

Second most common malaria parasite takes unrealized toll on human health

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A week earlier, 12-year-old Reni in hospital in eastern Indonesia was emaciated, dehydrated, and severely anemic after weeks of suffering a moderately febrile illness that would not let go of her. She had vivax malaria and it was slowly killing her when finally brought to hospital by her parents. She recovers as slowly as the infection sickened her. Credit: Pearl Gan, CC BY 4.0 (creativecommons.org/licenses/by/4.0/)

The malaria parasite *Plasmodium vivax* (*P. vivax*) causes frequent, chronic infections that represent a major unrecognized burden on global health, according to a review by Kevin Baird of the Eijkman-Oxford Clinical Research Unit in Indonesia and Katherine Battle of the Institute for Disease Modeling in the United States publishing October 7th in the open access journal *PLOS Medicine*.

In this review, Baird and Battle summarize evidence indicating that the global burden of malaria estimated from reported cases of acute attacks likely miss the widespread but more subtle harm done by chronic infection of *P. vivax*. Furthermore, *P. vivax* often affects impoverished communities where people face multiple health challenges. There are five *Plasmodium* species that cause malaria, but the vast majority of reported cases are due to *Plasmodium falciparum*, with about 193.5 million cases annually. *P. vivax* is the second most common reported cause, with about 14.3 million cases annually. A recent study found that while *P. falciparum* is more likely to cause death within two weeks of diagnosis, patients with *P. vivax* were more than twice as likely to die over the long term. Chronic infections in people who are repeatedly exposed to *P. vivax* cause damage to the kidneys, brain, and [circulatory system](#).

An improved understanding of the biology of *P. vivax* has recently revealed multiple factors that contribute to its toll on global health. The parasite can exist in the body at low levels that cause no symptoms, making it difficult to diagnose, but can still spread. Sub-Saharan Africa was once thought to be practically immune to *P. vivax* infection because most of the population lack the Duffy antigen, a molecule on the surface of red blood cells the parasite uses to invade. However, a recent study finds that *P. vivax* transmission is still widespread in this region. Additionally, there are two common genetic variations carried by part of the population that interfere with successful treatment of *P. vivax* malaria.

All these factors complicate efforts to estimate the full extent of *P. vivax* infections and control its spread. Baird and Battle conclude that the traditional approaches developed to combat *P. falciparum* in Africa are inadequate for *P. vivax*. Eliminating *P. vivax* will require different diagnostics, therapies and vector control strategies, and better data that reveal the true scope of the burden.

Baird adds, "Blood smears from patients suffering acute vivax malaria do not suffice to measure global burdens of this [infection](#). The parasite finds refuge in deeper organs where the harm done is more subtle but nonetheless substantial."

More information: Battle KE, Baird JK (2021) The global burden of Plasmodium vivax malaria is obscure and insidious. *PLoS Med* 18(10): e1003799. doi.org/10.1371/journal.pmed.1003799

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