

Malaria

ABOUT THE DISEASE

Malaria is a parasitic disease spread by the bite from a female *Anopheles* mosquito. People with malaria experience a flu-like illness that, if untreated, can cause severe complications and even death. The disease is typically found in regions of the world with tropical and subtropical climates.

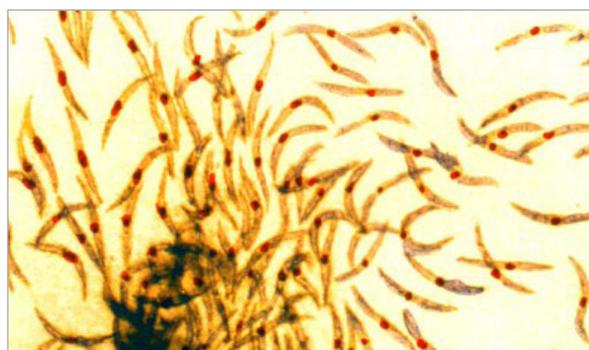
In 2013, an estimated 198 million cases of malaria occurred worldwide and 500,000 people died, mostly children in the African region. More than three billion people live in areas at risk of malaria transmission in 106 countries and territories. Because illness and death from malaria is usually preventable, strategies to combat the disease include public health interventions that can have a large impact, such as insecticide-treated bed nets.

TRANSMISSION, SYMPTOMS, AND PROGNOSIS

Five kinds of malaria parasites infect humans: *Plasmodium falciparum*, *P. vivax*, *P. ovale*, *P. malariae*, and *P. knowlesi*. The parasite's cycle involves stages in both humans and *Anopheles* mosquitos, which become infected by biting a malaria-infected person and ingesting parasites. When an infected mosquito takes its next blood meal, it injects malaria parasites into the person being bitten and transmits the disease to that person. In the human host, *Plasmodium* parasites undergo a phase in the liver during which they multiply, and then in the blood during which the clinical symptoms of malaria typically appear. *Plasmodium vivax* and *P. ovale* can remain dormant in the liver and cause illness months or even years later.

Malaria can also be transmitted through blood transfusion, organ transplant, or the shared use of needles contaminated with blood from a malaria-infected person. Pregnant women are more susceptible to *P. falciparum* malaria, and a mother can transmit the disease to her infant before or during delivery.

Symptoms of malaria include high fevers, shaking chills, headache, muscle aches, nausea, fatigue, and other flu-like symptoms. Additionally, patients can have anemia and jaundice due to loss of red blood cells. Symptoms usually appear 10 to 15 days after the mosquito bite. If untreated, severe infection can cause kidney failure, seizures, coma, and death.



Malaria sporozoites, the infectious form of the malaria parasite that is injected into people by mosquitoes.
Credit: NIAID

PREVENTION AND TREATMENT

Many effective anti-malarial medicines are available to prevent infection. Travelers to malaria-endemic regions can consult with their health-care provider to choose the appropriate preventative medicine before traveling.

For people living in regions where malaria is endemic, other preventative interventions are taken such as spraying insecticides, distributing insecticidal bed nets, or targeting the mosquito vector by removing standing-water breeding sites or applying insecticides that kill larval mosquitos. These methods have been somewhat successful, but have not eliminated the disease. Research and clinical trials to develop an effective malaria vaccine are ongoing.



Malaria is diagnosed by examining a patient's blood under a microscope to visually identify the parasite in its blood stage. The disease can usually be cured with prescription drugs that aim to eliminate the parasite from the patient's blood. Treating the illness also has a public health aim of lowering transmission rates; a mosquito must bite an infected person in order to carry the parasite and infect another person, so reducing the number of infected people lowers the infectious reservoir.

In some places, *P. falciparum* and *P. vivax* have developed resistance to several anti-malarial medicines, representing a great threat to malaria control.

Researchers, clinicians, and public health workers aim to impede the spread of antimalarial resistance through efforts such as continuous monitoring of antimalarial drug efficacy and containing resistance within affected countries.

The material above is collected from the following sources:

- [Centers for Disease Control](#)
- [World Health Organization](#)

Last updated April 2015