2 nets of any kind per household. (See also Figure 4.3.)



Presently, LLINs are available to all vulnerable groups at no cost. Preliminary results from the 2008 KDHS indicate that the national mass distribution of LLINs through EPI campaigns achieved 54 per cent household ownership of LLIN (KNBS et al., 2009). A national retreatment of all conventional nets was conducted in 2008. There is strong coordination of partners involved in LLINs and a universal coverage strategy has been adopted for LLINs. In the recent past, financial resources for LLIN procurement and distribution from the Global Fund, PMI and DFID increased.

On the other hand, entomological monitoring and evaluation including bioassays to test efficacy on ITNs have not been conducted regularly. Vector control indicators are not well structured and not used regularly.

- Entomological indexes (entomological inoculation rates, human biting index) and parasitological indicators (malaria prevalence) need to be monitored routinely. Process indicators including the number of nets distributed, number of households covered and population protected with IRS need to be monitored as well.

IRS Programme. Although capacity building has been enhanced, supervision remains a major challenge. Through collaborative efforts of partners, 68 entomology trainers and 16 field entomology technicians for vector surveillance have been trained. In the 2008 campaign, 63 per cent of the targeted houses were sprayed, protecting over 3.4 million people. Although there are checklists for IRS supervision, there are no maps showing IRS targeted areas and mechanisms for quality control of insecticides and pumps are nonexistent. Inconsistency in the flow of financing impedes control activities given that IRS is time bound. In the 2009 IRS campaigns, only PMI funds were available in a timely manner and IRS coverage declined to 35.7 per cent, with just 33.4 per cent of the targeted population protected. This was occasioned by delay in the release of funds from the Government and the Global Fund's Round 4 Phase 2. Currently, KEMRI is conducting bioassays on behalf of the DOMC with Global Fund and PMI support to check the quality of IRS application and residual effect of sprayed surfaces against the local vectors.

Larva Control. Larva control is still largely experimental in Kenya. However, trials with *Bti* and crude extracts of neem have taken place in Nyabondo, Malindi and Kisii (e.g., Kahindi et al., 2008). There are plans to integrate larviciding with ITNs and IRS in targeted areas from 2010.

4.3.10 Reporting, Reviews and Evaluations

Since there is no routine vector surveillance, routine reporting on vector control activities is currently not well developed and structured. While distribution of LLINs is reported through the HMIS, no database tracking LLINs exists at DOMC, but the division intends to introduce such a system in the near future. For IRS activities, reports are compiled by the districts and provinces and submitted directly to DOMC. Contact bioassays are conducted after IRS activities in collaboration with KEMRI. Reports on residual effects of insecticides are included in the annual IRS reports.

ITN ownership increased from 5.9 per cent in 2003 to 50.2 per cent in 2006. The target for ITN distribution was 60 per cent, so the set target was nearly reached. Some 3.4 million LLINs were distributed in 2006 alone, and 2,788,342 LLINs in 2008.

4.3.11 Operational Research

Over the years several studies relating to malaria vector control have been conducted by diverse research groups: KEMRI/Wellcome Trust, KEMRI, DVBD, CDC, Walter Reed Project, ICIPE and several universities. Larva control, vector behaviour and land use in relation to vector bionomics are some of the subjects of the research. Others are insecticide resistance and ITNs. Currently, DOMC, in collaboration with KEMRI, is conducting research on insecticide resistance and entomological monitoring at three sentinel sites.

Studies on the effectiveness of IRS in reducing the disease burden in malaria endemic areas with relatively high LLIN coverage have been done and will provide evidence for the implementation of IRS and LLIN programmes in those areas.

☛ Operational research needs to be strengthened and a research agenda and research needs for the NMCP clearly identified.

4.3.12 Success Stories and Best Practices

Major achievements have been made in vector control activities. Adequate numbers of LLINs have been made available to all vulnerable groups at no cost, ensuring equitable distribution of the nets across all socio-economic strata; a national retreatment of all conventional nets was conducted in 2008, increasing the number of households owning and using LLINs; and household ownership of ITNs rose from 6 per cent to 54 per cent (CBS et al., 2004; DOMC et al., 2009; KNBS et al., 2009). There is a strong coordination of partners involved in LLIN distribution and adoption of universal coverage strategy. Moreover, increased financial resources for LLINs have been leveraged from DFID, GFATM and PMI. Successful implementation of IRS in epidemic prone districts attained 97 per cent operational coverage in 2007. Eight sentinel sites for vector surveillance were established in 2008, staffed by 16 district entomology technicians. The laboratory capacity of DOMC/KEMRI has been strengthened to monitor vector bionomics including insecticide resistance.

4.3.13 Challenges

Several challenges still face malaria vector control activities. Key amongst these are: lack of vector control guidelines, inadequate storage facilities for vector control commodities including nets, spray pumps, insecticides, protective gear and LLINs, and insufficient office space at all levels. Similarly, there is no national or central maintenance workshop for spray pumps and inventory equipment. Lack of malaria focal points at provincial and district levels poses a major challenge. Failure to implement other vector control options, e.g., larviciding and environmental management, also hampers control activities.

No routine monitoring of insecticide resistance is done and a resistance management strategy and insecticide resistance map are still lacking. Currently, there is limited capacity for entomological surveillance and a weak monitoring system (bioassays to monitor quality of spray, residual effect of treated surfaces/materials) in relation to ITNs and IRS. Information on knowledge, attitudes and practices (KAP) regarding vector control operations is limited. In addition, human resources are insufficient and entomological operations research is uncoordinated and

Table 4.14: Performance rating for vector control

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Policy		✓			IVM draft policy guidelines have been developed.
Organization			✓		No malaria focal persons at district level.
Governance and partnership		✓			DOMC collaborates with several institutions.
Guidance			✓		Only guidelines for IRS and ITNS are available.
Human resources and training			✓		Human resource capacity is inadequate.
Planning and budgets		✓			Malaria business plan is available.
Performance indicators and targets		✓			IRS and LLINs targets are almost meeting the WHO, RBM targets.
Reporting and M&E			✓		Vector surveillance reporting is not conducted routinely.
Operational research			✓		Research and development to guide decision making is still weak.
Overall			✓		More efforts still required to scale up and sustain vector control for impact.

does not support policy formulation or links to NMCP. These pose a major challenge.

4.3.14 Conclusion

Considerable gains have been made in scaling up vector control activities, with increased public awareness and demand for malaria prevention services being strong enablers. Although there is a strong political will, strong collaboration and commitment by international partners, and good technical skills nationally to control malaria, vector control activities are still hampered by some knowledge gaps, plus inadequate human and especially financial resources to meet set targets. Strengthening of human resource capacity and financial resources will increase coverage of all vector control interventions.

4.3.15 Recommendations

- Finalize, adopt and disseminate the draft integrated vector management policy guidelines document.
- Augment the human resource capacity at the DOMC and DVBD to strengthen vector monitoring and surveillance activities.
- Allocate an annual budget line item for malaria vector control.
- Establish malaria focal points at provincial and district levels.
- Strengthen DVBD capacity and infrastructure (insectaries, laboratories and training) to provide technical support in vector surveillance including monitoring of insecticide resistance.
- Provide additional office space and storage facilities at all levels for ITNs, insecticides, IRS equipment, protective gear and other logistical requirements.
- Make LLINs available to all inpatients and spray all hospital wards and other facilities for captive communities.
- Expand IRS to endemic areas to reduce the overall disease burden.
- Map the distribution of malaria vectors in the country and their bionomics, periodically update the map, and establish and maintain a national vector database.
- Conduct geographical reconnaissance and pre and post entomological and parasitological surveys for the IRS programme.
- Scale up and sustain promotion of IEC for ITN utilization and IRS uptake.

4.3.15 Performance Rating

Performance ratings in vector control are summarized in Table 4.14.

4.4 Malaria Case Management in Kenya

With its contribution of 30 per cent of outpatient consultations, 19 per cent of inpatient admissions and up to 5 per cent of inpatient deaths, malaria remains a major public health problem in Kenya. The cornerstone of malaria control in Kenya is early diagnosis and prompt treatment using safe and effective medicines. Currently, a diagnosis of malaria relies on clinical examination and demonstration of parasites in the blood. Malaria diagnosis should precede treatment with antimalaria medicines. Historically, the malaria control programme relied on monotherapies such as chloroquine and

amodiaquine, but increasing trends of anti-malaria drug resistance globally, regionally and in the country prompted the change to combination therapies.

4.4.1 Policy

Policies on malaria treatment date as far back as the late 1970s when chloroquine was the first-line treatment of uncomplicated malaria. In 1998, there was a policy change from chloroquine to sulfadoxine-pyrimethamine (SP) as a result of the emergence and established high level of chloroquine resistance. The NMCP has developed guidelines on diagnosis and treatment of malaria to ensure adherence to the drug policy (MOH, 1998b, 2006b, 2007g, 2008b). At present there is no policy on malaria diagnostics.

The current recommendation requires that malaria diagnosis should be based on parasitological confirmation (except where stated) and further recommends free provision of antimalaria drugs in government and mission hospitals. For strengthening diagnosis, the policy recommends the use of RDTs in malaria epidemic areas. Although the malaria treatment policy states that treatment for malaria should be provided as close to the patient's home as possible, there are still no guidelines on the use of ACT for home management of malaria. Efforts are under way to gather data for the deregulation of ACT that will allow their use at community level.

4.4.2 Guidelines

The goal of malaria case management is to maximize the reduction of morbidity and mortality from malaria by efficiently using appropriate and effective antimalaria drugs. Several guidelines on malaria diagnosis and case management have been developed, including:

- National guidelines for laboratory diagnosis of malaria (2007) (MOH, 2007f).
- National guidelines for diagnosis, treatment and prevention of malaria for health workers (2006). These guidelines were updated in 2008 ((MOH, 2006b, 2008b).
- Guidelines for the National Pharmacovigilance System in Kenya (2007) (MOH, 2007c).

From these guidelines, presumptive treatment of malaria/fever is recommended only for children under five years of age who present with a history of fever in high risk malaria areas, or where laboratory confirmation is not available or feasible. For patients above five years treatment is based on confirmatory parasitological diagnosis using microscopy or RDT, where these services are available. Artemether lumefantrine (AL) is the recommended ACT for first-line treatment of uncomplicated falciparum malaria for all age groups. The second-line treatment for uncomplicated malaria is seven days of oral quinine. Injectable quinine is the recommended first-line treatment for severe malaria for all age groups. Administration of intramuscular quinine is the recommended pre-referral treatment at dispensaries and health centres. Training manuals on malaria diagnosis and treatment for both trainees and trainers were developed in 2007 (MOH, 2007g/h).

4.4.3 Organization

Formal management of malaria patients occurs almost exclusively at public and mission health facilities, albeit with a weak framework to

monitor implementation and adherence to the malaria treatment guidelines. DOMC has a focal person for malaria case management supported by technical officers responsible for laboratory diagnosis and case management. At provincial and district levels, however, there are no specific focal persons for malaria case management.

4.4.4 Human Resource Training and Capacity Building

Most of the training on malaria diagnosis currently occurs as part of pre-service training by local universities and medical training institutions. For in-service training, DOMC has developed a national training curriculum on malaria diagnosis and treatment. To date, there are 81 national and provincial trainers on case management and so far about 12,000 (60 per cent) health workers have been trained out of the targeted 20,000. Training of health workers is ongoing with support from the Global Fund, PMI and DFID. There is also a training curriculum and manual for malaria laboratory diagnosis. By the beginning of 2009, about 150 laboratory technicians/technologists had been trained using the curriculum.

4.4.5 Governance and Partnerships

At DOMC, there is a Drug Policy TWG with three subcommittees that focus, respectively, on case management, laboratory diagnosis, and drug management and procurement. The drug policy TWG provides policy direction on malaria diagnosis and treatment, including issues on drug procurement. The drug policy TWG is chaired by the Director of Technical Services and meets quarterly, although the subcommittees meet more frequently as need arises.

Professional associations (e.g., Kenya Medical Association, Kenya Clinical Officers Association, Association of Kenya Medical Laboratory Scientific Officers, Nurses Association of Kenya, Pharmaceutical Society of Kenya) are key stakeholders. Some of the implementing partners are KEMSA, MEDS, UNICEF and AMREF. The following partners have actively supported the training programme: PSI, Management Sciences for Health (MSH), Christian Health Association of Kenya (CHAK), FHI and the KEMRI/Walter Reed Project.

The NMCP is currently predominantly donor-funded, but the GOK contributes towards the support of human resources, infrastructure, logistics and procurement of commodities that are not covered by donors. Among the donors are DFID, WHO, USAID/PMI, Pfizer and the Global Fund. The procurement of AL for GOK and mission health facilities has been facilitated by financial support from the Global Fund.

4.4.6 Strategic and Annual Planning

The NMCP has in place a national malaria strategic plan (NMS 2001–2010), an annual operational plan (2008/09) and a malaria business plan (2006–2009). Districts and provinces do not have malaria-specific annual operational plans developed in line with the national malaria business plan, but a malaria component is included in the general annual operational plans.

4.4.7 Delivery Structures

Malaria is currently managed at all levels of the health care delivery system including the community level. With the change of first line treatment to AL, however, delivery of AL to community level is not yet operational.

Malaria Diagnosis. With the spread of antimalaria drug resistance, accurate diagnosis has become an important means of ensuring that malaria treatment is administered on the basis of confirmation of malaria parasites. This will to a large extent bring down the level of presumptive treatment for malaria of all patients with fever. Microscopy and RDTs are the tools for malaria diagnosis that are currently used in Kenya. Malaria laboratory diagnosis is available at national, provincial and district levels, as well as some health centres and dispensaries. The NMCP has developed national guidelines together with standard operating procedures for laboratory diagnosis of malaria.

There is also a supportive training curriculum for laboratory diagnosis of malaria. The availability of RDTs may offer a potentially practical, long-term solution to malaria diagnosis in settings where high quality microscopy is not possible or feasible. However, and partly because of the high cost, the routine use of RDTs has been confined to epidemic areas. Investigations for this review found that while malaria treatment is offered free of charge, in some health facilities patients are charged for malaria diagnosis.

Case Management. The DOMC has adopted the implementation of prompt treatment with safe and efficacious antimalaria drugs as a fundamental component of the control strategy. The correct use of antimalaria treatment has several benefits, including shortening the duration of

malaria illness, reducing the chance of recurrence, and lowering the frequency of complications and risk of death.

Early experiences in the implementation of the new treatment policy have been documented. One survey covering 193 facilities, including 227 health workers and 1,533 sick-child consultations, found 89 per cent of the facilities had AL in stock, 55 per cent of the health workers had access to treatment guidelines, and 46 per cent had attended in-service training. Only 1 per cent of the facilities had wall charts on AL. Another survey (Wasunna et al., 2008) on the reasons for non-adherence to AL policy that involved health workers in five rural districts, found that non-adherence was associated with frequent AL stock outs, fears of AL cost, lack of supportive supervision and availability of non-recommended antimalaria drugs. Similar findings were confirmed during the field visits for this review. KEMSA supplies antimalaria drugs on a quarterly basis to GOK health facilities, but these are often not sufficient for the required three months, particularly in malaria endemic areas. AL is provided at no cost at all government and faith-based health facilities.

4.4.8 IEC, BCC and Community Mobilization

According to the NMS 2001–2010, the GOK committed to ensuring that all Kenyans have access to appropriate, accurate and culturally relevant information about malaria control and management, so that effective behaviour change is achieved. Information dissemination has taken many forms, including wall charts, radio programmes, TV documentaries and annual World Malaria Day observances. Malaria forms a key component of the Community Strategy that was developed in 2005. During the launch of the current treatment policy in 2006, there was an intensive countrywide campaign using mass media, interpersonal communication and printed materials to increase the public awareness about new malaria treatment using ACT. Nevertheless, the 2007 MIS found that only 39 per cent of women aged 15–49 years had heard about ACT. Of these, 61 per cent received information from radio, 27 per cent from a health worker and 11 per cent from television, but only 0.6 per cent had heard about it at a community gathering (*baraza)* (DOMC et al., 2009).

4.4.9 Performance Indicators and Targets

Accurate reporting is essential for monitoring progress towards objectives, as well as the use of and need for antimalaria drugs and other commodities. According to the 2007 MIS, 70 per cent of children with fever sought treatment within 24 hours, 24 per cent took an antimalaria drug and 15 per cent took an antimalaria drug within 24 hrs. Of those who sought treatment, 59 per cent did so from public facilities and 30 per cent from the private health sector. Of those who received treatment, 29 per cent were treated using ACT and 35 per cent amodiaquine. The proportion of children under five years of age who received ACT treatment within 24 hours of the onset of fever was 4.3 per cent (DOMC et al., 2009). The trend analysis on the proportion of parasitologically-confirmed malaria cases is not available.

The cornerstone of malaria control in Kenya is early diagnosis and prompt treatment using safe and effective medicines. Presumptive treatment of malaria/fever is now recommended only for children under five who present with a history of fever in high risk malaria areas, or where laboratory confirmation is not available or feasible.

4.4.10 Reporting, Reviews, Evaluations and Research

GOK collaborates with KEMRI, Walter Reed Project, CDC and Wellcome Trust on malaria diagnosis, capacity building and research. The DOMC is currently conducting operations research on the use of AL at community level.

This study will guide the modalities of community access to AL as well as provide safety data to support the deregulation of AL to enable its use at community level. Routine data on malaria cases and deaths in government health facilities are collected by the HMIS, although timeliness and completeness of reporting hamper analysis of trends. Malaria parasitology results from the health facilities are not routinely reported to HMIS. These data are supposed to be sent to NHPLS for analysis. There is no evidence that this is currently taking place.

4.4.11 Success Stories and Best Practices and Enablers

Several major achievements by the NMCP were noted. Among these is evidence of the transitional policy from SP to ACTs supported by availability of updated guidelines and training manuals on malaria diagnosis and treatment. To ensure wide dissemination, there was a nationwide roll-out of the policy on ACT. Further, the 2007 MIS showed that 4.3 per cent of febrile children are treated using ACT within 24 hours of developing fever.

The NMCP has also ensured that training of health workers on malaria diagnosis and management is done and so far over 12,000 health workers have been trained on the new treatment guidelines. Availability of sentinel sites for testing antimalaria drug efficacy and the presence of TWGs are other observed achievements.

4.4.12 Key Issues and Challenges

Currently, resources needed for malaria parasitological diagnosis are inadequate (competent staff, microscopes, reagents, SOPs, QC). Although guidelines for laboratory diagnosis of malaria were developed and distributed, they are still not adequate. GOK does not have a functional QA/QC system for laboratory diagnostics. The laboratory staff is competent on general laboratory procedures, but specific competency on malaria microscopy, parasite speciation and quantification is lacking. Similarly, there is lack of adherence to standard routine reporting of malaria parasitology results from health facilities.

Other challenges to case management are:

- Implementation of treatment guidelines has been hampered by insufficient copies of the guidelines, uncoordinated training, drug stock outs, unclear position on alternative ACTs and the lack of supervisory mechanisms.
- Clinicians do not routinely use available laboratory results for making treatment decisions.
- Sentinel sites exist for testing drug efficacy but not all are functional.
- The last therapeutic efficacy testing (TET) of AL was conducted in 2006.
- Guidelines for pharmacovigilance have been developed, but reporting of adverse events is still a challenge.
- Currently, there is no access to affordable AL outside the public health sector and in particular for community-based treatment of malaria. The control programme has no focal persons at provincial, district or facility level

Table 4.15: Malaria case management performance rating

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization		✓			Case management well established but needs focal points at lower levels.
Governance and partnership			✓		Not well coordinated at lower levels.
Guidance		✓			Guidelines not widely distributed and staff not trained. Private sector not involved.
Human resources and training			✓		Grossly understaffed and requires more training on laboratory diagnosis.
Planning and budgets		✓			Planning and budgeting done promptly. Low funding.
Performance indicators and targets			✓		AL access within 24 hrs for children with fever is too low (4.3%).
Reporting and monitoring and evaluation			✓		Laboratory results do not reach central level. No mortality data.
Operational research				✓	Inadequate OR at national level.
Overall			✓		Strengthening needed in policy, coordination at lower levels, outcome indicators and training on diagnosis.

to oversee implementation of the policy and guidelines.

- Stock outs of AL are frequent, and when AL is not available there is use of non recommended monotherapies as well as quinine.
- In the long run, sustainable availability of AL supply in the absence of donor funding will be problematic, as reflected in the overall inadequate GOK support toward malaria.
- Understaffed health facilities and minimal involvement of the private health sector on issues of case management may compromise the quality of care.

4.4.13 Conclusion

Malaria case management policies and strategies are well established, with policy guidelines and training manuals in place. There is, however, no policy on the diagnosis of malaria and laboratory support for the diagnosis of malaria is inadequate. Where diagnostic services are available, they are offered at a cost. The first line treatment for malaria – AL – is currently available at no cost at all government and faith-based health facilities. Treatment is not yet available at community level, while AL in the private sector is inaccessible because of the high cost. Stock outs of malaria medicines resulting from procurement and distribution challenges hamper the provision of prompt and effective treatment. These result in the use of ineffective and non recommended treatments.

4.4.14 Recommendations

- Improve procurement and supply chain management of AL to avoid frequent stock outs.
- Implement community-based management of malaria with ACTs to increase access to prompt and effective treatment.
- Improve capacity for malaria diagnosis at all levels of the health care system.
- Provide malaria laboratory diagnosis free of charge.
- Designate an alternative ACT as second line treatment to reserve quinine for the treatment of severe disease.
- Strengthen routine therapeutic efficacy testing of all routinely used antimalaria medicines.
- Strengthen capacity for routine reporting of confirmed malaria cases.
- Designate or appoint malaria focal persons at district and provincial levels.

4.4.15 Performance Rating

Performance ratings for case management are summarized in Table 4.15.

4.5 Malaria in Pregnancy

Even though malaria is a preventable disease, in pregnancy it wields substantial negative effects on maternal health and child survival. Annually, about 70 per cent (1.5 million) pregnant Kenyan women are at risk of malaria. Current WHO recommendations for controlling malaria in pregnancy include both a preventive and curative strategy (WHO, 2004). The strategy includes ITNs, preventive chemotherapy and effective case management.

4.5.1 Policy

The policy on prevention of malaria in pregnancy was changed in 1998 from weekly CQ chemoprophylaxis to IPTp with SP specifically for pregnant women residing in malaria endemic areas. The

policy is complemented by free distribution of LLINs and case management of malaria illness/ anaemia at all levels. The policy was further revised in 2006 to adjust the SP doses for IPT. By definition, IPT in pregnancy (IPTp) is the administration of a complete curative dose of an effective antimalaria drug at pre-defined intervals during pregnancy.

4.5.2 Guidance

In Kenya, guidelines have been developed on treatment and prevention of malaria in pregnancy (MIP). These are included as part of the National Guidelines on Malaria Diagnosis, Treatment and Prevention for Health Workers and there is a separate training package. The current recommended drug for IPTp in malaria-endemic regions is SP. The guidelines recommend 3–4 IPT doses with SP, directly administered during antenatal care visits, every four weeks after quickening. For HIV-positive pregnant women, the guidelines specify IPT with SP while on antiretroviral therapy, but ***not*** when receiving daily cotrimoxazole chemoprophylaxis.

4.5.3 Organization

Malaria in pregnancy is managed at all levels within the health care delivery system as part of the focused antenatal care strategy, which contributes to the safe motherhood initiative. The strategy is implemented by two divisions, DOMC and DRH. In DOMC there is a malaria in pregnancy focal person, but there are no focal points at district and provincial levels.

4.5.4 Human Resource, Training and Capacity Building

Training of the health workers on malaria in pregnancy is currently through pre-service training by the local universities and training institutions. For in-service training, DOMC has developed a national training curriculum as part of the training manuals on malaria diagnosis and treatment. In addition, there is an orientation package – now in its fourth edition – focusing on malaria in pregnancy (MOH, 2007b) that was originally prepared in collaboration with the Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) (MOH et al., 2002).

4.5.5 Governance and Partnership

An MIP technical working group (MIPTWG) that is supposed to meet quarterly is in place within DRH, chaired by the head of the division. Several partners collaborate on MIP, including academic institutions, UN bodies and NGOs.

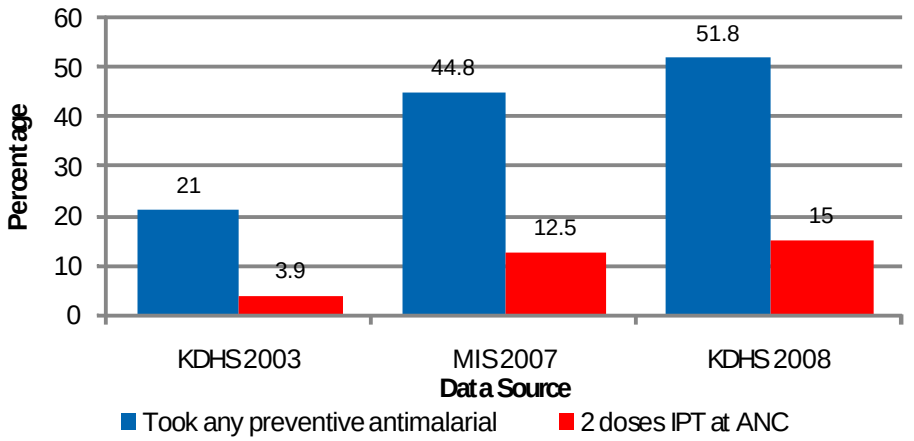
4.5.6 Strategic and Annual Planning

DOMC's annual operational plan/malaria business plan includes MIP, with clear objectives, inputs and expected outputs. Linkage with the district and provincial plans is weak, however.

4.5.7 Delivery Structures

Interventions towards malaria in pregnancy are offered at dispensary, health centre, district and provincial levels of the health care delivery system. The following interventions are delivered as part of preventing malaria in pregnancy:

Figure 4.4: Trends of IPTp uptake, 2003–2008



- ***IPT:*** The national guidelines recommend that all pregnant women (except those who are HIV positive and receiving daily cotrimoxazole chemoprophylaxis) in high malaria transmission areas receive 3–4 directly observed courses of IPT using SP during their antenatal visits after quickening.
- ***ITN:*** The policy on personal protection in malaria endemic regions is to increase the free access to LLINs for pregnant women.
- ***Case management for fever and anaemia:*** The current National Guidelines on Diagnosis and Treatment of Malaria for Health Workers (2006) recommend treatment using seven days of oral quinine as a first line drug for a pregnant woman who develops uncomplicated malaria. In the absence of quinine, an oral dose of AL may be used during the second or third trimester. Parenteral quinine is the recommended treatment for severe malaria in pregnancy. Iron and folic acid tablets are recommended to prevent and treat anaemia in pregnancy.

4.5.8 IEC, BCC and Community Mobilization

A malaria communication strategy exists, but IEC materials and messages on IPTp are inadequate.

4.5.9 Performance Indicators and Targets

In the NMS (2001–2010), the GOK committed itself to ensure that all pregnant women living in malarious areas have access to two free SP treatment doses (one in the second trimester and one in the third trimester) supported by effective community-based communication to encourage prompt treatment for fever. Performance targets set for the 2001–2010 NMS include:

- 60 per cent of pregnant women to have two IPT courses.
- 80 per cent of pregnant women with fever or anaemia to be appropriately managed at ANC.
- 60 per cent of pregnant women to be sleeping under an insecticide treated net.

These targets were revised in 2006 to include:

- 80 per cent of pregnant women to have two IPT courses.
- 80 per cent of pregnant women with fever or anaemia to be appropriately managed at ANC.
- 60 per cent of pregnant women to be sleeping under an insecticide treated net.

The 2007 MIS found that 87 per cent of pregnant women attended ANC at least once during their last pregnancy, 39.8 per cent slept under an ITN, 25 per cent received at least one IPT dose, 13 per cent received two IPT doses and 5.7 per cent received three IPT doses (DOMC et al., 2009). See Figure 4.4 for the trends.

4.5.10 Reporting, Reviews, Evaluations and Research

The revised policy on IPTp has benefited from research conducted by KEMRI on interventions at Kisumu and Kilifi that targeted pregnant women (e.g., O'Meara, Bon et al., 2008). Reports are transmitted monthly through DRH.

4.5.11 Success Stories, Best Practices and Enablers

The success of the programme is due to the adoption of an integrated approach to MIP using

Table 4.16: Malaria in pregnancy performance rating

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization			✓		Implementation at DRH and no MIP focal points at lower levels.
Governance and partnership			✓		Not well coordinated right from the top to lower levels.
Guidance				✓	No separate guidelines on MIP. Guidelines incorporated into the case management guidelines.
Human resources and training				✓	Almost all training done by DRH.
Planning and budgets			✓		Planning and budgeting done, but no evidence of spending.
Performance indicators and targets			✓		Performance indicators still low but improving.
Reporting and M&E			✓		Data on MIP captured through ANC, but reaches DOMC indirectly through HMIS.
Operational research				✓	Inadequate OR at national level.
Overall			✓		Outcome indicators still low. Strengthening needed in policy, coordination at central and lower levels, and training on MIP.

free IPT (using SP), free ITN and case management during antenatal care visit. This is an important way to utilize limited resources. In addition, training manuals and job aides related to MIP have been developed.

4.5.12 Key Issues and Challenges

There is no system for regular testing of the changing efficacy of SP when used as IPTp. Previously, this intervention has been hampered by:

- Late presentation of pregnant women to the ANC for first visit.
- Low uptake of IPTp interventions.
- Staff shortage at ANCs.
- Stock outs of SP.
- Lack of malaria-dedicated focal persons at district and provincial levels.
- Non-involvement of private health sector.
- Poor supervision of health workers from district and provincial levels.
- Inadequate coordination of activities among DOMC, DRH and other partners.

4.5.13 Conclusion

Despite the implementation of IPTp with SP for the past ten years, there has been poor uptake of this intervention by pregnant women – this even though antenatal clinic attendance is relatively high. Several contributing factors to low uptake have been suggested. There is now need to objectively evaluate causes of low IPTp uptake and design interventions based on this evidence.

4.5.14 Recommendations

- Evaluate the implementation of IPTp with SP, exploring reasons for low uptake after ten years of implementation.

> The GOK is committed to ensure that all pregnant women in high malaria transmission areas have access to a free ITN, at least three free IPT doses, and appropriate case management for malaria and anaemia.

- Explore alternatives to SP for IPTp.
- Place the country IPTp focal person at DOMC.
- Address the procurement and supply chain management of SP to avoid stock outs.
- Investigate other avenues (e.g., a community-based approach) in addition to the ANC for delivering IPTp.
- Establish IPTp-specific delivery points within the current ANC system.
- Develop key messages for BCC targeting both health workers and pregnant women

4.5.15 Performance Rating

Table 4.16 summarizes the performance of NMCP in the area of malaria in pregnancy.

4.6 Surveillance, Monitoring and Evaluation, and Operational Research

Monitoring and evaluation are among the supporting structures for the malaria programme whose implementation has been weak. Recent health reforms have recognized M&E as a key component of health interventions. Kenya's 1994 Health Policy

Framework, NHSSP II and its AOPs, and the NMS emphasize the role of an M&E framework for tracking performance against targets.

The M&E unit in DOMC is mandated to coordinate the generation of information/data on progress in the implementation of malaria interventions as well evaluation of health impacts from malaria interventions. DOMC's performance is measured against the NMS achievements towards set targets, outputs for the business plan and achievement of the sector's AOP targets.

4.6.1 Policy and Guidance

The policy on malaria M&E and operational research states:

> The Government of Kenya shall ensure adequate monitoring and evaluation of the strategic approaches to malaria prevention and control as outlined in the NMS. The Government of Kenya shall promote targeted, operational research that supports the implementation of the NMS and shall provide effective channels of communication between control and research communities. (MOH, 2001)

Currently, there is a malaria M&E plan in draft form that will provide the basis for more effective monitoring of the performance of the new malaria strategic plan. The M&E plan outlines the performance framework, indicators, data collection tools, roles and responsibilities. It is comprehensive, in line with the NMS, and serves the needs of many constituents, including the DOMC, academic researchers and international donors, thus minimizing the need for parallel M&E systems.

Until now, however, there have been no plans or guidelines for M&E at programme level for the regular generation, analysis and reporting of progress on interventions. The major sources of information for M&E have been the HMIS, IDSR and various surveys including sentinel site surveillance.

4.6.2 Data Collection Systems

The DOMC derives surveillance monitoring and evaluation (SM&E) data from various sources, including the HMIS, IDSR, surveys, special studies and operational research.

HMIS. DOMC has incorporated routine malaria indicators such as ITN distribution, IPTp uptake, and malaria cases and deaths (clinical and confirmed) into the HMIS. The information is reported electronically, on a monthly basis, up to the national level, where it is analysed and disseminated to the programmes and subnational levels. A key challenge of the HMIS is data completeness and timeliness.

IDSR. DOMC uses weekly IDSR data to monitor malaria epidemics in malaria epidemic prone areas. The DOMC has financed IDSR training and planning. Again, completeness and timeliness of reporting are a challenge at all levels.

IRS Monitoring System. Standard forms have been developed to collect data on spraying coverage, population protected by IRS and ITN coverage. Pre- and post-spraying entomological and insecticide monitoring are done routinely. The main challenge is data quality and validation.

ITN Tracking System. Multiple channels are used to distribute ITNs in the country. Routine data on the ITNs distributed through the clinics are captured using the harmonized HMIS tools. On the other hand, a system to track ITNs distributed during mass campaigns and other channels has not been set up.

Laboratory Reporting System. Although confirmed malaria cases are reported by the HMIS, the system does not capture the number of slides done, which is essential for calculating the slide positivity rate (SPR). These data are captured through the laboratory reporting system, which does not feed into HMIS. Because of various health system challenges, most malaria cases are diagnosed clinically and remain unconfirmed. Quality, completeness and timeliness of laboratory data remain key constraints.

ACT Consumption Data. ACT consumption data are not captured by the HMIS, making it difficult to link morbidity with treatments. AL consumption data are currently entered manually at the facility level, collated at district level and sent to DOMC. Reporting has been grossly incomplete and delayed, thus evaluation is very difficult. It has taken long to integrate ACT distribution and consumption using the LMIS at KEMSA, but the system is expected to be fully operational from August 2009 with support from DOMC and various partners. The result should be the timely and regular availability of ACT data for malaria control decision making.

Sentinel Surveillance System. Four sentinel sites representing the major malaria epidemiological areas were selected and established in 2000 by the DOMC, the Malaria Public Health and Epidemiology Group, and the KEMRI/Wellcome

Trust Programme. The sites monitor coverage interventions and impact indicators. Sentinel site data were used in the evaluation of progress towards NMS targets for 2006. There are no clear guidelines on the support for running the sentinel sites and sharing the data they generate for programme use.

Household Surveys. Several surveys to measure impact and outcome indicators have recently been completed and published. These include the 2008 KDHS, a 2008 subnational multiple indicator cluster survey (MICS; KNBS, 2009) and the 2007 MIS. These three surveys measured LLIN ownership and use, IPTp uptake, and access to treatment at household level. Better collaboration with stakeholders including timing of the surveys will maximize their contribution to programme evaluation.

Malariometric Surveys. These surveys among school children aged 2–9 years, as well as community-based prevalence surveys, will be key to measuring the impact of malaria control interventions countrywide.

4.6.3 Organization

The SM&E unit within DOMC is the secretariat for malaria SM&E. It works in collaboration with HMIS and IDSR as well as other ministry programmes and partners in malaria SM&E. The unit has one epidemiologist, one public health officer and four health records officers. This level of capacity is not adequate to effectively manage malaria SM&E and Global Fund activities at the programme. An SM&E technical working group was established, but it has not met regularly. Partners regularly provide technical support to the SM&E unit to boost information gathering and report writing.

Information Dissemination. Information generated by the programme is disseminated mostly through reports, bulletins, the programme's own website (www.nmcp.or.ke) and the shared MOH website, www.health.go.ke. A quarterly bulletin provides information to malaria partners and the general public. Annual malaria reports have not been produced since 2006.

Malaria Databases. The main DOMC database is the Malaria Information Acquisition System (MIAS), a tool for monitoring the implementation of the malaria business plan as well as a repository of malaria data from HMIS, IDSR and other sources. The WHO prototype database for national malaria control programmes, which was introduced in DOMC, is useful for capturing, warehousing and retrieving all malaria-related data.

4.6.4 Governance and Partnerships

The terms of reference for the Monitoring and Evaluation TWG include the following:

- Agree on methods for measuring indicators for malaria and malaria control.
- Identify logistical and resource issues associated with applying proposed methodologies and recommend solutions.
- Advise on methodology for disseminating results of M&E and report regularly to MICC.
- Establish modalities for feeding M&E results into revised strategic directions.

Several partners support malaria M&E both technically and with resources. Among these partners are GFATM, DFID, USAID/PMI, WHO and UNICEF. Implementing agencies include the KEMRI/Wellcome Trust Programme, PSI, Kenya National Bureau of Statistics (KNBS), National Coordinating Agency for Population and Development (NCAPD), DRH, DCAH and HMIS. DOMC's coordination of these partnerships has not been strong, however, because of the lack skilled personnel as well as of guidelines on the M&E framework for malaria in Kenya.

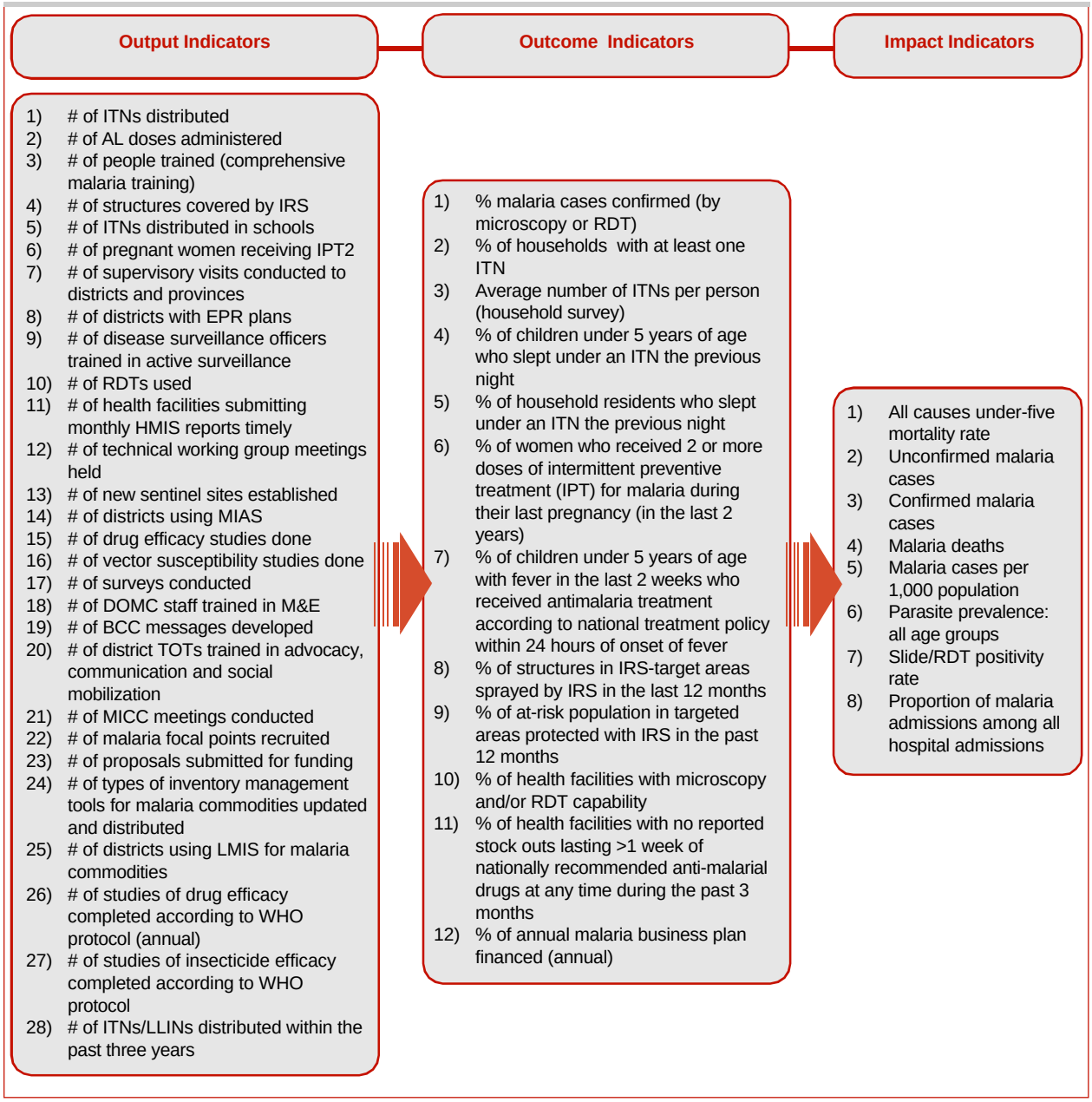
4.6.5 Strategic and Annual Planning

Various implementation targets from the NMS have been incorporated into the malaria business plan and AOPs, but a major drawback to M&E in the current strategic plan period is the lack of a framework for the targets and indicators listed for performance monitoring. Progress against annual targets is reviewed annually by the programme at district, provincial and national levels and incorporated into annual health sector performance reports. Challenges relating to poor performance are evaluated and recommendations fed into the setting or revision of targets for the next AOP.

4.6.6 Delivery Structures

M&E begins with data collected from health facilities and aggregated at district level before being sent weekly or monthly to the various information systems. Some data may be analysed by the facility or by district and province, but most data are analysed nationally. HMIS data are transferred electronically through a web-based file transfer protocol where this is available.

Figure 4.5: Result indicator chain from implementation to impact for the National Malaria Strategy 2009–2017



Key: AL = Artemether-lumefantrine; BCC = Behaviour change communication; DOMC = Division of Malaria Control; EPR = Epidemic preparedness and response; HMIS = Health Management Information System; IPT = Intermittent prophylactic treatment; IRS = Indoor residual spraying; ITNs = Insecticide treated nets; LLINs = Long lasting insecticidal nets; LMIS = Logistics management information system; M&E = Monitoring and evaluation; MIAS = Malaria Information Acquisition System; MICC = Malaria Interagency Coordinating Committee; RDT = Rapid diagnostic test; TOT = Training of trainers; WHO = World Health Organization.

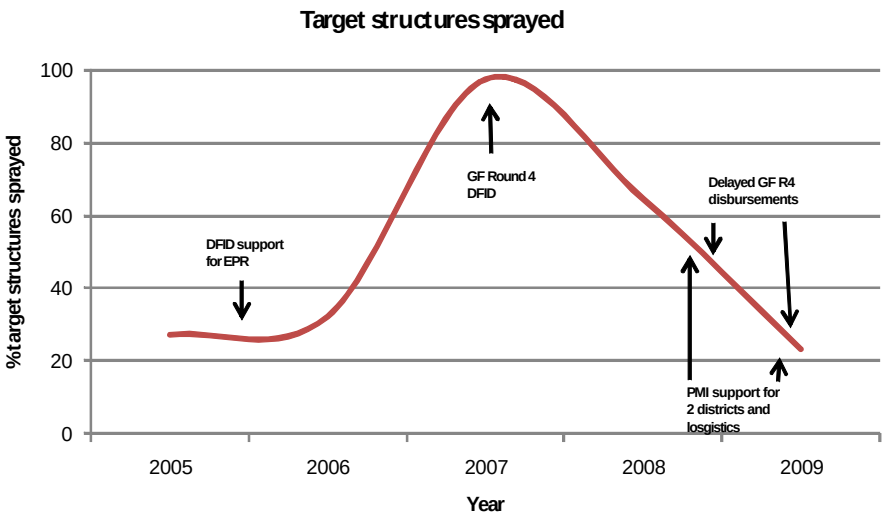
Some districts aggregate data manually, then send the results to HMIS. District Disease Surveillance Officers collect weekly surveillance reports and send to IDSR, from which weekly morbidity and mortality reports are produced and circulated to all departments and divisions in both health ministries.

DOMC accesses HMIS data by directly logging on to the HMIS server. Selected data are then analysed or uploaded onto the MIAS. Completeness and timeliness of reporting through HMIS and IDSR affect performance evaluation. Neither system collects information on all indicators. Survey and other non-routine surveillance data are submitted to DOMC when available or on request.

4.6.7 Performance Indicators and Targets

The flow of SM&E information for the malaria programme is illustrated in Figure 4.5.

Figure 4.6: Trends of IRS coverage, 2003–2008



4.6.8 Reporting, Reviews and Evaluations

Quarterly and annual reports have not been produced regularly by the DOMC. Evaluations of various interventions including of the strategy have been carried out between 2006 and 2008. The sections and figures below present performance on some key indicators assessed from various surveys.

Vector Control Performance. Vector control using ITNs is one of the major interventions carried out. Performance on key targets from preliminary KDHS 2008 results is listed in Table 4.17, while trends in net use from 2003 were shown in Figure 4.3. These are far below the 2006 national targets of 60 per cent and the 2010 global targets. (See also Section 4.3.)

Prevention of Malaria in Pregnancy. IPTp uptake, through the antenatal clinics, remains low countrywide, especially in malaria endemic areas (Figure 4.4). The implementation of IPTp as an intervention and factors affecting IPTp uptake will be evaluated from August 2009. Recommendations from this evaluation will hopefully improve performance on this intervention. (See also Section 4.5.)

Table 4.17: Achievements with net ownership and net use

Indicator	Global Target	Coverage 2008*
HH ownership of 1 ITN	100%	54.4%
Any net use U5	n/a	50.1%
ITN use U5	100%	46.1%
Any net use PW	n/a	52.7%
ITN use PW	100%	48.2%

Key: HH = Household; ITN = Insecticide treated net; PW = Pregnant women; U5 = Children less than 5 years.
*Source: KDHS 2008, preliminary results.

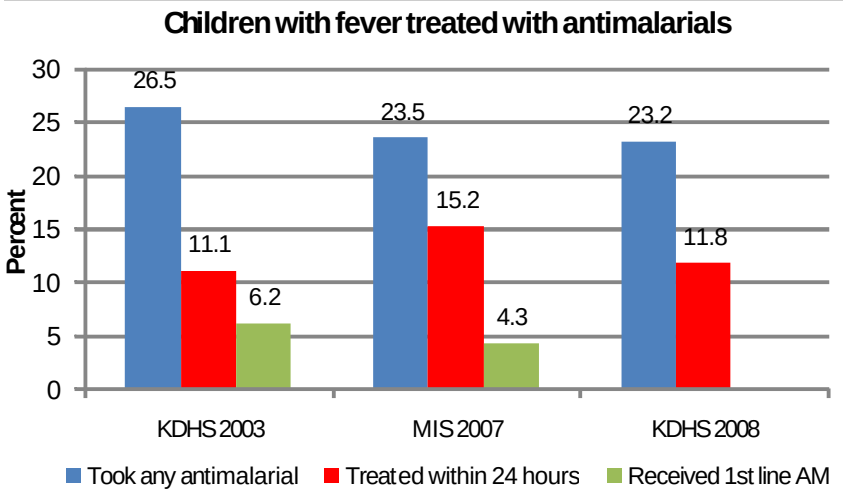
IRS Coverage. IRS is primarily used for epidemic prevention in epidemic prone western highland districts. IRS was carried out on a very small scale from 2002, mainly because of lack of resources, but in 2005 DFID increased support for epidemic preparedness and response, thus allowing targeted spraying in hotspots as shown by surveillance. In 2007, with resources from the Global Fund and DFID, the first comprehensive IRS in the districts was conducted. In subsequent years, maintaining this target has been a challenge mainly because of delayed disbursements from the Global Fund. Figure 4.6 illustrates the trends.

Prompt Access to Treatment. Community-based surveys give information on prompt access to treatment with antimalarials, especially for children less than five years of age with fever. Access to prompt treatment with recommended first line antimalaria medicines (SP in 2003, AL in 2007 and 2008) was generally below 10 per cent, as shown in Figure 4.7.

Monitoring of Antimalaria Drug and Insecticide Resistance. Kenya adopted AL as the first-line treatment for uncomplicated malaria following a precipitous decline in the efficacy of SP. AL was rolled out in 2006 and efficacy in 2008 remains 96 per cent – the same as in 2004 before widespread use in the public sector. Drug efficacy testing was carried out in four of eight sentinel sites. Because of the decline in patient numbers, however, most sites are not operational.

Routine monitoring of the susceptibility of malaria vectors to insecticides used for ITNs and

Figure 4.7: Trends in access to prompt treatment with antimalarials, 2003–2008



IRS is important for the judicious use of insecticides. Although an increase in frequency of the knockdown resistance (*kdr*) mutation from 4 per cent to 8 per cent has been found in areas of high ITN use, there is currently no evidence of phenotypic resistance to insecticides recommended by WHO for LLINs and IRS. Insecticide resistance monitoring continues annually in epidemic prone districts as well as in malaria endemic areas.

Quality Assessments of Diagnostics and Antimalaria Medicines. Regular quality assessments of RDTs, including market surveillance, are carried out by DOMC with support from the KEMRI/Walter Reed Project. DOMC, the PPB and the NQCLS also conduct annual surveys on the quality of marketed antimalarials. Reports on these assessments are available from the respective organizations.

4.6.9 Operational Research

Operational research activities currently being undertaken include the following:

- Pilot studies on the community-based treatment of malaria using AL through community health workers.
- Community access to AL through trained shopkeepers in Western Kenya.
- Use of circulars from MOPHS to increase IPTp uptake at antenatal clinics in Western Kenya
- Use of regular text messages on malaria case management to health workers and its impact on the quality of malaria case management.

Funding for operational research comes from donors, including USAID/PMI and the Canadian International Development Agency (CIDA). The existence of strong collaborative research networks between DOMC and research partners including KEMRI/WT, PSI, KEMRI/CDC and the Canadian Red Cross is commendable. The main challenges include lack of a programme-driven prioritized operational research agenda.

4.6.10 Success Stories, Best Practices and Enablers

- The DOMC with its partners has developed a comprehensive SM&E plan that is in line with the NMS and the business plan data.
- The integration of malaria indicators into the HMIS and IDSR has strengthened routine data collection, use and dissemination. The HMIS collects data on LLINs distributed, IPTp, and malaria cases and deaths whether confirmed or suspected. AL is one of the tracer drugs tracked monthly by the LMIS.
- The DOMC SM&E unit coordinates and works closely with other programmes that collect relevant data, but there is limited capacity for data analysis and use.
- Kenya successfully conducted an MIS with the involvement of all key partners. The data have been used for the review and to update the malaria database(s).
- Insecticide resistance and entomological surveys are done in endemic and epidemic prone districts in Western Kenya in collaboration with KEMRI/CDC, along with routine efficacy testing of first line antimalarials.

4.6.11 Key Issues and Challenges

The following need to be addressed:

- Strengthening of HMIS to support SM&E for malaria particularly reporting of confirmed

Table 4.18: Performance rating for SM&E and OR

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization			✓		No M&E plan existed until now. There is a draft, but it needs to be finalized and implemented.
Governance and partnership			✓		Not well coordinated at lower levels.
Guidance				✓	Guidelines for SM&E not available.
Human resources and training			✓		Lack of adequate human resource capacity for SM&E.
Planning and budgets			✓		Planning and budgeting done. Funding under-utilized.
Performance and indicators and targets			✓		Tracking of survey performance indicators is good. Tracking of routine data is poor.
Reporting and M&E			✓		Reports not produced nor is information disseminated.
Operational research		✓			A national agenda needs to set and prioritized.
Overall			✓		Strengthening SM&E and OR is needed as per recommendations.

malaria cases, inpatient morbidity, malaria specific mortality and laboratory data.
- Establishment of sentinel sites for surveillance of antimalarials, insecticides, vectors, diagnostics, disease trends and quality of patient care.
- Establishment of QA/QC system for malaria diagnostics within the NHPLS.
- Regular reporting and dissemination of findings especially regarding efficacy of malaria medicines, insecticides, drug quality surveys and diagnostics quality surveys.
- Regular production of malaria reports and quarterly, semi-annual and annual review meetings with provincial and district teams.
- Development of a clear research and operational research agenda.
- Lack of adequately skilled SM&E personnel.
- Incomplete and un-harmonized malaria databases at the DOMC.
- Lack of malaria quarterly and annual reports as well as review meetings.

4.6.12 Conclusion

The M&E function at the DOMC was articulated in the 2001–2010 NMS and the RBM M&E Framework was adopted. However, a fully-fledged unit headed by a focal person was only set up in 2005. An assessment of the M&E requirements at the division was undertaken in 2006 and the key findings included the need to establish a networked database management system, build M&E capacity for DOMC staff, strengthen liaisons with all sources of routine malaria data, and enhance data flow and reporting at all levels.

The DOMC has since established an M&E system and undertaken capacity building for staff in information technology and various aspects of database management including MIAS. There is still room for building further staff capacity in M&E, however, as well as in usage of the established systems. It is envisaged that the presence of malaria focal persons at province and district levels will greatly enhance malaria dataflow and reporting at those levels. When completed and disseminated, the M&E plan will be an effective tool to focus efforts in M&E and operational research by DOMC and its partners.

4.6.13 Recommendations

- Complete and implement the M&E plan.
- Harmonize malaria databases.
- Deploy skilled personnel for SM&E, equipment and space at DOMC and subnational levels.
- Produce regular malaria reports and hold regular review meetings with provincial and district teams.
- For both health ministries and all stakeholders, invest in improving HMIS operations to support M&E of disease control interventions.

4.6.14 SM&E and OR Performance

A summary of the performance in this area is presented in Table 4.18.

4.7 Epidemic Preparedness and Response (EPR)

In epidemic-prone areas of Kenya malaria control presents a different challenge from that in endemic settings. When epidemics occur in non-immune or semi-immune populations, morbidity and mortality rates are relatively high. For the control strategies to be effective,

Table 4.19: Capacity building for EPR

Capacity built in	Level of officers trained	Training target (No. of officers to be trained)	No. trained
In-depth analysis of the epidemiological and meteorological data in order to develop early warning and detection systems for malaria epidemics	National	1	1
Development of district epidemic preparedness and response plans	National	2	2
	District	37	30
Data analysis of malaria cases to develop epidemic thresholds for use in early detection at district and health facility levels	District	37	12
	Health facility	37	8
Strengthened surveillance in collaboration with IDSR	District	37	32
	Health facility		
Training of trainers for IRS implementation and supervision of spray men	National	12	9
	Provincial	3	3
	District	64	73
	Division	576	210
Training of spray men	Community	4,200	3,804

Source: WHO Mission Report on Assessment of Epidemic Preparedness (2005); DOMC IRS Report (2007).

they must be accurately targeted in both time and space since epidemics are often sudden and unexpected. The impacts of epidemics can be minimized by better prediction, improved prevention, vigilant preparedness, early detection and rapid response.

4.7.1 Policy

Only districts prone to epidemics were encouraged to provide indoor residual house-spraying and novel drug management schemes to prevent and contain epidemics detected through surveillance systems.

Draft guidelines for epidemic preparedness and response were developed in 1999 following the 1998 *El Niño* related epidemics. Epidemic-prone districts were to establish an effective early warning and detection system, as part of the HMIS and IDSR. The approach shifted from preparedness and response to prevention and control in 2005, since it proved difficult to develop malaria early warning systems.

MOH made it an informal policy in Kenya to adopt a well-targeted IRS as an annual campaign 40–60 days prior to the seasonal peaking of transmission (MOPHS, 2008b). Malaria epidemic prevention and control are recommended as an "epidemic preparedness and response strategy".

4.7.2 Guidance

The EPR guidelines developed in 1999 adequately addressed the different aspects of malaria epidemic management, the roles of the different levels of management and the involvement of other partners. The current IRS manual provides some guidance and outlines training of the various categories of spray personnel for IRS and is useful for planning and conducting IRS operations. At present, however, training modules for malaria specific EPR do not exist, pointing to the need for development of an all inclusive training manual.

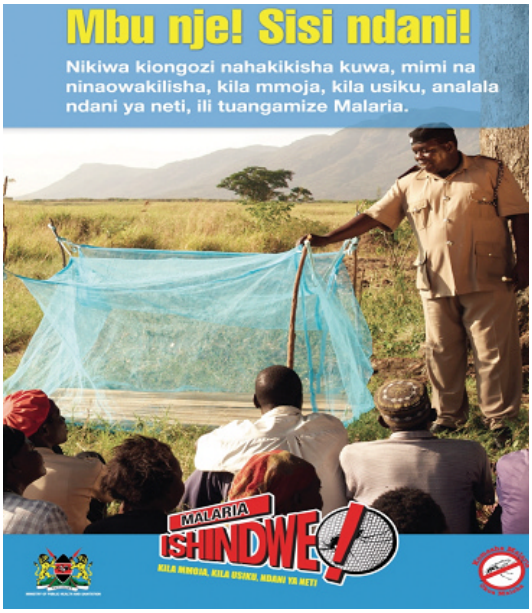
4.7.3 Organization

No malaria specific emergency-response team exists at the national level or in high risk districts, although there is an emergency response team that deals with all disease outbreak emergencies at DDSR. The malaria EPR unit at the DOMC is tasked with advising on overall policy direction and technical support in all aspects of malaria EPR. Consisting of one focal person and one technical officer, the unit has good training and technical skills in malaria EPR, but the human resource is inadequate. At the provincial and district level there are surveillance officers who are mostly public health officers.

☛ There is need to strengthen the technical composition of the EPR team with well-trained epidemiologists, public health officers and technicians. There is also need to establish technical officers in charge of malaria EPR at provincial and district level.

4.7.4 Human Resource Training and Capacity Building

As noted earlier, DOMC collaborates with WHO, DFID and PMI to conduct training and retraining of technical staff involved in vector control and IRS. In addition, collaborative efforts of DOMC, University of Nairobi, Kenya Meteorological Department (KMD) and the IGAD Climate Prediction and Application Centre (ICPAC) have helped to train technical staff on prediction and fore-



casting using climate data. The number and cadres of people trained on EPR and IRS are presented in Table 4.19. In partnership with DDSR, DOMC has trained DHMTs in epidemic prone districts on setting malaria thresholds.

4.7.5 Governance and Partnerships

A malaria specific subcommittee on malaria epidemics and emergency response does not currently exist at any level. While the EPR unit is not supported by any TWG, it does work closely with DDSR. There are no regularly scheduled meetings although this is highly recommended. Other partners are: WHO, DFID, UNICEF, Red Cross, KEMRI and the Disaster Preparedness Unit in the Office of the President. DOMC also collaborates with the KMD, ICPAC and national universities on prediction and forecasting.

There is no assessment and update of stakeholders involved in epidemics, but there are monthly meetings on general surveillance coordinated by DDSR. Thus, during malaria epidemics, partners contribute in the form of resources and participate in the epidemic response planning. DOMC collaborates with national and regional meteorological services on forecasting of weather conditions.

4.7.6 Strategic and Annual Planning

Strategic and annual business plans for the malaria EPR unit form part of DOMC's operational plan. Malaria EPR plans are updated annually and all malaria epidemic prone districts are mapped and updated annually. Like the vector control unit, the EPR unit has an annual business plan that outlines the IRS and malaria EPR budgets, activities and costing. Information from the targeted districts in terms of the number of structures to be sprayed and the population to be covered is used to prepare annual plans and to calculate and procure commodities for IRS.

4.7.7 Delivery Structures

Health workers in epidemic prone districts have been trained in simple analysis of morbidity data for epidemic detection. Even so, it is currently not possible to accurately forecast a malaria epidemic. Short-, medium- and long-term forecasting is conducted through collaboration with the national and regional meteorological climate monitoring centres. Malaria seasonal forecasting and prediction are done annually and malaria epidemic thresholds have been established in some districts and are updated annually.

Prevention. This is mainly achieved through targeted IRS. At the moment, IRS is implemented in epidemic prone highland districts and arid and semi-arid northern and eastern lowland districts to prevent and control malaria epidemics. Targeted IRS was adopted as an annual campaign in malaria epidemic prone districts in 2003 and is well accepted within the communities. IRS activities were initially funded by the Government, but other partners have come on board to support the programme: DFID (2005–2009), Global Fund (2007–2009) and PMI (2008, 2009).

Preparedness. Even though the numbers are still inadequate, Kenya has made tremendous improvements in personnel development for epidemic preparedness and response. DHMTs in epidemic prone districts have been trained in

all aspects of malaria epidemic preparedness and response. In the past, numerous efforts have been directed to capacity development and training at the different levels of management and implementation. Maintaining and supporting these cadres for implementation of EPR are a challenge. Creation of new districts also poses a challenge in terms of training the new DHMTs.

- There is need to have an emergency preparedness response team and plan at divisional level. Similarly, commodities and drugs should be made available at district and divisional level.

Surveillance - Early Warning. It has proven difficult to consistently run an efficient malaria early warning system (MEWS). The Highland Malaria (HIMAL) project, for example, demonstrated the potential of using weather, entomological, parasitological and case management parameters for predicting epidemics. However, the operational investments involved made this surveillance system difficult to sustain. Weekly surveillance and monitoring of key meteorological indexes are conducted in the 37 high risk districts during epidemic risk months.

Although not all cases of epidemic and emergencies are responded to within one week, these cases are usually investigated within one week of report. An annual updated EPR plan exists and weekly surveillance epidemic thresholds are available at all levels. A system for malaria epidemic surveillance including draft malaria EPR guidelines and SOPs exists.

- There is need to train more people to increase supervision capacity at district and community levels.

Rapid Response. No major malaria epidemics have occurred in Kenya since 1999, although there were significant outbreaks of the disease in three districts in 2003 and 2004. Since 2005, IRS has been used for epidemic prevention as well as response, while LLINs have been distributed to communities living in these areas. Response to malaria epidemics has been neither rapid nor well-coordinated in the past.

Poor epidemic detection and response has essentially been attributed to poor malaria case reporting and lack of analysis of available local data within districts. Currently, weekly data on malaria morbidity are published by IDSR in the morbidity and mortality reports. District surveillance staff have also been trained to monitor malaria morbidity trends from health facilities against established alert and action thresholds.

Involvement of Communities in Preventive Interventions. Community acceptability is critical to the implementation, sustainability and ownership of any epidemic preparedness plan. Community members are involved in the preparations and conduct of IRS. These teams are often constituted before the activity and trained.

- There is need for the community to have a response team (IRS team) that should have regular refresher training. This team should be supervised and directed by the district team.

4.7.8 Performance, Targets and Indicators

The 2006 targets for malaria EPR were to have 80 per cent of epidemic prone districts with reliable early warning and detection systems at the local level; 60 per cent responding to warning signals; and 60 per cent of confirmed epidemics effectively contained through selective interventions including indoor residual spraying. To date, however, the simple MEWS in use is surveillance of morbidity trends against established thresholds. Response to and control of malaria epidemics are still coordinated from the national level by DOMC and DDSR.

4.7.9 Reporting, Reviews and Evaluations

Annual records of surveillance for malaria epidemics have been established in Kenya since 1999 when the last malaria epidemic occurred. No post epidemic or emergency post-mortem assessment reports exist for malaria epidemics occurring in the 1980s and 1990s. Currently, epidemic prone districts compile reports of surveillance and IRS activities that are submitted to both the DOMC and the DDSR.

Districts - through their respective provinces - prepare reports on confirmed and clinical cases and deaths due to malaria on weekly basis by IDSR. There is an opportunity with the roll out of the Community Strategy to further improve surveillance and reporting.

4.7.10 Success Stories and Best Practices

IDSR has been providing DOMC with weekly epidemiological data. There has been strong collaboration between DOMC and the KMD and ICPAC in providing seasonal malaria forecasts alongside climate outlook forums for the Greater Horn of Africa. Epidemic prone districts are also

Table 4.20: Performance rating for EPR

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Policy		✓			Draft guidelines for malaria EPR exist.
Organization			✓		No malaria specific emergency-response team exists at national level or in high risk districts.
Governance and partnership			✓		Subcommittee on malaria epidemics and emergency does not exist.
Guidance			✓		Guidelines exist but still in draft form.
Human resources and training				✓	Human resource capacity is inadequate.
Planning and budgets			✓		Strategic and annual business plans exist.
Performance and Indicators and targets		✓			Performance indicators and targets are good.
Reporting and M&E			✓		Reporting is not done routinely.
Operational research				✓	Research in this area is lacking.
Overall			✓		Strengthening of the existing structures is required.

supported annually to establish epidemic thresholds and plans for malaria epidemic surveillance and response.

4.7.11 Operational Research

The HIMAL project demonstrated the usefulness of district-based detection and prediction using sentinel sites strategy, but the operational sustainability of the system was difficult. Currently KEMRI, through the Climate Change Africa Programme project funded by the International Development Research Centre (IDRC) of Canada, is fine-tuning an early warning model using rainfall, temperature and community parasitaemia. This may be the closest to the simplest malaria early warning tool for the East African Highlands and can be deployed easily in areas that can access climate data on a monthly basis. KEMRI is also carrying out post IRS insecticide bioassays to assess the quality of spraying.

☛ There is need for simple, functional MEWS models that include entomological, clinical, meteorological and environmental parameters to predict epidemics.

4.7.12 Issues and Challenges

One major challenge facing malaria EPR is that no funds are specifically dedicated to malaria epidemic response. Emergency funds are obtained when the emergency arises, which may delay planning and response. Nor is there inter-country or cross-country collaboration for malaria EPR. Other constraints are knowledge gaps in the interactions between climate, vectors, environmental and social factors, and the disease.

4.7.13 Conclusion

Since 2005, there have been improvements in the development of human resources and support by MOH and partners for malaria EPR in Kenya. Personnel in epidemic prone districts in the highlands use malaria morbidity surveillance as a tool for epidemic detection, while IRS is mainly used for epidemic prevention and sometimes response. Currently, there is no functional malaria early warning system. Insufficient financial resources constitute a major challenge to adequate response. If malaria epidemics are to be responded to in a timely manner, these challenges must be addressed.

4.7.14 Recommendations

- Maintain adequate stocks of insecticides for spraying, equipment and protective clothing in all malaria epidemic districts for epidemic preparedness.
- Map high risk areas using geographical information systems to guide proper district planning and estimation of required commodities.
- Strengthen operational research to bridge the knowledge gap in the interaction between malaria and the risk factors.
- Inform and educate local communities so that they can contribute to epidemic detection and response.

4.7.15 Performance Rating

A summary of findings in this area is presented in Table 4.20.

Angamiza mbu
(Eliminate mosquitoes)

The continuing burden of suffering and death from malaria despite diverse public health interventions is a strong pointer to the importance of activities in the areas of advocacy, behaviour change communication, and community and social mobilization

4.8 Advocacy, Behaviour Change Communication, Community and Social Mobilization (ACSM)

Underlying every malaria strategic approach in Kenya is the basic yet powerful fact that malaria is preventable and curable and no one need die of the disease. Malaria is nevertheless a major cause of mortality for children under the age of five and seriously erodes worker productivity – a big barrier to the achievement of Vision 2030. That suffering and death continue at such a level despite diverse public health interventions is a strong pointer to the importance of activities in the areas of advocacy, behaviour change communication, and community and social mobilization (ACSM; see for example, Seshu Babu, 2002; Abwao, 2007).

4.8.1 Policy

At the Abuja Summit of 2000, Kenya committed itself to the allocation of 15 per cent of its budget to the health sector. This budgetary target along with targets on malaria control was not attained by 2006. Indeed, there is insufficient budget allocation for IEC in the health sector. That year – 2006 – was the midterm of the NMS, as well as the year that the National Malaria Communications Strategy (MCS) was launched (MOH, 2006a). The MCS expires in 2009, but was never fully rolled out nationally and hence not well implemented. Thus the NMS needs updating to put more emphasis on contemporary areas of advocacy, community mobilization and social mobilization.

The current policy on IEC, derived from the NMS and further elaborated in the MCS of 2006, states:

> The Government will ensure all Kenyans have access to appropriate, accurate and culturally relevant information about malaria control and management, so that effective behaviour change is achieved.

The strategy targets primary and secondary audiences, for which the following problem domains have been identified:

- BCC to create demand.
- Public communication (campaigns).
- Community-based service providers and their role.
- Capacity building of health care providers.
- Advocacy by decision makers and opinion leaders.
- Media advocacy.
- Capacity building and coordination.

These seven problem domains translate into seven key objectives in the MCS. The achievement of the objectives has been slow, however, for reasons including low investment in ACSM and the nonexistence of policy and implementation guidelines. Moreover, the problems in the implementation of the existing IEC strategy and plan have not been redressed.

The target for the IEC intervention is to ensure that 80 per cent of households nationwide receive key messages on malaria control from at least one source every six months. To support the implementation of the four key strategic approaches – access to prompt treatment, use of ITNs, uptake of IPTp and enhanced acceptability of IRS – a number of surveys have been made to measure households' knowledge of malaria and

its prevention. A recent survey by PSI reported increased KAP scores on ITNs as a result of the dissemination of educational materials.

4.8.2 Guidance

The MCS published in 2006 has served as a malaria IEC strategic plan as well as an IEC guideline for operations. This document targets both the public and health workers and involves both IEC and BCC, although the priority focus of the strategy is biased towards IEC. An important step in this area is the national school health policy and guidelines – which capture malaria control – launched in mid 2009 (GOK, 2009) as a joint activity of MOPHS and the Ministry of Education. The policy makes it possible for basic messages on malaria control and prevention measures to be accessible, understood and utilized by teachers and students alike.

- The malaria communication policy and strategy should be updated and guidelines developed on ACSM and home-based malaria control. The focus should be on ACSM through an inter-sector approach. Malaria control communication to the public should also be separated from that of health workers with different training and capacity building activities.

4.8.3 Organization

There is a unit for IEC/BCC within DOMC, with a focal point and one technical officer deployed in 2008. This unit works closely with the DHP, which is mandated to develop and disseminate health-related information for the public.

4.8.4 Governance-Partnership

A situational analysis of the NMCP found the need for an IEC TWG within the NMS with well defined functions, TORs and membership. This group has been constituted and is chaired by the DHP with the malaria IEC unit as secretariat. Key members are the Department of Child and Adolescent Health, Department of Reproductive Health, the Kenya Network of NGOs against Malaria (KeNAAM), WHO, UNICEF, Merlin, PSI, USAID/PMI, MEDS and the Communications for Change programme of the Academy for Educational Development (AED-C-Change).

The IEC TWG has focused on harnessing stakeholders and national resources by developing effective partnerships to optimize the available technical and financial resources. The IEC TWG is one of the most active TWGs, holding quarterly meetings as scheduled, and is highly rated by development and implementing partners. There are no IEC TWGs at provincial and district levels.

4.8.5 Strategic and Annual Planning

ASCM strategic and annual plans and budgeting are part of the DOMC annual operational plans and its strategic three-year business plan. The main sources of funds for ASCM are WHO-DFID, UNICEF, USAID/PMI and GFATM. The Government pays salaries for all staff working in malaria control.

Komesha malaria okoa maisha
(Stop malaria save life)

There is need to consider sustaining ACSM campaigns throughout the year to ensure the uptake of the interventions. While efforts to update and produce malaria information are ongoing, there is need to expand and sustain the dissemination of information.

4.8.6 ASCM Delivery Structures

The IEC TWG at the central level is currently mandated to provide technical oversight on the implementation of ACSM activities at all levels. Malaria control is also an important part of the Community Strategy (MOH, 2006c). Malaria messages are included in *Key Health Messages for Level 1 of the Kenya Essential Package for Health: A Manual for Community Health Extension Workers and Community Health Workers* (MOH, 2007d), as well as in the training modules for both CHEWs and CHWs (MOH, 2007a/e). ACSM services are delivered at all points of contact between health workers and clients and client groups or communities.

Coordination structures at the provincial and district levels are not adequately engaged, thus undermining service delivery. Provincial and district health education officers are an important resource and could be mandated and supported to take forward malaria ACSM activities.

4.8.7 Advocacy

GOK has demonstrated commitment to the malaria control programme through its ratification of the MDGs and the Abuja Declaration on Roll Back Malaria in 2000. The President's personal commitment has been demonstrated by his presence at numerous malaria advocacy activities, including the launch of the new ACT guidelines in 2006. DOMC is branded with its own logo and motto and markets its efforts in malaria control at stakeholder meetings, during open day activities and through the media.

With stakeholders, DOMC holds high level advocacy events such as the World Malaria Day observance in April. A Malaria Goodwill Ambassador, Prof. Julius Meme, has been appointed to accelerate resource mobilization and advocate for malaria elimination in the country. Malaria advocacy meetings are held at the district level at regular intervals and these have been boosted by the World Malaria Day observances.

☛ There is need to expand the use of new and innovative images of opinion leaders to advocate for malaria interventions by profiling malaria champions such as sports role models, celebrities, musicians, political leaders and other national figures.

4.8.8 BCC

Traditional beliefs and myths, patriarchy, and illiteracy serve to obstruct the uptake of malaria interventions by individuals and communities. The ASCM unit continues to develop and refine key messages on malaria as a disease and in the malaria control intervention areas. Some of the key messages for malaria vector control are:

- *Angamiza mbu* (Eliminate mosquitoes) – DOMC
- *Komesha malaria okoa maisha* (Stop malaria save life) – DOMC
- *Malaria ishindwe* (Defeat malaria) – PSI

These simple messages are suitable for extending to major intervention areas through different channels such as pamphlets, posters, billboards, wall branding, and spots on radio and TV. Person-to-person materials are also being used. Additionally, posters, T-shirts, kangas, caps, flyers, key rings and pens are branded with the malaria message during malaria control campaigns. IEC outreach is conducted through various channels

including print and electronic mass media, road shows, mobile cinemas, and other channels.

DOMC has built experience in carrying out mass media campaigns as evidenced in its support for change of policy and the launch and delivery of new interventions such as ACT, mass campaigns for distribution of LLINs and others.

4.8.9 Media

The DOMC holds periodic media briefings and advocacy workshops with the media. Engagement with the media is highest during April when World Malaria Day is marked and the IRS campaigns are launched. Media support has been also been specifically designed to respond to malaria outbreaks, the launch of interventions and campaigns. A review of electronic media schedules published in the national media shows that there are close to 15 weekly news features and discussion programmes on health and related areas that have the potential of accommodating issues on malaria.

- The media attention created following the peak malaria transmission period in April should be sustained throughout the year. To accomplish this effectively, DOMC needs to develop a long-term plan and programme of collaboration with the media as opposed to ad hoc activities around events.

4.8.10 Community- and Home-Based Malaria Control

Malaria community education meetings including field days are being held at district level to inform and support social mobilization. The malaria community- and home-based delivery of BCC, ITNs/LLINs, RDT and ACT has been limited by the lack of clear national policy, strategy and implementation plan for community interventions. The Community Strategy incorporates support to the training and supervision of CHWs in malaria and malaria control, so as to rapidly expand community/social mobilization and to provide community-based malaria control services. As noted, the Community Strategy provides for malaria control activities in the curriculum and supporting documents for CHEWs and CHWs to enable them to undertake community BCC activities. Currently, DOMC supports various CBOs in several districts to deliver IEC on malaria prevention.

4.8.11 Performance Indicators and Targets

The objectives of the NMS rely on the uptake of effective interventions by communities at risk for malaria. This uptake depends on effective communication and behaviour change. Therefore communication is a vital tool in achieving the NMS target of 30 per cent reduction in malaria mortality. The indicator and target for malaria IEC in the 2001 NMP is "to ensure that 80 per cent of households nation-wide receive targeted key messages on malaria control from at least one source every six months". A detailed M&E framework with numerous outcome indicators was included in the 2006 MCS, but the strategy was not implemented.

Meanwhile, information is collected by the district each month and sent to DOMC. Specific resources to measure performance in IEC have been allotted in DOMC. Such information allows the ACSM unit to gauge its performance against

the increase in knowledge of malaria, increased demand and related behaviour change with uptake of all key interventions (IRS, EPR, etc.) so that ACSM identifies with the outcomes of the interventions, and not just the outcome "awareness creation" as its indicators. Some of the key indicators that could be used are:

- Knowledge indicators
  - Causes
  - Symptoms
  - Treatment
  - Preventive measures
- Behaviour indicators
  - Use of LLINs
  - Treatment seeking within 24 hours
  - Uptake of IPTp
  - Uptake of IRS

4.8.12 Reporting, Monitoring and Evaluation

IEC process or output indicators have been generated since 2004 under the GFATM quarterly performance reporting system. HMIS reports don't capture ACSM data. Moreover, evaluative studies are rarely undertaken and best practices are most times not documented.

☛ There is need for regular qualitative studies to monitor knowledge and behaviour and the quality of care.

4.8.13 Operational Research

Studies on the acceptability and impact of messaging for various interventions have been carried out. These studies have provided information on the most widely accessible and effective means of communication including duration of messages. Results have been used to modify the way malaria messages are delivered.

4.8.14 Situational Analysis

The situational analysis considered the strengths, weaknesses, opportunities and threats (SWOT) that the NMCP contends with. The results can be summarized as:

- ***Strengths:*** There exists a strong partnership among BCC stakeholders and increased access to malaria information from various sources. This has led to increased demand for and utilization of services. Another plus is the involvement of CBOs in disseminating malaria prevention messages.
- ***Weaknesses:*** Provincial and District Health Education Officers are not adequately engaged to coordinate ACSM activities.
- ***Opportunities:*** The launch and roll out of the Community Strategy present an opportunity to effectively implement ACSM activities at the community level. With advancements in ICT, ACSM could seize this opportunity to scale up its activities innovatively. The results of this programme review should provide an opportunity for mobilizing increased funding and private partner involvement.
- ***Threats:*** Education levels of community members have been positively correlated with the uptake of health interventions. Low literacy is a threat to behaviour change communication.

4.8.15 Success Stories, Best Practices and Enablers

- The antimalaria culture of LLIN use developed in Central Province is due to the increased awareness of the benefits of and resultant demand for this malaria intervention.
- World Malaria Day commemorations are highly visible and well coordinated.
- The appointment of the Malaria Goodwill Ambassador will add an important voice for resource mobilization and allocation.
- Video documentaries on IRS, mass net treatment and case management have been produced for rapid transmission and dissemination during peak transmission months.

4.8.16 Lessons Learnt

- An appropriate, effective ACSM strategy needs to make best use of the comparative advantages of different partners, including the public sector, CSOs and the private sector.
- Creating demand for health services must go hand-in-hand with provision of quality services.
- Strengthening linkages with other intervention areas, especially case management, will provide more opportunities for interpersonal communication.

4.8.17 Key Issues and Challenges

- The diversity in Kenyan ethnic communities in relation to message development and dissemination.
- Low level of utilization/uptake of various interventions.
- Insufficient funds for sustained ACSM activities.
- Delivery of advocacy and BCC messages by health workers in health facilities.
- No M&E framework for ACSM activities.
- Inadequate training of health personnel on ACSM.

Table 4.21: Performance rating for ACSM

Standard	A: Highly adequate	B: Adequate	C: Present but not adequate	D: Not adequate at all	Comments
Organization		✓			The IEC unit is established & functional.
Governance and partnership			✓		Not well coordinated at lower levels.
Guidance			✓		Policy emphasis in NMS has been on IEC and not ACSM.
Human resources and training			✓		The IEC unit is not fully staffed and requires more training on ACSM.
Planning and budgets		✓			Planning and budgeting are done promptly. Funding is low.
Performance and indicators and targets			✓		Responsibility for the performance against indicators lies within other interventions.
Reporting and M&E				✓	ACSM component in M&E not rolled out. HMIS tools do not capture ACSM.
Operational research				✓	Inadequate OR at national level.
Overall			✓		Strengthening needed in policy, coordination at lower levels, outcome indicators and training on ACSM.

4.8.18 Conclusion

The NMCP and partners have developed and disseminated key messages on malaria prevention and treatment. Policy issues on ACSM require updating, and the lessons learnt suggest that BCC indicators for malaria control should be refined to include the detailed series/stages of behaviour change.

The approach to BCC should be repetitive and sustained. Because of the importance of health workers, there is need to build their capacity to maximize each contact with clients. Mixed modes of engaging partners should be pursued as these have better outcomes.

4.8.19 Recommendations

- Conduct an assessment and review of ACSM structures and capacity to profile ACSM as a key intervention for malaria control.
- Review, produce and disseminate ACSM policy guidelines.
- Increase investment and support for ACSM to sustain communication.
- Link malaria control activities with other development programmes. In this manner, communities will be sustainably involved.
- Leverage the media as a strategic partner in communication for behaviour change.
- Strengthen M&E and social research for ACSM.

4.8.20 Performance Rating

A summary of the overall performance of the ACSM activities is presented in Table 4.21.

5. Conclusions and Recommendations

In November 2008, the Government of Kenya in collaboration with the Malaria Interagency Coordination Committee (MICC) and key partners agreed to undertake an in-depth review of the National Malaria Control Programme (NMCP). This decision was made in the context of the observed decline in malaria transmission and disease burden, variations in parasite prevalence across the country, improving coverage of interventions, and the global drive to achieve universal coverage for populations at risk with malaria control interventions by 2010.

The review was organized in two phases: Phase 1 involved consultation of partners to agree on the need and scope of the review, development of an implementation plan and mobilization of resources. It also covered desk reviews leading to the production of thematic reports. Phase 2 entailed central level consultations with senior management of both health ministries and representatives of partner agencies and stakeholders, plus field visits to provinces and districts to validate the findings of the desk review.

5.1 Conclusions

The Kenya Malaria Programme Review (MPR), through the various thematic groups, has generated significant and relevant findings for making changes necessary to improve performance. Through its recommendations for enhancing approaches to advocacy and community-based behaviour changes, the challenges to improving and strengthening case finding, plus prompt treatment particularly of pregnant women, should be addressed effectively. In addition, strengthened programme management at the central level and streamlined malaria focal structures at the provincial and district levels will facilitate efficient field implementation as well as coordination of multiple activities.

Complementing these with effective vector control strategies, universal LLIN coverage and epidemic preparedness training would enhance the capabilities for malaria prevention including prevention of malaria epidemics. Strengthened surveillance and reporting capacity and solid M&E support have great potential for a successful revamping of the programme towards realizing the vision of a malaria-free Kenya.

The emerging evidence from sentinel sites suggests declining malaria trends with possible epidemiological transition. The country is experiencing decreased malaria transmission, variation in malaria parasite prevalence and reduced malaria burden as evidenced by lower malaria admissions.

Today the country is stratified into four malaria eco-epidemiological zones: endemic; seasonal transmission; epidemic-prone; and low risk/malaria free areas. It is estimated that 70 per cent of the Kenyan population is at risk of malaria. The challenge of achieving a malaria-free Kenya is to incrementally expand the malaria-free areas within the country through scaled up, well-focused and targeted actions in all epidemiological zones.

In 2004, Kenya changed its first line treatment for uncomplicated malaria from sulfadoxine-pyrimethamine to an artemisinin-based combination treatment (ACT) due to drug resistance. Since then, several guidelines on case management and pharmacovigilance have been developed and most health workers have been trained. However, both the access to diagnostics

and the coverage of ACT for management of malaria are still low in the country. Health facilities also continue to experience frequent stock outs of ACT because of distribution bottlenecks.

The NMCP has a well defined malaria in pregnancy policy, including the provision of free intermittent preventive treatment (IPTp) in malaria endemic areas, free insecticide treated nets (ITNs), and prompt diagnosis and free treatment of clinical disease. This malaria control package is implemented as part of routine antenatal care. The current high antenatal care attendance by Kenyan women has not resulted in high uptake of IPTp, however, which currently is 13 per cent for two doses of IPTp. Many factors contribute to this situation, including late presentation of pregnant women to antenatal care, stock outs of SP for preventive treatment and shortage of trained health workers. Use of insecticide treated nets among pregnant women is currently 50 per cent.

The main interventions for vector control in Kenya are ITNs and indoor residual spraying (IRS). The ITN policy (2001–2010) targets children under five years and pregnant women; nets have been distributed in all malarious districts in Kenya. As a result, 48 per cent of households in Kenya own at least one ITN. IRS has been successfully implemented for prevention of epidemics, attaining operational coverage of 97 per cent of targeted structures and protecting over 3.1 million people. A pilot IRS project in a malaria endemic district has shown that IRS significantly reduces the disease burden in endemic areas with high ITN coverage. Currently, malaria vectors are fully susceptible to all insecticides used for vector control in Kenya.

Highlands west of the Rift Valley, as well as arid and semi-arid areas, are prone to malaria epidemics. The programme has been successful at epidemic prevention through IRS and early detection through surveillance. Epidemic preparedness has been improved at district level through planning, training and pre-positioning of commodities to enable districts to respond to epidemics within two weeks of detection. The main challenges include the limited capacity to forecast epidemics and the absence of guidelines for epidemic preparedness and response.

Advocacy and communication have created demand for malaria control interventions and use of services. However, advocacy and communication activities for behaviour change have not been intensive. The launch and roll out of the Community Strategy is an opportunity for effectively implementing community-based advocacy and communication for behaviour change. A major challenge has been the lack of a clear policy on the coordination of advocacy and communication activities at provincial and district level.

Malaria control is a national priority. The DOMC is strategically placed within the Ministry of Public Health and Sanitation. It has a well-established national coordinating body, the Malaria Interagency Coordinating Committee (MICC), with several malaria technical working groups. The programme also has a number of steady and long-term partners that provide technical assistance and funding for malaria interventions. A new, costed malaria strategy for 2009–2017 is being developed to support the vision of a malaria-free Kenya.

Overall, the policies and guidelines for malaria control are fragmented. The DOMC currently lacks adequate human resource capacity to fulfil its mandate. The Division also lacks a programme management unit responsible for

planning, procurement and training, which hampers full implementation of malaria control activities. Budgetary allocations from GOK are inadequate to cover malaria control interventions. There is also inadequate infrastructure at central, provincial, district and facility levels. The distribution system for malaria commodities is weak, leading to frequent stock outs of commodities, particularly medicines. In addition, there are no designated malaria focal persons at provincial or district level to coordinate activities.

The DOMC together with partners has developed a comprehensive surveillance monitoring and evaluation plan that is in line with the national malaria strategic plan. The integration of malaria indicators into the HMIS and IDSR has strengthened routine data collection, use and dissemination. Operational research activities include: Quality control of diagnostics, post market surveillance on quality of malaria medicines in collaboration with the Pharmacy and Poisons Board (PPB), routine antimalaria drug efficacy monitoring, insecticide resistance monitoring in collaboration with KEMRI and the DVBD, and entomological surveillance of malaria vectors. The main programme challenges in operational research include overall lack of a research agenda, including operations research.

Implementing the recommendations of this review should enable the NMCP, through the new malaria strategy, to improve case management, particularly of pregnant women, and strengthen programme management at all levels.

5.2 Recommendations

The conclusions detailed above and other important findings of this review – the changing epidemiology of malaria, the policy and programming framework, and progress and performance in the delivery of the key technical and supportive interventions – contribute to a number of recommendations for boosting programme performance. Implementation of the recommendations can be expected to place Kenya firmly on the path to a malaria-free future.

5.2.1 Malaria Prevention

- Scale up interventions towards universal coverage of all at-risk populations with LLINs.
- Accelerate the provision of IPTp and LLINs at community level for pregnant women.
- Increase training and advocacy for health workers on the provision of IPTp.
- Adopt and implement the use of IRS for vector control in malaria endemic areas.

5.2.2 Diagnosis and Treatment

- Implement the policy of testing every case of fever to confirm malaria at all levels of health care.
- Provide free diagnosis of malaria using rapid diagnostic tests and microscopy at all levels of the health care system, in line with free treatment with ACT.
- Implement home management of malaria using ACT to increase access to prompt and effective treatment.
- Standardize training curricula for pre-service and in-service training for health workers in collaboration with training institutions and

scale up training of health workers in all sectors, including the private sector, on malaria diagnosis and case management.

5.2.3 Epidemic Preparedness and Response

- Enhance capacity building of districts for epidemic preparedness and response through training, provision of commodities and funding for quick response.
- In all epidemic prone districts and regions, continue IRS for epidemic prevention as a transition is made to epidemic preparedness and response.

5.2.4 Surveillance, Monitoring and Evaluation, and Operational Research

- Validate the decline of malaria trends through surveillance, surveys and data quality audits.
- Monitor disease trends through routine surveillance and malariometric surveys and regularly update the malaria epidemiological map on the basis of the evidence.
- Implement the M&E plan and harmonize malaria databases.
- Develop mechanisms for performance monitoring and mutual accountability of partners in malaria control.
- Expand M&E capacity and produce regular quarterly and annual malaria reports.
- Redefine and prioritize the operational research agenda through an OR technical working group.
- Build capacity at various levels for entomological surveillance and insecticide resistance monitoring.

5.2.5 Advocacy, Communication and Social Mobilization

- Strengthen capacity at provincial and district levels to undertake sustained advocacy and community-based behaviour change communication activities.
- Standardize malaria advocacy and BCC tools and enhance dissemination through community channels.
- Increase funding for the coordination and implementation of activities for advocacy and BCC.

5.2.6 Programme Management

- Revise existing policies and consolidate into one National Malaria Control Policy document. Policies should aim at targeting the malaria control intervention packages by epidemiological zones for maximum impact on disease burden.
- Strengthen the human resource capacity for effective malaria programme management both at national level (programme planning officer, training officer, resource mobilization and partnerships coordinator and malaria commodities logistician) and at provincial and district levels through the designation of malaria focal persons to coordinate malaria control activities.
- Evaluate the procurement and supply management of malaria commodities with an aim of delinking procurement and warehousing from distribution to address bottlenecks and enhance efficiency.
- Strive to assure long-term funding commitments by partners including GOK in order to sustain the gains made in malaria control.

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Annex A: Aide Mémoire

Kenya Malaria Programme Performance Review 2009 Aide Mémoire

I. Purpose

The malaria programme performance review (MPR) is a periodic joint programme management process for reviewing progress and performance of country programmes within the national health and development agenda with the aim of improving performance and/or redefining strategic direction and focus. This *aide mémoire* summarizes the major findings and critical actions emerging from the MPR. The *aide mémoire* is neither a memorandum of understanding nor a legal document. It is a restatement of the joint commitment of partners to work together towards the implementation and follow up of recommendations towards the achievement of the vision of a malaria-free Kenya.

II. Background

In November 2008, Government of Kenya in collaboration with the Malaria Interagency Coordinating Committee (MICC) and key partners decided to undertake an in-depth review of the National Malaria Control Programme. This decision was made in the context of the observed decline in malaria transmission and disease burden, variations in parasite prevalence across the country, improving coverage of interventions and the global drive to achieve universal coverage for populations at risk with malaria control interventions by 2010.

The objective of the review was to assess the current strategies and activities with a view of strengthening the malaria control programme and health system used in delivery of malaria control services. The specific objectives of the MPR were:

- To review malaria epidemiology in Kenya
- To review the policies and programming framework within the context of the health system and the national development agenda
- To assess the progress towards achievement of the global Roll Back Malaria targets
- To review the current programme service delivery systems, their performance and challenges
- To define the next steps for improvement of programme performance

The review was organized in 2 phases. Phase 1 involved consultation of partners to agree on the need and scope of the review, development of implementation plan and resource mobilization. It also covered the desk reviews leading to the production of the thematic reports. Phase 2 involved central level consultations with senior management of both Ministries of Health and representatives of partner agencies and stakeholders, and field visits to provinces and districts to validate the findings of the desk thematic review.

III. Key Findings and Action Points

1. Malaria Epidemiology

The emerging evidence from sentinel sites suggests declining malaria trends with possible epidemiological transition. The country is experiencing a decline in malaria transmission, variation in malaria parasite prevalence and reduction in the malaria burden as evidenced by reduction of malaria admissions. Today the country is stratified into four malaria eco-epidemiological zones: endemic, seasonal transmission, epidemic-prone and low risk/ malaria-free zones. It is estimated that 70 per cent of the population in Kenya is at risk of malaria. The challenge of achieving a malaria free Kenya is to incrementally expand the malaria free areas within the country through focused and targeted scaled up actions in all epidemiological zones.

Action points:

- Validate the decline of malaria trends through routine surveillance, surveys and data quality audits
- Target malaria control intervention packages by epidemiological zones
- Scale up the implementation of malaria control intervention packages to universal coverage of all populations at risk
- Monitor disease trends and regularly update the malaria epidemiological map based on evidence

2. Malaria Diagnosis and Treatment

In 2004, the country changed its 1st line treatment for uncomplicated malaria from sulfadoxine-pyrimethamine to an artemisinin-based combination treatment (ACT) due to drug resistance. Since then, several guidelines on case management and pharmacovigilance have been developed and most health workers have been trained. However, both the access to diagnostics and coverage of ACT for management of malaria are still low in the country. Health facilities also continue to experience frequent stock outs of ACT due to distribution bottlenecks.

Action points:

- Address the bottlenecks associated with the procurement and distribution of malaria medicines and diagnostics
- Implement the policy of testing every case of fever to confirm malaria at all levels of health care
- Provide or enable free diagnosis of malaria using rapid diagnostic tests and microscopy at all levels of the health care system
- Scale up training of health workers in the private sector on diagnosis and case management
- Implement home management of malaria using ACT to increase access to prompt malaria treatment

3. Prevention of Malaria in Pregnancy

The malaria control programme has well defined malaria in pregnancy policy including: the provision of free intermittent preventive treatment (IPTp) in malaria endemic areas, free insecticide treated nets (ITNs), and prompt diagnosis and free treatment of clinical disease. This malaria control package is implemented as part of routine antenatal care. The current high antenatal care attendance in the country has however not resulted in high uptake of IPTp, which currently stands at 25 per cent for IPTp1 and 13 per cent for IPTp2. Use of insecticide treated nets among pregnant women currently stands at 50 per cent. Many factors including late presentation of pregnant women to the antenatal care, stock outs of sulphadoxine-pyrimethamine (SP) for preventive treatment and shortage of trained health workers.

Action points:

- Implement the provision of IPTp and ITNs at community level to increase uptake among pregnant women
- Increase training and advocacy for health workers on the provision of IPT
- Streamline the procurement and distribution of SP

4. Vector Control

The main interventions for vector control in Kenya are insecticide treated nets (ITNs) and indoor residual spraying (IRS). The ITN policy (2001–2010) targets children under five years and pregnant women; nets have been distributed in all malarious districts in Kenya. As a result, 63 per cent of households in Kenya own at least one ITN. Indoor residual spraying has been successfully implemented for epidemic prevention attaining operational coverage of 97 per cent of the targeted structures protecting over 3.1 million people. A pilot project with indoor spraying in a malaria endemic district has shown that IRS significantly reduces disease

burden in endemic areas with high ITN coverage. Currently, malaria vectors are fully susceptible to all insecticides used for vector control in Kenya.

Action points:

- Implement universal coverage with insecticide treated nets to all populations at risk of malaria
- Adopt and implement the use of indoor residual spraying for vector control in malaria endemic areas
- Build capacity at national and subnational levels for entomological surveillance and insecticide resistance monitoring.

5. Epidemic Preparedness and Response

Highlands west of the Rift Valley, arid and semi-arid areas are prone to malaria epidemics. The programme has been successful at epidemic prevention through indoor residual spraying and early detection through surveillance. Epidemic preparedness has been improved at district level through planning, training and pre-positioning of commodities to enable districts to respond to epidemics within two weeks of detection. The main challenges include the limited capacity to forecast epidemics and absence of guidelines for epidemic preparedness and response.

Action points:

- In epidemic prone districts, continue IRS for the next two years and transition to epidemic preparedness and response
- Continue capacity building for epidemic preparedness and response through training, adequate funding and provision of commodities for quick response
- Strengthen capacity for routine surveillance and epidemic threshold monitoring

6. Advocacy, Communication and Social Mobilization

Advocacy and communication has created demand for malaria control interventions and utilization of services. However, advocacy and communication activities for behaviour change have not been intensive. The launch and roll out of the community strategy is an opportunity for effectively implementing community-based advocacy and communication for behaviour change. The major challenge has been the lack of a clear policy on the coordination of advocacy and communication activities at provincial and district level.

Action points:

- Increase funding for the coordination and implementation of activities for advocacy and behaviour change communication
- Strengthen the capacity of provincial administration to undertake community-based malaria behaviour change communication activities
- Standardize malaria advocacy and behaviour change communication tools and enhance dissemination through community channels

7. Policies, Strategies and Programme Management

Malaria control is a national priority. The Division of Malaria Control (DOMC) is strategically placed within the Ministry of Public Health and Sanitation. It has a well-established national coordinating body, the Malaria Interagency Coordinating Committee (MICC), with malaria technical working groups. The programme also has a number of steady and long term partners who provide technical assistance and funding for malaria interventions. A new costed malaria strategic plan 2009-2017 is being developed to support the new vision of a malaria-free Kenya.

The Division currently lacks adequate human resource capacity to fulfil its mandate. In addition, there are no designated malaria focal persons at provincial and district level to coordinate activities. It also lacks a programme management unit responsible for planning, procurement and training, which hampers full implementation of malaria control activities. Budgetary allocation from Government of Kenya is inadequate to cover malaria control interventions. Overall, the policies and guidelines for malaria control are fragmented. There is also inadequate infrastructure at central, provincial, district and facility levels. The distribution system for malaria commodities is weak, leading to frequent stock outs of commodities particularly medicines.

Action points:

- Ministry of Public and Sanitation – develop one policy document for malaria control
- Appoint or designate malaria control focal persons at provincial and district level to coordinate implementation activities
- Assure long-term funding commitments by partners including the Government of Kenya in order to sustain the gains made in malaria control

- Appoint human resource to support malaria programme management, including programme planning officer, training officer, resource mobilization and partnerships coordinator and malaria commodities logistician
- Evaluate the procurement and supplies management of malaria commodities with an aim of delinking procurement and warehousing from distribution to enhance efficiency.
- Standardize training curricula for pre-service and in-service training for health workers in collaboration with training institutions

8. *Surveillance, Monitoring and Evaluation, and Operational Research*

The Division of Malaria Control together with partners has developed a comprehensive surveillance monitoring and evaluation plan that is in line with the national malaria strategic plan. The integration of malaria indicators into the health management information system (HMIS) and integrated disease surveillance and response (IDSR) has strengthened routine data collection, use and dissemination. Operational research activities undertaken include: Quality control of diagnostics, post market surveillance on quality of malaria medicines in collaboration with the Pharmacy and Poisons Board (PPB), routine antimalaria drug efficacy monitoring, insecticide resistance monitoring in collaboration with Kenya Medical Research Institute and the Division of Vector Borne Diseases (DVBD), and entomological surveillance of malaria vectors. The main programme challenges in operational research include lack of a prioritized research agenda and forums for dissemination of operational research findings.

Action points:

- Implement the M&E plan
- Harmonize and utilize the various malaria databases
- Expand capacity for monitoring and evaluation and produce regular quarterly and annual malaria reports
- Develop mechanisms for performance monitoring and mutual accountability by all partners in malaria control
- Redefine and prioritize the operational research agenda through operational research technical working group

IV. Conclusion

The Kenya Malaria Programme Performance Review provided important findings regarding the changing epidemiology of malaria, the policy and programming framework, and progress and performance in the delivery of the key technical and supportive interventions. Implementation of the recommendations of the review will place Kenya firmly on the path to a malaria free future.

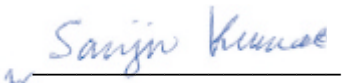
V. Commitment

We, as the Ministry of Public Health and Sanitation and partners of the malaria control programme in Kenya, commit ourselves to the implementation of the programme review action points and the acceleration and scaling up of malaria control interventions for universal access and sustainable impact with the ultimate goal to eliminate the disease in the country.

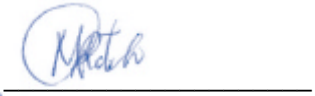
Signed on behalf of the Government of Kenya and Partners:

Mark K. Bor, EBS
Permanent Secretary
Ministry of Public Health and Sanitation

David Okello
World Health Organization Representative
Kenya Country Office



Olivia Yambi
UNICEF Representative
Kenya Country Office



Anthony Daly
Health Advisor – Kenya and Somalia
Department for International Development

Lynn Adrian
Director USAID/OPH
Office of Population and Health – Nairobi

In Nairobi, Kenya, on Friday 5th June 2009

Annex B: List of Participants

B1: MPR Secretariat

Name	Position
Dr. Elizabeth Juma	MPR Coordinator
Dr. Akpaka Kalu	MPR Technical Advisor
Andrew Wamari	MPR Data Manager
Caroline Maina	Documentation Officer
Eunice Njeru	Administrative Officer
Enock Odhiambo	Administrative Officer
Regina Karonji	Secretary

B2: Thematic Group Members

1. *Vector control & epidemic preparedness and response*

Name	Organization
Munga Stephen	KEMRI/Consultant
Evan Mathenge	KEMRI/Chair
Anthony Kanja	PSI-Kenya
Paul K. Kiptoo	DOMC
Daniel G. Wacira	USAID/PMI
Jacob M. Kimani	DOMC
Kiambo Njagi	DOMC
James K. Sang	DOMC
Jean Rakotoson	RTI
Autman Tembu	RTI
Rebecca Kiptui	DOMC

2. *Programme management*

Name	Organization
Ephantus Kabiru	Kenyatta University/ Rapporteur
Manya Andrews	PSI-Kenya/Chair
Josephine Karuri	MSH/SPS
Catherine Ngugi	RTI
Gladys Tetteh	MSH/SPS
Rebecca Kiptui	DOMC
Elizabeth Juma	DOMC
Andrew Wamari	DOMC
Akpaka Kalu	WHO Kenya

3. *Epidemiology*

Name	Organization
Teresa Kinyari	University of Nairobi/ Rapporteur
Mary Ann Seday	PSI - Chair
Augustine Ngindu	WHO - Kenya
James Sekento	DOMC
Eric Were	DOMC
Christine Mbuli	DOMC
Dejan Zurovac	KEMRI/Wellcome Trust Programme
Emelda Okiro	KEMRI/Wellcome Trust Programme
Boniface Isindu	DOMC
Rebecca Kiptui	DOMC
Ayub Manya	DOMC
Kiambo Njagi	DOMC
Evan Mathenge	KEMRI
Gladys Echesa	HMIS
Jackson Muriithi	Division of Child and Adolescent Health
Jedida Obure	Division of Child and Adolescent Health
Simon Mutie	Ministry of Special Programmes
David Mwangi	
Abdisalan Noor	KEMRI-Wellcome Trust Programme
Lawrence Muthami	KEMRI
Faith Okalebo	UON - School of Pharmacy
Wanjiru Gichuhi	UON - Pop. Studies Research Institute
Florence Mutua	UON - School of Medicine

4. *Malaria parasite control and malaria in pregnancy*

Name	Organization
Dismas Ongore	UON/Rapporteur
Mbogo Bunyi	PSI-K/Chair
Jane Carter	AMREF

Dorcas Alusala	DOMC
John Nyamuni	DOMC
James Akudian	DOMC
Samuel Kigen	DOMC
Andrew Nyandigisi	DOMC
Dorothy Memusi	DOMC
Ephantus Murigi	DOMC
Peter Ouma	KEMRI-CDC
Ouma Yamo	AMREF

5. Advocacy, communication and social mobilization

Name	Organization
J.G. Muriithi	Division of Child and Adolescent Health
Hemston Waweru	Department of Health Promotion
James Sekento	DOMC
Belina Shisia	Department of Health Promotion
Daniel Nyamongo	WHO
Terry Muchoki	PSI-Kenya
John Moro	DOMC
Phares G. Nkari	Department of Health Promotion
Valerie Omondi	Merlin
Josephine Ojiambo	Rapporteur
Judith Karia	Department of Health Promotion
Albert Wandago	Private Sector Consultant
Suleman Malik	UNICEF
Irene Chami	RTI
Liza Kimbo	Academy for Educational Development

6. Procurement and supply management

Name	Organization
Mtana Lewa	RITEKA/Rapporteur
Mildred Shieshia	MSH/Chair
Dorothy Memusi	DOMC
Charles K Mburu	KEMSA/PSCMC
Joan Kamondia	RITEKA
James Mwenda	Mission for Essential Drugs
Joan Wakori	KEMSA
Paul Kiptoo	DOMC
James Sakwa	Kenya Medical Laboratories Board
Nelima Wesangula	Department of Pharmacy
Suzanne Hoza	RTI

B3: Participants for MPR Phase 1 Reports Harmonization Retreat

Name	Organization
Akpaka Kalu	WHO
Augustine Ngindu	WHO
Ayub Manya	DOMC
Belina Shisia	Department of Health Promotion
Boniface Isindu	DOMC
Caroline Maina	DOMC
Christine Mbuli	DOMC
Dismas Ongore	UON
Dorcas Alusala	DOMC
Dorothy Memusi	DOMC
Elizabeth Juma	DOMC
Ephantus Murigi	DOMC
Ephantus W. Kabiru	Kenyatta University
Eric Were	DOMC
Eunice Njeru	DOMC
Evan Mathenge	KEMRI
Florence Mutua	UON
Gladys Echesa	HMIS
Hemston M.Waweru	Department of Health Promotion
James Akudian	DOMC
Joan Kamondia	RITEKA
Joaquim Canelas	Aid Managers Ltd
John Moro	DOMC
Josephine Karuri	MSH/SPS
Josephine Ojiambo	Consultant
Lawrence N. Muthami	KEMRI
Mary Hamel	KEMRI/CDC
Mildred Shieshia	MSH
Mtana Lewa	RITEKA
Paul Kiptoo	DOMC
Peter Ouma	KEMRI/CDC
Phares Nkari	Department of Health Promotion
Rebecca Kiptui	DOMC
Regina Karonji	DOMC
Solomon Nzioka	Consultant
Stephen Munga	KEMRI
Teresa Mwendwa	UON
Valerie Omondi	MERLIN
Wamari Andrew	DOMC

B4: Phase 2 MPR Participants

Name	Organization
Abdullah Ali	Ministry of Health - Zanzibar
Akpaka Kalu	WHO – Kenya
Andrew Wamari	DOMC
Anthony Kanja	PSI – Kenya
Ayub Manya	DOMC
Beatrice Muraguri	DOMC
Belina Shisia	Department of Health Promotion
Boniface Isindu	DOMC
Caroline Maina	DOMC
Charles Obonyo	KEMRI/Local Consultant
Charles Paluku	WHO – IST
Christine Mbuli	DOMC
Daniel Wachira	USAID/PMI
Davis Wachira	Division of Vector Borne and Neglected Diseases
Dorcas Alusala	DOMC

Dorothy Naisiae	DOMC
Edward Addai	The Global Fund
Elijah Njeru	Division of Child and Adolescent Health
Elizabeth Juma	DOMC
Enock Odhiambo	WHO – Kenya
Ephantus Murigi	DOMC
Eric Were	DOMC
Eunice N. Njeru	DOMC
Evan Mathenge	DOMC
Gladys Tetteh	USAID/PMI
Grace Miheso	UNICEF Kenya Country Office
Jacinta Opondo	DOMC
Jacinta Opondo	DOMC
Jacob Kimani	DOMC
James Akudian	DOMC
James Mwenda Riungu	Mission for Essential Drugs
James Sang	DOMC
James Sekento	DOMC
Joel S. Nkaku	Department of Environmental Health
John Govere	WHO – IST
John Moro	DOMC
John O. Nyamuni	DOMC
Josephat Mulwa Yundu	National Public Health Laboratories
Josephine Karuri	MSH/SPS
Josephine Ojiambo	Local Consultant
Julius Kimitei	DOMC
Kaendi Munguti	USAID/PMI
Kentse Moakofhi	WHO – Botswana
Khoti Gausi	WHO – IST
Khoti Gausi	WHO – IST
Kiambo Njagi	DOMC
Manasseh A Bocha	Ministry of Medical Services
Manya Andrews	PSI
Mbogo Mbunyi	PSI-Kenya
Mildred Shieshia	MSH
Murugasampillay Shiva	WHO – Geneva
Nathan Bakyaitta	WHO – AFRO
Panduka M. Wijeyaratne	TD & Health Associates - Sri-Lanka
Paul Kiptoo	DOMC
Peter Njiru	DOMC
Phares G. Nkari	Department of Health Promotion
Rachel K. Gesami	Local Consultant
Rebecca Kiptui	DOMC
Regina Karonji	DOMC
Rwakimari John Bosco	Ministry of Health – Uganda
Sammy Makama	Department of Environmental Health
Samson Katikiti	WHO – IST
Samwel Kigen	DOMC
Sanyu Kigondu	JHPIEGO
Soce Fall	WHO – AFRO
Stephen Munga	KEMRI /Local Consultant
Valerie Munyeti	Medical Emergency Relief International
Willis Akhwale	Head, Dept. Disease Prevention & Control
Wycliffe Matini	Dept. of Disease Surveillance and Response

B5: Provincial Teams for Field Visits

Nyanza Team

Level	Leader	Member
Provincial	Panduka Wijeyaratne	John Moro
District	Kentse Moakofhi	Josephat M. Yundu
HF 1	Davis Wachira	Anthony Kanja
HF 2	Valerie Munyeti	Joel Nkako
HF 3	Phares G. Nkari	Julius Kimitei

Western Team

Level	Leader	Member
Provincial	Nathan Bakyaita	James Sekento
District	Abdullah Ali	Samwel Kigen
HF 1	James Mwenda	Dorcas Alusala
HF 2	Boniface Isindu	Gladys Echesa
HF 3	Ephantus Murigi	Belina Shisia

Rift Valley Team

Level	Leader	Member
Provincial	John B. Rwakimari	Jacinta Opondo
District	Josephine Ojiambo	Kiambo Njagi
HF 1	Evan Mathenge	Jacob Kimani
HF 2	Paul Kiptoo	Wycliffe Matini
HF 3	Sammy Makama	James Akudian

Coast Team

Level	Leader	Member
Provincial	John Govere	Eric Were
District	Augustine Ngindu	Beatrice Muraguri
HF 1	Rachel Gesami	Peter Njiru
HF 2	Ayub Manya	Manaseh Bocha
HF 3	Christine Mbuli	Elijah N. Mbiti

B6: Participants during Signing of *Aide Mémoire*

Name	Organization
Mark K. Bor	Permanent Secretary, Ministry of Public Health & Sanitation
Shahnaz Sharif	Director Technical Services, MOPHS
David Okello	WHO Representative - Kenya
Mark Rotich	Department for International Development

Sanjiv Kumar	UNICEF Kenya
Daniel Wachira	USAID/PMI Kenya
Willis Akhwale	Department of Disease Prevention and Control
Julius Meme	Malaria Goodwill Ambassador
Daun Fest	PSI - Kenya
Margaret Onyimbo	Ministry of Finance – Global Fund
Thomas Nouboussi	Ministry of Finance – Global Fund
Shiva Murugasampillay	WHO – HQ
Charles Paluku	WHO – IST
John Govere	WHO – IST
Nathan Bakyaita	WHO – AFRO
Soce Fall	WHO – AFRO
Kentse Moakofhi	WHO – Botswana
Akpaka Kalu	WHO – Kenya
Augustine Ngindu	WHO – Kenya
Panduka Wijeyaratne	Tropical Diseases & Health Associates - Sri-Lanka
Abdullah Ali	Ministry of Health - Zanzibar
John Bosco Rwakimari	Ministry of Health - Uganda
Charles Obonyo	KEMRI
Stephen Munga	KEMRI
Bernhards Ogutu	KEMRI
James Mwenda	MEDS
Rachel Gesami	Local consultant
Gladys Tetteh	PMI
Elizabeth Juma	DOMC
Edward Mwangi	Kenya Network of NGOs against Malaria
Ayub Manya	DOMC
Rebecca Kiptui	DOMC
John Moro	DOMC
Peter Njiru	DOMC
Jacob Kimani	DOMC
Mbogo Bunyi	PSI
Grace Miheso	UNICEF
Agatha W. Kahara	National Mirror Newspaper
Tobias Okech	KEMRI
John Nyamuni	DOMC
Boniface Isindu	DOMC
Andrew Wamari	DOMC

Annex C: Terms of Reference

C1: Malaria Programme Review Coordinator

1. The Malaria Programme Review (MPR) Coordinator

The MPR Coordinator will work closely with the head of the Division of Malaria Control (DOMC), who is also the chairperson for the malaria programme review, or an appointed designee. He/she will be based full time at the review secretariat in the DOMC.

2. Terms of reference

With technical and programmatic support from the World Health Organization, the MPR Coordinator is responsible for the management of the planning, conduct and follow-up of the programme review. The role of the MPR Coordinator is to lead, plan and organize the review and prepare all the background materials and organize the participation of internal and external reviewers.

The specific functions of the review coordinator are to coordinate the

- Preparation of the review proposal and plan
- Development of a MPR budget
- Sourcing of the funds required for the implementation of the MPR
- Setting up of a review secretariat and a review task force
- Identification of internal and external review team members
- Preparation of background literature and desk review and collection of required materials
- Preparation of background systematic (thematic) overviews, case studies and conduct of malaria surveys that may be required
- Arrangement of logistics for the MPR
- Preparation of key presentations
- Preparation of review aide-memoir, PowerPoint presentations and press releases
- Preparation of the MPR report, its printing and dissemination
- Follow up of the MPR recommendations and implementation of its work plan of action

C2: Terms of Reference for the Review Secretariat

1. Tasks

Under the leadership of the MPR Coordinator, the task of the review secretariat is to provide technical, organizational, and logistic support for all phases of the review. The technical tasks are to

- Summarize the status of the programme and its component areas
- Identify the major achievements, best practices and problems in the programme
- Investigate priority problems and select possible solutions
- Develop recommendations and work plan of action

2. Composition and focus of secretariat

The secretariat should consist mainly of DOMC staff along with facilitators from RBM partners. The secretariat should consist of people with the following skills:

- Malaria programme leadership and management
- Data collection and analysis
- Conduct of systematic reviews
- Conduct of management reviews
- Health systems assessment

C3: Terms of Reference for Phase 1 Consultants

1. Background

The Government of Kenya in collaboration with the Malaria Interagency Coordinating Committee is undertaking an in-depth review of the National Malaria Control Programme with the aim of refocusing malaria control in Kenya for greater impact. This malaria programme review is scheduled in 3 phases as follows: Phase 1, Preparation, planning, organization and management (January to March 2009); Phase 2, Conducting the review (April 2009); Phase 3, follow up of the review (May to July 2009 and onwards).

The malaria programme review (MPR) will be undertaken at various technical and administrative levels. Therefore different teams will be responsible for different levels. There will be two groups of teams:

1. Thematic review and coordination team: This team will undertake an in-depth review of the various Kenya malaria control programme components - programme management; case management; MIP; vector control; IEC/BCC; EPR; SM&E
2. Field review teams: District/provincial review teams; national review teams - DOMC, RBM partners, other MOPHS/MOMS departments and divisions, non-health sector players, research institutions

The objectives of the review are as follows:

1. To review malaria epidemiology
2. To review the policy and programming framework within the context of the health system and the national development agenda
3. To assess progress towards achievement of global RBM targets
4. To review the current programme service delivery systems, their performance and challenges
5. To define next steps to improve programme performance and/or redefine the strategic direction and focus including revision of the strategic plan and operational plan

The expected outputs of phase 1 of the review are:

a) Thematic group reports

2. Consultants' profile

The services of the following specialists will be required to support phase 1 of the Kenya malaria programme review 2009: Malarialogist; malaria field epidemiologist; clinical specialists in malaria case management (internal physician, paediatrician, obstetrics and gynaecology); laboratory, parasitology and pathology specialist; entomologist and/or vector control specialist; information, education and communication or behaviour change communication specialist; economist and/or financial specialist; M&E specialist and disease modellers; programme administrators and human resource specialist; programme management specialists.

3. Terms of reference

Under the direction of the MPR Chairperson, the consultants will be required to work as part of a team or group to undertake the following:

Phase 1:

i. Literature review on various components of the national malaria programme; development of thematic review papers based on a framework provided
ii. Keep records of the findings and resolutions of the team
iii. Document meetings and decisions of the thematic group assigned and keep minutes of meetings
iv. Document the report of the team using the reporting framework provided
v. Facilitate the development of the PowerPoint presentations of the team
vi. Carry out assignments given by the thematic group chair

In addition, the consultant must possess great writing and computer skills.

All consultants will be engaged by the World Health Organization (WHO) as short-term local consultants for a period of 4 weeks.

4. Working tools for phase 1

Relevant documents and logistics will be provided to the consultants including but not limited to the following:

- Updated national malaria control database and maps
- Malaria control documents
  - National malaria control strategy
  - Annual national malaria control business plans
  - GFATM proposals and reports
  - District annual malaria operational/ business plans
  - Development partners' plans and reports
  - Other malaria project plans and reports
  - Reports of technical support missions
  - Reports of supervisory visits
  - Malaria technical policies, guidelines and tools
  - Published articles and literature
  - Reports of surveys, studies, researches and other sources of data
- National policies and frameworks relevant to malaria control: Vision 2030 document,

Economic Recovery Strategy medium-term plan (linked to strategic plans of sector), etc.
- National Health Sector Strategic Plan
- Medium-term expenditure framework (MTEF)
- Kenya Demographic and Health Survey (KDHS)
- Population census reports
- Hard and electronic copies of guidelines and tools for field interviews

C4: Terms of Reference for Phase 2 Consultants

1. Background

The Government of Kenya in collaboration with the Malaria Interagency Coordinating Committee is undertaking an in-depth review of the National Malaria Control Programme with the aim of refocusing malaria control Kenya for greater impact. This malaria programme review is scheduled in 3 phases as follows: Phase 1, Preparation, planning, organization and management (January to March 2009); Phase 2, Conducting the field review (May 2009); Phase 3, Follow up of the review (June to July 2009 and onwards).

The malaria programme review (MPR) will be undertaken a various technical and administrative levels. Therefore different teams will be responsible for different levels. There will be two groups of teams:

- Thematic review and coordination team: This team will undertake an in-depth review of the various Kenya malaria control programme components - Programme management; Case management; MIP; Vector control; IEC/BCC; EPR; SM&E
- Field review teams: District/provincial review teams; national review teams - DOMC, RBM partners, other MOPHS/MOMS departments and divisions, non-health sector players, research institutions

The objectives of the review are as follows:

a) To review malaria epidemiology
b) To review the policy and programming framework within the context of the health system and the national development agenda
c) To assess progress towards achievement of global RBM targets
d) To review the current programme services delivery systems, their performance and challenges
e) To define next steps to improve programme performance and/or redefine the strategic direction and focus including revision of the strategic plan and operational plan

The expected outputs of phase 2 of the review are:

b) Malaria Programme Review Report and *aide mémoire*
c) Recommendations for finalization of the National Malaria Strategic Plan

2. Consultants' profile

The services of the following specialists will be required to support phase 2 of the Kenya malaria programme review 2009: Malarialogist; malaria field epidemiologist; clinical specialists in malaria case management (internal physician, paediatrician, obstetrics and gynaecology); laboratory, parasitology and pathology specialist; entomologist and/or vector control specialist; information, education and communication or behaviour change communication specialist; economist and/or financial specialist; M&E specialist and disease modellers; programme administrators and human resource specialist; programme management specialists

3. Terms of reference

Under the direction of the MPR Chairperson, the consultants will be required to work as part of a team or group to undertake the following:

a) Participation in team building exercises
b) Conduct of consultations, interviews and collection of relevant data during field visits at central, provincial, district, health facility and community levels
c) Data analysis and preparation of field reports
d) Review of data, reports, literature and documents and articulation of statuses, best practices, gaps, strategies and recommendations for malaria control in Kenya
e) Preparation of review reports, PowerPoint presentations and *aide mémoire*
f) Briefing of leaders and stakeholders at all levels on the MPR at different segments of the review process
g) Facilitation of the revision and finalization of national malaria strategic plan, monitoring and evaluation framework and annual operational/business plan

In addition, the consultants must possess great writing and computer skills.

All consultants will be engaged by the World Health Organization (WHO) as short-term local consultants for a period of 3 weeks.

4. Working tools for phase 2

Thematic reports of various programme components; national, provincial, and district profiles and all the documents used in phase 1 of the Malaria Programme Review.

C5: Terms of Reference for MPR Technical Adviser

1. Background

The Kenya Malaria Programme Review (MPR) is a huge management undertaking that should conform to the guidelines of the World Health Organization on the conduct of the malaria program reviews. Also all the outputs of the MPR including journal articles for publication in peer reviewed journals must conform to the highest standards provided in the WHO guidelines. The MPR Technical Adviser will therefore be required to provide technical support to the Kenya MPR processes from conception to end, ensuring that all the outputs are produced to the required standards.

2. Functions

The MPR Technical Adviser will be required to

- Advise DOMC and the MICC on the conduct and management of the MPR
- Provide technical support to the MPR Coordinator, MPR secretariat, MPR chairperson and the MPR taskforce in the planning, implementation and follow up of the 3 phases of the MPR
- Provide orientations and guidance to DOMC staff and MPR secretariat on the planning and implementation of the MPR
- Participate in and provide guidance to all relevant meetings for the planning, coordination and implementation of the PR including meetings of the MPR secretariat and PR task force
- Provide technical leadership in the planning and implementation of the Kenya MPR
- Provide leadership in the finalization of all MPR outputs including journal articles or publications

Annex D: Malaria Programme Performance Review Phase 2 Agenda

Saturday, 23 May 2009			
Arrival of external and internal reviewers			
Time	**Activity**	**Facilitator**	**Comments**
2.00–5.00 pm	Arrival at KCB Conference Centre	Secretariat	
2.00–5.00 pm	Registration	Secretariat	

Sunday, 24 May 2009			
1. Common objectives and outputs of the review **2. Briefing and team building between internal and external review teams** **3. Technical briefings and consensus building on the review thematic areas**			
Time	**Activity**	**Facilitator**	**Comments**
8.00–8.30 am	Registration	Secretariat	
8.30–9.00 am	Welcome and introductions		
9.00–9.30 am	MPR objectives, outputs and outcomes MPR phases and steps	Shiva Murugasampillay	
9.30–9.45 am	Overview of policies and structures of the national health system	Willis Akhwale	
9. 45–10.00 am	Overview of the policies and structures of the NMCP	Elizabeth Juma	
10.00–10.20 am	Overview of phase 1 of the review process	Andrew Wamari	
10.20–10.45 am	*Tea break*	ALL	
10.45–11.05 am	Epidemiology, M&E	Gladys Tetteh	
11.05–11.30 am	Parasite control	Mbogo Bunyi	
11.30–11.55 am	Vector control	Evan Mathenge	
11.55–12.15 pm	Procurement and supplies management	Mildred Shieshia	
12.15–12.35 pm	Advocacy, IEC and social mobilization	Kaendi Munguti	
12.35–12.55 pm	Programme management	Manya Andrews	
12.55–1.00 pm	Thematic working groups	Shiva M	
1.00–2.00 pm	*Lunch break*	ALL	
2.00–4.30 pm (Tea break at 3.30)	Thematic working groups to define priority issues/success/gaps in national programme	ALL	
4.30–5.30 pm	Presentation by thematic working groups (10 mins each)	External reviewers	
5.30–6.00 pm	Review of day's objectives and planning for day 2	Andrew Wamari	

Monday, 25 May 2009			
4. Review and adapt data collection tools for central and field visits **5. Briefing and consensus on central, provincial and district field visits and formation of field teams**			
Time	**Activity**	**Facilitator**	**Comments**
8.00–8.15 am	Day 2 objectives	Dr. Shiva Murugasampillay	
8:15–8:30 am	National profile	Dr. Elizabeth Juma	
8.15–10.30 am	Central data collection tools and guidelines	N. Bakyaitta; R. Gesami; J. Ojiambo; J. Mwenda;C. Obonyo; S. Munga	
10.30–11.00 am	*Tea break*	ALL	
11.00–11.30 am	Provincial data collection tools and guidelines	J. Govere; Panduka Wijeyaratne	
11.30–12.00 pm	District data collection tools and guidelines	J. Govere; Panduka Wijeyaratne	
12.00–1.00 pm	Health facility data collection tools guidelines	Dr. Shiva; Dr. Abdullah Ali	
1.00–2.00 pm	*Lunch break*	ALL	
2.00–2.30 pm	Community data collection tools and guidelines	Andrew Wamari; J. B Rwakimari	
	Set up teams: Provincial teams; central coordinating team		
2.30–3:30 pm	Presentation on malaria profile of provinces and districts to be visited	Secretariat	
3:30–4:30 pm	*Tea break*	ALL	
4:30–5:30 pm	Issues to focus on during the field visits	Dr. Shiva	
5:30–6:00 pm	Review of day's objectives and planning for day 3	Andrew Wamari	

Aim: Draft report should be prepared by end of this day for validation during field visits.

Tuesday, 26 May 2009			
6. Central visits to national institutions and organizations			
Time	**Activity**	**Facilitator**	**Comments**
	Briefing and consultation with Minister of Public Health and Sanitation	Internal and external review facilitator	
	Briefing and consultation with Director of Public Health and Sanitation	Internal and external review facilitator	
	Briefing and consultation with departmental and divisional heads in MOPHS	Internal and external review facilitator	
	Briefing and consultation with partners in research and academic institutions	Internal and external review facilitator	
	Briefing and consultation with other RBM stakeholders	Internal and external review facilitator	
	Briefing and consultations with other non-health stakeholders	Internal and external review facilitator	
	Central visit to specific departments and institutions	Internal and external review facilitator	

Wednesday, 27 May 2009			
Central visits to national institutions and organizations			
Time	**Activity**	**Facilitator**	**Comments**
8.00– 8.15 am	Day 4 objectives	Dr. Shiva	
8:15–9:15 am	Central teams finalize report	All central teams	
9.15–12.15 am (+ Team)	Meeting NMCP/DOMC	Internal and external review facilitator led by Dr. Shiva	Meeting to be held at KCB place with all DOMC focal persons participating
12:15–1:00 pm	Preparatory meetings of provincial teams	Provincial teams	
1:00–2:00 pm	*Lunch break*	ALL	
3.00–5.00 pm	Visit to NMCP and departure to provinces	Secretariat	Leave for airport to travel to Kisumu, Mombasa and Eldoret

Thursday, 28 May 2009					
8. Provincial and district visits					
Time	**Activity**				
	Provincial level	**District level**	**Health facility 1**	**Health facility 2**	**Health facility 3**
8.30–9.00 am	Provincial level sub-team arrive designated venue of meeting with the provincial health team (respectively at Kisumu, Kakamega, Eldoret and Mombasa)	District and health facilities sub-teams arrive district headquarters (DHMT office)			
9.30–11:00 am	Provincial presentation on provincial malaria situation Meeting with provincial malaria team	District presentation on district malaria situation Meeting with district malaria team	Health facility teams depart for assigned health facilities after picking up designated guide from the DHMT Meeting with health facility		
11:00–1:00 pm Lunch break	Visit to provincial hospital (OPD, MCH clinic, lab, pharmacy and KEMSA depot)	Visit to district hospital (OPD, MCH clinic, Lab, Pharmacy and KEMSA depot)	FGD with community members and CHWs	FGD with community members and CHWs	FGD with community members and CHWs
2:00–3:30 pm			Feedback to health facility	Feedback to health facility	Feedback to health facility
3:45–6:00 pm			Travel back to district headquarters	Travel back to district headquarters	Travel back to district headquarters
Friday, 29 May 2009					
8:00–9:00 am	Visit to provincial hospital (OPD, MCH clinic, lab, pharmacy and KEMSA depot)	District teams prepare summary report for district			
9:00–10:00 am		Preparation of brief written assessment summary and quick feedback to district team			
10:30–11:30 am		Travel back to provincial headquarters			
11:30–1:00 pm	Finalization of provincial teams summary report for province				
1:00–2:00 pm	Lunch				
2:00–4:00 pm	Written assessment summary and feedback to provincial team				

Saturday, 30 May 2009			
9. Travelling to Nairobi - Karen Centre			
Time	**Activity**	**Facilitator**	**Comments**
9:00–1:00 pm	Finalization of provincial reports	Team leaders and provincial teams	
2:00–Onwards	Departure for airports and travel to Nairobi	Team leaders and provincial teams	
	Arrival in Nairobi and KCB Centre	Secretariat and professional caterers	

Sunday, 31 May 2009
10. Rest day – All teams and informal work by provincial teams

Monday, 1 June 2009			
11. Sharing of reports and presentations from central, provincial and district visits and consensus on key findings			
Time	**Activity**	**Facilitator**	**Comments**
8.00–9.00 am	Detailed analyses and summaries and SWOT from HF, district and provincial findings. Comments on tool	Provincial Teams	
9.00–10.30 am	Provincial presentations: Key findings, challenges, solution and recommendations	Team leaders provincial team	
11.00–13.00 pm	Thematic area: SWOT, achievements, success, best practices, lessons learnt from central and field visits	Group work by thematic areas	
13.00–15.00 pm	Thematic area: Challenges, problems, solutions and recommendations from central and field visits	Group work by thematic areas	
15.30–17.00 pm	Thematic area presentations (Key findings, challenges, solution and recommendations)	External team leaders thematic areas	
17:30–18:00 pm	Review of day's objectives and planning for next day	Andrew Wamari	

Tuesday, 2 June 2009			
12. Sharing of reports and presentations from central, provincial and district visits and consensus on key findings			
Time	**Activity**	**Facilitator**	**Comments**
8.00–8.30 am	Review of malaria population at risk stratification and mapping	N. Bakyaita	
8.30–9.00 am	Review of malaria disease burden estimates and actual trends	N. Bakyaita	
9.00–9.30 am	Review of national malaria policies	Dr. Abdullah Ali/ Dr. Soce Fall	
9.30–10.00 am	Review of annual operational plans and strategic plans, objectives and targets on access, coverage, quality utilization and impact	Dr. Abdullah Ali/ Dr. Soce Fall	
10.30–11.00 am	Review of national guidelines, manuals and training modules	Dr. Shiva	
11.00–11.30 am	Malaria service delivery mapping and progress and performance set on national and global targets	N. Bakyaita	
11.30–17.00 pm	Draft report: Advocacy, IEC and community mobilization	Group work by thematic areas	
	Draft report: Vector control and epidemic preparedness and response	Group work by thematic areas	
	Draft report: Diagnosis and treatment and malaria in pregnancy	Group work by thematic areas	
	Draft report: Epidemiology, surveillance, information, surveys and operational research	Group work by thematic areas	
	Draft report: Programme management by level	Group work by thematic areas	
17:30–18:00 pm	Review of day's objectives and planning for next day	Andrew Wamari	

Wednesday, 3 June 2009			
13. Preparation of draft report and aide memoir with Malaria Technical Working Groups			
Time	**Activity**	**Facilitator**	**Comments**
8.00–10.30 am	Preparation of draft report and *aide mémoire*	Internal and external review chairs, NMCP manager and secretariat	
10.30–11.00 am	*Tea break*	ALL	
	Preparation of draft report and *aide mémoire*	Internal and external review chairs, NMCP manager and secretariat	
1:00–2:00 pm	*Lunch break*	ALL	
14.00–15.30 pm	Presentation of draft report and *aide mémoire* to malaria technical working groups and member of malaria interagency working group	Internal and external review chairs, NMCP manager and secretariat	Chair DDP&C Those present and seek to get others where possible health focal points DFID, USAID, World Bank, UNICEF, WHO
16.00–17.00 pm	Preparation of executive summary, *aide mémoire* and press release.	Kalu/Juma/ Soce Fall/Paluku/Addai	
17:30–18:00 pm	Review of day's objectives and planning for next day	Andrew Wamari	

Thursday, 4 June 2009			
14. Preparation of *aide mémoire* and PowerPoint presentation on key findings and recommendations			
Time	**Activity**	**Facilitator**	**Comments**
8.00–10.30 am	Presentation of executive summary and *aide mémoire* to MOPHS senior officials	Internal and external review chairs, NMCP manager and secretariat	
10.30–13.00 pm	Changes to draft review report, PowerPoint presentation and *aide mémoire* and sharing with Heads of Agencies of DFID, USAID, UNICEF, World Bank, WHO	DDP&C, internal and external review chairs, NMCP manager and secretariat	
14.00–15.30 pm	Overview of Phase 2 of the review process	Juma/Bakyaita	
16.00–17.30 pm	Roundtable lessons learnt (benefits, timing, process & tools) in MPR Kenya	Soce Fall/ C. Paluku/E. Addai	
17:30–18:00 pm	Review of days objectives and planning for next day	Andrew Wamari	

Friday, 5 June 2009			
15. Stakeholder presentation of review findings, recommendations and press release – press conference **16. Preparation and plan for phase 3 recommendation implementation and quarterly review**			
Time	**Activity**	**Facilitator**	**Comments**
8.00–9.30 am	Preparation for stakeholder feedback	Internal and external review chairs, NMCP manager and secretariat	
10.00–10.30 am	High level signing of *aide mémoire* MOPHS, DFID, USAID, WHO, World Bank, UNICEF; preparation of documentary and press release	Dr. Sharif, Director Technical Services MOPHS	Laico Regency Hotel Nairobi Documentary prepared
11.00–13.00 pm Venue Laico Hotel	National stakeholder meeting on the presentation of the review findings	Internal and external review chairs, NMCP manager and secretariat	Laico Regency Hotel
14.00–15.30 pm	Planning for Phase 3 – follow up of recommendation	Internal and external review chairs, NMCP manager and secretariat	Laico Regency Hotel
14.00–17.00 pm	Presentation of plan for Phase 3 – follow-up of recommendations	NMCP secretariat and internal review facilitators	DOMC

Saturday, 6 June 2009			
Time	**Activity**	**Facilitator**	**Comments**
	Departure of review facilitators	Secretariat and professional caterers	

Mbu nje! Sisi ndani!

Nahakikisha kuwa mimi na jamii yangu, kila mmoja, kila usiku, analala ndani ya neti. Sasa boma yangu ni eneo bila Malaria.

MALARIA ISHINDWE!

Division of Malaria Control
Ministry of Public Health and Sanitation
PO Box 19982 KNH
Nairobi 00200, Kenya
www.nmcp.or.ke