

## Is tafenoquine a cost-effective treatment option for *Plasmodium vivax* malaria?

10 January 2024

A new study led by Menzies School of Health Research has provided further insight into the cost-effectiveness of a new malaria medication, tafenoquine, to treat vivax malaria.

Researchers used a year's worth of vivax malaria disease report data from Brazil and projected the impact over a 10-year period. They compared different types of medications to compare the costs and impact on disease, including the reduction of malaria transmission. This is particularly important as vivax malaria can remain undetected in the liver and reactivate weeks or months after the initial infection.

Primaquine and tafenoquine are the 2 medications available to treat the liver stage of vivax malaria. Published today in PLOS Medicine, the study uncovered that tafenoquine was a cost-effective option when compared to 7 days of primaquine treatment. This is despite the requirement to test for glucose-6-phosphate dehydrogenase (G6PD) deficiency prior to tafenoquine being prescribed. G6PD testing before primaquine treatment is also recommended by the World Health Organization as best practice.

The findings analysed the use of G6PD screening and one dose of tafenoquine to a 7-day course of low dose primaquine without G6PD screening. Up until recently, the latter was the standard practice for treating the liver stage of vivax malaria in Brazil.

Current data suggests only 62 to 86% of vivax malaria patients in Brazil complete their 7-day primaquine treatment. Therefore, when looking at cost effectiveness, the researchers also looked at different scenarios of patients completing their primaquine treatment.

They used an economical evaluation model coupled with a disease transmission model to estimate and map their results. They looked at 3 different primaquine treatment scenarios (patients completing 30%, 67% or 90% of the 7-day treatment). The researchers found tafenoquine was the most cost-effective treatment when compared to the 3 different primaquine completion rates.

Incomplete vivax malaria treatment can result in future illness due to parasites that remain dormant in the liver. This can cause a further loss of productivity and greater economic impacts of the disease.

The researchers' findings support the use of tafenoquine after G6PD screening in Brazil and highlight that it would be particularly cost-effective in areas where people are less likely to stick to a primaquine treatment plan. The study also suggested tafenoquine would be even more cost-effective when this treatment is available for children.

Vivax malaria is one of the most common forms of malaria. Finding clinically effective and cost-effective ways to tackle this disease is vital to achieve malaria elimination.

The use of G6PD testing and tafenoquine has been recently adopted as part of Brazil's national treatment policy for adults. These important findings can also help other countries seeking cost-effective malaria treatments.

The study was funded by Medicines for Malaria Ventures. Read more about the study in full: <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1004255>

**Quotes attributable to Menzies School of Health Research Senior Research Fellow (health economist) and study corresponding author, [Associate Professor Angela Devine](#):**

“Malaria causes a significant economic burden in endemic countries. Therefore, understanding the cost effectiveness of malaria treatments is vital to help support decision makers to set treatment priorities and allocate resources.

“Both clinically effective and cost-effective treatment helps to limit health expenses, increases productivity and contributes to greater economic development.

“These findings are important in the role of malaria elimination. They take into account both the economic impact of treatment and the impact treatment has on stopping the spread of this disease.”

ENDS

**Tafenoquine fast facts:**

- Primaquine and tafenoquine are the 2 medications available to treat the liver stage of *Plasmodium vivax* malaria. While primaquine has been used for more than 60 years, tafenoquine is a newer medication, having been approved for use in the last 6 years.
- Tafenoquine is given as a single dose, as it has a shorter treatment cycle than primaquine, lasting longer in the body. This overcomes adherence challenges with multiday primaquine regimens.
- For patients with insufficient glucose-6-phosphate dehydrogenase (G6PD) activity, both tafenoquine and primaquine can induce acute hemolytic anemia (destruction of red blood cells). The World Health Organization recommends G6PD testing of patients before treatment with primaquine as best practice and this testing is mandatory before tafenoquine is prescribed.
- Due to this testing requirement, tafenoquine is a more expensive medication than primaquine per patient treated. But the shorter treatment cycle means that tafenoquine can also reduce costs by preventing future malaria episodes.

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**Menzies School of Health Research**

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