

# Malaria

Malaria is an infectious disease caused by single-celled parasites (**plasmodia**). The transmitter (or vector) of these pathogens is the crepuscular and nocturnal female mosquito of the genus *Anopheles*.



There are 5 different species of parasites that can infect humans, each with a different type of malaria. The most severe and dreaded form is malaria tropica, which is caused by *Plasmodium falciparum*, which is why it is often called "falciparum malaria". The incubation period is 6-40, on average 12, days. Malaria is an illness of almost all tropical and subtropical regions [not above 2,500 m (subtropics) or above 1,500 m (tropics)] occurring on all continents except Australia. It is widespread in Sub-Saharan Africa (above all in Kenya), South East Asia, Central and South America and the South Pacific.

Malaria is known to occur in 91 countries, with around 3 billion people living there altogether. Big cities in affected areas are mostly malaria-free. Malaria is one of the three illnesses mostly attributed to fatalities worldwide (tuberculosis, AIDS and malaria). According to WHO estimates, there were approximately 219 million cases of illness worldwide in 2017, 92% of which lived on the African continent. Malaria tropica claimed around 435,000 lives that year with 70% being children below 5. Statistically, that means a child died of malaria every 2 minutes. The same year, there were 956 imported cases of malaria reported in Germany, with a majority being malaria tropica. 90% were contracted in Africa and 10% in Asia (Robert Koch Institute 2017). First signs of illness are non-specific, flue-like **symptoms** such as lethargy, fatigue, muscle and back pain, headaches and dry coughing. In 90% of the cases, there is sudden high fever including shivering fits and profuse sweating. Other symptoms that frequently occur are

nausea, vomiting and diarrhoea, which can be mistaken as symptoms of gastroenteritis. Without treatment, malaria tropica can quickly become **life-threatening** and may be fatal in 10-20% of cases if untreated. Other plasmodium parasites (e.g. *Plasmodium ovale*) may stay unnoticed in the body over a long period until disease develops months or years later. **If you develop a fever or have symptoms typical for malaria after any stay in a malaria risk area or if you are suspected of having malaria, we recommend contacting the doctors on our aqua med emergency hotline immediately and quickly consulting a local doctor, whether you are still abroad or at home.**

There are two main examinations to diagnose malaria: The most common microscopic examination, which can be carried out in nearly any medical centre, uses thick or thin blood smears, which will immediately show if there are plasmodia in the blood. Furthermore, there are quick tests that are sometimes specific to a certain type of malaria. In case of a positive reading, treatment with the appropriate malaria medication must start right away. There is no complete protection against malaria, but appropriate protective measures reduce the risk of infection considerably. Mosquito protection is the first priority, which includes wearing light-coloured clothing with long sleeves, long trousers and socks, spraying your clothes with mosquito-repellent insecticides (permethrin, e.g. Nobite® as spray or washing solution), using mosquito repellents for non-covered body-parts such as face and hands [appropriate repellents contain 30-50% DEET (e.g. care plus®, Antibrumm®, Nobite®)], using air-conditioning or – if there is no air-conditioning – insecticide-treated mosquito nets and avoiding mosquito habitats such as river estuaries and stagnant waters. In addition to these measures to limit the risk of exposure, travellers may also choose the so-called chemoprophylaxis. A permanent or long-lasting chemoprophylaxis with medication is only necessary in high-risk areas.

For most risk areas, it is sufficient to carry a so-called standby emergency treatment. The tablets should be prescribed and bought in Europe rather than abroad, since the costs can differ and the quality of medication abroad does not always comply with European standards or you could find yourself buying counterfeit medicine. If you do contract malaria, self-treatment can be started after a medical consultation (e.g.

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through our aqua med emergency hotline). The medication mostly recommended is a drug combination of the active ingredients atovaquone and proguanil (e.g. Malarone®).

The consulting physician needs to evaluate the advantages and disadvantages in each individual case and explain the different recommended dosages and intake instructions. The combination of atovaquone and proguanil is the one best compatible with diving due to its fewer side effects on the central nervous system. Mefloquine (Lariam®), which was often used in the past, is only rarely used today and not recommended any more because of the significant neurotoxic side effects.

Before going on a (diving) holiday to a tropical area, consulting a doctor specialised in travel medicine is recommended. If you travel to a country where you are at risk of malaria infection, the consulting physician needs to look at different possible risks, check whether there is an indication for a medical chemoprophylaxis, weigh the side effects and the benefits and explain the recommended dosage of the prophylaxis or, if need be, the emergency treatment. Especially if you travel to tropical countries with (small) children, consulting a specialist for tropical medicine is absolutely necessary.