The lifecycle of the malaria parasite

Blocking transmission

Blocking the transmission of the parasite from patient to patient is key in reducing malaria transmission. In the blood of an infected patient, a minority of parasites form gametocytes, the sexual form of the parasite. It is these gametocytes, taken up in the mosquito’s blood meal, that infect the mosquito and thus continue the parasite’s lifecycle. MMV is working to identify compounds that will target and destroy these blood stage sexual forms (gametocytes) to block transmission from man to mosquito as well as vector stages ( ookinetes and oocysts) thereby blocking transmission from the mosquito back to man.

Targeting vivax

P. vivax is one of two forms of relapsing malaria to infect humans, and is the most prevalent species in Southeast Asia and South America. It has the ability to become dormant in the liver (“hypnozoite”) and can be reactivated after months or even years leading to an attack of blood stage malaria despite the absence of a mosquito bite. MMV is working to identify new molecules that will provide complete cure of patients infected with dormant liver stage vivax malaria, in addition to the blood stage infections - a so-called “radical cure.”

Targeting the blood stage

The majority of available antimalarial drugs target the blood stage in the parasite lifecycle, since this leads to the clinical symptoms of malaria. Current treatment requires a 3-day administration once or twice daily. Ideally, a drug is needed that requires just a single oral administration, thereby improving compliance and allowing healthcare workers to directly observe treatment. This is especially important when treatment follow-up is difficult, as is the case in many malaria-endemic countries. MMV is currently testing a candidate for a single-dose cure.

The timings are for Plasmodium falciparum only

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