

MALARIA

Patient Information Fact Sheet

›What is Malaria?

Malaria is a tropical disease spread by mosquitoes. It is prevalent in most tropical and sub-tropical countries and remains a serious public health problem. In 2011, it was estimated that around 3.3 billion people were at risk for malaria. Malaria is the most significant health hazard facing travelers to tropical countries. According to the World Health Organization (WHO) report, in 2010 there were 219 million cases of malaria, most of which (80%) occurred in the African region. In the same year there were 660,000 deaths due to malaria, 91% of which occurred in Africa and 86% of which occurred in children under the age of five.

›What causes malaria?

There are five types of parasite that can cause malaria: *Plasmodium (P.) vivax*, *P. ovale*, *P. malariae*, *P. knowlesi*, and *P. falciparum*. Anopheles mosquitoes carrying parasites bite their victim and inject infective forms of the parasite into the bloodstream. These infective forms are then passed into the liver where they start to develop into parasites over the course of 6–11 days.

The parasites are then released back into the bloodstream where they begin to infect the red blood cells. A blood sample examined under a microscope will show the presence of the parasites. *P. vivax* and *P. ovale* can lie dormant in the liver after a person is bitten, causing recurring symptoms each time a new batch of mature parasites is released into the bloodstream. This is why some people with malaria suffer from intermittent fever.

Anopheles mosquitoes bite at night from dusk until dawn and this is when most protection is needed.

›What are the symptoms of malaria?

Symptoms of malaria usually appear around 10–15 days after being bitten by an infected mosquito. However, in some cases symptoms can develop months or even years later, particularly if malaria prevention medication was being taken at the time of infection.

The main symptoms are fever, chills with sweating, headache, muscle aches and malaise. In the early stages, the symptoms may resemble influenza (the flu). Other possible symptoms include abdominal pains, diarrhea, jaundice and coma.

The severity of the disease is related to the number of parasites in the blood, and the type of malaria. Malaria caused by *P. falciparum* is the most dangerous type and can be fatal. People who live in countries where this type of malaria exists tend to develop some immunity to it, but visitors and children who have no immunity often develop serious or even fatal disease. Severe falciparum malaria can cause symptoms of severe anemia, liver and kidney failure and convulsions. If the brain is affected (cerebral malaria), coma may occur.

Pregnant women are more at risk because resistance to malaria drops during pregnancy. The disease is more frequent and severe in pregnant women. It also increases the rate of miscarriage and stillbirth in infected women. The disease is rarely passed on to the unborn baby but this is more likely to happen in women with no previous immunity, such as travelers.

›How is malaria treated?

There are clinical drug trials underway to develop an effective vaccine against the different forms of malaria. But until a vaccine is widely available, prevention is still the best form of protection against this disease. If you are traveling to a tropical country you should always take medicines to protect against malaria.

These medicines (**antimalarials**) do not provide true protection against malaria as they do not actually prevent the parasites from entering the body. Instead, they work by suppressing the development of the parasites in the red blood cells. Some antimalarials may also inhibit the development of parasites in the liver.

Most courses of antimalarials should be started 1–2 weeks before entering an infected area, continued while there, and for 4 weeks after leaving. Some treatments may be started as late as 1 or 2 days before entering an infected area and continued for only 1 week after returning. Always carefully read the instructions in the prescribing information that accompanies the medicine. Unfortunately, there are now areas where malaria has become resistant to certain drugs and alternative drugs need to be used. No drug regimen is completely effective against this disease and people can develop malaria even after taking the drugs. Antimalarials will be prescribed according to the areas that will be visited. Your doctor or pharmacist should double-check to verify which antimalarials are recommended for the region to which you are traveling.

Antimalarials are often prescribed in combination. The most commonly prescribed combination is **atovaquone** and **proguanil** (Malarone). Other single therapies include **mefloquine** (Lariam), **doxycycline** (Vibra-Tabs, Vibramycin), **chloroquine** (Aralen), and **hydroxychloroquine** (Plaquenil). Some antimalarials are taken weekly, and others are taken daily. Side effects can be a problem with some antimalarials, but fear of these should not prevent you from taking them. Starting treatment at least a week before traveling should help to identify any problems before departure, giving an opportunity for alternatives to be considered.

If infection with malaria does occur, a number of medicines can be prescribed to treat it, including some of those used for prevention. In emergencies, some drugs may also be given by injection. Drugs prescribed for treatment may include **artemether/lumefantrine** (Coartem), **atovaquone/proguanil**, **chloroquine**, **hydroxychloroquine**, **mefloquine**, and **quinine** (Qulaquin). Delaying treatment can have serious consequences.

›How can malaria be prevented?

To reduce the risk of being bitten by an infected mosquito

- Apply insect repellent to exposed skin, particularly at dusk and overnight. Mosquito nets, especially those impregnated with insecticide are very helpful, particularly in high-risk areas. Air conditioning and mesh protection at windows may help to prevent insects from entering a bedroom at night.

- Always take the correct dose of antimalarial medication and continue the course for the recommended time after leaving an area of risk.
- If infection with malaria is suspected, a blood test to confirm the presence and type of malaria is necessary as soon as possible so that treatment can be started right away.

› **Further information**

Centers for Disease Control and Prevention: www.cdc.gov/MALARIA/

World Health Organization: who.int/topics/malaria/en/

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