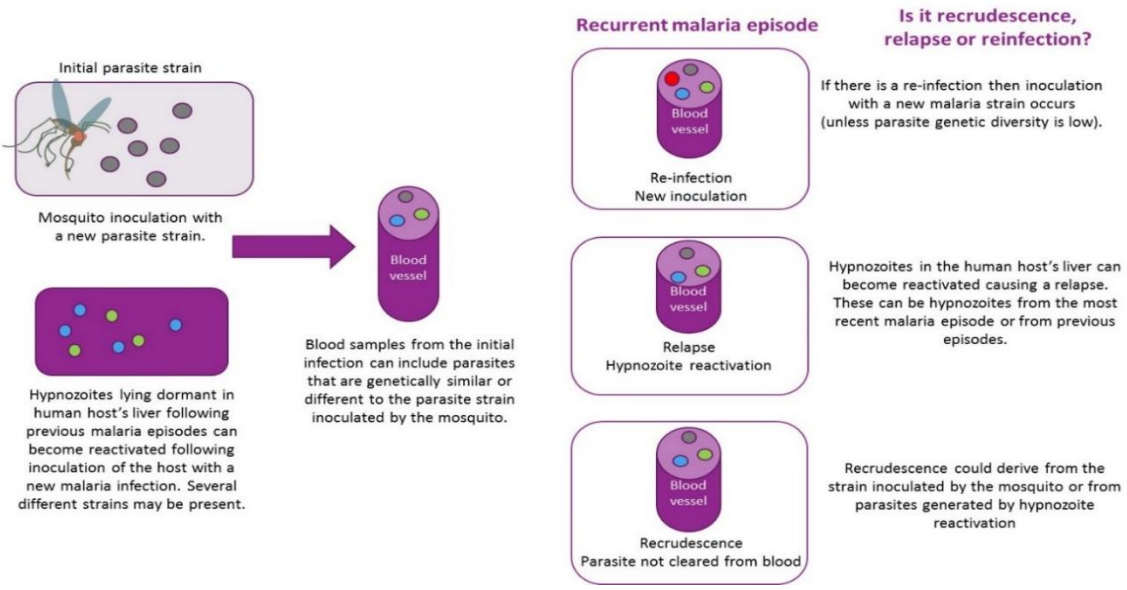
FACTSHEET

FOCUS ON: RELAPSE, RE-INFECTION OR RECRUDESCENCE?

For *P. vivax* there is no method for distinguishing between a recrudescence (recurrence of the initial infection owing to inadequate anti-malarial treatment as a result of parasites not cleared during the treatment, relapse (hypnozoite reactivation) or re-infection (new infection transmitted by a mosquito). This is because latent hypnozoites in the liver can be re-activated by a P. *falciparum* infection or other *Plasmodium* infections and patients can harbour different populations of hypnozoites derived from repeated inoculations.

Figure 1: Relapse situation with a monoclonal infection



The figure shows a situation with an infection from a single parasite species in a patient with pre-existing hypnozoites. However, the initial infection can involve multiple strains circulating in the blood, any of which could potentially cause a recrudescence (as a result of parasites not being cleared during treatment) or produce hypnozoites that result in subsequent relapse.

Initial infection versus recurrence	Potential source
Homologous	• Recrudescence of initial infection derived from sporozoite inoculation • Relapse caused by hypnozoites generated during initial infection • Re-infection in areas of low genetic diversity for the parasite
Heterologous	• Recrudescence of infection derived from minority strain in polyclonal inoculum • Relapse derived from pre-existing hypnozoites present before the initial infection • Relapse derived from hypnozoites formed from a minority strain in a polyclonal inoculum • Re-infection with a new parasite strain

In areas of high P. vivax genetic diversity and if recrudescence can be excluded, it may be possible to assume that most homologous recurrences are relapse. However, in this case, a polyclonal inoculum is perhaps more likely and heterologous recurrences could be caused by recrudescence, relapse or reinfection. Thus, if only recurrences that are homologous to the initial infection are assumed to be a relapse, relapse rates will be underestimated. For more information please visit www.vivaxmalaria.org