Global Malaria Programme



Guide to G6PD deficiency rapid diagnostic testing to support *P. vivax* radical cure



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GLOSSARY

- DNA Deoxyribo-nucleic acid
- FST Fluorescent spot testing
- G6PD Glucose-6-phosphate dehydrogenase
- PCR Polymerase chain reaction
- RDT Rapid diagnostic test
- SNP Single nucleotide polymorphism

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1. Purpose of this document

This user guide is designed to provide national malaria control programmes with general information on glucose-6-phosphate dehydrogenase (G6PD) deficiency. Individuals with this condition may be at risk of adverse effects from medicines commonly used to cure *Plasmodium vivax* malaria, as well as from other medicines and substances [1]. While this document discusses G6PD testing for *P. vivax* case management, this guidance also applies to *P. ovale* malaria as per the WHO guidelines for treatment of malaria. This document includes generic instructions on how to conduct point-of-care testing for G6PD deficiency using currently available rapid diagnostic tests (RDTs). This guide is intended to provide practical information that will support G6PD deficiency testing, principally as part of *P. vivax* malaria control and elimination programmes.

2. Introduction

P. vivax is the most geographically widespread form of malaria and poses unique challenges to elimination. It is estimated that 2.85 billion people are at risk of acquiring *P. vivax* malaria. Although it causes significant morbidity, it rarely results in death; out of 13.8 million estimated cases in 2015, 1400–14 900 deaths globally can be attributed to *P. vivax* (based on analysis of country-level mortality rates) *[2]. P. vivax* is sometimes difficult to detect in patients, as the parasite can remain dormant in the liver in a hypnozoite stage for long periods before re-entering the blood cycle and causing relapse. This hypnozoite stage must be specifically targeted with a medicine to prevent repeated clinical attacks or relapses of illness. Not only do patients become recurrently ill during these relapses, but they are also infective and allow the disease to be transmitted to others through the bite of an *Anopheles* mosquito (Figure 1). Relapse is a major contributor to *P. vivax* in endemic communities, where a significant portion of transmission can be attributed to relapses *[3]*.

FIG. 1. **Lifecycle of** *P. vivax* **parasites**



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