CHALLENGES AND BEST PRACTICES IN IMPROVING DATA REPORTING

FOR MALARIA ELIMINATION IN INDIA

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A P L M A   P o l i c y   B r i e f

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About APLMA-APMEN

Asia Pacific Leaders Malaria Alliance (APLMA) is an alliance of heads of government committed to achieving a region free from malaria by 2030. APLMA is a distinctive platform facilitating collective regional leadership for malaria elimination and health security.

Asia Pacific Malaria Elimination Network (APMEN) is a network of 22 countries and 54 partner institutions. APMEN facilitates regional and multi-sectoral collaboration around evidence-based practices and fosters innovation. Jointly, APMEN and APLMA act as an 'evidence-to policy' vehicle that links directly to leadership levels across the region.

Photo credit: APLMA 2023

Introduction

There is strong consensus among stakeholders and partners involved in the fight against malaria regarding the significant progress made in reducing the number of malaria cases in India over the last 15 years. The national malaria programme of India reported 161,753 cases in 2021 compared to 1.6 million cases in 2010 -- a reduction of over 89%. The number of deaths related to malaria have also shown a similar decrease to 90 deaths in 2021 compared to 1,018 deaths in 2010 -- a reduction of over 91%.

While this progress in burden reduction is rightly commended, there continues to be a large gap between the reported number of cases and deaths by the national programme of India and the number of cases estimated by World Health Organization (WHO)[i]. The WHO's World Malaria Report 2021 estimated the number of cases in India to be around 4.26 million and number of deaths at around 7,450.

The are multiple reasons for this difference between reported cases and WHO estimates of malaria incidence. Challenges include the time lag in reporting in the National Vector Borne Disease Control (NVBDC) programme's surveillance system as well as innate difficulties in surveillance of hard-to-reach communities like tribal

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[i] Estimates were made by adjusting the number of reported malaria cases for completeness of reporting, the likelihood that cases were parasite positive, and the extent of health service use. The procedure, which is described in the World malaria report 2008 (8), combines national data annually reported by NMPs (i.e. reported cases, reporting completeness and likelihood that cases are parasite positive) with data obtained from nationally representative household surveys on health service use among children aged under 5 years, which was assumed to be representative of the service use in all ages.

populations, migrant and mobile populations, forest-goers, and populations from remote and inaccessible areas such as hilly regions and along international borders. Another important reason for the significant difference between reported cases and WHO estimates is the inadequate data from the private sector in malaria information system.

As countries shift from malaria control to malaria elimination, it is imperative that there is access to real-time data from a robust national-level surveillance system that captures information from the private as well as the public health system. The malaria health information system nationwide needs to evolve from using aggregated data that is not updated in real-time to accessing near real-time case-based surveillance information that can be used to target elimination efforts especially in under-served areas[2].

Incomplete data or delayed access to surveillance information through the national malaria health information system can result in prolonged transmission of malaria and further impeding elimination efforts[2].

Photo credit: APLMA 2023

Current situation

Malaria reporting in India is primarily based on passive surveillance as only those patients who seek medical care are counted in the national reporting system. Passive Case Detection (PCD) refers to the detection of malaria cases in people who seek care, usually with symptoms, from health providers or community health workers.

A comprehensive Integrated Health Information Programme (IHIP) has been launched by the Government of India to serve as a single, centralized mechanism to integrate health information and health-relevant data from various national programmes and entities. The IHIP has been developed and envisioned as a web-enabled, near real-time electronic information system and includes a module for malaria to monitor malaria cases and control activities.

In the IHIP, the Auxiliary Nurse Midwife (ANM) is expected to feed real-time information on a daily basis through digital tablets along with the geocoded location of the cases for geographic reference. This data is expected to be synchronized directly to the server such that the district, state, and central surveillance units (DSU, SSU, and CSU) will be able to view and analyse the data on the same day.

The vision for the IHIP and the potential to use it as a tool for elimination efforts is noteworthy. However, this will be possible only when the IHIP is implemented at scale and ANMs across the country are trained and able to input data directly into the system. Currently, the IHIP allows the capturing of data up to the level of the Primary

Healthcare Centre (PHC). In states like Karnataka, data is being reported on a weekly basis and not daily. Further, the IHIP does not have a mobile interface, which makes it challenging to enter the data on the web portal. This requires dedicated data entry personnel for private and public facilities, which is an additional barrier.

Figure 1 - Different pathways through which patients with symptoms access care and treatment for malaria in India.
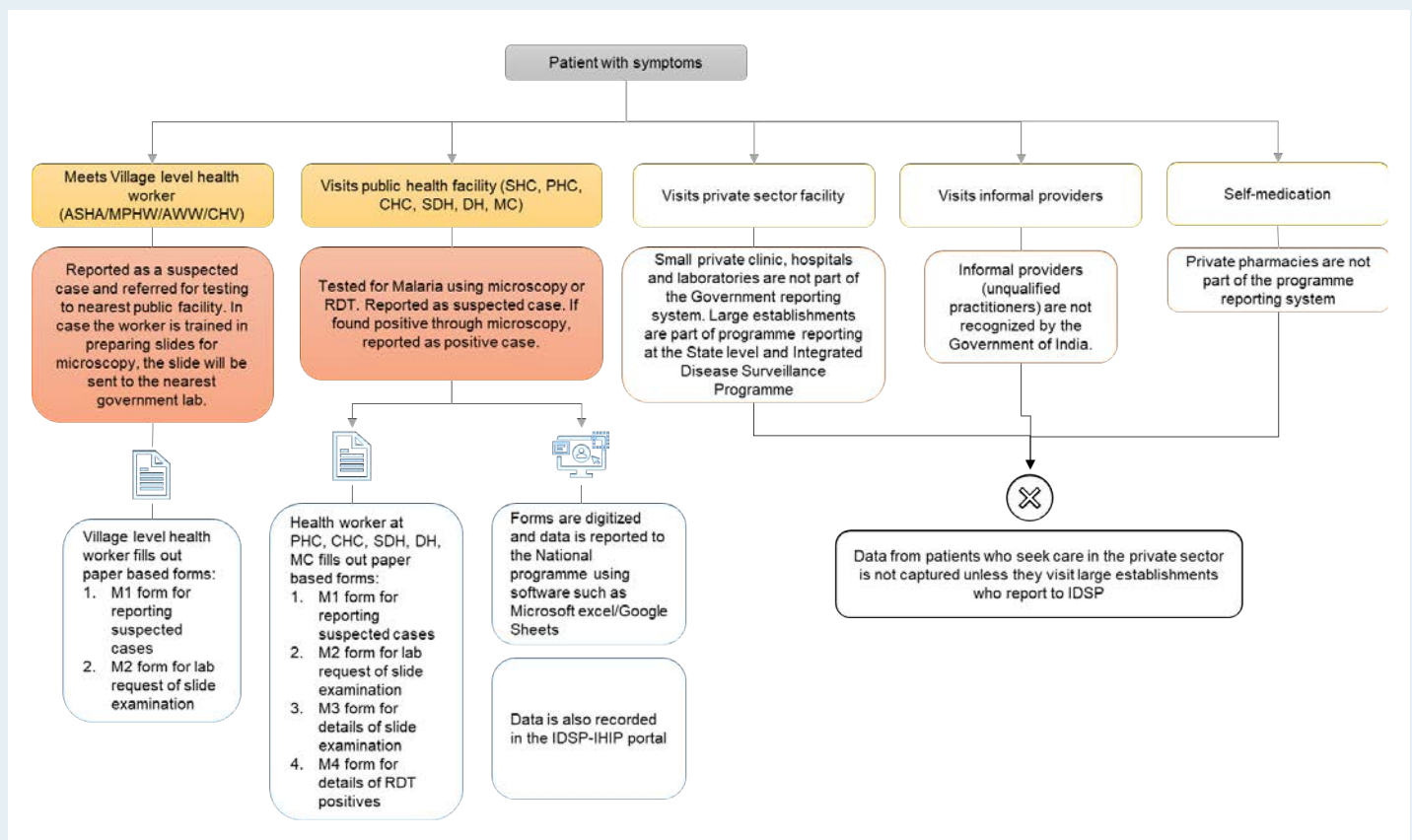
ASHA: Accredited Social Health Activist, MPHW: Multi-Purpose Health Workers, AWW: Anganwadi Worker, CHV: Community Health Volunteer, SHC: Sub Health Centre, PHC: Primary Health Centre, CHC: Community Health Centre, SDH: Sub District Hospital, DH: District Hospital, RDT: Rapid Diagnostic Test

The IHIP is being rolled out in a phased manner across the country. After initial piloting in the two states of Odisha and Himachal Pradesh, IHIP is now being planned for scale-up across key states. However, national scale-up and implementation along with data reporting from ANMs will require an extended timeline.

Photo credit: PMI 2016

Challenges

Those malaria cases reported through the IHIP will only reflect patients who access medical care through public health facilities. However, it is already known that, as many as 70% of cases, the first point of contact for health-seeking in India remains the private sector. Thus, the many patients who go to the private sector for care and treatment are not reflected in the national reported numbers[4].

The notification of malaria cases by the private sector is mandated in 33 states in India. The appropriate legal framework also exists in most states with the Clinical Establishment Act, 2010 (CEA 2010) and associated Rules that require clinical establishments registered under CEA 2010 to maintain electronic health/medical records of patients and share information on national programmes, notifiable diseases, and emergencies/disasters/epidemics with the District Authorities[5]. However, in practice, there is limited surveillance data available from the private sector through the IHIP and other management information systems (MIS). State-level enforcement of the mandatory malaria case notification rules has also been limited. This results in insufficient and unreliable data unable to paint a comprehensive picture of the malaria situation in India.

With an elimination target of 2030, it is important to ensure that all malaria cases -- whether public or private -- are identified, documented, and investigated. In India, where the private sector is a major source of healthcare provision, engaging with private providers is essential to eliminating malaria.

Best practice – Mangaluru, Karnataka, India

Mangaluru city in the state of Karnataka offers an interesting case study in the use of technology to better capture data on malaria cases from both the public and private sectors and impact on the malaria burden.

The new 'Malaria Control System' (MCS) was launched in October 2015 in Mangaluru by the Government of Karnataka to capture data and build capacity of the existing programme within the entire city[1]. MCS was introduced as a programme management system to support effective management of the malaria control programme by digitizing reporting of newly diagnosed malaria cases for treatment, tracking and closure of cases after completed care foreach malaria patient.

This application's software enabled data reporting using hand-held devices, which was reflected in state and district dashboards and ensured prompt follow-up. Any field-level interventions and vector control activities were also reported in the app by the local ASHAs. Most importantly, cases were reported by all the health care providers and stakeholders including private health facilities such as hospitals, nursing homes and diagnostic centres.

A study analysing the first five years of data after introduction of MCS showed that surveillance continued to improve, with malaria cases being reported from all hospitals and diagnostic centres of private as well as public health systems. In the first year after digitization, private health care facilities contributed to nearly two-thirds (68%) of the total cases being reported while the public health system contributed to nearly one-third including combined reporting of 18.6% by community public hospitals and 4.3% by malaria clinics.

The impact on malaria incidence in Mangaluru was also reported to be significant with a 83% reduction in number of cases in the first 5 years after the introduction of MCS[3].

Photo credit: Christian Lederer 2016

Enabling factors in Karnataka

REGULATORY FRAMEWORK TO ENFORCE PRIVATE SECTOR REPORTING

Reporting of malaria cases was mandatory under the communicable disease act of 1969, notifiable disease act of Government of Karnataka, and Karnataka Private Medical Establishment Act 2007[6]. Prior to the introduction of MCS, malaria cases were reported more slowly by the private sector health institutions via email or, despite the statutory requirements, never reported at all.

TRAINING AND CAPACITY BUILDING OF PRIVATE SECTOR

Training programmes were conducted for private hospitals at the time of MCS's introduction. Monitoring of data quality in MCS was also carried out periodically. With appropriate training, monitoring and follow-up, behavioural changes were observed with respect to timely reporting of malaria cases by the private sector. Details from 89% of new cases were uploaded into the system within 48 hours of diagnosis by both public and private health care provider s[1,3].

MULTI-STAKEHOLDER PARTICIPATION AND COORDINATION

A multi-pronged, integrated approach is critical for malaria elimination. The MCS programme helped connect all stakeholders with necessary information to further activate appropriate responses in the field --breaking the chain of transmission. Appropriate field responses such as active case detection and vector control activities in risk areas where cases were detected helped to reduce the parasite load for transmission[3].

LOCALIZATION OF STRATEGIES

At one point during the implementation of MCS, data analysis showed clusters of new cases in one week and specific hotspots were identified. One such hotspot had a high predominance of labourers and daily wage earners. It was not convenient for these manual labourers and daily wage earners to go to malaria clinics, which were typically open from 9 AM to 5 PM, as it would affect their income generation activities. Therefore, a mobile 24 × 7 clinic comprising a van and healthcare workers was introduced. This mobile clinic could visit various places and could also be sent to a specific site by request via a central malaria helpline number. This helped in improving diagnosis, as treatment and prompt reporting of malaria in migrant populations[3].

Recommendations

There are challenges and barriers to the appropriate inclusion of the private sector in the national surveillance system for malaria elimination. However, it is widely acknowledged that this is a critical step that can significantly propel the malaria elimination trajectory in India. These recommendations below build on experiences of state-level programmes in India that have demonstrated success with private-sector engagement for data reporting.

1. **Enforce implementation of malaria case notification by the private sector and mandatory registration of private practitioners under the appropriate Clinical Establishment Act of the state.** Currently, 33 states in India have mandated case notification for malaria by all providers. However, enforcement has been limited. An improvement in private sector case reporting will be seen by enforcing the Clinical Establishment Act that mandates registration of all types of medical practitioners (Allopathy, Ayurveda, Unani, Homeopathy, Siddha) to register their clinics/hospitals under the Act. Since malaria is a notifiable disease, the Act mandates reporting of malaria suspected and confirmed cases to the state.

2. **Appropriate sensitization of private practitioners** – The Mangaluru case study highlights the importance of training and sensitization workshops for private practitioners to ensure real-time data reporting. Compliance by private practitioners can be improved by involving them in a consultative process before implementing mandatory case reporting. This consultative process will also provide private

practitioners with an opportunity to voice their concerns which better allows the programme to understand bottlenecks and enablers in improving data reporting.

3. **Ease of use in reporting systems** – A significant bottleneck in ensuring reporting from the private sector has been the lack of clarity around what needs to get reported, in which format, at what frequency and to whom. The use of technology to make it easier to capture and report data in real-time can be a significant game changer as seen from the Mangaluru experience. The rollout of IHIP is a step in the right direction. With the addition of modules for private providers along with appropriate training, IHIP can significantly alter the elimination trajectory of India.

4. **Consider range of financial and non-financial incentives to motivate private sector reporting** – Anecdotal evidence – from informal studies as well as experience of the National TB Elimination programme in India[7] – points to a general interest and willingness of private providers to report case information to the national system. However, private providers have expressed issues with knowing what and how to report to the government as well as a financial burden in the maintenance of records and reporting. The National TB programme provides an incentive of INR 500 (6 USD) for each TB patient private providers notify and another INR 500 (6 USD) to report on the treatment outcome[8]. In the case of Karnataka, a multi-stakeholder approach that involved the District Magistrate (the senior-most administrative office in the governance and management of a district in India) created concerns of the potential cancellation of the private providers' establishment license in case of non-reporting of data and helped enforce reporting by private providers.

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