

## ABBREVIATIONS

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ACT	Artemisinin-based combination therapy
ANC	Antenatal care
CDC	U.S. Centers for Disease Control and Prevention
CL	Confidence limits
CSPro	Census and Survey Processing System
Deft	Design effect
DHS	Demographic and Health Surveys
EA	Enumeration area
FDA	U.S. Food and Drug Administration
GHPC	General Household and Population Census
GIS	Geographic information system
GPS	Global Positioning System
HBV	Hepatitis B virus
HH	Household
HIV	Human immunodeficiency virus
HQ	Household Questionnaire
IPT	Intermittent preventive treatment
IRS	Indoor residual spraying
ITN	Insecticide-treated net
LLIN	Long-lasting insecticidal net
M&E	Monitoring and evaluation
MARA	Mapping Malaria Risk in Africa
MERG	Monitoring and Evaluation Reference Group
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
NMCP	National malaria control program
OSHA	U.S. Occupational Safety and Health Administration
PDA	Personal digital assistant
PET	Prompt, effective treatment
RDT	Rapid diagnostic test
RBM	Roll Back Malaria
RSE	Relative standard error
SP	Sulfadoxine-pyrimethamine
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
VIP	Ventilated improved pit



## INTRODUCTION

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To provide a coordinated global approach to fighting malaria, the Roll Back Malaria (RBM) Partnership was launched in 1998 by numerous global partners. Controlling malaria has contributed significantly to the United Nations (UN) Millennium Development Goals, which all 191 UN Member States pledged to achieve by 2015, and will continue significant contribution to the Sustainable Development Goals, adopted by the UN sustainable development summit of September 2015 Heads of States and Governments. Beyond reducing disease burden, a successful fight against malaria will have a far-reaching positive effect on child mortality, maternal health, and poverty, which in turn may increase global stability. Regarding the overall burden of malaria and coverage of RBM's key interventions, RBM partners are committed to sound, evidence-based approaches in documenting progress towards key targets and indicators.

In 2002, the RBM Monitoring and Evaluation Reference Group (MERG) was established to act as an advisory body for the RBM Partnership Board on all matters pertaining to monitoring and evaluation of RBM initiatives at the international, regional, and national levels. The MERG has been providing technical advice on state-of-the-art approaches for the monitoring and evaluation of malaria programs. Relative to measurement of key targets and indicators, one focus of the MERG has been on assessing core indicators to ensure consistency and accuracy in national and regional reporting. Further, the MERG is guided by the overall commitment of the RBM partners to i) partnership and capacity building; ii) harmonization, accountability, and transparency in scaling-up actions; and iii) bridging the gaps between technical and programmatic support needs at the country level.

Following these principles, the RBM MERG Survey and Indicator Guidance Task Force arranged for the development of *Malaria Indicator Survey (MIS) Basic Documentation for Survey Design and Implementation*—a comprehensive package of tools for providing guidance in carrying out household-level surveys relevant for assessing core malaria indicators. Specifically, the questionnaires were designed to assess the core household indicators outlined in RBM's *Household Survey Indicators for Malaria Control* revised in September 2012.<sup>1</sup> Nationally representative, population-based sample surveys are a principal measurement tool required to collect the necessary data for constructing all 11 outcome indicators and three impact indicators. Three large survey efforts that currently collect data on these indicators are the Demographic and Health Surveys (DHS), the Multiple Indicator Cluster Surveys (MICS), and the Malaria Indicator Survey (MIS).

Household surveys are especially relevant in many malaria endemic settings for measuring coverage of interventions that primarily target the household level, such as insecticide-treated nets (ITNs), and for understanding patterns of diagnostic testing and antimalarial use among target populations, especially in areas where antimalarial treatment and prevention may occur outside the formal health sector.

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<sup>1</sup> Roll Back Malaria, MEASURE Evaluation, USAID, UNICEF, World Health Organization, MACEPA, CDC. *Household Survey Indicators for Malaria Control*. Calverton, Maryland: MEASURE Evaluation.

The MIS package contains a series of guidelines, questionnaires, recommended tabulations, and relevant manuals to assist those conducting household-level malaria surveys. These recommendations are based on field-tested questions and methods and represent the combined experience of RBM MERG Survey and Indicator Guidance Task Force agencies including Centers for Disease Control (CDC), Clinton Health Access Initiatives (CHAI), The Demographic and Health Surveys Program, The Global Fund to Fight AIDS, Tuberculosis and Malaria, Johns Hopkins Center for Communications Programs, KEMRI, MACEPA, Malaria Consortium, MEASURE Evaluation, PATH/Malaria Care, United States Agency for International Development (USAID), UNICEF, University of Oxford- Wellcome Trust, World Bank, and World Health Organization (WHO).

The MIS package contains additional recommendations for issues, such as measuring coverage of indoor residual spraying (IRS), anemia and malaria testing in survey field conditions, as well as guidance on integrating geocoding into survey sampling and data collection.

This package of tools is relevant for RBM partners and stakeholders engaged in monitoring and evaluation of malaria programs, particularly those conducting or with an interest in conducting household surveys. At the country level, national malaria control program (NMCP) authorities are the primary stakeholder in malaria monitoring and evaluation activities and use data and information gathered through these activities to plan and manage the program, and close collaboration with NMCP authorities is crucial for successful implementation of the MIS package of tools. In particular, NMCP input is needed in the refinement of questionnaires related to net branding and national antimalarial treatment policy. Results from coverage assessments and impact measures are important for evaluating overall malaria control efforts and for understanding where further targeting of interventions is appropriate. Dissemination of results among stakeholders is also important for advocacy and further resource mobilization.

Essential to any successful, large-scale survey is the involvement of experienced survey practitioners and survey statisticians. Adequate skills in survey design and conduct are often found within countries in central bureaus of statistics, in universities, or in other agencies experienced in survey work. The MIS package is designed to assist those with existing experience in designing and conducting household surveys to assess and present malaria-relevant indicators in a standardized manner. Further, the questionnaires and tabulation plans developed for the MIS contain the minimum recommended methods and wording for understanding the core indicators that are relevant for RBM partners, including National Malaria Control Programs (NMCP). It is expected that agencies conducting the MIS will consider including additional questions and tabulations as necessary for measuring progress towards additional national or local targets.

Effective survey data management is important to ensure quality and timely results. Data management incorporates skilled data managers with robust software packages for entering, cleaning, and tabulating survey results. Within countries, skills for survey data processing and management may be available within central bureaus of statistics,

universities, or private agencies. Many public domain software packages are available for use and integration with the MIS survey, making effective data management for the MIS survey more affordable. These software packages include Epi Info<sup>2</sup> and the Census and Survey Processing System (CSPro).<sup>3</sup>

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<sup>2</sup> Centers for Disease Control and Prevention. 2015. Epi Info (Version 7.1.5). Available at <https://wwwn.cdc.gov/epiinfo/7/index.htm>.

<sup>3</sup> U.S. Census Bureau, ORC Macro, and Serpro. 2015. Census and Survey Processing System (CSPro) (Version 6.1). Available at <https://www.census.gov/population/international/software/cspro/csprodownload.html>

## Overview of the MIS Package

The MIS package contains several components that are relevant for designing and conducting surveys, as well as recommendations for presentation of survey results. These include detailed questionnaires for assessing the core malaria indicators, a rationale for questions, and select data tabulation recommendations. The MIS package also contains many procedural manuals for survey design and sampling, interviewer techniques and training, and overall survey supervision. This section provides a brief overview of each component.

### *Core Components*

Consistency in the methods, wording of questions, and presentation of results is *essential* for national, regional, and global comparisons of results and determination of progress. Additional questions may be added as needed by local program efforts, but it is imperative that the recommended questions and data tabulations for the recommended indicators remain unchanged for all planned MIS surveys.

#### HOUSEHOLD, BIOMARKER AND WOMAN'S QUESTIONNAIRES

The Household, Biomarker and Woman's Questionnaires contain the recommended wording, skip patterns, interviewer instructions, and respondent details necessary for conducting household interviews. The Household Questionnaire contains basic demographic information, a complete listing of household residents and visitors, a record of selected household assets, suggested questions for measuring IRS coverage, and the recommended net roster for recording ITN possession and use. Hemoglobin measurements for assessing anemia status and malaria parasitemia measurements for assessing malaria infection are recorded in the Biomarker Questionnaire.

The Woman's Questionnaire includes information on characteristics for women between the ages of 15 and 49 years as well as questions for recording a recent birth history, pregnancy status, and use of intermittent preventive treatment with sulfadoxine-pyrimethamine during pregnancy. The Woman's Questionnaire is also designed to collect information from each woman interviewed about her children under age five. This includes information on care seeking, diagnostic testing and access to prompt treatment with antimalarials for children with reported fever.

#### RATIONALE

The rationale explains in broad terms the various sections of the Household, Biomarker and Woman's Questionnaires and the reasons for including each section. For example, questions about basic household assets are useful for calculating an asset-based household wealth index, which can be divided into wealth quintiles to analyse malaria-related inequities. Possession and use of ITNs are most efficiently and reliably assessed through a mosquito net roster linked to the listing of household residents.

## INTERVIEWER'S MANUAL

This manual explains to interviewers how to do their job. The manual includes information about implementation of the survey, training activities, and fieldwork procedures. It details interview techniques and procedures for completing the questionnaires.

## SUPERVISOR'S MANUAL

This manual explains to field supervisors how to do their jobs. This is a “model” manual that reflects the standard MIS protocol for how to organize and implement the survey. Responsibilities of field supervisors, ensuring the availability of necessary training and fieldwork materials, organizing and overseeing interviewers and interviewer fieldwork, and monitoring interviewer performance are discussed in detail.

## GUIDELINES FOR THE MALARIA INDICATOR SURVEY INTERVIEWER TRAINING

This document provides general guidelines for organizing and conducting the training of the field staff. The Interviewer's Manual, which contains more detailed discussion of specific elements of the questionnaire and fieldwork procedures, also should be used during training. These guidelines are intended to establish a standard approach to MIS data collection.

## HOUSEHOLD LISTING MANUAL

Prior to interviewing, it is necessary to list all households in the clusters selected from the sampling frame. This manual discusses the responsibilities of the listing staff, definition of terms, materials needed, the locating of the clusters, drawing sketch maps of the clusters, listing the households, segmentation of large clusters, and quality control issues of listing procedures.

## GUIDELINES FOR SAMPLING FOR THE MALARIA INDICATOR SURVEY

This manual presents the general policy on sampling for the MIS survey. Probability sampling using a preexisting sampling frame, with a two-stage cluster sample selection, is recommended. Issues to consider in understanding the sampling frame, details of sample design, and sample size determinations are provided with dynamic worksheets to assist with calculations. Procedures for selecting households from clusters (enumeration areas) are also explained.

## TABULATIONS FOR KEY MALARIA INDICATORS

This plan provides the recommended tables for presenting results obtained from the MIS Household and Woman's Questionnaires for the key RBM coverage indicators. Details are provided for inclusion of appropriate survey data for calculation of numerators and denominators of the recommended indicators. For a full report on the results of the MIS

survey, additional tables may be needed on such topics as household characteristics, women's characteristics, and IRS

### ***Biomarker Testing***

#### BIOMARKER MANUAL

This manual provides an overview of procedures for conducting anemia and malaria parasitemia testing in the field during household surveys. The manual lays out a standard approach for anemia testing using the HemoCue® system. It also presents a standard approach for parasitemia testing using rapid diagnostic testing (RDT) and microscopy. This manual also includes protocol for biohazard waste disposal and safety precautions when taking blood samples.

### ***Geographic Coordinates***

#### INCORPORATING GEOGRAPHIC INFORMATION INTO MEASURE SURVEYS: A FIELD GUIDE TO GPS DATA COLLECTION

This manual addresses the geocoding of household- or cluster-level survey measurements, which adds a geographical dimension to survey information. Understanding the spatial representation of malaria survey data is important because of the variation of malaria transmission by factors such as altitude or proximity to breeding sites. With geographic locations, it is possible, for example, to link the MIS data with other geocoded data sets, such as health care facilities, or to aggregate information by new units of analysis. Accounting for spatial patterns of disease or coverage of interventions can further inform intervention targeting efforts. Geocoding survey information can be a cost-effective way to increase the analytic potential of survey results. However, ethical issues of confidentiality of the data collected and the protection of human subjects need to be fully considered when geocoding MIS clusters and making the data available with longitude and latitude coordinates. The procedures and training required depends on the specific type of Global Positioning System (GPS) receivers used.

### ***Budget Estimation***

#### PREPARING THE BUDGET OF THE MALARIA INDICATOR SURVEY

This guide addresses how to develop an appropriate budget for the MIS survey. Issues to consider in calculating cost include materials and training, adequate sample size, personnel and fieldwork, analysis and report preparation, and publication and dissemination of results.

Financing the MIS survey requires careful planning and leveraging of funds from appropriate agencies, both national and external. Incorporating assessments of coverage into existing and future proposals is important for evaluating progress and should be explored. Including standard malaria questions in DHS and MICS surveys may also

reduce costs and provide valuable results. Often, to generate support and financing for efforts, advocacy among relevant stakeholders is needed to present a unified approach for attaining measurable results.

***Complementary Documents***

ASSIGNMENT SHEET

REFERRAL FORMS

CHILD ANEMIA AND MALARIA BROCHURE

TRANSMITTAL FORM

BUDGET CALCULATION TEMPLATE