

PRIVATE SECTOR ENGAGEMENT IN MALARIA CASE MANAGEMENT TOOLKIT

Greater Mekong Sub-region Elimination of Malaria through Surveillance



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The PSI Cambodia team would acknowledge the partners who have worked collaboratively with us over the last decade to engage the private sector in malaria case management in Cambodia. In particular the team would like to acknowledge the partnership of the Ministry of Health of Cambodia, the National Center for Parasitology, Entomology, and Malaria Control, the staff of the Provincial and District Health Departments as well as the as tireless staff of the public health facilities.

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List of Acronyms

ACT	Artemisinin-based Combination Therapy
BMGF	Bill and Melinda Gates Foundation
CLIME	Community Led Initiatives for Malaria Elimination
CNM	National Center for Parasitology, Entomology, and Malaria Control
D2A	Data-To-Action
DAC	DHIS2 Android Capture
DHIS2	District Health Information System
D&T TWG	Diagnosis and Treatment Technical Working Group
EIP	Empathy, Insights and Prototyping
GEMS	Greater Mekong Sub-region Elimination of Malaria through Surveillance
GMS	Greater Mekong Sub-region
GTS	Global Technical Strategy
HC	Healthcare Center
HMIS	Health Management Information System
HNQIS	Health Quality Improvement Network System
ITN	Insecticide treated net
METT	Meet Educate Test Treat
MIS	Malaria Information System
MMP	Migrant and Mobile Population
MMW	Mobile Malaria Worker
MOH	Ministry of Health
MOU	Memorandum Of Understanding
NGO	Non-governmental organization
NMCP	National Malaria Control Program
NMP	National Malaria Programs
NTGs	National Treatment Guidelines
OAMT	Oral Artemisinin Monotherapy
OD	Operational District
PRFs	Patient Register Forms
PHD	Provincial Health Department
PPM	Public Private Mix

List of Acronyms

PSI	Population Services International
PSI/C	Population Services International Cambodia
QA	Quality Assurance
QoC	Quality Of Care
RDTs	Rapid Diagnostic Tests
SOP	Standard Operating Procedure
UiO	University of Oslo

The Toolkit



Background of the Toolkit

Between 2016 and 2019, Population Services International (PSI) received funding from the Bill & Melinda Gates Foundation to implement The Greater Mekong Sub-region Elimination of Malaria through Surveillance (GEMS) project in Cambodia, Lao PDR, Myanmar, and Vietnam. The primary objective of the project was to increase coverage of private sector engagement for malaria testing, treatment and reporting according to national policies. The GEMS project was a collaborative effort between private worksites, outlets, government agencies and non-governmental organizations (NGOs).

Purpose of the Toolkit

This private sector engagement toolkit aims to strengthen existing and future malaria case management services by offering detailed outlines and valuable insights from PSI Cambodia's programming to help national program managers, their teams, and collaborating partners inform and improve private sector engagement programs.

Through this toolkit, PSI/C aims to provide practical and accessible tools so that best practices and lessons learned from the field can be used to strengthen current and future programs.

Content of the Toolkit

The toolkit includes standard operating procedures (SOPs), best practices and lessons learned when engaging private sector providers in the delivery of quality malaria case management. The content focuses on aspects such as program implementation, quality assurance of malaria case management, surveillance, supply chain management community engagement, and data monitoring.

1. Introduction



GEMS Program & Goals

As the countries of the Greater Mekong Sub-region (GMS), continue to make steady progress towards malaria elimination goals, all public, community, and private sectors need to be prepared to correctly detect and treat cases. With many people still choosing to seek care in the private sector, engaging private health care providers remains critical to ensure that quality treatment is available wherever people seek care, and that timely, accurate data is shared with National Malaria Programs (NMPs). For the past five years, PSI's GEMS program has been:



Increasing universal access to quality malaria diagnosis and treatment services by supporting and supervising private providers



Bringing care closer to the most at-risk population by ensuring services are available where they are most needed



Ensuring that national malaria programs (NMPs) have timely access to private sector data to drive decisions through surveillance

In Cambodia, the program included five core elements:

- Mapping of private providers
- Providing comprehensive training
- Providing routine supervision to providers
- Ensuring secure supply chains for quality assured rapid diagnostic tests (RDTs) and first line treatments
- Establishing routine case reporting from the private sector incorporated into the national health management information systems (HMIS).

Malaria in Cambodia

In Cambodia adult males have the highest risk of acquiring malaria from occupational and travel-related factors, particularly frequent visits to forest and forest-fringe areas. In 2017, the Cambodia migrant and mobile populations (MMPs)

survey found only 51% of mobile workers in Cambodia used an insecticide treated net (ITN) the last time they visited the forest, and only 29% of mobile populations with fever in the last three months accessed parasite-based diagnosis. The forest-related epidemiology of malaria in Cambodia places forest-going MMPs at highest risk [1]. MMPs, including the sub-category of forest workers, have low access to appropriate health services and low knowledge of malaria risk. This is further complicated by the fact that the health system is most stretched in remote areas, making it difficult to provide treatment and adequate follow-up to a population with high mobility patterns [2].

Public Private Mix (PPM) Program Background & Rationale

The World Health Organization's (WHO) Global Technical Strategy for Malaria 2016-2030 (GTS) highlights the provision of quality malaria case management and the transformation of surveillance into a core intervention as fundamental components of a malaria control and elimination strategy. This means that practitioners must provide early and accurate diagnosis, as well as effective treatment, and national surveillance systems should capture, track, classify and respond to malaria cases from both private and public sectors. However, support to private providers in administering quality malaria case management and the integration of private sector data into national systems remains a challenge for national malaria programs (NMPs) in endemic countries.



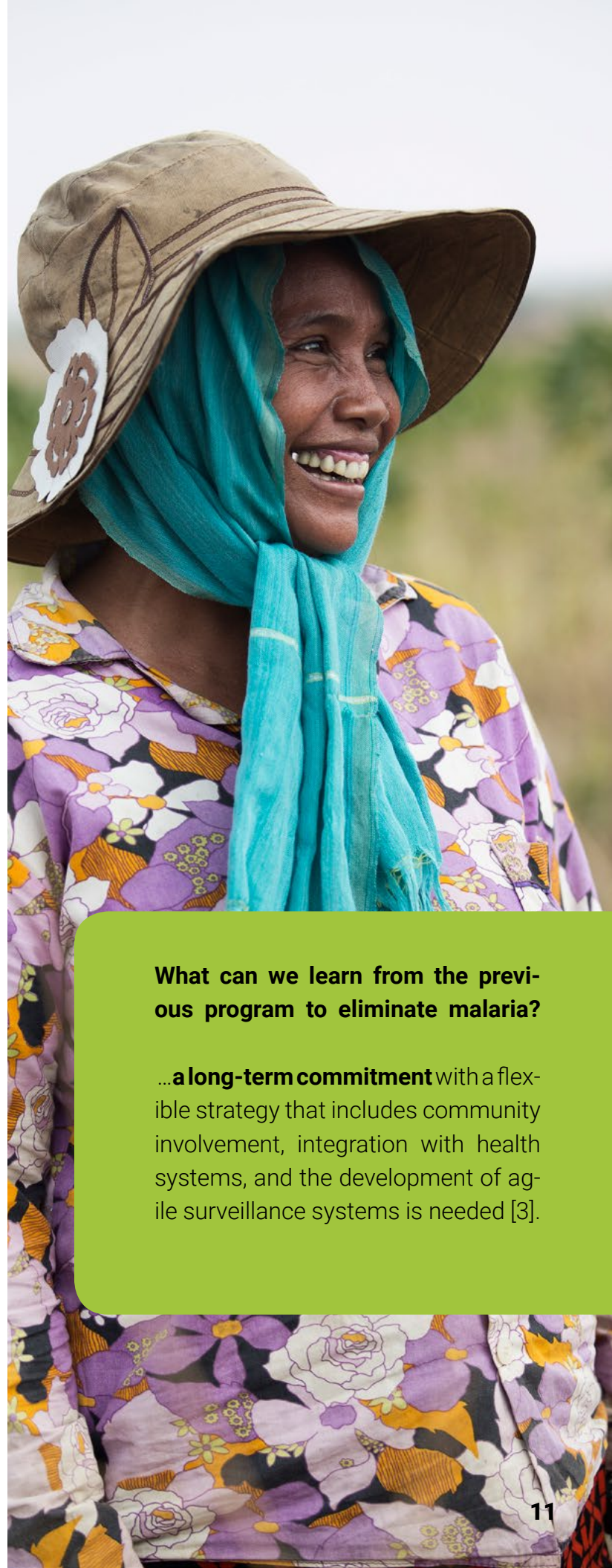
With an estimated 75% of people in Cambodia seeking and receiving malaria treatment from the private sector, Ministries of Health need accurate, reliable and complete data to define the epidemiology of disease, plan for and allocate resources, target geographic areas and high risk groups, as well as measure progress over time.

To address this, Cambodia's National Center for Parasitology, Entomology, and Malaria Control (CNM) launched the Public Private Mix (PPM) Program as a pilot, subsequently partnering with PSI in 2010, with the goal of improving data quality and increasing access to malaria services within the PPM network. The Cambodia PPM program was coordinated and planned at a national level and provided focused support to 10 Operational Districts (ODs) in 8 selected malaria endemic provinces. The project was later scaled up to focus on 37 ODs in 15 selected provinces.

Worksites Program Background & Rationale

Composed predominantly of adult males in search of work, MMPs are at high risk for the following reasons: MMPs typically move across the country with the cropping seasons and primarily work in the forest and plantation regions where malaria transmission is highest. If they fall ill, appropriate and easily accessible malaria treatment is often difficult to access due to long travel distances and associated cost barriers. Furthermore, due to their transitory lifestyle, which is exacerbated by high levels of poverty, MMPs typically make very little contact with the formal health services and prefer to return home when they fall sick. Such behavioral and population characteristics mean that MMPs have historically been key drivers of malaria transmission in the region, and as such they remain a particular group of concern within the malaria elimination strategy.

In 2013, PSI Cambodia began its Worksites Program to foster a cooperative partnership with CNM, and aid in providing free quality malaria case management that would help eliminate malaria among high risk groups working and residing on worksites. The premise of the program was that worksites could provide an effective mechanism to target the MMPs at risk of malaria and provide them with onsite quality malaria case management. Beginning on 45 worksites in 5 endemic provinces, the Worksites Program continued to expand with support from the Gates Foundation under the GEMS program in 2015.



What can we learn from the previous program to eliminate malaria?

...**a long-term commitment** with a flexible strategy that includes community involvement, integration with health systems, and the development of agile surveillance systems is needed [3].

2. Program Implementation



How We Implement



PSI supports diverse private sector outlets to correctly test, treat and report malaria cases to accelerate malaria elimination in Cambodia. GEMS takes a unique approach to malaria elimination:

- Mapping and enrollment
- Orientation and training
- Supportive supervision
- Ensuring supply of quality commodities
- Quality assurance of malaria case management
- Case reporting
- Data driven decision making



The mapping exercise is carried out in collaboration with the Provincial Health Department (PHD) and OD, with the list of all private providers in the district serving as a starting point for the exercise. During the mapping process, the use of a structured data collection tool is recommended to ensure accuracy and consistency across project areas. All information collected should be housed in a database; at the most basic level, an Excel sheet that serves as a Master List will suffice.

PPM Mapping

The first step in the implementation of the PPM program is the mapping of all private sector outlets in the targeted area. This comprehensive census includes targeting all licensed and unlicensed private providers located in malaria endemic OD's for the survey. These include private for-profit outlets such as clinics, polyclinics, cabinets, health care rooms, pharmacies, Depot A, Depot B, laboratories and drug stores.

The mapping exercise entails collecting key information on the providers including:

- **demographic information (including training level of the provider)**
- **geographical location (including GPS coordinates)**
- **registration status and services provided**

Implementation Tip

PSI/C was able to promote and build ownership by engaging with the ministry staff from all levels. The mapping was jointly executed by the PSI team staff from the CNM, PHD, and OD officials. This helped establish a foundation for alignment with the public sector and to build capacity.

The key objectives of the mapping exercise in Cambodia are as follows:



1. Mapping: To support CNM in identifying, classifying and locating private sector providers in malaria endemic ODs.



2. Enrolling: Provide assistance to each OD official to register eligible private providers into the program.

The following steps should then be performed to start the mapping process:

1

Visiting relevant local authorities to request support:

Surveyors and CNM visit PHDs, ODs, and Health Centers (HCs) to gain their buy-in and support to conduct activities in the geographic area.

2

PPM Location identification:

The survey team conducts field trips to locate both licensed and unlicensed private providers to record their GPS coordinates.

3

Mapping interview:

The surveyors then administer the mapping interview questionnaire to the owner of the outlet or the main practitioner located in the outlet. If on the first visit the appropriate person is not available, two additional visit attempts are made to conduct the mapping interview.

4

Data cross-checking:

The survey team then cross checks data with the OD and PHD officers for confirmation that all providers in the area have been mapped.

5

Compiling PPM Master List:

The information gathered is then compiled into a PPM Master List and submitted to CNM.

6

Data quality assurance and control:

As an extra step to ensure high data quality and accuracy, five percent of mapped private providers are contacted for back check interviews, as a random spot check by supervisors.



The PPM Master List can be organized into the following sections:

Section I: Private Provider Contact Information (address, type of outlet, outlet GPS)

Section II: Legal Status (licensed or unlicensed)

Section III: Malaria Training Information (received training)

Section IV: Malaria Service Information (testing and treatment available or not)

Section V: Information on products stocked

Section VI: Patient Volume Data

Worksites Mapping

The mapping process of the worksites program was carried out within the context of operational research. Plantation level data was obtained during a nationwide plantation mapping survey conducted by PSI in 2013. The mapping component of the study focused on identifying the type and number of worksites and private plantations located in malaria endemic provinces. Information gathered during this mapping survey included the size of the plantation, the type(s) of crop cultivated, location of the closest medical facility, types of houses, number of workers and their families etc.

Assessing the overall situation on the provision of available healthcare services on the plantation is also an important objective of the plantation mapping. The national mapping survey was used to collect this information and find out how many plantations provided health services to workers (in particular malaria diagnostic services and treatment). The recommended duration of the survey depends on the implementation scope of the program, however, in PSI/C's case, the national mapping survey spanned over a three-month period for 18 provinces and mapping of over 1500 worksites.

The worksite mapping survey has three objectives centered around obtaining information on worksite location, workers and access to health services.



1. Location: To map the location of (a) family-run and private plantations and (b) private construction companies (industries varying from hydro-electric, roads, mining...).



2. Workers: To estimate the peak number of workers by season/month.



3. Health Services: To assess the availability and accessibility of health services available to the workers, in order to identify opportunities to provide malaria treatment and testing services.

The data collection instrument for the worksite mapping covered twelve main sections:

Section I: Plantation/Company:
Address, profile, and coordinates

Section II: Screening & business type

Section III & IV: Type of worker and their living conditions

Section V: Availability of nets

Section VI: A typical day

Section VII: Pay day information

Section VIII: Access to health services

Section IX: Impact of malaria on business

Section X: Events

Section XI: NGO involvement

Section XII: Personal information of respondent

The mapping process was then conducted as detailed below in the timeline:

1

Updated List of Plantations/ Private Companies

Upon arrival at the district, the team supervisors contact the district or commune chief and the chief of the Provincial Department of Agriculture, Forestry and Fisheries, to request an updated list of all the private plantations/companies registered in the area.

2

Full Census

A full census of all plantations/private companies is conducted in the eligible communes. In addition to the full census, a snowballing technique is used to identify additional plantations/companies by asking those interviewed to list any other known enterprises.

3

Screening Questions

Screening questions are used to select plantations/companies that meet the inclusion criteria of having a minimum of 70 employees. For enterprises with less than 70 employees, only Section 1 of the questionnaire, which records the plantation/company details, will be completed.

Implementation Tip

A minimum number of employees was set as a criteria for engagement in the worksite program to ensure services were being provided where a critical mass of workers were present, thereby ensuring cost-effectiveness of the intervention.

4

Consent

For enterprises that meet the inclusion criteria, the survey staff will explain the objectives of the study and having received verbal consent, will carry out a full interview.

5

Callbacks

If the owner or manager is unavailable at the time of the first visit, the interviewer will arrange to return. Two return visits will be made after which the plantation/company will be dropped.

Mapping Data Collection Tools

Implementation Tip

Mapping of the private providers in relation to public sector providers such as village malaria workers is recommended in order to reduce overlap while ensuring patients have choice.

Selecting the appropriate tools to carry out the mapping of the PPM program requires consideration on the needs of a program. To aid the selection of a tool, the following points should be taken into account:

- The type of data collected
- How the data will be transferred and used at different levels
- If the tool may hinder the accuracy of the collected data
- Visualization and ease of communication of the data

In the case of the PPM program, a structured questionnaire was used for all private providers. (Annex 1). A monitoring sheet was also used to help the surveyors track daily performance and report back to their supervisor and CNM. In the case of the worksites program a mapping study protocol was developed for use (Annex 2).

Implementation Tip

Utilizing easily available technology will allow for more efficient data collection, storage and improved data quality. The PPM mapping was conducted using Android smartphones which facilitated the collection of GPS waypoints.

Enrollment

Provider Enrollment (PPM Program)

Enrollment is the process of registering a mapped provider into the PSI program. After all mapping data is collected and entered into the master list database, analysis is carried out to identify the private providers that meet the minimum criteria for enrollment in the PPM program. The criteria for enrollment in the PSI/C PPM program included:

- A licensed private healthcare provider
- A provider who offers malaria services
- A provider located in one of the 15 targeted malaria provinces and
- A provider that is willing to participate in the PPM program

A provider was considered enrolled in the PPM program after participating in program related trainings and signing the memorandum of understanding (MoU) with PSI/C which outlines the scope of the program and expected roles and responsibilities of each party (Annex 3). In order to clearly outline accountability and responsibility, it was crucial that both parties had a mutual understanding on how the PPM program would be implemented.

The PPM MoU was signed between PSI and the private providers **detailing the responsibilities of privates Providers** to be:

- To test every suspected malaria case
- To treat all positive cases and manage all negative cases according to National Treatment Guidelines (NTGs)
- Appropriately and accurately fill out data collection sheets e.g. Patient Register Forms (PRFs).

And **the responsibilities of PSI** were:

- To ensure that providers are fully stocked with quality Rapid Diagnostic Tests (RDTs) and Artemisinin- based Combination Therapy (ACTs),
- To make sure that providers are routinely supported and visited at their workplaces and,
- Provide a monthly stipend of \$5 per provider per month (phone credit allowance).

PSI/C developed criteria to help prioritize which worksites to include in the program.

- The caseload of each province
- Type of worksite (private)
- Location (rural)
- Number of workers onsite - minimum 70
- The type of workers onsite (mobile <6 months; migrant 6 months - 1 year; or local >1 year)
- Distance/ level of access to health facilities
- Consent from the owner or manager

Upon identifying a worksite to engage with, field officers visit the worksites (and conduct follow-up calls) to meet with owners and representatives in order to outline objectives and invite them into the Worksite Program. In order to create a trust-based relationship, field officers should bring a supporting letter from local authorities (such as CNM), approving and supporting the activities being conducted.

Once the worksite agrees to work with PSI/C, they are included in the Worksite Master List with the information collected from the Worksite Mapping Survey. An MoU is signed with the worksite and the worksite would be listed as 'active' on the Worksite Master List. On average it cost about \$2500 per year to provide ongoing support through monitoring quality of care, checking reports and building capacity.

MMW Enrollment (Worksites Program)

A Mobile Malaria Worker (MMW) is the cadre of workers that provide malaria case management on worksites.

The enrollment of MMW is somewhat different from the process of enrolling the PPM provider because the MoU is signed between the worksite and PSI. A process to identify an appropriate individual for the role of the MMW is then initiated between PSI and the worksite management. Incentive pay for volunteers at \$20/month was provided providing a minimum number of tests were carried out and reported.

A balance between availability to provide the malaria case management service and having the time to carry out their duties as worksite employees is required. The suggested criteria to the worksites for an MMW are:

- An individual that can read and write
- With sufficient availability to provide malaria case management services
- An individual that is trusted amongst the workers

Implementation Tip

Choosing the appropriate individual should be done in consultation with the targeted population. A study using Human Centered Design methods showed that workers had a preference for receiving fever testing services from shopkeepers who were considered more convenient and provided other practical services compared to the single service MMWs provided.

Training

Provider Training (PPM Program)

The training workshops are an opportunity to provide hands-on capacity building to the selected providers. The scope of the training covers an introduction to malaria, proper use of a malaria rapid diagnostic test, the contents of national treatment guidelines and how to correctly fill PRFs in order to provide accurate malaria case data that is integrated into the national Health Management Information System (HMIS).

PSI/C provided frequent refresher trainings within the PPM provider network as a formalized method of engagement, supplementing the routine supportive supervision and quality assurance.

The training curriculum (Annex 4) for the PPMs was developed at the national level in collaboration with the Diagnosis and Treatment Technical Working Group (D&T TWG). The D&T TWG is a national TWG that brings together technical experts and implementing partners to review and provide technical advice on all areas of malaria case management in Cambodia. The group is responsible for setting the remit and developing the training curriculum and job aids for all providers (public health facilities, community and private).

PSI/C working with CNM, PHDs, and ODs plans the training schedule of the providers in geographic area. The number of trainings

conducted within an OD depends on number of PPMs in the area. Each PSI/C training session was limited to no more than 30 providers in a class room style. The training was delivered by PSI/C and CNM staff using adult learning techniques i.e. maximizing practical exercises. On average, \$116.48 was spent per PPM provider per annum for training/ refresher training.

Implementation Tip

Private providers have competing business priorities that impact the amount of time they can dedicate to the PPM program. A proportion of providers are unable to leave their clinics or pharmacies for the multiple days required to attend training. Flexibility by the implementing partner is required. Onsite training is delivered to providers at their place of business when they are unable to attend the formal classroom training.

Orientation & MMW Training (Worksites Program)

The trainings at the worksites are comprised of two levels. Firstly, to provide a clearer understanding of the Worksites Program to the

owners/representatives of worksites, PSI organized orientation workshops. At these workshops, the roles and responsibilities of owners/representatives and Mobile Malaria Workers (MMWs) were outlined. Owners/representatives were then given the opportunity to formally sign an agreement (MoU) with PSI to begin the program on their worksites.

Implementation Tip

Given that MMWs selected from worksites to be trained are unlikely to be the owners/managers of the worksites, it is useful to have a comprehensive orientation for owners/representatives of the worksites in order to gain support for the program and facilitate permission for MMWs to take part in the program.

Secondly, MMWs are provided with a comprehensive malaria case management training. The scope of the training is similar to that of the PPMs but adapted to reflect the services the MMWs are allowed to provide based on the national treatment guidelines. At the end of the trainings, participants should be able to use a Rapid Diagnostic Test (RDT), give correct dosages of ACTs, and correctly complete the patient register form and malaria referral slips. To ensure that the quality of service provision is maintained, routine refresher trainings are held. The refresher trainings should also share challenges encountered by MMWs for further program improvements and recommendations.

Implementation Tip

In order to measure the engagement and effectiveness of the organized trainings, it is suggested to evaluate knowledge regarding malaria through pre and post tests. The training workshop content and delivery should be routinely reviewed. Training content should be reinforced through one on one onsite training during supervisory visits.

Supportive Supervision for PPMs and MMWs

Establishing and maintaining a relationship with the private providers enrolled in the program is essential to ensure the quality of malaria services provided. Relying on a model of

supportive supervision, which emphasizes the importance of joint problem-solving, mentoring and two-way communication between the PSI staff and the providers is the cornerstone of the supportive supervision component of the program.

Throughout the program, PSI/C worked on strengthening providers' knowledge and skills. This was achieved through monthly supportive supervision visits aimed at building capacity, and reinforcing learning on performing RDT's and providing of treatment according to national guidelines. Regular supportive super-

vision was used by PSI/C as a touch point to verify and collect data, provide commodities, conduct quality of care assessments, exchange information on updates in national guidelines and changes to the provider status.

Supportive supervision was carried out on a monthly basis by PSI/C. On a quarterly and annual basis, joint supervision was conducted by PSI/C and staff from the health center, OD, PHD, and CNM.

Implementation Tip

Ensuring routine participation in supportive supervision from staff from the health center, OD, PHD and national level is an important way to establish joint ownership of the PPM program. It allows the NMP staff at all levels to gain first insight into the realities of PPM service provision. On the PPM, side it offers legitimacy to the program and reaffirms that their participation is part of a national malaria elimination strategy.

3. Quality Assurance of Malaria Case Management



Providers should undergo routine quality of care assessments (QA) in order to ensure that services provided follow national treatment guidelines. This section provides an overview of the QA process and application used by PSI/C. PSI/C carried out routine quality of care assessments using an app called the Health Quality Improvement Network System (HNQIS) application which approaches quality assurance evaluation in a holistic way. HNQIS is a job aid for supervisors to conduct supportive supervision and perform quality of care assessments (QA) as a means of improving quality of care (QoC). A more detailed synopsis of HNQIS is provided (Annex 5).

In the past paper based QA systems were used. These relied on static schedules for assessments rather than prioritizing visits based on provider quality of care and client load.

Using HNQIS, all components of malaria case management are assessed and the application is linked to the Disease Health Information Software (DHIS2) to create data

visualizations. The HNQIS app streamlines the QA process by supporting four modules:



- 1. Plan:** Prioritization of supervision visits to providers
- 2. Assess:** Assessment of providers' performance in service provision
- 3. Improve:** Immediate feedback to address weaknesses in performance and improve providers' knowledge and skills
- 4. Monitor:** Comprehensive records of providers' performance over time

Quality Assessment Process

Field staff, equipped with tablets loaded with the HNQIS app, conduct assessments with either a real or simulated case. When the assessment is complete, a score is automatically generated, providing insights into areas of improvement as well as a visit schedule for when the next QA visit is due.

Once data has been recorded and uploaded, field officers can refer to the Action Plan feature of the app to review assessment results and take performance improvement to address any potential concerns. The feature shows which critical and non-critical steps a provider missed during their management of a malaria case and requires the field officer to detail the action plan, as well as the individual responsible for overseeing that the action plan is completed at a chosen date.

Implementation Tip

In areas of low malaria transmission, where observing provider interaction with real patients may be difficult, field officers can run a simulated case as a means of assessing quality of case management. Simulated cases as a means of assessing quality can be limited and should be adapted to compensate for limitations in assessing areas where providers have historically performed poorly (e.g, counselling and assessing for danger

signs). Field officers should provide clear and logical instructions mimicking real life scenarios in order to avoid confusion.

Areas of Examination

The HNQIS checklist was developed based on global best practices benchmarks and examines eight areas of malaria case management to generate an overall quality of care score. The areas can be broken down into the following:

Inquiry

Ability to inquire verbally about symptoms and ask for patient history.

Physical Exam

Ability to assess danger signs and physical symptoms through observations and conducting basic medical checks.

RDT Procedure

Demonstration of provider safety, patient safety, administration of RDT and appropriate disposal of biohazards.

Diagnosis & Treatment

Correctly interpreting RDT results, recommending appropriate treatment and correctly administering treatment.

Documenting & Reporting

Accuracy of patient registration and data entry into reporting systems (DHIS2).

Workplace

Whether essential tools (gloves, tests, etc.) are available and being used when appropriate.

Equipment, Supplies & Consumables

Appropriate storage of commodities, lighting, cleanliness and privacy.

Classification-Scoring

A QA score is calculated from the scores across the different areas of examination. Based on consultations with stakeholders and technical experts, weights are provided to each area examined so that each one contributes to the overall scores based on clinical importance. This allows for general comparisons and benchmarking. Figure 1 is an example of a QA score breakdown graph that would be found on DHIS2.

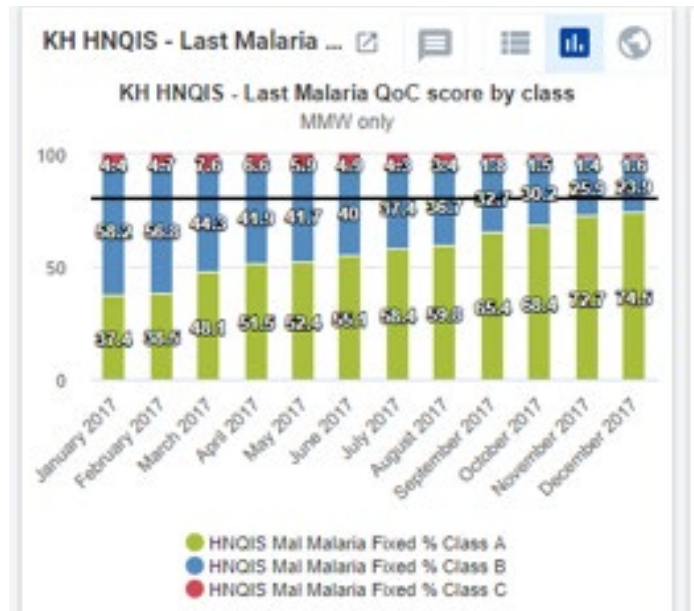


Figure 1 Sample QA score breakdown graph from DHIS2

Scoring System

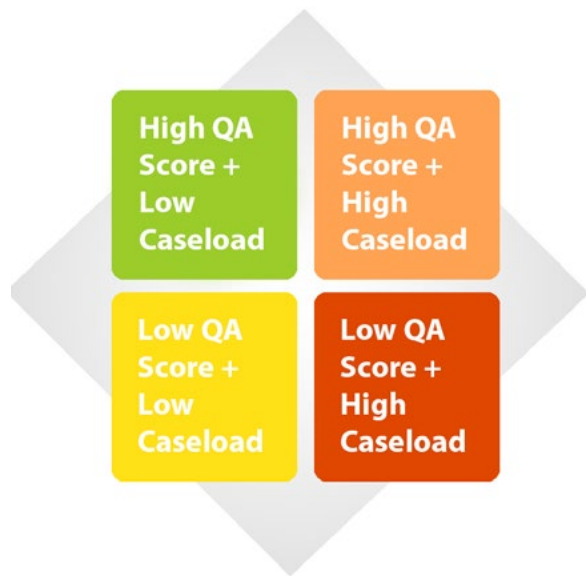
Once the QA score is calculated and reflected as a percentage. The providers are classified as either A, B, or C.

- A** Class A >80
- B** Class B <80 >50
- C** Class C <50

These cutoff points for class A, B and C are determined based on maturity of the program and global standards. These can be revised up in order to foster higher expectations of quality of care.

For example, in accordance with PSI global revised quality of care classification policy, in 2019.

Based on the Quality of Care (QoC) score and productivity (volume of patients at a facility), providers were then given a date for a follow-up assessment. The algorithm also ensures that the poorest performing providers that have the highest case load are prioritized for follow on visits. The long-term goal is for providers to improve their performance and require less frequent supervision visits by field officers as time goes on.



All data from QA visit is transmitted into the DHIS2 database. Data can then be analyzed to create different analytical objects (maps, charts, reports, tables, etc.) These visualizations provide important information on the facility performance. The data can be viewed at the facility level for a particular health area and then aggregated at an overall level. On average, \$112.56 per PPM provider per annum was spent for ongoing supports and QA assessment.

4. Surveillance

An effective malaria surveillance system enables decision-makers to identify the geographic areas and population groups most affected, identify trends that require special intervention and assess the impact of control measures. Surveillance systems need to quickly process information from all providers – public and private – from the national to the community level (including mobile populations), to enable quick and accurate decision-making and course corrections. As elimination progresses, the system must be able to track malaria down to the last case, and then continue to monitor for new outbreaks.

Routine Reporting

Complete, accurate and timely malaria case data reported to national surveillance systems remains an essential component in malaria elimination, allowing for the national programs

to see a clearer picture of the disease burden and make data driven decisions in response to robust data. Over the course of PSI's engagement in Cambodia reporting into national surveillance systems was achieved by implementing a combination of paper and electronic reporting. This section outlines the steps carried out to implement both the paper and electronic reporting systems within PSI supported private providers. Figure 2 is a simple schematic of the data flow from private providers to the national system.

Paper Reporting

In Cambodia, like many countries, paper reporting remains the main mode of collecting data at provider level for integration into the surveillance systems. Therefore, at the inception on the PSI private sector engagement program providers were set up to report by paper. The first step in setting up a private provider reporting system is working with the national program to determine the data requirement from the providers. Paper-based

Data Flow For Private Sector Surveillance Systems In Cambodia

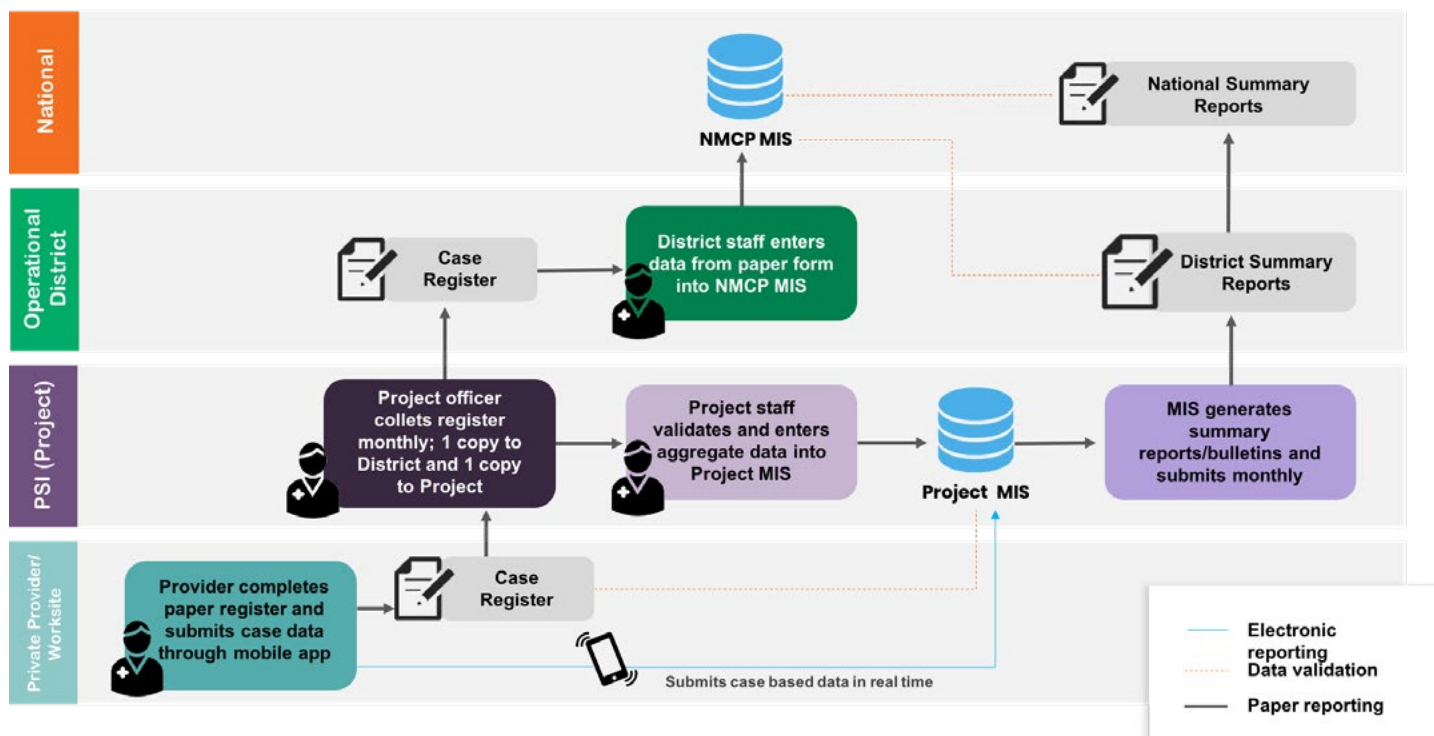


Figure 2 Sample data flow for private sector surveillance systems in Cambodia

data collection tools should then be designed in alignment with NMCP standardized malaria reporting forms, reflecting the services that private providers are allowed to offer. In Cambodia the PRF (Annex 6) was developed with CNM and the National Surveillance Technical Working Group.

Implementation Tip

Only collect data that is necessary and useful for the program. In designing/adapting national case reporting forms for use in the private sector, priority should be given to simplicity and ease of reporting. This is particularly true for private providers who are often busy and participating in malaria elimination programs in a voluntary capacity.

In relation to data flow, figure 2 above shows that a provider enters data into the PRF that is collected by a PSI field officer during supervision visits. The forms are filled in triplicate, with one copy submitted to the OD office and another submitted to the PSI HQ team for data validation and manual entry into the PSI Management Information System (MIS).

Sustaining a paper based system is labor intensive and data integration into the MIS where it can be analyzed and displayed in a manner that supports decision making takes time. It often takes between 4-6 weeks after data is collected from the field for it to be entered into the PSI MIS system. In addition, at the OD level, data from the private sector was often not entered into the MIS. This is because in the public system data is collected and entered at the health center level or the village malaria workers submit data to the health center at the OD level that is then responsible for entering

the data. In essence, having private providers that were not associated with a health center caused a misalignment between the public and private sector reporting mechanisms and compromised the integration of public and private sector data.

Implementation Tip

It is important to determine from the onset of the program clear data reporting, validation and integration flows. In addition, it is important to ensure that at the point where the private sector data is integrated into the national surveillance system. All the relevant public sector stakeholders are consulted and buy-in is obtained from them so that they see the data generated by the private sector as an essential part of their surveillance system.

While paper based reporting is low tech and proven to be scalable to even the most hard-to-reach places, the systems is weakened by issues of delays in reporting limiting the ability to provide timely feedback and/or make decisions based on data. The resource intensive nature of the system also results in limited support for data audits/validation.

Electronic Reporting

The power of real time reporting in malaria elimination settings is that it facilitates the

implementation surveillance for elimination protocols, making it possible for cases to be report, classified, investigated and responded to within days. Figure 3 is a screenshot of the MCS App process flow.

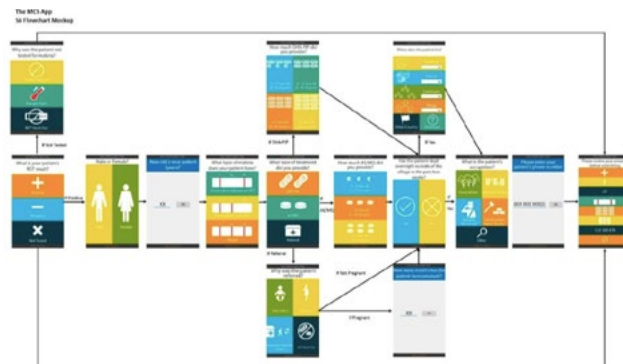


Figure 3 MCS App process flow

1. Test Result: Positive/Negative/Not tested
2. Gender: Male/Female
3. RDT result: Pf, Pv, Mixed
4. Type of treatment
5. Dosage
6. Patient traveled within last 14 days?
7. Patient's risk group
8. Review screen

In 2016, PSI/C started the process of implementing electronic reporting. In Cambodia, the Malaria Case Surveillance (MCS) application was used. The MCS App is a custom Android app that links with DHIS2, designed for private providers and worksite malaria volunteers to easily report case data in near real-time. The objectives of introducing a mobile case reporting app were to:



Reduce burden of reporting on private sector providers;



Provide a mechanism for near real time reporting of malaria cases as the country progressed toward malaria elimination;



Reduce the long lag-times associated with paper-based reporting to speed up decision-making

The development of the MCS App was a collaborative effort between PSI and University of Oslo (UiO). After extensive field testing and piloting, PSI Cambodia began rolling out the application to providers in June 2016.

Each provider was given a basic smartphone with the application pre-installed and setup for that provider. In total, more than 60% of PSI providers (over 500 providers) were equipped to use the application. The MCS app was adapted by PSI/Laos, Save the Children Myanmar (for Village Malaria Volunteers), and informed the development of UiO's generic, freely available DHIS2 Android Capture (DAC) App. The use of electronic reporting in Cambodia enabled the providers to report aggregate and individual-level data.

Implementation Tip

DHIS2 core apps like the DAC should be favored above standalone apps like the Malaria Case Surveillance (MCS) app. This is because the costs and level of effort required to sustain custom apps over time are no longer justified, given the new functionality that can be leveraged from DHIS2 core apps.

Implementation Tip

Gain buy-in from stakeholders during the design and development of the mobile data collection tool. Prototype and pilot amongst end users during the development and pilot phases. Screenshots loaded on phones and simulation software are great ways to get a look and feel of the app before roll-out.

Rolling Out Electronic Reporting

Training on mobile reporting through apps was incorporated into case management trainings for PPMs and MMWs to ensure they were fully capable and comfortable navigating the application for reporting purposes. A careful mapping of mobile network coverage was carried out to determine what phone service to provide each provider. Monthly phone credit top-ups to providers was supplied in order to use mobile data to sync up the reported cases to the DHIS2 system.

Annex 7 is a draft lessons learned document that captures the experience of the roll out of the MCS App in Cambodia.

Implementation Tip

When rolling out electronic reporting careful thought should be given to the purchase of mobile devices. If smartphone ownership is sufficiently high, it may be logistically easier and more cost effective to use providers' phones rather than purchase and distribute new ones. Additionally, PSI/C installed a Mobile Device Management (MDM) app onto all MMW phones in order to motivate providers, manage phones, keep track of phone data usage and movement patterns.

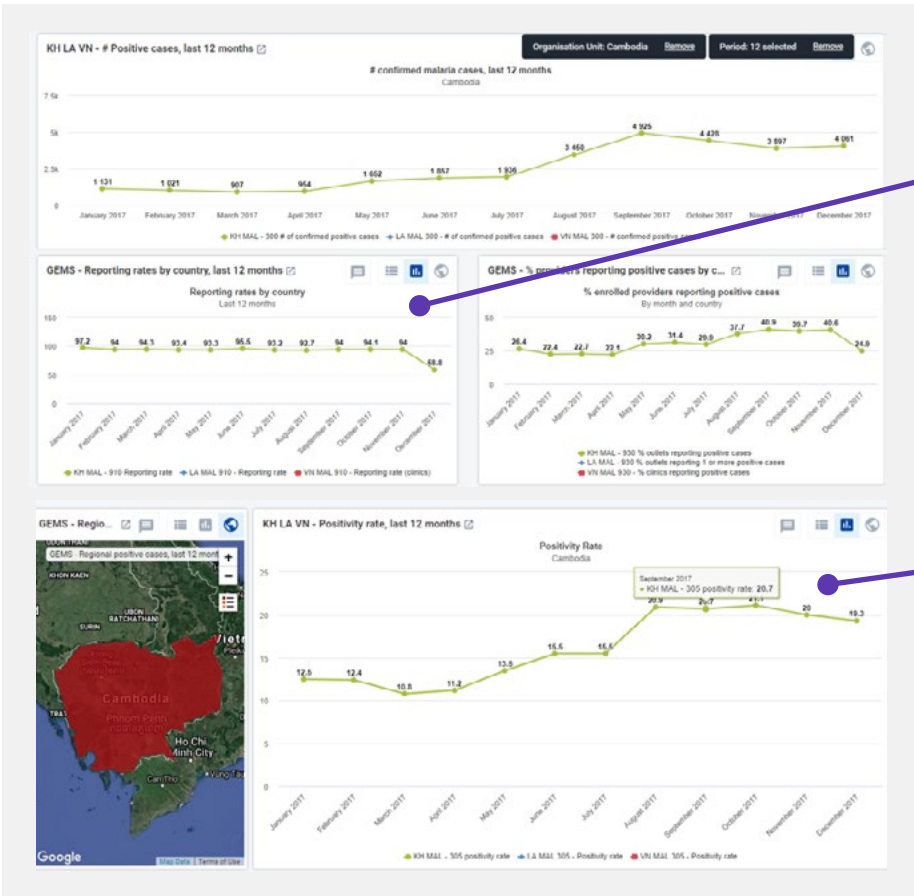
Implementation Tip

In addition, given the progress of electronic reporting, preference should be given to using electronic applications/platforms that providers are familiar with, above standalone apps where possible.

Data Analysis & Response Using DHIS2

DHIS2 is an open-source health management information system adopted by more than 60 countries worldwide and used within PSI/C for data analysis. The configuration of the system was tailored to Cambodia's data model and requirements. The system was used to produce both custom and standardized outputs with automated dashboards designed to enable timely monitoring of surveillance and operational data for program decision making. Standard reports and surveillance bulletins were also configured within the MIS to produce standardized outputs at national and sub-national levels for easy sharing with PHDs and ODs.

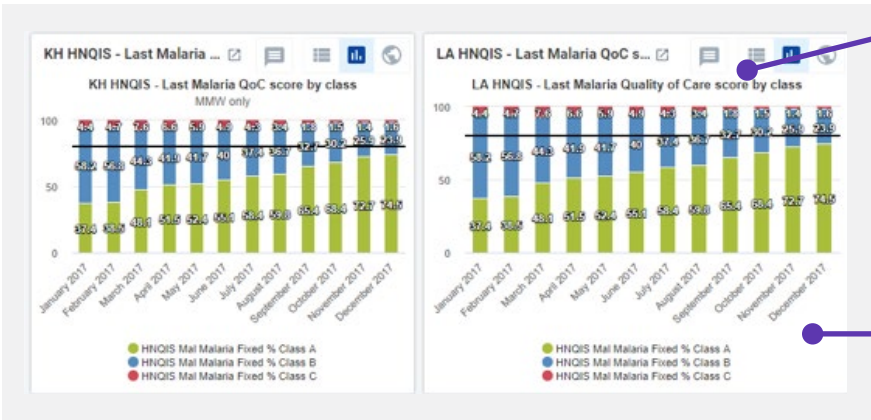
The following images are a few examples of the dashboards created to analyze and respond to data collected from PPM providers and MMWs.



Reporting Rate: % of reporting units that actually submit data (receiving data from all enrolled outlets)

Positivity Rate: To track positivity rate historically and compare it to the current positivity rate.

Quality of Care Score (Last Assessment): To track and compare the percentage of provider classification through HNQIS assessments.



Quality of Care Score (By Provider): To see scoring of individual providers though number of QoC assessments.



Positive & Negative Cases: Compares the difference between the number of suspected (or negative cases) and actual positive cases.

Suspected Cases Tested: To track the percentage of testing with RDT (formula=suspected cases approach/cases tested with RDT).

Malaria Cases: To track distribution of malaria cases by species.

Sub-national dashboards were also created to support the analysis of data by sub-national government staff. The development of these dashboards followed a process of consultation with the PHD, identification of their data needs, development of the provisional dashboard, consultation on the initial product followed by updates based on feedback.

Data-To-Action For Malaria Case Reports & HNQIS

The Data-To-Action (D2A) framework in DHIS2 promotes evidence based decision making using case reporting and HNQIS data. The three principles (Set-Track-Act) in which the D2A framework in DHIS2 operates on are:

SET *Expectations*

Setting clear expectations regarding data use by utilizing Data-to-Action frameworks

TRACK *progress*

Tracking progress by swiftly moving data from field-to fingertips

ACT *to improve*

Acting on what the data reveals in order to improve performance by informed decision-making

Figure 4 demonstrates the Set-Track-Act principles in the DHIS2 system layout.

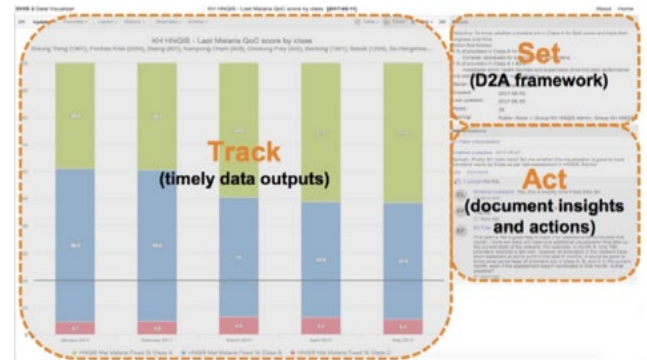


Figure 4 Set-Track-Act DHIS2 sample

Prior to setting up the D2A framework in DHIS2. The PSI program team worked collaboratively to establish an Excel based D2A framework. The team agreed upon a core set of indicators to track, documented the justification for each indicator and established data visualization graphs/tables with standardized data inputs. In addition, a threshold/target was set with a clear action that follows if targets were not met and the responsible person clearly identified. Annex 8 is an example of an Excel based D2A framework developed for case reporting and HNQIS data.

The Excel based D2A was used to inform the organization of the DHIS2 dashboards for PSI Cambodia head office and field staff. The PSI program and field officers were trained to analyze, investigate and manage work in their target provinces based on a D2A framework.

Finally the interpretations feature in DHIS2 is used across teams to foster data analysis and reinforce the notion of evidence based decision making. Individuals can view a shared dash board and understand what the

indicators signify, as well as ask questions to other team members about data trends or performance. This can help alert team members of data patterns that may require action and help managers track progress of an ongoing project.

Implementation Tip

Developing a D2A framework and monitoring it using DHIS2, particularly with the use of the interpretations feature is an excellent way to foster a team wide data use culture. Agreeing on which indicators to track clearly sets/reinforces program output priorities and expectations and identifying actions to take ensures accountability.



5. Routine Data Quality Assessment



Introduction

PSI collects and uses data to monitor and evaluate its programs; estimate the health impact of specific interventions; assess value for money and improve intervention cost-effectiveness; and evaluate the health of the markets PSI works to strengthen. Thus, high quality data is essential for accurately monitoring and measuring the health impact of our interventions.

Improving data quality is an important strategic priority for PSI to strengthen the quality and integrity of data collected and instill confidence and accuracy in data used for decision making. PSI/C ensures data quality by conducting a Routine Data Quality Assessment at least once a year to evaluate the data quality being provided by the program. Based on the findings of the data verification at the service site, key issues are identified and action plans with an estimated timeline are implemented to strengthen and improve data quality.

What Is Reviewed?

First, the data quality is assessed through the following dimensions:

- **Availability:** The extent to which data and its supporting documentation are available
- **Completeness:** Complete means that the document contained all the required entries of the indicator as appropriate
- **Accuracy:** The degree to which the data correctly reflects what they were intended to measure
- **Timeliness:** The extent to which data is up to date (current) and is made available on time
- **Integrity:** The extent to which data is protected from unauthorized changes or manipulation.
- **Confidentiality:** The extent to which clients' personal information is protected and kept secure

- **Precision:** The extent to which data is collected with the level of detail required to measure the indicator (e.g. disaggregation by age, sex, etc.)

The following data sources and indicators were selected for review because of the importance to the program and donors:

- **PRF - Caseload Report:** Ensure that a) patient register form is available at the MMWs outlet, b) all information contained in the PRF is complete, valid and precise c) detailed information in the PRF is confidentially stored and protected
- **Data Entry- DHIS2 Android Capture (DAC) App:** Ensure that a) the DAC App and phone is available (and can be validated by worksite officers) b) all information in the app is complete, valid and precise, c) all data entry is pushed into the system on time
- **Malaria Stock-RDTs-Availability:** Ensure a) RDT stocks are available at the MMWs outlet, b) stock is stored in an appropriate place and temperature
- **Malaria Stock-ACTs-Availability:** Ensure a) ACT stocks are available at the MMWs outlet, b) stock is stored in an appropriate place and temperature
- **Malaria Material-Job Aids:** Ensure a) all supporting material for malaria case management and education is present at MMWs outlet, b) job aids being used are up to date and aligned with the CNM model

- **HNQIS QA Assessment Visit:** Ensure a) HNQIS assessment plan is followed and assessed with the prioritization matrix, b) all assessment conducted is valid and follows the HNQIS assessment action plan guidelines
- **Training (Case Management and Reporting):** Ensure a) MMWs contain knowledge and updated information for Malaria case management (refer, test, and treat) and follow METT: Meet Educate Test Treat, b) MMWs understand and provide valid, clear malaria information and education to patients, c) MMW understands the importance of reporting and decision making

6. Community Engagement



Introduction

In a low disease context, health education initiatives that attempt to elicit participation only through increasing malaria knowledge and by encouraging individuals to take responsibility for their own health will be ultimately ineffective.

Complementary strategies are therefore required to provide the motivation for communities to participate actively in preventative, curative and screening practices for elimination, particularly where malaria is no longer a perceived risk or social or cultural belief systems hinder participation.

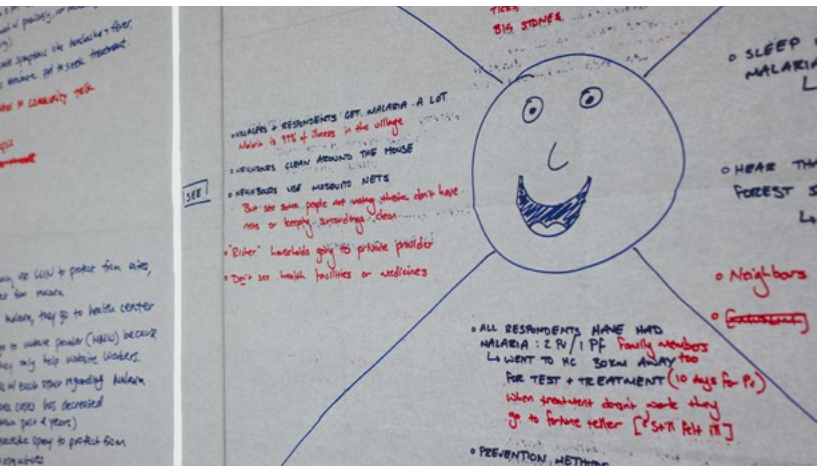
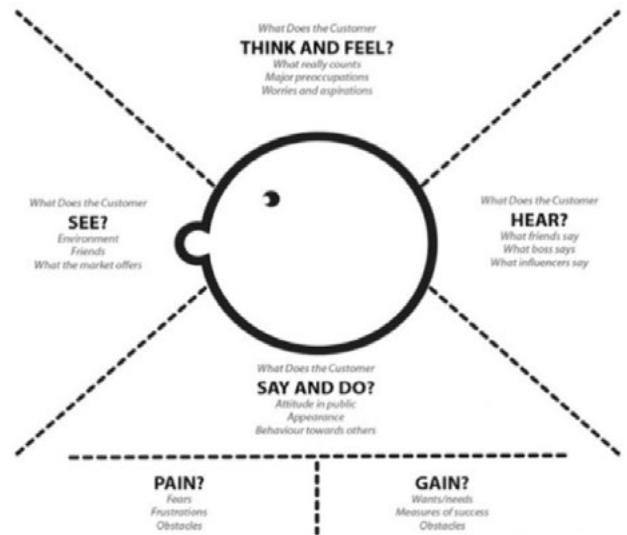
PSI implemented community engagement strategies in order to understand the nuanced nature of those most at risk of malaria and improve targeting as well as the design and implementation of appropriate malaria elimination interventions.

EIP (Empathy, Insights and Prototyping) is a human centered design methodology that helps PSI build deep insight into target community, understanding all influences (interpersonal, community, and societal) that influence their behaviors. The integration of a variety of techniques, is what PSI calls EIP. With strategies to increase engagement and empathy with users, and to understand them at a level that allows for sharpened insights, EIP puts users at the center of all programming and resists the urge to jump from an identified problem directly to a solution or to something that is familiar. EIP prototyping methods help ensure that solutions resonate with users, that they are not only feasible, but are desirable.

The implementation of EIP in Cambodia led to the recognition that engaging in partnerships with the forest going communities is key to co-designing and co-delivering effective malaria elimination interventions. The objective of the EIP exercise was to 1) Identify social determinants of health seeking/fever management behaviors among forest goers and 2) Co-design initiatives to increase testing and access to malaria services with at-risk

communities. Implementing EIP in Cambodia consisted of using three main tools to gather data from forest goers in targeted communities. [More information on PSI's approach to program design and EIP can be found at this website.](#)

Empathy Map



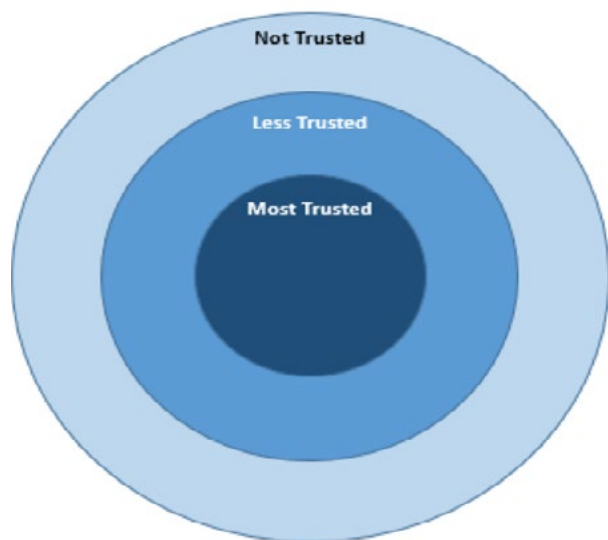
Empathy maps are a tool to help in understanding the target audience as individuals rather than a jumble of demographic descriptors. Empathy maps look at the tensions that often exist between what people say, do, think and feel. These tensions or contradictions often reveal barriers faced by the target audience or opportunities to design appropriate interventions. By closely observing target audience and actively listening to them, teams not only complete empathy maps but gain understanding and compassion.

Empathy maps may not require additional research. Rather, an empathy map can be populated as teams review research and interactions with the target audience. As such, empathy maps can serve as an organizing tool for data already collected or help to pinpoint areas of additional inquiry in later steps. Note that thoughts and feelings can't be observed directly but are inferred by paying attention to clues—body language, tone, choice of words, facial expression—and should be recorded while in the field.

Circles Of Trust



This tool is used to elicit information from the target on who and what influences them. Participants can map out on a bullseye map across any range of scenarios related to a project: who influences them most, who are they closest to, where do they get information, what sources of care/information do they trust, etc, The objective of the circles of trust is to understand the interpersonal factors that influence the target population.



Journey Map



Journey mapping is an approach to collecting, analyzing and visualizing qualitative data to capture and evaluate target consumer experiences. This approach considers the lived experiences of the consumer during each stage, or touch point, in their health-seeking 'journey'. The end result of the journey mapping approach should be the creation of a visual map which helps to illustrate the milestones, decisions, behaviors, expectations, and emotions consumers have during each stage of their journey.



The objective of developing a journey map is to learn about the decision-making processes that consumers go through in the process of accessing services, using products or changing behavior, and to understand their emotional experiences during each step in their journey. The 'journey' is not just a physical displacement, but also an entire decision-making process from identifying a need, taking steps to identify a solution, enacting a solution (or not) and subsequent needs and expectations after the solution. Journey mapping experiences enable programmers to identify key areas and moments which can be targeted to increase demand, facilitate access or improve our offering. While conducting a journey map a myriad of behavioral factors facing the target consumer are uncovered, it is also an empathy tool, allowing program teams to engage with consumers and both see and better understand the issues facing the consumer.

The main findings from the EIP process were:



Low access to health services by forest goers who were not residents on worksites



Low malaria awareness and knowledge of malaria preventive behaviors



Low community engagement in malaria elimination

A program of Community Led Initiatives for Malaria Elimination (CLIME) was launched in 2019. The overall aim of CLIME was to develop/foster community leadership and ownership of responses and interventions aimed at tackling malaria elimination. In recognition of the importance of involving the community in programming, PSI/C commissioned an anthropological study for community engagement in Cambodia to evaluate the implementation of CLIME. The study found that involving the community in the selection of a malaria case management provider led to high levels of trust in the providers. Annex 9 is the full report of the study.

7. Supply Chain Management



Ensuring consistent supply of quality assured RDTs and ACTs is a critical component of ensuring quality malaria case management is delivered by the private sector.

PSI Cambodia worked with CNM and relevant partners to quantify malaria commodities (ACTs and RDTs) needed annually. Once the supplies for the public and private sector were purchased by the principal recipient under the Global Fund malaria grant, delivery of the private sector commodities were made to PSI's Phnom Penh warehouse. PSI's sales representatives take malaria commodities from the warehouse on monthly basis and sell to private providers networks nationwide through social marketing. Individual private providers buy malaria commodities from PSI's sales representative and use these for malaria case management. As of 2017, the recommended prices were \$ 0.25 for a malaria blood test and \$0.63 for a malaria treatment for an adult patient. PSI Cambodia allocated some of malaria commodities for free distribution to PSI's community volunteers under the worksites program, who in turn provided free services to

worksite workers and their families. PSI's program officers under worksites replenish stock for volunteers on a monthly basis.

PSI Cambodia started doing social marketed malaria commodities (ACTs and RDTs) to private providers from 2003 until 2018 when MoH banned private providers from providing malaria case management. In 2020, PSI Cambodia worked with CNM to integrate the MMWs into the VMW system, which included the objective of having MMWs collect commodities directly from health centers.

8. Lessons Learned

PPM Program Lessons Learned

Throughout the implementation of the PPM program, PSI encountered implementation realities that served as lessons learned for the future. These takeaways can serve as a note for stakeholders looking to implement private sector engagement for quality malaria case management.

- Engage the National Malaria Program and wider departments of the MoH as early as possible in the process. This engagement should be at national and sub-national levels.
- Ensure that the proposed private sector engagement operational model fits into the short, medium and long term national strategy and vision for private sector engagement in malaria elimination. For example, if the NMP plans for private sector providers to only engage in testing and referral in the short term, the program operations (i.e. training and resources invested) should be set up for that eventual transition.
- A robust evidence base should be used to determine where private sector providers should be deployed. For example, location of those most at risk using national stratification; location of public health facilities identifying service provision gaps; and data on community provider preferences are all data points that should be used to inform where private providers are most needed. The review of this data and final decisions should be made in collaboration with the NMPs to promote ownership and ensure the cost effectiveness/strategic positioning of private providers.
- Program implementation should embrace the notion that there is no “one size fits all” solution for most aspects of private sector engagement. For example, when establishing reporting mechanisms for the private sector, a range of options tailored to accommodate provider preferences should be explored. If digital reporting mechanisms are introduced, they should include a range of options that are context-appropriate and that allow for providers to use platforms that most easily facilitates timely and complete reporting.
- Ongoing quality assessment is necessary to ensure that providers and workers are able to meet global and national standards of quality malaria case management, as well as allay any perceptions of substandard service provision by private providers.

8. Lessons Learned

- A key advantage of engaging the private sector in malaria case management is that it ensures consistent supply of free/highly subsidized quality assured ACTs and significantly reduces the availability of Oral Artemisinin Monotherapy (OAMT). It is important to conduct regular outlet surveys to monitor the malaria commodity market (availability and price of ACTs and RDTs). These surveys also document the reduction of OAMT, as well as ensure that the prices charged for services in the private sector are in-line with project recommendations
- Ongoing engagement and advocacy to broader departments within the MoH is necessary to ensure understanding of the role of the PPMs.
- Unlike public sector employees, the availability of private providers to provide services, attend trainings and participate in QA exercises, proved to be a challenging aspect of the program. Practical implementation adaptations and flexibility in programming should be used to mitigate this challenge. For example, an MoU outlining full expectations, thoughtful choice in provider selection and careful planning/flexibility of program activities.
- A thorough understanding of the complex nature of private provider motivation for participating in malaria elimination is necessary. Research shows that contrary to perceptions motivating factors include finances as well as recognition and a desire to help their communities. These context specific factors should be understood and used to inform program design and implementation.
- Coordination between stakeholders, government and implementing partners at the national and subnational level is essential for the success. The Cambodia health coordination structure consists of national technical working groups and provincial technical working groups which support national level engagement, as well as provincial leadership. Ensuring active participation in these structures is crucial for successful implementation and partner buy-in. In particular the following areas required concerted joint working required included:
 - **Curriculum development** – The training curriculum and IEC/BCC materials were designed by PSI/C in collaboration with stakeholders on the Diagnosis and Treatment Working Group. The final curriculum was approved by the national malaria program technical unit prior to roll out.

8. Lessons Learned

- **Implementation of training** – Co-facilitation of PPM and MMW training workshops by PSI/C and CNM.
- **Supportive supervision** – Teaming up with the national malaria program technical staff and the sub-national health staff to routinely supervise PPMs and MMWs with the goal of ensuring the provision of high quality malaria services to malaria patients.
- **Monitoring and evaluation** – Collaborating with the national malaria program technical staff to design evaluation tools, questionnaires to collect data, finding reporting forms, and improving implemented programs.

Worksites Program Lessons Learned

Worksite Specific Lessons: In addition to the wider lessons learned, the program found a number of lessons specific to the implementation of the worksite program:

- Worksites are often private businesses that have sensitivities around the nature of their business, the number of workers they employ etc. Therefore, building trust and maintaining good relationships is a delicate process. Sustained engagement and advocacy to the worksite owners of the health focus of the activity and mutual benefits of a healthy workforce is an important ongoing aspect of implementing a malaria case management program on worksites.
- Adapting global and national best practices to local context when implementing worksite programming is essential. For example, when selecting a provider to offer malaria case management services, understanding the preferences of the worksite population is important. In Cambodia worksite workers expressed preferences for shopkeepers to act as providers as this was convenient.
- Worksites are often in remote hard-to-reach areas, therefore, adapting transportation logistics and accessibility when seasonal disruptions occur is important. For example, ensuring that each worksite has a buffer of medical supplies in case they cannot be reached due to road conditions.

8. Lessons Learned

- Identifying and leveraging opportunities of mutual benefit is important. For example using the malaria elimination program as an opportunity to address other health priorities of families on the worksite serves to promote the malaria services of the worksite volunteers.
- Ongoing iteration of programming, as malaria cases become increasingly focused, ensuring that the worksite where services are being provided is still 'at risk' is important. Case data and risk factors should be routinely reviewed to inform service provision. The PSI network of worksites were stratified annually and intensity of support was adjusted based on the classification with worksites deemed no longer at risk transitioned to NMP oversight.



9. Case Studies

Remaining flexible and responsive to results from an early stage in program implementation will allow for organizations to achieve the best results and continuously improve the program's design. As the original worksites program general structure began detecting a non-substantial amount of cases in worksites in Cambodia, PSI quickly realized the need to adapt the program to fit Cambodia's needs. This involved various strategies that focused on GEMs goals through a more sub-national approach and with more flexibility. The following case studies are examples of how PSI was able to implement program innovations within the existing worksites program.

Contact Tracing of Malaria Positive Cases



Despite worksites being located in malaria endemic provinces and forest workers and mobile populations being at most risk of malaria infection, case detection on worksites was relatively low. Program data analysis showed that PPM providers recorded three times the test positivity rates when compared to the worksite MMWs. Furthermore, data from the PSI private provider network showed that MMWs within a 5-10 KM radius of PPM providers reported significantly fewer positive malaria cases, despite a significant proportion of the PPM cases reporting ‘plantation worker’ and ‘forest goer’ as their occupation.

In order to increase the testing and case detection on worksites, PSI Cambodia piloted strategies to intensify case detection by carrying out reactive case detection on 24 high priority worksites between September 2017 and December 2019.

PSI Cambodia worksite team implemented a program of reactive case detection by targeting the co-travelers and family members of patients who had tested positive for malaria.

At the end of implementation, 537 index cases were identified. 61 co-travelers and 1,541 family members were investigated and tested leading to the identification of 35 positive cases.

Worksite Stratification



In 2017, PSI found that only 14% of worksites reported at least one case every month, 80% of all cases came from 25% of worksites, and 36% of the network reported zero cases the entire year. Up until this point, PSI had been treating all the worksites the same but after reviewing the data, a new strategy was developed.

Therefore, in order to effectively manage the worksite program to ensure high impact and cost effectiveness, PSI Cambodia stratified worksites into three classifications based on caseload and proximity to the nearest Health Center (HC) or PPM.

Services on Priority 1 worksites

- Trained MMW on worksite
- Quality assurance of case management
- Incentives for testing and reporting (up to 20USD)
- Integrated health products (Condoms, Oral Rehydration Salts)
- Training of team leaders as communicators
- Screening new workers as they arrive on worksites
- Focused screening events e.g. linked to outbreaks
- Contact Tracing (family members and co-travelers)

Services on Priority 2 worksites

- Trained MMW on worksite
- Quality assurance of case management
- Incentives for testing and reporting (up to 20USD/ month)
- Integrated health products (Condoms, Oral Rehydration Salts)

Services on Priority 3 worksites

- BCC materials to worksite managers office
- Provision of referral slip so that suspected cases can be sent to the closest health facility

After the first round of stratification, 24 worksites were in priority 1, 91 in priority 2 and 46 in priority 3. The stratification process enabled the implementation team to dedicate additional resources to high case load worksites and streamline support to worksites that were less of a priority, resulting in context specific, tailored implementation. Re-stratification was carried out on an annual basis and intervention packages adjusted based on updated classification.

Community Led Initiative for Malaria Elimination (CLIME)



Despite an increase in access to quality malaria case management through the worksite program population movement and deforestation led to settlements of forest goers not covered by the worksite volunteers. These forest goers live in communities that are located alongside forests and around worksites with high malaria caseloads. In addition, these growing communities are new settlements not recognized as administrative villages and therefore, not covered by the public health system.

In order to effectively target the most at-risk populations, PSI developed Community Led Initiatives for Malaria Elimination (CLIME), a community engagement pilot program designed to empower these communities in areas of high malaria transmission, to lead their fight against malaria. The program aimed to shift some responsibility onto the community for services provided through high-level community engagement throughout each step along the way. By piloting CLIME, PSI aimed to better understand the health seeking, fever management, and forest-going behaviors of the community and support them in designing initiatives to increase testing and improve their access to malaria services.

Initially through human centered design, PSI found that the some of the main challenges faced by communities in these areas are:

- Low accessibility to health services
- Low malaria awareness and knowledge of malaria preventive behaviors
- Low community engagement in malaria elimination

Therefore, the objective of CLIME was to address these challenges and improve people's timely access to quality testing and treatment, individuals' malaria prevention behaviors, and support community members to engage and work together to bring malaria elimination. Importantly, CLIME aimed to address these challenges using the voices and ideas of the community. Using Empathy, Insight Prototyping (EIP) and support from PSI/C, communities designed and developed initiatives to address these objectives based on their needs.

The CLIME program comprised of eight steps aimed at resolving the identified gaps.

- Step 1: Engage the community leader of the identified target area
- Step 2: Through community consultation and agreement, launch the project and select an MMW
- Step 3: Through community consultation identify cluster of households as implementation units
- Step 4: Through community consultation, identify clusters leader for peer education and support
- Step 5: Through community consultation co-design interventions to promote appropriate malaria health behaviors
- Step 6: Establish ongoing support from PSI and health center staff– commodity supply, training, supportive supervision and QA for MMWs.
- Step 7: Through community consultation, implement targeted screening of forest goers
- Step 8: Carry out annual community awareness events which include recognition of individuals, households and clusters that practice appropriate malaria prevention and treatment seeking behaviors.

Key lessons learned from the implementation process include

1. The process of engaging a community to get involved in the implementation of malaria elimination activities takes a significant amount of time. Every step is preceded by lengthy consultations with the community members to build relationships, trust and foster ownership of the initiative.
2. Field staff implementing community engagement initiatives require skills that are different from the usual private sector engagement field implementation skills. Active listening, facilitation of focus group discussions, building consensus and observation skills are some of the new competencies that the PSI Cambodia staff developed.

3. Ensuring that the program staff understand and communicate the flexibility of the approach is crucial. The steps should be introduced to the community as suggestions for consideration rather than instructions to follow.
4. The implementation process was gradual due to the high-level involvement of community members at different levels for decision-making. The resulting effect, however, is a long-standing relationship built on trust between PSI/C and the community, and a sustainable method for workers to continue providing services.
5. Rethinking ways to foster quicker buy-in to the project should be explored, for example in CLIME earlier establishment and introducing peer educations within the community would have helped facilitate more gatherings within the community and increase the effectiveness of consultations.

The full impact of the community engagement approach was not achieved as the worksite program started a transition process in 2020. However, an initial review of the approach by the Institute of Tropical Medicine found that, though there were some weaknesses in the MMW selection process, the consultative nature of the process led to a widespread recognition and acceptance of the MMW. The consultative process also led to community members having high levels of trust in the MMW and being placed in locations that fostered access by the community.

10. Annexes

The following annexes can be accessed through a Google Drive folder by clicking on the below links:

[**Annex 1** PPM Program questionnaire](#)

[**Annex 2** Worksites Program Mapping Study Protocol](#)

[**Annex 3** Sample MoU for provider enrollment](#)

[**Annex 4** Sample training program for providers](#)

[**Annex 5** HNQIS Generic Data-User Manual](#)

[**Annex 6** Paper-based daily patient register](#)

[**Annex 7** Lessons learned from MCS App in Cambodia](#)

[**Annex 8** D2A Framework for case reporting & HNQIS data](#)

[**Annex 9** ITM Report for GEMS Cambodia](#)

11. References

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