

MALARIA



General considerations

Malaria is a common and life-threatening disease in many tropical and subtropical areas. It is currently endemic in over 100 countries, which are visited by more than 125 million international travellers every year.

Each year many international travellers fall ill with malaria while visiting countries where the disease is endemic, and well over 10 000 fall ill after returning home. Fever occurring in a traveller within three months of leaving a malaria-endemic area is a medical emergency and should be investigated urgently.

Cause

Human malaria is caused by four different species of the protozoan parasite Plasmodium: Plasmodium falciparum, *P. vivax*, *P. ovale* and *P. malariae*.

Transmission

The malaria parasite is transmitted by various species of Anopheles mosquitoes, which bite mainly between sunset and sunrise.

Nature of the disease

Malaria is an acute febrile illness with an incubation period of 7 days or longer. Thus, a febrile illness

developing less than one week after the first possible exposure is not malaria.

The most severe form is caused by *P. falciparum*, in which variable clinical features include fever, chills, headache, muscular aching and weakness, vomiting, cough, diarrhoea and abdominal pain; other symptoms related to organ failure may supervene, such as: acute renal failure, generalized convulsions, circulatory collapse, followed by coma and death. It is estimated that about 1% of patients with *P. falciparum* infection die of the disease.

The initial symptoms, which may be mild, may not be easy to recognize as being due to malaria. It is important that the possibility of falciparum malaria is considered in all cases of unexplained fever starting at any time between the seventh day of first possible exposure to malaria and three months (or, rarely, later) after the last possible exposure, and any individual who experiences a fever in this interval should immediately seek diagnosis and effective treatment.

Early diagnosis and appropriate treatment can be life-saving. Falciparum malaria may be fatal if treatment is delayed beyond 24 hours. A blood sample should be examined for malaria parasites. If no parasites are found in the first blood film but symptoms persist, a series of blood samples should be taken and examined at 6–12-hour intervals.

Pregnant women, young children and elderly travellers are particularly at risk. Malaria in pregnant travellers increases the risk of maternal death, miscarriage, stillbirth and neonatal death.

The forms of malaria caused by other *Plasmodium* species are less severe and rarely life-threatening. Prevention and treatment of falciparum malaria are becoming more difficult because *P. falciparum* is

increasingly resistant to various antimalarial drugs.

Of the other malaria species, drug resistance has to date been reported for *P. vivax*, mainly from Indonesia (Irian Jaya) and Papua New Guinea, with more sporadic cases reported from Guyana. *P. vivax* with declining sensitivity has been reported for Brazil, Colombia, Guatemala, India, Myanmar, the Republic of Korea, and Thailand. *P. malariae* resistant to chloroquine has been reported from Indonesia.

Geographical distribution

The risk for travellers of contracting malaria is highly variable from country to country and even between areas in a country.

In many endemic countries of Latin America and the Caribbean, Asia and the Mediterranean region, the main urban areas—but not necessarily the outskirts of towns—are free of malaria transmission. However, malaria can occur in main urban areas in Africa and India. There is usually less risk of the disease at altitudes above 1500 metres, but in favourable climatic conditions it can occur at altitudes up to almost 3000 metres. The risk of infection may also vary according to the season, being highest at the end of the rainy season.

There is no risk of malaria in many tourist destinations in South-East Asia, Latin America and the Caribbean.