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Malaria

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Frequently Asked Questions about Malaria

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The Disease

What is malaria?

Malaria is a serious and sometimes fatal disease caused by a parasite. Patients with malaria typically are very sick with high fevers, shaking chills, and flu-like illness. Four kinds of malaria parasites can infect humans: *Plasmodium falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*.

Infection with any of the malaria species can make a person feel very ill; infection with *P. falciparum*, if not promptly treated, may be fatal. Although malaria can be a fatal disease, illness and death from malaria are largely preventable.

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Is malaria a common disease?

Yes. The World Health Organization estimates that each year 300-500 million cases of malaria occur and more than 1 million people die of malaria. About 1,300 cases of malaria are diagnosed in the United States each year. The vast majority of cases in the United States are in travelers and immigrants returning from malaria-risk areas, many from sub-Saharan Africa and the Indian subcontinent.

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Is malaria a serious disease?

Yes. Malaria is a [leading cause of death and disease](#) worldwide, especially in developing countries. Most deaths occur in young children. For example, in Africa, a child dies from malaria every 30 seconds. Because malaria causes so much illness and death, the disease is a great drain on many national economies. Since many countries with malaria are already among the poorer nations, the disease maintains a vicious cycle of disease and poverty.

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management of suspei
malaria should call the
Hotline: 770-488-7788
4:30pm, eastern time).
consultation after hour
7100 and request to sp
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Wasn't malaria eradicated years ago?

No, not in all parts of the world. Malaria has been eradicated from many developed countries with temperate climates. However, the disease remains a major health problem in many developing countries, in tropical and subtropical parts of the world.

An [eradication campaign](#) was started in the 1950s, but it failed globally because of problems including the resistance of mosquitoes to insecticides used to kill them, the resistance of malaria parasites to drugs used to treat them, and administrative issues. In addition, the eradication campaign never involved most of Africa, where malaria is the most common.

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If I live in the United States, can I still get malaria?

Malaria was eradicated from the United States in the early 1950s. However, malaria is common in many developing countries and travelers who visit these areas risk getting malaria.

Returning travelers and arriving immigrants could also reintroduce the disease in the United States if they are infected with malaria when they return. The mosquito that transmits malaria, *Anopheles*, is found throughout much of the United States. If local mosquitoes bite an infected person, those mosquitoes can, in turn, infect local residents (*introduced malaria*).

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Where Malaria Occurs

Where does malaria occur?

Malaria typically is found in [warmer regions](#) of the world -- in tropical and subtropical countries. Higher temperatures allow the *Anopheles* mosquito to thrive. Malaria parasites, which grow and develop inside the mosquito, need warmth to complete their growth before they are mature enough to be transmitted to humans.

Malaria occurs in over 100 countries and territories. More than 40% of the world's population is at risk. Large areas of Central and South America, Hispaniola (the Caribbean island that is divided between Haiti and the Dominican Republic), Africa, the Indian subcontinent, Southeast Asia, the Middle East, and Oceania are considered malaria-risk areas.

Yet malaria does not occur in all warm climates. For example, economic development and public health efforts have eliminated malaria from the southern United States, southern Europe, Taiwan, Singapore, and all of the Caribbean islands (except Hispaniola). Some Pacific islands have no malaria because *Anopheles* mosquitoes are not found there.

Why is malaria so common in Africa?

In Africa south of the Sahara, the principal malaria mosquito, *Anopheles gambiae*, transmits malaria very efficiently. The type of malaria parasite most often found, *Plasmodium falciparum*, causes severe, potentially fatal disease. Lack of resources and political instability can prevent the building of solid malaria control programs. In addition, malaria parasites are increasingly resistant to antimalarial drugs, presenting one more barrier to malaria control in that continent.

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How People Get Malaria (Transmission)

How is malaria transmitted?

Usually, people get malaria by being bitten by an infected female [Anopheles](#) mosquito. Only

Anopheles mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken on an infected person.

When a mosquito bites, a small amount of blood is taken in which contains the microscopic malaria parasites. The parasite grows and matures in the mosquito's gut for a week or more, then travels to the mosquito's salivary glands. When the mosquito next takes a blood meal, these parasites mix with the saliva and are injected into the bite.

Once in the blood, the parasites travel to the liver and enter liver cells to grow and multiply. During this "incubation period", the infected person has no symptoms. After as few as 8 days or as long as several months, the parasites leave the liver cells and enter red blood cells. Once in the cells, they continue to grow and multiply. After they mature, the infected red blood cells rupture, freeing the parasites to attack and enter other red blood cells. Toxins released when the red cells burst are what cause the typical fever, chills, and flu-like malaria symptoms.

If a mosquito bites this infected person and ingests certain types of malaria parasites ("gametocytes"), the [cycle of transmission](#) continues.

Because the malaria parasite is found in red blood cells, malaria can also be transmitted through blood transfusion, organ transplant, or the shared use of needles or syringes contaminated with blood. Malaria may also be transmitted from a mother to her fetus before or during delivery ("congenital" malaria).

Malaria is not transmitted from person to person like a cold or the flu. You cannot get malaria from casual contact with malaria-infected people.

I live in the United States, where there is no malaria. Can I still get malaria?

You will be most at risk if you travel to countries where malaria is endemic ("[malaria-risk areas](#)"). However, a few cases of malaria occur every year in the United States in people who have not left the country. Fortunately, these are very rare occurrences. Malaria may be transmitted through blood transfusions, organ transplants, shared use of needle or syringes, or by local transmission (see *Introduced malaria* above). A few cases of congenital malaria are reported each year; infected mothers pass the parasite to their fetus during pregnancy or delivery. Malaria remains a public health concern in the United States even though the disease has been eradicated in this country.

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Who Is at Risk

Who is at risk for malaria?

Anyone can get malaria. Most cases occur in residents of countries with malaria transmission and travelers to those countries. In non-endemic countries, cases can occur in non-travelers as congenital malaria, introduced malaria, or transfusion malaria (see above).

Who are the people most at risk of severe and fatal malaria?

Plasmodium falciparum causes severe and life-threatening malaria; this parasite is very common in many countries in Africa south of the Sahara. People who are heavily exposed to the bites of mosquitoes infected with *P. falciparum* are most at risk of dying from malaria. People who have little or no immunity to malaria, such as young children and pregnant women; or travelers coming from areas with no malaria, are more likely to become severely ill and die. Poor people living in rural areas who lack knowledge, money, or access to health care are more vulnerable to the disease. As a result of all these factors, an estimated 90% of deaths due to malaria occur in [Africa south of the Sahara](#); most of these deaths occur in children under 5 years of age.

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Preventing Malaria

If I live in an area where malaria is a problem, how can I prevent myself and my family from getting sick?

You and your family can prevent malaria by

- keeping mosquitoes from biting you, especially at night
- taking antimalarial drugs to kill the parasites
- eliminating places around your home where mosquitoes breed
- spraying insecticides on your home's walls to kill adult mosquitoes that come inside
- sleeping under bed nets - especially effective if they have been treated with insecticide, and
- wearing insect repellent and long-sleeved clothing if out of doors at night

Isn't there a malaria vaccine? And if not, why?

There is currently no malaria vaccine approved for human use. The malaria parasite is a complex organism with a complicated life cycle. Its antigens are constantly changing and developing a vaccine against these varying antigens is very difficult. In addition, scientists do not yet totally understand the complex [immune responses](#) that protect humans against malaria. However, many scientists all over the world are working on developing an effective vaccine. Because other methods of fighting malaria, including drugs, insecticides, and bed nets, have not succeeded in eliminating the disease, the search for a [vaccine](#) is considered to be one of the most important research projects in public health.

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Traveling and Malaria

I will be traveling outside of the United States. What should I do to avoid getting malaria or other infectious diseases?

Some simple precautions will help protect your health while traveling. CDC's [Travelers' Health](#) provides detailed information on malaria risk by country, prevention information including recommended antimalarial drugs, and health recommendations (e.g., vaccinations) for other diseases.

Travelers leaving the United States should:

- Visit your health care provider 4-6 weeks before foreign travel for any necessary vaccinations, as well as a prescription for an antimalarial drug, if needed. (There are no vaccines against malaria.)
- Take your antimalarial drug exactly on schedule without missing doses.
- Wear insect repellent to prevent mosquito and other insect bites. Your insect repellent should contain DEET as its active ingredient. To prevent malaria, wear insect repellent if out of doors between dusk and dawn when the mosquito that transmits malaria is biting.
- Wear long pants and long-sleeved clothing.
- Sleep under a mosquito bed net (preferably one that has been treated with insecticide) if you are not living in screened or air-conditioned housing.

Should I buy my malaria pills in the malaria-risk country where I will be traveling?

Buying medications abroad has its risks. The drugs could be of substandard quality because of poor manufacturing practices. The drugs could contain contaminants or they could be [counterfeit](#) drugs. Such products may not provide you the protection you need against malaria. In addition, some medications that are sold overseas are not used anymore in the United States or were never sold here. These drugs may not be safe or their safety has never been evaluated.

It would be best to purchase all the medications that you need before you leave the United States. As a precaution, note the name of the medication(s) and the name of the manufacturer(s). That way, in case of accidental loss, you can replace the drug(s) abroad at a reliable vendor.

Can I give blood if I have been in a country where there is malaria?

It depends on what areas of that country you visited, how long ago you were there, and whether you ever had malaria. In general, most travelers to an area with malaria are deferred from donating blood for 1 year after their return. Former residents of malaria-risk areas will be deferred for 3 years. Persons diagnosed with malaria cannot donate blood for 3 years after treatment, during which time they must have remained free of symptoms of malaria. Blood banks follow strict guidelines (e.g. those of the [American Red Cross](#)) for accepting or deferring donors who have been in malaria-endemic areas. This is in order to avoid collecting blood from an infected donor and inadvertently transmitting malaria to the recipient. In the United States during the period 1963-1999, there were 93 cases reported to CDC where people acquired malaria through a transfusion. Because of these control measures, transfusion-transmitted malaria is very rare in the United States and occurs at a rate of less than 1 per million units of blood transfused.

I was born 40 years ago in a malaria-endemic country and immigrated to the United States 10 years ago. When I was a child I had some malaria, but as I grew older malaria bothered me less and less. I guess that I just became immune. Now I am planning to go back to my native country for two months to visit friends and relatives. Do I really need to worry about getting malaria?

Yes, anyone who goes to a malaria-risk country should take precautions against acquiring malaria. During the last ten years that you have spent in the United States, you have lost any malaria immunity that you might have acquired while living in your native country. Without frequent exposure to malaria parasites, your immune system has lost its ability to fight malaria. You are now as much at risk as someone who was born in the United States (a "non-immune" person). Please consult with your health-care provider or a travel clinic about precautions to take against malaria (preventive drugs and protection against mosquito bites) and against other diseases.

I am 4 months pregnant but want to visit a malaria-risk country for 2 weeks. Is it safe to do so?

CDC advises women who are pregnant or likely to become pregnant to avoid travel to areas with malaria risk, if possible. [Malaria in pregnant women](#) can be more severe than in nonpregnant women. Malaria can increase the risk for adverse pregnancy outcomes, including prematurity, miscarriage, and stillbirth. No preventive drugs are completely effective. Please consider these risks (and other health risks as well) and discuss with your health-care provider.

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Symptoms and Diagnosis

What are the signs and symptoms of malaria?

[Symptoms of malaria](#) include fever and flu-like illness, including shaking chills, headache, muscle aches, and tiredness. Nausea, vomiting, and diarrhea may also occur. Malaria may cause anemia and jaundice (yellow coloring of the skin and eyes) because of the loss of red blood cells. Infection with one type of malaria, *Plasmodium falciparum*, if not promptly treated, may cause kidney failure, seizures, mental confusion, coma, and death.

How soon will a person feel sick after being bitten by an infected mosquito?

For most people, symptoms begin 10 days to 4 weeks after infection, although a person may feel ill as early as 7 days or as late as 1 year later. Two kinds of malaria, *P. vivax* and *P. ovale*, can relapse. In *P. vivax* and *P. ovale* infections, some parasites can remain dormant in the liver for several months up to about 4 years after a person is bitten by an infected mosquito. When these parasites come out of hibernation and begin invading red blood cells ("relapse"), the person will become sick.

How do I know if I have malaria?

Most people, at the beginning of the disease, have fever, sweats, chills, headaches, malaise, muscles aches, nausea and vomiting. Malaria can very rapidly become a severe and life-threatening disease. The surest way for you and your health-care provider to know whether you have malaria is to have a diagnostic test where a drop of your [blood is examined under the microscope](#) for the presence of malaria parasites. If you are sick and there is any suspicion of malaria (for example, if you have recently traveled in a malaria-risk area) the test should be performed without delay.

Any traveler who becomes ill with a fever or flu-like illness while traveling and up to 1 year after returning home should immediately seek professional medical care. You should tell your health care provider that you have been traveling in a malaria-risk area.

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Treating Malaria

When should malaria be treated?

The disease should be treated early in its course, before it becomes severe and poses a risk to the patient's life. Several good antimalarial drugs are available, and should be administered early on. The most important step is to think about malaria, so that the disease is diagnosed and treated in time.

What is the treatment for malaria?

Malaria can be cured with prescription drugs. The type of drugs and length of treatment depend on which kind of malaria is diagnosed, where the patient was infected, the age of the patient, whether the patient is pregnant, and how severely ill the patient is at start of treatment.

If I get malaria, will I have it for the rest of my life?

No, not necessarily. Malaria can be treated. If the right drugs are used, people who have malaria can be cured and all the malaria parasites can be eliminated. However, the disease can persist if it is left untreated or if it is treated with the wrong drug. Some drugs are ineffective because the parasite is resistant to them. Some patients may be treated with the right drug, but at the wrong dose or for too short a period of time.

Two types (species) of parasites, *Plasmodium vivax* and *P. ovale*, have dormant liver stages that can remain silent for years. Left untreated, these liver stages may reactivate and cause malaria attacks ("relapses") after months or years without symptoms. Patients diagnosed with *P. vivax* or *P. ovale* are often given a second drug to help prevent these relapses. Another type (species), *P. malariae*, if left untreated, has been known to persist in the blood of some persons for several decades.

But in general, if you are correctly treated for malaria, the parasites are eliminated and you are no longer infected with malaria.

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Malaria Drugs

How do I find out what is the best drug to take against malaria?

[Regional Malaria Information](#) gives detailed information on the proper drugs to take for the area you are visiting and specific prevention tips.

Many effective antimalarial drugs are available. Your health care provider and you will decide on the best drug for you based on your travel itinerary, medical history, age, drug allergies, pregnancy status, and other health factors.

To allow sufficient time for the drugs to become effective and for a pharmacy to prepare any special doses of medicine (especially doses for children and infants), visit your health care provider 4-6 weeks before travel.

Can children also take malaria pills?

Yes, but not all types of malaria pills. Children of any age can get malaria and any child traveling to a malaria-risk area should be on an antimalarial drug. However, some antimalarial drugs are not suitable for children. Doses are based on the child's weight. More details on [Preventing Malaria in Infants and Children](#).

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