



Royal Government of Cambodia

Ministry of Health

MONITORING & EVALUATION PLAN

OF THE

MALARIA ELIMINATION ACTION FRAMEWORK

2016 - 2020

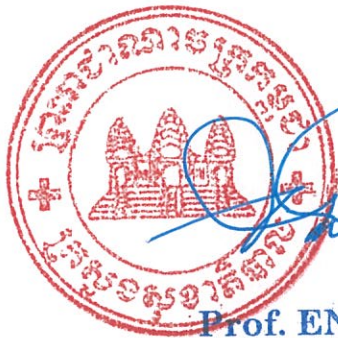
National Center for Parasitology, Entomology, and Malaria
Control



Foreword

The National Malaria Monitoring and Evaluation (M&E) Plan 2016-2020 has been developed in line with the **Government's Malaria Elimination Action Framework (MEAF) 2016-2020** and GMS Regional Strategy for Malaria Elimination 2015-2030 with an overall goal to achieve falciparum elimination by 2020. The MEAF, launched by The National Center for Parasitology, Entomology and Malaria Control (CNM), is based on and carries forward an inclusive partnership between the Ministry of Health (MOH), CNM, other line ministries of the Royal Government of Cambodia, development and all implementing partners in malaria elimination.

The development of the National M&E Plan, as part of MEAF 2016-2020, involved an elaborate consultative process involving several key stakeholders from national malaria program and technical partners including World Health Organization (WHO) and Clinton Health Access Initiative (CHAI). Several implementing partners in malaria control and elimination in Cambodia also participated and provided inputs in the finalization of the plan. I am confident that this National M&E Plan provides the necessary framework for M&E of existing and new malaria interventions for elimination and I therefore urge all stakeholders to put all effort into its implementation to enable the country move towards the vision of malaria-free Cambodia.



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SECRETARY OF STATE

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List of Acronyms and Abbreviations

ACT	Artemisinin-based Combination Therapy
CNM	The National Center for Parasitology, Entomology and Malaria Control
CHAI	Clinton Health Access Initiative
DOT	Directly Observed Treatment
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
HMIS	Health Management Information System
ITN	Insecticide-treated Net
LLIN	Long-Lasting Insecticide Treated Net
MDR	Multidrug resistance
MEAF	Malaria Elimination Action Framework
MIS	Malaria Information System
MMP	Mobile and migrant populations
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MPR	Malaria Program Review
OD	Operational District
PPM.	Public-Private Mix
PSI	Population Services International
PIF	Program Indicator Framework
PHD	Provincial Health Department
PPM	Public-private mix
QA	Quality Assurance
QC	Quality Control
RDT	Rapid Diagnostic Test
VMW	Village Malaria Worker
WHO	World Health Organization

1 Introduction

1.1 CAMBODIA MALARIA ELIMINATION ACTION FRAMEWORK 2016-2020

Cambodia has made considerable progress in diminishing their malaria burden over the last decade and has a vision of a malaria-free country by 2025 as laid out in the National Strategic Plan for Elimination of Malaria (NSPEM) in the Kingdom of Cambodia, 2011-2025, which was endorsed by Samdech Akka Moha Sena Padei Hun Sen, Prime Minister of the Kingdom of Cambodia. The Malaria Elimination Action Framework (MEAF) 2016-2020 is an amendment to the original strategy and reflects new strategic updates based on changes in the country's epidemiological and programmatic context, while taking into account recommendations from the 2012 Malaria Program Review (MPR) and recent global and regional policy guidelines.

The MEAF 2016-2020 was developed to clearly describe the approach, implementation strategies, and roles and responsibilities of stakeholders involved in the national malaria response. It is a dynamic document that lays out in detail the five-year action plan for elimination, but will be updated as necessary based on results produced and the availability of new evidence or tools. The framework was also developed to align the national malaria response to the WHO technical strategies highlighted in the Malaria Elimination in the Greater Mekong Sub region 2015–2030 to contribute to the overall interruption of *Plasmodium falciparum* transmission in areas of multidrug resistance, including artemisinin resistance, in the Greater Mekong Subregion.

In the past decade, the National Centre for Parasitology Entomology and Malaria Control (CNM) has worked to cut the number of reported malaria cases (both confirmed and clinically diagnosed) in the public and community levels in half, from 113,855 cases in 2004 to 56,271 cases in 2014. The overall malaria mortality rate has also decreased from 0.98 per 100,000 in 2010 to 0.12 per 100,000 in 2014. National prevalence by microscopy has declined in each consecutive survey: 4.4% in 2004, 2.6% in 2007, 0.9 in 2010 and 0.1 in 2013. Weighted national prevalence measured in 2013 was 1.5%. This achievement could be credited to the successes of CNM and the introduction of the National Strategic Plan (2011-2025), which led to increased coverage of malaria control interventions. Despite this dramatic reduction, malaria transmission is still endemic in 21 out of the 25 provinces with more than half the population (an estimated 8.6 million people) still at risk. The northeast region of the country still accounts for over 70% of the malaria burden, mainly along the forested borders of Viet Nam, Lao People's Democratic Republic, and Thailand.

Building off the MEAF national strategy with this new framework and accelerating the approach to elimination based on the country's epidemiological and programmatic context, Cambodia has the goal to reduce the incidence of malaria to less than 1 infection per 1000 people at risk in each operational district and eliminate *Plasmodium falciparum* including multidrug resistance by 2020.

Intervention strategies will cover a wide range of activities to increase the capacity of the malaria program, its tools and prepare the country for elimination. The specific framework objectives are tailored to the scale-up of these key elimination strategies:

- **Objective 1**
Providing effective program management and coordination at all levels by 2017 to efficiently deliver a combination of targeted interventions for malaria elimination
- **Objective 2**

Achieving universal coverage of case management services by 2016 to ensure 100% parasitological diagnosis of all suspected cases and effective treatment of all confirmed cases

- **Objective 3**

Protecting at least 90% of all populations at risk of malaria with an appropriate vector control intervention by 2017

- **Objective 4**

Enhancing the surveillance system to detect, immediately notify, investigate, classify and respond to all cases and foci by 2017 to move toward malaria elimination

- **Objective 5**

Implementing comprehensive IEC/BCC approach that facilitates at least 90% of people seeking treatment for fever within 24 hours at a health facility or with a qualified care provider and at least 85% of at-risk population utilizing an appropriate protection tool by 2017

1.2 DEVELOPMENT OF THE MONITORING AND EVALUATION PLAN

Monitoring involves the routine tracking of the key elements of program performance through record keeping, regular reporting from the surveillance systems and periodic surveys. Monitoring is used to verify step-by-step progress of the activities in order to verify whether activities have been implemented as planned, ensure accountability, detect problems and constraints, and promote evidence-based planning through timely feedback to the relevant authorities. An effective and robust Monitoring and Evaluation (M&E) system is therefore necessary to measure the success of the MEAF 2016-2020 at achieving the stated goals and ensuring the use of evidence for decision making.

Following the completion of the national strategic framework in MEAF 2016-2020, CNM developed this M&E Plan in consultation with WHO and partners to monitor progress of achievements over the same period. The indicator framework was developed taking into account the guidelines in the M&E Toolkit (2011) recommended by The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). Relevant indicator frameworks including GFATM Performance Frameworks for Single Stream Funding (2009-2014) and New Funding Model (2015-2017); NSPEM 2011-2025 and GMS Regional Malaria Indicator Framework (WHO) were consulted to ensure Cambodia Malaria M&E indicator framework is aligned with national, regional and global malaria M&E indicator frameworks.

2 Indicators definitions and measurement

The M&E framework follows the standard logical framework used for M&E systems of malaria control programs, from input & process, via output and outcomes to health impact, linked to a process of assessment and planning (see Figure 1 below). For a program to achieve its goals, inputs such as money and staff time must result in outputs such as stocks and delivery systems for drugs and other essential commodities, new or improved services, trained staff, information materials, etc. If these outputs are well designed and reach the populations for which they were intended, the program is likely to have positive short-term outcomes, for example improved access to effective treatment or insecticide-treated net. These short-term outcomes should lead to changes in the longer term impact of programs, measured in reduction of malaria cases and deaths.

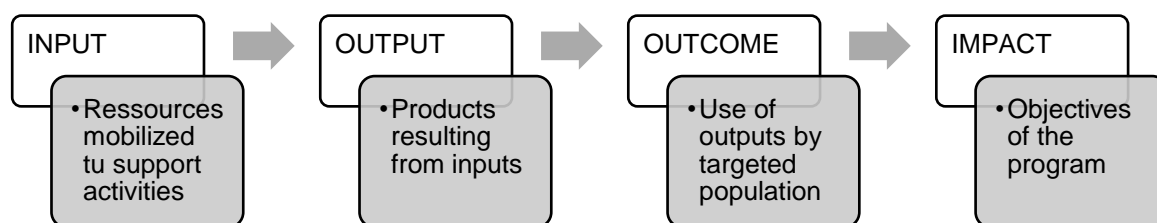


Figure 1: Logical framework with classification of indicators

A set of impact indicators is selected to measure progress on overall goals of MEAF 2016-2020 and different process, output and outcome indicators have been selected to measure results of anti-malaria interventions under each strategic objective of MEAF 2016-2020.

The indicator framework in Annex 1 includes a table presenting all indicators for which data are collected for the period 2016 to 2020. For each indicator included, the following information should be provided: definition; baseline values with date; source of data; annual targets set; data collection method; frequency of data collection.

Annex 2 provides the following detailed information about each indicator:

- Indicator name
- Associated Objective
- Rationale/purpose
- Definition (with Numerator, Denominator, Multiplier and Equation)
- Baseline and targets
- Data source (including method of measurement and measurement tool)
- Frequency of data collection and reporting

3 Routine Data Collection

Routine monthly surveillance is strengthened across the country to ensure complete and timely reporting from all service providers: Referral Hospitals (RHs), Health Facilities (HFs), Village Malaria Workers (VMWs), Mobile Malaria Workers (MMWs) and Private Providers (PPs). Data from these sources is captured using two systems:

3.1 HEALTH INFORMATION SYSTEM (HMIS)

The Cambodian Health Management Information System (HMIS) is web-based system, managed by the Department of Planning and Health Information (DPHI) reporting nation-wide health data for all disease including malaria. Operational District (OD) offices have to enter data into the system within 2 weeks after the end of the month. Malaria information for each HF and RH consists of monthly aggregated case counts with distinct sections on out-patient, in-patient and laboratory data. Each HF report now also includes separated monthly aggregates from VMWs and MMWs managed by respective HFs.

3.2 MALARIA INFORMATION SYSTEM (MIS)

The current MIS (Figure 2) in Cambodia is designed for collection of passive case data on a routine basis. MIS is a stand-alone system for collecting case-based data from HFs, VMWs and private providers in endemic areas. It was created in 2009 to capture additional information by village and record case based case management sequence using line-listing of malaria confirmed cases. The system does not cover the non-endemic ODs. Monthly line-list report from HFs, VMW and private providers are collected and entered on web portal by OD office into the MIS national database maintained at CNM. Paper based reports from HFs and dependent VMWs are transmitted to ODs during monthly coordination meetings or supervision visits. Reports from private providers are collected directly by OD staff during supervisory visits. In addition, the MIS imports and manages additional data from RH, non-endemic ODs and security forces. Monthly aggregated data from RHs and HFs non-endemic ODs are automatically imported from the HIS.

The malaria data flow, collection and reporting from all sources in endemic areas is shown as below in Figure 3. The malaria data from health facilities in non-endemic areas is captured only by HMIS.

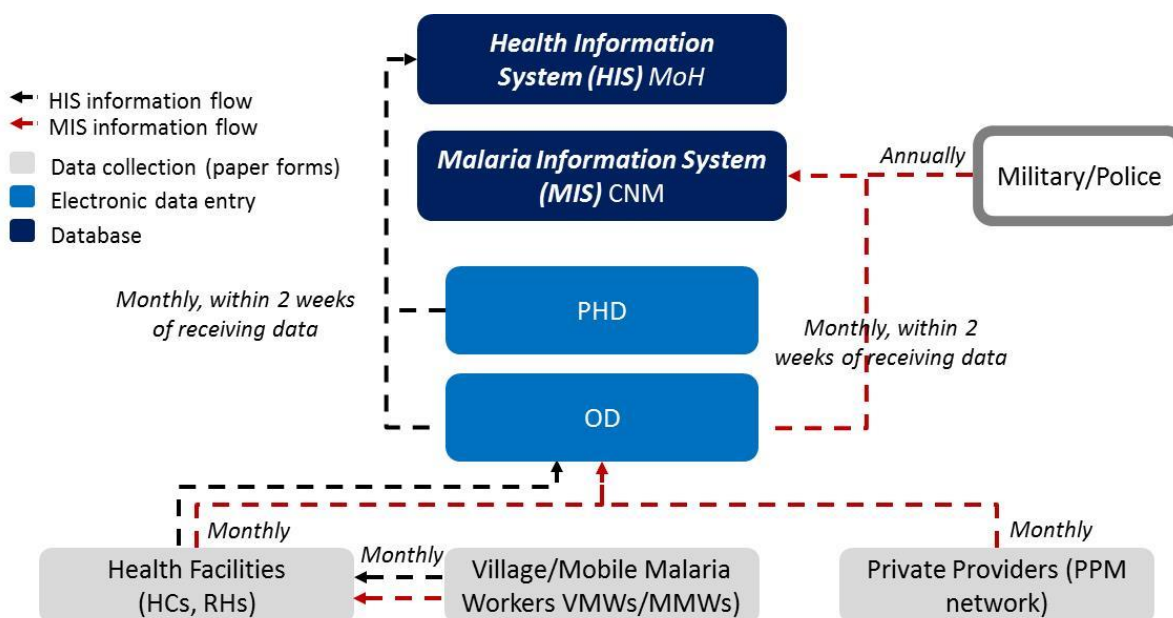


Figure 2: Data collection and reporting flow of MIS

3.3 Cambodia’s Plan to Upgrade MIS

The National Malaria Program plans to upgrade the MIS to allow for rapid notification of cases and investigation at the household and village level. The new MIS will also have linkages with HMIS, military/police and partner surveillance systems to import the. The surveillance operational manual

provides all details on functions, design and SOPs of the planned upgraded integrated and modular MIS (see Figure 2 below). Main characteristics of data collection and operations are described below.

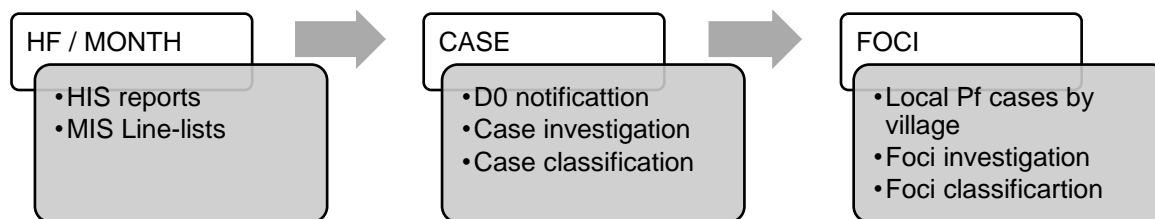


Figure 3: Structure of upgraded integrated modular MIS

Immediate case-based notification in Elimination ODs

When elimination activities are initiated in an OD, malaria becomes a notifiable disease among all service providers. HF, VMW/MMW and PP/PMW should immediately notify every case through mobile phone network. MIS then trigger immediate alerts to OD and HC staff of relevant catchment area.

Case investigation and reactive case detection in Elimination ODs

All notified case should be investigated and classified by the closest HC team taking into account patient household location and travel history. Data from all case investigation reports captured on Tablets by HCs is transmitted by internet and compiled in a national case register integrated into the MIS. Case investigation collects evidence of potential local transmission. Reactive case detection should be carried out around index cases which are classified as local.

Foci investigation and management in Elimination ODs

OD staff should investigate, classify and map all foci (village-based) of malaria transmission based on case investigation and classification. Data from all foci investigation reports captured on Tablets by ODs is transmitted by internet and compiled in a national foci register integrated into the MIS. The list of all classified foci is updated once a year based on localization and classification of new cases and foci. Based on factors driving transmission, the OD team should lead response, which may include additional vector control, environmental management and active case detection. Annually, case-based surveillance data will be analyzed to identify any potential transmission foci that were not yet investigated.

4 Data Management

Standard reference lists and population figures

Reference list of villages with population estimates and risk classification compiled by CNM will be finalized and disseminated in 2016. This village level risk stratification is basis for the targeting and stratification of VMW and PPM programs as well as LLIN mass and continuous distributions.

Respective CNM units update every year the standard list of VMWs, MMWs, Private providers, Plantations. MoH's Department of Planning and Health Information (DPHI) is the source of annually updated list of health facilities (including unique ID coding and GPS coordinate) is updated annually. The same source provides list of ODs with projected population numbers updated every year to be used for calculation of rates.

Data storage and processing

Monthly and case-based surveillance data, vector control interventions, entomological surveillance, therapeutic drug efficacy studies, and commodity procurement, distribution, and utilization, as well as all partner data will be integrated into an integrated modular MIS platform to facilitate comprehensive analysis.

The CNM's Epidemiology Unit continuously analyzes the malaria situation for every OD as data is entered into MIS platform. PHD/OD can access all relevant MIS data, analyze and interpret their related data regularly in coordination with CNM.

5 Program Reviews, Evaluations and Surveys

Program reviews, evaluations and surveys are important tools for measuring malaria program's overall performance, including its effectiveness, outcome and impact. The following review, evaluations and surveys are planned as part of this M&E plan.

5.1 PROGRAM REVIEWS

Mid-Term Review of the MEAF

A mid-term internal evaluation of goals and objectives in MEAF 2016-2020 is planned end of 2017 with support from WHO. The evaluation aims at improving operational performance and good-quality service delivery. It focuses on the operational level, but also addresses program coordination and management, identify best practices, lessons learned, problems as well as potential solutions and produce practical recommendations.

Malaria Program Review

The last Malaria Program Review (MPR) was held in 2012. This is an exercise of external evaluation that allows the country to undertake a detailed review of achievements, examine the enabling factors and bottlenecks, and define the gaps between what was planned and what was implemented and achieved. MPR involves all stakeholders and is undertaken every four-five years. The overall purpose is to provide evidence for improving performance, to define possible re-orientation of the program's strategic direction or to identify new approaches for achieving a greater impact. The next one is planned for the end of 2019.

5.2 SURVEYS

Household Survey

Malaria Indicator Surveys are household sample surveys that are carried out periodically to collect core household-level malaria data and monitor change over time. Cambodia has carried out a Malaria Indicator Survey (i.e. the "Cambodia Malaria Survey") every three years since 2004. The main purpose of the Cambodia Malaria Survey (CMS) has been to assess the performance and impact of malaria activities, whilst also monitoring and evaluating donor-funded activities.

Malaria transmission rates vary widely across the country and previous CMS' have focused on collecting representative data about the populations at greatest risk of malaria. The 2013 survey was

stratified according to high risk provinces in two geographical “Domains” (Domain 1: western Cambodia, Domain 2: southern and eastern Cambodia) and then by the distance to the forest. The next CMS is planned for 2017. The survey will adopt a similar stratified sampling approach in order to generate a representative sample of the populations at greatest risk and to facilitate the continued analysis of trends over time.

The household questionnaire typically collects information about household composition, characteristics and assets; net ownership and use; treatment seeking, knowledge of malaria transmission and prevention; exposure to behaviour change communication (BCC) messages, forest-related activities, and travel amongst permanent and temporary visitors. In doing so, the survey helps to determine the coverage of key interventions within the populations at greatest risk. It also assesses BCC strategies by tracking key knowledge, attitude, behaviour and practice indicators and thereby helps to evaluate and revise existing strategic and operational priorities related to this population.

Mobile and Migrant Population Survey

Mapping and census of MMPs will be conducted at regular intervals in specific areas of risk to target bed net distribution and other interventions. A mobile and migrant population (MMP) survey will be conducted every two years, beginning 2016. A sample of people from each of the various MMP groups will be selected for interviews.

Health Facility Surveys (Public and Private)

These surveys use a stratified sample of public health facilities, VMWs, private practices, pharmacies, and drug vendors. They measure use and availability of different antimalarial drugs and testing, recent stock outs and assess presence of oral artemisinin monotherapy (oAMT) in the private sector. They also measure market share between different sectors and type of private outlets. Exit interviews of patients consulting for fever will be conducted to measure frequency of good diagnosis practices, prescriptions and counseling. The private sector surveys documented successful enforcement of 2009 ban with almost complete disappearance (<1% in 2015) of oAMT. In 2016-2020, these outlet surveys are planned to be conducted in 2017 and 2019. The scope and coverage of these surveys may be adjusted in every round.

Other surveys

Knowledge, Attitudes, Practices (KAP), and Beliefs survey will be used on an ad hoc basis and in a targeted manner to track progress and inform decision making.

6 Other Sources

Entomological Surveillance

Annually, CNM selects three routine sentinel sites for entomological surveillance including species distribution, vector behavior and bionomics, vector density, identification of host preference, seasonal fluctuation of species.

Insecticide Resistance Monitoring

Existing information on the resistance status of the main malaria vectors, *An. dirus s.l.*, *An. minimus s.l.* and *An. epiroticus*, in the Mekong region is patchy and region-wide comparable resistance data are required to make informed decisions on the correct use of insecticides in malaria vector control. Every year the program conducts regular entomological surveillance and insecticide resistance monitoring at

sentinel sites. If insecticide resistance is found, its operational significance is assessed and a suitable response developed as required.

Therapeutic Efficacy Monitoring

In cooperation with WHO, the CNM conducts annual multidrug resistance monitoring for *P. falciparum* in at least 3 sentinel sites. The data from these drug efficacy studies provides essential information that feeds into decision-making for both the national program and the regional approach to the elimination of multi-drug resistance. The information generated is used to update national treatment guidelines as appropriate.

7 Data Quality Assurance and Supervision

The 5 dimensions of data quality would be accounted for:

Reliability: The data generated by a program's information system are based on protocols and procedures that do not change according to who is using them and when or how often they are used. The data are reliable because they are measured and collected consistently.

Accuracy: refers to how well information in or derived from the database or registry reflects the reality it was designated to measure.

Timeliness: refers primarily to how current or up-to-date the data are at the time of release, by measuring the gap between the end of the reference period to which the data pertain and the date on which the data becomes available to users.

Completeness: means that an information system from which the results are derived is appropriately inclusive.

Integrity: is when data generated by a program's information systems are protected from deliberate bias or manipulation for political or personal reasons

The CNM's Technical Bureau oversees all aspect of M&E activities with collaboration with the 8 technical units: Epidemiology, Data Management, Monitoring and Evaluation, Vector Control, Laboratory, Health Education, Public-Private Mix and Village Malaria Workers.

TORs and SOPs/checklists are developed for the M&E team at CNM and PHD/OD/HC level to ensure high quality monitoring of case management, vector control, and surveillance activities. CNM's M&E unit regularly supervises data collection and reporting process for units at lower levels. All data generated in the MIS platform are verified through data check, cleaning and collation.

CNM will carry out bi-annual supervisory visits with field staff to assist in planning, implementation, monitoring and evaluation of malaria control activities. HMIS and MIS data will be assessed on quarterly basis at all levels using routine data quality assessment tools (RDQA). At service delivery points, OD, PHD, this exercise is been conducted along with routine supervision.

8 M&E Coordination

A Malaria Elimination Taskforce (METF) will be created at national level amongst senior management at CNM, MOH, and lead technical and implementing partners, to serve as a steering committee to guide

implementation of the Malaria Elimination Action Framework. Working Groups representing each thematic area (Diagnosis & Treatment, Vector Control and Surveillance) will meet on an ad hoc basis to advise the METF.

Provincial health departments will meet with district health staff carry out an annual review to chart progress against the national monitoring and evaluation plan and develop provincial operational plans in Q4 for the coming year. CNM and PHDs will meet in Q1 of each calendar year at Annual Malaria Review Meeting to align operational plans across provinces.

A National Multi-Sectoral Malaria Elimination Committee, consisting of all relevant health and non-health stakeholders, will meet bi-annually to discuss current progress and challenges related to malaria elimination. Provincial elimination committees, consisting of key health staff and other inter-sectoral partners relevant to malaria, which already exist in some areas of the country, will be expanded and strengthened to support interventions specific to the local context.

CNM will establish a PSM working group to share regular updates regarding procurement and distribution and share stock levels of different commodities. CNM will also implement a stock management system at HCs to monitor supplies and ensure no commodity stock outs occur at any point of time at lower health levels. Stock levels at central level via national drug inventory system at CMS will be closely monitored by CNM.

9 Capacity building

Each PHD has a malaria unit with Surveillance and M&E functions. Each OD has at least one or two staff responsible for malaria operations. They are supported by quarterly supervisions from CNM.

Annual trainings on data collection, reporting and analysis at the central and peripheral level are conducted by CNM and partners among PHD/OD/HF staff, VMW/MMWs, PP/PMWs networks. Details are given in the costed M&E work plan in Annex 3. Training will be integrated into other malaria trainings where possible. CNM needs to collaborate with military and police on surveillance training.

10 M&E and Surveillance Costed Work Plan

This budget extracted from the master operational costed plan of the MEAF includes not only usual M&E activities but also covers additional resources for passive and active Surveillance in the prospect of elimination and the monitoring of drug resistance. It refers to the specific objective 4 of the MEAF covering 10 strategies for a total cost of 39,634,568 USD (see break-down by strategy in Table 4 below). Annex 3 provides detailed 2016-2020 M&E costed work plan by activity.

Objective 4: Enhancing the surveillance system to detect, immediately notify, investigate, classify and respond to all cases and foci by 2017 to move toward malaria elimination	39,634,568
Strategy 4.1 Define system specifications for upgraded Malaria Information System (MIS)	521,063
Strategy 4.2 Strengthen and build capacity to implement the surveillance system for malaria elimination	10,945,423

Strategy 4.3 Strengthen passive case detection and routine reporting by all health care providers	4,233,334
Strategy 4.4 Strengthen case detection, investigation and reporting system for all malaria infections	16,663,286
Strategy 4.5 Strengthen investigation, classification, and appropriate response to all malaria transmission foci	550,735
Strategy 4.6 Strengthen management and usage of data at all health levels	2,115,766
Strategy 4.7 Outbreak preparedness and response	1,145,182
Strategy 4.8 Strengthen program monitoring and evaluation	1,439,403
Strategy 4.9 Strengthen Operational Research for malaria	4,448
Strategy 4.10 Monitor drug efficacy and test new drug regimens	2,015,928

11 Products, Dissemination and Use

Once data are collected and analyzed, they are used to inform decision-making and increase the efficiency and effectiveness of the program. The results of the analysis are disseminated to all relevant stakeholders and shared with implementers through a systematic feedback mechanism.

Quarterly Surveillance Bulletins

Quarterly malaria bulletins with tabular and graphical data by OD and by Province are generated and disseminated. Regular feedbacks are provided to all health levels through epidemiological reports. Intervention coverage and operational targets for implementation are computed regularly to ensure successful monitoring of operations.

Annual Malaria Review

CNM and PHDs meet in Q1 of each calendar year at Annual Malaria Review Meeting to align operational plans across provinces. CNM systematically presents and discuss progresses on all indicators of the M&E framework.

Program progress and challenges will be shared and discussed with stakeholders at all levels as part of strategic information sharing to inform decision making, better planning, implementation and effective program management

References

Multi-partner M&E Toolkit, 4th Edition; 2012

The Global Fund: Monitoring and Evaluation Framework:

List of Malaria indicators

Malaria indicator guidance sheets

Guidance for submission of an M&E plan for Global Fund grants

<http://www.theglobalfund.org/en/me/framework/>

The Global Fund: Monitoring and Evaluation Systems Strengthening Tool

<http://www.theglobalfund.org/en/me/strengthening/>

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National Centre for Parasitology Entomology and Malaria Control (CNM). Malaria Elimination Action Framework (MEAF) 2016-2020. Phnom Penh; 2016

Annex 1 M&E Framework 2016-2020

NO.	INDICATOR	DISAGGREGATED BY	BASE LINE	2016	2017	2018	2019	2020	SOURCE OF DATA	FREQUENCY
Impact indicators: Reduce the incidence of malaria to less than 1 infection per 1000 people at risk in each operational district and eliminate <i>Plasmodium falciparum</i> including multidrug resistance by 2020										
IP-1	Test positivity rate: Percentage of positive malaria tests (includes both microscopy and rapid diagnostic tests) ENDEMIC ODs ONLY	Care provider Microscopy/RDT, Species, Province/OD, Phasing	20% (2014)	18%	14%	10%	7%	5%	MIS/HIS	Annually
IP-2a	Annual Parasite Incidence: Number of confirmed malaria cases per 1,000 population ALL COUNTRY	Care provider, Sex, Species, Province/OD, Phasing	4.8 (2014)	4.0	3.2	2.4	1.6	<1	MIS/HIS	Annually
IP-2b	Annual <i>Plasmodium falciparum</i> Incidence: Number of confirmed <i>Plasmodium falciparum</i> malaria cases (including mixed) per 1,000 population ENDEMIC ODs ONLY	Care provider, Sex, Province/OD, Phasing	2.5 (2014)	2.1	1.7	1.2	<1	0	MIS/HIS	Annually
IP-3	Number of severe malaria cases per 10,000 per population ALL COUNTRY	Sex, Age, Province/ OD, Phasing	1 (2014)	0.9	0,8	0.6	0.5	0.4	MIS/HIS	Annually
IP-4	Number of in-patient malaria deaths per 100,000 population ALL COUNTRY	Sex, Age, Province/OD, Phasing	0.12 (2014)	0,09	0.07	0.05	0.02	0	MIS/HIS	Annually
IP-5	Number of endemic Operational Districts (ODs) that have API less than 1 per 1,000 population	Species, OD, Phasing	18 (2014)	28	32	37	43	53	MIS/MIS	Annually
IP-6	In Elimination targeted areas: Percentage of <i>Plasmodium falciparum</i> cases (including mixed) that are classified as local	OD, Province	N/A	TBD	TBD	TBD	TBD	0%	MIS	Annually

IP-7	In Elimination targeted areas: Number of active foci (with local <i>Plasmodium falciparum</i> , including mixed)	OD, Province	N/A	TBD	TBD	TBD	TBD	0	MIS	Annually
Objective n°1: Providing effective program management and coordination at all levels by 2017 to efficiently deliver a combination of targeted interventions for malaria elimination										
PM-1a	Percentage of points of care with no stock-out of RDTs	Care provider, OD, Province	NA	TBD	TBD	TBD	TBD	>95%	MIS	Monthly
PM-1b	Percentage of points of care with no stock-out of first-line antimalarials	Care provider, OD, Province	NA	TBD	TBD	TBD	TBD	>95%	MIS	Monthly
Objective n°2: Achieve universal coverage of case management services by 2016 to ensure 100% parasitological diagnosis of all suspected cases and effective treatment of all confirmed cases										
CM-1	Annual blood Examination Rate: Number of parasitological tests carried out per 100 population ENDEMIC ODs ONLY	Microscopy/RDT, Care provider, OD, Province, Phasing	4% (2014)	5%	6%	7%	7.5%	8%	MIS	Annual
CM-2	Access to parasitological testing: Percentage of suspected malaria cases that received parasitological test ENDEMIC ODs ONLY	Care provider, Treatment received	100% (2014)	100%	100%	100%	100%	100%	MIS	Monthly
CM-3	Access to first-line treatment: Percentage of confirmed malaria cases that received first-line antimalarial treatment ENDEMIC ODs ONLY	Care provider, Treatment received	100% (2014)	100%	100%	100%	100%	100%	MIS	Monthly
CM-4	Case fatality rate: Percentage of deaths among severe malaria in-patient in referral hospitals	OD, Province	2% (2014)	1.5%	1.2%	1%	0.5%	0%	HIS	Monthly
CM-5	Percentage of care providers with adequate case management practices and supply diagnostics and medicines	Care provider (HF, VMW, PPM), OD, Province	N/A	70%	75%	85%	95%	100%	Routine supervision	Quarterly
CM-6	Percentage of people from the mobile population with fever in the last 3 months that accessed parasite-based diagnosis	MMP Category	N/A	70%			>90%		MMP survey	Every 3 years
QA-1	Coverage of QA microscopy:	HF type, OD, Province	TBD (2014)	TBD	TBD	TBD	TBD	TBD	Microscopy QA report	Quarterly

	Number microscopy laboratories participating in Quality Assurance (QA) / Quality Control (QC) management system									
QA-2	Percentage of microscopists achieving both sensitivity and specificity greater than 90% during blind proficiency tests	HF type, OD, Province	N/A	80%	90%	95%	100%	100%	Microscopy QA report	Quarterly
DG-1	Percentage of private sector outlets in endemic provinces selling artemisinin monotherapy	OD, Province	0.2 % (2015)		0%			0%	Outlet Survey	Every 3 years
DG-2	Number of antimalarial drug sample batch collected for QC test	OD, Province	91 (2014)	120	120	TBD	TBD	TBD	DDF	Annual
DG-3	Number of inspection visits conducted by central and provincial drug inspectors	OD, Province	900 (2014)	1000	1000	TBD	TBD	TBD	DDF	Annual
Objective n°3: Protect at least 90% of all populations at risk of malaria with an appropriate vector control intervention by 2017										
VC-1	Percentage of population in targeted villages who slept under an insecticide-treated net (ITN) during the previous night POPULATION TARGETED BY ITNs	ITN, LLIN, Sex, Age, Pregnant	60% All 63% U5 61% PW (2013)		70%			>90%	HH Survey	Every 3 years
VC-2	Percentage of population in targeted villages using an ITN among the population with access to an ITN POPULATION TARGETED BY ITNs	ITN, LLIN, Sex, Age, Pregnant	74% (2013)		80%			>90%	HH Survey	Every 3 years
VC-3a	Percentage of households in targeted villages with at least one insecticide-treated net. POPULATION TARGETED BY ITNs	ITN, LLIN	90% (2013)		95%			>95%	HH Survey	Every 3 years
VC-3b	Percentage of households in targeted villages with at least one insecticide-treated net for every two people POPULATION TARGETED BY ITNs	ITN, LLIN	62% (2013)		70%			>90%	HH Survey	Every 3 years
VC-4	Percentage of forest visitors in targeted villages who reported sleeping under an ITN the last time they slept in the forest POPULATION TARGETED BY ITNs	ITN, LLIN, Sex, Age, Pregnant	49% (2013)	70%				>90%	HH survey	Every 3 years

VC-5	Percentage of mobile people that used an ITN the last time they slept in transmission area	MMP category	N/A						MMP survey	Every 2 years
VC-6	Percentage of the population-at-risk potentially covered by LLIN mass campaign POPULATION TARGETED BY ITNs	OD, Province	78% (2014)	50%	59%	TBD	TBD	TBD	MIS	Annually
Objective n°4: Enhance the surveillance system to detect, immediately notify, investigate, classify and respond to all cases and foci by 2017 to move toward malaria elimination										
SV-1a	Completeness of reporting: Percentage of expected HIS reports submitted from Referral Hospitals	OD, Province	50% (2014)	70%	80%	95%	100%	100%	HIS	Monthly
SV-1b	Completeness of reporting: Percentage of expected monthly MIS reports submitted from public HF's	OD, Province	80% (2014)	85%	90%	95%	100%	100%	MIS	Monthly
SV-1c	Completeness of reporting: Percentage of expected monthly MIS reports submitted from VMW/MMWs	OD, Province	>90% (2014)	>90%	95%	100%	100%	100%	MIS	Monthly
SV-1d	Completeness of reporting: Percentage of expected monthly MIS reports submitted from private providers/PMWs	OD, Province	N/A	65%	75%	85%	100%	100%	MIS	Monthly
EL-1	In Elimination targeted areas: Percentage of malaria cases notified within 24h according to surveillance manual	OD, Province	N/A	75%	85%	95%	99%	100%	MIS	Monthly
EL-2	In Elimination targeted areas: Percentage of malaria cases investigated within 3 days after detection according to surveillance manual	OD, Province	N/A	75%	85%	95%	99%	100%	MIS	Monthly
EL-3	In Elimination targeted areas: Percentage of patients with <i>Plasmodium falciparum</i> malaria (including mixed) with directly observed treatment (DOT) by VMWs	Mobile, OD, Province	N/A	50%	60%	70%	80%	>90%	MIS	Monthly
EL-4	In Elimination targeted areas: Proportion of cases investigated who were diagnosed within 24 hours after onset of symptoms	OD, Province	N/A	65%	75%	85%	100%	100%	MIS	Monthly
EL-5	In Elimination targeted areas:	OD, Province	N/A	75%	85%	95%	100%	100%	MIS	Monthly

	Percentage of new active foci investigated according to surveillance manual									
EL-6	In Elimination targeted areas: Percentage of investigated foci in which response was initiated according to surveillance manual	OD, Province	N/A	75%	85%	95%	100%	100%	MIS	Monthly
Objective n°5: Implementing comprehensive IEC/BCC approach that facilitates at least 90% of people seeking treatment for fever within 24 hours at a health facility or with a qualified care provider and at least 85% of at-risk population utilizing an appropriate protection tool by 2017										
IE-1	Percentage of population who could explain how malaria is prevented through the use of ITN		41.8% (2013)		65%			>90%	HH Survey	Every 3 years
IE-2	Proportion of respondents reporting VMW as first point of consultation for fever		16% (2013)		40%				HH Survey	Every 3 years

Annex 2 Indicator Definition and Measurement

IMPACT INDICATORS	
Goal: Reduce the incidence of malaria to less than 1 infection per 1000 people at risk in each operational district and eliminate Plasmodium falciparum including multidrug resistance by 2020	
Indicator number	IP-1
Indicator name	Test positivity rate
Definition:	Percentage of positive parasitological malaria tests reported from all sources (public health facilities, community level services and PPM providers). Includes both microscopy and rapid diagnostic tests but covers only passive case detection.
Numerator (N)	<p>Number of confirmed cases reported:</p> <ul style="list-style-type: none"> From public health facilities, community, private providers, security forces From endemic ODs only (out of 49 in 2015) From passive case detection only <p>Cases from active case detection and non-endemics ODs are reported separately</p>
Denominator (D)	<p>Number of patients tested reported:</p> <ul style="list-style-type: none"> From public health facilities, community, private providers, security forces From endemic ODs only (out of 49 in 2015) From passive case detection only <p>Tests from active case detection and non-endemics ODs are reported separately</p>
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	<p>ENDEMIC ODs ONLY</p> <p>A decreasing positivity rate indicates low transmission rate. This also the indicator of choice to detect outbreaks. Can also be calculated using $API=(ABER*SPR)/10$</p>
Baseline	19.9% (2014)
Target	5.0% (2020)
Disaggregation	By Care provider, Microscopy/RDT, Specie, Province/OD, phasing
Data Source	<p>Numerator: Number of positive tests from all care providers consist of: HIS (Positive tests from Microscopy/RDT section) for Referral Hospitals MIS (Line-list of positive cases) for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs) Case reports from security forces</p>
	<p>Denominator: Number of tests conducted from all care providers consist of: HIS (Total tests from Microscopy/RDT section) for Referral Hospitals MIS (Total tests - Microscopy and RDT) for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs) Case reports from security forces</p>
Frequency of Data Collection/Reporting	<p>GF NFM indicator Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year Can also be reported monthly as a proxy to monitor changes in transmission level.</p>

Indicator number	IP-2a
Indicator name	Annual Parasite Incidence (API)
Definition:	Number of confirmed malaria cases reported per 1,000 mid-year population at risk
Numerator (N)	<p>Number of confirmed cases reported:</p> <ul style="list-style-type: none"> • From public health facilities, community, private providers, security forces • From endemic and non-endemic ODs (out of 89 in 2015) • From passive case detection only <p>Cases from active case detection and non-endemics ODs are reported separately</p>
Denominator (D)	Mid-year population of endemic and non-endemic ODs (out of 89 in 2015)
Multiplier (M)	1,000
Equation	$(N/D) \times M$
Disaggregation	By Care provider, Sex, Age group, Specie, Province/OD, phasing
Interpretation	<p>ALL COUNTRY</p> <p>Impact indicator to assess the progress of national malaria program toward the goal of elimination of all forms of malaria by 2025. Compared across geographic locations, this indicator can help identify priority areas by geography for malaria interventions. However, trends should be interpreted with caution, taking into account changes in the coverage and completeness of case and death reporting. Can also be calculated using $API=(ABER*SPR)/10$</p>
Targets	4.8 (2014)
	< 1.0 (2020)
Data Source	<p>Numerator: Number of positive tests from all care providers consist of: HIS (Positive tests from Microscopy/RDT section) for Referral Hospitals MIS (Line-list of positive cases) for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs) Case reports from security forces Data collection by HFs, VMWs/MMWs and PPM private providers is continuous. Data is collected from VMW/MMWs during monthly meetings at health facility level. Data collection from private providers and PMWs occurs on site once per month according to a routine supervision schedule. All of this data is entered on web based MIS platform at OD level once per month within 2 weeks of the end of the reporting period. Malaria data from the national HMIS is imported in MIS system on a monthly basis.</p> <p>Denominator: Standard projected annual population by ODs is provided by MoH's Department of Planning and Health Information (DPHI)</p>
Frequency of Data Collection/Reporting	<p>GF NFM indicator Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year. Numerator: Number of confirmed cases can also be reported monthly to monitor incidence continuously.</p>

Indicator number	IP-2b
Indicator name	Annual <i>Plasmodium falciparum</i> (Pf) Incidence
Definition:	Number of confirmed <i>Plasmodium falciparum</i> malaria cases per 1,000 mid-year population at risk (including mixed)
Numerator (N)	Number of confirmed Pf or mixed cases reported: <ul style="list-style-type: none"> • From public health facilities, community, private providers, security forces • From endemic ODs only (out of 49 in 2015) • From passive case detection only Cases from active case detection and non-endemics ODs are reported separately
Denominator (D)	Mid-year population of endemic ODs (out of 49 in 2015)
Multiplier (M)	1,000
Equation	$(N/D) \times M$
Interpretation	ENDEMIC ODs ONLY Impact indicator to assess the progress of national malaria program toward the goal of elimination of <i>Plasmodium falciparum malaria</i> by 2020. Compared across geographic locations, this indicator can help identify priority areas by geography for malaria interventions. However, trends should be interpreted with caution, taking into account changes in the coverage and completeness of case and death reporting.
Targets	2.5 (2014)
	0.0 (2020)
Disaggregation	By Care provider, Sex, Age group, Province/OD, phasing
Data Source	Numerator: Number of Pf or mixed positive tests from all care providers consist of: HIS (Positive Pf or mixed Microscopy/RDT from section) for Referral Hospitals MIS (Line-list of positive cases) for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs) Case reports from security forces Denominator: Standard projected annual population by ODs is provided by MoH's Department of Planning and Health Information (DPHI)
Frequency of Data Collection/Reporting	GF RAI indicator Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year. Numerator: Number of confirmed cases can also be reported monthly to monitor incidence continuously.

Indicator number	IP-3
Indicator name	Incidence of severe malaria cases
Definition:	Number of severe malaria cases per 10,000 per mid-year population per year
Numerator (N)	Number of severe malaria cases reported from: <ul style="list-style-type: none"> Referral Hospitals and public health facilities Endemic and non-endemic ODs (out of 89 in 2015)
Denominator (D)	National mid-year population of endemic and non-endemic ODs (out of 89 in 2015)
Multiplier (M)	10,000
Equation	$(N/D) \times M$
Interpretation	ALL COUNTRY Severe malaria case rate assesses the effectiveness of efforts to improve access to quality healthcare services and promote early treatment seeking.
Baseline	1 (2014)
Target	0 (2020)
Disaggregation	By Sex, Specie, Age group, Province/OD, phasing
Data Source	Numerator: Number of severe malaria cases consist of: HIS (Severe cases from IPD section) for Referral Hospitals MIS (Severe cases in line-list of positive cases) for public health facilities Severe malaria cases reported in OPD section of HIS reports are not included
	Denominator: Standard projected annual population by ODs is provided by MoH's Department of Planning and Health Information (DPHI)
Frequency of Data Collection/Reporting	Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year. Numerator: Number of severe cases can also be reported monthly to monitor incidence continuously and detect outbreaks.
Indicator number	IP-4
Indicator name	Incidence of in-patient malaria deaths
Definition:	Number of in-patient malaria deaths per 100,000 mid-year population per year
Numerator (N)	Number of malaria deaths reported from: <ul style="list-style-type: none"> Referral Hospitals and public health facilities Endemic and non-endemic ODs (out of 89 in 2015)
Denominator (D)	National mid-year population Endemic and non-endemic ODs (out of 89 in 2015)
Multiplier (M)	100,000
Equation	$(N/D) \times M$
Interpretation	ALL COUNTRY Falling malaria specific mortality rate suggests that control efforts are effective and, depending on changes in API, may suggest better access to early diagnosis and treatment and/or more effective treatment of severe malaria

Baseline	0.12 (2014)
Target	0.00 (2020)
Disaggregation	By Sex, Specie, Age group, Province/OD, phasing
Data Source	Numerator: Number of in-patient malaria deaths consist of: HIS (Deaths from IPD section) for Referral Hospitals MIS (Deaths in line-list of positive cases) for public health facilities Malaria deaths reported in OPD section of HIS reports are not included
	Denominator: Standard projected annual population by ODs is provided by MoH's Department of Planning and Health Information (DPHI)
Frequency of Data Collection/Reporting	Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year. Numerator: Number of deaths can also be reported monthly to monitor mortality continuously and detect outbreaks.
Indicator number	IP-5
Indicator name	Number of endemic ODs with Annual Parasite Incidence (API) less than 1
Definition:	Number of endemic ODs that have API less than 1 per 1000 population
Numerator (N)	Number of endemic ODs that have API less than 1 per 1000 population Out of the 49 ODs listed in 2015 API measurement is detailed in table below
Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Interpretation	ALL COUNTRY Reducing number of ODs with API less than 1 per 1000 population marks progression towards elimination.
Baseline	18 (2014)
Target	49 (2020)
Disaggregation	By Specie, Province/OD, phasing
Data Source	Numerator: MIS
	Denominator: NA
Frequency of Data Collection/Reporting	GF NFM indicator GF RAI indicator with <i>Plasmodium falciparum</i> only Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year

Indicator number	IP-6
Indicator name	In elimination targeted areas: Percentage of <i>Plasmodium falciparum</i> and mixed cases classified as “local”
Definition:	Percentage of <i>Plasmodium falciparum</i> and mixed cases classified as local as per the Surveillance Operational Manual - in Elimination targeted areas with case investigation and classification
Numerator (N)	Number of <i>Plasmodium falciparum</i> and mixed cases classified as local
Denominator (D)	Number of <i>Plasmodium falciparum</i> and mixed cases that are classified
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Reducing the number of <i>Plasmodium falciparum</i> cases that are classified as local in an area marks progression towards achieving interruption of transmission
Baseline	NA
Target	0% (2020)
Data Source	Numerator: Case investigation reports in national case register
	Denominator: Case investigation reports in national case register
Frequency of Data Collection/Reporting	Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year
Indicator number	IP-7
Indicator name	In elimination targeted areas: Number of active foci
Definition:	Number of active foci as per the Surveillance Operational Manual - in Elimination targeted areas with foci investigation and classification.
Numerator (N)	Number of active foci
Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Interpretation	Reducing the number of active foci in marks progression towards achieving elimination
Baseline	NA
Target	0 (2020)
Data Source	Numerator: Foci investigation reports and national foci register
	Denominator: Foci investigation reports and national foci register
Frequency of Data Collection/Reporting	Reported annually Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year.

OBJECTIVE 1: Providing effective program management and coordination at all levels by 2017 to efficiently deliver a combination of targeted interventions for malaria elimination	
Indicator number	PM-1a
Indicator name	Percentage of points of care with no stock-outs of RDTs
Definition:	Percentage of points of care with no stock-out of RDTs
Numerator (N)	Number of points of care (health facilities, VMWs and PPM) with no stock-out of RDTs during the past month
Denominator (D)	Number of points of care (health facilities, VMWs and PPM) using electronic stock alert system
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Adequate and continued supply of the recommended diagnostics is the key to the delivery of prompt and effective treatment. Low stock out rates indicates a stronger supply management system.
Baseline	NA
Targets	> 95% (2020)
Disaggregation	By Care provider, Province/OD, phasing
Data Source	Numerator: MIS (electronic stock alert system) Until now, the data for this indicator was collected only at health facility level during routine supervision visits per quarter/semester. For example, 264 health facilities were monitored for stock levels in Q2 2015 and none reported stock outs of RDTs or ACTs. But 2017 onward, an electronic stock alert system will be implemented nation-wide at health facility and community level that can send information on stock levels in real-time or on regular basis. VMWs will report on a monthly basis on new forms and stock out status will be analyzed during monthly meetings at Health Center level. Private providers in PPM program will report stock levels in their bi-monthly meetings at OD level before the electronic system is rolled out at PPM level at a later stage.
	Denominator: MIS (electronic stock alert system)
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	PM-1b
Indicator name	Percentage of points of care with no stock-outs of antimalarial
Definition:	Percentage of points of care with no stock-outs of first-line ACT
Numerator (N)	Number of points of care (health facilities, VMWs and PPM) with no stock-out of first-line ACTs during the past month
Denominator (D)	Number of points of care (health facilities, VMWs and PPM) using electronic stock alert system
Multiplier (M)	1,000
Equation	$(N/D) \times M$

Interpretation	Adequate and continued supply of the recommended diagnostics is the key to the delivery of prompt and effective treatment. Low stock out rates indicates a stronger supply management system.
Baseline	NA
Targets	> 95% (2020)
Disaggregation	By Care provider, Province/OD, phasing
Data Source	Numerator: MIS (electronic stock alert system) Until now, the data for this indicator was collected only at health facility level during routine supervision visits per quarter/semester. For example, 264 health facilities were monitored for stock levels in Q2 2015 and none reported stock outs of RDTs or ACTs. But 2016 onward, an electronic stock alert system will be implemented nation-wide at health facility and community level that can send information on stock levels in real-time or on regular basis. VMWs will report on a monthly basis on new forms and stock out status will be analyzed during monthly meetings at Health Center level. Private providers in PPM program will report stock levels in their bi-monthly meetings at OD level before the electronic system is rolled out at PPM level at a later stage.
	Denominator: MIS (electronic stock alert system)
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.

OBJECTIVE 2: Achieve universal coverage of case management services by 2016 to ensure 100% parasitological diagnosis of all suspected cases and effective treatment of all confirmed cases	
Indicator number	CM-1
Indicator name	Annual Blood Examination Rate (ABER)
Definition:	Number of parasitological tests carried out per 100 persons per year
Numerator (N)	Number of parasitological tests reported: <ul style="list-style-type: none"> • From Referral Hospitals • From public health facilities, community, private providers, security forces • From endemic ODs only (out of 49 in 2015) • From passive case detection only Tests from active case detection and non-endemics ODs are reported separately
Denominator (D)	National mid-year population in the 49 endemic ODs
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	ENDEMIC ODs ONLY This indicator provides a measure of application of rational parasitological testing for malaria. Higher testing rates are recommended in elimination scenario. Can also be calculated using $API=(ABER*SPR)/10$
Baseline	4%(2014)
Targets	8% (2020)
Disaggregation	By Care provider, HF type, Microscopy/RDT, Province/OD, phasing
Data Source	Nominator: Number of tests conducted from all care providers consist of: HIS (Total tests from Microscopy/RDT section) for Referral Hospitals MIS (Total tests - Microscopy and RDT) for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs) Case reports from security forces Denominator: Standard projected annual population by ODs is provided by MoH's Department of Planning and Health Information (DPHI)
Frequency of Data Collection/Reporting	Reported annually GF NFM indicator to replace “% of suspected case tested” Results are published by the CNM annually. Preliminary results for any given year are available within 1 month of the end of that year. Final annual results are available within 3 months of the end of the last year
Indicator number	CM-2
Indicator name	Percentage of suspected malaria cases that received parasitological testing
Definition:	Percentage of suspected malaria cases that received parasitological testing
Numerator (N)	Number of confirmed uncomplicated malaria cases receiving first-line anti-malarial treatment as per national guidelines reported: <ul style="list-style-type: none"> • From public health facilities, community, private providers, security forces • From endemic ODs only (out of 49 in 2015) • From passive case detection only Referral Hospitals are excluded

Denominator (D)	<p>Number of confirmed uncomplicated malaria cases reported:</p> <ul style="list-style-type: none"> • From public health facilities, community, private providers, security forces • From endemic ODs only (out of 49 in 2015) • From passive case detection only <p>Referral Hospitals are excluded</p>
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	<p>ENDEMIC ODs ONLY</p> <p>This indicator provides a measure of adherence to case definition of suspected malaria in national treatment guidelines and availability of parasitological test</p>
Baseline	100% (2014)
Targets	100% (2020)
Disaggregation	By Care provider, HF type, Province/OD, phasing
Data Source	<p>Numerator: Number of parasitological tests are compiled from: MIS line-list reports for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs): All confirmed cases treated by appropriate ACT – DHA-PIP or AS-MQ depending on province - excluding severe and referred cases. Case reports from security forces if required information on treatment available</p>
	<p>Denominator: Number of suspected malaria cases is compiled from: MIS line-list reports for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs): All confirmed cases - excluding severe and referred cases. Case reports from security forces if required information on treatment available</p>
Frequency of Data Collection/Reporting	<p>Reported monthly</p> <p>Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.</p> <p>NB: This indicator can be measured more accurately by probability sampled health facility survey with exit interview of patients</p>
Indicator number	CM-3
Indicator name	Percentage of confirmed malaria cases that received first-line antimalarial treatment
Definition:	Percentage of confirmed malaria cases that received first-line antimalarial treatment according to national policy
Numerator (N)	<p>Number of confirmed uncomplicated malaria cases receiving first-line anti-malarial treatment as per national guidelines reported:</p> <ul style="list-style-type: none"> • From public health facilities, community, private providers, security forces • From endemic ODs only (out of 49 in 2015) • From passive case detection only <p>Referral Hospitals are excluded</p>
Denominator (D)	<p>Number of confirmed uncomplicated malaria cases reported:</p> <ul style="list-style-type: none"> • From public health facilities, community, private providers, security forces • From endemic ODs only (out of 49 in 2015) • From passive case detection only <p>Referral Hospitals are excluded</p>

Multiplier (M)	100
Equation	(N/D) x M
Interpretation	ENDEMIC ODs ONLY This indicator provides a measure of adherence to national treatment guidelines and availability of first-line treatment
Baseline	100% (2014)
Targets	100% (2020)
Disaggregation	By Care provider, HF type, Province/OD, phasing
Data Source	Numerator: Number of confirmed uncomplicated malaria cases receiving first-line anti-malarial treatment are compiled from: MIS line-list reports for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs): All confirmed cases treated by appropriate ACT – DHA-PIP or AS-MQ depending on province - excluding severe and referred cases. Case reports from security forces if required information on treatment available
	Denominator: Number of confirmed uncomplicated malaria cases is compiled from: MIS line-list reports for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs): All confirmed cases - excluding severe and referred cases. Case reports from security forces if required information on treatment available
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting. NB: This indicator can be measured more accurately by probability sampled health facility survey with exit interview of patients
Indicator number	CM-4
Indicator name	Case fatality rate in referral hospitals
Definition:	Percentage of malaria deaths among severe in-patients in referral hospitals
Numerator (N)	Number of deaths of severe malaria in-patients in referral hospitals
Denominator (D)	Number of severe malaria in-patients in referral hospitals
Multiplier (M)	100
Equation	(N/D) x M
Interpretation	Decreasing rates suggests that efforts to improve case management and/or early treatment seeking for severe cases are effective
Baseline	2% (2014)
Targets	0% (2020)
Data Source	Numerator: HMIS
	Denominator: HMIS
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from HMIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.

Indicator number	CM-5a
Indicator name	Number of villages/point of care covered by with VMW/MMW/PMW
Definition:	Number of villages/point of care covered by with VMW/MMW/PMW
Numerator (N)	Number of villages/point of care covered by with VMW/MMW/PMW
Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Interpretation	Number of VMW/MMW/PMW in target areas indicates high access to malaria case management services targeted in an elimination program
Baseline	2955 (2014)
Targets	TBD
Disaggregation	By VMW/MMW/PMW, Province/OD, phasing
Data Source	Numerator: MIS
	NA
Frequency of Data Collection/Reporting	Annual
Indicator number	CM-5b
Indicator name	Number of active PPM providers
Definition:	Number of PPM active providers
Numerator (N)	Number of active PPM providers
Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Interpretation	Geographical expansion of qualified service providers in the private sector is likely to increase access and quality of malaria diagnosis and treatment
Baseline	TBD (2014)
Targets	TBD (2020)
Disaggregation	By Province/OD, phasing
Data Source	Numerator: MIS
	Denominator: NA
Frequency of Data Collection/Reporting	Annual

Indicator number	CM-6
Indicator name	Percentage of care providers with adequate case management practices and drug supply
Definition:	Percentage of care providers with adequate case management practices and supply of quality-assured diagnostics and medicines
Numerator (N)	Number of HF/VMW/PPM providers with adequate case management practices and supply of quality-assured diagnostics and medicine (based on QA assessment/supervision tools)
Denominator (D)	Number of care providers surveyed using VMW QA assessment tool
Multiplier (M)	100
Equation	$(N/D) \times M$
Baseline	NA
Targets	100% (2020)
Disaggregation	By Care provider, HF type, Province/OD, phasing
Data Source	Numerator: MIS
	Denominator: MIS
Frequency of Data Collection/Reporting	Quarterly supervision. SOPs and QA assessment/supervision tools will be designed to capture case management practices and availability of drugs and diagnosis tools. Individual scoring system will be developed to follow up progress
Indicator number	CM-7
Indicator name	Access of malaria diagnosis for MMPs
Definition	Percentage of people from the mobile and migrant population (MMP) with fever in the last three months that accessed parasite-based diagnosis
Numerator (N)	Number of people from the MMPs with fever in the last three months that accessed parasite-based diagnosis
Denominator (D)	Number of people from the MMPs interviewed
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	A rising diagnosis rate in MMPs indicates that programmatic efforts to promote rational treatment in these target groups are becoming increasingly effective
Baseline	NA
Targets	>90% (2019)
Disaggregation	Category of MMP, Province/OD
Data Source	Numerator: HH/MMP Survey
	Denominator: HH/MMP Survey
Frequency of Data Collection/Reporting	Every three years

Indicator number	QA-1
Indicator name	Microscopy QA/QC coverage
Definition:	Percentage of designated microscopy points participating in QA/QC management system (all positive slides and 10% of negative slides sent for retesting and the blind proficiency test completed each year).
Numerator (N)	Number of designated microscopy points participating in QA/QC management system (all positive slides and 10% of negative slides sent for retesting and the blind proficiency test completed each year).
Denominator (D)	Number of designated microscopy points.
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Complete coverage with an effective QA/QC management system will maximize the quality of microscopy services
Baseline	70% (2013)
Targets	0% (2020)
Disaggregation	HF type, Province/OD
Data Source	Numerator: Microscopy QA database Denominator: Microscopy QA database
Frequency of Data Collection/Reporting	As per microscopy supervision schedule
Indicator number	QA-2
Indicator name	Sensitivity and specificity of microscopy
Definition:	Percentage of microscopists achieving both sensitivity and specificity greater than 90% during blind proficiency tests
Numerator (N)	Number of microscopists achieving both sensitivity and specificity greater than 90% during blind proficiency tests
Denominator (D)	Number of microscopists assessed by blind proficiency tests
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	An increasing percentage of microscopists achieving both sensitivity and specificity greater than 90% during blind proficiency tests indicates that the quality of microscopy is improving
Baseline	NA
Targets	100% (2020)
Data Source	Numerator: Microscopy QA database Denominator: Microscopy QA database
Frequency of Data Collection/Reporting	As per microscopy supervision schedule

Indicator number	DG-1
Indicator name	Sale of artemisinin monotherapies
Definition:	Percentage of private sector outlets in endemic provinces selling artemisinin monotherapies
Numerator (N)	Number of private sector outlets in endemic provinces selling artemisinin monotherapies
Denominator (D)	Number of private sector outlets in endemic provinces sampled
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	A falling percentage of private sector outlets in endemic provinces selling artemisinin monotherapy indicates that regulation and enforcement efforts are successfully progressing
Baseline	0.2 % (2015)
Targets	0% (2020)
Disaggregation	Care provider, Outlet type
Data Source	Numerator: Outlet survey
	Denominator: Outlet survey
Frequency of Data Collection/Reporting	Every 3 years
Indicator number	DG-2
Indicator name	Quality Control of antimalarial drugs
Definition:	Number of antimalarial drug sample batch collected for QC test
Numerator (N)	Number of antimalarial drug sample batch collected for QC test
Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Baseline	91 (2014)
Targets	TBD
Disaggregation	Care provider, Outlet type, Province/OD
Data Source	Numerator: DDF database
	Denominator: DDF database
Frequency of Data Collection/Reporting	As per DDF batch testing schedule
Indicator number	DG-3
Indicator name	Inspections care providers and drug vendors
Definition:	Number of inspection visits conducted by central and provincial inspectors
Numerator (N)	Number of inspection visits conducted by central and provincial inspectors

Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Interpretation	
Baseline	900 (2014)
Targets	TBD
Disaggregation	Care provider, Outlet type, Province/OD
Data Source	Numerator: DDF database
	Denominator: DDF database
Frequency of Data Collection/Reporting	As per DDF batch testing schedule

OBJECTIVE 3: Protect at least 90% of all populations at risk of malaria with an appropriate vector control intervention by 2017

Indicator number	VC-1
Indicator name	Use of ITN by population in targeted villages
Definition	Percentage of people living in targeted villages who slept under an ITN during the previous night (categories: all, children under 5 and pregnant women)
Numerator (N)	Number of people who slept under an ITN the previous night
Denominator (D)	Number of people surveyed
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	POPULATION TARGETED BY ITN This indicator provides a measure of ITN coverage at household level.
Baseline	52% all; 56% under-five; 57% pregnant women (2013)
Targets	>90% (2019)
Disaggregation	ITN, LLIN, Sex, Age, Pregnant
Data Source	Numerator: HH survey Denominator: HH survey
Frequency of Data Collection/Reporting	Every three years
Indicator number	VC-2
Indicator name	Use of ITN by the population with access to an ITN
Definition	Percentage of population living in targeted villages using an insecticide-treated net among the population with access to an insecticide-treated net
Numerator (N)	Number of people in survey who slept under an ITN the previous night
Denominator (D)	Number of people in survey who had access to an ITN
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	POPULATION TARGETED BY ITN This indicator provides a measure of ITN coverage at household level.
Baseline	72% (2013)
Targets	>90% (2019)
Disaggregation	ITN, LLIN, Sex, Age, Pregnant
Data Source	Numerator: HH survey Denominator: HH survey
Frequency of Data Collection/Reporting	Every three years

Indicator number	VC-3a
Indicator name	Percentage of households with at least one ITN
Definition	Percentage of households with at least one ITN
Numerator (N)	Number of households surveyed in target areas with at least one ITN
Denominator (D)	Number of households surveyed in target areas
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	POPULATION TARGETED BY ITN This indicator provides a measure of ITN coverage at household level.
Baseline	78% (2013)
Targets	>90% (2019)
Disaggregation	ITN, LLIN
Data Source	Numerator: HH survey
	Denominator: HH survey
Frequency of Data Collection/Reporting	Every three years
Indicator number	VC-3b
Indicator name	Percentage of households with at least one ITN for every two people
Definition	Percentage of households with at least one ITN for every two people
Numerator (N)	Number of households surveyed in target areas with at least one ITN for every two people
Denominator (D)	Number of households surveyed in target areas
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	POPULATION TARGETED BY ITN This indicator provides a measure of ITN coverage at household level.
Baseline	54% (2013)
Targets	>90% (2019)
Disaggregation	ITN, LLIN
Data Source	Numerator: HH survey
	Denominator: HH survey
Frequency of Data Collection/Reporting	Every three years

Indicator number	VC-4
Indicator name	Use of ITN by forest goers for sleeping in forest
Definition	Percentage of forest-goers in targeted villages who reported sleeping under an ITN the last time they slept in the forest
Numerator (N)	Number of forest-goers in survey who slept under an ITN the last time they slept in the forest
Denominator (D)	Number of forest-goers in survey
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	POPULATION TARGETED BY ITN This indicator provides a measure of ITN coverage at household level.
Baseline	49% (2013)
Targets	>90% (2019)
Data Source	Numerator: HH survey
	Denominator: HH survey
Frequency of Data Collection/Reporting	Every three years
Indicator number	VC-5
Indicator name	Number of LLIN and LLIHN distributed
Definition	Number of LLIN and LLIHN distributed during the year
Numerator (N)	Number of LLIN and LLIHN distributed during the year
Denominator (D)	NA
Multiplier (M)	NA
Equation	NA
Interpretation	POPULATION TARGETED BY ITN This indicator provides a measure of outputs of LLIN distribution
Baseline	862,397 (2014)
Targets	TBD (2020)
Disaggregation	LLIN, LLIHN, mass campaign, continuous
Data Source	Numerator: MIS
	Denominator: NA
Frequency of Data Collection/Reporting	Annually
Indicator number	VC-5
Indicator name	Percentage of the population-at-risk potentially covered by nets distributed

Definition	Percentage of population living in targeted at risk areas potentially covered by the LLINs distributed in last 3 years calculated from number of insecticide-treated nets distributed in last three years.
Numerator (N)	LLINs are assumed to protect 1.8 persons for 3 years. Hence the number of people potentially covered is 1.8 x (number of LLINs distributed in last 3 years).
Denominator (D)	Target population for LLIN distribution
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	POPULATION TARGETED BY ITN This indicator provides an estimated coverage of LLIN distribution
Baseline	>90% (2014)
Targets	>98% (2020)
Disaggregation	Province/OD, phasing
Data Source	Numerator: MIS
	Denominator: MIS
Frequency of Data Collection/Reporting	Annually

OBJECTIVE 4: Enhance the surveillance system to detect, immediately notify, investigate, classify and respond to all cases and foci by 2017 to move toward malaria elimination	
Indicator number	SV-1a
Indicator name	Completeness of reporting – Referral hospitals
Definition	Percentage of expected HIS reports submitted by referral hospitals
Numerator (N)	Number of HIS reports submitted by referral hospitals according to national guidelines
Denominator (D)	Number of HIS reports by referral hospitals expected during the period of interest
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	ALL COUNTRY Complete reporting is key to effective M&E, surveillance and program management
Baseline	50% (2014)
Targets	>99% (2020)
Data Source	Numerator: HIS
	Denominator: Number of referral hospitals x number of months
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from HIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	SV-1b
Indicator name	Completeness of reporting – HCs
Definition	Percentage of expected MIS reports submitted by HCs
Numerator (N)	Number of MIS reports submitted by HCs according to national guidelines
Denominator (D)	Number of MIS reports by HCs expected during the period of interest
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	ENDEMIC ODs ONLY Complete reporting is key to effective M&E, surveillance and program management
Baseline	80% (2014)
Targets	>99% (2020)
Data Source	Numerator: MIS
	Denominator: Number of HCs x number of months
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	SV-1c

Indicator name	Completeness of reporting – VMW/MMWs
Definition	Percentage of expected MIS reports submitted by VMW/MMWs
Numerator (N)	Number of MIS reports submitted by VMWs according to national guidelines
Denominator (D)	Number of MIS reports by VMWs expected during the period of interest
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	ENDEMIC ODs ONLY Complete reporting is key to effective M&E, surveillance and program management
Baseline	>90% (2014)
Targets	>99% (2020)
Data Source	Numerator: MIS
	Denominator: Number of VMWs x number of months
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	SV-1d
Indicator name	Completeness of reporting – PP/PMWs
Definition	Percentage of expected MIS reports submitted by PP/PMWs
Numerator (N)	Number of MIS reports submitted by PP/PMWss according to national guidelines
Denominator (D)	Number of MIS reports by PP/PMWs expected during the period of interest
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	ENDEMIC ODs ONLY Complete reporting is key to effective M&E, surveillance and program management
Baseline	NA
Targets	>99% (2020)
Data Source	Numerator: MIS
	Denominator: Number of PP/PMWs x number of months
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.

Indicator number	EL-1
Indicator name	In Elimination ODs: Percentage of confirmed malaria cases notified within 24h
Definition	Percentage of confirmed malaria cases notified within 24h
Numerator (N)	Number of confirmed malaria cases recorded notified through digital devices in real-time All species including <i>Plasmodium vivax</i>
Denominator (D)	Number of confirmed malaria cases recorded
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Timely notification of all cases in target ODs is crucial to ensure a rapid response and thereby minimize the risk of onward transmission. An increasing timely notification rate indicates that the program is making progress towards developing the capacity for surveillance required for malaria elimination.
Baseline	NA
Targets	>99% (2020)
Data Source	Numerator: Number of malaria cases notified through digital devices in real-time according to the Surveillance Operational manual is generated by the MIS. Time from diagnosis to notification is generated by the system
	Denominator: Number of positive tests from all care providers consist of: HIS (Positive tests from Microscopy/RDT section) for Referral Hospitals MIS (Line-list of positive cases) for public health facilities, community level (VMW/MMWs) and private providers (PPM/PMWs) Case reports from security forces
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	EL-2
Indicator name	In Elimination ODs: Percentage of <i>Plasmodium falciparum</i> cases investigated within 3 days
Definition	Percentage of notified <i>Plasmodium falciparum</i> and mixed malaria cases fully investigated within 3 days after detection
Numerator (N)	Number of <i>Plasmodium falciparum</i> and mixed malaria cases in targeted ODs fully investigated within 3 days after detection according to the Surveillance Operational manual.
Denominator (D)	Number of <i>Plasmodium falciparum</i> and mixed malaria cases notified through digital devices in real-time
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Timely investigation of all cases in target ODs is crucial to ensure a rapid response and thereby minimize the risk of onward transmission. An increasing timely

	investigation rate indicates that the program is making progress towards developing the capacity for surveillance required for malaria elimination.
Baseline	NA
Targets	>99% (2020)
Data Source	Numerator: Number of <i>Plasmodium falciparum</i> and mixed malaria cases fully investigated within 3 days after detection according to the Surveillance Operational manual is generated by the MIS. Time from diagnosis to investigation is generated by the system Denominator: Number of <i>Plasmodium falciparum</i> and mixed malaria cases notified through digital devices in real-time
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	EL-3
Indicator name	In Elimination ODs: Percentage of <i>Plasmodium falciparum</i> cases who received DOT by VMWs
Definition:	Percentage of <i>Plasmodium falciparum</i> and mixed malaria cases who received directly observed treatment (DOT) by VMWs
Numerator (N)	Number of <i>Plasmodium falciparum</i> and mixed malaria cases who received DOT by VMWs. DOT means treatment taken in front of VMWs on day 1 and confirmed through follow-up visit by VMW on days 2 and 3.
Denominator (D)	Number of <i>Plasmodium falciparum</i> and mixed malaria reported by VMWs
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Increasing DOT rate is indicative of increasing effectiveness of case management services at community level
Baseline	63% (2014)
Targets	100% (2020)
Data Source	Numerator: MIS (Line-list of positive cases with DOT completed) from VMWs Denominator: MIS (Line-list of positive cases) from VMWs
Frequency of Data Collection/Reporting	Reported monthly GF RAI indicator Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	EL-4
Indicator name	In Elimination ODs: Percentage of <i>Plasmodium falciparum</i> malaria cases detected within 24 hours
Definition:	Percentage of investigated <i>Plasmodium falciparum</i> and mixed malaria cases detected within 24 hours after onset of symptoms

Numerator (N)	Number of investigated <i>Plasmodium falciparum</i> and mixed malaria cases detected within 24 hours after onset of symptoms
Denominator (D)	Number of investigated <i>Plasmodium falciparum</i> and mixed malaria cases
Multiplier (M)	100
Equation	(N/D) x M
Interpretation	Timely detection of all cases in target ODs is crucial to ensure a rapid response and thereby minimize the risk of onward transmission.
Baseline	NA
Targets	100% (2020)
Data Source	Numerator: Case investigation reports from HC captured by MIS web-platform Time from onset of symptoms to detection is generated by the system
	Denominator: Case investigation reports from HC captured by MIS web-platform
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	EL-5
Indicator name	In Elimination ODs: Percentage of new active foci fully investigated
Definition	Percentage of new active foci fully investigated according to the Surveillance Operational manual.
Numerator (N)	Number of new active foci fully investigated according to the Surveillance Operational manual. New active foci is a village with at least one <i>Plasmodium falciparum</i> and mixed malaria cases classified as 'local'
Denominator (D)	Number of foci identified
Multiplier (M)	100
Equation	(N/D) x M
Interpretation	Focus investigation is a key strategy for elimination of malaria. An increasing foci investigation rate indicates that the program is making progress towards developing the capacity for surveillance required for malaria elimination.
Baseline	NA
Targets	>99% (2020)
Data Source	Numerator: MIS
	Denominator: MIS
Frequency of Data Collection/Reporting	Reported monthly GF RAI indicator Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.
Indicator number	EL-6

Indicator name	In Elimination ODs: Percentage of investigated foci in which appropriate response was operated
Definition	Percentage of investigated foci in which appropriate response was operated according to the Surveillance Operational manual.
Numerator (N)	Number of new active foci investigated in which an appropriate response was initiated according to the national guidelines
Denominator (D)	Number of foci investigated
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	A timely response to confirmed foci is key to preventing continued transmission in elimination settings. Focus investigation is a key strategy for elimination of malaria. An increasing active focus response rate indicates that the program is making progress towards developing the capacity for surveillance required for malaria elimination.
Baseline	NA
Targets	>99% (2020)
Data Source	Numerator: MIS
	Denominator: MIS
Frequency of Data Collection/Reporting	Reported monthly Indicator for any given month can be extracted from MIS 1 month after the end of that month but final results are available 3 months after the end of that month to take in account data from delayed reporting.

OBJECTIVE 5: Implementing comprehensive IEC/BCC approach that facilitates at least 90% of people seeking treatment for fever within 24 hours at a health facility or with a qualified care provider and at least 85% of at-risk population utilizing an appropriate protection tool by 2017

Indicator number	IE-1
Indicator name	Knowledge of malaria prevention in target population
Indicator definition	Percentage of target population who could explain how malaria is prevented through the use of ITN
Numerator (N)	Number of people surveyed in the target population who could explain how malaria is prevented through the use of ITN
Denominator (D)	Number of people surveyed in the target population
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	Fostering a better understanding of malaria and methods for its prevention amongst members of the ITN target population is key to changing behavior to improve the utilization of ITNs. Increasing value of this indicator measures the effectiveness of IEC/BCC strategies.
Baseline	42% (2013)
Targets	>90% (2020)
Data Source	Numerator: CMS Denominator: CMS
Frequency of Data Collection/Reporting	Every three years
Indicator number	IE-2
Indicator name	Care seeking to VMWs
Indicator definition	Percentage of respondents reporting VMW as usual point of consultation for fever
Numerator (N)	Number of people surveyed in the target population reporting VMW as usual point of consultation for fever
Denominator (D)	Number of people surveyed in the target population
Multiplier (M)	100
Equation	$(N/D) \times M$
Interpretation	
Baseline	16% (2013)
Targets	TBD
Data Source	Numerator: CMS Denominator: CMS
Frequency of Data Collection/Reporting	Every three years

Annex 3 M&E and Surveillance costed work plan

BUDGET USD	2016	2017	2018	2019	2020	TOTAL
Objective 4: Strengthen the surveillance system to immediately investigate, classify, report and respond to all cases and foci to move toward malaria elimination	7,881,796	8,389,181	7,397,525	8,841,642	7,124,424	39,634,568
Strategy 4.1 Define system specifications for upgraded Malaria Information System (MIS)	321,225	43,022	44,308	55,425	57,084	521,063
4.1.1 Review and define architecture of surveillance systems	55,432	586	599	10,405	10,713	77,733
4.1.2 Develop system specifications with surveillance working group	39,193	0	0	0	0	39,193
4.1.3 Procure and install hardware for MIS upgrade	61,800	0	0	0	0	61,800
4.1.4 Procurement, installation, and customization of software for MIS upgrade	128,750	5,305	5,464	5,628	5,796	150,942
4.1.5 Maintain and customize MIS as required	36,050	37,132	38,245	39,393	40,575	191,394
Strategy 4.2 Strengthen and build capacity to implement the surveillance system for malaria elimination	1,359,390	2,101,008	2,355,148	2,695,386	2,434,491	10,945,423
4.2.1 Develop malaria surveillance operational manual	35,975	672	4,656	685	4,912	46,900
4.2.2 Assess human resource capacity at OD/PHD/HC level	889,302	1,900,072	2,145,242	2,321,024	2,390,655	9,646,295
4.2.3 Train PHD/OD/HC staff, PPM network, VMWs, military/police, and implementing partners on surveillance	434,113	200,264	205,251	373,676	38,924	1,252,228
Strategy 4.3 Strengthen passive case detection and routine reporting by all health care providers	1,332,452	561,298	532,351	1,142,424	664,809	4,233,334
4.3.1 Mandate malaria as a notifiable disease	206	0	0	0	0	206
4.3.2 Upgrade malaria-portion of HIS in collaboration with Department of Planning and Health Information (DPHI)	0	0	0	0	0	0

4.3.3 Align military/police reporting with national data forms and reporting requirements	70,618	61,108	66,053	73,833	69,952	341,564
4.3.4 Procure and distribute mobile phones/tablets with reporting application to all service providers (health facilities, VMWs, private providers) in targeted ODs	1,237,912	490,190	466,298	1,068,591	594,857	3,857,849
4.3.5 Upgrade real-time system to include immediate case alert and stock management features and link it with MIS	23,715	10,000	0	0	0	33,715
Strategy 4.4 Strengthen case detection, investigation and reporting system for all malaria infections	3,083,274	4,434,630	2,929,854	3,727,915	2,487,613	16,663,286
4.4.1 Conduct mapping of households in every village in ODs selected for elimination to compile a household location database	607,427	498,480	542,383	550,879	559,630	2,758,798
4.4.2 Investigate, classify, and report all cases from health center and hospital level in ODs targeted for elimination	1,354,815	1,813,433	799,546	1,837,597	1,664,932	7,470,323
4.4.3 Follow-up at household level, investigate, and classify all confirmed cases reported by VMWs and PPM network through real-time case reporting system in districts targeted for elimination	315,760	780,785	644,980	460,692	5,906	2,208,122
4.4.4 Carry out reactive case detection around index cases in ODs targeted for elimination	377,975	931,604	766,641	545,406	6,914	2,628,540
4.4.5 Conduct IRS in households around the index case household in Elimination ODs	243,513	357,573	166,666	333,341	250,232	1,351,326
4.4.6 Carry out proactive case detection based on suspected transmission, increase in presence of high-risk populations, changes in receptivity/vulnerability, and to prevent outbreaks and report data to MIS	183,784	52,754	9,638	0	0	246,175
Strategy 4.5 Strengthen investigation, classification, and appropriate response to all malaria transmission foci	0	112,969	242,585	151,439	43,741	550,735
4.5.1 Investigate, classify, and map all foci in elimination targeted ODs to identify drivers of transmission	0	98,411	210,875	131,362	37,860	478,508
4.5.2 Respond to active foci based on results of investigation	0	14,559	31,710	20,077	5,881	72,227
4.5.3 Establish and maintain geo-referenced database for all foci	0	0	0	0	0	0
Strategy 4.6 Strengthen management and usage of data at all health levels	455,636	384,013	395,193	406,709	474,215	2,115,766
4.6.1 Train surveillance officers at the central and peripheral level on data collection, reporting, analysis and data validation	3,563	1,451	1,478	1,505	1,534	9,531

4.6.2 Establish access to central MIS for PHD/OD staff	436,308	366,647	377,646	388,976	456,290	2,025,868
4.6.3 Establish feedback mechanisms on surveillance data for all health levels	15,765	15,914	16,069	16,228	16,391	80,367
Strategy 4.7 Outbreak preparedness and response	257,500	212,180	218,545	225,102	231,855	1,145,182
4.7.1 Develop guidelines for outbreak preparedness and response	20,600	0	0	0	0	20,600
4.7.2 Train all relevant staff on outbreak preparedness and response	0	0	0	0	0	0
4.7.3 Investigate and take response in outbreak situation	30,900	0	0	0	0	30,900
4.7.4 Develop outbreak early warning system in areas targeted for burden reduction	0	0	0	0	0	0
4.7.5 Establish flexible funding mechanism for outbreak response, including buffer stock of malaria commodities	206,000	212,180	218,545	225,102	231,855	1,093,682
Strategy 4.8 Strengthen program monitoring and evaluation	515,576	180,269	328,277	54,637	360,645	1,439,403
4.8.1 Update Monitoring and Evaluation plan and revise as necessary	10,876	3,204	0	0	3,371	17,450
4.8.2 Train all malaria-relevant staff on Monitoring and Evaluation	0	0	0	0	0	0
4.8.3 Conduct Cambodia Malaria Survey (2016)	257,500	0	0	0	0	257,500
4.8.4 Conduct Community Survey (2018, 2020)	0	0	328,277	0	348,269	676,546
4.8.5 Conduct Mid-Term Review of Malaria Elimination Action Framework	0	27,357	0	0	0	27,357
4.8.6 Conduct Malaria Program Review	0	0	0	54,637	9,005	63,642
4.8.7 Conduct ACTwatch Outlet Survey	0	149,708	0	0	0	149,708
4.8.8 Conduct MMP Survey	247,200	0	0	0	0	247,200

Strategy 4.9 Strengthen Operational Research for malaria	853	255	2,792	270	278	4,448
4.9.1 Review and endorse the Policies and Guidelines to Conduct Malaria Research in Cambodia	573	0	0	0	0	573
4.9.2 Assign a CNM focal point to lead on the operational research agenda	0	0	0	0	0	0
4.9.3 Train CNM staff on research methodologies across core thematic areas	33	0	2,530	0	0	2,563
4.9.4 Conduct quarterly meeting of CNM Research Network to coordinate the research agenda in an elimination setting	247	255	262	270	278	1,312
Strategy 4.10 Monitor drug efficacy and test new drug regimens	555,891	359,539	348,471	382,335	369,693	2,015,928
4.10.1 Conduct Therapeutic Efficacy Studies (TES) on ACTs recommended in NTGs at selected sentinel sites	435,742	235,785	221,004	251,045	234,463	1,378,038
4.10.2 Conduct therapeutic studies on artesunate and piperaquine	120,150	123,754	127,467	131,291	135,229	637,890