Malaria is a disease caused by parasites that infect human red blood cells.

Malaria is typically transmitted to humans by the bite of a female Anopheles mosquito, the carrier of Plasmodium parasites. Of the 5 parasite species that infect humans, Plasmodium falciparum is associated with the highest death rates.

**Symptoms of Malaria**
Fever is the most common symptom of malaria. Other associated symptoms may include headache, cough, nausea, vomiting, abdominal pain, diarrhea, and muscle or joint pain.

**How Common Is Malaria?**
In 2019, there were an estimated 229 million cases of malaria worldwide, resulting in 409,000 deaths, with the largest numbers of cases and deaths occurring in sub-Saharan Africa. In the US, approximately 2000 cases of malaria are diagnosed each year, with most cases acquired by US travelers who have visited malaria-endemic countries.

**How Is Malaria Diagnosed?**
Diagnosis of malaria usually is based on identification of Plasmodium parasites in a sample of blood examined using a microscope. Rapid diagnostic tests that detect parasite-specific molecules in a blood sample may also be used to diagnose malaria.

Patients with uncomplicated malaria have symptoms and a positive malaria test result without features of severe malaria. Uncomplicated malaria due to Plasmodium falciparum can rapidly progress to severe malaria. Therefore, early diagnosis and treatment of uncomplicated malaria is important. First-line treatment involves immediate administration of antimalaria medication.

Severe malaria, which is typically associated with a high blood level of Plasmodium parasites, may result in decreased consciousness, seizures, difficulty breathing, severe anemia, and multiorgan failure. Individuals at high risk of severe disease include young children, pregnant persons, older travelers, and people who are immunosuppressed. Although untreated severe malaria is nearly always fatal, with timely and effective treatment, the death rate due to malaria in the US is less than 2%. Patients diagnosed with severe malaria should be treated with intravenous antimalaria medications and be closely monitored in an intensive care unit.

**Preventing Malaria**
Control of mosquitoes in endemic areas involves measures such as mosquito nets and insecticides and draining standing water that mosquitoes use as breeding grounds. For travelers, insect repellents containing DEET or picaridin, treatment of clothing with insecticide, and avoiding being outdoors between dusk and dawn can all help decrease risk of travel-associated malaria.

Use of chemoprophylaxis (preventive medication) is recommended for people traveling to malaria-endemic areas who have had no previous exposure to malaria or who have lost immunity to malaria after moving from an endemic area. Chemoprophylaxis may be given daily or weekly, depending on the drug. The length of time the chemoprophylaxis drug must be taken before and after travel to the endemic area will also depend on the drug used.

Vaccination with the 4-dose RTS, S malaria vaccine results in a 30% reduction in malaria deaths in children. In October 2021, the World Health Organization recommended that children living in areas of moderate to high Plasmodium falciparum malaria undergo routine vaccination with the RTS, S vaccine. There is no malaria vaccine for adults who travel to a malaria-endemic area.

**FOR MORE INFORMATION**
- Centers for Disease Control and Prevention
  [www.cdc.gov/parasites/malaria/index.html](http://www.cdc.gov/parasites/malaria/index.html)
- World Health Organization