THE MEI MALARIA ELIMINATION TOOLKIT

District-level Readiness for Elimination of Malaria Tool (DREAM-IT)

The Malaria Elimination Initiative

UCSF Institute for Global Health Sciences

The Malaria Elimination Initiative is an initiative of the UCSF Institute for Global Health Sciences.

shrinkingthemalariamap.org

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DREAM-IT is a malaria elimination-focused operational assessment tool designed to systematically and comprehensively evaluate the operational readiness of the health system (all levels) for elimination and sustained prevention of reintroduction (POR). DREAM-IT is intended for national malaria programs and partners but can be used by anyone for different purposes. The tool is comprised of a User Guide and five modules, each focused on a level of the health system (national, provincial, district, health facility, and community health worker).

Developed by the University of California, San Francisco Malaria Elimination Initiative in collaboration with national malaria programs.

The Malaria Elimination Initiative (MEI) at the University of California, San Francisco (UCSF) believes a malaria-free world is possible within a generation. As a forward-thinking partner to malaria-eliminating countries and regions, the MEI generates evidence, develops new tools and approaches, disseminates experiences, and builds consensus to shrink the malaria map. With support from the MEI's highly-skilled team, countries around the world are actively working to eliminate malaria.

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DREAM-IT was developed by UCSF MEI team members Adam Bennett, Valerie Scott, Emily Dantzer and Cara Smith Gueye.

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Acronyms

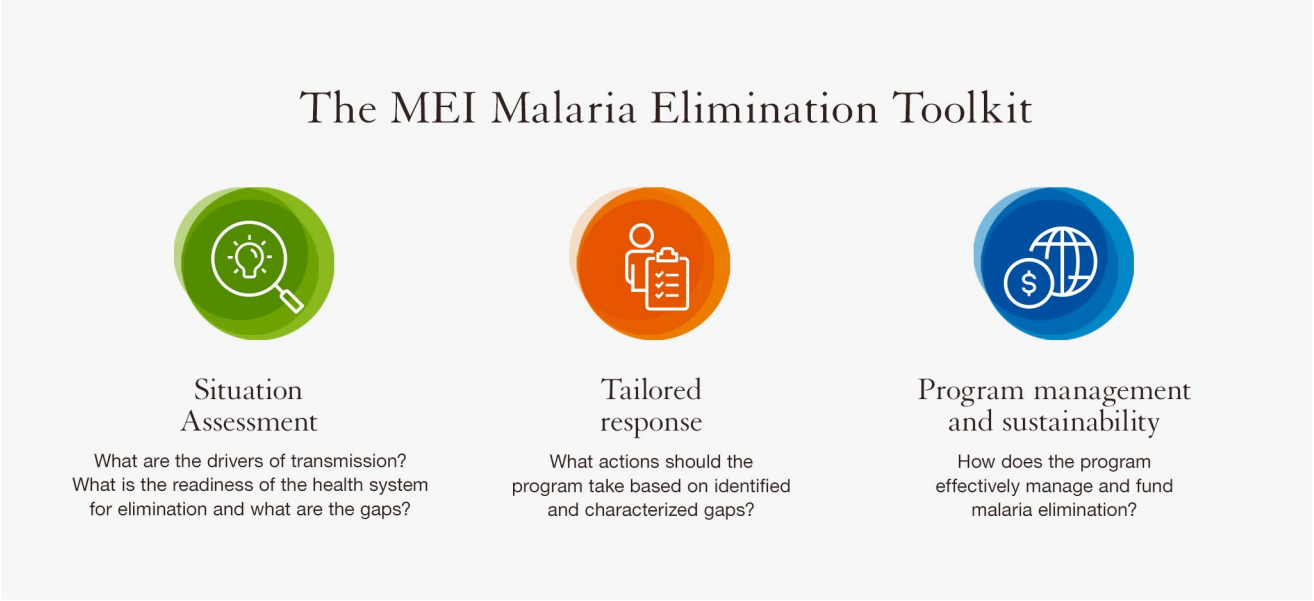
ACD	Active case detection
AC	Access to Care
ACT	Artemisinin-based combination therapy
ANC	Antenatal care
API	Annual parasite incidence
CC	Cross-sector Collaboration
CHW	Community health worker
CSO	Civil society organization
DQA	Data quality assurance
EOC	Emergency operations center
GI	General Information
GTS	WHO Global Technical Strategy
HMIS	Health management information system
HR	Human Resources
HRP	High risk populations
iCCM	Integrated community case management
IRB	Institutional Review Board
IRS	Indoor residual spraying
KD	Key Document Availability
LG	Leadership and Governance
LLIN	Long-lasting insecticide treated net
LSM	Larval source management
MOH	Ministry of Health
MOP	Malaria Operational Plan
MPR	Malaria Program Review
M&E	Monitoring and evaluation
NGO	Non-governmental organization
NSP	National strategic plan for malaria control or elimination
NMCP	National Malaria Control Program
OC	Other Challenges
OI	Office Infrastructure
PACD	Proactive case detection
PCD	Passive case detection
PF	Planning and Financing
PMI	President's Malaria Initiative
PQ	Primaquine
QA/QC	Quality Assurance/Quality Control
RACD	Reactive case detection
RDT	Rapid diagnostic test
SBCC	Social and behavior change communication
SLDPQ	Single low-dose primaquine
SOP	Standard operating procedure
SC	Supply Chain
SR	Surveillance and Response
SV	Supervision
TES	Therapeutic efficacy study
TPR	Test positivity rate
TR	Training
UCSF-MEI	Malaria Elimination Initiative, University of California, San Francisco
USAID	United States Agency for International Development
VC	Vector Control
WHO	World Health Organization

About the Malaria Elimination Toolkit

The MEI Malaria Elimination Toolkit is a set of proven tools, frameworks, and guides to help malaria endemic countries accelerate progress toward malaria elimination. Developed by the Malaria Elimination Initiative (MEI) at the University of California, San Francisco (UCSF), the toolkit addresses the unique challenges faced by national malaria programs in heterogeneous transmission settings. These tools have been used successfully at the national and/or subnational levels, leading to important changes in malaria policy and practice.

The MEI Malaria Elimination Toolkit focuses on three primary areas: situation assessment, tailored responses, and program management and sustainability – with the ultimate goal of building capacity and optimizing a country or district's ability to advance toward elimination. These tools help malaria programs understand the drivers of transmission in a target area and the readiness of the health system for elimination; decide what actions to take and how to tailor its response; and ensure efforts are well-managed and sustainably funded.

The MEI offers direct technical assistance to support the adoption, tailoring, and implementation of its tools, frameworks, and guidelines. Please contact us to learn more at mei@ucsf.edu, or visit our website at http://www.shrinkingthemalariamap.org/toolkit.



Introduction

Malaria elimination programs are very operationally and logistically demanding. Every case must be reported, investigated, and effectively managed to prevent onward transmission. Active foci must be investigated and managed with deployment of effective vector control and drug-based interventions to quickly halt transmission. Populations at highest risk for malaria who seed or sustain transmission need to be identified and targeted with appropriate malaria services to successfully interrupt transmission. To deliver on these demands, malaria programs need a broad range of operational capabilities at all levels of the health system, but particularly at the district level.

It is often operational challenges or constraints, rather than technical, that impede or delay malaria elimination. And there is sometimes large heterogeneity between and within the performance and capacity of different administrative levels for malaria control and elimination programming.

The World Health Organization (WHO) Global Technical Strategy (GTS) emphasizes the importance of understanding a program's operational capacity on the pathway towards elimination.[1] In Pillar 3 of the GTS, which describes the importance of transforming malaria surveillance into a core intervention in national and subnational malaria strategies, the WHO recommends that National Malaria Control Programs (NMCPs) collect data to understand overall program performance. These data should comprise an assessment of program financing, staff, commodities, access to services and intervention coverage, amongst others.

Understanding core operational gaps and challenges at the district level is crucial to addressing bottlenecks and barriers to malaria elimination. While some general assessment tools exist for malaria, such as health facility assessments, there are no formal or comprehensive frameworks for assessing operational capabilities for malaria elimination specifically, and none that focus on the district level as the unit of operation. In response, the University of California, San Francisco (UCSF) Malaria Elimination Initiative (MEI) developed the District-level Readiness for Elimination of Malaria Tool (DREAM-IT). DREAM-IT is a series of modules designed to systematically collect information from different administrative levels (from community to national level) on a range of operational capabilities and thematic areas determined to be necessary for malaria elimination, such as human resources, supply chain management and supervision mechanisms, amongst others. Results of DREAM-IT can be used to identify areas of improvement across and within different levels of the health system, informing malaria operational planning. DREAM-IT can be tailored to individual country contexts.

What is DREAM-IT?

DREAM-IT is a series of five assessment modules designed to comprehensively identify the operational gaps and challenges of the malaria program. There is one module for each level of the of the health system: national, provincial, district, health facility, and community health worker (CHW). The core module is focused on the district. Depending on the assessment objectives and available resources, programs can choose which modules to include in the assessment and tailor the module questions for the country context and priorities.

DREAM-IT modules are comprised of 15 thematic areas, each containing a series of questions focused on that core thematic area (Table 1).

Each module contains "TIER 2" questions in addition to the core questions. TIER 2 questions are shaded in grey and numbered separately than the core questions. The TIER 2 questions were developed as potential additional questions if the NMCP has a particular interest or would like to delve deeper under a certain topic, such as *P. vivax* treatment or around certain surveillance strategies, for example.

Who should use this tool?

DREAM-IT has been developed for use by anyone – NMCP staff, partner organizations, research institutions, evaluators, donors, or others – to conduct an assessment of a national malaria program using the district as the primary unit of operation to implement malaria elimination strategies and activities. Buy-in and strong engagement with the NMCP is crucial for a successful and impactful assessment.

1 World Health Organization. The Global Technical Strategy for Malaria 2016-2030. Geneva: The World Health Organization Global Malaria Programme.

Table 1. DREAM-IT Thematic Areas

- General Information (GI)
- Office Infrastructure (OI)
- Access to Care (AC)
- Planning and Financing (PF)
- Human Resources (HR)
- Key Document Availability (KD)
- Training (TR)
- Supervision (SV)
- Supply Chain (SC)
- Vector Control (VC)
- Community Engagement (CE)
- Surveillance and Response (SR)
- Cross-sector Collaboration (CC)
- Leadership and Governance (LG)
- Other Challenges (OC)

Technical assistance is available to support the tailoring and implementation of all MEI tools. Please visit our website and contact us for more information: http://www.shrinkingthemalariamap.org/contactus.

How is this tool used?

Findings from a DREAM-IT assessment can be used to inform future operational strategies and plans and highlight key barriers and bottlenecks that require improvement for elimination to be achieved. DREAM-IT modules can be tailored by users to address more targeted operational inquiries around specific program questions or areas of priority or interest. For example, a NMCP may wish to understand challenges specific to malaria supply chain management, or an external evaluation team may want to focus on human resource availability for malaria at different levels of the health system. In each of these cases, findings can be used for advocacy purposes, to inform direction and training priorities, and build evidence for funding proposals.

DREAM-IT can be used in the following ways, depending on the needs and resources of the program:

1. National, provincial or district level strategic plan development
2. Advocacy and development of funding proposals
3. NMCP budgeting
4. Personnel and staff planning
5. Identify training needs and curricula
6. Assess implementation fidelity across CHWs, health facilities, districts, etc.
7. Conduct targeted supervision or QA/QC
8. Answer specific program queries

How do I navigate this tool?

The first step is for the assessment team to confirm the objectives and scope of the assessment based on the needs and available resources of the NMCP. The DREAM-IT User Guide walks the user through team roles and tool adaptation, logistics and management, methods, and procedures. The tool is divided into modules for each level of the malaria program. The basic unit is the district level, as it is the main operational unit for malaria elimination activities.

1. DREAM-IT District Module
2. DREAM-IT National Module
3. DREAM-IT Provincial Module
4. DREAM-IT Health Facility Module
5. DREAM-IT Community Health Worker Module

Key Messages

Malaria elimination is logistically and operationally demanding and requires national programs to have a broad range of capabilities as well as the necessary infrastructure at all levels of the health system.

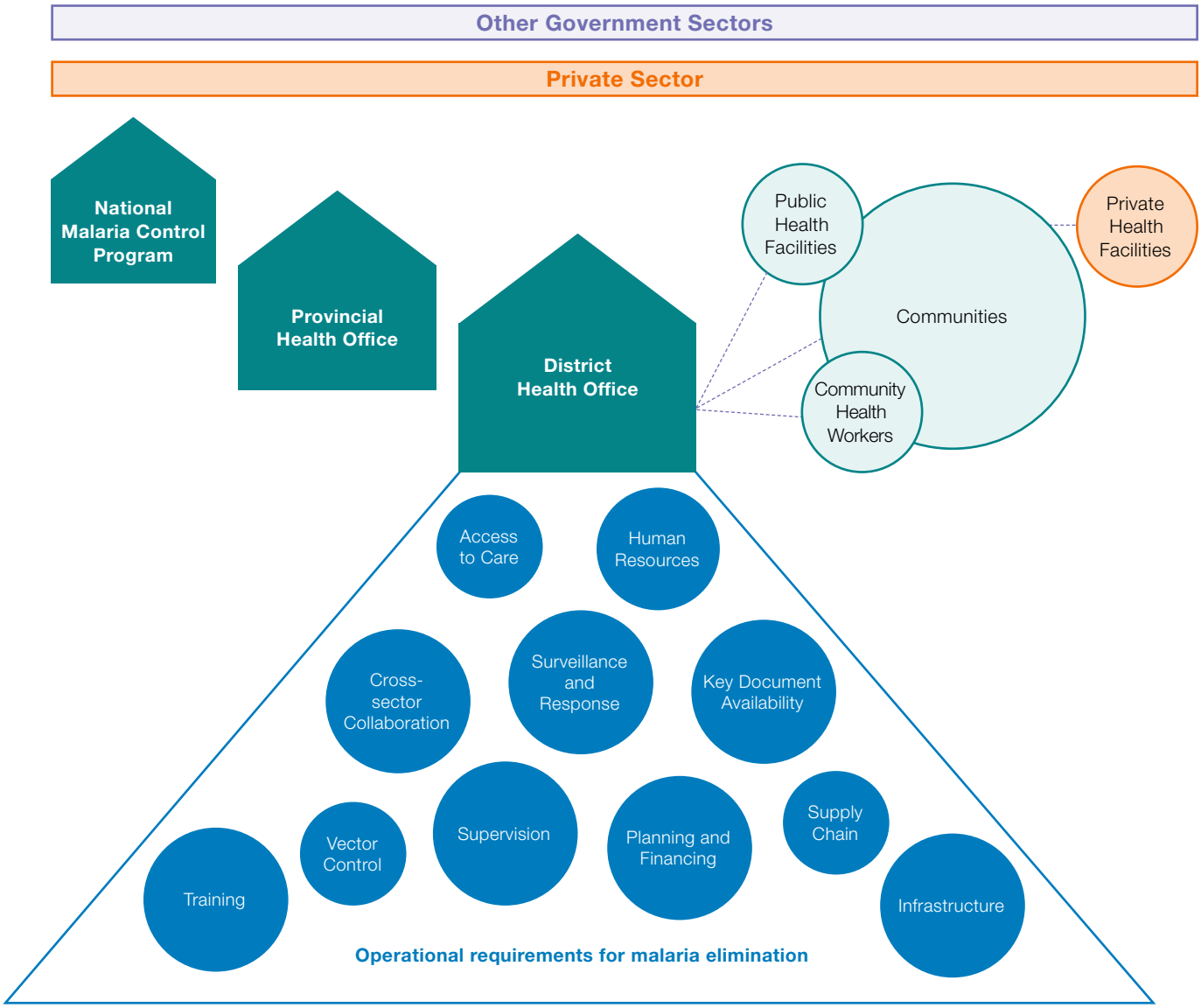
The district is the primary unit of operation for most malaria elimination programs.

DREAM-IT is designed to systematically assess the operational readiness for malaria elimination across different levels of the health system, with a focus on the district level.

DREAM-IT can be tailored to country contexts and program needs or priorities.

The tool can be used in numerous ways. It can be used for a general, comprehensive assessment or for more targeted inquiries.

Figure 1. DREAM-IT Modules and Thematic Areas



Key Concepts

Case detection: One of the activities of surveillance operations, involving passive or active screening for malaria cases in a community

Case Detection, Active (ACD): Detection by health workers of malaria cases at community and household levels, sometimes in population groups that are considered at high risk. Active case detection (ACD) can consist of screening for fever followed by testing of all febrile patients or as testing of the target population without prior screening for fever.

Case Detection, Passive (PCD): Detection of malaria cases among patients who, on their own initiative, visit health services for diagnosis and treatment, usually for a febrile illness.

Case Detection, Proactive (PACD): A form of active case detection (ACD): screening and testing provided to a subset of a population in a given area based on higher risk, not prompted by the detection of an infected person/s.

Case Detection, Reactive (RACD): A form of active case detection (ACD): screening and testing provided to a subset of a population in a given area in response to the detection of an infected person (i.e. the index case). Traditionally carried out among index case household members and households within a given radius.

Case Investigation: Collection of information to allow classification of a malaria case by origin of infection, i.e. imported, indigenous, induced, introduced, relapsing or recrudescent.

Community Health Worker: Community members who provide essential population-based health services to the communities in which they live, particularly in underserved and vulnerable populations. CHW is umbrella term that encompasses workers with diverse roles and activities; service delivery areas include a wide range of basic health services and specialist areas such as maternal and child health, HIV/AIDS, TB and malaria.

Entomological Surveillance: The collection of entomological data over space and time. In the context of malaria, entomological surveillance is essential to understand mosquito vector species composition, specific population dynamics, and behavioral traits that affect disease transmission and intervention effectiveness over time.

Intervention Coverage: Proportion of unit (e.g., person, house, larval habitat) with an intervention of total units.

Larval Source Management: Management of aquatic habitats (water bodies) that are potential habitats for mosquito larvae, in order to prevent the completion of development of the immature stages.

Malaria Elimination: Interruption of local transmission (reduction to zero incidence of indigenous cases) of a specified malaria parasite species in a defined geographical area as a result of deliberate activities. Continued measures to prevent re-establishment of transmission are required.

Outbreak: A case or a greater number of local cases than would be expected at a particular time and place.

Stratification: Classification of geographical areas or localities according to epidemiological, ecological, social and economic determinants of receptivity and vulnerability for malaria transmission, for the purpose of guiding malaria interventions.

Surveillance and Response: Continuous, systematic collection, analysis and interpretation of disease-specific data and use in planning, implementing and evaluating public health practice.

Targeting High-Risk Groups: Delivering malaria services to targeted group/s of people who are particularly vulnerable to malaria infection in certain situations or contexts.

Vector Control: Measures of any kind against malaria-transmitting mosquitoes, intended to limit their ability to transmit the disease.

User Guide

District-level Readiness for Elimination of Malaria Tool (DREAM-IT)

This DREAM-IT User Guide is a companion document to the DREAM-IT modules. In this User Guide the reader will find all of the components to consider in advance of implementing DREAM-IT:

- Team roles and responsibilities
- Scoping
- Survey adaptation and translation
- Logistics and management
- Methods
- Procedures

Team Roles and Responsibilities

The first step of the assessment is assembling the DREAM-IT team. DREAM-IT was designed for anyone to be able to use it, whether NMCP, partner institution, research organization or other group. Based on assessment team experience piloting DREAM-IT, it is important to define the roles and responsibilities in the assessment. The roles and personnel for the assessment will be defined by the objectives, scope and scale, timeline and budget. Here are some example roles for an assessment team, and some limitations that may apply under different scenarios:

1. DREAM-IT Project Lead: Coordinates across all partners involved in the assessment, working closely with the NMCP focal point. Leads development of the assessment objectives, workplan, and timelines for the project. Ensure communication across all partners.
2. NMCP focal point(s) if NMCP itself is not conducting it: Liaise with NMCP to ensure that objectives, scope and scale of the assessment closely responds to the NMCP priorities and strategies; NMCP will play a strong role in adapting the tool to the current context and ensuring terminology and translation are accurate.
3. Field supervisors: Supervisors oversee data collectors in the field during data collection, ensuring quality work and data. Malaria programmatic and research survey experience is necessary for this role. This role may or may not be necessary depending on the scale of the assessment, and can be combined with the data collectors if the scale or scope is limited. In some countries, NMCPs opt to have NMCP personnel serve as Field Supervisors, as they are familiar with the objectives, however, having NMCP officers present during an interview risks social desirability bias, where key informants feel pressure to provide answers or responses that are perceived as more acceptable.
4. Data collectors: These positions are conducting the interviews and taking notes or entering responses. They are also responsible for maintaining organized files and scheduling interviews. Research survey experience is priority, with preference for those who have served as interviewers for a survey; experience in consent process (if determined consent forms are necessary); strong listening and interpersonal skills; some experience in public health programs (particularly malaria) or research is also helpful. Data collectors must be flexible and willing to travel into the field at short notice. Collectors must have language skills appropriate for the survey.
5. Administration/logistics: Depending on the implementation arrangement, the agency employing assessment personnel and budget should identify one person who can assist with such components as interview scheduling, letters of request or permission, per diems, transportation, and procurement of supplies and equipment.
6. Technical Lead: As DREAM-IT focuses on operational capacity for malaria elimination strategies and activities, the assessment benefits from oversight of a technical officer or team that can provide insight into elimination programmatic requirements and the transition from malaria control to elimination.

Scoping

Assessment objectives and scope

One of the first steps of implementing DREAM-IT is for the Project Lead to engage with the NMCP and partner institutions to ensure consensus on the objectives and scope of the assessment. It is important to work together as a team to answer the following questions:

- Who is interested in the assessment?
- Why are they interested in an assessment?

- What current information is already available?
- How should DREAM-IT be targeted - is there a specific question in one geographic area?
- How generalizable do the findings need to be (e.g., for the target districts or perhaps for all elimination districts)?
- What is the assessment budget?
- What is the preferred data collection format (e.g., paper or electronic)?
- What are personnel needs and who is appropriate to conduct interviews at the different levels?
- What is the plan for dissemination of results to lower levels and partners?
- What are the timelines shaping the assessment - for example, when is the report needed and for what purpose (e.g., Global Fund proposal)? Is there a preferred timeline for data collection (e.g., during low malaria season)? If Institutional Review Board (IRB) review is required, what is the timeline for review?

Typically, review by an IRB is not required as an assessment is a malaria program activity, as opposed to research, but this may depend on who is conducting the assessment. However, if IRB review is required, then the Project Lead will need to identify the required IRBs and timeline for review.

Some DREAM-IT assessments include data collection in all eliminating districts in the country while other countries focus on specific districts and do not attempt to cover all. The scale of DREAM-IT implementation depends on the assessment objectives and available resources.

Answering the above questions as a team will help inform and ensure agreement on the assessment design, sampling strategy, and implementation logistics. It is important to balance the desire for comprehensive data with the reality of resource availability including respondents' time for interviews.

Document and data review

Before designing the assessment, malaria program documents should be assembled and reviewed to ascertain what information is already available and what the key gaps are. The documents and data to be reviewed may include:

- National strategic plan (NSP) for malaria and/or malaria elimination
- Malaria program-related guidelines (surveillance and response, diagnosis, treatment, vector control, monitoring and evaluation (M&E))
- Standard operating procedures (SOPs) for malaria program activities
- Current malaria risk stratification
- Maps of provinces, districts and major towns
- Malaria incidence data for past three years
- Malaria testing and confirmation, district and health facility level
- Reporting completeness and timeliness, district level
- Malaria commodity stock reports
- Malaria Program Review (MPR) from the previous three years
- Annual malaria control program reports from previous three years
- Survey data within previous three years (e.g., LLIN usage, coverage, preferences, insecticide resistance status)

DREAM-IT module objectives

It is important from the outset to ensure agreement on the DREAM-IT assessment objectives among the NMCP and stakeholders.

DREAM-IT has five modules, each corresponding to a different level of the health system, with each module containing all or some of the 15 thematic areas (Table 1) to identify any themes that may not be necessary to include in the assessment.

The objective for each module is assessment of the feasibility to:

1. District Module: Implement elimination strategies and activities, and oversee elimination activities by the health facilities and CHWs in catchment areas
2. National Module: Technically guide and ensure funding and resources for subnational (i.e., district level) elimination efforts, and to supervise elimination activities at the provincial and district levels
3. Provincial Module: Support and oversee elimination activities at the district, health facility and CHW levels
4. Health Facility Module: Implement elimination strategies and activities and oversee elimination activities by the CHWs
5. Community Health Worker Module: Implement specific elimination activities

Pre-survey checklist

This checklist will help the Project Lead adapt the assessment modules so that questionnaires are appropriate for the local context and reflect the strategies, activities, and terminology employed in the country's malaria program. This checklist should be reviewed by the Project Lead with help from the assessment technical lead, with close engagement with the NMCP.

- ✓ Levels and types of health facilities, including public and private, and referral system
- ✓ Standard positions, including titles, at lower levels of the health system
- ✓ CHW cadres and types of malaria services provided (if any) and forms of compensation
- ✓ CHW access to and utilization of rapid diagnostic tests (RDTs), artemisinin-based combination therapies (ACTs), radical cure for *P. vivax* with primaquine (PQ), single low-dose primaquine (SLDPQ) and other diagnostic and treatment activities
- ✓ Funding sources and amounts dedicated toward elimination activities
- ✓ Supply chain infrastructure and processes
- ✓ Diagnosis and treatment guidelines (e.g., use of SLDPQ, radical cure for *P. vivax* with PQ)
- ✓ Vector control strategies and activities: Indoor Residual Spraying (IRS), Long-lasting insecticide treated nets (LLIN), and Larval source management (LSM)
- ✓ Surveillance strategies and activities (e.g., proactive case detection or reactive case detection)
- ✓ Confirm available key documents, with titles, and which levels disseminated and when
- ✓ Standard malaria program trainings given and which levels were trained
- ✓ Supervision guidelines and standardized checklist/report format
- ✓ M&E policies and practices
- ✓ Surveillance database and reporting order and frequency
- ✓ Country governance for malaria (e.g., national malaria steering committee or taskforce)

Table 1. DREAM-IT Modules and Thematic Areas

Thematic Area	Community Health Worker	Health Facility	District	Provincial	National
General Information (GI)	x	x	x	x	x
Office Infrastructure (OI)	x	x	x		
Access to Care (AC)	x	x	x		x
Training (TR)	x	x	x	x	x
Supervision (SV)	x	x	x	x	x
Supply Chain (SC)	x	x	x	x	x
Surveillance and Response (SR)	x	x	x	x	x
Vector Control (VC)	x	x	x		x
Community Engagement (CE)	x	x			
Planning and Financing (PF)			x	x	x
Human Resources (HR)		x	x	x	x
Key Document Availability (KD)			x	x	x
Cross-sector Collaboration (CC)			x		
Leadership and Governance (LG)				x	x
Other Challenges (OC)			x	x	x

Survey Adaptation and Translation

The modules are developed to be ready-to-use and broadly applicable to all malaria programs. Programs may wish to adapt the questionnaires to best suit their needs and the assessment objectives. The pre-survey checklist and material gathered in the scoping and document review can be used for this purpose.

Health system levels to include

First, the Project Lead and stakeholders will need to determine the levels of the health system to include in the assessment based on the objectives and resources available (funding, staffing, timeline). The district level questionnaire is the most comprehensive as DREAM-IT was developed with the understanding that districts are the primary unit of operation in most malaria programs.

Respondent sampling

In a typical DREAM-IT assessment, the majority of respondents work within the Ministry of Health. The NMCP focal point can identify respondents at each level and for each district. Table 2 lists the type of positions that can be included as respondents for each level. The Project Lead and team may decide not to include certain modules in their assessment and thus would exclude this group of possible respondents. For each interview, it is ideal have three or fewer respondents in an interview session.

Table 2. List of potential respondents for assessment at each level.

National	• Head of Malaria • Surveillance • Vector Control • M&E • SBCC
Provincial	• Head of Malaria • Chief Medical Officer • Surveillance • Vector Control • Laboratory
District	• Head of Malaria • Surveillance • Vector Control • Laboratory
Health Facility	• Chief Medical Officer
Community Health Worker	• Community Health Worker affiliated with sampled health facilities

Identification of TIER 2 questions

Within each module, the Project Lead will find a subset of questions highlighted in grey with a different numbering system. These "TIER 2" questions are optional to include in your assessment, depending on the assessment objectives. TIER 2 questions typically are more detailed queries around a particular strategy or activity, which may or may not be relevant for the NMCP. The team can review the TIER 2 questions during the survey adaptation period and decide whether to include them. It will be important to carefully review and adapt the skip patterns based on any changes made.

For example, some programs may wish to delve deeper into a certain topic or area (e.g., supply chain, supervision, access to care), whereas others may already have recent or relevant data available under a certain theme, and therefore the tools can be adapted by removing sections or questions to meet the specific needs of the national program.

Teams should carefully consider the necessary time commitments and availability of interview respondents when determining the number of questions to include. Respondents can gradually fatigue of the interview questions and when this happens the answers may become rushed or incomplete. Thus it is important to balance comprehensiveness or scope of responses with data quality and respondent satisfaction.

Translation

At the outset, consider which languages respondents will feel most comfortable using at the different levels and choose one language to use throughout, if possible. The team should adapt and iterate the module questionnaires in English before translation into local language. Careful review of the translated questionnaires by the study team and NMCP focal point while referring to the English versions is helpful to ensure accurate translations and meanings. It is important to consider respondent comprehension and comfort levels for the different tools (i.e., the formalness or casualness of the translation style). See Appendix 2 for guidance on adaptation of survey questions.

Logistics and Management

Budget

DREAM-IT implementation does not have to be a costly project. Table 3 lists budget categories and items for consideration. Efforts should be made to add travel for interviews to any planned trips to target areas, for cost savings. Virtual or remote interviews are possible, but as a last resort; ideally all

interviews should be conducted in person on site at the appropriate level.

Table 3. Budget categories for DREAM-IT implementation

Personnel	• Data collectors • Field supervisors (if do not have volunteers from NMCP and partners) • Administrator/logistics (part-time only)
Travel	• Training participant and trainer travel and per diem • Per diem and lodging for data collectors, field supervisors, and technical support • Actual travel (vehicles, petrol, maintenance)
Training	• Conference room and projector • Catering • Printing
Supplies and equipment	• Tablets or laptops (if using electronic data collection) • Printed copies of modules (if paper data collection) and consent forms (if applicable) • Pens • Audio recorders (if needed)
Services	• Translation of modules • Server access (especially if electronic data collection)
Other	• If allowed, add a budget for refreshments to offer to survey respondents

Preparing for field work

After confirming which modules will be included in the DREAM-IT assessment, target respondents (corresponding to each module) must be identified, guided by NMCP and partners. Respondents should be informed about the assessment and formally invited to participate by sending out notices or letters about data collection to the health offices, including any requests to assemble documents or information (e.g., budgets) in advance.

Second, the training of data collectors and field supervisors is planned. Topics to include in the training include confidentiality, interview skills, data entry, data quality, post-interview debriefs, assessment objectives and procedures (see Procedures section, below). Practice with the module questionnaires is most important. If the assessment requires consenting respondents, data collectors need to practice with the consent forms and should be trained on human subjects research and the informed consent process. Depending on the number of levels to be interviewed, we recommend at least one day of training on each questionnaire, allowing for sufficient practice and gaining of comfort and familiarity with the survey. Another full day should be set aside to train data collectors on the assessment objectives, methods, SOPs, logistics, as well as confidentiality and informed consent (if the latter two are applicable).

The process for dissemination of results should be discussed early on in development of the assessment, as it is a priority to feedback results to the NMCP, partners, malaria and health system workers in the target districts and communities from which respondents participated. Dissemination of results should be in the local language and can include reports or workshops or meetings.

Methods

Assessment framework

It is best practice to develop a brief framework for any assessment or study, even if IRB review is not needed. Frameworks are especially useful when there are multiple people and partners on a study. It is a way to ensure that everyone has an opportunity to understand the assessment objectives, rationale, methods and expected outputs. An example structure of a framework follows:

1. Abbreviations and acronyms
2. Assessment team roles and responsibilities
3. Background
4. Assessment rationale and objectives
5. Design and methodology
6. Target populations and locations
7. Sampling strategy and size (e.g., number and selection criteria for districts)
8. Procedures (e.g., data collection, debriefs, QA/supervision, consent process)
9. Data management and analysis
10. Dissemination of results (including lower levels and communities)
11. Timeline
12. Appendix with workplan and data collection tools

Data collection

The tools are comprised of both quantitative and qualitative questions.

Quantitative

- Responses are numbered and generally one response per question.
- Some questions require asking to see evidence (e.g., document, organogram) during the interview.

Qualitative

- Open or free text answers, where respondent is invited to give thoughts with some direction and probes. Bring additional blank pages if more space is needed.
- Some programs opt to include more qualitative questions, such as on key challenges. If collecting qualitative data, one consideration is whether the data collection could include "free text" handwritten or typed-in responses, and if responses will need transcription, translation and a more robust analysis.

Regarding data collection format, some assessments have used paper-based data collection, where data collectors write answers on printed forms. Other assessments have opted for electronic data collection using tablets or laptop computers. The Project Lead should decide what type of collection suits the NMCP and assessment best, with consideration of the data collectors' comfort level with electronic data collection. If there are more than 20 different sites (or districts targeted in the assessment), electronic data collection is recommended for ease of collation and analysis.

Regardless of whether paper or electronic data collection is used, it is recommended to limit the length of an interview to under two hours to avoid fatigue in the respondent. Interview length depends on how many questions are included, but generally the district module requires the most time – approximately 2.0 hours without any TIER 2 questions. Other modules would require about 1 to 1.5 hours.

Quality control

Supervisors should review the completed module questionnaires within 24 hours of data collection to ensure that all non-skipped fields are completed, free text answers are legible and respond to the question, and interview ID codes along with interview date, time and data collector's name are clearly written on the forms or entered into the electronic form. Debriefs should occur within 24 hours of data collection and cover: 1) How did the interview proceed overall? 2) What challenges presented during the interview? 3) Was the respondent knowledgeable, helpful and willing to participate? 4) Were there problems with any of the questions?

Analysis and reporting

The assessment team should identify who is responsible for the data analysis and reporting of findings well in advance. If the work involves a different language, it is also important to identify timing and resources for translation, if necessary.

Analysis of quantitative data can be done using Excel or a statistical analysis software (e.g., R, Stata, SAS). Summaries should be developed for each thematic area and tables or text boxes are recommended to display information efficiently.

Depending on the extent of the qualitative component, users can choose to use a software for qualitative analysis (coding and thematic analysis) or simply use Excel or Word. If the qualitative data are a larger component of the data, it may be helpful to use a coding software program (e.g., Dedoose (open source, subscription-based) or Atlas.ti).

Ethical review

Local and partner IRBs should be consulted to find out whether review and approval is required for the assessment. In most cases, the data collection and analysis are considered "program activities" and access to and use of the data generated through DREAM-IT implementation is limited for those outside of the malaria program, and in these cases IRB approval is typically not required. If IRB review is required by any institution, it is important to include timing of IRB review and approval in the planning phase.

Procedures

Priority steps and activities are described in Table 4, but this is not an exhaustive list.

Table 4. Priority Steps for DREAM-IT

Schedule interviews	• Identify a date, time and location for the interviews with each respondent. • Notify respondents (e.g., formal letter/email as appropriate for local context) in advance that assessment teams will be in the area. Ideal to have high-level official issue interview request letters to increase response rate.
Assign interview ID codes and develop registration form	• Assign interview ID codes to each interview, to ensure that names and personal information is not linked or shared. ID codes should be written or typed at the top of each form. • A demographic or registration form can be used to link the ID code with respondent information (name, address, phone number etc.). That form will be the only link between personal information and the ID code. • An example of an ID code is: District name—Level of interview (e.g., National, Provincial, District, Health Facility, or CHW)—Number of interview.
Conducting interviews	• Conduct the interview in a private, quiet place, away from other people but within sight of others. The respondent(s) should be asked for a good location to hold the interview. • If possible, best to conduct data collection with MOH and NMCP officials without more senior MOH or NMCP officials in the room. Their presence can introduce bias or create discomfort or unease in respondents as they may feel that they need to provide positive, optimistic, or "correct" answers and not the real situation. • Respondents should answer questions as honestly as possible. It is important to encourage respondents to be honest, as this will increase the usefulness and validity of the findings.
Completing the questionnaire	• Electronic or paper-based data collection are options. Data collectors must practice with the module questionnaires to understand the skip patterns and have an understanding of the concepts in order to guide the respondent. • It is important to enter data very clearly if handwritten. • Quality control procedures should occur within 24 hours of an interview, with supervisors reviewing completed questionnaires. Debriefs with supervisors and data collectors should occur within 24 hours, best within the same day as the interview was conducted
Data entry	• If data collection is done electronically, then no data entry will be required. Paper-based data will have to be entered into a database in Excel or using a data entry software.

Tips and Tricks

1. Diversity in the sample of districts in the assessment is important - choose districts that represent diversity in eco-epidemiology, rural and urban, and other aspects important to the malaria program.
2. In one assessment, an app-based data entry program, Koboto, was used but some problems occurred such as lack of time during the data collector training for beta testing and errors in the forms.
3. In some cases, it is more efficient for data collectors to enter data directly into the online form during the interview or enter data from the paper-based form into an Excel spreadsheet.
4. If data collectors do not transcribe what was written in the notes, it is difficult to clarify answers and also to know how much data were lost.
5. Inaccurate translation of technical surveillance terms (e.g., "case investigation") can cause data loss.

DREAM-IT Modules

The five DREAM-IT modules are available for download in Microsoft Word at the below links. MS Word versions are provided to allow for the adaptation and tailoring of the modules.

If you have any trouble downloading the tool modules, please contact mei@ucsf.edu for support.

1. DREAM-IT District Module
2. DREAM-IT National Module
3. DREAM-IT Provincial Module
4. DREAM-IT Health Facility Module
5. DREAM-IT Community Health Worker Module

Appendix

1. Example DREAM-IT Report Table of Contents
2. Guidance on adapting assessment questions

Appendix 1

Example DREAM-IT Report Table of Contents

Abbreviations and Acronyms

I. Background and Rationale
- A. Assessment Rationale and Objectives

II. Design and Methods
- A. Elimination Readiness Assessment
- B. Procedures
- C. Data Management and Analysis
- D. Ethical Considerations

III. Access to Care
- A. Access to Care through Community Health Workers
- B. Treatment Follow Up
- C. Single Low-Dose Primaquine
- D. Integrated Community Case Management

IV. Surveillance and Response
- A. Reporting
- B. Data Monitoring and Analysis
- C. Case Investigation
- D. Foci Investigation
- E. Outbreak Identification and Response
- F. Rapid Response Team
- G. Targeting
- H. Equipment and Supplies

V. Vector Control
- A. Vector Control Strategies
- B. Entomological Surveillance

VI. Planning and Financing

VII. Human Resources
- A. Challenges for the Malaria Program

VIII. Training

IX. Supervision

X. Leadership and Governance

XI. Key Document Availability

XII.Malaria Supply Chain

XIII. Cross-sector Collaboration

XV. Operational Strengths (list out for each thematic area)

XVI. Operational Gaps (list out for each thematic area)

XVII. Malaria Program Recommendations
- A. Community Health Workers
- B. Health Facilities
- C. District Malaria Offices
- D. Provincial Level
- E. National Level

Appendix 2

Guidance on Adapting Assessment Questions

Themes and areas of work that may benefit from local adaptation and definition for the study team:

General
- Local or common names for RDT, ACT, PQ (SLDPQ and 14-day radical cure), insecticide, IRS, LLINs
- Translation of diagnosis and treatment
- Local terms for “freedom to allocate” or “staff turnover”
- Add any known or perceived challenges to respective response lists

Access to Care
- Type of public and private health facilities
- Names of health facility types and CHW cadres

Human Resources
- Adapt the name of malaria positions to the local context

Surveillance and Response
- Targeting and tailoring refers to use of data (epidemiological or entomological) to identify appropriate malaria control activities and target them to zones and population groups in need.
  - » Case investigation and response
  - » Foci investigation and response
  - » Reactive case detection (RACD)
  - » High risk population (HRP)
  - » Data quality assurance (DQA)
  - » Routine sentinel site surveys
  - » Patient follow-up

Work Planning
- Work Plan: Not a strategic plan, but a planning document that maps out activities with resources required and timelines expected.

Vector Control
- Adapt survey with local current vector control interventions
- LSM activities
- Entomological surveillance

Supervision
- Supervision: is the term supervision defined nationally?
- Is there a standardized checklist?

Supply Chain
- Ensure correct reference to malaria commodity reports; national stock-out definition

Key Document Availability
- Adapt types of documents to those most important for malaria elimination in your country
- Adapt names of all guidance manuals and SOPs referenced

Training
- Adapt types and names of training to match local context
- Types of training expected/assigned for each level (e.g., CHW cadre malaria responsibilities and compensation)

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