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REVIEW OF MONITORING OF MALARIA IN PREGNANCY THROUGH NATIONAL HEALTH MANAGEMENT INFORMATION SYSTEMS: TANZANIA

April 2014

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The findings of this review are based on Tanzania's health management information system forms that were collected and reviewed during the period of October 2012–March 2013. Every attempt was made to get the latest tools available. Qualitative information included in this report was collected during key informant interviews conducted from November 2013 to January 2014. This report was compiled by the Maternal and Child Health Integrated Program (MCHIP) for review by the President's Malaria Initiative and Roll Back Malaria Initiative.

This report was made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Leader with Associates Cooperative Agreement GHS-A-00-08-00002-00 and Cooperative Agreement AID-OAA-A-14-00028. The contents are the responsibility of MCHIP and The Maternal and Child Survival Program (MCSP), and do not necessarily reflect the views of USAID or the United States Government.

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Abbreviations

ACT	Artemisinin-Based Combination Therapy
ANC	Antenatal Care
CDC	Centers for Disease Control and Prevention
CHMT	Council Health Management Team
DfID	Department for International Development
DHS	Demographic and Health Survey
DMIFP	District Malaria and IMCI Focal Person
DRCHCo	District Reproductive and Child Health Coordinator
eIDSR	electronic IDSR
FANC	Focused ANC
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIS	Health Information System
HMIS	Health Management Information System
HSSP	<i>Health Sector Strategic Plan</i>
IDSR	Integrated Disease Surveillance and Response
IMCI	Integrated Management of Childhood Illness
IPD	Inpatient Department
IPT/IPTp	Intermittent Preventive Treatment in Pregnancy
ITN	Insecticide-Treated Net
LLIN	Long-Lasting Insecticide-Treated Net
M&E	Monitoring and Evaluation
MAISHA	Mothers and Infants, Safe, Healthy, and Alive
MCHIP	Maternal and Child Health Integrated Program
MIP	Malaria in Pregnancy
MOH	Ministry of Health
MoHSW	Ministry of Health and Social Welfare
MPR	Malaria Program Review
mRDT	Malaria RDT
MSD	Medical Stores Department
MTMSP	<i>Medium Term Malaria Strategic Plan</i>
MTUHA	<i>Mfumowa Taarifaza Uendeshajiwa Hudumaza Afya</i>
NATNETS	National Insecticide-Treated Nets
NMCP	National Malaria Control Program
OPD	Outpatient Department
P4P	Pay for Performance
PMI	President's Malaria Initiative
RBM	Roll Back Malaria
RCH	Reproductive and Child Health
RCHS	RCH Section
RDT	Rapid Diagnostic Test
SBM-R	Standards-Based Management and Recognition

SMI	Safe Motherhood Initiative
SMS	Short Message Service
SP	Sulfadoxine-Pyrimethamine
THMIS	<i>Tanzania HIV/AIDS and Malaria Indicator Survey</i>
USAID	United States Agency for International Development
WHO	World Health Organization

Acknowledgments

The Maternal and Child Health Integrated Program (MCHIP) is grateful for the support provided by Jhpiego staff in Tanzania and for their participation in this work. The authors would like to express our gratitude to the key informants who spared time to inform this review, which was made possible by their efforts. Our gratitude also goes to the President's Malaria Initiative and the many reviewers who provided helpful comments at several stages of the review, with particular appreciation to Fabrizio Molteni, Lynn Paxton, and Mary Drake.

Introduction

MCHIP works closely with the President’s Malaria Initiative (PMI) and the Roll Back Malaria (RBM) Partnership community—including key stakeholders in maternal health and child health—to support reduction in the global burden of malaria morbidity and mortality. MCHIP supports this reduction by helping to improve the quality of malaria programs, strengthening health systems, and helping countries achieve sustained results. A critical aspect of health systems strengthening is ensuring that appropriate high-quality data on malaria service delivery are available to policymakers and program managers.

Obtaining reliable, valid, and timely malaria service data, especially data related to the control of malaria in pregnancy (MIP), is challenging. While population-based MIP indicators are very useful, the timing of population-based surveys, generally every two to five years, is too infrequent for program monitoring. National health management information system (HMIS) data are more frequently collected, complement survey data, and have the potential to be more useful for ongoing service improvement and decision-making. However, the quality of HMIS data in low-income settings is poor; often data are missing, report formats are outdated, and reporting is late. Furthermore, it is not widely known what data are being recorded at the facility level, what data are reported up through the health system, and whether those data are being used at the facility.

MCHIP conducted a review of national HMISs in six selected PMI focus countries to improve understanding of how Ministries of Health (MOHs)—both National Malaria Control Programs (NMCPs) and Reproductive Health Units—are monitoring and reporting their MIP-related program results and how the data are being used. This MIP-specific review fits within a larger review of routine maternal and newborn health data collection systems by MCHIP in the same six countries and additional non-PMI/non-malaria-endemic countries.

The PMI countries selected for this review are Kenya, Malawi, Mozambique, Mali, Tanzania, and Uganda. Each of these countries is one of the 19 focus countries benefiting from PMI, which is implemented by the United States Agency for International Development (USAID) in partnership with the US Centers for Disease Control and Prevention (CDC). The review focuses on the public sector and examines how HMIS and supplemental routine data collection and reporting strategies are used at different levels of the health system to capture MIP indicators. The review describes MIP information, data quality gaps, and best practices.

This report presents findings from the review, recommendations on priority indicators that should be monitored at the facility level, and data collection formats, as well as ways to interpret and use data to improve services and ways to report data up through the health system. Information from this report, along with the other five country reviews, will be used to propose revisions to the World Health Organization (WHO)/RBM manual, *Malaria in Pregnancy: Guidelines for Measuring Key Monitoring and Evaluation Indicators*.¹

The findings and recommendations from this review will be shared with the countries to help improve their routine monitoring systems. Findings and recommendations will also be shared with PMI, as well as the RBM MIP working group and RBM Monitoring and Evaluation (M&E) Reference Group, for further review, discussion, and development of final recommendations for global and country levels.

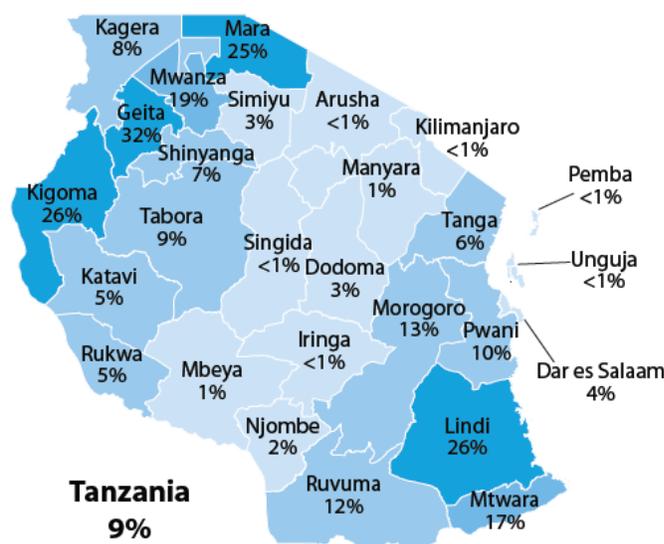
¹ World Health Organization. 2007. *Malaria in Pregnancy: Guidelines for Measuring Key Monitoring and Evaluation Indicators*. Geneva, Switzerland: World Health Organization. http://whqlibdoc.who.int/publications/2007/9789241595636_eng.pdf.

Background

MALARIA SITUATION IN TANZANIA

In Tanzania, malaria still remains a severe public health threat and the leading cause of mortality and morbidity in the country, accounting for 40% of all outpatient visits.² It is estimated that 93% of the population lives in areas that are at risk, with pregnant women and children under the age of five being especially vulnerable. Great variation is seen in terms of prevalence, with highest rates in the Great Lake Zones (3–33%) and Southern lowlands (17–26%) and lowest rates in the Northern and Central ($\leq 3\%$) Zones. Malaria prevalence is highest in rural areas (10%) compared to urban areas (3%), where more than 80% of the country's 47.7 million people live (see Figure).

Figure. Malaria prevalence in Tanzanian children aged 6–59 months, 2011–2012



Source: Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International. 2013. *Tanzania 2011–12 HIV/AIDS and Malaria Indicator Survey: Key Findings*. Dar es Salaam, Tanzania: TACAIDS, ZAC, NBS, OCGS, and ICF International. <http://dhsprogram.com/pubs/pdf/SR196/SR196.pdf>.

Reduction of malaria has improved through the years, as shown in recent Demographic and Health Surveys (DHSs) and the *Tanzania HIV/AIDS and Malaria Indicator Surveys* (THMISs), which have documented improvements in coverage of malaria prevention and control interventions (see Table 1).

Table 1. Population-based malaria indicators for Tanzania

MALARIA INDICATOR	DHS 2004–2005 ^a	THMIS 2007–2008 ^b	DHS 2010 ^c	THMIS 2011–2012 ^d
All-cause under-five mortality rate	112/1,000	—	81/1,000	—
All-cause maternal mortality rate	578/100,000	—	454/100,000	—
Proportion of children 6–59 months positive for malaria parasites (malaria rapid diagnostic test [mRDT])	—	18%	—	9%

² United Republic of Tanzania Ministry of Health and Social Welfare. 2008. *Human Resource for Health Strategic Plan 2008–2013*. Dar es Salaam, Tanzania: Ministry of Health and Social Welfare. [http://ihi.eprints.org/798/1/MoHSW.pdf_\(23\).pdf](http://ihi.eprints.org/798/1/MoHSW.pdf_(23).pdf).

MALARIA INDICATOR	DHS 2004–2005 ^a	THMIS 2007–2008 ^b	DHS 2010 ^c	THMIS 2011–2012 ^d
Proportion of households with at least one insecticide-treated net (ITN)	23%	39%	64%	91%
Proportion of children under five years old who slept under an ITN the previous night	16%	26%	64%	72%
Proportion of pregnant women who slept under an ITN the previous night	16%	27%	57%	75%
Proportion of women who received any sulfadoxine-pyrimethamine (SP)/Fansidar during the pregnancy for their last live birth in the two years preceding the survey, during an antenatal care (ANC) visit	52%	57%	61%	60%
Proportion of women who received two or more doses of IPTp (intermittent preventive treatment in pregnancy) during the pregnancy for their last live birth in the two years preceding the survey, during an ANC visit	22%	30%	26%	32%
Proportion of women who took any SP/Fansidar during the pregnancy for their last live birth in the two years preceding the survey	53%	59%	63%	63%
Proportion of women who took two or more doses of SP/Fansidar during the pregnancy for their last live birth in the two years preceding the survey	22%	31%	27%	33%

a. National Bureau of Statistics and ORC Macro. 2005. *Tanzania Demographic and Health Survey 2004–2005*. Dar es Salaam, Tanzania: National Bureau of Statistics and ORC Macro. <http://dhsprogram.com/pubs/pdf/FR173/FR173-TZ04-05.pdf>.

b. Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), Office of Chief Government Statistician (OCGS), and Macro International Inc. 2008. *Tanzania HIV/AIDS and Malaria Indicator Survey 2007–08*. Dar es Salaam, Tanzania: TACAIDS, ZAC, NBS, OCGS, and Macro International Inc. <http://www.nbs.go.tz/tnada/index.php/catalog/9/download/16>.

c. National Bureau of Statistics (NBS) and ICF Macro. 2011. *Tanzania Demographic and Health Survey 2010*. Dar es Salaam, Tanzania: NBS and ICF Macro. <http://dhsprogram.com/pubs/pdf/FR243/FR243%5B24June2011%5D.pdf>.

d. Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), Office of Chief Government Statistician (OCGS), and ICF International. 2013. *Tanzania HIV/AIDS and Malaria Indicator Survey 2011–12*. Dar es Salaam, Tanzania: TACAIDS, ZAC, NBS, OCGS, and ICF International. <http://dhsprogram.com/pubs/pdf/AIS11/AIS11.pdf>.

Great strides have been made in improving usage of ITNs for both pregnant women and children through the Tanzania National Voucher Scheme or *Hati Punguzo* program. This program was launched in October 2004 by the Ministry of Health and Social Welfare (MoHSW) to provide vouchers to subsidize the price of ITNs for all pregnant women and infants attending health facilities. On the other hand, improvement has been poor in uptake of two or more doses of SP for IPTp, only increasing by 10 percentage points during an eight-year interval.

The low level of increase in IPTp uptake may be tied to relatively poor attendance at multiple ANC visits and late attendance at ANC, as measured by median months of pregnancy at first ANC visit: 5.6 months in 1991³ and 5.4 months in 2010.⁴ The median month of attendance of the first ANC visit has not changed in the last 10 years and remains later than optimal for the first two doses of SP. In the 2010 DHS, 50% of respondents (women aged 15–49 years who had a live birth in the five years preceding the survey) reported being four to five months pregnant at the time of their first ANC visit.⁵

³ Bureau of Statistics and Macro International Inc. 1997. *Trends in Demographic, Family Planning, and Health Indicators in Tanzania*. Calverton, MD: Bureau of Statistics and Macro International Inc. <http://dhsprogram.com/pubs/pdf/TR06/TR06.pdf>.

⁴ National Bureau of Statistics (NBS) and ICF Macro. 2011. *Tanzania Demographic and Health Survey 2010*. Dar es Salaam, Tanzania: NBS and ICF Macro. <http://dhsprogram.com/pubs/pdf/FR243/FR243%5B24June2011%5D.pdf>.

⁵ National Bureau of Statistics (NBS) and ICF Macro. 2011. *Tanzania Demographic and Health Survey 2010*. Dar es Salaam, Tanzania: NBS and ICF Macro. <http://dhsprogram.com/pubs/pdf/FR243/FR243%5B24June2011%5D.pdf>.

Another factor influencing the slow increase in uptake of IPTp2 (second dose of IPTp) is stock-outs of SP in health facilities. Factors that have contributed to the stock-outs include poor ordering and forecasting at the facility level, lack of communication between ANC clinics and pharmacy departments on routine needs, SP for IPTp being provided free of charge to ANC clients but the facility being charged by the Medical Stores Department (MSD) for procurement, the regional MSD not providing adequate amounts to the facilities, and national-level stock-outs.

WORLD HEALTH ORGANIZATION AND TANZANIA MALARIA MONITORING AND EVALUATION RECOMMENDATIONS

In October 2012, the WHO updated its policy recommendation on IPTp-SP in an effort to increase access to the intervention during ANC in all sub-Saharan African areas with moderate-to-high malaria transmission.⁶ WHO urged national authorities to disseminate the new guidance and ensure that it is implemented correctly. Additionally, WHO recommends key indicators for MIP monitoring at output, outcome, and impact levels (see Table 2).

Table 2. WHO-recommended indicators to be used for monitoring MIP

OUTPUT INDICATORS	<ul style="list-style-type: none"> ▪ Percentage of ANC staff (pre-service, in-service, or at supervisory visits) trained in control of MIP in the past 12 months (including IPTp, counseling on long-lasting insecticide-treated net [LLIN] use, and case management for pregnant women) ▪ Percentage of health facilities reporting stock-outs of the recommended drug for IPTp (currently SP) in the past month
OUTCOME INDICATORS	<ul style="list-style-type: none"> ▪ Percentage of pregnant women receiving IPTp under direct observation (first dose, second dose, third dose, according to national guidelines) ▪ Percentage of pregnant women who report having slept under an LLIN the previous night
IMPACT INDICATORS	<ul style="list-style-type: none"> ▪ Percentage of low-birthweight singleton live births (< 2,500g) by parity ▪ Percentage of screened pregnant women with severe anemia (hemoglobin [Hb] < 7g/dl) in third trimester by gravidity

Adapted from Blouse, Ann. 2008. *Prevention and Control of Malaria in Pregnancy in the African Region: A Program Implementation Guide*. Baltimore, MD: Jhpiego. http://www.mchip.net/sites/default/files/Malaria_ImpGuide_web_0.pdf.

During the writing of this report, the NMCP disseminated a final draft of the *Malaria Strategic Plan* for the period 2014–2020 to stakeholders for approval; the plan was expected to be approved in early 2014. The new plan addresses MIP in the third strategic approach of the second component of the strategic plan chapter: malaria diagnosis, treatment, preventive therapies, and vaccine. The new Strategic Plan seeks to reduce vulnerability to malaria infection and its complications among specific at-risk populations, including pregnant women. The focus of the strategy will be to increase the number of women accessing IPTp2 through

- improved management of the SP supply chain,
- IPTp administration at each scheduled ANC visit,
- training and supervision to improve capacity of health care providers, and
- improved frequency of ANC attendance.

NMCP has recently completed an exercise to review the *National Guidelines for Malaria Diagnosis and Treatment* 2013. The guidelines have been validated by stakeholders and now await the chief medical officer’s final sign-off before mass reproduction and dissemination. Guidelines specific to MIP are in the Management of Malaria, in chapter 7, “Special Situations and Groups.”

⁶ World Health Organization and Global Malaria Programme. 2012. *Updated WHO Policy Recommendation (October 2012): Intermittent Preventive Treatment of Malaria in Pregnancy Using Sulfadoxine-Pyrimethamine (IPTp-SP)*. http://www.who.int/malaria/iptp_sp_updated_policy_recommendation_en_102012.pdf.

Methods

DESK REVIEW

For each country review, MCHIP field offices collected HMIS forms. A content analysis was done on these forms to determine what was being monitored and reported related to MIP. Second, in each country, a review was conducted of national policies, strategies, and guidelines with information related to MIP M&E, as well as technical reports, publications, and Web materials related to MIP. The following documents were reviewed:

Reports and Strategic Documents

- *National Malaria Control Program Monitoring and Evaluation [NMCP M&E] Plan 2008–2013*⁷
- *National Guidelines for Diagnosis and Treatment of Malaria* (2006)⁸
- *National Malaria Strategic Plan 2014–2020*, draft document 2.3
- *National Guidelines for Malaria Diagnosis and Treatment* 2013, draft document 25, November 2013
- “Harmonization of RCH [Reproductive and Child Health] M&E Framework to RCH HMIS Data Collection Tools,” report from meeting held 14–16 December 2009
- *PMI Malaria Operational Plan FY 2013*⁹
- Focused Antenatal Care Malaria and Syphilis in Pregnancy, Antenatal Care Quality Improvement Tool (July 2013), using the Standards-Based Management and Recognition (SBM-R[®]) process
- *The National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania, 2008–2015*¹⁰
- *Health Sector Strategic Plan [HSSP] III: July 2009–June 2015*¹¹
- Pwani HMIS Pilot, HMIS Indicator Revision Team, September 2010, Maternal Health Indicators and Data Dictionary

Tools

- HMIS Instruction Manual
- ANC register, tally form, and monthly summary form
- Outpatient department (OPD) register, tally form, and monthly summary form
- Inpatient department (IPD) register, tally form, and monthly summary form
- ANC client card

⁷ United Republic of Tanzania Ministry of Health and Social Welfare. 2010. *National Malaria Control Program Monitoring and Evaluation Plan 2008–2013*. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Tanzania/monitoring_evaluation_plan_2008-2013.pdf.

⁸ United Republic of Tanzania Ministry of Health and Social Welfare. 2006. *National Guidelines for Diagnosis and Treatment of Malaria*. <http://apps.who.int/medicinedocs/documents/s19271en/s19271en.pdf>.

⁹ President’s Malaria Initiative. *Tanzania Malaria Operational Plan FY 2013*. http://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy13/tanzania_mop_fy13.pdf?sfvrsn=8.

¹⁰ United Republic of Tanzania Ministry of Health and Social Welfare. 2008. *The National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania, 2008–2015*. <http://www.who.int/pmnch/countries/tanzaniamapstrategic.pdf>.

¹¹ United Republic of Tanzania Ministry of Health and Social Welfare. *Health Sector Strategic Plan III: July 2009–June 2015*.

<https://extranet.who.int/nutrition/gina/sites/default/files/TZA%202009%20Health%20Sector%20Strategic%20Plan%20III.pdf>.

- Death register
- NMCP health facility monthly summary form
- DHIS 2—ANC monthly summary form
- DHIS 2—malaria monthly summary form

KEY INFORMANT INTERVIEWS

Key informant interviews were conducted at the facility level, district level, and national level to understand the HMIS strengths and weaknesses with respect to MIP information. Heads of departments and M&E focal people at NMCP, HMIS, Reproductive and Child Health Section (RCHS), PMI, USAID, and WHO were all interviewed. For a more practical understanding of implementation and how data are collected, reported on, and reported back, a site visit to a health facility and a district hospital was used to facilitate more in-depth information on the reporting system. District focal persons and health care providers tasked with recording and reporting were all interviewed. Specific questions developed to guide the HMIS desk review and key informant interviews are included in Annex 1. The list of persons interviewed is included in Annex 2.

Findings

HEALTH MANAGEMENT INFORMATION SYSTEM STRUCTURE AND FUNCTION

Tanzania's HMIS, also known as *Mfumowa Taarifaza Uendeshajiwa Hudumaza Afya* (MTUHA), was established in the late 1980s to collect and report on routine health service provision from service delivery points. The system became nationally operational in 1997. The HMIS is the system used in the health sector to collect routine data from all health facilities.

For years, the routine data collected through HMIS have had a number of limitations, including inaccuracy, incompleteness, delayed reporting, and poor data management. The HMIS unit, supported by vertical programs including the NMCP and RCHS, has undertaken ambitious efforts to improve both data quality and reporting.

In 2005, it was decided to use the District Health Management Information System (DHIS) for the electronic component of HMIS, with the objective of improving sharing and coordination of health and health-related information being collected by the HMIS for the sake of creating a functional national electronic database. DHIS 2 began as a Microsoft Access database in 2005 and was upgraded to a Web-based system in 2008.¹² With the refinement of the new HMIS tools (see next paragraph), once again in 2009 the online system was refined. The University of Dar es Salaam has provided technical support to the MoHSW in the development of Tanzania's DHIS 2 database, while other implementing partners have provided funding. As of January 2014, all districts had been trained and connected to DHIS 2. All data entry and reporting at district level will now be done using DHIS 2.

HMIS registers and monthly summary forms were revised and piloted in Pwani Region for two years, through the end of 2010. The purpose of the pilot was to receive feedback from health care providers who were using the tools for data entry and reporting. Their feedback was then used to refine the tools. The revised tools were rolled out beginning with six regions: Pwani, Lindi, Mtwara, Shinyanga, Dodoma, and Dar es Salaam. Rollout of the new HMIS registers to the six regions was complete in mid-2012, and then, after a final revision of the tools, nationally.

¹² DHIS 2 is being used as the primary HMIS in 30 countries across four continents. DHIS 2 helps governments in developing countries and health organizations to manage their operations, monitor processes, and improve communication. See <http://www.dhis2.org/>.

In 2012, in compliance with the 2009–2015 *HSSP*, an updated version of the HMIS was rolled out nationally. Two providers per dispensary, 10 per health center, and 20 per hospital—in all regions—were trained on the use of the newly updated HMIS client registers and monthly summary forms. Although the new tools had been launched, startup varied due to procurement and printing delays. Almost all facilities began using the new tools in August 2013; facilities in Mbeya region, however, faced a one-month delay and started using the tools in September 2013.

Through the rollout process, other gaps were identified. With the launch of new guidelines during the implementation stage, slight revisions of these tools have been discussed in a number of meetings.

System Structure, Training, and Implementation of DHIS 2

Selected representatives from each government level are trained in the DHIS 2 and assigned a username and password to access the database. Council Health Management Team (CHMT) members, regional and zonal coordinators, and responsible program managers at central level will all be trained in DHIS 2. More than one individual is trained from each level to share the workload and to anticipate absenteeism, such as leave. Access rights will vary by level; however, the district level will be the only one able to enter and edit data. All levels will be able to run pregenerated reports and view graphs through a dashboard system.

In theory, the position of district HMIS focal person was designed so that person could take on the responsibility of data entry, data cleaning, and data management. However, a budget line for the position was not preplanned and may vary from location to location. For example, the position of district HMIS focal person and malaria focal person is often assigned to an existing—probably overworked—CHMT member, district RCH coordinator (DRCHCo), or other health care worker. Some districts are assigning full time staff to these positions. In Kibaha district, the HMIS focal person is a member of the CHMT who was sent to study information systems and has now been assigned as a full-time HMIS focal person.

As mentioned above, routine service delivery data will continue to be paper based from the facility to the district. With time, more and more HMIS monthly summary forms will be added as modules into DHIS 2. Future plans include allowing implementing partners to have viewer rights to the DHIS 2; this, however, has yet to be implemented and is still under discussion.

As Tanzania's DHIS 2 is still fairly new, the HMIS team is expecting some problems that may need to be fixed in the months to come as more users enter data in the system. Computers and functioning Internet have been purchased for all districts through Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) resources.

MALARIA IN PREGNANCY INDICATORS IN NATIONAL PLANS, HEALTH MANAGEMENT INFORMATION SYSTEM REGISTERS, AND REPORTS

The 2008–2013 *Medium Term Malaria Strategic Plan [MTMSP]* has two core strategies and three supportive strategies. The first supportive strategy—Monitoring, Evaluation, Surveillance and Operational Research—has four targets.¹³ The *NMCP M&E Plan 2008–2013* presents the NMCP's M&E objectives; lists associated indicators, data sources, and frequency of collection; shows who is responsible; and includes an M&E action plan.¹⁴ The indicators in Table 3, all from the *M&E Plan*, correspond to the national *MTMSP 2008–2013* and have been adapted

¹³ United Republic of Tanzania Ministry of Health and Social Welfare National Malaria Control Programme. 2008. *Medium Term Malaria Strategic Plan 2008–2013*. <http://www.natnets.org/attachments/article/65/MTMSP%202008-2013.pdf>.

¹⁴ United Republic of Tanzania Ministry of Health and Social Welfare. 2010. *National Malaria Control Program Monitoring and Evaluation Plan 2008–2013*. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Tanzania/monitoring_evaluation_plan_2008-2013.pdf.

from the RBM Partnership *Guidelines for Core Population-Based Indicators*.¹⁵ Table 3 includes an exhaustive list of all MIP indicators mentioned in the following strategic documents:

- *NMCP M&E Plan 2008–2013*
- “Harmonization of RCH M&E Framework to RCH HMIS Data Collection Tools,” report from meeting held 14–16 December 2009
- *The National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania, 2008–2015*¹⁶
- *HSSP III: July 2009–June 2015*¹⁷

The *National Malaria Strategic Plan 2014–2020* and the *National Guidelines for Malaria Diagnosis and Treatment 2013* were excluded from the list as they were still under revision at the time this report was written.

Table 3. MIP indicators in national policy documents

INDICATOR	DOCUMENT	MEANS OF VERIFICATION
Vector control (ITN)		
Proportion of pregnant women and children under five sleeping under an ITN the night preceding the survey	<i>HSSP III 2009–2015</i>	THMIS
Proportion of pregnant women who slept under an ITN the night preceding the survey	<i>NMCP M&E Plan 2008–2013</i> <i>MTMSP 2008–2013</i>	<ul style="list-style-type: none"> ▪ THMIS ▪ DHS ▪ National Insecticide-Treated Nets (NATNETS) Programme
Proportion of pregnant women who slept under an ITN the night preceding the survey in household with at least one ITN <i>Denominator:</i> Total number of pregnant women surveyed in household owning at least one ITN	<i>NMCP M&E Plan 2008–2013</i>	<ul style="list-style-type: none"> ▪ DHS ▪ THMIS ▪ NATNETS
Behavior change communication and voucher system		
Proportion of pregnant women who received a voucher at first ANC visit	<i>NMCP M&E Plan 2008–2013</i>	<ul style="list-style-type: none"> ▪ DHS ▪ THMIS ▪ NATNETS ▪ Activity and supervision monthly monitoring report / participating partners
Proportion of pregnant women receiving ITN vouchers	“Harmonization of RCH M&E Framework” report 2009	HMIS
Number of vouchers redeemed by pregnant women	<i>NMCP M&E Plan 2008–2013</i>	Activity and supervision monthly monitoring report / participating partners
Proportion of women of childbearing age aware of importance of early attendance at ANC	<i>NMCP M&E Plan 2008–2013</i>	<ul style="list-style-type: none"> ▪ DHS ▪ THMIS ▪ NATNETS

¹⁵ Roll Back Malaria Partnership, MEASURE Evaluation, MEASURE DHS, USAID, UNICEF, World Health Organization, CDC, MACEPA. 2009. *Guidelines for Core Population-Based Indicators*. Calverton, MD: MEASURE Evaluation.

http://rbm.who.int/partnership/wg/wg_monitoring/docs/GuidelinesForCorePopulationFINAL9-20_Malaria.pdf.

¹⁶ United Republic of Tanzania Ministry of Health and Social Welfare. 2008. *The National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania, 2008–2015*. <http://www.who.int/pmnch/countries/tanzaniamapstrategic.pdf>.

¹⁷ United Republic of Tanzania Ministry of Health and Social Welfare. *Health Sector Strategic Plan III: July 2009–June 2015*.

<https://extranet.who.int/nutrition/gina/sites/default/files/TZA%202009%20Health%20Sector%20Strategic%20Plan%20III.pdf>.

INDICATOR	DOCUMENT	MEANS OF VERIFICATION
Proportion of respondents who know that malaria becomes more dangerous after a woman becomes pregnant	<i>NMCP M&E Plan 2008–2013</i>	<ul style="list-style-type: none"> ▪ THMIS ▪ NATNETS
IPTp		
Total number of pregnant women (denominator for IPTp indicators)	<i>NMCP M&E Plan 2008–2013</i>	HMIS / health facility sentinel surveillance
Proportion of women who received at least two doses of IPTp during their last pregnancy ^a	<i>MTMSP 2008–2013</i> <i>HSSP III 2009–2015</i> “Harmonization of RCH M&E Framework” report 2009 <i>NMCP M&E Plan 2008–2013</i>	<ul style="list-style-type: none"> ▪ THMIS ▪ DHS
Number of pregnant women who received IPTp1	<i>NMCP M&E Plan 2008–2013</i>	Health Facility Sentinel Surveillance / HMIS
Number of pregnant women who received IPTp2	<i>NMCP M&E Plan 2008–2013</i>	Health Facility Sentinel Surveillance / HMIS
Case management		
Number of rapid diagnostic test (RDT)-confirmed outpatient cases of malaria <5 years, 5+, pregnant women	<i>NMCP M&E Plan 2008–2013</i>	Health Facility Sentinel Surveillance / HMIS
Number of clinical inpatient cases of malaria <5, 5+, pregnant women	<i>NMCP M&E Plan 2008–2013</i>	Health Facility Sentinel Surveillance / HMIS
Standardized laboratory-confirmed malaria cumulative incidence per year (among children <5 years, 5+, and pregnant women)	<i>NMCP M&E Plan 2008–2013</i>	Health Facility Sentinel Surveillance / HMIS

a. NMCP M&E Plan 2008–2013 specifically words indicator as “Proportion of women who received at least two doses of IPTp during their last pregnancy **that led to a live birth within the last 2 years**” (emphasis added).

It is notable that the *NMCP M&E Plan* cites the total number of pregnant women as the denominator for IPTp indicators.¹⁸ The global recommendation is that number of first ANC visits is the denominator. Further, the globally recommended indicator is used at district level (see later section, “Use of Malaria in Pregnancy Data”).

Data from multiple sources are used to provide strategic information for malaria M&E. Data sources include

- standard monthly reports from the NMCP implementing partners and other government line ministries,
- routine reporting from national surveillance systems (HMIS / Integrated Disease Surveillance and Response [IDSR] / health facility–based sentinel surveillance),
- periodic household surveys (population based, national and subnational), and
- facility surveys.

Mainland Tanzania adopted the IDSR strategy in 1998 to strengthen surveillance of key infectious diseases. Central to the IDSR strategy is the integration of multiple existing surveillance and response systems and linking of surveillance, laboratory, and other data with public health action. IDSR is overseen by the epidemiology section in the MoHSW M&E department with funding from the Global Fund, CDC, and other partners. IDSR collects data on a number of priority diseases including cholera, bacillary dysentery, neonatal tetanus, polio,

¹⁸ United Republic of Tanzania Ministry of Health and Social Welfare. 2010. *National Malaria Control Program Monitoring and Evaluation Plan 2008–2013*. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Tanzania/monitoring_evaluation_plan_2008-2013.pdf.

measles, meningococcal meningitis, and malaria. For the NMCP, the purpose of the IDSR is to provide denominator data for measuring the proportion of cases so the NMCP can detect malaria epidemics and respond appropriately within two weeks of onset at the national level. The malaria form reports confirmed cases and deaths, disaggregated by age, monthly. This information is not disaggregated by pregnancy status.

Currently, the paper-based IDSR system is supposed to collect the following indicators:

- Number tested for malaria (disaggregated by under vs. over five years of age)
- Number positive for malaria (disaggregated by under vs. over five years of age)
- Number clinically diagnosed with malaria

However, the paper-based IDSR does not function optimally, despite being rolled out nationally. Many health facilities do not have the recording forms, and there is no designated person to compile the information in facilities or at the district level.

More recently, the epidemiology section has been working to roll out an electronic IDSR (eIDSR), which will be implemented through the newly rolled out DHIS 2. A pilot of eIDSR is currently taking place in Temeke district and will provide information on malaria cases on a weekly basis. A separate eIDSR initiative, implemented by RTI International with PMI support, has also been launched in three districts in the Lake Zone regions (Kagera, Mwanza, and Mara). This initiative is still part of the larger IDSR; scale-up is expected to be done in different stages.

Periodic Surveys

Impact and outcome indicators are principally made available through national representative surveys conducted by the National Bureau of Statistics: mainly the Tanzania DHSs, THMISs, and Tanzania Service Provision Assessments. These surveys are performed regularly at fixed intervals, usually every four to five years. They collect core impact and outcome indicators to assess long-term progress toward achieving the malaria control strategic objectives defined in the *NMCP M&E Plan*.¹⁹

Health Management Information System Content

The objective of the HMIS is to provide data for measuring/monitoring the following key impact MIP indicators over time:

- Standardized laboratory-confirmed malaria cumulative incidence per year among children less than a month, 1–11 months, under five years old, and five or older
- IPTp uptake among pregnant women
- Standardized crude laboratory-confirmed malaria death rate among children less than a month, 1–11 months, under five years old, and five or older

This information is reported annually through CHMTs and the Health Statistics Abstract. Data flow from the health facility level up to the central level, where they are compiled, analyzed, and reported. Health facility data are stored in a database at the epidemiology unit of the MoHSW. The NMCP and RCHS also receive informal reports directly from the districts and regions.

¹⁹ United Republic of Tanzania Ministry of Health and Social Welfare. 2010. *National Malaria Control Program Monitoring and Evaluation Plan 2008–2013*. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Tanzania/monitoring_evaluation_plan_2008-2013.pdf.

While the HMIS books were being revised, the M&E unit of the MoHSW decided to simultaneously improve the aggregate monthly summary, making it electronic through entry in DHIS 2. The routine DHIS 2 reports have been set up in the form of modules, each module specific to a service delivery or illness (e.g., ANC, malaria, family planning, labor and delivery). Each module collects monthly aggregate information for a few standardized key indicators being collected and reported nationally. There are currently 17 modules on DHIS 2 (see Box), 3 of which are in the process of being launched.

Presently only the malaria module includes information on medical supplies and stock-outs. All the modules aside from the malaria one are register-specific: that is, the ANC module reports information collected from the ANC register and the family planning module from the family planning register. In contrast, the malaria module draws information from five locations/registers: OPD, IPD, deaths, laboratory, and commodities. But MIP indicators are only being collected and reported under the ANC module. For a detailed breakdown of all the forms containing malaria indicators, please see Annex 3.

A national reporting system for capturing training information is not available, with the exception of family planning trainings, which have recently been collected through an RCHS-run family planning-specific database. There is the possibility that this database will be used to capture all national trainings in the future; however, it is still too early to assess how efficient the database really is. Please visit <http://www.rchs.go.tz/index.php/en> for more information.

The revised version of HMIS collects information on MIP at three service delivery sites: ANC, OPD, and IPD. Information for MIP as a cause of maternal death is also collected through death registers.

Box. Modules on the DHIS 2 database

1. Malaria
2. Family planning
3. ANC
4. Labor and delivery
5. OPD
6. IPD
7. Diarrhea Treatment Corner
8. Voluntary medical male circumcision
9. Population
10. Tracer medicine
11. Child health
12. Prevention of mother-to-child transmission of HIV
13. Postnatal case
14. Death registry
15. Gender-based violence—still new
16. Cervical cancer prevention—still new
17. Postexposure prophylaxis—still new

Paper tools now record cases of malaria confirmed by RDT and microscopy, as well as fever cases, as confirmation of clinical diagnosis can now be conducted in all facilities. The indicators of primary interest that were reviewed included those having to do with the three components of MIP control promoted by WHO:

- IPTp
- ITN use among pregnant women
- MIP case management with
 - RDTs and
 - artemisinin-based combination therapy (ACT)

The authors reviewed ANC client cards; ANC, OPD, and IPD registers; daily tally sheets; and monthly facility summary forms to closely determine how MIP indicators were being collected and reported. We also reviewed the facility death notification and report form. Table 4 summarizes the indicators collected through the HMIS. Tables 5 and 6 summarize key MIP and ANC data elements captured in HMIS registers and reports. More detailed results are summarized in Annexes 3 and 4.

Table 4. List of indicators being collected through HMIS

INDICATOR	SERVICE DELIVERY POINT / CLIENTS
1. Number of clients given ITN/LLIN vouchers	ANC client
2. Number of clients tested for malaria	ANC client
3. Number of clients tested for malaria with positive results	ANC client
4. Number of clients given IPT1	ANC client
5. Number of clients given IPT2	ANC client
6. MIP ^a	OPD and IPD client
7. Maternal cause of death: MIP	Deaths

a. Indicator number 6, MIP collected at OPD and IPD, is currently under discussion. Proposed changes have been discussed between HMIS and the NMCP as this indicator no longer satisfies NMCP needs.

Table 5. Indicators related to MIP prevention in HMIS tools

DOES THE TOOL HAVE A PLACE TO RECORD THE FOLLOWING INFORMATION?	ANC REGISTER (BOOK 6)	ANC DAILY TALLY FORM	ANC MONTHLY SUMMARY FORM	LABOR AND DELIVERY REGISTER	LABOR AND DELIVERY DAILY TALLY FORM	LABOR AND DELIVERY MONTHLY SUMMARY FORM
IPTp1	Yes (date recorded, col 16)	Yes	Yes	No	No	No
IPTp2	Yes (date recorded, col 16)	Yes	Yes	No	No	No
IPTp3+	No	No	No	No	No	No
ITN voucher	Yes (date recorded, col 16)	Yes	Yes	No	No	No
Malaria test done	Yes (first visit test, col 16)	Yes	Yes	No	No	No
Malaria test negative (all tests)	Yes (first visit test, col 16)	No	No	No	No	No
Malaria test positive (all tests)	Yes (first visit test, col 16)	Yes	Yes	No	No	No
Are instructions for completing the tool included inside the tool book?	Yes	No	No	Yes	No	No

Table 6. Other ANC indicators relevant to control of MIP

DOES THE FORM HAVE A PLACE TO RECORD THE FOLLOWING?	MATERNAL AND CHILD HEALTH CARD	ANC REGISTER	ANC MONTHLY REPORT
Are instructions for completing the form included?	No	No	No
ANC visit	All	Not recorded	First, follow-up, and fourth visits recorded
Gestation of pregnancy at visit (in weeks)	Recorded	Recorded	Gestational age <16 or 16+ weeks
Iron/folate given	Blank field for data element	Recorded # of iron and folate given separately	Recorded 90+ tabs of iron and folate together
Hb, packed cell volume recorded	Hb level recorded	Not recorded	# of women who were tested for Hb on first visit and Hb <8.5g/dl (anemia) on first visit
HIV testing done—pregnant woman	Not recorded	Recorded	Recorded

DOES THE FORM HAVE A PLACE TO RECORD THE FOLLOWING?	MATERNAL AND CHILD HEALTH CARD	ANC REGISTER	ANC MONTHLY REPORT
Prevention of mother-to-child transmission—on co-trimoxazole (prevention of opportunistic infections)	Recorded	Recorded	Recorded

DATA FLOW AND REPORTING PROCESS

Data Collection

When a pregnant woman attends ANC services, IPT1 and 2 and ITN voucher provision is entered on her ANC card. It is national policy that pregnant women are tested for malaria during first ANC visit. In theory, pregnant women tested and treated for malaria are recorded in a separate OPD register for ANC; however, at Mkoani Health Centre, ANC nurses explained that there is no place for recording the results of this test, so they use the IPT1 column to write in the results. The ANC register and tally form record the result of the malaria test on the first visit, whether an ITN voucher has been given, the date of IPT1, and the date of IPT2.

On their first visit to ANC, clients are referred to the laboratory, which is usually several meters away, for their malaria test. They return with the results, which are recorded on their ANC cards, in the ANC register, and on the ANC tally form. In large health centers and district hospitals, pregnant women with malaria-like symptoms, such as fever, are generally sent to the laboratory for a malaria test, then referred to the OPD if the test is positive. At the OPD, their details are entered into the OPD register and the women are also counted in the OPD tally form. The daily tally form records daily

- number of blood-slide positives,
- number of mRDT positives,
- number clinically diagnosed as having malaria, and
- number of MIP cases seen.

Pregnant women attending smaller health centers and dispensaries, where all services are likely to be provided in the same room, are sent to the laboratory, if present, or clinically diagnosed and treated in one place. The health worker in charge then records their information in the OPD register as above.

Limitations are experienced if the client does not know, or chooses not to tell her clinician, that she is pregnant (as pregnancy tests are not generally available in most health facilities).

Flow of Data Reported through the DHIS 2 Electronic Database System

Service delivery data flow in paper form from the facility to the district or council, specifically to the HMIS focal person. The reports are checked by CHMT members assigned to oversee M&E. These include the HMIS focal person, the DRCHCo, the district social welfare officer, and the district HIV/AIDS control coordinator. This team then enters the reports into the DHIS 2. Information can be accessed at other levels of the health system (e.g., regional and central) through this online information system. There are some routine data sources with MIP information that are not included in the national HMIS / DHIS 2 (e.g., training and supervision information). Please see Annex 4 for detailed explanation on the flow of reporting.

Routine service delivery data will continue to be paper based from the facility to the district. With time, more and more HMIS monthly summary forms will be added as distinct modules into DHIS 2. For example, the facility-level malaria report is sent to the district HMIS focal

person, who shares the report with the district malaria and Integrated Management of Childhood Illness (IMCI) focal person (DMIFP) for validation. The facility-level reports are then entered into the DHIS 2 malaria module. Before DHIS 2, the DMIFP would forward the report to the regional malaria and IMCI focal person, who in turn compiled the region's report and forwarded it to the NMCP M&E unit. Now, as time passes and information is entered into the DHIS 2 database, regional- and central-level staff with a username and password who have been trained in DHIS 2 will be able to view facility-level, district-level, regional-level, and national-level reports.

Malaria Monthly Aggregate Report

To address the substantial delay in receiving reports through HMIS, the NMCP created the malaria health facility summary form, which is compiled monthly. Until recently, the form was a parallel system of reporting, but it has now been integrated into the DHIS 2 and has been rolled out in approximately half of the country. The report is prepared by facility staff who fill out the forms using information recorded in the HMIS registers, as well as laboratory and pharmacy records. Approximately half of the regions have been trained on this new malaria monthly summary form. See Annex 5 for DHIS 2 malaria monthly summary forms.

In the malaria health facility summary form (see Annex 6: DHIS 2 Malaria Module), MIP is only recorded under subsection 1.(d)ANC (Malaria for Pregnant Women). All other subsections—OPD, Admission, Deaths, Laboratory—report malaria-related information but only disaggregate by sex (male and female) and by the following age categories: < 1 month, 1–11 months, 12–59 months, and 5 years and above). Section 3. Logistic Data for Malaria Commodities records SP availability.

MALARIA IN PREGNANCY DATA QUALITY

Data quality checks are theoretically carried out at all levels of reporting, with particular emphasis at facility and district levels. Mechanisms set up to improve data quality include the following:

- The practice of compiling reports at facility level, with at least two people responsible to have a final look at the report. Once satisfied, the person responsible (usually the section in-charge) signs off on the report.
- At district level, reports are delivered to the HMIS focal person. This person works with the M&E / DHIS 2 team to check completeness and reporting accuracy. The team follows up on missing reports or irregular data, usually by telephone.
- Another level of validation is during data entry: the DHIS 2 has in place predetermined minimum and maximum parameters for certain indicators.
- CHMT members visit the sites with problems during routine supportive supervision visits to rectify data entry and reporting errors.

The majority of facility staff interviewed did not report problems with data quality and felt they had adequate data for making decisions. Problems with accuracy and timeliness of reporting still remain due to several factors, including work overload, dependence on the submission of hard copies of reports, and poor understanding of indicators by facility workers.

The CHMT felt that the lag between training on the revised HMIS (which took place in July 2011) and provision of tools (in August 2012) was too long. The CHMT M&E / DHIS 2 team felt that data quality (including IPTp2 and LLINs) and completeness of reporting is an issue. The DRCHCo felt that there are too many clinical malaria diagnoses in spite of the shift in policy to confirm all malaria cases.

USE OF MALARIA IN PREGNANCY DATA

At district level, the M&E / DHIS 2 team (which includes the DRCHCo) generates charts and figures for some of the facilities and also presents summary information during CHMT meetings. Charts depicting ANC indicators by the quarter include the proportion of women given IPT1 and IPT2 as a proportion of number of clients attending first ANC visit. These charts are used to track pay for performance (P4P) indicators every six months; the proportion of clients given IPT2 is a P4P indicator and each facility has a six-month target. DRCHCos also use the RCHS reports to track SP availability and communicate with MSD. With the introduction of DHIS 2, reports and graphs can simply be downloaded and printed automatically.

At the national level, NMCP generates monthly summaries of the malaria reports that are sent in by regions. The monthly summary includes the number of pregnant women who test positive for malaria by mRDT or microscopy. Neither the number of women diagnosed with MIP nor maternal deaths due to malaria are reported in the NMCP monthly summary. The RCHS produces an annual report that is a compilation of annual zonal reports, which are in turn compiled from HMIS reports including the ANC and labor and delivery reports.

The HMIS Unit publishes the following reports annually:

- The health performance profile, which is an overview of progress made in the health sector against targets set in the *HSSP III*. Under reproductive health, the proportion of maternal deaths attributed to malaria is reported. The malaria section reports the proportion of mothers receiving two doses of SP during pregnancy and the proportion of pregnant women sleeping under a net.
- *Annual Health Statistical Tables and Figures* is a compilation of the HMIS monthly reports for the whole country. The latest version the authors could get, for the year 2009, was generated from an estimated 60–80% of all expected reports.²⁰

STOCK MANAGEMENT

SP commodities are purchased with MoHSW funding and are not part of the Global Fund budget. PMI was supporting distribution of SP commodities but is no longer doing any procurement, per its *Malaria Operational Plan FY 2013*.²¹

Commodities information collected includes stocks of ACTs, mRDTs, artesunate injections, SP tablets, and quinine injections and tablets. Nationally, the MSD receives directions from the NMCP, which provides the information on quantities of products, delivery schedules, and product specifications for procurement purposes. At the health facility level, a paper-based system is in place to collect patient and pharmaceutical inventory data on a routine basis. The Integrated Logistics System is used for managing various categories of health supplies in public dispensaries, health centers, and hospitals (including faith-based and not-for-profit organizations). These health facilities order quantities of each supply according to their needs and within their budgets. In addition, since September 2010, Tanzania has implemented the SMS [Short Message Service] for Life program, which was initially supported by the Novartis Foundation for Sustainable Development and, more recently, by the Global Fund. This program provides the district medical officer, the zonal and central MSDs, and the NMCP with weekly data on the stocks of essential malaria-related commodities (ACT and quinine) via text

²⁰ United Republic of Tanzania Ministry of Health and Social Welfare. 2009. *Annual Health Statistical Tables and Figures: Tanzania Mainland*. <http://www.moh.go.tz/index.php/resources/downloads/category/18-monitoring-evaluation?download=28:tanzania-health-statistical-tables-and-figure-2009>.

²¹ President's Malaria Initiative. *Tanzania Malaria Operational Plan FY 2013*. http://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy13/tanzania_mop_fy13.pdf?sfvrsn=8.

messaging sent from the health facility to a central database. It is planned that weekly data will also be reported on SP and mRDT, but this is still under discussion.

Although not solely focused on malaria, another SMS system more widely used is the ILSGateway, developed by the USAID Deliver project in collaboration with the MoHSW. This integrated logistical system allows for reporting of stock-outs and availability of safe motherhood and family planning essential drugs and malaria drugs (including SP and mRDT) at facilities including dispensaries, health centers, and hospitals. A focal person at every facility has been appointed to send the SMS on a quarterly basis. The MoHSW and MSD can then view reports using through a Web interface, using secured login and password access. ILSGateway is being implemented in over 5,000 facilities out of 7,090 in the country; private facilities are not included.

OTHER THEMES

Enabling Environment and Challenges in Service Provision

The Malaria Program Review (MPR) is a periodic joint program management process recommended by WHO for assessing progress and performance of country programs with the aim of improving performance and refining or redefining strategic direction and focus. The 2012 MPR attributed success in the process of implementing MIP interventions to effective collaboration between NMCP, RCHS, and the USAID-funded MAISHA (Mothers and Infants, Safe, Healthy, and Alive) program. MAISHA provides technical support for capacity development and national-level coordination. The partnership developed training materials and job aids, trained health workers, and conducted comprehensive supportive supervision to the health facilities. At the regional and district levels, malaria focal persons work closely with the RCH coordinators on implementation of MIP interventions at the facility and community levels. However, challenges do exist. For example, less than half (45%) of health workers had accessed the guidelines for IPTp.²²

The 2012 MPR suggests that successes are mitigated by challenges in ANC service delivery: low ANC attendance among pregnant women due to perceptions of quality and lack of informational activities on MIP at the community level. Late and irregular ANC attendance by pregnant women requires more efforts to create demand for quality ANC services and to advocate for safe motherhood initiatives (SMIs) through targeted behavior change communication / information, education, and communication interventions. The shortage of health care providers at ANC clinics, especially in the lower-level facilities, continues to be a major challenge. Frequent stock-outs of SP at ANC clinics hinder provision of quality focused ANC (FANC)/MIP services.

Data from PMI-supported sites have consistently shown that where stock-outs are less frequent, IPTp2 rates are remarkably higher than in facilities with frequent stock-outs. For example, in fiscal year 2011, IPTp2 rates in facilities with no stock-outs were 55% compared to the 37% overall IPTp2 rate.²³

Coordination of Reproductive and Child Health Section and National Malaria Control Program Units

Monitoring of MIP indicators is described in the M&E plans of the RCHS²⁴ and the NMCP.²⁵ These two entities in the MoHSW work with a range of stakeholders on M&E, surveillance, and

²² Ministry of Health and Social Welfare. 2013. *Tanzania Service Availability and Readiness Assessment (SARA) 2012*. Dar es Salaam, Tanzania: Ifakara Health Institute. http://ihi.eprints.org/2448/1/SARA_2012_Report.pdf.

²³ President's Malaria Initiative. *Tanzania Malaria Operational Plan FY 2013*. http://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy13/tanzania_mop_fy13.pdf?sfvrsn=8.

²⁴ United Republic of Tanzania Ministry of Health and Social Welfare, Reproductive and Child Health Section. 2015. "Key RCHS Monitoring and Evaluation Indicators." <http://www.rchs.go.tz/index.php/en/evaluation.html>.

²⁵ United Republic of Tanzania Ministry of Health and Social Welfare. 2010. *National Malaria Control Program Monitoring and Evaluation Plan 2008–2013*. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Tanzania/monitoring_evaluation_plan_2008-2013.pdf.

operations research activities. It is the understanding of both NMCP and RCHS that the NMCP provides technical guidelines for control and prevention of MIP, while RCHS oversees implementation of MIP interventions. However, in practice, both sections oversee some interventions. NMCP monitors case management interventions, including SP availability, and ITN distribution to ANC clients (this latter is currently done through Department for International Development [DfId]-supported partner MEDA). RCHS monitors IPTp and ITN distribution through the ANC report (see Table 4 for summary of indicators tracked).

As pointed out by several interviewees, previous lack of coordination between NMCP and RCHS on MIP strategy sometimes resulted in confusion at the implementation level. As a means of strengthening collaboration and improving coordination and communication, in 2013 the MIP Task Force, chaired by RCHS, specifically the SMI unit, was formed to help integrate MIP implementation and guide activities. The Task Force, which meets on a quarterly basis, includes RCHS, NMCP, and HMIS; donors WHO and PMI; and partners, including Jhpiego and Johns Hopkins University. As the USAID-supported MAISHA program draws to a close, it will be important to ensure a seamless transition to a new project and/or lead partner that can continue to support RCHS, NMCP, and HMIS in improving coordination for MIP data management.

Supportive Supervision

Supportive supervision by the CHMTs is supposed to take place on a quarterly basis; however, frequency of supervision visits depends on availability of funding for travel. Often, implementing partners support supervision visits, but are narrowly focused on the intervention area of interest. Tanzania is currently going through a process of revising and integrating its supportive supervision tools to be adopted by the CHMT members during their supportive supervision visits. The idea behind the integration of a comprehensive tool is to make better use of resources. Because the comprehensive tool is currently being discussed, the authors did not have a chance to confirm whether it would include components on malaria and data quality checking.

FANC SBM-R tools are used to improve the performance and quality of health services. These tools employ systematic, consistent, and effective utilization of operational performance standards as the basis for the organization and functioning of services; they also reward compliance with standards through recognition mechanisms. The FANC SBM-R tools, used nationally to supervise FANC as well as malaria and syphilis, do include a component on observation of correct procedures to follow for MIP as well as data quality checks.

At district level, interviewees reported that limited funds for supervision mean they now go quarterly instead of monthly to supervise facilities. On these trips, they typically have three hours to spend on each facility. They have not yet received the tools for integrated supervision. Rather, they depend more on the quality improvement activities carried out in partnership with Jhpiego to identify gaps and mentor facility staff.

Training in Malaria in Pregnancy

Information on training in MIP is only collected by implementing partners in keeping with their funding requirements. Until December 2011, for example, Jhpiego was reporting FANC trainings (which include a component of MIP) to PMI. All national trainings include a detailed clinical component, often some in-service practice sessions, and a very short session on data recording and reporting. With the closing of the USAID-supported MAISHA program and without strong on-the-ground leadership and a seamless transition to a new partner and/or project, the momentum driving MIP implementation and data management could be in jeopardy.

Discussion

STRENGTHS AND OPPORTUNITIES

There has been strong political commitment from the top level of the MoHSW to strengthen the national HMIS, which has resulted in improved collection of MIP indicators. During a review and updating of the HMIS (specifically the ANC and Labor and Delivery registers) in February 2014, recommendations were made for including IPTp3 and 4, as well as retaining the number of pregnant women tested for malaria and number of pregnant women tested for malaria who received positive results. The resulting sets of data elements were proposed as the newly revised ANC and Labor and Delivery registers and monthly reports and shared with the heads of the HMIS department and RCHS unit for final approval. Once the heads of department approve, the tools will be considered final.

During the same February 2014 revision meeting, recommendations were made to add a column specifically to document women's pregnancy status in the OPD and IPD registers, for the purpose of prompting providers to ask this question. Final versions of the proposed tools are still waiting to be shared with the working group making these recommendations, so it is unclear if these suggestions have been accepted.

It is unclear, once the tools have been finalized, when the revised tools will be made available at facility level, as supplies of old tools will need to be used up and printing and dispatch of new tools will need to be planned for. Further collaboration and communication is suggested with the MIP Task Force and the HMIS department to ensure continued harmonization between data collection tools and guidelines.

WEAKNESSES

Although improvements have been noted overall, some challenges in regard to data collection of MIP indicators remain. In the context of routine reporting, for example, a pregnant woman with malaria may show up at different service delivery points (ANC, IPD, OPD, or other), making it challenging to accurately count and report on all cases seen. In monthly summary aggregates, malaria treatment details are not systematically disaggregated by pregnancy status.

It was also noted that information on case management of pregnant women could be incomplete. In the OPD and IPD registers, there are no specific columns to prompt recording of pregnancy status. Although there is a special OPD/ANC register that records all pregnant women, women showing up after hours may not be reported or may only be recorded in the regular OPD register. Thus, there may be some underreporting of MIP in the OPD. In the IPD register, numbers for MIP are supposed to be compiled using patient charts and the ward register, but it is not clear whether this procedure is followed consistently. Furthermore, MIP is not being reported in the IPD summary form.

Routine surveillance data also do not disaggregate by pregnancy. The IDSR, which tracks malaria cases and malaria-related deaths, would need to be updated to enable this disaggregation; however, such an update is very unlikely. One NMCP official who reviewed and provided input on this report noted that the IDSR is generally used to capture intensity of malaria transmission and that MIP data should be collected through routine service delivery registers and reports. The official also noted that reporting MIP-related death is difficult as malaria is not often classified as a direct cause of death.

The new diagnosis and treatment guidelines will soon recommend more than two doses of IPTp (a maximum of five) to be given during ANC, while the revised ANC registers, which now allow recording of IPTp1 and 2, will soon be re-revised. Revisions to the ANC register, including those

changes made recently and referenced in the “Strengths and Opportunities” section, will require reprinting of tools, retraining of providers, and updating of the DHIS 2 ANC module. Similarly, labor and delivery registers and ANC cards will also have to be revised to accommodate the new guidelines for IPTp. Furthermore, training of health workers on HMIS tools should be developed, as current HMIS trainings do not have training and participant’s manuals, which leaves definitions of some indicators open to interpretation.

With the use of multiple systems of data collection in place—multiple SMS systems, population-based surveys, and routine data collection at multiple service delivery points—coordination remains tricky, but it is important that systems communicate to each other and that results are easily made available to both NMCP and RCHS.

RECOMMENDATIONS

With current revisions of key malaria strategic documents (the *National Malaria Strategic Plan 2014–2020* and the NMCP M&E Plan 2008–2013) and renewed coordination support between NMCP and RCHS through the MIP Task Force, this report comes at the right time to offer possible solutions.

The report has provided an overview of how MIP is currently being reported in Tanzania. Although multiple systems of data collection have been discussed, recommendations primarily focus on strengthening the routine national HMIS system, where there are many opportunities to improve availability of MIP data. These recommendations include the following:

Policy

- Although M&E for MIP is generally included in key policy documents, the *NMCP M&E Plan* notes that number of pregnant women is the denominator for IPTp indicators.²⁶ The global recommendation is that number of first ANC visits is the denominator. Further, the globally recommended indicator is used at district level, as described in the “Use of Malaria in Pregnancy Data” section of this report. To help eliminate these inconsistencies, it is recommended that indicator definitions reflect global recommendations and that these indicator definitions are used across all of the key policy and HMIS guidance, documents, and tools.

Coordination

Improve coordination between NMCP, RCHS, and partners in reporting MIP indicators.

- An essential aspect of coordination includes frequent communication and information sharing. Continue support for MIP Task Force meetings to regularly take place to continue and strengthen relationships between RCH, NMCP, and implementing partners in the field. Task Force meetings should continue to be used to discuss trends in MIP indicators, challenges encountered in reporting, and development of solutions. These meetings will be particularly important during the initial rollout of the revised tools.
- MIP Task Force meetings with implementing partners should also continue to be used as a forum to coordinate efforts between RCHS and NMCP and an opportunity to discuss overlapping reporting systems—such as SMS for Life and ILSGateway—and identify solutions to reduce burden on providers. Overlapping reporting systems add to the already high workload of health care providers, make poor use of resources, and may affect the quality and timeliness of reporting.

²⁶ United Republic of Tanzania Ministry of Health and Social Welfare. 2010. *National Malaria Control Program Monitoring and Evaluation Plan 2008–2013*. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Tanzania/monitoring_evaluation_plan_2008-2013.pdf.

Capacity Development

- Plan refresher training of health care providers and district officials on revised HMIS tools (including revised ANC and Labor and Delivery registers with revision accommodating the new IPTp guidelines) once they have been finalized and printed. It is important to consider the timing of tool distribution to health facilities when scheduling training so that trained providers can apply their learning straightaway after returning from training. During field visits, it was learned that a very long lag time between training and availability of tools in the facility greatly impacted provider confidence and accuracy of reporting.
- Strengthen the M&E training curriculum on MIP and other key indicators for use in in-service and pre-service education so that it is competency-based and includes practical sessions (from data collection through data entry to reporting and data use), assignments, and compulsory examination. Establishing a dedicated time for health care providers to focus solely on M&E could greatly improve confidence and competency of providers and improve quality of data being reported. It could also bring the system a step closer toward health care providers of all cadres understanding and using data for decision-making once posted in the field.
- Develop training manual and participants' manual for all MTUHA (HMIS) books, with clear and unambiguous definitions of indicators and explanation on how and where data can be collected. The manuals should also have a detailed explanation on the correct recording of IPTp2 (and other IPT doses when integrated into the HMIS) and LLINs, which the CHMTs felt are poorly reported. These manuals will potentially improve not only completeness but also quality and accuracy of reporting.
- Advocate for the creation of a district HMIS position with a standardized scope of work and job description. The creation of this position will allow for the MoHSW to plan for and channel funding specific to this position as well as to elicit discussion of early fundraising if funding is not available. The position will create a responsibility and accountability of reporting as well as facilitate support of data entry and closer supervision and coaching at facility level. The district HMIS staff's role would include ensuring updated tools are being distributed and received by facilities as well as ensuring quality data and data use of indicators on IPTp1–4, malaria testing, and treatment.

Strengthen the Health Management Information System

- Once the new MTUHA books have been finalized, confirm that MIP case management data are being collected and reported in monthly summary reports. One of the recommendations was to make sure that women's pregnancy status is captured and recorded clearly in the OPD/IPD tools in an assigned column and that the tools include IPT3 and 4. Moving forward, key steps to realizing this recommendation include the following:
 - Ensure tools reflect recent policy change.
 - If tools do reflect policy change, support capacity development of managers, technical staff, CHMT members, and health care providers.
 - If tools do not reflect policy change, continue advocating for inclusion of suggestions previously made.

Proposed indicators to appear in the malaria monthly summary report are listed in Table 7.

Table 7. Proposed indicators to appear in the malaria monthly summary report

	INDICATOR	NUMERATOR	DENOMINATOR
1	Percentage of ANC clients getting IPT1	Number of ANC clients receiving IPT1	Number of ANC 1 visits
2	Percentage of ANC clients getting IPT2	Number of ANC clients receiving IPT2	Number of ANC 1 visits
3	Percentage of ANC clients getting IPT3	Number of ANC clients receiving IPT3	Number of ANC 1 visits
4	Percentage of ANC clients getting IPT4	Number of ANC clients receiving IPT4	Number of ANC 1 visits
5	Percentage of ANC clients that receive an ITN/LLIN voucher	Number of ANC clients that received an LLIN	Number of ANC 1 visits
6	Percentage of ANC clients tested for malaria	Number of ANC clients with fever tested for malaria	Number of ANC 1 visits
7	Number of ANC clients with a confirmed MIP diagnosis	Number of ANC clients with a confirmed MIP diagnosis	N/A
8	Number of ANC 1 visits	Number of ANC 1 visits	N/A
9	Percentage of ANC providers trained in MIP	Number of ANC providers also trained in MIP	Number of ANC providers

- Currently, the malaria module and the ANC module are separate modules on DHIS 2, with different MIP indicators. Together with HMIS, explore ways to easily link the malaria and ANC module report in the DHIS 2 so that RCHS and NMCP staff can access both reports without difficulty.
- Once DHIS 2 has been smoothly implemented and is running nationally, plan for the introduction of data entry at facility level using mobile technology to export reports directly to the district level and into the DHIS 2 database. This would help in improving timeliness of reporting. If mobile technology is in use, validation systems could also be put in place to improve data quality. Awards for number of reports submitted per year could also motivate providers to systematically submit reports. Planning will include development of software and purchasing of mobile devices, airtime, and computers at facility level.
- Support MoHSW to monitor ANC providers trained in MIP to improve reporting on globally recommended indicator “Percentage of ANC providers trained in MIP.” Support will include defining standardized training topics tailored to country training materials and should include MIP prevention, MIP case management, and MIP data use. A database of health care providers will also be useful to generate lists of providers requiring refresher trainings.
- Support MoHSW to monitor number of health care providers trained in MIP by liaising with Zonal Health Resource Centers and using national training databases such as TrainSMART (Training System Monitoring and Reporting Tool). In addition, NMCP and RCHS should periodically review national curricula for pre-service training for health care providers to ensure that malaria content is up to date.

To review these findings, vet these recommendations, and mobilize resources to act upon them, it is recommended that country-level stakeholders—under the leadership of the NMCP and RCHS and including WHO, PMI, the United Nations Children’s Fund, and implementing partners—discuss the findings and stated recommendations of this report and identify and prioritize steps for moving forward.

Annex 1: Guiding Questions for Key Informant Interviews

Specific questions developed to guide the HMIS desk review and key informant interviews include the following:

- What forms, tools, registers, etc., are used to track service delivery related to MIP?
- Which indicators are actually collected and reported? Who collects them and to whom do they get reported?
- Are service delivery data tracked electronically or is tracking paper based?
- Are all MIP indicators captured through ANC? Or are there other registers?
- What Health Information System (HIS) is being used to report on MIP indicators? Is this integrated in the national system or is there a parallel system of reporting?
- Are MIP data reported through the routine HIS? Do separate reports with MIP data go to the RCHS of the MoHSW, the NMCP, the Global Fund, or other malaria partners?
- How complete and timely is reporting?
- Who is responsible for MIP M&E at each level of the health system?
- How are indicators summarized and analyzed at each level of the health system?
- Are there any data quality concerns about MIP data?
- What data quality improvement efforts have been undertaken by RCHS and/or NMCP? Have MIP data been a focus of data quality improvement efforts?
- How are MIP data used for national-level policy and programming decisions, if at all?
- Are there any opportunities to leverage the sentinel site surveillance system to include MIP indicators (IPTp, malaria diagnosis, treatment)?
- Are there any opportunities or plans to leverage pilot initiatives to strengthen M&E of MIP?
- At health facility level, explore the flow of care for a routine ANC visit and documentation of that care in client cards, registers, and reports to understand how ITN provision, use, and IPTp are documented.
- At health facility level, explore the flow of care for a pregnant woman suspected of malaria and documentation of that care in client cards, registers, and reports to understand where a woman may be seen for diagnosis, how she is diagnosed and treated, what treatment she receives, what ward she is admitted to, and whether the HMIS tools reflect the pregnancy status.

Annex 2: List of People Interviewed

NATIONAL LEVEL

NAME	ROLE/TITLE	ORGANIZATION (LEVEL)
Dr. Mohammed Ali	Program Manager	NMCP
Dr. Sigsbert Mkude	National Coordinator for Malaria Diagnosis and Treatment	NMCP
Dr. Renata Mandike	Deputy Program Manager	NMCP
Dr. Fabrizio Molteni	Technical Advisor Case Management Unit–NMCP	Swiss Tropical and Public Health Institute
Ana Mahendeka	Program Officer M&E Unit	NMCP
Dr. Koheleth Winani	Head of SMI	RCHS
Dr. Georgina Msemo	Acting Head	RCHS
Clement Kihinga	M&E Adviser	RCHS
Lynn A. Paxton	PMI Resident Adviser	PMI
Miriam Kombe	Project Management Specialist–Maternal, Neonatal, and Child Health	USAID
Chonge Kitojo	Project Management Specialist–Malaria	CDC
Mwakapeje	IDSR Focal Person	MoHSW
Enoch Anthony Muhehe	M&E Officer	HMIS Unit, MoHSW
Dr. Mnunugu	Administrator	M&E, HMIS Unit, MoHSW
Grace Qorro	Malaria Pre-Service Education Adviser	Jhpiego
Gaudiosa Tibaijuka	Senior Technical Manager	Jhpiego, MAISHA program
Frank Ntogwisangu	Senior Data Manager	Jhpiego, MAISHA program
Faustine Gabriel	Research Scientist and National HMIS trainer	Ifakara Health Institute
Dr. Alex Mwita	Acting Head, Global Fund Coordinating Unit	MoHSW
Dr. Ritha Njau	National Program Officer–Malaria	WHO

DISTRICT LEVEL

NAME	TITLE	DISTRICT
Allan Sayi	DRCHCo	Kibaha
Alfred Ndiguru	District HMIS Focal Person	Kibaha
Ali Bakari Shaha	DMIFP	Kibaha
Nazar Mkabara	ANC Nurse, Mkoani Health Centre	Kibaha
Alice Yona	ANC Nurse, Mkoani Health Centre	Kibaha
Happiness Haintish	In-Charge ANC, Mkoani Health Centre	Kibaha
Dr. Dattan	Facility In-Charge, Tumbi Specialist Hospital	Kibaha
Sister Malinda	Data Manager, Tumbi Specialist Hospital	Kibaha
Margareth Molele	In-Charge ANC, Tumbi Specialist Hospital	Kibaha

Annex 3: Indicators Related to Malaria in Pregnancy Case Management

DOES THE FORM HAVE A PLACE TO RECORD THE FOLLOWING INFORMATION?	OPD REGISTER (BOOK 5)	OPD DAILY TALLY REGISTER	OPD MONTHLY SUMMARY FORM	IPD REGISTER	IPD DAILY TALLY FORM	IPD MONTHLY SUMMARY	DEATH REGISTER AND REPORT
Completion instructions	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Asked if client currently has fever/malaria	No			No			
Temperature recorded	Yes (under tests taken)			Yes (under tests taken)			
Malaria testing	Yes (under tests taken)	No	No	Yes (under tests ordered, col 10)	No	No	
Malaria test negative (all tests)	Yes (test results col 11)	No	No	Yes (under test results, col 11)	No	No	
Malaria test positive (all tests)	Yes (test results col 11)	No	No	Yes (under test results, col 11)	No	No	
Malaria test positive—mRDT	Yes (test results col 11)	Yes	Yes	Yes (under test results, col 11)	Yes ^a	Yes ^a	
Malaria test positive—blood slide	Yes (test results col 11)	Yes	Yes	Yes (under test results, col 11)	Yes ^a	Yes ^a	
Malaria positive—clinical	Yes (col 12 diagnosis)	Yes	Yes	Yes (under test results)	Yes ^a	Yes ^a	
Malaria treatment given	Yes (under treatment given)	No	No	Yes (under treatment given, col 13)	No	No	
Referral for malaria treatment	Yes			Yes (under final outcome/comments, col 14)			
Pregnancy status	No (may be recorded under diagnosis)			Yes (first diagnosis, col 8, or final diagnosis, col 12)			
Diagnosis of MIP	Yes (col 12 diagnosis)	Yes	Yes	Yes (first diagnosis, col 8, or final diagnosis, col 12)	No	No	Yes

a. Age disaggregation: < one month; one month to < one year; one year to < five years; ≥ five years.

Annex 4: Flow of Data in the Health Management Information System / DHIS 2

	PAPER-BASED ROUTINE HMIS REPORTING SYSTEM	DHIS 2 REPORTING SYSTEM
Health facility level	<ul style="list-style-type: none"> ▪ Health care providers to complete client registers every time a service is provided ▪ Health care provider on duty during the first week of the month to compile monthly aggregates of services provided using information from the client registers ▪ Designated group of health care providers to check monthly reports for quality and sign off on final monthly reports before submitting to facility in-charge ▪ Monthly reports to be sent by facility in-charge to the district CHMT 	<ul style="list-style-type: none"> ▪ Following the same procedure as the paper based system: facilities to send aggregated paper-based monthly reports to the district CHMT
District level	<ul style="list-style-type: none"> ▪ Assigned district representative responsible for collecting monthly reports from all facilities in the district and conducting data quality checks ▪ ANC monthly reports are generally overseen by the DRCHCo; however, the HMIS focal person or other CHMT members available may perform this task. Responsibility of who oversees each report varies per district depending on staff shortages and absenteeism; however, reports must be overseen by a member of the CHMT. ▪ District representatives to manually aggregate monthly facility summaries to create a monthly district aggregated report 	<ul style="list-style-type: none"> ▪ Assigned district representative responsible for collecting monthly reports from all facilities to conduct data quality check ▪ DHIS 2-trained district representatives are responsible for entering monthly reports from all district facilities in the DHIS 2 database ▪ Once data are entered, district representatives are able to create graphs, run queries, and view facility-level and aggregated district data
Regional level	<ul style="list-style-type: none"> ▪ Assigned regional-level representative responsible for receiving monthly reports from all districts in the region and conducting data quality checks before compiling cumulative quarterly reports for the region ▪ Regional representatives to manually aggregate monthly district summaries to create a quarterly regional aggregated report 	<ul style="list-style-type: none"> ▪ Regional representatives trained in DHIS 2 are able to access and view district reports through DHIS 2
Central level	<ul style="list-style-type: none"> ▪ Assigned central-level representative to collect all aggregated quarterly reports from the regions and compile ad hoc and annual national report 	<ul style="list-style-type: none"> ▪ Central-level representative from different MOH departments, trained in DHIS 2, are able to view national data electronically by accessing DHIS 2 ▪ Only a select group from the HMIS department will hold all administrative rights to the database

Annex 5: Summary of Health Management Information System Tools

ANTENATAL CARE REGISTER: BOOK 6

A client's demographic characteristics are recorded once in the register at her first visit. For the second, third, and all other visits, the provider is supposed to trace back the client (by her name or client number) and fill in other services provided at that visit in the same column previously used for the first entry.

ANC register: Book 6

COLUMN	COLUMN HEADING	RESPONSE REQUESTED	NOTES
16	Malaria testing	Positive/Negative	Test only given on the first visit If identified positive, woman should receive treatment If identified negative, should be given SP as IPTp depending on the gestation of the pregnancy
	Given ITN/LLIN voucher	Yes/No	Leave blank until the woman receives a voucher
	IPT1	Date	SP started from the 20th week
	IPT2	Date	Given four weeks after the first dose

ANC monthly summary form

INDICATORS BEING COLLECTED		DISAGGREGATION	LOCATION INFORMATION IS BEING COLLECTED
6a	Number of clients given ITN/LLIN vouchers	<ul style="list-style-type: none"> ▪ Women under 20 years ▪ Women 20 years of age and above 	<ul style="list-style-type: none"> ▪ Paper-based monthly summary forms ▪ ANC DHIS 2 module
6b	Number of clients tested for malaria		
6c	Number of clients tested for malaria with positive results		
6d	Number of clients given IPT1		
6e	Number of clients given IPT2		

Labor and delivery register: Book 12

COLUMN	COLUMN HEADING	RESPONSE REQUESTED	NOTES
13	Problems before delivery	Unprompted: Malaria	It is not clear if with malaria or had malaria at any stage during the pregnancy
23	Mothers' health	Dead/Alive	After speaking to health care providers, doctors certify the cause of death where it took place
		Date of release	
		Reason for death	

Labor and delivery monthly summary

COLUMN	COLUMN HEADING	RESPONSE REQUESTED
4f	Number of women with problems before delivery (malaria)	Alone and as a total of other area of interest (antepartum hemorrhage, preterm rupture of the membranes, high blood pressure, etc.)

OUTPATIENT DEPARTMENT: BOOK 5

Monthly summary

INDICATOR	DISAGGREGATION	LOCATION INFORMATION IS BEING COLLECTED
Malaria blood slide positive	First disaggregation: <ul style="list-style-type: none"> ▪ Under one month ▪ One month up to less than one year ▪ One year up to less than five years ▪ Five years and above Second disaggregation: <ul style="list-style-type: none"> ▪ Male/female 	Paper based + DHIS 2
Malaria mRDT positive		Paper based + DHIS 2
Malaria clinical (no test)		Paper based + DHIS 2
MIP		Paper based + DHIS 2

Limitations:

- Clinician has to ask the woman if she is pregnant
- Woman has to know she is pregnant
- Woman has to tell the clinician she is pregnant
- Not reported in a separate column but added as a note under “Diagnosis”

INPATIENT DEPARTMENT: BOOK 14

Monthly summary form

INDICATOR		DISAGGREGATION	LOCATION INFORMATION IS BEING COLLECTED
Malaria Severe/Complicated	Blood slide positive	First disaggregation: <ul style="list-style-type: none"> ▪ Under one month ▪ One month up to less than one year ▪ One year up to less than five years ▪ Five years and above Second disaggregation: <ul style="list-style-type: none"> ▪ Male/female 	Paper based + DHIS 2
	mRDT positive		Paper based + DHIS 2
	Clinical (no test)		Paper based + DHIS 2

DEATH REGISTER: BOOK

Also captures following characteristics:

- Date of death
- ID number
- Name
- Age
- Gender

Cause of death	<ul style="list-style-type: none"> ▪ Communicable/Notifiable Diseases ▪ Malaria simple confirmed ▪ Malaria severe confirmed ▪ Malaria presumptive ▪ Maternal deaths ▪ MIP
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DHIS 2

Malaria module—monthly summary

INDICATOR		DISAGGREGATION
OPD	Total OPD attendance	First disaggregation: <ul style="list-style-type: none"> ▪ Under one month ▪ One month up to less than one year ▪ One year up to less than five years ▪ Five years and above Second disaggregation: <ul style="list-style-type: none"> ▪ Male/female
	Clinical Malaria (not tested)	
	Malaria (mRDT+)	
	Malaria (Blood slide+)	
	Anemia Mild/Moderate	
	Anemia Severe	
IPD	Total admissions	
	Clinical Malaria (not tested)	
	Malaria (mRDT+)	
	Malaria (Blood Slide+)	
	Anemia Mild/Moderate	
	Anemia Severe	
Deaths	Total deaths	
	Clinical Malaria (not tested)	
	Severe Malaria confirmed	

ANTENATAL CARE MODULE

MIP indicators being collected in the ANC monthly summary forms

INDICATOR	DISAGGREGATION
Malaria (mRDT / blood slide+)	<ul style="list-style-type: none"> ▪ Under 20 years of age ▪ 20 years of age and above
Total malaria test	
Number given ITN voucher	
Number given IPT1	
Number given IPT2	

Annex 6: DHIS 2 Malaria Module

NMCP: Health facility monthly summary

1.MALARIA CASES, DEATHS, AND ANTENATAL CLINIC (SERVICE DATA)								
Age & Sex / Cases & Tests	<1 month		1-11 months		12-59 months		5 years and above	
	M	F	M	F	M	F	M	F
1.(a)OPD								
Total OPD Attendance								
Clinical Malaria(Not Tested)								
Malaria(mRDT+)								
Malaria(Blood smear+)								
Anemia, Mild/Moderate								
Anemia, Severe								
1.(b)Admission								
Total Admission								
Clinical Malaria(Not Tested)								
Malaria(mRDT+)								
Malaria(Blood smear+)								
Anemia, Mild/Moderate								
Anemia, Severe								
1.(c)Deaths								
Total Death								
Clinical Malaria(Not Tested)								
Severe Malaria Confirmed								
1.(d)ANC (Malaria for Pregnant Women)								
Malaria Tested								
Malaria(mRDT/Blood smear+)								
2.LABORATORY								
Total mRDT Tests								
Malaria(mRDT+)Pf								
Malaria(mRDT+)Pf& Pan								
Malaria(mRDT+)Pan								
Total Blood Slides								
Malaria(Blood smear+)								

3.LOGISTIC DATA FOR MALARIA COMMODITIES						
Commodity	Unit	Quantity				
		Beginning Balance	Received	Issued	Adjustment/ Loss	Balance on hand
ALUStocks:6s(Yellow)	Strips					
ALUStocks:12s(Blue)	Strips					
ALUStocks:18s (Red/Pink)	Strips					
ALUStocks:24s(Green)	Strips					
mRDT	Tests					
Artesunate Injection	Vials					
Quinine Injection	Ampoule					
Quinine Tablets	Tablet					
Other Recommendations– Malarials, specify						
SP	Tablet					

