



Making Data Work for Malaria Elimination: Surveillance in the Private Sector



Using Technology to Drive Elimination Efforts

Since 2013, Population Services International (PSI) has leveraged unparalleled private sector access to malaria patients across 14 countries that aim to eliminate malaria by 2030, in order to improve quality of care and support robust and responsive national surveillance programs. As demonstrated in Sri Lanka, the private sector plays an important role both during and after elimination in identifying, treating and reporting imported cases to prevent reintroduction. Understanding the need for timely, accurate and actionable data, PSI has developed a Malaria Case Surveillance (MCS) mHealth tool, supported by USAID's President's Malaria Initiative in the Greater Mekong Subregion, to change how private sector data is collected and transmitted, and how it guides implementation.

The Malaria Case Surveillance App

The MCS App is a simple and elegant smartphone application, built to replace paper-based reporting forms and promote the use of surveillance data. The app is Android-based and in sync with PSI's global warehousing software, District Health Information System 2 (DHIS2), and was created through a collaborative process among National Malaria Control Programs, PSI and Population Services Khmer. Intentionally developed as an open source, plug and play tool, the MCS App is easy to adapt to any context, and is available to stakeholders in pre-elimination and elimination settings. Save the Children in Myanmar, for example, has already adapted the App for use across Global Fund partners, adding additional modules to meet needs. With clear visuals, local language capabilities, and an intuitive user interface, the MCS App guides the user through the data collection process in seven steps. Data collected aligns with key national indicators and includes patient demographic and surveillance data, along with key commodity information:

- ✓ Suspected Case Result
- ✓ Reasons for Not Testing
- ✓ Gender
- ✓ Age
- ✓ Malaria Species
- ✓ ACT Administered
- ✓ Dosage/Reasons for Referral
- ✓ Local vs. Imported Transmission
- ✓ Occupation
- ✓ Phone Number

Improves Timeliness of Reporting and Analysis



Physically transporting paper records can be slowed down by many factors including distance and challenging terrain, poor infrastructure, inadequate human resources and budget constraints, and field data can take up to two months to move from a provider to a centralized database. In the Greater Mekong Subregion, the seasonal nature of malaria, the mobility of at-risk populations, and growing artemisinin resistance demand a timely and nimble response. Connecting through phone networks, the MCS App transmits malaria data immediately, giving PSI and the national leadership the necessary intelligence to make informed decisions about a response, be that additional surveillance measures such as case classification and localized active case detection or full intervention course corrections. With training and supportive supervision, a private provider can report a malaria case to PSI and the National Malaria Control Program (NCMP) in 30 seconds after diagnosis, alleviating all costs associated with traditional reporting and freeing up resources to focus on response interventions.

Produces Consistent and Reliable Data



Experience has shown that private providers find paper patient registers to be complicated and often unwieldy and as such, case management data is rarely entered immediately after the consultation. This leads to recall bias and incomplete or erroneous data, identified and corrected during data validation. Concerns surrounding consistent and reliable data were a driving force for the development of the MCS App and shaped the creation of a logical flow that mirrors the medical consultation. Simple prompts and contextually appropriate images also assist to improve data quality. The App ensures that critical information is not missed, and the simple output formatting facilitates validation during quality assurance visits, such as cross-checking reported test results with used RDTs. Providers have responded positively to the tool, reporting increased ease of use and a greater motivation to use the technology to contribute to a larger public health issue.

Promotes Data-Driven Action



Perhaps the most significant advantage of real-time data collection is the manner in which it stimulates data use. Information is automatically analyzed in DHIS2 and presented in tailored dashboards developed to highlight programmatic indicators relevant to each user. Data users can design their own dashboards based on areas of interest or concern and can create threshold alerts to flag anomalies in case load and other key indicators. These dashboards and alerts dramatically increase awareness and provide decision makers with information previously unavailable to them so easily. Based on the reported data, and changing needs and treatment protocols, PSI and national programs can adapt the App's content, and update the tool across a network of providers remotely, a key benefit compared to traditional paper records. In the long term the MCS App will evolve to collect other key health data as the malaria burden decreases and the need for accurate differential diagnosis grows.

The Cambodian Experience

In light of growing artemisinin-resistance, threatening gains in malaria burden reduction and elimination efforts, Cambodia's NMCP and partners are pushing for the rapid development and rollout of surveillance interventions to support the government's ambitious elimination agenda. PSI, and local network member Population Services Khmer (PSK), have focused their efforts on strengthening case management and surveillance efforts across the private sector.

In partnership, PSI/PSK and the NMCP have launched a customized Malaria Case Surveillance App to fit the Cambodian context. With Khmer script, and in alignment with the national program surveillance needs and most recent National Treatment Guidelines (2014), the App is supported by practical training materials and a Surveillance Unit to support its rollout and investigate anomalies, alerted by DHIS2. As of November 2016:



- **103 providers** are currently enrolled in the MCS App pilot launched in July 2016 in two northeastern provinces
- **9,663 febrile/suspected cases** have been tested. **1,155 positive cases** have been reported within 24 hours
- **40.9%** were identified as local cases, **50.1%** as imported cases
- **77%** were men; **48%** of whom were forest workers and **27%** as plantation workers

Given the successful rollout and smooth adoption, additional programs including the Global Fund's Regional Artemisinin Initiative and the Bill and Melinda Gates Foundation's Greater Mekong Subregion Elimination of Malaria through Surveillance (GEMS) program will be supporting the use of the MCS App across PSI/PSK's entire Public Private Mix and rubber plantation malaria network currently containing 736 health service delivery points.

