

MALARIA



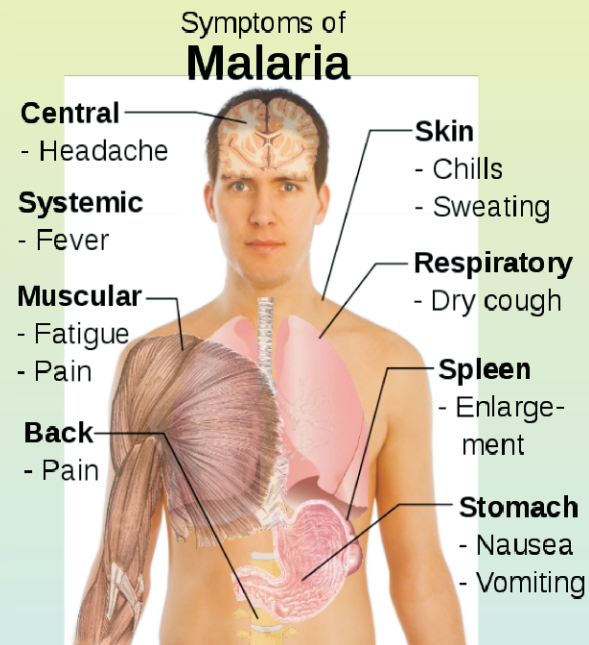
Mosquito Menace

What is malaria?

Malaria is an infectious disease caused by a parasite, Plasmodium, which infects red blood cells. Malaria is characterized by cycles of chills, fever, pain, and sweating. The Anopheles mosquito transmits malaria in human. It is a preventable as well as curable disease where quick diagnosis and quick treatment is vital. Currently, about 2 million deaths per year worldwide are due to Plasmodium infections. The majority occur in children under 5 years of age in sub-Saharan African countries. There are about 400 million new cases per year worldwide.

What are malaria symptoms and signs?

The symptoms characteristic of malaria include flu-like illness with:

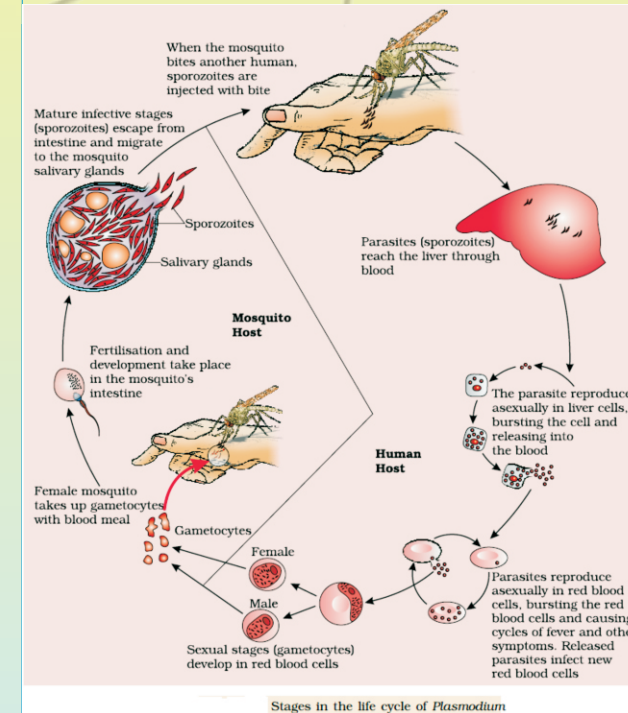


People with severe *P. falciparum* malaria can develop bleeding problems, shock, liver or kidney failure, central nervous system problems, coma, and can die from the

infection or its complications. Cerebral malaria (coma, or altered mental status or seizures) can occur with severe *P. falciparum* infection. It is lethal if not treated quickly; even with treatment, about 15%-20% die.

How is malaria transmitted?

The life cycle of the malaria parasite (Plasmodium) is complicated and involves two hosts, humans and Anopheles mosquitoes. The disease is transmitted to humans when an infected Anopheles mosquito bites a person and injects the malaria parasites (sporozoites) into the blood. This is shown in Figure below



Where is malaria a particular problem?

Malaria is a particular problem and a major one in areas of Asia, Africa, and Central and South America. Unless precautions are taken, anyone living in or traveling to a

country where malaria is present can get the disease. Malaria occurs in about 100 countries; approximately 40% of the world population is at risk for contracting malaria.

HIV (AIDS) and malaria co-infection is a significant problem across Asia and sub-Saharan Africa. Research suggests that malaria and HIV co-infection can lead to worse clinical outcomes in patients. It seems that co-infections enhance the disease process of both pathogens.

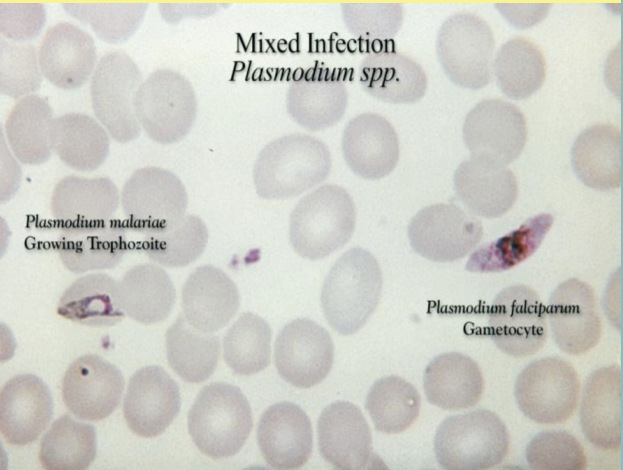
What is the incubation period for malaria?

The period between the mosquito bite and the onset of the malarial illness is usually one to three weeks (seven to 21 days). This initial time period is highly variable as reports suggest that the range of incubation periods may range from four days to one year. The usual incubation period may be increased when a person has taken an inadequate course of malaria prevention medications. Certain types of malaria (*P. vivax* and *P. ovale*) parasites can also take much longer, as long as eight to 10 months, to cause symptoms. These parasites remain dormant (inactive or hibernating) in the liver cells during this time. Unfortunately, some of these dormant parasites can remain even after a patient recovers from malaria, so the patient can get sick again. This situation is termed relapsing malaria.

How is malaria diagnosed?

Rapid and accurate diagnosis of malaria is integral to the appropriate treatment of affected individuals and in preventing the further spread of infection in the community. The classic and most used diagnostic test for malaria is the blood smear on a microscope slide that is stained (Giemsa

stain) to show the parasites inside red blood cells (see Figure below).



Other tests based on immunologic principles exist; including RDTs (rapid diagnostic tests) and polymerase chain reaction (PCR) tests. These are not yet widely available and are more expensive than the traditional Giemsa blood smear. Some investigators suggest such immunologic based tests be confirmed with a Giemsa blood smear

What is the treatment for malaria?

Treatment of malaria depends on many factors including disease severity, the species of malaria parasite causing the infection and the part of the world in which the infection was acquired. The latter 2 characteristics help determine the probability that the organism is resistant to certain anti-malarial drugs. Additional factors such as age, weight, and pregnancy status may limit the available options for malaria treatment. Drug treatment of malaria is not always easy. Malaria is usually treated by using combinations of two or more anti-parasite drugs incorporated into pills that are

taken before exposure (prophylactic or preventative therapy) or during infection. More serious infections are treated by IV anti-parasitic drugs in the hospital.

Is malaria a particular problem during pregnancy?

Yes. Malaria may pose a serious threat to a pregnant woman and her fetus. Malaria infection in pregnant women may be more severe than in women who are not pregnant. Malaria may also increase the risk of problems with the pregnancy, including prematurity, abortion, and stillbirth.

How do people avoid getting malaria?

- **Wear appropriate clothing:** wearing long-sleeved shirts, long pants, boots, and hats. Tucking in shirts and wearing socks and closed shoes instead of sandals may reduce risk.
- **Check for ticks:** inspect your clothing for ticks during outdoor activity and at the end of the day. Prompt removal of attached ticks can prevent some infections.
- **Insecticides:** Aerosol insecticides, vaporizing mats, and mosquito coils can help to clear rooms or areas of mosquitoes. Insecticides should always be used with caution, avoiding direct inhalation of spray or smoke.
- **Optimum protection** can be provided by applying repellents.
- **Bed nets:** bed nets are essential to provide protection and to reduce discomfort caused by biting insects.

Bed nets are most effective when they are treated with an insecticide or repellent such as permethrin. Pretreated, long-lasting bed nets can be purchased or nets can be treated after purchase. The permethrin will be effective for several months if the bed net is not washed. (Long-lasting pretreated nets may be effective for much longer.)



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