

Malaria: An Overview

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Description

Malaria is an infectious disease spread by mosquitos that affects people and other animals. Malaria is characterised by symptoms such as fever, exhaustion, vomiting, and headaches. It can cause jaundice, seizures, coma, or death in severe situations. After being bitten by an infected mosquito, symptoms usually appear ten to fifteen days later. People may get recurrences of the condition months later if they are not appropriately managed. Reinfection usually causes lesser symptoms in persons who have recently survived an infection. If the person is not exposed to malaria for months or years, the partial resistance diminishes. Malaria is caused by Plasmodium microorganisms, which are single-celled microorganisms. It is only carried by bites from infected Anopheles mosquitoes. The parasites from the mosquito's saliva enter a person's bloodstream through a mosquito bite. The parasites make their way to the liver to develop and multiply.

Humans may infect and spread five species of Plasmodium. *P. falciparum* is the most common cause of death, but *P. vivax*, *P. ovale*, and *P. malariae* cause a milder form of malaria. Human illness is rarely caused by the *P. knowlesi* species. Malaria is usually detected through microscopic study of blood films or antigen-based fast diagnostic procedures. Although methods for detecting the parasite's DNA using the polymerase chain reaction have been developed, they are not generally employed in places where malaria is prevalent due to their high cost and complexity. The risk of disease can be lowered by using mosquito nets and insect repellents to avoid mosquito bites, as well as mosquito-control techniques including spraying insecticides and emptying standing water. Malaria prevention drugs are available for travellers in countries where the disease is common. In locations with high malaria prevalence, occasional doses of the combination medicine sulfadoxine/pyrimethamine are suggested in babies and after the first trimester of pregnancy. [1-5]

As of 2020, there is a single vaccination that has been found to reduce the risk of malaria in African children by roughly 40%. Another vaccination showed 77 percent efficacy in a pre-print research, although this study has not yet been peer reviewed. Efforts to create more effective vaccines are still underway. A combination of antimalarial drugs, including artemisinin, is suggested for the treatment of malaria. Mefloquine, lumefantrine, or sulfadoxine/pyrimethamine may be used as the second medicine. If artemisinin is not available, quinine and doxycycline can be used instead. Due to concerns about rising drug resistance, it is recommended that malaria be verified if feasible before treatment begins in places where the disease is common. Resistance to numerous antimalarial drugs has emerged among the parasites; for example, chloroquine-resistant *P. falciparum* has spread over most malarial areas, and artemisinin resistance has become a concern in some parts of Southeast Asia.

The disease is seen in a large range of tropical and subtropical regions

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near the equator. Much of Sub-Saharan Africa, Asia, and Latin America fall within this category. Malaria caused 241 million cases worldwide in 2020, resulting in an estimated 627,000 fatalities. Sub-Saharan Africa accounted for almost 95% of the cases and deaths. From 2010 to 2014, disease rates fell, but from 2015 to 2020, they climbed. Malaria is frequently linked to poverty and has a major detrimental impact on economic growth. It is anticipated that increased healthcare costs, reduced capacity to work, and negative effects on tourism will cost Africa \$12 billion every year. Malaria in adults causes chills and fever – typically in six-hour bursts, followed by sweating and fever relief – as well as headache, weariness, abdominal discomfort, and muscle pain. Fever, cough, vomiting, and diarrhoea are all common symptoms in children. Initial symptoms of malaria, which are typical to all malaria species, are comparable to flu-like symptoms and can be mistaken for sepsis, gastroenteritis, and viral infections.

Headache, fever, shivering, joint pain, vomiting, hemolytic anaemia, jaundice, haemoglobin in the urine, retinal impairment, and convulsions are all possible symptoms. Malaria has a number of dangerous side effects. The development of respiratory distress, which affects up to 25% of adults and 40% of children with severe *P. falciparum* malaria, is one of them. Respiratory compensation of metabolic acidosis, noncardiogenic pulmonary oedema, concurrent pneumonia, and severe anaemia are all possible causes. Although acute respiratory distress syndrome is uncommon in young children with severe malaria, it affects 5–25% of adults and up to 29% of pregnant women.

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Recurrence can be defined as recrudescence, relapse, or reinfection, depending on the reason. When symptoms reappear after a time of symptom-free living, this is known as recrudescence. It is caused by parasites that have survived in the blood due to insufficient or inefficient therapy. Relapse occurs when symptoms return after the parasites have been removed from the bloodstream but remain dormant as hypnozoites in the liver cells. Relapse is prevalent in *P. vivax* and *P. ovale* infections, and it usually happens between 8 and 24 weeks. However, hypnozoite activation is likely being over-attributed to relapse-like *P. vivax* recurrences. Some of them could be the result of an extravascular merozoite, making these recurrences recrudescences rather than relapses. Erythrocytic forms in bone marrow are a newly recognised non-hypnozoite probable contributing source to recurrent peripheral *P. vivax* parasitemia.

Conflict of Interest

None.

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