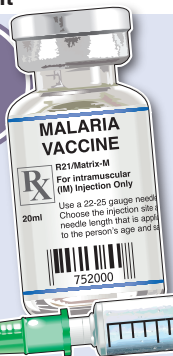
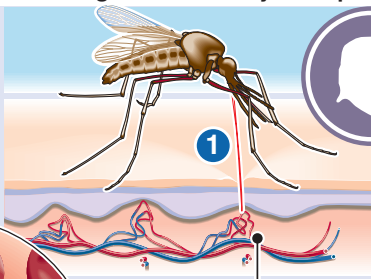


Malaria vaccine breakthrough

The Jenner Institute at Oxford University is conducting Phase III trials of a malaria vaccine – R21/Matrix-M – in northern Tanzania. The vaccine has shown a high-level efficacy of 77 percent

1. Transmission:

Bite by *Anopheles* mosquito – infected with one of four *Plasmodium* parasites – injects malaria **sporozoites** into blood



Small blood vessels in skin

Sporozoites

■ **R21/Matrix-M:** R21 vaccine is combined with Matrix-M – adjuvant which boosts antibody response from immune system

■ **Vaccine:** Targets *circumsporozoite protein (CSP)* on surface of sporozoite. R21 induces attack with CSP-specific antibodies to block liver stage

2. Infection: Sporozoites travel via blood to liver where they invade **hepatocytes** – main cell type in liver

3. Liver stage: Infected hepatocytes rupture, each releasing around 20,000 **merozoites**

4. Merozoites: Infect red blood cells to replicate. Cells burst, releasing merozoites to infect more red cells

5. Sexual cycle: Some merozoites produce **gametocytes**. If mosquito bite infects human, gametocytes eventually produce new sporozoites.

Cycle begins again

