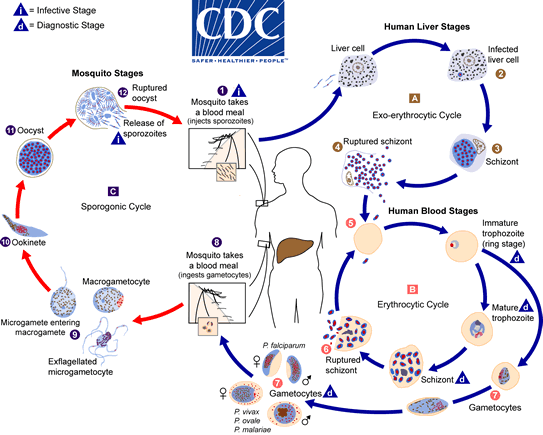
**What Are the Different Types of Malaria Parasites?**

* Plasmodium falciparum (or P. falciparum)
* Plasmodium malariae (or P. malariae)
* Plasmodium vivax (or P. vivax)
* Plasmodium ovale (or P. ovale)
* Plasmodium knowlesi (or P. knowlesi)



The malaria parasite life cycle involves two hosts. During a blood meal, a malaria-infected female Anopheles mosquito inoculates sporozoites into the human host C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image001.gif . Sporozoites infect liver cells C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image002.gif and mature into schizonts C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image003.gif, which rupture and release merozoites C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image004.gif. (Of note, in P. vivax and P. ovale a dormant stage [hypnozoites] can persist in the liver (if untreated) and cause relapses by invading the bloodstream weeks, or even years later.) After this initial replication in the liver (exo-erythrocytic schizogony C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image005.gif), the parasites undergo asexual multiplication in the erythrocytes (erythrocytic schizogony C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image006.gif). Merozoites infect red blood cells C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image007.gif. The ring stage trophozoites mature into schizonts, which rupture releasing merozoites C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image007.gif. Some parasites differentiate into sexual erythrocytic stages (gametocytes) C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image009.gif. Blood stage parasites are responsible for the clinical manifestations of the disease. The gametocytes, male (microgametocytes) and female (macrogametocytes), are ingested by an Anopheles mosquito during a blood meal C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image010.gif. The parasites’ multiplication in the mosquito is known as the sporogonic cycle C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image011.gif. While in the mosquito’s stomach, the microgametes penetrate the macrogametes generating zygotes C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image012.gif. The zygotes in turn become motile and elongated (ookinetes) C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image013.gif which invade the midgut wall of the mosquito where they develop into oocysts C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image014.gif. The oocysts grow, rupture, and release sporozoitesC:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image015.gif, which make their way to the mosquito’s salivary glands. Inoculation of the sporozoites C:\Documents and Settings\ORE\Desktop\CDC - Malaria - About Malaria - Biology_files\clip_image001.gif into a new human host perpetuates the malaria life cycle.

**Comparative properties of antimalarial drugs**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | PRE | ERYTHRO | ERYTH |  | Phase | Hypnozoite | Gamete | Resistance | Toxicity Grading |
| S/N | DRUG | Fal | Viv | Activity | Onset | Duration |  |  |  |  |
| 1 | Chloroquine | \_ | - | + | Fast | Long | \_ | - | Slow | + |
| 2 | Mefloquine | \_ | - | + | Int | Long | \_ | - | Minor | ++ |
| 3 | Quinine | - | - | + | Int | Short | - | - | Minor | +++ |
| 4 | Proguanil | + | - | + | Int | Short | - | \* | Rapid | ± |
| 5 | .Pyrimethamine | \_ | - | + | Slow | Long | \_ | - | Rapid | + |
| 6 | Primaquine | + | + | - | - | - | + | + | Minor | ++ |
| 7 | Sulfonamides | \_ | - | ± | slow | Long | \_ | - | Minor | +± |
| 8 | Tetracyclines | \_ | - | + | slow | Short | \_ | - | Nil | + |
| 9 | Clindamycin | \_ | - | + | slow | Short | \_ | - | Nil | + |
| 10 | Artemisinin | \_ | - | + | Fastest | Short | \_ | + | Nil | + |
| 11 | Lumefantrine | \_ | - | + | Int | Long | \_ | - | Nil | + |

\*Do not kill gametes but may inhibit their development in mosquito.

Pre-erythro. — Preerythrocytic stage; Fal. — *P. falciparum*; Viv — *P. vivax*; Int — Intermediate