

# Accelerating the elimination of *P. vivax* malaria in the Americas

## About PAVE

The Partnership for Vivax Elimination (PAVE) led by PATH and Medicines for Malaria Venture (MMV) brings together National Malaria Programs (NMPs), researchers, funders, and other organizations to support countries as they strive to achieve their elimination goals through:

- Working with NMPs to identify optimal radical cure tools and strategies for their given contexts.
- Generating and sharing high-quality evidence on *Plasmodium vivax* (*P. vivax*) case management to inform policy decisions and implementation by national governments.
- Advancing the development and availability of quality-assured medicines and diagnostics for *P. vivax*.



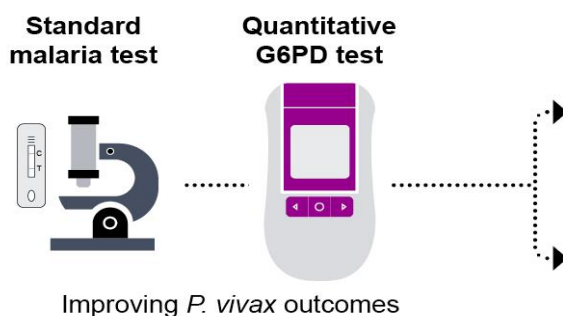
Photo: Jamil Barton/ PATH

PAVE facilitates access to new and existing malaria diagnostics and treatments for *P. vivax* elimination

## Eliminating *P. vivax* malaria

Eliminating malaria is an ambitious goal, and relapsing *P. vivax* malaria presents a major obstacle to its achievement. In countries approaching elimination, the decline in *P. vivax* burden often lags the decline of *P. falciparum*. The *P. vivax* parasite has a dormant liver stage—the ‘hypnozoite’—that can be activated weeks, months, or years after the initial infection, making it difficult to eliminate. Diagnosis, and radical cure treatment requires coordinated use of (1) a malaria blood-stage diagnostic (either a rapid diagnostic test or microscopy), (2) a glucose-6-phosphate dehydrogenase (G6PD) diagnostic test, (3) a blood-stage antimalarial, either chloroquine (CQ) or an artemisinin-based combination therapy (ACT) (based on national strategies), and (4) tafenoquine (TQ) or primaquine (PQ) to clear parasites from the liver and prevent relapse. TQ and PQ can both cause severe hemolysis in G6PD deficient patients. As a result, G6PD testing is mandatory before using TQ, as patients can only be treated if they have enzyme activity  $\geq 70\%$ . G6PD testing is also recommended before using PQ to guide appropriate use and dosing.

## New Tools for Radical Cure



		Day	1	2	3	4	5	6	7
7/14 DAY TREATMENT	PQ	Week 1	●	●	●	●	●	●	●
	PQ	Week 2	●	●	●	●	●	●	●
	CQ/ACTs		■	■	■	*option for 7 day 0.5mg/kg/day			
3 DAY TREATMENT	TQ		●						
	CQ		■	■	■				

## Quantitative test to measure G6PD activity

The STANDARD™ G6PD Test provides a quantitative measure of a patient's G6PD enzyme activity levels. The SD Biosensor handheld device provides a patient's G6PD level and hemoglobin measurement in 2 minutes based on a finger-prick. As of November 2023, the test is registered/available in over 22 countries. In addition, the test received Australian Therapeutic Goods Administration (TGA) approval in 2021 and Global Fund Expert Review Panel for Diagnostics approval until July 2024. The test was submitted to WHO prequalification for review in January 2021.

## Tafenoquine—a single-dose relapse prevention treatment

TQ is a single-dose liver-stage treatment that provides radical cure for *P. vivax* malaria when used in combination with CQ. The Australian TGA and United States Food and Drug Administration approved TQ in 2018 for patients aged 16 years and over. It is now registered for the same population in Brazil, Colombia, Ethiopia, Peru, the Philippines and Thailand. In March 2022, the Australian TGA approved the use of TQ for children aged 2 years and above. Subsequently in August 2023, Brazil's regulatory body also approved TQ for the same population. The approvals include a novel 50 mg tablet that can be dispersed in water to facilitate use in children.

## Pediatric primaquine for relapse prevention

PAVE is supporting Fosun Pharma to develop a 2.5 mg and 5 mg dispersible PQ tablet addressing the supply gap in pediatric treatment for relapsing malaria. If approved by WHO prequalification, it will be the first quality-assured pediatric PQ formulation available.

## Generating evidence on *P. vivax* case management

In support of ministries of health, and led by in country research partners, PAVE is conducting feasibility studies to investigate the best use of *P. vivax* treatments and diagnostics to support malaria elimination. For more information visit the [P. vivax information hub](#).

PAVE collates evidence to support national policy decisions of malaria-endemic countries. Country landscape reports have been developed or are underway for most *P. vivax* endemic countries, including Guatemala, Honduras and Panama. Visit the [study database](#) for an overview of vivax research studies; and the [G6PD Operational Research Community of Practice site](#) for practical information regarding the use of the G6PD test.

## Progress in the Americas

In **Brazil**, evidence generated by the [Tafenoquine Roll-out Study \(TRuST\)](#) and health economic assessments (HEA) informed the National Commission of Technology Incorporation into the Unified Health System's (CONITEC) recent decision to incorporate TQ and G6PD testing for nationwide rollout.

In **Colombia**, PAVE's HEA on the cost implications of introducing various radical cure scenarios into the health system have been finalized. A [Pilot Educational Program \(PEP\)](#) to evaluate the effectiveness of training health personnel at all levels in diagnosing G6PD deficiency has also been completed and its results and materials are now serving as inputs for the pilot implementation of G6PD testing in four health facilities in Quibdó (Chocó).

In **Peru**, the Ministry of Health worked with PAVE to develop and approve a strategy for the potential introduction of TQ and G6PD testing following the implementation of a [feasibility study](#) that started recruiting patients in August 2023.

PAVE has also been working to identify challenges in case management in **Guatemala**, **Honduras** and **Panama** and supporting NMPs in conducting implementation pilots of G6PD testing.

PAVE consolidates project work from multiple funders and is aligned with country partners and the WHO to accelerate progress. The partnership combines investments from Unitaid, the Bill & Melinda Gates Foundation, the UK Foreign, Commonwealth and Development Office (FCDO) and MMV core funding, among others. For additional information regarding our work, reach out to: [pave@path.org](mailto:pave@path.org)



Photo: Daniel San Martin/ MMV