

# Truenat: An affordable and user-friendly option for screening of sub-microscopic *Plasmodium* infections in low resource countries

Hari Shankar,<sup>a</sup> and Gaurav Kumar<sup>b\*</sup>

<sup>a</sup>Indian Council of Medical Research, Delhi, India

<sup>b</sup>National Institute of Malaria Research (ICMR), Delhi, India

Sub microscopic infections (SMI) are one of the major hurdles in achieving the goal of malaria elimination. SMI remains undetected through standard diagnostic tools and contribute to sustenance of malaria transmission. Deora and colleagues in *The Lancet Regional Health-Southeast Asia* review SMI and highlight the issue of SMI in context of India where burden of SMI ranged from 0.4 to 38.4%.<sup>1</sup> The sensitivity of microscopy is lower for *Plasmodium falciparum* (Pf) malaria than *Plasmodium vivax* (Pv) and extremely compromised for mixed Pf-Pv infections. Importantly, the prevalence of Pf (63.8%) is ~ 1.8 times higher than Pv (36.2%) in India which means that a significant proportion is missed by microscopy.<sup>2</sup> The review advocated the importance of mapping hotspots of sub-microscopic infections using molecular techniques. But, molecular technique like polymerase chain reaction (PCR) requires skilled technician with sophisticated instrument and well equipped laboratory infrastructure. For elimination of SMI, point of care tests with better sensitivity will be required considering the diverse eco-geography of India. Truenat<sup>®</sup> Malaria, a chip-based microPCR test, is one such point of care diagnostic tool which has comparable limit of detection (<5 malaria parasites per microlitre) with PCR.<sup>3,4</sup> The Truenat has aided advantage of portable, battery operated with no requirement of skilled manpower. The tool has shown proven benefits in successful screening and management of disastrous infections such as COVID-19 and Tuberculosis. Therefore, Truenat may produce

substantial benefits in identifying sub-microscopic *Plasmodium* infections in low resource settings due to its easy operations and cost-effectiveness. For successful elimination of SMI in India, demarcation of SMI hotspots by microscopy and Truenat supported with effective treatment would be a cost effective and more robust approach.

## Contributors

GK: Conceptualization, Writing – GK and HS.

## Declaration of interests

None.

## Acknowledgements

None.

## References

- 1 Deora N, Yadav CP, Pande V, Sinha A. A systematic review and meta-analysis on sub-microscopic Plasmodium infections in India: different perspectives and global challenges. *Lancet Reg Health-Southeast Asia*. 2022;28:100012.
- 2 National Vector Borne disease control Program (NVBDCP), Malaria situation in India from 2018, Available from: <https://nvbdc.gov.in/index1.php?lang=1&level=1&sublinkid=5784&lid=3689>. Accessed 19 June 2022.
- 3 Nair CB, Manjula J, Subramani PA, et al. Differential diagnosis of malaria on Truelab Uno<sup>®</sup>, a portable, real-time, microPCR device for point-of-care applications. *PLoS One*. 2016;11(1):e0146961.
- 4 Hussain SS, Ojha VP, Jeena M, et al. Validation of micro-chip based PCR assays for diagnosis of both Plasmodium falciparum and Plasmodium vivax. *J Vector Borne Dis*. 2022;59(1):57.

The Lancet Regional Health - Southeast Asia 2022;00: 100032

Published online xxx  
<https://doi.org/10.1016/j.lansea.2022.100032>

\*Corresponding author.

E-mail addresses: [gauravnimr@gmail.com](mailto:gauravnimr@gmail.com), [mailmegauravks1@rediffmail.com](mailto:mailmegauravks1@rediffmail.com) (G. Kumar).

© 2022 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)