

Malaria

Introduction

Malaria is a serious tropical disease spread by mosquitoes. If malaria is not diagnosed and treated promptly, it can be fatal.

A single mosquito bite is all it takes for someone to become infected.

Symptoms of malaria

It is important to be aware of the symptoms of malaria if you are travelling to areas where there is a high malaria risk (see below). Symptoms include:

a high temperature (fever) of 38C (100.4F) or above

vomiting

sweats and chills

muscle pains

headaches

diarrhoea

Symptoms can develop as quickly as seven days after being bitten, although they usually appear between 10 to 15 days afterwards.

In some cases, the symptoms may not appear for up to a year or, occasionally, even longer.

When to seek medical attention

Go to see a doctor if you develop the symptoms of malaria, even if it's several months after your trip.

If you are abroad and start to experience malaria-like symptoms, go to the nearest medical centre or hospital. A blood sample will be taken to test for malaria.

Read more about diagnosing malaria.

Malaria risk areas

Malaria is found in more than 100 countries, mainly in tropical regions of the world including:

large areas of Africa and Asia

Central and South America

Haiti and the Dominican Republic

parts of the Middle East

some Pacific islands, such as Papua New Guinea

What causes malaria?

Malaria is caused by a type of parasite known as Plasmodium. There are many different types of Plasmodia parasites, but only five cause malaria in humans.

The Plasmodium parasite is mainly spread by female Anopheles mosquitoes, which are night-biting mosquitos. When an infected mosquito bites, it injects the parasites into your body.

Read more information about the causes of malaria and how it is spread.

Treating malaria

If malaria is diagnosed and treated promptly, virtually everyone will make a full recovery. Treatment should be started as soon as the diagnosis has been confirmed.

Anti-malarial medication is used both to treat and prevent malaria. Which drug used and the length of treatment will depend on:

the type of malaria

the severity of your symptoms

where you caught malaria

whether you have taken an anti-malarial to prevent malaria

whether you are pregnant

Read more about treating malaria.

Complications of malaria

Malaria is a serious illness and can be fatal. It can also cause serious complications including:

severe anaemia: where red blood cells are unable to carry enough oxygen around the body, leading to drowsiness and weakness

cerebral malaria: in rare cases, the small blood vessels leading to the brain can become blocked, causing seizures, brain damage and coma

Read more about the complications of malaria.

Preventing malaria

Many cases of malaria can be avoided. An easy way to remember is the ABCD approach to prevention:

Awareness of risk: find out whether you're at risk of getting malaria before travelling.

Bite prevention: avoid mosquito bites by using insect repellent, covering your arms and legs and using an insecticide- treated mosquito net.

Check whether you need to take malaria prevention tablets: if you do, ensure you take the right antimalarial tablets, at the right dose and that you finish the course.

Diagnosis: seek immediate medical advice if you develop malaria-like symptoms, including up to a year after you return from travelling.

Speak to your DOCTOR if you are planning to visit an area where there is a malaria risk. It may be recommended that you take antimalarial tablets to prevent infection.

Read more about preventing malaria.

Symptoms of malaria

Symptoms of malaria can develop as quickly as seven days after you are bitten by an infected mosquito.

Typically, the incubation period (the time between being infected and when symptoms start) is 10 to 15 days. However, in some cases it can take up to a year for symptoms to develop.

The initial symptoms of malaria are flu-like and include a fever, headache, sweats, chills and vomiting. This is often mild and can sometimes be difficult to identify as malaria.

Other symptoms of malaria include:

muscle pains

generally feeling unwell

diarrhoea

With some types of malaria, the fever occurs in four-to-eight hour cycles. You feel cold at first with shivering that lasts for up to an hour. You then develop a fever that lasts for two-to-six hours, accompanied by severe sweating.

Seek medical advice immediately if you develop the symptoms of malaria, even if it is several weeks, months or a year after you return from travelling.

Plasmodium falciparum malaria

The most serious type of malaria is caused by the Plasmodium falciparum parasite. It can develop very quickly into a severe, life-threatening illness.

If it is not treated promptly, it can lead to life-threatening complications, such as:

breathing problems

seizures (fits)

organ failure

severe anaemia, which is a lack of oxygen in your blood (although this is very rare)

The most serious complication of falciparum malaria is a blockage in the blood vessels that supply the brain.

Read more about the complications of malaria.

Causes of malaria

Malaria is caused by the Plasmodium parasite. The parasite can be spread to humans through the bites of infected mosquitoes.

There are many different types of Plasmodium parasite, but only five types cause malaria in humans. These are listed below.

Plasmodium falciparum: mainly found in Africa and responsible for most malaria deaths worldwide.

Plasmodium vivax: mainly found in Asia and Latin America. This parasite produces less severe symptoms than Plasmodium falciparum, but it can stay in the liver for up to three years, which can result in relapses.

Plasmodium ovale: fairly uncommon and usually found in West Africa. It can remain in your liver for several years without producing symptoms.

Plasmodium malariae: this is quite rare and usually only found in Africa.

Plasmodium knowlesi: this is very rare and found in parts of Southeast Asia.

How malaria is spread

The Plasmodium parasite is spread by female Anopheles mosquitoes, known as night-biting mosquitoes, because they usually bite between dusk and dawn.

If a mosquito bites a person infected with malaria, it can also become infected and spread the parasite on to others.

The parasite enters the bloodstream and travels to the liver. The infection develops in the liver before re-entering the bloodstream and invading the red blood cells.

The parasites grow and multiply in the red blood cells. At regular intervals, the infected blood cells burst, releasing more parasites into the blood.

Infected blood cells usually burst every 48 to 72 hours. Each time they burst, you will have a bout of fever, chills and sweating.

Pregnancy and malaria

The World Health Organization (WHO) recommends that pregnant women should avoid travelling to areas where there is a risk of malaria.

If you get malaria while pregnant, you and your baby have an increased risk of developing complications.

There is also a higher risk of premature birth, stillbirth and miscarriage (loss of the pregnancy during the first 23 weeks).

Visit your DOCTOR if you're pregnant and travelling to a high-risk area. They may recommend that you take anti-malaria medicine.

Read more about taking antimalarials while you are pregnant.

Diagnosing malaria

Visit your nearest surgery or hospital if you are abroad and have malaria-like symptoms. You will need to have a blood sample taken from you to check for parasites.

The symptoms of malaria can take up to a year to develop, so let your DOCTOR know if you experience flu-like symptoms even if it's a while after your travels.

Tell your DOCTOR about any areas you have been to where there is a risk of malaria, including brief stopovers.

If malaria is suspected, a blood test will usually be carried out at your local hospital rather than at your DOCTOR surgery.

The test will confirm whether or not you have malaria parasites in your blood and, if you do, the type of parasite that is causing your symptoms.

You should receive the results of your blood test on the same day. If you have malaria, treatment will be started straight away.

Read more about treating malaria.

Preventing and treating malaria

Prevention better than cure

Always consider taking antimalarial medicine when travelling to areas where there is a risk of malaria.

It is very important that you take the correct dose and that you finish the course.

Check with your DOCTOR or pharmacist how long you should take antimalarial medication for.

Antimalarial medication is used to prevent malaria and also to treat it.

If you have taken an antimalarial as a preventative measure, the same type of antimalarial should not be used to treat malaria. It is therefore important to tell the doctor treating you which antimalarial you have previously taken.

Preventative antimalarials

It is usually recommended you take antimalarial tablets if you are visiting an area where there is a malaria risk. Visit a specialist travel health clinic or your DOCTOR surgery to discuss your options.

The type of antimalarial tablets prescribed will be based on the following information you give:

where you are going

any relevant family medical history

your medical history, including any allergies to medication that you have

any medication that you are currently taking

any problems that you have had with antimalarial medicines in the past

your age

whether you are pregnant

You may need to take a short trial course of antimalarial tablets before travelling. This is to check that you don't have an adverse reaction or side effects. If you do, alternative antimalarials can be prescribed before you leave.

Antimalarial treatment

If malaria is diagnosed and treated promptly, a full recovery can be expected. Treatment should be started as soon as your blood test confirms malaria.

The same antimalarial medicines used to prevent malaria can also be used to treat malaria. However, if you have taken an antimalarial as prevention, you should not take the same one to treat malaria. Tell the doctor treating you the name of the tablets that you took to prevent malaria.

The type of antimalarial medicine and how long you need to take it will depend on:

the type of malaria you have

where you caught malaria

the severity of your symptoms

whether you took preventative antimalarial tablets

your age

whether you are pregnant

Your doctor may recommend using a combination of different antimalarials to overcome strains of malaria that have become resistant to single types of medication.

Antimalarial medication is usually given as tablets or capsules. If someone is very ill, it will be given intravenously (through a drip into a vein in the arm) in hospital.

Treatment for malaria can leave you feeling very tired and weak for several weeks.

Types of antimalarial medication

Three types of antimalarials used to prevent and treat malaria are described below.

Atovaquone plus proguanil

Prevention: the adult dose is one adult-strength tablet a day. Child dosage is also once a day, but the amount depends on the child's weight. It should be started just one or two days before your trip, taken every day that you are in a risk area and for seven days after you return.

Recommendations: a lack of clear evidence means that this antimalarial should not be taken by pregnant or breastfeeding women. It is also not recommended for people with severe kidney problems.

Possible side effects: intestinal upset, headaches, skin rash and mouth ulcers.

Other factors: it is more expensive than other antimalarials so may be more suitable for use on short trips.

Doxycycline (also known as Vibramycin-D)

Prevention: the dose is 100mg daily as a tablet or capsule. You should start the tablets two days before you travel, take them all the time you are in a risk area and for four weeks after you return.

Recommendations: not suitable for pregnant or breastfeeding women, children under the age of 12 (due to the risk of permanent tooth discolouration), people who are sensitive to tetracycline antibiotics or people with liver problems.

Possible side effects: sunburn due to light sensitivity, stomach upset, heartburn and thrush. It should always be taken with food, preferably when standing or sitting. Doxycycline reduces the effectiveness of combined hormone contraceptives, such as the contraceptive pill or contraceptive patches.

Other factors: if you take doxycycline for acne, it will also provide protection against malaria as long as you are taking an adequate dose (ask your DOCTOR). Doxycycline is relatively cheap.

Mefloquine

Prevention: the adult dose is one tablet weekly. Child dosage is also once a week but the amount will depend on the child's weight. It should be started three weeks before you travel, taken all the time you are in a risk area and for four weeks after you get back.

Recommendations: it is not recommended if you have epilepsy, seizures, depression or other mental health problems, or if a close relative has any of these conditions. It is not usually recommended for people with severe heart or liver problems.

Possible side effects: dizziness, headache, sleep disturbances (insomnia and vivid dreams) and psychiatric reactions (anxiety, depression, panic attacks and hallucinations). It is very important to tell your doctor about any previous mental health problems, including mild depression. Do not take this medication if you have a seizure disorder.

Other factors: if you have not taken mefloquine before, it is recommended that you do a three-week trial before you travel to see whether you develop any side effects.

Pregnancy

If you are pregnant, avoid travelling to areas of the world where there is a risk of malaria.

Pregnant women have an increased risk of developing severe malaria. There is also a greater risk that both the mother and their baby will experience complications if they get malaria.

If you are pregnant and unable to postpone or cancel your trip to an area where there is a malaria risk, it is very important that you take the right antimalarial medicine.

Some of the antimalarials used to prevent and treat malaria are unsuitable for pregnant women because they can cause side effects for the mother and her baby.

The list below outlines which medications are safe or unsafe to use while pregnant.

Mefloquine (Larium) isn't usually prescribed during the first trimester of pregnancy (weeks 1-13), or if pregnancy is a possibility during the first three months after preventative antimalarial medication is stopped. This is a precaution even though there is no evidence to suggest that mefloquine is harmful to an unborn baby.

Doxycycline is never recommended for pregnant or breastfeeding women because it could harm the baby.

Atovaquone and proguanil are generally not recommended during pregnancy or breastfeeding because research into their effects is limited. However, if the risk of malaria is high, they may be recommended if there is no suitable alternative.

Complications of malaria

Malaria is a very serious illness which can be fatal if not diagnosed and treated quickly.

The falciparum parasite causes the most severe malaria symptoms and most deaths.

Anaemia

The destruction of red blood cells by the malaria parasite can cause severe anaemia.

Anaemia is a condition where the red blood cells are unable to carry enough oxygen to the body's muscles and organs, leaving you feeling drowsy, weak and faint.

Cerebral malaria

Some rare cases of malaria can affect the brain. This is known as cerebral malaria and it can cause your brain to swell, sometimes leading to permanent brain damage. It can also cause seizures (fits) or coma (a state of unconsciousness).

Other complications

Other complications that can arise due to severe malaria include:

breathing problems, such as fluid in your lungs

liver failure and jaundice (yellowing of the skin and whites of the eyes)

shock (a sudden drop in blood flow)

spontaneous bleeding

abnormally low blood sugar

kidney failure

swelling and rupturing of the spleen

dehydration (a lack of water in the body)

As complications of severe malaria can occur within hours or days of the first symptoms, it is important to seek urgent medical help as soon as possible.

The effects of malaria are usually more severe in pregnant women, babies, young children and the elderly.

Preventing malaria

Get immediate medical advice

If you become ill after returning from travelling, you must see your DOCTOR or a hospital doctor straight away (even if you took the right antimalarial tablets).

Tell the doctor the countries you have travelled to in the last 12 months, including any brief stopovers.

Malaria can develop very quickly, so it's important that it is diagnosed and treated as soon as possible.

There is a significant risk of getting malaria if you travel to an affected area. It is very important you take precautions to prevent it.

Malaria can often be avoided using the ABCD approach to prevention which stands for:

Awareness of risk: find out whether you are at risk of getting malaria.

Bite prevention: avoid mosquito bites by using insect repellent, covering your arms and legs and using a mosquito net.

Check whether you need to take malaria prevention tablets: if you do, ensure you take the right antimalarial tablets, at the right dose and that you finish the course.

Diagnosis: seek immediate medical advice if you have malaria-like symptoms, including up to a year after you return from travelling.

These are outlined in more detail below.

Being aware of the risks

It's also important to visit your DOCTOR or local travel clinic for malaria advice as soon as you know you are going to be travelling.

Preventing bites

It is not possible to avoid mosquito bites completely but the less you are bitten, the less likely you are to get malaria.

To avoid being bitten:

Stay somewhere that has effective air conditioning and screening on doors and windows. If this is not possible, make sure that doors and windows close properly.

If you are not sleeping in an air-conditioned room, sleep under an intact mosquito net that has been treated with insecticide.

Use insect repellent on your skin and in sleeping environments. Remember to re-apply it frequently. The most effective repellents contain diethyltoluamide (DEET) and are available in sprays, roll-ons, sticks and creams.

Wear light, loose-fitting trousers, rather than shorts, and shirts with long sleeves. This is particularly important during early evening and at night when mosquitoes prefer to feed.

Garlic, vitamin B and ultrasound devices do not prevent mosquito bites from occurring.

Chemoprophylaxis (antimalarial tablets)

Taking medicine to prevent getting malaria is essential if you are visiting areas where there is a risk of malaria. However, antimalarials are not 100% effective so taking steps to avoid bites is also important.

When taking antimalarial medication:

Make sure you get the right antimalarial tablets before you go (check with your DOCTOR or pharmacist if you are unsure).

Follow the instructions included with your tablets carefully.

It is important that you continue to take your tablets after returning from your trip (to cover the incubation period of the disease).

Most antimalarial tablets need to be taken for four weeks after you return, although atovaquone plus proguanil needs to only be taken for one week.

Check with your DOCTOR to make sure you are prescribed a medication you can tolerate. You may be more at risk from side effects if you have:

HIV or AIDS

epilepsy or any type of seizure

depression

heart problems

liver or kidney disease

porphyria (an inherited condition that causes sensitivity to sunlight)

psoriasis (red, flaky, crusty patches of skin covered with silvery scales)

psychiatric problems

You may also be more at risk from side effects if:

Your spleen has been removed or does not work properly.

You take medicine, such as warfarin, to prevent blood clots.

You are a woman using combined hormonal contraception, such as the contraceptive pill or contraceptive patches.

If you have taken antimalarial medication in the past, don't assume that it is suitable for future trips. The antimalarial you need to take will depend on which strain of malaria is carried by the mosquitoes and whether they are resistant to certain types of antimalarial medication.

In the UK, chloroquine and proguanil can be bought from local pharmacies. For all other antimalarial tablets, you will need a prescription from your DOCTOR.