

**RPM Plus  
Technical  
Assistance to the  
Kenya Division of  
Malaria Control for  
Establishment of a  
Malaria  
Information  
Acquisition System:**

---

*MIAS Assessment and  
Recommendations  
Report*

Management Sciences for Health  
is a nonprofit organization  
strengthening health programs worldwide.



**USAID**  
FROM THE AMERICAN PEOPLE

This report was made possible through support provided by the U.S. Agency for International Development, under the terms of Cooperative Agreement Number HRN-A-00-00-00016-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

Paul Krystall  
*June 2007*

# **RPM Plus Technical Assistance to the Kenya Division of Malaria Control for Establishment of a Malaria Information Acquisition System: MIAS Assessment and Recommendations Report**

---

Paul Krystall

June 2007



---

Rational Pharmaceutical Management Plus  
Center for Pharmaceutical Management  
Management Sciences for Health  
4301 N. Fairfax Drive, Suite 400  
Arlington, VA 22203  
Phone: 703-524-6575  
Fax: 703-524-7898  
E-mail: [rpplus@msh.org](mailto:rpplus@msh.org)

Strategic Objective 5

This report was made possible through support provided by the U.S. Agency for International Development, under the terms of cooperative agreement number HRN-A-00-00-00016-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

## **About RPM Plus**

RPM Plus works in more than 20 developing and transitional countries to provide technical assistance to strengthen pharmaceutical and health commodity management systems. The program offers technical guidance and assists in strategy development and program implementation both in improving the availability of health commodities—pharmaceuticals, vaccines, supplies, and basic medical equipment—of assured quality for maternal and child health, HIV/AIDS, infectious diseases, and family planning and in promoting the appropriate use of health commodities in the public and private sectors.

## **Recommended Citation**

This report may be reproduced if credit is given to RPM Plus.

Krystall, P. 2006. *RPM Plus Technical Assistance to the Kenya Division of Malaria Control for Establishment of a Malaria Information Acquisition System: MIAS Assessment and Recommendations Report*. Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

Rational Pharmaceutical Management Plus Program  
Center for Pharmaceutical Management  
Management Sciences for Health  
4301 North Fairfax Drive, Suite 400  
Arlington, VA 22203 USA  
Telephone: 703-524-6575  
Fax: 703-524-7898  
E-mail: [rpmplus@msh.org](mailto:rpmplus@msh.org)  
Web: [www.msh/rpmplus](http://www.msh/rpmplus)

## TABLE OF CONTENTS

ACRONYMS .....	v
ACKNOWLEDGMENTS .....	vii
EXECUTIVE SUMMARY .....	1
Background .....	1
Recommendations .....	1
THE MIAS CONSULTANCY METHODOLOGY .....	7
Linkages and Persons Worked With .....	8
Outputs Produced During the Consultancy .....	10
Limitations of the Consultancy .....	11
MIAS PRIORITY AREAS .....	15
Priority Areas .....	15
Overall Requirements of MIAS .....	16
Definitions of Monitoring and Evaluation .....	18
PERFORMANCE—PLANNING, BUDGETING, AND MONITORING OF MALARIA PROGRAM IMPLEMENTATION .....	19
Current Situation .....	19
Recommendations .....	21
Workplan and Budget .....	23
EFFECTIVENESS OF MALARIA INTERVENTIONS—MEASUREMENT OF MALARIA INDICATORS THROUGH SURVEYS .....	25
Current Situation .....	25
Recommendations .....	27
Workplan and Budget .....	27
ROUTINELY REPORTED HEALTH INFORMATION .....	29
Current Situation .....	29
Recommendations .....	31
Workplan and Budget .....	35
Malaria Key Indicators for Routine Reporting .....	36
OTHER SYSTEMS .....	41
Training Information System .....	41
ACT Antimalarial Medicine Information .....	43
Indoor Residual Spraying .....	48
Epidemic Detection and IDSR .....	49
Pharmacovigilance System .....	49
STRENGTHENING CAPACITY AT DOMC .....	51
Current Situation .....	51

Recommendations.....	51
Training Program.....	52
ANNEX 1. WORKPLAN AND BUDGETS FOR ACTIVITIES .....	55
Workplan.....	55
Budget.....	60
ANNEX 2. TERMS OF REFERENCE FOR DATABASE SPECIALIST .....	67
ANNEX 3. TERMS OF REFERENCE .....	69
ANNEX 4. PROCUREMENT LIST .....	71
ANNEX 5. DATA ENTERED IN MALARIA HMIS AT DOMC .....	73
ANNEX 6. DOCUMENTS/FORMS PRODUCED DURING THE CONSULTANCY .....	75

## ACRONYMS

AOP	Annual Operational Plan
ACT	artemisinin-based combination therapy
CWC	child welfare clinics
DCH	Division of Child Health
DFID	Department for International Development
DHS	Demographic and Health Survey
DOMC	Division of Malaria Control
DOMU	Disease Outbreak Monitoring Unit
DRH	Division of Reproductive Health
DSS	Demographic Surveillance Site
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GIS	Geographical Information System
HMIS	health management information system
IDSR	Integrated disease surveillance and response
IMCI	Integrated Management of Childhood Illnesses
IEC	information, education, and communication
IPD	inpatient department
IPT	intermittent preventive treatment
IRS	indoor residual spraying
ITN	insecticide-treated net
KEMSA	Kenya Medical Supplies Agency
KENAAM	Kenya Alliance Against Malaria
KEPH	Kenya Essential Package for Health
LLITN	long-lasting insecticide treated net
M&E	monitoring and evaluation
MEDS	Mission for Essential Drugs and Supplies
MIAS	Malaria Information Acquisition System
MoH	Ministry of Health
MSH	Management Sciences for Health
NGO	nongovernmental organization
NHSSP	National Health Sector Strategic Plan
NMCP	National Malaria Control Programme
NMS	National Malaria Strategy
RBM	Roll Back Malaria
RH	reproductive health
RPM Plus	Rational Pharmaceutical Management Plus
USAID	U.S. Agency for International Development
WHO	World Health Organization



## ACKNOWLEDGMENTS

Strengthening the capacity to combat malaria in Kenya with a strong malaria information system is the vision of the Head of the Division of Malaria Control (DOMC), Dr Willis Akhwale. The author of this report and RPM Plus would like to thank him for his commitment and the collaboration that has enabled the progress in monitoring and evaluation (M&E) to date. The progress also builds on the work started by Dr. Samuel Ochola, who was head of the DOMC when the MIAS consultancy started.

Also instrumental in preparing the report were the DOMC's head of M&E, Dr. Rebecca Kiptui, and the technical manager, Andrew Wamari. Rational Pharmaceutical Management (RPM) Plus also worked closely with the department heads—Dr. Beth Rapuoda, Dorothy Naisiae, Dr. Ayub Many, Dr. Dorcas Alusala, and John Moro; and with the DOMC staff including James Sang, Andrew Nyandigisi, Julius Kimitei, Paul Kiptoo, Kiambo Njagi, James Sekento, Samuel Nzivo, Eric Were, Anne Mwangi, Ruth Kihara, Caroline Asimwe, Jacob Kimani, P. Njiru, A. Songwa, and of course, Betty Nyakiamo.

Thanks to Dr. Gladys Tetteh of Management Sciences for Health RPM Plus for all of your assistance and encouragement. The support from the U.S. Agency for International Development officials is also recognized, in particular Dr. Sheila Macharia and Dr. Mike Strong.

Special mention should be made of the WHO malaria team in Kenya—Ms. Joanne Greenfield, Dr. Augustine Ngindu, and Ms. Regina Mbindyo. Their long-standing working relationship with the DOMC makes them great partners to work with towards a common goal.

Also, we would like to thank the contributors on the M&E technical working group—Dr. Abdisalan Mohamend Noor and Dr. Robert Snow of KEMRI/Wellcome Trust.

The RPM Plus consultancy which produced this report included a special collaboration between various divisions and partners, including the *Workshop for Review and Integration of Registers and Data Collection Tools* held in Karen, Nairobi, in March 2006, where DOMC, DCH, NASCOP, DRH, DOMU, Nutrition, KEPI, and Health Management Information Systems (HMIS) all worked together to make an important contribution for data harmonization. Fundamental to making this happen was Pepela Wanjala of HMIS and key contributions were made by Dr. Ogara of HMIS, Dr. Joseph Uchudi of WHO, Dr. Solomon, and Diana M. Kamar and Charity Ndwiga of the Division of Reproductive Health. The meeting was opened by the Director of Medical Services, Dr. J. Nyikal.

Thank you to KENAAM, Godfrey Baltazar of NASCOP, Thomas Ogara of the Ministry of Health, and Jayesh Pandit of the Pharmacy and Poisons Board for their contributions.

Sadly, two of the DOMC officials that we had worked closely with during the consultancy are not with us any longer—Grace Kongoro (Case Management Unit) and Rosemary Mutisya (M&E Unit) lost their lives in a tragic road accident during a field trip. Both of them had contributed to the job, and both are hugely missed.



## EXECUTIVE SUMMARY

### Background

The Division of Malaria Control (DOMC) of the Ministry of Health (MoH), Kenya, is responsible for monitoring the success of the National Malaria Strategy (NMS) 2001–2010. Monitoring includes ensuring that the resources invested in malarial prevention and treatment are used in the most cost-efficient, effective, and equitable way. Evaluation includes the assessing the progress toward achieving the strategy targets.

The DOMC requested technical support from U.S. Agency for International Development (USAID) to design and implement an information system that will assist in monitoring, evaluating, compiling, and analyzing priority information needed for malaria control in Kenya. USAID-funded technical assistance was provided through Management Sciences for Health's (MSH) Rational Pharmaceutical Management (RPM) Plus Program.

The overall objective of the technical support is—

“... to set up a Malaria Information Acquisition System (MIAS) that will use information technology as a vehicle to provide accurate, reliable and timely information on progress in controlling malaria that can inform interventions at the district, national, regional and global levels in line with the WHO (World Health Organization)-recommended RBM (Roll Back Malaria) M&E (monitoring and evaluation) framework<sup>1</sup>.”

The first step in the consultancy was to assess the existing systems and capacity and information needs, and to produce recommendations to implement the system. This report contains the assessment and the recommendations for strengthening malaria information systems at the DOMC. The *Malaria Information Acquisition System: System Design Document* accompanying this report gives the system design of the recommended computer system.

The initial assessment recommendation phase began on January 16, 2006, and was completed on June 30, 2006. During the recommendation phase, various implementation activities were undertaken when they were required and requested by the DOMC. Implementation of the project began on July 1, 2006.

### Recommendations

This section lists the consultancy's main recommendations. Details of each recommendation are found in separate sections of this document. Workplans and costings for each recommendation are found in Annex 1.

---

<sup>1</sup> Rational Pharmaceutical Management Plus. 2005. Communication to U.S. Agency for International Health. Arlington, VA: Management Sciences for Health

### ***DOMC and MoH Consensus on the Report Recommendations***

The head of the DOMC will reach a consensus on the recommendations, which will be updated accordingly. DOMC will then hold an internal meeting where the recommendations are presented, refined, and agreed upon. Then the recommendations will be presented to the Head of Preventive and Promotive Health and the Director of Medical Services, MoH.

The report recommendations are designed to create a malaria information system which builds on existing and ongoing work within the MoH, both at the central and the decentralized levels. The recommendations are also based on creating partnerships, minimizing duplicated efforts, and filling information gaps—not in creating a parallel malaria information system. As such, it is essential that the DOMC and the other MoH divisions work together from the beginning of implementation. (Annex 1: Table 1—Output A1)

### ***Enhance Monitoring and Evaluation of IT Structures and Capacity***

This will involve—

- Forming a MIAS Systems Implementation Group within DOMC that will meet weekly during the implementation phase and manage the process
- Seconding or hiring a consultant database specialist with a knowledge of health management information systems (HMIS)/M&E to work with the DOMC during the system implementation phase
- Providing a technical training program for the DOMC staff and partners that will include courses in systems, M&E, and MIAS use. Training will should also include technical staff from related partners including Division of Reproductive Health (DRH), Division of Child Health (DCH), HMIS, and the Disease Outbreak Monitoring Unit (DOMU).
- Continuing to support the malaria M&E technical working group which will actively help design and use the MIAS. (Annex 1: Table 1—Output A2)

### ***Immediate Update and Dissemination of Malaria Business Plan (2006–2007 financial year)***

The proposed information system will based around the Malaria Business Plan (which comes from the NMS's strategies and targets), and be harmonized with the MoH's Annual Operational Plan (AOP) II and the National Health Sector Strategic Plan (NHSSP) II, community strategy, and the Joint Programme of Work. The business plan needs updating to reflect the current activities and resources, and disseminating so that all malaria partners and related divisions are working together with one plan. Above all, the business plan should be used by all DOMC units for planning, monitoring, and reporting on their activities. (Annex 1: Table 1—Output A3)

## **Implementation of the MIAS Priority Areas**

The core of the MIAS requires two distinct systems to be developed.

- Core MIAS System at DOMC—The first system will be a computer-based system hosted on the DOMC’s existing local area network. It will be programmed by an external firm through a tender process. It will be used by all DOMC staff for—
  - Budgeting and planning system—The system will be based around the malaria business plan, the AOPs, and the workplans for the various partners including the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM). It will assist the DOMC in the annual planning and budgeting process for activities by combining resource needs for objectives with available resources. The system will help various units of the DOMC to work together to produce and cost annual plans, and to identify areas that require support. It will produce the medium-term expenditure framework and all reports necessary for the planning, budgeting, and review cycle of DOMC and the health sector, integrated into the sector-wide approach process.
  - Performance-monitoring system—The system will be used at the DOMC and partners to monitor the activities in the annual workplans that are linked to the business plan. It will be a management tool for the DOMC, and the outputs will be used by all stakeholders including MoH (central and district levels), partners, donors, and the various bodies of the GFATM. This part of the MIAS forms the core of technical and financial tracking of malaria funds spent, as all technical reports and financial summaries will be processed through the system. The system will generate reporting formats that will be completed by the recipients of malaria funds (at MoH central and district levels, and other partners).
  - Effectiveness survey-based system—Linked to the performance system, the effectiveness system will track impact and outcome data against the NMS target and supplementary indicators. The system will also assist DOMC in tracking survey gaps. The information will be publicly disseminated through regular updates of the Kenya malaria website.
  - Training information system (TIS)—All malaria and focused prenatal care related training will be tracked through a TIS. The system will also be used at DRH and by other partners, so information can be combined. As training and training updates are a key part of the NMS, detailed tracking of trainees will be beneficial for planning and implementing future trainings.
  - Other—The core system will also contain databases on organizations working in malaria and an epidemics preparedness database (Annex 1: Table 1— Output A4).

- District-based system for key malaria activities in conjunction with HMIS

The second part of the MIAS will be implemented at the district and facility level, with summary information sent to provinces and DOMC/Kenya Medical Supplies Agency (KEMSA). At these levels, the system is primarily about using the information for action at source.

This system will be implemented in conjunction with the HMIS to ensure that information collection isn't duplicated. The system will be tested in two or more districts (the number and location of the districts will be decided by DOMC), and then it will need to be implemented in all districts, as national data is required.

In the long run, all of the district-based information will be collected through a single HMIS. However, there are a number of priority malaria-related activities that need monitoring immediately at the facility and district level. MSH therefore recommends implementing these systems—in conjunction with HMIS—so that the systems will work together rather than in parallel. The systems that will be processed at the district health office include—

- Tracking of artemisinin-based combination therapy (ACT). Dispensing registers have been produced and distributed with the drugs, together with a monthly summary form on consumption and stock levels. This information needs to be monitored at the district level by the District Health Management Team and KEMSA. District health record officers and pharmacists will be trained in the collecting and processing of the ACT data and what actions the data indicates to manage the drugs and prevent stock-outs. An electronic tool will help the process at the district level. Summary information will be sent to the provinces and central level.
- Indoor Residual Spraying (IRS) Planning and Monitoring System. This system will be implemented in epidemic-prone districts to plan for and monitor the annual IRS exercises.
- Epidemic Detection System/Integrated Disease Surveillance and Response (IDSR). As part of its strategy for early detection of and response to epidemics, DOMC wants to implement a malaria tracking and detection system at 5 sentinel sites in all 16 epidemic-prone districts. At the same time, the Disease Outbreak Monitoring Unit (DOMU) is implementing IDSR for detection and response of epidemics and notifiable diseases. The malaria detection system can be seen as a subset of IDSR, so the recommendation is that the two systems be combined and implemented together.

DOMC and DOMU have planned to coordinate the training and implementation of the malaria epidemic and response needs with IDSR. This work will take place at the facility and district level, and is discussed as a separate activity in a following section. What is important in this section is district-level processing of the IDSR data, monitoring and detection of epidemics and response, and reporting to the national level.

- Routine Insecticide-Treated Nets (ITN) and Intermittent Preventive Treatment (IPT) Utilization Data. Districts will report on facilities' use of ITN and IPT on a monthly basis. This work will be coordinated with the HMIS rollout to ensure that efforts aren't duplicated. The districts will be trained and the same electronic tool will be used. If possible, a community information system will also be piloted during this process.
- Information flow to provincial and central levels. The information that is processed at the district level must be sent to the provincial and central levels. Again, this will be coordinated with HMIS plans and existing systems. This is treated as a separate activity and budgeted under Annex 1: Table 1—Output A5.

All of the district and level sub-systems will be integrated with HMIS, and the MoH will continue to strengthen the district HMIS systems. We recommend that that DOMC continues to work with HMIS to ensure that the malaria information needs are integrated into the HMIS in the long term, and harmonized with the HMIS work in the short term.

We also recommend that malaria resources for piloting the MIAS at the district and facility level go into enhancing the HMIS by one or more of the following—

- Set up the meeting to finalize the HMIS registers and reporting formats
- Add new indicators to the district HMIS computer system, or create a supplementary district-tool for capturing these indicators for the short term
- Help develop data flow from districts to provinces and national level

Also, malaria resources should be used to strengthen HMIS with specific malaria objectives in mind. This is preferable to creating new vertical systems and information flows. (Annex 1: Table 1—Output A5).

### ***Epidemic Detection System/IDSR***

Another recommendation is that DOMC harmonize their malaria epidemic detection plans with a full implementation of IDSR as a disease tracking and reporting tool in facilities and response tool in the epidemic-prone districts. This work is to be coordinated with DOMU as malaria tracking for early detection of epidemics is a subset of the IDSR disease reporting. It is recommended that DOMC and DOMU work together and combine resources to implement the epidemic detection system together with IDSR. This work will take place at the facility and district level, with information flowing to the central level. (Annex 1: Table 1—Output A6)

### ***Piloting of Pharmacovigilance System***

A pilot pharmacovigilance system in seven hospitals will be funded in conjunction with Pharmacy and Poisons Board. (Annex 1: Table 1—Output A7)

### ***Hardware and Software Purchases***

Both hardware and software are needed for the DOMC network to run the MIAS. (Annex 1: Table 1—Output A8)

### ***Dissemination of Information, Reviews, and Continued Stakeholder Involvement***

- Dissemination of information
- Hold stakeholders' review meeting in six months to review progress
- Annual review of M&E business plan performance and effectiveness
- End of Project Assessment  
(Annex 1: Table 1—Outputs B1 and B2)

### ***Support for Management, Supervision, and Utilization***

- Support for maintenance, communications and transport, and consumables for M&E for MIAS for first year (Annex 1: Table 1—Outputs B3 and B4)

## THE MIAS CONSULTANCY METHODOLOGY

The consultancy methodology has been—

- Information-gathering meetings with the various units within the DOMC, other divisions and departments in the MoH, and selected partners
- Field visits to observe the systems at the health facility, district, and provincial levels
- Building on working relationships with other divisions and partners to further processes that are important for the recommended strategy
- Working within the DOMC to assist in day-to-day processes and respond to immediate needs to lay the foundation systems that will be discussed in the recommendations
- Working with the malaria M&E technical working group
- Holding a stakeholders' meeting to present recommendations and receive feedback

It is not easy to make quick recommendations for a malaria information system. The multitude of required systems, and the complexity and the level of integration required means that the system will have to rely on many additional partnerships if it is to succeed. The recommendations were made in this light.

After priorities were identified, this report was produced to present clear and workable recommendations in all areas. The secondary goal is to have furthered the processes that are necessary for recommendations to succeed in the priority areas.

## **Linkages and Persons Worked With**

Following are the main linkages during the consultancy.

### ***Routine Reporting/Health Management Information Systems***

Worked with the MoH of Health to incorporate the key malaria indicators that can be routinely reported into the main HMIS system.

- Briefed Head of Preventive and Promotive Services
- Metted with DOMC to define the routine reporting requirements for the malaria program
- Worked with DRH, HMIS, and WHO to plan and facilitate the meeting on harmonization of registers entitled “Review and Integration of Registers and Data Collection Tools” in March 2006
- Finalized routine reporting requirements with DOMC and the malaria stakeholders and communicate these requirements to the HMIS harmonization working group
- Continued to work with the DOMC and the HMIS harmonization working group

### ***Planning/Budgeting/Monitoring Systems***

Working with DOMC and GFATM partners to improve M&E

- Produced formats for GFATM Round 2 Phase 2 and Round 4 budgets and workplans
- Designed and sent reporting formats for GFATM Round 2 Phase 1 monies disbursed
- Created computer system for recording returns from recipients of GFATM money
- Held briefings with GFATM administrative support unit, MoH GFATM accountant, and local funding agent (KPMG) consultant to coordinate M&E systems.
- Held meetings with nongovernmental organization (NGO) recipients of GFATM support to harmonize M&E reporting and met with financial management agent

### ***Evaluation/Impact Systems***

- Worked with the M&E technical working group to prepare baseline information and a structure for the system and methodology for upkeep.
- Incorporated Abuja Report indicators into computer system as prototype for future MIAS survey-system.

### ***Epidemic Preparedness and Response Systems***

- Held epidemic preparedness M&E meeting
- Finalized reporting requirements—Epidemic Detection Sites
  - IRS system implemented in epidemic prone districts.
  - Epidemic Preparedness Database implemented at DOMC and plans and activities tracked at district level.
- Worked with the Highland Malaria Project, DOMU, HMIS, and the World Health Organization (WHO) to combine malaria detection system, IDSR, and HMIS to come up with a single reporting and response system.

### ***Training Information Systems***

- Worked with DOMC Case Management to use the training information system for Case Management training.
- Worked with DRH to assist them with same training information system.

### ***ACT Monitoring and Management Systems***

- Worked with KEMSA, the chief pharmacist, HMIS, and the working group on harmonization of registers to create recommendations for monitoring artemether-lumefantrine at health facilities and districts.
- Created dispensing books for artemether-lumefantrine, and forms for monthly reporting.
- Worked with DOMC, KEMSA, and HMIS through meetings to produce a proposed information flow for ACT monitoring.

### ***Pharmacovigilance***

- Worked with Pharmacy and Poisons Board to recommend funding for a pilot pharmacovigilance system in seven hospitals.

### ***Monitoring and Evaluation Structures***

- Met regularly with the M&E technical working group
- Worked with DOMC and M&E technical working group to organize and participate in MIAS Stakeholders Forum, June 16, 2006

- Worked on completing malaria business plan as planning (activity and funding) and monitoring tool
- Collected key indicators for Abuja Targets

## Outputs Produced During the Consultancy

During the consultancy, DOMC requested a number of monitoring activities. They were performed during the recommendation phase, as the outputs were needed at a specific time. All activities' outputs are incorporated into the recommendations for the MIAS (Table 1).

**Table 1. Outputs for MIAS Consultancy**

Output	Recommendations
<b>A</b> Monitoring Artemether-Lumefantrine	<ol style="list-style-type: none"> <li>1. Recommendation report for tracking artemether-lumefantrine</li> <li>2. Dispensing book for artemether-lumefantrine</li> <li>3. Monthly summary report for artemether-lumefantrine for health units</li> <li>4. District monthly summary report for artemether-lumefantrine for health units</li> </ol>
<b>B</b> Routine Reporting of ITN/IPT at Health Facilities	<ol style="list-style-type: none"> <li>1. Monthly summary report for artemether-lumefantrine, ITN/IPT for Health Units (This is a variation of number A3 above)</li> <li>2. District monthly summary report for artemether-lumefantrine, ITN/IPT for health units. (This is a variation of number A4 above)</li> </ol>
<b>C</b> Epidemic Preparedness/IRS Planning and Monitoring	<ol style="list-style-type: none"> <li>1. District epidemic preparedness situation analysis and planning worksheet for epidemic-prone districts</li> <li>2. District IRS monthly activity sheet for epidemic-prone districts</li> <li>3. Draft epidemics preparedness database</li> </ol>
<b>D</b> Early Detection of Epidemics	<ol style="list-style-type: none"> <li>1. Health facility daily monitoring and detection form for epidemic-prone diseases <b>or</b></li> <li>2. Weekly malaria surveillance form for sentinel facilities in malaria epidemic-prone districts</li> </ol>
<b>E</b> Monitoring of Activities/Financial Summaries of GFATM activities	<ol style="list-style-type: none"> <li>1. Reporting format for quarterly reporting on GFATM activities (or any workplan activities), from recipients of funds.</li> </ol>
<b>F</b> NGOs Database Questionnaire	<ol style="list-style-type: none"> <li>1. Questionnaire for NGOs for MIAS organizations' database</li> </ol>

<b>G</b> Training Information System	<ol style="list-style-type: none"><li>1. Database for training—tested with training for case management</li><li>2. Training Capture Forms for participants and trainers</li></ol>
<b>H</b> Prototype of MIAS Core Computer System	<ol style="list-style-type: none"><li>1. Prototype system for preparing GFATM budgets and workplans</li><li>2. Prototype system for GFATM M&amp;E reporting on activities and expenditures</li><li>3. Business plan entry and reporting</li><li>4. Targets and indicator tracking (surveys)</li></ol>
<b>I</b> Facilitating Partnerships	<ol style="list-style-type: none"><li>1. Coordinated meeting for harmonization of registers (no output produced, but working group is continuing the process)</li><li>2. Organized a series of meetings between DOMC, DOMU, and HMIS on harmonization. (output not yet produced)</li></ol>
<b>J</b> Consultancy Reports	<ol style="list-style-type: none"><li>1. Mid-term (quarterly) consultancy progress report, March 2006</li><li>2. Report on stakeholders meeting, June 2006</li><li>3. MIAS Assessment and Recommendations Report, July 2006 (this report)</li><li>4. MIAS System Design document</li></ol>

## **Limitations of the Consultancy**

### ***Malaria Indicators***

One of the tasks listed in the terms of reference was to create a complete set of indicators on which the MoH and other stakeholders would accept.

In the mid-term consultancy report presented March 2006 to DOMC and USAID, it was proposed that this consultancy not attempt to make recommendations on a complete set of indicators, but to convene the M&E technical working group to determine the indicators.

Malaria program targets and indicators have been well defined in different planning formats, and they are generally similar. Frameworks for the main malaria objectives and targets can be found in the following documents—

- NMS 2001-2010
- Abuja Targets
- RBM
- GFATM Toolkit and Objectives

- Business Plan and AOP
- NHSSP II
- Millennium Development Goals

Sets of key and supplementary indicators have been proposed, notable in the Kenya Alliance Against Malaria (KENAAM) 2004 report *Monitoring And Evaluation Toolkit For Malaria* and the Abuja Reporting Document.

During the consultancy, we did define the minimum indicators that the DOMC needs and that can be realistically obtained from routine reporting, and started the process to get them included in the main HMIS.

The M&E technical working group also presented at the stakeholders meeting the evaluation indicators and measurable results produced for the Abuja Report.

But the limitation is that throughout the consultancy we did not reach the point where the DOMC and the malaria stakeholders have agreed on a single set of indicators. It is recommended that the DOMC and M&E technical working group continue this process by disseminating the Abuja Report and then meet to agree on what indicators to measure.

The feedback that has been received many times is that the NMS targets need revision; it is hoped that the M&E technical working group will make recommendations on the targets.

### ***Integration with HMIS***

From the beginning of the consultancy, the distinction between integration with other divisions/systems as opposed to creating a vertical information system was highlighted as a major challenge. Integration was the preferred choice for the following reasons.

- An integrated HMIS is desirable to health facility, district, and provincial staff because it reduces staff workload, data is easier to process and send, it gives more useful integrated information, and there is more chance of it being sustainable.
- Unlike NASCOP who has over 100 coordinators and records officers in the field, the DOMC has no staff outside their office. So a vertical system would be difficult to supervise and sustain.
- The MoH is moving towards a single HMIS and single M&E reporting system, so vertical program information systems would be moving away from this goal.

However, integration is problematic in the world of HMIS. There is currently no national integrated HMIS in Kenya—a number of different systems exist and there is no clear path of integration or data flow to the national level. Here are some examples of the challenges we found—

- Data collection tools are not harmonized—we have seen four different antenatal registers in use or proposed.
- For computerized data processing at the district level, we saw seven different computer models planned for use in a district health office and none of them is integrated (or even compatible at the data level). None of them is currently fully implemented.
- Malaria data, which currently comes to the national level, does not come close to addressing the needs of the DOMC’s reporting obligations in terms of the RBM indicators, the Abuja Targets, the GFATM reporting requirements, or even the AOP indicators.

So while the recommendations focus on long-term integration of HMIS systems, this consultancy has had to recognize DOMC’s mandate to report on the malaria program, and make sure that the required data is available.

Wherever possible, we have recommended integration with HMIS, and that malaria funds be used to add malaria indicators to the district HMIS being implemented in specific provinces. But in case this is not possible in the short term, there are malaria-related monitoring needs that must be met.

These needs include the—

- Monitoring necessary at the facility and district level for the effective operation of malaria interventions (e.g., the facilities and districts must monitor their ACT stocks, detect epidemics, and monitor IRS activities)
- Monitoring necessary for malaria-specific interventions including IPT and ITN coverage that are not currently included in the HMIS
- Monitoring necessary for specific program requirements such as the GFATM



## MIAS PRIORITY AREAS

### Priority Areas

The information system assessment and recommendations focus on the following areas—

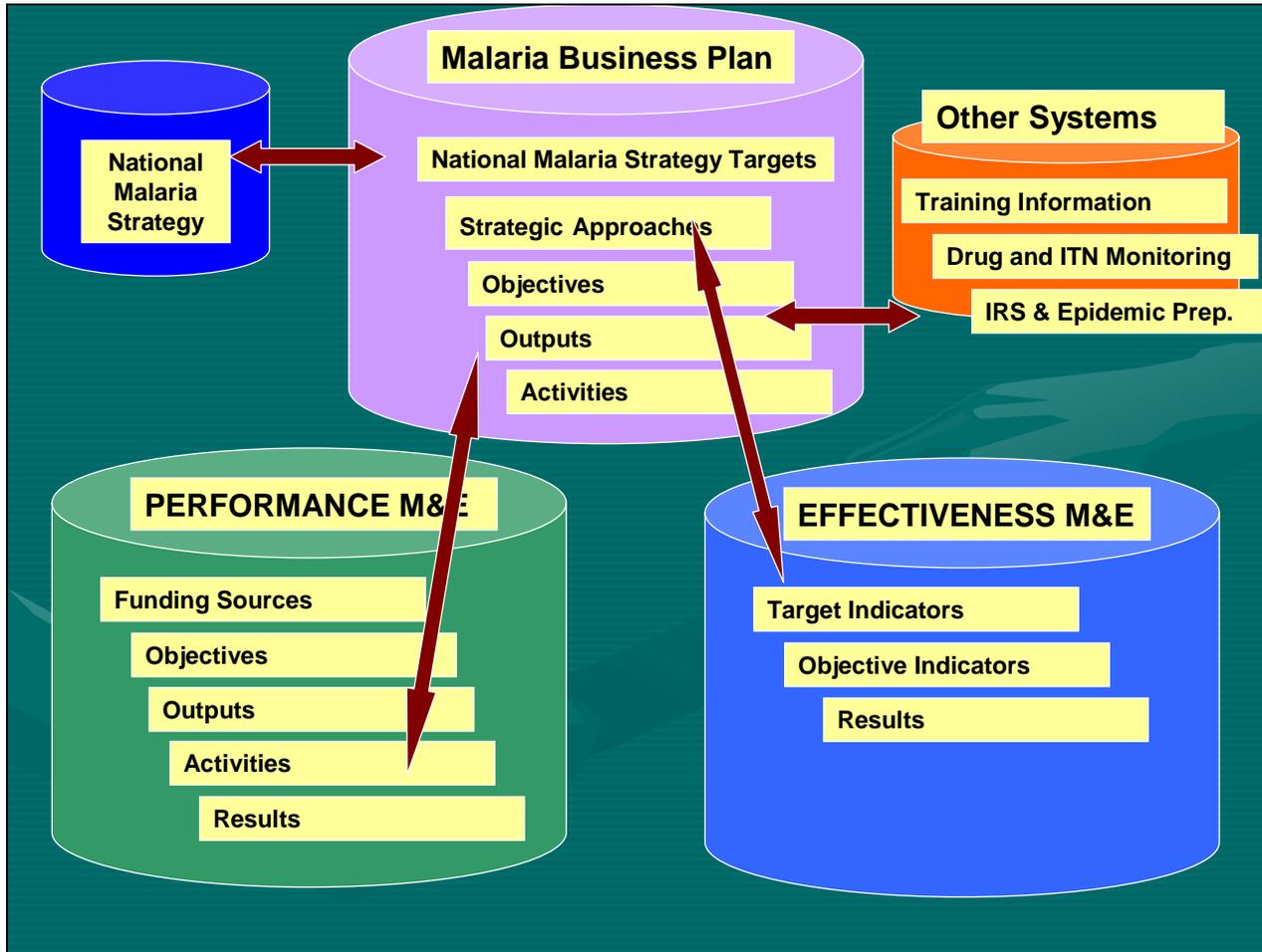
- Performance monitoring of malaria program implementation
  - Planning/budgeting/monitoring
  - Targets compared with activities
  - Budgets compared with expenditures
- Evaluation of program effectiveness through survey based data
  - Demographic health survey
  - Sentinel surveillance
  - Service provision assessment survey
  - Coverage surveys (e.g., long-lasting insecticide-treated net mass distribution [LLITN])
  - Facility/retail surveys
  - Medicine sensitivity surveys
  - Quality of care
- Routine data recording and collection of service provision from health facilities and districts (HMIS)
- Other systems—
  - Indoor residual spraying  
Epidemics detection monitoring system (coordinated with IDSR/DOMU)
  - Epidemics preparedness database
  - ACT antimalarials—medicine audit trail, consumption, and stock out
  - ITN distribution
  - Training information system
  - Pharmacovigilance system
- Cross-cutting issues
  - Strengthening M&E and technical capacity at DOMC

- Facilitating partnerships on MIAS/M&E—through M&E technical working group
- Links into MoH AOP II, AOP III, and Joint Programme of Work where appropriate

### **Overall Requirements of MIAS**

- All monitoring of activities and indicators will be based on NMS targets and outputs, which will be operationalized in the DOMC business plan
- All activities and all indicators to be linked to DOMC business plan, and also linked to NHSSP II/AOP/Kenya Essential Package for Health (KEPH) (where applicable)
- All program implementers need to report to DOMC on a timely basis
- A data warehouse needs to be established at DOMC
- DOMC staff will be thoroughly trained in using the recommended monitoring tools
- Part of the system design for DOMC will include a M&E dissemination strategy
- Strategic indicators will be monitored by DOMC's M&E unit, together with the M&E technical working group

Figure 1 shows the core components of the MIAS and how they link to the business plan.



**Figure 1. Core components of MIAS.**

During the assessment, a prototype database system was developed that stores and reports on the following data—

- Business plan approaches, objectives, outputs, activities
- Workplan objectives, sub-objectives, budgets, and activities
- NMS target indicators and results
- Training information

Pieces of the prototype were developed when specific tasks had to be completed, and then the pieces were put together to form a working model for the following purposes—

- To provide DOMC with a better vision of the functions of the MIAS
- To make some pieces available to DOMC at present (like business plan updating, GFATM monitoring, training information tracking)
- To give the chosen software developers of MIAS a base to build from

## Definitions of Monitoring and Evaluation

The overall goal of the MAIS includes—

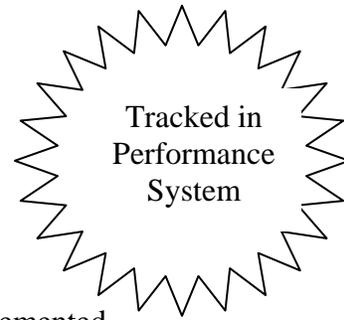
### Monitoring Performance

- Verify the progress of implementation of activities and outputs
- Ensure accountability
- Detect problems and constraints in implementation

### Evaluate Effectiveness

- To measure program effectiveness
- To determine if program inputs have had measurable impacts on targeted areas

**Monitoring performance** of malaria program/interventions (measured at program level)



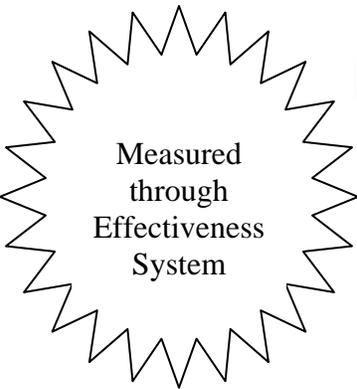
**Inputs**—measures level of resources available, e.g., level of funding available for ITN purchase

↳ **Process**—measures whether an intervention has been implemented, e.g., whether ITNs have been purchased and distributed

*Input and Process will lead to desired changes in outputs*

↳ **Output**—to measure benchmarks of program-level performance, e.g., the number of ITNs distributed to pregnant women or children under age five

**Evaluating results and effectiveness** of malaria interventions (measured at population level)



Measured through Effectiveness System

↳ **Outcome**—measures medium-term population level results, attributable to intervention e.g., level of ITN coverage among pregnant women or children under age five

↳ **Impact**—overall long-term program goals, e.g., reduction in morbidity and mortality in pregnant women and children under age five

## PERFORMANCE—PLANNING, BUDGETING, AND MONITORING OF MALARIA PROGRAM IMPLEMENTATION

### Current Situation

A large percentage of DOMC management and staff time is spent in planning and budgeting malaria program activities. These activities include MoH activities, as well as those funded by GFATM, the U.K. Department for International Development (DFID), and other partners. The activities also include those undertaken at the national level by DOMC or other partner divisions and district malaria activities that are supported by DOMC. Activity planning that has taken place during the assessment period has included—

- Activities for the malaria business plan
- Activities for the annual operational plan
- Submission of the malaria activities for AOP by cohort and level
- Finalization of the activities and budget for the upcoming GFATM Round 2 Phase 2 and GFATM Round 4
- Proposed activities for GFATM Round 6
- Activity planning for the DFID/WHO quarterly workplans
- Coordinating activities with other partners and partner divisions.

In general, the planning process at DOMC works well. Activities are aligned to targets and many of the activities are supported by funded workplans. However, the following opportunities for improvement were noted—

- The planning and budgeting process could be strengthened with an overall business plan which ties all activities and workplans together
- Preparing the funding proposals and quarterly workplans would be easier if they were derived from a single malaria business plan
- Preparing the annual operation plans would also be facilitated if the plans were extracted from the business plan

Actually creating the workplans is time-consuming. Different workplans have different formats and documents. The tool used for creating most of the workplans is MS-Excel, which most of the DOMC staff know and find useful. However, the resulting worksheets, although not complex, were large and detailed, and are difficult for the DOMC staff to manipulate. Some of the difficulties observed were—

- It is difficult to extract different views of the data. For example, the GFATM Round 2 Phase 2 workplan was organized by objective and then by year.
- To create a required analysis by year and by objective was a huge task.
- Formula errors were found in many of the workplans, due to the detail involved in subtotalling and linking different worksheets.
- Producing workplans and reports by KEPH cohort and service delivery level is also difficult and time consuming.

When it comes to monitoring the performance of the program's activities, the consensus reached at the beginning of this evaluation was that the existing reporting systems are inadequate. Programs such as GFATM require a high degree of performance monitoring. While some reporting on these activities has been done, the data is disjointed, difficult to obtain, incomplete, and does not attempt to link financial reporting on expenditure and technical reporting on targets.

Periodic reports are received from districts and NGOs that undertake malaria activities. Different units in DOMC are responsible for receiving and compiling reports for their own areas of intervention. The DOMC staff extract figures from the narrative reports received and compile summary reports. The monitoring system is hindered because—

- There is no standardized format for reporting.
- There is no easy link between the workplans/budgets and activities and expenditure monitoring.
- It is difficult to monitor activities and outputs based on narrative reports.
- Often, the reporting system depends on an individual in DOMC who may be in the field for an extended period of time.
- The monitoring information is not easily obtainable when needed at DOMC.

As the MoH moves towards integrated financing—sector-wide approach—and decentralized activity implementation, the monitoring and supervisory roles of the DOMC and other divisions will change. At present, however, DOMC still has the major role in supervising malaria-related activities at all levels of the health system, and monitoring and reporting on whether the activities have been implemented.

In the 2005 report by the RBM Monitoring and Evaluation Reference Group, *Building Capacity in Monitoring and Evaluating Roll Back Malaria in Africa: A Conceptual Framework for the Roll Back Malaria Partnership*, performance monitoring of activities is recommended.

“M&E support to date has focused on monitoring outcomes. Although the NMCPs have some form of system for monitoring actual implementation, there is need for

strengthening this capacity, following greater investment in malaria control. Given the advent of the GFATM, the importance of properly monitoring inputs and process indicators has grown. Areas where capacity development in monitoring implementation should focus include in tracking investment, commodity tracking and the generation of accurate, timely quarterly activity reports.”

## **Recommendations**

It is recommended that the DOMC combine the planning and budgeting process with the monitoring process in a systematic way that will provide simple and clear information on the malaria program performance. Another recommendation is that a computer system be used across the DOMC network to assist them to process the information and produce the required outputs. The recommended system for planning, budgeting, and monitoring would need a core method of classifying activities, and the chosen document is the malaria business plan.

The following activities would be necessary—

- Update the malaria business plan every three to five years and enter the information into the system
- Incorporate the annual workplans and budgets into the system, including all specifically funded workplans like the GFATM.
- Create annual workplans through the intersection of the business plan and the workplans—include the district annual health plans where possible

A computer-based system will be used for the central processing of this core information on the DOMC network. The system will be used by all DOMC units to demonstrate progress on agreed targets and expenditure as compared to budgets and disbursements.

One of the most important aspects of the system is performance monitoring. The system will be used for monitoring activities in the annual workplans. As these activities are linked to the business plan, the business plan will also be monitoring. The methodology of the monitoring system is as follows—

- The system will be used during the planning stage. This includes updating the business plan, the annual planning and budgeting cycle, and creating the AOP, and in preparing the suggested workplans such as the GFATM, DFID, and WHO to facilitate the work.
  - All funded workplans will be entered into the system and linked to the business plan at the start of each year.
  - All activities that are in the business plan and not linked to a funded workplan, but are to be done from the GOK budget (or no cost) will be generated as a DOMC workplan.

- When workplans are completed and disbursements begin, the workplans are fixed—a snapshot of the workplans is made on the system, against which reporting will be done. (Once the workplans are fixed, changes can still be made, but they will have to follow more rules than simple editing.)
- The baseline of performance reporting is the collection of the workplan activities that should encompass all malaria activities for the year—if any activities have baseline data, that will also be stored.
- The system will be used during the implementation stage to generate reporting formats for districts, the DOMC, NGOs, and other fund recipients that list their specific activities and budgets to make reporting easier and clearer, and make it easier for them to use the information.
  - All disbursements of funds must be entered into the system. This information must be obtained from the original authority to incur expenditures (for GFATM and other disbursements going through the GOK accounting system), and from partner information for other disbursements.
  - On a quarterly basis, the system will generate reporting formats. These formats—either hard-copy or electronic, or both—will be sent to the recipients of funds for completion. The reporting formats will list the budgets and targets, as well as monies disbursed. The recipients will complete the formats with their actual achievements and expenditure summaries, and then return them to DOMC, together with narrative reports. The reporting formats will make it easier to report in a standardized way against the targets and budgets.
- The system will be used during the reporting stage for the DOMC to enter financial and technical information on work completed and money spent.
  - When the reporting formats are returned to DOMC, they are entered into the system by the M&E unit. The information will then be available to all DOMC staff on the network. The system will generate outputs that will be discussed internally, and disseminated to the stakeholders.
  - A full list of the recommended reports that the system will generate is found in the *MIAS: System Design Document*.
  - Note that the system is a monitoring system and an information system—not an accounting system. The system as described does not replace the MoH or other partner accounting systems; rather, it supplements the accounting systems by linking financial summaries to activities, and breaking down expenditure into program areas.
- The system will be used during the management and supervision stage and regular reporting stages to make information easily accessible and available to DOMC and implementing partners.

- The system will generate reporting formats that have all baseline and reported information to be used as the basis of the monitoring visits by DOMC and other implementing partners.
- The system reports will be used to report internally to the GOK and to funders on how money was spent and whether or not targets were reached.
- To report on the progress of the malaria program, and have this information disseminated in a consistent and useful fashion.

The existing DOMC network would not require much enhancement to be able to house the system. DOMC has a strong system manager and a newly formed M&E unit who will be responsible for the system once they are fully trained.

As the system manager and M&E unit have so many current responsibilities, and the implementation phase of a new system involves a lot more work than keeping an existing system running, it is recommended that a HMIS/M&E data manager be seconded to DOMC or hired for one year to assist in getting the system running. A comprehensive design for this system is found in the accompanying document *MIAS: System Design Document*.

### **Workplan and Budget**

Details of the workplan and budget for performance planning, budgeting and monitoring can be found in Annex 1 of this report.



## **EFFECTIVENESS OF MALARIA INTERVENTIONS—MEASUREMENT OF MALARIA INDICATORS THROUGH SURVEYS**

### **Current Situation**

Apart from performance monitoring and routine reporting, data from surveys of various types is essential for the monitoring of malaria indicators, especially most of the outcome and impact indicators.

Surveys include periodic surveys, demographic surveys, and data collected from sentinel surveillance districts and sites.

The NMS contains the overall key targets for the malaria program (Figure 2). These were targets set in 2006 and are to be maintained till 2010. Feedback received in the stakeholders forum shows the need to recommend revisions to these targets, and add targets for new interventions such as IRS.

Previous consultancies and efforts have documented the indicators and surveys needed to track the malaria indicators. In the mid-term report for this consultancy, it was proposed that we do not address in detail the survey aspects of Malaria Information Systems, and leave this task to the agencies mandated by the DOMC to undertake surveys such as the Wellcome Trust.

The Malaria M&E technical working group met to discuss the survey gaps and the consolidation of malaria indicators. This work began with the preparation of the Abuja Report, where results were extracted from surveys and posted against the Abuja targets, the key NMS targets, and other supplementary indicators. The NMS targets are still the ones that are tracked for malaria reporting, but many other targets also need to be monitored, including NHSSP II, AOP, RBM, GFATM, and other targets.

## **Malaria Business Plan—Approaches and Targets**

### **DOMC Monitoring System**

---

#### **Approach A. Program Management and Coordination**

- A Division of Malaria Control that ensures a coordinated, multilateral, national response which harnesses RBM and reflects Kenya's policies on health sector reform and poverty alleviation

#### **Approach B. Clinical Management—Providing Prompt Effective Treatment**

- 80% of first line therapeutic failures and severe, complicated malaria cases correctly managed by health personnel in appropriate health facilities
- 60% of fever case which are treated at home by family members or caretakers will be managed appropriately
- 80% of Government of Kenya health facilities to have continuous and adequate supplies of essential medicines for management of malaria
- 80% of all cases treated by CHWs or at out-patient facilities will be managed according to national recommendations.

#### **Approach C. Management of Malaria and Anemia in Pregnancy**

- 60% of pregnant women will sleep under treated nets during their confinement
- 80% of fever or anemia cases will be appropriately managed through prenatal services
- 60% of pregnant women will have at least two IPT of sulfadoxine-pyrimethamine in the second and third trimesters

#### **Approach D. Vector Control**

- At least 50% of these nets will be regularly treated by 2006
- 60% of the at-risk population will sleep under nets by 2006

#### **Approach E. Epidemic Preparedness and Response**

- 60% of confirmed epidemics will be effectively contained through selective interventions
- 60% of districts will respond to reliable warning signals through their DOMT and POMT
- 80% of epidemic prone districts will have an early warning and detection system for local malaria epidemics

#### **Approach F. IEC**

- By 2006, outcomes and process of the NMS measured to inform and redefine strategy to 2010
- 80% of households nation-wide should have received targeted IEC on all key messages from at least one source every 6 months

**Figure 2. Malaria Program Key Targets**

## **Recommendations**

The effectiveness system, part of the core MIAS running on the DOMC network and related to the performance system to monitor activities, tracks the progress towards targets. The main targets are the key NMS indicators, but also include supplementary indicators that the DOMC has agreed upon with the M&E technical working group.

Malaria targets are currently linked to the Business Plan Strategic Approach Areas. The system should allow linking targets to Business Plan Objectives, and even outputs. The major workplans, like the GFATM, also have target indicators for the objectives, so these should also be stored in the system.

The major uses of this part of the system are—

- To store, in one accessible place, all of the NMS and supplementary indicators and the results
- To produce reports on progress towards targets that can be disseminated to stakeholders and update the website
- To enter details of which indicators will be covered by which upcoming surveys, and to produce reports showing which key indicators have a gap and need surveys commissioned

It should be emphasized that the system is just a tool to store the summary results of the surveys. The main work of deciding which surveys need to be done, doing the surveys, and extracting the data for entry into the system will need to be managed by the M&E unit of DOMC, with input from the M&E technical working group.

The prototype system has three reports that can be produced, either showing all surveys, national surveys, or sentinel surveys. Figures 3 and 4 are examples of outputs from the survey system.

## **Workplan and Budget**

Details of the workplan and budget for measurement of indicators through surveys can be found in Annex 1 of this report.

Malaria Key NMS Indicators DOMC Monitoring System						
INDICATOR	Year	Hall or Sentinel	Sample Size	Indicator Value	HMS 2006 Target	Citation Ref
<b>Approach B CLINICAL MANAGEMENT - PROVIDING PROMPT EFFECTIVE TREATMENT</b>						
<b>Proportion of under fives with malaria/fever receiving SP/AQ within 48 hours of onset of attack</b>	2001-2002	S	301/2655	11.3	60%	1
	2003	N	267/2313	11.5		2
<b>Proportion of paediatric fevers managed at a health facility according to existing national guidelines (SP) with the correct dose</b>	2001-2002	S	201/1040	19.3	80%	3
	2005-2006	S	213/1292	16.5		4
<b>Proportion of OPD HW with access to:</b>					80%	
- National Malaria Guidelines	2001-2002	S	77/135	57		6
	2005-2006	S	153/231	66.2		4
- IMCI Guidelines	2001-2002	S	0/135	0		6
	2004	N	46/417	11		8
	2005-2006	S	45/231	19.5		4
<b>Proportion of OPD facilities reporting no stock-out during the last 6 months of</b>					80%	
- SP	2001-2002	S	72/81	88.9		6
	2005-2006	S	156/185	84.3		4
- AQ	2001-2002	S	25/81	30.9		6
	2005-2006	S	83/185	44.9		4
- Quinine tablets	2001-2002	S	11/81	13.6		6
	2005-2006	S	56/185	30.3		4
- Quinine injections	2001-2002	S	30/81	37		6
	2005-2006	S	39/185	21.1		4

Figure 3. Results Toward Key NMS Targets

Malaria Indicators DOMC Monitoring System						
INDICATOR	Year	Hall or Sentinel	Sample Size	Indicator Value	HMS 2006 Target	Citation Ref
<b>Approach B CLINICAL MANAGEMENT - PROVIDING PROMPT EFFECTIVE TREATMENT</b>						
<b>Proportion of children aged &lt; 5 years reporting fever in last 14 days</b>	2001-2002	S	2655/6287	42.2		1
	2003	N	2313/5560	41.6		2
<b>Proportion of under fives with malaria/fever receiving any antimalarial</b>	2001-2002	S	804/2655	30.3		1
	2003	N	613/2313	26.5		2
<b>Proportion of under fives with malaria/fever receiving SP/AQ within 48 hours of onset of attack</b>	2001-2002	S	301/2655	11.3	60%	1
	2003	N	267/2313	11.5		2
<b>Proportion of under fives with malaria/fever receiving SP/AQ within 24 hours of onset of attack</b>	2001-2002	S	100/2655	3.8		1
<b>Proportion of fevers managed with an antimalarial that obtained medicines from the formal GoK/Mission health sector</b>	2001-2002	S	406/804	50.5		1
	2003	N	262/574	49.1		2
<b>Proportion of fevers managed with an antimalarial that obtained medicines from the retail sector</b>	2001-2002	S	227/804	28.2		1
	2003	N	126/570	22.5		2
<b>Proportion of paediatric fevers managed at a health facility according to existing national guidelines (SP)</b>	2001-2002	S	583/1040	56.1		3
	2005-2006	S	620/1292	48		4
<b>Proportion of paediatric fevers managed at a health facility according to existing national guidelines (SP) with the correct dose</b>	2001-2002	S	201/1040	19.3	80%	3
	2005-2006	S	213/1292	16.5		4

Figure 4. Supplementary and NMS Key Indicators

## ROUTINELY REPORTED HEALTH INFORMATION

### Current Situation

#### *Existing HMIS Malaria Data*

The sources for routinely reported malaria data are—

- The HMIS tracks cases on the outpatient morbidity form and tracks cases and deaths on inpatient forms. This data is available at the facility level, and also summarized and sent to the districts, provinces, and national HMIS levels.
- In addition, district level outpatient and some inpatient data is available at the DOMU.
- Some health facilities visited and one district office had developed a very good tracking system to monitor malaria cases.

Both of the national datasets are highly aggregated and do not meet the reporting needs of DOMC to monitor the indicators of the malaria program.

In addition, the quality and timeliness of the data is not optimal. In the recent report from the Ministry of Health (2006) entitled *Monitoring and Evaluation of Health Sector Performance: Framework and Action Plan 2006/2007–2009/2010*, existing routine data systems are summarized as follows—

The quality of routine data is poor. Most routine data are incomplete and the reports are generally not on time. Thus, the currently available routine data has very little value for effective planning, monitoring, and evaluation of health services. The health information management systems need significant improvement to generate the most needed quality information for planning and management of health services, including the monitoring and evaluation of health sector performance.

There are currently a number of initiatives to improve the routine reporting in the Ministry of Health in the larger context of the National Health Sector's Strategic Plan II's objective of "one plan, one budget, one monitoring system, and one framework for coordination." (Some of these initiatives will be discussed later in the section.)

At the provincial or district level, there are no staff specifically designated for malaria control. Other vertical programs have implemented their own vertical reporting systems, usually through facilitation of district staff and diseases surveillance officers, to ensure their vertical data flows upwards. The malaria program has not done this.

### **Existing Malaria Data System**

The malaria program introduced malaria-specific data form—the NMCP0001 form—to be used by all facilities in 16 districts. It is to be completed on a weekly basis at the facility level and then sent to districts and then to the DOMC. The form shows inpatient and outpatient malaria cases, and also cases and deaths in children under age five, children over age five, adults, and pregnant women. The form also includes a section for blood smear results and availability of malaria drugs.

This is a vertical reporting system for the malaria program and reporting rates are very low.

- For 2003—
  - Seven districts submitted 30 percent of the required reports
  - One district submitted 16 percent of the required reports
  - Eight districts submitted no reports
- For 2004—
  - Only six districts submitted reports
- For 2005—
  - Less than one percent of expected reports were submitted

Possible reasons for the low reporting rates are—

- Form use is minimally supervised in the districts.
- Difficult to complete the form as it is not harmonized with the registers and instructions are not clear.
- The DOMC used to provide postage stamps for the transmission of the form. However, when DOMC stopped sending out postage stamps, the data stopped being received.

The unit in the DOMC responsible for processing this routine data was formerly called HMIS, but now the data function will be taken over by the newly formed M&E unit. The HMIS unit processes the data received through the use of spreadsheets. They have a computer-database system for this purpose that was built in 2004, but it has not been used.

As reporting through the NMCP is very low, the DOMC mainly relies on HMIS and DOMU for information. As previously stated, this “block” information on malaria cases and deaths by district or province is insufficient for the malaria program monitoring.

### **Tools and Registers**

One of the biggest obstacles to the capture of routine malaria data is that most of the information is not captured on the source documents in the health system. Although there is no single HMIS tool, and a number of tools are in existence, the following commonalities were observed—

- Cases and deaths are sometimes broken down into over age five and age five and under
- Malaria in pregnancy is not easily captured from the inpatient and outpatient registers
- Clinical/confirmed malaria breakdowns are never captured
- Provision of IPT is included on a few proposed antenatal care registers, but very few health facilities track this data
- Medicine registers are not standardized—the new first-line treatment ACT (artemether-lumefantrine) is not included on any registers
- There is no tracking in HMIS for IRS activities or ITNs
- Community-level indicators are not part of the HMIS

## **Recommendations**

The recommended strategy for routine reporting of malaria indicators is to ensure the selected minimum malaria indicators are incorporated onto the national HMIS tools (forms and registers), and to have the data utilized at all levels through routine HMIS processing.

Part of this strategy, however, involves ensuring that specific malaria-related data is monitored at the health facility and district levels, and summary data is available at the national level. This includes ACTs, epidemic detection, and IRS monitoring, and the provision of ITN and IPT. This will involve—

- Temporary use of malaria-specific forms and facilitation of data collection and decentralized processing for items such as ACT data, ITN, IPT, and IRS.

**or**

- Working with HMIS to add the malaria indicators to the existing HMIS initiative and piloting this system in selected districts to prepare for national roll-out.

The second strategy is recommended if it can be coordinated with HMIS.

## **Harmonization Process**

Already, a number of activities were undertaken to further this goal—

- Meetings were held with all of the DOMC staff and we agreed on the minimum set of key routinely reported indicators that we would like to capture
- A workshop was held in Karen, Nairobi, on March 20–23 to agree on harmonizing the tools, registers and reporting formats. The malaria program facilitated the process of bringing the most of the MoH divisions together with HMIS to agree on the harmonization of registers.

- A working group has met regularly and discussed the registers, but now they would like to have sponsorship for the next working meeting.

It is recommended that the malaria program continue this process of harmonization of the HMIS because—

- The program cannot implement a vertical system, but needs to integrate with HMIS
- Malaria indicators cut across all registers of the HMIS and need to be incorporated properly
- Malaria has the resources and support to facilitate this process

The process would include a second workshop where we agree on harmonization and make recommendations for an implementation strategy, including—

- Development and printing of harmonized tools
- Training on the use of the tools
- Planning for transmission of data to the district/provincial/national level
- Planning for decentralized data processing and transmission to next level
- Planning for data sharing between divisions/systems
- Discussing related issues such as technical capacity, sustainability,

### ***Desired Outputs***

If process of harmonization could be completed by partners, the following outputs would be desirable for the malaria program—

- All facility level tools and reporting formats agreed upon by all Ministry of Health divisions and include key minimum malaria indicators
- Agreement on adoption of facility level tools by HMIS in future roll-outs and trainings by partners
- Agreement and workplan for inclusion of malaria indicators in the various decentralized computer systems
- Design and workplan for information flow from district to provincial and national level
- Plan for implementation of tools at all levels

It is recommended that DOMC work with HMIS to help this agenda as much as possible and bring its resources into this process. Specifically, resources could be used for—

- Facilitation of working meetings to produce a harmonized set of registers and plan for their implementation/training
- Facilitation of working meetings to plan the inclusion of the system modifications into the HMIS system
- Facilitation of working meetings to plan the information flow from the facilities to districts to provincial and national levels
- Printing of tools/training and implementation for pilot districts

(It should be noted that the working group appointed at the March 20-23 meeting in Karen, Nairobi, to work on harmonization of registers will be a different group than the one that will need to meet to decide on implementation planning, data flow, and computer system issues.)

### ***Specific Immediate Data Processing Needs at the District Level***

- Tracking of ACTs
- IRS planning and monitoring system
- Epidemic detection system/IDSR
- Routine IPT and ITN utilization data
- Case morbidity and mortality
- Information flow to provincial and central level

### ***Various Scenarios***

The process of revising the HMIS and implementing it nationally is not the DOMC's responsibility. The recommendations are for DOMC to work with this process and assist it, so that one harmonized system is built. But as the process is not within DOMC's control, it might not be possible to follow these recommendations. So we present a few scenarios that outline different possibilities for DOMC in implementing the MIAS over the short term in conjunction with HMIS.

All scenarios begin with the harmonization of registers. This must happen quickly, and as stated above, it is recommended that DOMC immediately facilitates the meeting as requested by HMIS.

There would then be an agreed-upon set of tools, including inpatient and outpatient registers (U5 and general), antenatal care, child welfare clinics (CWC), maternity and postnatal registers, radiography and laboratory and medicine dispensing register, and the tools to report the data on a routine basis to the districts. (These are all facility-level tools, and whether or not there will be community-level tools at this point is still under discussion.)

### **Recommended Option**

It is recommended that DOMC continue to work with HMIS on the process of harmonization of registers/reports and getting the new HMIS system rolled out nationwide. If possible, malaria resources could continue to be used to further this process by facilitating the working harmonization meetings.

However, this is a long-term strategy. The next provincial HMIS rollout in facilities and districts is in August 2006, and it is questionable whether or not it will include any revisions based on the harmonization meetings. Even if it does, the revised system would only be in place in one province out of eight, and key malaria information needs to be tracked nationwide at the facility and district level, and reported to the national level (as detailed elsewhere in the recommendations).

There are two options. The recommended option is that DOMC works together with HMIS to implement the system that will fulfill the national reporting needs and the malaria needs. The details are—

- HMIS intends to implement a Facility Monthly Performance Reporting Form in each facility in Kenya. The form will help the facilities measure performance progress as per the AOP targets. The form will be filled monthly and submitted to the district MoH. The district MoH needs a tool for processing the data, analyzing it, and then sending the summarized data to the provinces and national level, and for feedback to the facilities. The form collects data on about 19 key indicators towards their targets. The indicators include—
  - Number of LLITN distributed to pregnant women at facility
  - Pregnant women receiving IPT x 2
  - Number of LLITN distributed to children under age five at facility
  - Malaria inpatient case fatality rate—children under age five
  - Malaria inpatient case fatality rate—children five years and older
- These are among the key indicators that the malaria program needs from the routine reporting system. Rather than set up a separate system to track these indicators, it is recommended that DOMC work with HMIS to get this single system working.

It might be possible to include an indicator on antimalarial stock-outs on the Facility Monthly Performance Reporting Form. Currently, one of the other 19 indicators is “Number of days in a month without amoxicillin and co-trimoxazole syrup.” It is recommended that another indicator for ACT—the new first-line treatment for malaria that has just been distributed to each facility—be included as well.

As recommended in the *Ministry of Health (2006) Monitoring and Evaluation of Health Sector Performance, Framework and Action Plan 2006/2007–2009/2010*, two other AOP indicators that the nationwide M&E system should start reporting on are—

- Percentage of population under age five treated for malaria
- Percentage of population aged five and older treated for malaria
- So it is recommended that DOMC work together with HMIS to implement this performance system, as otherwise both groups would be doing parallel work, and key malaria indicators that are needed at the district and national level are already included in the Performance Monitoring System.

The project could take the following approaches—

- Finalization of needs and system plans and agreements of system goals, boundaries, and design
- The national and provincial level HMIS staff would build the system themselves and develop the software through a training process. The system would be owned by the MoH, and they would be able to modify it and do most of the work on the system by themselves (though some initial external support would still be required for the more technical areas of data transfer, etc.).
- Capacity building would also take place for the national and provincial staff for supporting the system in the districts.
- Implementation would be done through a series of training programs, training the district health office staff to receive, process, and use the data, and to provide feedback and send data to the next level—all using the proposed system.
- Testing/implementation in a number of districts.
- Building the communication system—the system for sending data to the provincial level and national levels would also be built onto existing MoH systems at the provincial and national levels

The other option is for the DOMC to build the district-level system for tracking ACT consumption, ITN coverage and use, and IPT coverage and use which is a parallel process, and not recommended if coordination is possible. However, a budget and activity list have been prepared.

## **Workplan and Budget**

Details of the workplan and budget for routine monitoring activities can be found in Annex 1 of this report. (The budget might change, however, depending on the implementation option chosen.)

## **Malaria Key Indicators for Routine Reporting**

### ***Malaria Requirements for Prenatal Register***

For each line (prenatal care attendance), the following will be recorded

- Whether or not the attendee received IPT 1
- Whether or not the attendee received IPT 2
- Results of screening for hemoglobin showing anemia
- Whether or not the attendee was issued with an ITN/LLITN on this visit
- What week of pregnancy the attendee was in so that a survey can determine whether correct trimester guidelines for IPT are being followed

### ***Malaria Requirements for Prenatal Care Health Facility Monthly Summary***

For each health facility, the following will be recorded—

- Number prenatal care attendees during the month
- Number prenatal care attendees receiving presumptive IPT 1 during the month
- Number prenatal care attendees receiving presumptive IPT 2 during the month
- Number prenatal care attendees screened for HB during the month
- Number prenatal care attendees screened for HB with a hemoglobin of less than 7 gm/dl during the month
- Number prenatal care attendees issued with an ITN/LLITN during the month

### ***Malaria Requirements for CWC Register***

For each line (CWC attendance), the following will be recorded—

- Whether or not the child was issued a net on this visit

### ***Malaria Requirements for CWC Health Facility Monthly Summary***

For each health facility, the following will be recorded—

- Number of CWC attendees during the month
- Number of CWC attendees issued a net during the month

### ***Malaria Requirements for Inpatient Register***

For each line (inpatient admission), the following information will be recorded—

- Diagnosis should be broken down into the two following categories
  - Malaria—admissions and deaths (See age breakdown)
  - Malaria in pregnancy—admissions and deaths

There are two ways of achieving the malaria in pregnancy breakdown. One is to introduce a pregnancy column. The second is to treat “malaria” and “malaria in pregnancy” as two separate diagnoses. If the second method is chosen, it will require constant training—it would be good if this information could be printed as an instructional legend on the actual register.

### ***Malaria Requirements for Health Facility Monthly Summary from Inpatient Register***

For each facility, the following information will be recorded—

- Number of inpatient admissions (see age breakdown)
- Number of inpatient admissions with malaria (see age breakdown)
- Number of inpatient deaths with malaria (see age breakdown)
- Number of inpatient admissions with malaria in pregnancy
- Number of inpatient deaths with malaria in pregnancy

### ***Age Breakdown***

For the inpatient figures that have age breakdowns.

At a minimum, DOMC would require two age categories: children under age five and children aged age five and over. However, if HMIS is breaking down age by KEPH cohort levels, that is acceptable, too.

### ***Malaria Requirements for Outpatient Register***

For each line (outpatient diagnosis), the following information will be recorded—

- Diagnosis should be broken down into the following categories—
  - Malaria—clinical cases (see following age breakdown )
  - Malaria—confirmed cases (see following age breakdown)
  - Malaria in pregnancy—clinical cases

- Malaria in pregnancy—confirmed cases (see the note above in the inpatient section on the two ways to track malaria in pregnancy)

### ***Malaria Requirements for Health Facility Monthly Summary from Outpatient Register***

For each facility the following information will be recorded—

- Number of outpatients (see following age breakdown)
- Number of outpatient cases with clinical malaria (see following age breakdown)
- Number of outpatient cases with confirmed malaria (see following age breakdown)
- Number of outpatient cases with clinical malaria in pregnancy  
Number of outpatient cases with confirmed malaria in pregnancy

### ***Age Breakdown***

At a minimum, DOMC would require two age categories—“Children under age five” and “Children aged five and older.” However, if HMIS is breaking down age by KEPH cohort levels, that is acceptable, too. (Inpatient and outpatient summaries should fulfill the IDSR monthly reporting requirements, as per the MoH 504. Priority communicable diseases should be listed together in one section. When outbreaks occur, the form should be submitted weekly. The relation between IDSR and malaria reporting for epidemic and response, and HMIS routine reporting is discussed in the section on IDSR.)

### ***Malaria Requirements for the Maternity Register***

For each line (delivery), the following information will be recorded—

- Birth weight
- Parity

### ***Malaria Requirements for the Monthly Health Facility Summary***

For each facility, the following information will be recorded—

- Number of live births
- Number of low-birth-weight (LBW) live births
- Number of LBW/primigravidas
- LBW/multigravidas

### ***DOMC Requirements for Medicine Registers***

The four doses of ACT should be added to the MoH medicine registers. (In the meantime, the ACT Register was introduced and distributed). The medicine registers will show the dispensing of ACT, broken down by the 4 x ACT doses, receipts, and ending balances.

### ***Health Facility Monthly Summary for the District Pharmacy Facilitator***

- Monthly consumption of each of the 4 x ACT doses
- Days out of stock of each of the 4 x ACT doses
- Ending stock balance of each of the 4 x ACT doses
- Upcoming medicine expiry information for each of the 4 x ACT doses

### ***District Monthly Summary for Action at District, KEMSA, DOMC, and for Principal Medical Officer***

- Number of facilities with stock outs of 7 days or more this month for each of the 4 x ACT doses
- Total consumption for the district (adjusted for stock-out-days) for each of the 4 x ACT doses
- Total balances end of month in district for each of the 4 x ACT doses

Note: “Percentage tracer medicine availability” is one of the key sector performance indicators as listed in the NHSSP II/AOP.

If the ACT first-line antimalarial drugs is part of the “tracer medicine stock-out system,” then ACT will be monitored and reported on a routine basis. It is recommended that DOMC follow up on this process.



## OTHER SYSTEMS

### Training Information System

#### *Current Situation*

One of the main activities in the malaria program is conducting or coordinating trainings in malaria-related topics. Topics include case management at community or health facility level, treatment guidelines, pharmaceutical management, IRS, and net treatment techniques among others. In addition, focused prenatal care/malaria in pregnancy training is coordinated with the DRH. Training can take place at the training of trainers level, or at provincial, district, health facility, divisional, or community levels.

When these trainings occur, technical details on training activities are tracked in the following ways: participants are registered during the courses and manual registers of participant names are kept. The registers are not of a single standardized format. The details are mainly used for paying allowances and as appendixes to narrative reports. Often the participants details are typed into MS Word or MS Excel documents. In addition, a variety of training reports are produced for reporting to the training funder. For example, the GFATM local funding agent receives summary reports on numbers of participants trained for each budgeted training. Other ad-hoc training reports are produced showing numbers trained for a particular course by province and by cadre, or by province and then by cadre and by level of health facility. The tracking of training and production of training reports is the responsibility of the focal person of each respective DOMC unit.

The details that are sometimes tracked on the training registers include the participants' names, designation, station, and the facility type. Personnel numbers are not recorded, and designations and facility types, if tracked at all, are not standardized and tracked according to a list of designations or facility types.

It was noted that in some DOMC units such as Case Management produced detailed training lists and well-analyzed training summarized, but other units did not make available regular reports. The local funding agent was sometimes unable to get details on numbers of personnel trained.

#### *Recommendations*

It is recommended that a computerized TIS be used to record, track and report on all malaria and focused prenatal care-related training. The system will be used at the DOMC, and it is also recommended that the same system be used at DRH). It could also be used by other training partners, so information can be combined. As training and update training is a key part of the NMS, detailed tracking of trainees will be beneficial for planning and implementing future trainings.

The strategy is to have in place—as part of the MIAS on the DOMC's server—a system to track and administer the training provided in malaria-related topics, and to have this system

compatible with the MoH's personnel database so that attrition and long-term training needs can be calculated.

During the assessment phase of the consultancy, it was requested that we start entering training data for the Case Management Training into a system. A computerized training information system was adapted for DOMC from existing systems that had been used to track training in the past. Two officers received minimal instruction in how to enter data, and successfully entered training data for some of the Case Management courses.

In addition, we designed training forms to be used in all trainings that capture trainer and training details. Importantly, the forms capture the MoH personnel number.

It is recommended that—

- The DOMC decide on the classifications of training information that are required for the training system (e.g., what levels of classification of staff, facility, qualifications, responsibility are required for the system).
- Staff from DOMC and DRH are trained in the TIS use. This includes staff for entering the data, and all DOMC staff for producing training reports.
- All trainings use the new training information capture forms to capture trainer and trainee data in a consistent manner.
- The data forms are returned to DOMC and entered into the TIS by secretarial staff for all trainings.
- Training data be obtained and integrated data from other providers (implementers) of malaria-based training. If necessary, the same system can be provided to implementers of training, or KENAAM.
- The firm that is developing the core MIAS system becomes familiar with the TIS so they can support the system in the future.
- The DOMC coordinates with the MoH's personnel department to ensure compatibility of the data on the Integrated Personnel and Payroll System (IPPD) with the data of the training system for future linkages.

### **Outputs**

The training information system will produce a number of training reports. The key reports requested so far, including samples, are available in the companion MIAS System Design Document.

The system will have the ability to link training details with the MIAS workplans and business plan and then report on the key indicators dealing with training, e.g., numbers of service

providers trained in focused prenatal care/intermittent preventive treatment giving summary or detailed information.

By storing a unique MoH personnel number for trainees and the facility codes, the system will be able to link to data in other systems.

There are many benefits that will arise from these linkages. In some cases, such as a comparison of the trainee dataset with the MoH staff on the personnel system (IPPD), the primary benefit would be that DOMC will be able to quickly get an indication of the attrition rate after training. DOMC would also be able to calculate future training needs and to see which facilities have no trained staff in a certain course.

DOMC should rationalize the designations and responsibility fields on the training form.

## **ACT Antimalarial Medicine Information**

### ***Current Situation***

The first-line antimalarial medicine has been changed to ACT in the new treatment guidelines. Artemether-lumefantrine was supplied to all government and mission health facilities during the period of the consultancy. It is a costly medicine with a high value in the commercial market.

There is no standard way of tracking medicine dispensing to end-users in government facilities. The government S3/S5 bin card system is used for the main stores of medicines and other supplies. But there are a number of different systems in use for recording the dispensing of the medicines.

- Large district hospitals with computer systems for revenue print receipts that list the medicines issued and quantities, linked to the patient name and number. Even non-chargeable items like the antimalarials will go through the system with a selling price of zero. At the end of the day, and month, reports are available showing quantities of the different medicines dispensed. But the system in use in most facilities is not linked to a stock control module, and not used for monitoring stock levels.
- Other health facilities use one or more dispensing registers. The chief pharmacist's office has made a dispensing register with many of the essential medicines. Separate registers and tracking systems have also been produced and implemented for various "program-specific" medicines like ARVs, vaccines, family planning commodities, and other medicines and supplies.
- Specific provinces and districts have implemented different systems for tracking and re-ordering medicines including revolving medicine funds and credit-line/pull system ordering.

Above all, there has been no standardization of registers or data collection tools up to now. At the time the new antimalarials were arriving, the four doses of the new ACTs were obviously not found on any of the existing registers, and many facilities interviewed complained of lack of bin cards and dispensing registers.

The DOMC's immediate priority was to ensure that mechanisms and registers were in place to record the receiving, issuing, and use of the new medicines. It was necessary to have a clear paper trail for ACTs' receipt, storage, and issue. Forms were needed to summarize the consumption and the stock-levels, and a system was required so the stock levels could be monitored at the health facility and district level. Most importantly, information on situations involving shortfalls, pending stock-outs, or expiring medicines was required so these situations can be acted upon.

It is also necessary to calculate subsequent artemether-lumefantrine usage requirements and this year's consumption will be important in this calculation. Specifically, the following information needs to be tracked at various levels:—

- Artemether-lumefantrine receipt, storage, and issue information in the health facility stores
- Artemether-lumefantrine dispensing information (consumption) in the facility pharmacies
- Summary information to send to the district level containing—
  - Health facility stock-out data
  - Health facility consumption data
  - Health facility stock balance data, including drugs pending expiry
- The following can then be calculated at the district-level—
  - Health facility adjusted consumption data (consumption data adjusted for number of days out of stock)
  - Number of days supply in stock (balances of artemether-lumefantrine in stock as compared to consumption data)
  - Subsequent order quantity

If possible, the district health office and hospitals can work with KEMSA to act on replenishing and redistributing stock between health facilities as needed, based on reported stock-levels and medicine expiry data.

- At the national level, adjusted consumption data is needed for stock replenishment and future purchasing planning by KEMSA and DOMC. Stock-out information is also necessary, as minimizing stock-outs of first-line antimalarial drugs is one of the key indicators for case management.

### **Monitoring Work to Date**

To implement a system that will fulfill the needs outlined above, the long-term strategy for DOMC is to track malaria medicine information through a harmonized HMIS reporting-system. Health facility data on stock-outs and consumption would be reported monthly to the district through a single flow of information from the health facility to the district HMIS officer. The information would be processed by the health information officer and be immediately available to the district pharmaceutical technologist (or district hospital pharmacist). Summary information would be sent to the provincial and national levels, and KEMSA and DOMC at the national levels.

To further this process, the malaria medicine information needs were presented at the recent HMIS—Forms Harmonization meeting, March 20–24, 2006, at Kenya School of Law. The process of harmonization through HMIS is continuing, but it was clear that it would take some time before the malaria medicine information is tracked through HMIS and available at the district and national level nationwide.

In the meantime, due to the sensitivity, importance, and visibility of the artemether-lumefantrine, it was agreed that a system needed to be quickly put in place to record and track the usage of the medicines. This system is not permanent but just for immediate needs until such time as the malaria medicine information is incorporated into HMIS, and implemented nationwide.

Under the consultancy to make recommendations to the DOMC with regard to information systems, RPM Plus was asked to help design systems that could be implemented immediately. The report, *Recommendation Report for Tracking of Artemether-Lumefantrine* produced in May 2006 recommended breaking the activities into two categories. First was the immediate design, printing, and distribution of medicine reporting tools with the shipments of medicines—

- A dispensing book to record the receipt, usage, and stock balances of the artemether-lumefantrine in the dispensing points
- A supply of government stock/bin cards for artemether-lumefantrine in the main stores
- Monthly summary reporting tools for facilities to record the monthly situation and send it to the districts
- Instructions for all of the above

These items are currently being distributed by KEMSA with the actual medicines. The system was designed so that every shipment of artemether-lumefantrine would arrive with sufficient materials to record all of the stock within the shipment. This was a stop-gap way of ensuring that there could be a paper trail at the health facility level, and there would be no problem due to lack of reporting tools.

The design of the artemether-lumefantrine dispensing book was coordinated with the HMIS working group on harmonization of registers, and the format is the same as what the group is

working on. Once arthemether-lumfantrine is part of the MoH standard medicine registers in use in all facilities, there would be no need for the registers, but this is not expected to be for some time.

The second group of recommended activities were related to the system at the district, provincial, and national level, and will be discussed later.

### **Recommendations**

After the dispensing registers are produced and distributed, the following activities should occur—

- Management group—A group should meet to agree on implementing medicine monitoring at the district level. This meeting should occur as soon as possible, as implementation of the system, including development of necessary tools and training of district staff, will take some time. The group should be coordinated by DOMC and include—
  - DOMC
  - Chief pharmacist's office
  - KEMSA and Mission for Essential Drugs and Supplies
  - RPM Plus, Danida, John Snow Inc., WHO, and other partners working in medicine management
  - HMIS and HMIS harmonization working group
  - Representatives from DMOH, principal medical officer's office
- District Level Monitoring—The pharmaceutical information needs to be monitored at the district level by the district health management team (DHMT )and KEMSA. It is recommended that the following activities be immediately implemented to ensure a system is in place in all districts.
  - A monthly summary form needs to be made for the district level. The District Monthly Summary Report for Artemether-Lumefantrine for Health Units was designed, but needs to be finalized.
  - The district health record officers and pharmacists must be trained in collecting, processing, and handling issues arising from the ACT data to manage the medicines and prevent stock-outs. They will be trained in the reporting forms, and the electronic tool, if implemented.
  - It is recommended that a simple electronic tool be developed to help the process at the district level. The facility information will be entered into the electronic tool,

reports and feedback produced, and then summary information will be sent to the provinces and central level. (The electronic tool development could be done separately for artemether-lumefantrine, or it could be combined with the District Performance Monitoring Tool as recommended in the section on HMIS. Whether both tools are combined, or just an artemether-lumefantrine tool is developed, does not affect the budget).

- Information Flow—The regular flow of data from the health facilities to the districts needs to be improved. This will be discussed during the training of district staff. All GOK and Mission facilities will complete the medicine registers and the monthly summary sheets and send to the District MoH (except provincial hospitals which will send to the principal medical officer). In addition, hospitals and mission facilities will be preparing separate order forms for arthemether-lumfantrine from KEMSA and MEDS, and the registers and summaries will help them determine ordering quantities.

The District Pharmaceutical Facilitator (DPF) will compile information for district summary sheets (with the district health records information officer (DHRIO) and act immediately on shortfalls. The DPF and DHRIO will use the district summary as a basis to work with the KEMSA Regional Liaison Officer. The information will be used to calculate changes to the distribution schedule. (If available, the electronic tool will be used).

*(However, it is recommended that the issue of collecting returns from health facilities be discussed again with KEMSA. It had originally been hoped that as KEMSA is distributing drugs to all facilities, they could also be responsible for collecting returns. But KEMSA did not want to take on this job for reasons including the delays that might arise in waiting for returns, and the fact that KEMSA sub-contracts various transport companies in the field.*

*While these reasons are understood, we still recommend that the distributing agency is the logical body to collect returns from the facilities. The flow of information recommended in this report does not include this option, as it was necessary to move forward.)*

## **Supervision**

As part of the district training, supervision training will be provided. In addition to district and provincial staff, the training should include the following people who would act as TOTs and assist in the supervision process—

- 6 KEMSA Regional Liaison officers
- 2 MEDS officers
- 1 officer from the Christian Health Association of Kenya
- 1 person from the Kenya Catholic Secretariat

### **Harmonization with HMIS**

It is recommended that DOMC continue to work with the registers' harmonization working group to ensure that antimalarials are correctly included on the standard tools and summary reporting forms.

### **Other Issues**

Other issues that came up as gaps in the meetings regarding the artemether-lumefantrine—

- Recording at facilities supplied by the Missions for Essential Drugs and Supplies (MEDS), which does not keep any consumption data from mission health facilities, and there are no standard ways of recording the drugs at the facility level. MEDS requested identical registers for its facilities. Registers must be given to MEDS for distribution. (There are 1,000 facilities, currently 350 have requested ACT doses.) Mission facilities should be instructed to report to the DMOH on consumption.
- KEMSA order forms—Relating to ordering antimalarials
  - KEMSA should remove amodiaquine and add 4x ordering lines to their order forms for hospitals.
  - A form is needed for the districts to use for ordering on behalf of rural health facilities. The districts will be ordering on the facilities behalf until capacity is developed for facilities to order each medicine directly from KEMSA.

### **Indoor Residual Spraying**

The IRS Planning and Monitoring System that was designed should be implemented in epidemic prone districts for the planning and monitoring of the annual IRS exercises. The designed tools include—

1. District Epidemic Preparedness Situation Analysis and Planning worksheet for epidemic-prone-districts
2. District IRS Monthly Activity Sheet for epidemic-prone districts
3. Draft Epidemics Preparedness database

More work needs to take place with the DOMC Epidemics unit to make an implementation plan for these activities.

## **Epidemic Detection and IDSR**

It is recommended that DOMC harmonize their malaria epidemic detection plans with a full implementation of IDSR as a disease tracking and reporting tool in facilities and response tool in the epidemic prone districts. This work is to be coordinated with DOMU as the malaria tracking for early detection of epidemics is a subset of the IDSR disease reporting.

DOMC and DOMU are also encouraged to work together and combine resources to implement the epidemic detection system together with IDSR. This work will take place at the facility and district level, with information flowing to the central level.

A series of meetings produced the conclusions that the process continue. A working meeting should be held to finalize the details of the harmonization of the systems and finalize the tools. It is also recommended that HMIS is fully part of these meetings, and the registers harmonization working group is involved. The IDSR should not attempt to duplicate HMIS in the breakdowns and level of detail. But we should ensure that those breakdowns of data (cases by age category, by malaria in pregnancy) will actually be available through HMIS.

It is then recommended that the malaria program use its resources to implement IDSR, rather than just a malaria detection system, in the epidemic-prone districts. Five sentinel sites in each of these districts would receive extra training and be supervised more closely, but these should be sentinel sites for all IDSR diseases and not just malaria.

## **Pharmacovigilance System**

The Pharmacy and Poisons Board is setting up a pharmacovigilance system in health facilities to assess and prevent adverse drug reactions. This is especially important for the malaria program as ACTs are introduced as the first-line treatment.

It is recommended that the malaria program can use some of its resources to fund the pilot pharmacovigilance system setup and implementation in seven hospitals. DOMC will coordinate this activity with the Pharmacy and Poisons Board to ensure there is no duplication and that the information collected is available to the malaria program. It should be clarified that the pilot system will not be exclusively for antimalarial drugs, but will include all medicines, including ARVs.

The broad goals of the system are—

- Rational and safe use of antimalarials and other medicines
- Identification of risk factors and possible adverse reactions from antimalarial and other medicine use

- Assessment and communication of the risks and benefits of antimalarials and other medicines
- Disseminate information needed to improve medicine prescribing

Specific goals of the pilot phase being proposed are—

- To determine the nature and frequency of adverse drug reactions occurring with inpatient and outpatients from antimalarials and other medicines
- To assess the patterns of adverse drug reactions of antimalarials and other medicines
- To assess the severity of adverse drug reactions
- To create an awareness of the importance of reporting adverse drug reactions to antimalarials and other medicines

Activities in the pilot phase would include—

- Finalizing the tools used for the pharmacovigilance system
- Training field staff in detection, reporting, and preventing adverse drug reactions
- Building capacity at central level and field level
- Regular mechanism for disseminating of information

Details of the workplan and budget for pharmacovigilance can be found in Annex 1 of this report under Output 7.

## **STRENGTHENING CAPACITY AT DOMC**

The success of the MIAS will be primarily determined by three factors

- The management's support for the process, which clearly exists at present
- The appropriateness and usefulness of the proposed system that we are recommending and have confidence in
- The capacity of the DOMC staff to use the system and translate the system information into improvements in the malaria interventions in the field

This section discusses recommendations on how to strengthen DOMC's capacity. It concentrates on enhancing technical capacity on-the-job, and it is systems-related, as that is the scope of the consultancy. But it does leave room for other training as required, including the design and implementation of studies, specialized monitoring techniques, and support supervision training.

### **Current Situation**

During the period of the consultancy, a M&E unit was set up within the DOMC, headed by Dr. Rebecca Kiptui. There is a person from M&E who sits in each of the other focal units, providing a linkage between M&E and all the other units.

The M&E unit and DOMC as a whole are supported by a good IT infrastructure and computer network, including dedicated internet connectivity. There is also a systems manager who has a strong knowledge of the system, the DOMC, and the website.

All DOMC staff use computers daily, including e-mail on the internal Exchange Server system, and most have personal web mail addresses. Everyone uses MS-Word and most know MS-Excel and MS-PowerPoint.

Some additional computers, hardware, and consumables needed to meet the current staffing levels and the requirements of MIAS are listed in Appendix 2.

The M&E technical working group has recently been convened and has met regularly, commissioning the indicator report for Abjua, planning the M&E stakeholder meeting, and moving forward with recommending required surveys.

### **Recommendations**

To strengthen capacity at DOMC to implement the MIAS, the following are recommended—

- The formation of an MIAS Systems Implementation Group within DOMC that will meet weekly during the implementation phase and manage the process. The group will be comprised of key members of the M&E unit, the systems manager, and the consultant assisting in the implementation process
- The seconding or hiring of a consultant database specialist with a knowledge of HMIS/M&E to work with the DOMC during the system implementation phase
- A technical training program for the DOMC staff and partners that will include topics in systems, M&E, and the use of the MIAS. Training should also include technical staff from related partners including DDRH, DCH, HMIS, DOMU, etc. The list of training recommended is shown in the next section. It is hoped that the consultant would be able to do much of the training internally.
  - The Malaria M&E technical working group will continue to be supported and will take an active role in the design and use of the MIAS.

## **Training Program**

### ***Outcome***

A cadre of personnel in the DOMC, MoH, and supporting NGOs should be trained on data management, analysis, storage, manipulation, and database systems so they can manage the MIAS data.

### ***Details***

It is recommended that staff of DOMC, partner divisions, and NGOs receive training as follows:

**Table 2. Technical IT/ M&E Training for DOMC and Partners**

<b>Course Content</b>		<b>Number of Trainees</b>
<b>GROUP 1</b>	<b>GENERAL COURSES FOR BUILDING STAFF CAPACITY IN DOMC</b>	
	Updating Staff on General Computer Use—Filing, Hardware, Shortcuts	30
	Review of MS Word and MS Excel	30
	Designing reporting formats and data collection tools	30
	Database Management Systems—Introduction	20
	Intermediate Data Analysis (MS Excel and MS Access)	20
	Using Accounting Software for Financial Management	5

<b>GROUP 2</b>	<b>TECHNICAL COURSES FOR SYSTEM MANAGERS</b>	
	Database Management Systems—Intermediate	10 (including partners)
	Database Management Systems—SQL Server Administration	5
	Network System Administration	5
	Website Upkeep—Introduction	5
	Website Upkeep—Intermediate	5
	Website Upkeep—Linking Website to SQL Server Database	5
	Advanced Data Analysis (MS Excel and MS Access)	—
	Advanced Data Analysis (Mapping)	—
	Other M&E courses	—
	Other computer courses	—
<b>GROUP 3</b>	<b>COURSES RELATING DIRECTLY TO MIAS FOR DOMC</b>	
	Using the System—Data Input, Processing, Output, Action	30
	Maintaining the System for System Managers	5



## ANNEX 1. WORKPLAN AND BUDGETS FOR ACTIVITIES

### Workplan

MIAS Activities - 2006/2007 Workplan

Division of Malaria Control

August 2006

Output	Activities	Timeline												Responsible	Activity Type	Indicative Budget US\$	Consulting Days	Indicator			
		Au	Se	Oc	No	De	Ja	Fe	Ma	Ap	Ma	Ju	Jul						Au	Se	
<b>(A) Objective A - To Build the MIAS System</b>																					
<b>Output 1: Endorse the proposed MIAS operational plan and agree on funding and implementation schedule</b>																					
1	Review meeting with DOMC to build consensus																DOMC, TA	Capacity Building	300	2	MIAS plan endorsed and document finalized
2	Presentation to MOH - DMS, HMIS, Prev&Prom, and Divisions HSRS																DOMC, DMS	Coordination			Presentation held
3	Printing and Distribution of Report																DOMC, MSH	Procurement	500		Report printed and put on website.
<b>Formalization of interim system (follow up from DOMC consensus meeting), including</b>																					
	- Agreement of boundaries of system, agreement of classifications of data, system outputs, coordination of system with HSRS, JPoW, AOP, coordination of training database with Human Resources																DOMC, TA, DRH, HSRS, HR	Coordination	3,000	7	System Design Document Updated -MIAS and AOPs aligned -MIAS and HR system alligned
	- Additional Analysis & Programming of Interim System, if Required																Programmer	TA		5	Interim System Updated and System Design Document Updated
	- Training of Interim System																DOMC, Partners	Capacity Building	1,000	5	DOMC Staff Using System and Producing Reports
	- Data Collection for Training Database, BP, WP																				









## Budget

Malaria Business Plan 2006 - 2007																								
Approach Objective Output	Act	ACTIVITY	TIMELINE 2006 - 2007												Responsibility	2 0 0 6 - 2 0 0 7			Fund Source	Recipient	Performance Indicator			
			7 06	8 06	9 06	10 06	11 06	12 06	1 07	2 07	3 07	4 07	5 07	6 07		2006_2007 BUDGET	Allocated 2006/7	Gap 2006/7						
<b>MONITORING, EVALUATION AND RESEARCH</b>																								
<b>OBJECTIVE 1</b>	<b>To promote coordinated monitoring and evaluation activities</b>																							
<b>OUTPUT 1</b>	<b>G-1-1-&gt;M&amp;E-Coordinated M and E-A co-ordinated network of partners providing national malaria M&amp;E data</b>																							
	1	Support Quarterly Monitoring and Evaluation Technical Working Group Meetings																DOMC, ME TWG	160,000		160,000		National	Meeting held & minutes
	2	Support other M & E technical working group meetings																DOMC, ME TWG	80,000		80,000		National	Meeting reports
	3	Establish MoU with partners for M&E network																DOMC,MOH Atya House Legal Advisor			-			To be defined - to include M&E Framework and agreed indicator set.
	4	Support consensus meeting to approve M&E framework																DOMC / CDC/USAID	320,000		320,000			Meeting minutes
	5	Edit, produce and disseminate agreed M& E framework																DOMC			-		National	
	6	Establish and maintain GIS platform for M&E network																DOMC	75,000		75,000			
	7	Map M&E activities of Network																DOMC			-			
	8	M&E technical adviser contract																	5,700,000		5,700,000			M&E adviser assisting DOMC
	9	Establish and maintain a malaria control database which is geo-referenced																DOMC	75,000		75,000			
	10	IMCI household survey																DOMC,DCH,DRH, HMIS	3,000,000	9,150,000	(6,150,000)	GFII,DFID		
	11	Incorporation of FANC/MIP data into national HMIS registers, summaries and system																HMIS, DRH, DOMC	3,000,000		3,000,000		National	
	12	Progress review meeting																DOMC,Partners	963,600		963,600		National	Meeting Report
<b>Sub-totals for Output 1</b>																			<b>13,373,600</b>	<b>9,150,000</b>	<b>4,223,600</b>			
<b>TOTALS FOR OBJECTIVE 1</b>																			<b>13,373,600</b>	<b>9,150,000</b>	<b>4,223,600</b>			













## ANNEX 2. TERMS OF REFERENCE FOR DATABASE SPECIALIST

<b>TITLE:</b>	<b>Health Database Specialist</b>
<b>SALARY SCALE:</b>	<b>Competitive</b>
<b>REPORTS TO:</b>	<b>Senior Program Associate, MSH Head, Division of Malaria Control</b>
<b>LOCATION:</b>	<b>Division of Malaria Control</b>
<b>JOB DURATION:</b>	<b>Up to June 30, 2007</b>

### **JOB RESPONSIBILITIES:**

1. Work with the Ministry of Health to implement the Malaria Information Acquisition System software at the central and decentralized levels and provide staff training.
2. Be a liaison person between partners on this project including the Ministry of Health, the MSH project consultant, and the systems programrs to assist in the development and training, and lead in the implementation of the system.
3. Documentation, data analysis and data manipulation will also be a big part of the job.
4. Preparing status reports for MSH and MoH.

### **QUALIFICATIONS**

1. No formal academic qualifications are required, however the candidate must have experience in the creation of a database application in any Windows-based database software (this must be demonstrated).
2. Minimum of 5 years experience in a company or organization working with SQL databases.
3. Minimum of 3 years experience in updating creating/updating database-driven websites.
4. References and a proven record of competency in the implementation of systems at a previous job.
5. Detailed knowledge of common computer software such as MS Excel, MS Word is essential, as is knowledge of networking with MS Windows.
6. Prior experience of Geographical Information System Mapping Software is desirable.
7. A team player that can work with people of different qualification and experience.
8. Good written English, as documentation will be important in the job.



## ANNEX 3. TERMS OF REFERENCE

This section outlines the Terms of Reference for the consultancy, and lists the methodology employed, and outputs produced during the period of the consultancy. It also lists the linkages and organizations worked with and the limitations of the consultancy.

### Terms of Reference

The main purpose of the activity described in this scope of work is to provide technical support to the Division of Malaria Control, Ministry of Health, Kenya in support of the development of a Malaria Information Acquisition System (MIAS).

The overall objective is to set up a MIAS that will use IT as a vehicle to provide accurate, reliable and timely information on progress in controlling malaria that can inform interventions at the district, national, regional and global levels in line with the WHO recommended RBM M&E framework.

In response to the challenging problem of malaria, the Kenya MoH developed a National Malaria Strategy 2001—2010 that aims to reduce the level of malaria infection and consequent death in Kenya by 30 percent by the year 2006, and to sustain that level of control to 2010. This gives emphasis to the April 2000 Abuja Declaration on Roll Back Malaria in Africa that committed African states to achieving specific targets under the global RBM initiative by 2005. The DOMC, MoH, is responsible for monitoring the success of the national malaria strategy with heavy reliance on the country's HMIS, surveillance data, and household surveys. Unfortunately, the HMIS has not provided all the relevant data on a timely basis, thus slowing the pace of national program's monitoring and evaluation. In addition, there are many malaria control stakeholders who are supporting the DOMC through the implementation of DOMC-recommended RBM interventions and using stakeholder-specific indicators to guide the collection of information.

The challenge is that a lot of malaria control information collected is held in separate records and parallel systems and, as a result, is often incomplete and not available to the DOMC for decision making and for reporting to donor agencies.

Working with support from RPM Plus and funding from USAID, the DOMC therefore proposes to set up a MIAS that will use IT as a vehicle to ensure that limited resources it invests in malarial prevention and treatment are used in the most cost-efficient, effective and equitable way. The MIAS will aim to make available relevant, timely and accurate data between program managers at the Division of Malaria Control and Provincial and District levels of the health care system (only the DOMC and four districts are going to be initially involved in the initiative). This will allow timely tracking of the implementation of the NMS in conjunction with the globally recommended RBM strategy. Selected quality data will be reported to the National Malaria Program which in turn will be able to meet international reporting requirements for the Millenium Development Goals, GFATM, and the RBM (Abuja targets).

The IT consultant will work in close collaboration with Dr. Gladys Tetteh, a public health consultant, and Dr. Willis Akhwale, DOMC, MoH, Kenya, to accomplish the following tasks—

1. Receive a technical brief from the RPM Plus and DOMC team to understand the scope of work for the MIAS.
2. Work with RPM Plus/DOMC and the public health consultant to plan for and assess the functioning of current information systems relevant to malaria control including the existing HMIS and identification of strengths and weaknesses; evaluation of arrangements by all mandated agencies for reporting in different aspects of malaria control, analysis of existing tools; linkages between relevant MoH departments/programs; human resource capacity, etc. The assessment will be carried out by an assessment team competent in all the respective aspects of malaria control (i.e., ITN; IPT; pharmaceutical management; pharmacovigilance, medicine efficacy; malaria information, education, and communication (IEC); and advocacy).
3. Based on the assessment findings, develop an innovative yet simple MIAS design with the ability to track resource utilization, collect and collate patient/client centered information to ensure a continuum of care in both public and private sectors; specify roles and create linkages in malaria control information flow of all key stakeholders providing support to the DOMC; deliver the right information, at the right time, to the right person to provide feedback that interventions reach those who need them; integrate into HMIS and complimentary to periodic surveys, demographic surveillance sites, sentinel surveillance sites or districts; review documents, supervision, and special studies; link with the malaria outbreak detection system for early prediction and prompt action; link with early detection systems for resistance to antimalarial medicines and insecticides; link between different levels of healthcare ensuring efficiency and cost effectiveness; link between the data collection/analysis and the decision making process to allow timely and effective decision made based on the information received; provide support for malaria prevention and treatment in order to increase quality of care.
4. Together with the public health consultant, facilitate one or more stakeholder consensus meetings which will aim to disseminate findings of assessment; share the proposed MIAS design; development/agreement on overall indicators; achieve stakeholder agreement on tools to be used and personnel to be used at the different levels of health care and determine stakeholder roles in the pilot implementation of the MIAS.
5. Participate in briefings with representatives from the USAID Mission, DOMC, and other relevant organizations as requested.(3 days)
6. Write a comprehensive report of activities conducted. (5 days)
7. Write a 2-page summary of work to fulfill the scope of work.

## ANNEX 4. PROCUREMENT LIST

No.	Item	Qty	User (No. of computers)	Activity	Est. Price, U.S. dollars	Est. Total Cost	Specifications
1	Desktop Computer  With MS Office Pro	8	Deputy Head (1) Case Management(3) M&E (2) System manager (1) KENAAM (1)	Office Applications Website Update MIAS	2,000	16,000	Pentium 4 3.2 Ghz 512 Mb Ram, 80 Gb Hdd, NIC 17" Flatscreen 1280 x 1024 Win XP Pro 3 Year Parts/Labor Warranty
2	Laptop computer  With MS-Office Pro	1	(1) M&E	Field Visits	2500	2,500	Pentium M Processor 512 Mb Ram, 40 Gb Hdd, NIC Win XP Pro 3 Year Parts/Labor Warranty
3	UPS Smart 700VA	8	As in # 1 Above	As in # 1 Above	350	2,800	
4	Network Materials for 10 additional points on the DOMC network	10	New PCs and 3 extra	Network connectivity	30	300	
5	Backup DAT Tapes	10	System Administrator	MIAS and data backup	30	300	DAT 20/40 GB
10	Universal Serial Bus drive for 256 MB	90	District HRIO	District Electronic Tool	40	3,600	Customized with MoH logo
Total Price						25,500	

### Computer Needs

Deputy head (to be filled) has no computer – requires 1  
Case Management has 3 computers for 7 staff – needs 3 – one for Andrew, one for Grace and 1 for the lab  
M&E requires 2 computers for Anne and Andrew Wamari  
Vector Control has 2 computers for 4 staff – requires 1

### No Need

Head has a computer  
Malaria in Pregnancy has 1 computer for 2 staff  
IEC has 1 computer for 2 staff  
Epidemics has 2 computers for 2 staff



## ANNEX 5. DATA ENTERED IN MALARIA HMIS AT DOMC

MALARIA INFORMATION SYSTEM DATAB. YEAR 2005      January  
Malaria Out-Patient Morbidity Cases by Health Facility  
Rift Valley Province - Trans Mara District

	Health Facility	Week 1			Week 2			Week 3			Week 4			January TOTAL			Grand Total
		< 5 y	>=5y	Preg.	< 5 y	>= 5y	Preg.	< 5 y	>=5y	Preg.	< 5 y	>=5y	Preg.	< 5 y	>=5y	Preg.	
1	Trans-mara D.H	66	103	1	106	153	4	128	201	1	186	244	0	486	701	6	1193
2	Trans-Mara Medicare Hosp	1	9	0	0	0	0	1	0	0	2	0	0	4	9	0	13
3	St. Joseph's Mission Hosp	0	4	0	2	5	0	1	8	0	1	5	1	4	22	1	27
4	Akemo valley Hosp	3	4	0	7	2	1	5	3	1	4	2	0	19	11	2	32
5	Angata H.C	20	34	3	43	30	5	50	14	3	70	15	3	183	93	14	290
6	Emarti H.C													0	0	0	0
7	Enosaen H. C	51	42	1	44	60	3	57	95	11	73	130	5	225	327	20	572
8	Enoosen Z.H. Clinic	7	10	0	9	10	2	8	21	1	32	29	3	56	70	6	132
9	Kimintet H/C	3	5	1	4	12	0	11	16	6	10	8	2	28	41	9	78
10	Lolgorian H/C	58	58	4	63	72	4	79	76	8	102	96	12	302	302	28	632
11	Nkararo H.C	20	12	0	24	17	3	11	9	0	81	53	5	136	91	8	235
12	Angata B.H.C													0	0	0	0
13	St Antony H/C Abosi													0	0	0	0
14	Changina comm. Disp.													0	0	0	0
	Chemamit Disp	6	7	0	4	8	0	2	6	0	5	12	0	17	33	0	50
15	Itolish COG Disp													0	0	0	0
16	Kabolecho disp	22	29	0	30	17	6	21	41	3	39	62	2	112	149	11	272
17	Kamaget Disp	8	6	3	7	4	2	14	8	1	6	3	2	35	21	8	64
18	Kapsasian	10	20	3	10	20	5	15	17	4	13	18	4	48	75	16	139
19	Kapweria Comm. Disp.	12	22	1	3	19	1	6	21	0	14	20	0	35	82	2	119
20	Korongurik Comm. Disp	17	27	1	18	21	2	12	18	0	36	60	3	83	126	6	215
21	Mogor C.D.	4	8	2	6	13	3	3	12	0	8	13	2	21	46	7	74
22	Nganaiyo Comm Disp	3	4	1	9	6	0	6	16	1	25	23	1	43	49	3	95
23	Ogwedhi Sigawa Disp.													0	0	0	0
24	Oldonyorok COG Disp	10	18	1	16	11	1	9	11	0	31	21	2	66	61	4	131
25	Osupuko Disp	19	20	8	19	17	4	21	30	7	46	50	5	105	117	24	246
26	Romasha Disp	10	24	2	9	20	5	21	34	4	40	64	7	80	142	18	240
27	St Theresia of Jesus Esoit													0	0	0	0
28	Savimbi MC													0	0	0	0
29	Shankoe Disp	18	40	1	8	52	0	39	62	1	50	113	1	115	267	3	385
30	Sigilai comm	10	3	0	6	5	0	7	9	1	15	7	3	38	24	4	66
31	Takitech Comm Disp	46	59	2	52	38	3	53	51	1	56	82	4	207	230	10	447
	Kamermeru B.I	3	2	0	3	2	0	2	4	0	2	2	0	10	10	0	20
32	Olchobosei Clinic													0	0	0	0
	Totals	427	570	35	502	614	54	582	783	54	947	###	67	###	###	210	5767

MALARIA TRENDS IN KENYA BY DISTRICTS & YEARS						
	1996	1997	1998	1999	2000	2001
NAIROBI	69,142	116,294	100,489	54,066		
KIAMBU	110,206	180,288	163,754	197,719	82,570	67,773
KIRINYAGA	168,110	187,458	148,771	170,535	147,729	188,392
THIKA	37,288	70,355	70,098	68,376	41,660	
MARAGUA		26,980	44,086	67,319	55,941	83,366
NYERI	66,114	71,385	87,310	102,480	102,374	119,487
MURANGA	160,679	132,497	69,567	51,925	83,931	84,929
NYANDARUA	44,690	39,749	40,020	44,261	43,521	27,710

Malaria Inpatient Morbidity Cases (Discharges) – Alive

Malaria Inpatient Morbidity Cases (Discharges) – Dead

Malaria Bloodslide Positivity Results (1996 - 2001) – total and positive

Malaria Admissions and Deaths

**ANNEX 6. DOCUMENTS/FORMS PRODUCED DURING THE CONSULTANCY**

**Republic of Kenya**



**Ministry of Health**

**Artemether-Lumefantrine  
Dispenser's Book**

**for**

**Health Centres and Dispensaries  
and Hospitals**

**Republic of Kenya – Ministry of Health**

**Artemether-Lumefantrine  
Dispenser's Book**

District: .....

Facility: .....

Starting date for this book: .....

Closing date for this book: .....

### Artemether-Lumefantrine Dispenser's Book (ABD) - Instructions for Use

#### Use the ADB:

- o To record the name and quantity of the Artemether-Lumefantrine dispensed each day (needed to monitor item utilization and help detect inappropriate use)
- o To calculate consumption of each item over a chosen period (for estimating order requirements)
- o To compare ADB records with stock (use stock control cards or bin cards and physical inventory checks) to identify discrepancies between medicines issued from stores and those actually dispensed.

#### Entering ADB Records

1. Record the following information *for each patient*:
  - a) Date = date of the patient's visit/date of dispensing
  - b) IP / OP Number = Inpatient or Outpatient Number, that references the In-Patient or Out-Patient Registers
  - c) Prescription No = number of the prescription which the patient presents (a unique sequential prescription number from the individual prescriber's prescription pad) – *if the facility uses a prescription book*
  - d) Quantity (doses) dispensed to the patient (put this figure in the box in the correct row for the patient and the correct column for the strength)
2. If *new stock* is received from the stores, record the following information *for each receipt of drugs*:
  - a) Receipt Date = date of the receipt of drugs from the stores
  - b) Reference Number = the reference number of the receipt of drugs, for example the S12 number.
  - c) Quantity Received = the quantity received - in doses - for each strength of Artemether-Lumefantrine.
3. *End each day* by drawing a line across the page through the row of boxes under last patient's records (indicated by a dashed line in the sample).
4. *Begin a new day* by starting records from the first row under the line.

#### Calculating Item Totals

- o Calculate these on a *page basis* (not a daily basis):
  1. For each strength of Artemether-Lumefantrine, enter the starting balance amount in the vertical 'Balance Previous Page' box (ie. The 'stock balance brought forward' from the previous page) "A"
  2. If any stock was received during the period the page was in use, record the amounts "B"
  3. Add the received amounts to the 'Balance Previous Page' figure to get the 'Total Stock Available'. "C"
  4. Run down each item column and carefully add each quantity dispensed "D"
  5. Insert the total quantity dispensed for each item in the vertical 'Total Quantity Issued' box at the bottom of the page "E"
  6. Calculate the 'Balance End of Page' (ie. the remaining stock at the end of the page) as below. Note that this is also the 'Stock Balance Carried Forward' to the next page: "F"

See Sample Sheet

**Balance End of Page = Total Stock Available – Total Quantity Issued**

7. Copy this figure into the 'Balance Previous Page' box at the top of the next page (i.e. the new Stock balance brought forward for that page) "A"

#### End of Month:

**End a page at the end of the month.** For each strength of Artemether-Lumefantrine, add the total quantity issued during the month, and report this figure, together with the ending balance, and number of days out-of stock on the **"Monthly Artemether-Lumefantrine Summary Report"** and send to the DMOH.

Page number

**Republic of Kenya – Ministry of Health**  
**Artemether-Lumefantrine**  
**Dispenser's Book**

The total quantities of drugs dispensed are counted **per page**.

			Artemether-Lumefantrine Anti Malarials - DOSES				Comments
			Artemether-Lumefantrine 5-14 KG	Artemether-Lumefantrine 15-24 KG	Artemether-Lumefantrine 25-34 KG	Artemether-Lumefantrine 34 KG +	
Balance previous page →			0	0	0	0	A
Receipt Date	Reference Number	Quantities Received →	60	60	200	200	B
07/06/2006	S12 832343						
Total Stock Available →			60	60	200	200	C
Date	IP / OP Number	Prescription Number (if applicable)	Quantities Dispensed				
07/06/2006	OP 12349					1	
07/06/2006	OP 12350			1			
07/06/2006	OP 12352					1	
07/06/2006	OP 12360						
07/06/2006	OP 12364		1				
07/06/2006	OP 12371				1		
07/06/2006	OP 12372		1				
-----							
08/06/2006	OP 12373		1				
08/06/2006	OP 12374		1				
08/06/2006	OP 12378		1				
08/06/2006	OP 12379		1				D
08/06/2006	OP 12390					1	
08/06/2006	OP 12395				1		
08/06/2006	OP 12401		1				
08/06/2006	OP 12402		1				
08/06/2006	OP 12403			1			
08/06/2006	OP 12404		1				
-----							
09/06/2006	OP 12409		1				
09/06/2006	OP 12410					1	
09/06/2006	OP 12412					1	
09/06/2006	OP 12419		1				
09/06/2006	OP 12422				1		
09/06/2006	OP 12425		1				
Total quantity issued →			13	2	3	5	E
Balance end of page → (Total stock available less quantity issued )			47	58	197	195	F







# Malaria Information Acquisition System Assessment and Recommendations Report



**REPUBLIC OF KENYA**  
**Ministry of Health**  
**District Monthly Artemether-Lumefantrine Summary Report for Health Facilities**

District: \_\_\_\_\_

Month: \_\_\_\_\_

Year: \_\_\_\_\_

**NOTE:** Complete one line for each health facility summary sheet that you receive. Follow up on the facilities that did not submit. This tool is primarily for the district pharmaceutical facilitator (or district pharmacist) to monitor and act on the drug supply in the district.

This form should be completed in 3 copies and delivered by the 10th day of the following month. (January statistics should be posted by 10th February, February statistics by 10th March, and so forth) The copies should be distributed as follows:

- \* Original Form should be sent to the Provincial Medical Records Office;
- \* One Copy should be sent to the KEMSA Regional Liaison Office
- \* One Copy should be retained by the District's Records Office.

Number GOK and Mission Health Facilities in the District \_\_\_\_\_

Number GOK and Mission Health Facilities Reporting this Month \_\_\_\_\_

Health Facility	Facility Type *	Agency **	Artemether-Lumefantrine 5 - 14 KG					Artemether-Lumefantrine 15 - 24 KG					Artemether-Lumefantrine 25 - 34 KG					Artemether-Lumefantrine 35 + KG					Number of ITN/LIN Distributed		IPT at ANC		
			Days Out of Stock	Consumption	Adjusted Consumption	Stock on Hand	Action Required	Days Out of Stock	Consumption	Adjusted Consumption	Stock on Hand	Action Required	Days Out of Stock	Consumption	Adjusted Consumption	Stock on Hand	Action Required	Days Out of Stock	Consumption	Adjusted Consumption	Stock on Hand	Action Required	Pregnant Women	Children Under 5	Total ANC	IPT 1	IPT 2
<b>Totals for the District</b>																											

Number of Health Facilities with Stock Out of 7 days or more this month: \_\_\_\_\_

Total Consumption for the District for the Month: \_\_\_\_\_

Total Consumption x Days in Month / Days in Stock: \_\_\_\_\_

Total Stock on Hand at the End of the Month: \_\_\_\_\_

\* Facility Type is Hospital / Health Centre / Dispensary

\*\* Agency is MOH / Mission / Private

Total ITN/LIN Distributed: \_\_\_\_\_

Percent of ANC attendees receiving IPT1: \_\_\_\_\_

Percent of ANC attendees receiving IPT2: \_\_\_\_\_

	Name	Signature	Designation	Date
Prepared at Dist by:				
Approved at Dist by:				
Received by:				
Entered by:				

Version 09/06/2006



	<b>REPUBLIC OF KENYA</b> <b>Ministry of Health</b>	
<b>Monthly Summary Report for Artemether-Lumefantrine, ITN and IPT for Health Units</b>		

**District:** \_\_\_\_\_ **Month:** \_\_\_\_\_

**Health Unit Name:** \_\_\_\_\_ **Year:** \_\_\_\_\_

**Health Unit Code:** \_\_\_\_\_

NOTE: Complete every line- leave no blanks. If there was no Artemether-Lumefantrine in stock for the whole month, then indicate the actual number days out of stock and a '0' for consumption.

At the end of each month, this form should be completed in 2 copies and delivered by the 5th day of the following month. (January statistics should be posted by 5th February, February statistics by 5th March, and so forth) The copies should be distributed as follows:

\* **Original Form** should be sent to the **District Medical Records Office**;

\* The **Copy** should be retained by the **Facility's Records Office**.

<b>Artemether-Lumefantrine</b>  <b>5 -14 KG</b>  <i>(unit is blister of 6 tabs)</i>	Number of Days out of stock in the month		Earliest Expiry Date for this Stock	
	Total Consumption for the Month - DOSES		Quantity of Stock with this Expiry Date	
	Total Stock on Hand End of Month - DOSES		<b>DOSES REQUIRED*</b>	

<b>Artemether-Lumefantrine</b>  <b>15 -24 KG</b>  <i>(unit is blister of 12 tabs)</i>	Number of Days out of stock in the month		Earliest Expiry Date for this Stock	
	Total Consumption for the Month - DOSES		Quantity of Stock with this Expiry Date	
	Total Stock on Hand End of Month - DOSES		<b>DOSES REQUIRED*</b>	

<b>Artemether-Lumefantrine</b>  <b>25 - 34 KG</b>  <i>(unit is blister of 18 tabs)</i>	Number of Days out of stock in the month		Earliest Expiry Date for this Stock	
	Total Consumption for the Month - DOSES		Quantity of Stock with this Expiry Date	
	Total Stock on Hand End of Month - DOSES		<b>DOSES REQUIRED*</b>	

<b>Artemether-Lumefantrine</b>  <b>35 + KG</b>  <i>(unit is blister of 24 tabs)</i>	Number of Days out of stock in the month		Earliest Expiry Date for this Stock	
	Total Consumption for the Month - DOSES		Quantity of Stock with this Expiry Date	
	Total Stock on Hand End of Month - DOSES		<b>DOSES REQUIRED*</b>	

<b>ITN - 1. Number of ITNs / LLIN Distributed this month to Pregnant Women</b>	
<b>2. Number of ITNs / LLIN Distributed this month to Children &lt; 5</b>	
<b>IPT - 3. Total Number of Pregnant Women who attended ANC clinic :</b>	
<b>4. -of ANC attendees how many received presumptive IPT 1 this month</b>	
<b>5. -of ANC attendees, how many received presumptive IPT 2 this month</b>	

**DOSES REQUIRED\* -**

Hospitals order directly from KEMSA and mission facilities order directly from MEDS, so just indicate quantities ordered.

GOK Health Centres and GOK Dispensaries, indicate the number doses required at next supply - assume it will be at least 3 months from now

	Name and Signature	Designation	Date
Prepared at Facility by:			
Approved at Facility by:			
Received at District by:			
Entered at District by:			

*Version 09/06/2006*