

## Perspective Piece

# Active Engagement of Private Healthcare Providers Is Needed to Propel Malaria Elimination in India

Manju Rahi<sup>1,2\*</sup> and Amit Sharma<sup>2,3,4</sup>

<sup>1</sup>Indian Council of Medical Research (ICMR), V. Ramalingaswami Bhawan, P.O. Box No. 4911, Ansari Nagar, New Delhi, 110 029, India; <sup>2</sup>Academic Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India; <sup>3</sup>ICMR National Institute of Malaria Research, Sector 8, Dwarka, New Delhi 110 077, India; <sup>4</sup>Group Leader, Structural Parasitology, International Centre for Genetic Engineering and Biotechnology, Aruna Asaf Ali Marg, New Delhi- 110 067, India

**Abstract.** Malaria is a major public health concern in India. Despite a remarkable decline in overall malaria cases and deaths over the past several years, the caseload is still substantial. India's commitment towards malaria elimination by 2030 requires several additional measures for its achievement. The country's malaria data are collated from the public health sector only by the aggregated paper-based surveillance system, which is considered weak because it captures only a minuscule percentage (8% as per the World Malaria Report 2017). The absence of private-sector data is a serious caveat in India's malaria epidemiological scenario. The private healthcare sector (trained and untrained) is a major provider to communities in malaria-endemic areas. It is increasingly recognized that the involvement of the private healthcare sector is crucial for understanding the complete epidemiological picture and targeting elimination strategies accordingly as is being done for tuberculosis in India. Active involvement and alignment of the private sector to the government program of the private sector can be fostered by assessing the presence of the private healthcare sector via landscaping exercise, establishing linkages between the two sectors, incentivization, and encouraging reporting via user-friendly online and offline systems. There are challenges and barriers to the successful adoption of the private healthcare providers in the fold of the national malaria control program; at the same time, it is a critical step that will propel malaria elimination plans of India.

## INTRODUCTION

Malaria is a health concern for many developing countries in Africa and Asia, including India. According to the World Malaria Report 2021, there were 241 million estimated cases and 627,000 fatalities in 2020 globally. India registered a remarkable decrease in the absolute number of malaria cases from 20 million estimated cases in 2000 to 4.1 million cases in 2020.<sup>1</sup> Despite this success in terms of case reduction, India harbors a substantial malaria caseload. The national malaria program of India reported 186,532 cases in 2020, indicating a disparity between national data and WHO-estimated cases.<sup>2</sup> Results of a study carried out by the Indian Council of Medical Research (ICMR) between 2015 and 2016 revealed that the estimated incidence was 4 times higher, and deaths were 93 times greater than that reported by the national malaria program.<sup>3</sup> The disparity has been partly attributed to the weak surveillance system of India, which according to the World Malaria Report in 2017, detected only 8% of malaria cases.<sup>4</sup> At the same time, India is committed to malaria elimination by 2030, and that essentially means that each case gets presented to the health care system, investigated, diagnosed, reported, and treated. For every case to be reported, data must be collated from all sectors—namely, the public and private sectors (which consists of formal and informal healthcare providers).<sup>5</sup> However, it is well known that malaria surveillance data in India currently captures only the public health sector, and the comprehensiveness of even that is uncertain. Malaria is notifiable in 31 states of India, which makes it mandatory by law for the private sector to report malaria to the government.

However, despite this, the malaria caseload reported by the national program consists of only public health sector data as of now.

## PRESENCE OF THE PRIVATE HEALTHCARE SECTOR IN INDIA AND ITS ROLE IN MALARIA MANAGEMENT

The private sector engaged in medical care in India is heterogeneous. It can be categorized as “formal and informal” based on their regulatory status and level of training and as “for-profit and not-for-profit” business models. India's multifarious private healthcare sector ranges from the formal, organized, semiorganized, informal, untrained, and unorganized sectors. The formal and organized sector consists of large corporate hospitals, private hospitals, nursing homes, philanthropic organizations running missionary hospitals, clinics, and health facilities operated by non-governmental organizations (NGOs). They are within the legal framework and have a fairly good record-keeping system. The semi-organized sector exists in the form of registered medical practitioners (RMPs), pharmacies, and private practitioners such as single-doctor clinics. They dispense healthcare to a large proportion of the community. The RMPs and pharmacies operate well within the system as they register with the Medical Council of India, now called National Medical Commission (national and/or state) and State Drug Controller, respectively. The informal, untrained, and unorganized sector includes traditional/faith healers, informal volunteers, and gypsy drug vendors, among others who do not fall under the legal ambit.<sup>6,7</sup>

In India, the private sector is a substantial source of healthcare for people irrespective of economic status. The National Health Accounts estimates of 2017–2018 released by the government of India revealed that the health expenditure spent by the government was only 1.35% of the total

\*Address correspondence to Manju Rahi, Indian Council of Medical Research, V. Ramalingaswami Bhawan, P.O. Box No. 4911, Ansari Nagar, New Delhi, 110 029, India. E-mail: drmanjurahi@gmail.com

gross domestic product (GDP). Household's out-of-pocket expenditure amounted to 1.6% of GDP. The proportion of government health expenditure as a percent of the total health expenditure was 40.8%, whereas it was 48.8% for out-of-pocket expenditure.<sup>8</sup> As per National Sample Survey (2014–2015), 75% of outpatient care and 62% of inpatient care was rendered by the private sector.<sup>9</sup>

Despite the sizeable contribution to healthcare by the private sector, it remains a poorly used resource for public health. Perceptions regarding the accessibility and quality of private providers are key drivers influencing health-seeking behaviors of rural, urban poor and low-income communities at risk of malaria in India. Some of the reasons for at-risk communities to prefer private providers even when they have access to community volunteers or public services include 1) perception of better quality drugs and treatment, 2) shorter wait times, 3) less documentation (desirable for at-risk groups that might be engaged in illegal activities and in migrant populations), 4) perception of being treated with more respect and dignity (particularly for marginalized populations/ethnic groups), 5) convenient hours of operation, 6) prevention of lost wages, 7) satisfaction over ease of purchase and immediate treatment, and 8) flexible payment options, especially in rural settings.

In a review from 2019 on the pattern of testing of febrile illness in southern states of India, malaria was reported to be the topmost infection suspected by the clinicians, followed by other seasonal infections such as dengue, leptospirosis, scrub typhus, and typhoid.<sup>10</sup> Private practitioners may choose to prescribe or administer antimalarial drugs based on a presumptive diagnosis, or they may use rapid diagnostic tests and/or microscopy depending on availability, affordability, and their clinical judgment. Over-the-counter availability of antimalarials facilitates treatment of malaria without a confirmatory diagnosis, which is contrary to national malaria control program guidelines. Studies in malaria-endemic areas have shown a preference of communities to seek treatment in the private sector in studies Assam, Mizoram, and central India.<sup>11</sup>

#### ACTIVE ENGAGEMENT OF THE PRIVATE MEDICAL CARE PROVIDERS IS NEEDED IN THE NATIONAL MALARIA CONTROL PROGRAM

Given the potential of private providers to yield additional malaria cases and their strong influence on communities, they must be actively involved in all facets of malaria elimination. The private sector must also be engaged in surveillance, prevention, and management of malaria in pregnancy and young children. They must also offer patient counseling for the use of protective vector control tools. The WHO, Roll Back Malaria, and Global Funds have recognized that inadequate engagement of the private sector is a crucial barrier to achieving elimination.<sup>12–14</sup> There would be several benefits reaped from the inclusion of the private sector in the national malaria program. First, there would be an improvement in the quality, availability, and affordability of malaria prevention, diagnostics, or treatment products in the private sector. Second, alignment of malaria case management practices of private sector to the national program guidelines would take place. Third, enhancement in community awareness and demand for effective malaria prevention and management

products with related behaviors may occur. Fourth, augmentation of the national surveillance system by pooling of private sector data will take place. Fifth, provision of quality private healthcare to the affording communities can free up public-sector capacity for more needy population. Sixth, the larger corporate sector or formal not-for-profit organizations will bring more intangible assets such as fostering of leadership qualities, proficiency in financial planning and management, best practices in governance, and transparency.

#### PATHWAY TO THE ACTIVE INVOLVEMENT OF PRIVATE SECTOR IN INDIA

1. Landscaping exercise: India is a vast country in terms of geography, population size, ecologies, and diversity in ethnicity, culture, and practices which have a bearing on health-seeking behavior. Therefore, a landscaping effort to map these facilities on outlet type, location, malaria services and information currently being offered, operational hours, staff, and legal status will be helpful to understand the characteristics, standards, and presence of the private sector. These can be assessed for their capacity to provide diagnosis, treatment, reporting, and impact on communities (especially remote and tribal-dominated communities). This information needs to be updated every few years to account for new or closed facilities. Landscaping can be prioritized in malaria high endemic areas, which are also typically populated by the marginalized and socioeconomically weaker communities missed by the sparse healthcare system in these areas. Malaria-endemic areas are usually rural interiors, tribal belts, or areas with difficult terrain, especially the northeastern region of India, and they face both availability and accessibility barriers.
2. Linkages between the national program and private providers: There is an urgent need to improve linkages between the two arms. The national program can approach the organized and formal healthcare sector via certain mechanisms. One of the routes to approach the semi-organized sector, such as individual trained practitioners, can be through the Indian Medical Association and other professional bodies. The inclusion of the informal sector is a challenge. Non government agencies, civil society agencies such as the Red Cross, local bodies, and government administration at the local level can play an important role in creating bridges between the national program and private providers.
3. Integrated training: Selected private healthcare providers can be trained in services related to malaria care and can be offered opportunities for accreditation/recognition to those who satisfy the prevailing standards. Systemizing these joint activities with the aim to harmonize and upgrade the standards of private practitioners would be a critical step. Support from intermediary organizations such as NGOs and civil society can also be useful. Integrated training of matching cadres can align and promote compliance of private providers to the national guidelines and improve referral linkages due to increased trust and confidence. Unlike formal healthcare practitioners, it is more challenging to make informal healthcare providers (untrained and unregulated) a part of national malaria surveillance systems due to the uncertain nature of their legal status.

4. Appropriate and effective incentives and disincentives: Incentives can be financial or through other means, such as provision of subsidized diagnostics, therapeutics, and vector-control products. Availability of quality-assured rapid diagnostics to the private providers will have an immense benefit on appropriate diagnosis and management of malaria.<sup>15</sup> Social franchising and marketing have been recognized as potentially effective incentive schemes. They have been operational for health subjects ranging from maternal health, reproductive and sexual health services, and others in India that can be leveraged for malaria as well.<sup>16,17</sup> Identified private providers could be contracted for certain services and run on the model of “pay-for-performance” schemes that have been carried out for tuberculosis.<sup>18</sup> Disincentives such as revoking registration or licensure or refusing renewal can be considered in certain situations wherein private providers fail to report consistently.
5. Appropriate reporting systems to be in place: There is a need for user-friendly, simple, and cost-free platforms for reporting and referring malaria cases. These platforms could be mobile apps, messaging services, and Internet-based digital platforms that these providers can use after specific training. Digital dashboards can be used wherein the data from different stakeholders can be collated for rapid data visualization, analysis, and decision-making.<sup>19</sup>

#### ALIGNING THE PRIVATE SECTOR TO VARIOUS FACETS OF THE NATIONAL MALARIA PROGRAM IN INDIA

1. Surveillance: The pooled public and private data can be used to convene workshops with private sector and public health experts to review data by geographic area and by provider type to inform elimination program and policy makers. This is consistent with the need to shift from aggregated case data to near real-time data collection, transfer, and integration via digitalized platforms.<sup>13</sup> These modern platforms can augment the surveillance systems of not only malaria but the three vector-borne diseases under consideration for elimination, malaria, visceral leishmaniasis, and lymphatic filariasis, in an integrated way in India.<sup>20</sup>
2. Diagnosis and management: The Indian Drug Policy (2013) mandates that all suspected malaria cases be tested by microscopy or rapid diagnostic kits before administering antimalarials. However, in several instances, the private healthcare providers, especially in the semi-organized/unorganized sector, prescribe antimalarials, including artemisinin-based combination therapy, based on clinical suspicion. One of the ways to address this is to empower the private care provider, including informal providers and drug shopkeepers, by subsidizing quality-assured rapid diagnostics. The provision of rapid diagnostics with the private sector in India has been proposed earlier by the authors.<sup>15</sup> Successful utilization of malaria diagnostics will require training of these practitioners in their use along with compliance to national guidelines. Post training support and incentives and disincentives may further strengthen diagnostic and prescription practices. India has now an equivalent burden of vivax as of falciparum malaria.<sup>2</sup> The current radical cure option for *P. vivax* is 14-day treatment with primaquine, preferably with prior screening for glucose-6-phosphate dehydrogenase (G6PD) deficiency in certain areas. Sensitization of private healthcare providers to ensure patient’s compliance to 14-day treatment is needed.

A study that reviewed scientific literature from 1969 to 2016 revealed the prevalence of G6PD deficiency to range from zero to ~30% among different castes, ethnicities, linguistic groups, and regions of India.<sup>21</sup> However, testing facilities are not always available, and only specialized laboratories, often at the district (tertiary) level, offer G6PD deficiency tests. Testing for G6PD deficiency is not a matter of routine in India as yet. Also, providers are ignorant of the requirement of prior testing, especially in areas of a known high prevalence of G6PD deficiency. Severe malaria cases, malaria in pregnancy, and malaria in the pediatric population need separate skill sets and private providers need to be oriented in handling/referring these cases.

3. Preventive measures: The healthcare provider in the private sector most often is the first point of contact for the communities. This opportunity can be harnessed for imparting information and education about preventive measures. Over-the-counter availability of insecticide-impregnated nets has been proposed to enhance the accessibility and use by at-risk communities.<sup>22</sup>
4. Community mobilization: Private sector providers can be roped in for community engagement and involvement in campaigns by national malaria control program, such as the nationwide antimalaria month in India.

#### BARRIERS AND PITFALLS OF ENGAGING THE PRIVATE HEALTHCARE PROVIDERS IN INDIA

The participation of the private sector is fraught with its own complexities. There are procedural obstacles in bringing the informal private sector, typically out of the legal framework, into the fold of national malaria control policies. Informal healthcare providers may be reluctant to take part in the national program activities and may not want to share their records. The assessment of the size and composition of the informal sector, especially in rural and inaccessible areas, can be challenging. This could be due to the sheer size of the private sector and the absence of organization in these settings. There is a discordance between the two sectors on the desired goal of the malaria elimination program because motivations of the private sector are profit driven. The current public health surveillance system is a paper-based aggregated data collection system. In the absence of any established modern surveillance system, an amalgamation of the private sector is cumbersome. The existing treatment services, which may include presumptive treatments, overprescription of antimalarials and other antibiotics, and the use of counterfeit drugs in the private sector, can be difficult to overcome. Poor quality of diagnostics, lack of knowledge of correct use of rapid diagnostics, and general unavailability can be additional roadblocks. Apprehensions of the program managers over the so-called legitimization of informal untrained healthcare providers and possible misuse of government endorsement can lead to inadequate efforts and delay in inclusion of informal private sector in the fold of national program. Insufficient communication with remote informal private providers, especially in tribal and inaccessible areas, and their capacity to meet quality standards even if trained is another barrier to the successful convergence of the private sector in national program policies. Lastly, political will and additional funds are needed for the inclusion of private providers.

## CONCLUSION

Mechanisms and approaches would need to be devised to overcome the barriers mentioned herein for smooth incorporation of the private sector into national malaria policies. The need to have quality data from all public-sector partners and private healthcare providers is being increasingly recognized as India targets malaria elimination by 2030. A switchover to the modernized surveillance system by near real-time data capture and collation on digital dashboards from the private and public sector will make the decision-making prompter and more efficient. Successful admittance of private healthcare providers in all facets of the malaria elimination program is undoubtedly an arduous task. However, it has the potential to propel the country toward its aim of malaria elimination.

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Authors' addresses: Manju Rahi, Indian Council of Medical Research, Division of Epidemiology and Communicable Diseases, New Delhi, Delhi, India, E-mail: drmanjurahi@gmail.com. Amit Sharma, National Institute of Malaria Research, ICMR-National Institute of Medical Research, New Delhi, Delhi, India, E-mail: directornimr@gmail.com.

## REFERENCES

- World Health Organization, 2021. *World Malaria Report*. Available at: <https://www.who.int/publications/i/item/9789240040496>. Accessed January 11, 2022.
- National Vector Borne Disease Control Programme. *Malaria*. Available at <https://nvbdcp.gov.in/index1.php?lang=1&level=1&sublinkid=5784&lid=3689>. Accessed January 11, 2022.
- Kumar A, Chaturvedi HK, Mohanty AK, Sharma SK, Malhotra MS, Pandey A, 2020. Surveillance based estimation of burden of malaria in India, 2015–2016. *Malar J* 19: 156.
- World Health Organization, 2017. *World Malaria Report*. Available at: <https://www.who.int/publications/i/item/9789241565523>. Accessed January 11, 2022.
- Rahi M, Das P, Sharma A, 2021. Malaria elimination in India requires additional surveillance mechanisms. *J Pub Health April* 5: fdab106. <https://doi.org/10.1093/pubmed/fdab106>.
- Rao PH, 2021. The Private Health Sector in India: a framework for improving the quality of care. *ASCI J Management* 41: 14–39.
- Sengupta A, Nundy S, 2005. The private health sector in India. *BMJ* 331: 1157–1158.
- National Health Accounts. *Estimates for India (2017–2018)*. Available at: <https://nhsrcindia.org/sites/default/files/2021-11/National%20Health%20Accounts-%202017-18.pdf>. Accessed on January 26, 2022.
- National Sample Survey Office, 2016. *Health in India. Key Indicators of Social Consumption in India: Health*. NSSO 71st Round, January–June 2014. Available at: [http://mospi.nic.in/sites/default/files/publication\\_reports/nss\\_rep574.pdf](http://mospi.nic.in/sites/default/files/publication_reports/nss_rep574.pdf). Accessed on January 25, 2021.
- Bhaskaran D, Chadha SS, Sarin S, Sen R, Arafah S, Dittich S, 2019. Diagnostic tools used in the evaluation of acute febrile illness in South India: a scoping review. *BMC Infect Dis* 19: 970.
- Chaturvedi HK, Mahanta J, Pandey A, 2009. Treatment-seeking for febrile illness in north-east India: an epidemiological study in the malaria endemic zone. *Malar J* 8: 301.
- The Global Fund, 2019. *Framework on Private Sector Engagement*. Available at: [https://www.theglobalfund.org/media/8382/core\\_privatesectorengagement\\_framework\\_en.pdf](https://www.theglobalfund.org/media/8382/core_privatesectorengagement_framework_en.pdf). Accessed January 11, 2022.
- Global Malaria Programme, 2018. *WHO Malaria Policy Advisory Committee (MPAC) Meeting*. Available at: <https://apps.who.int/iris/bitstream/handle/10665/275762/WHO-CDS-GMP-2018-24-eng.pdf?ua=1>. Accessed January 11, 2022.
- Private sector engagement framework and work plan. *The RBM Partnership to End Malaria*. Available at: [https://endmalaria.org/sites/default/files/CEPA%20submission%20%20RBM%20Private%20Sector%20Engagement%20Strategy%20final%20version%20Aug18\\_.pdf](https://endmalaria.org/sites/default/files/CEPA%20submission%20%20RBM%20Private%20Sector%20Engagement%20Strategy%20final%20version%20Aug18_.pdf). Accessed January 11, 2022.
- Rahi M, Sharma A, 2021. Free market availability of rapid diagnostics will empower communities to control malaria in India. *Am J Trop Med Hyg* 105: 281–283.
- Haemmerli M et al., 2018. How equitable is social franchising? Case studies of three maternal healthcare franchises in Uganda and India. *Health Policy Plan* 33: 411–419.
- Sweat MD, Denison J, Kennedy C, Tedrow V, O'Reilly K, 2012. Effects of condom social marketing on condom use in developing countries: a systematic review and meta-analysis, 1990–2010. *Bull World Health Organ* 90: 613–622A.
- Shibu V et al., 2020. Tapping private health sector for public health program? Findings of a novel intervention to tackle TB in Mumbai, India. *Indian J Tuberc* 67: 189–201.
- Rahi M, Sharma A, 2020. For malaria elimination India needs a platform for data integration. *BMJ Glob Health* 5: e004198.
- Rahi M, Chaturvedi R, Das P, Sharma A, 2021. India can consider integration of three eliminable disease control programmes on malaria, lymphatic filariasis, and visceral leishmaniasis. *PLoS Pathog* 17: e1009492.
- Shah I, Jarullah J, Jarullah B, 2018. Prevalence of glucose-6-phosphate dehydrogenase (G6PD) deficiency in India: a systematic review. *Adv Biosci Biotechnol* 9: 481–496.
- Rahi M, Ahmad SS, Sharma A, 2021. Coverage enhancement and community empowerment via commercial availability of the long-lasting nets for malaria in India. *Public Health Res Pract* 2: 100133.