

**November 2007**

## **Malaria**

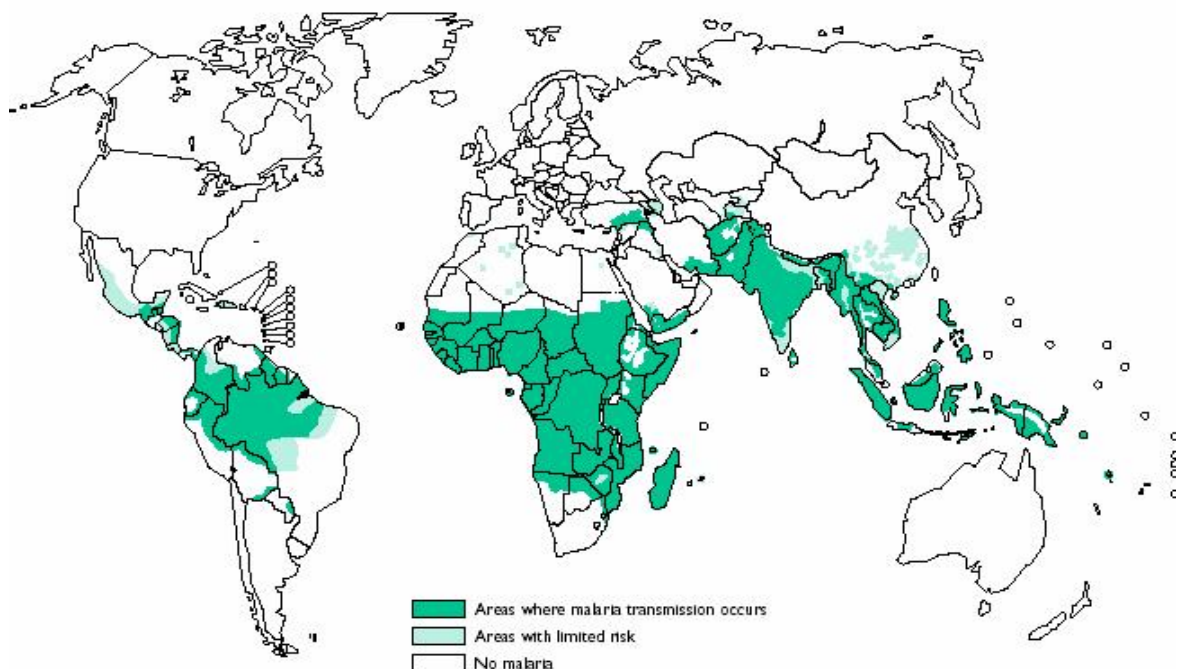
### **Introduction**

Malaria is a serious, sometimes fatal, disease spread by mosquitoes. It is common in many tropical countries and is caused by a parasite called *Plasmodium*.

There are four types of *Plasmodium* parasites: *Plasmodium falciparum*, *vivax*, *malariae*, and *ovale* and they are all carried by night-biting *Anopheles* mosquitoes.

Malaria is found in tropical regions of the world, including large areas of Africa, Asia, Central and South America, Haiti and the Dominican Republic, parts of the Middle and Far East and some Pacific Ocean Islands, such as Papua New Guinea. Recent estimates show that as many as 300 to 500 million people become ill with *falciparum* malaria every year.

### Worldwide Distribution of Malaria in 2005



Map courtesy of the World Health Organization

Malaria is widespread in over 100 countries and 3.2 billion people are believed to live in areas where malaria occurs.



Types of malaria vary between regions. For example *falciparum* is more common in Africa, Haiti, the Dominican Republic and Papua New Guinea. *Vivax* is the strain usually found in India, Pakistan, Bangladesh and Mexico and Central America. Both *vivax* and *falciparum* are present in South America and South East Asia. *Ovale* and *malariae* are uncommon.

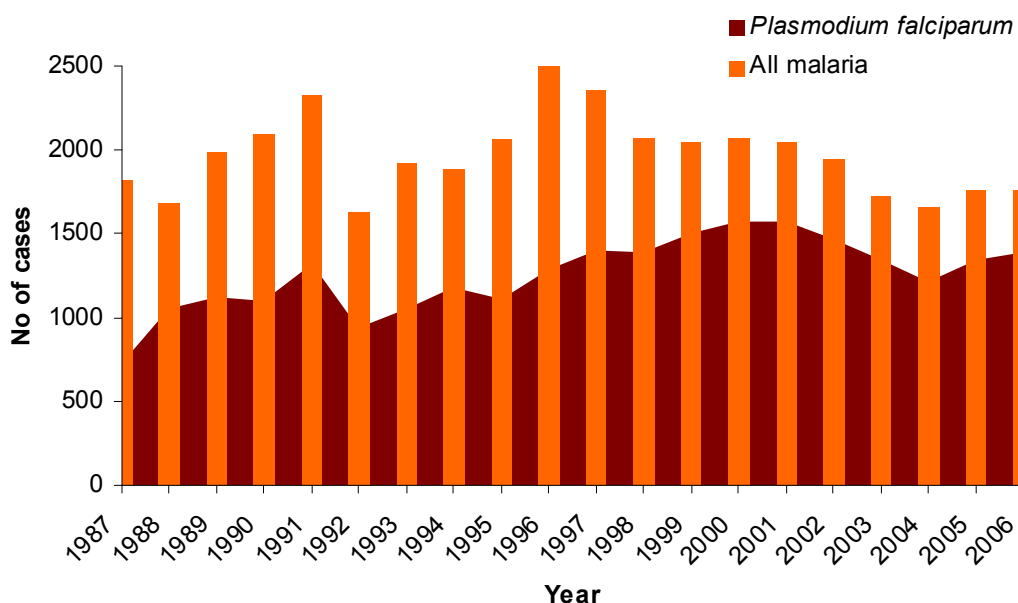
In many African countries, particularly those in West Africa, malaria transmission is high all year-round, with many people infected. Adults born and brought up and still living in these regions may develop some immunity against malaria, although this immunity is not complete. Babies and children who have not yet developed any immunity can become seriously unwell and many babies and young children die from malaria in these areas of high malaria transmission. Visitors to these regions are at high risk of malaria, as they have no protective immunity.

In other regions of the world, such as South and South East Asia, the risk depends on factors like the weather and time of year. Short outbreaks of varying strengths tend to occur, especially during and after rainy seasons. This means malaria transmission in these areas is less intense, so people have poor immunity and all age groups are at risk of serious illness.

Malaria is a huge global health issue, with an estimated 300 to 500 million cases, and at least one million deaths every year. Ninety percent of malaria deaths occur in African countries near the equator, below the Sahara Desert. Most of those who die are young children.

### Malaria in travellers from the United Kingdom

Malaria cases in travellers from the United Kingdom between 1987 and 2006.





Data from the Health Protection Agency Malaria Reference Laboratory

Each year approximately 1,750 people return to the UK with malaria. Most illness is due to infection with the potentially fatal *falciparum* strain. There are between five and 15 deaths due to malaria reported every year in the UK. In 2006 there were 1,758 reported malaria cases, with eight deaths. All the UK deaths were due to *falciparum* malaria caught in Africa.

Failing to take malaria prevention tablets or not taking the appropriate tablets is a key reason for catching malaria. Most UK travellers who catch malaria either do not take tablets or do not take the right tablets for the risk areas they visit.

The risk of dying from malaria depends on several factors, including:

- Lack of awareness of malaria risks
- Taking the wrong malaria prevention tablets or not realising tablets are needed
- Mistaking malaria for another illness such as flu
- Delaying seeing a doctor or starting treatment

### **Risk for Travellers**

Any travellers visiting an area with malaria can catch the disease. This includes people originally from countries with malaria, who now live in malaria free regions such as the UK and return home to visit friends and relatives. If you are born and brought up in a country with malaria you may have some immunity to the disease, however, this immunity is not total and disappears quickly once you leave the risk country. If your children are born outside risk areas, they will not have any immunity to malaria.

The risk of malaria depends on:

- Where you go
- What you do
- Where you stay
- What time of year you travel
- Whether you take the right malaria prevention tablets
- How carefully you try to avoid mosquito bites



You can find further information in the [UK malaria guidelines](#) and the [NaTHNaC Country Information](#) pages which describe the different areas of malaria risks.

## Transmission

Malaria spreads to humans via the bite of an infected female *Anopheles* mosquito. She needs protein from blood in order for her eggs to grow. A diagram showing the [life cycle of the malaria parasite](#) can be seen on the Health Protection Agency website.

*Anopheles* mosquitoes usually bite between dusk and dawn and are attracted to humans by our body heat, smell and the carbon dioxide we breathe out.

## Signs and Symptoms

Malaria usually starts with fever, headache and muscle pain. Coughing and diarrhoea may also be present. Symptoms can rapidly progress to a high fever and severe muscle aches. *Falciparum* malaria can develop as quickly as eight days after exposure, or as long as several months (the latter is more common with *vivax* or *ovale* malaria).

With *vivax* or *ovale* malaria, the fever occurs in 48 hour cycles. You can initially feel cold, with shivering lasting 15 to 60 minutes, and then develop fever that lasts two to six hours, followed by extreme sweating.

Any type of malaria can be dangerous. However, malaria caused by *falciparum* can progress very rapidly and lead to severe medical problems. If prompt treatment is not given, it can be life threatening. The most serious complication of *falciparum* malaria occurs when malaria parasites enter the brain's blood vessels. This can lead to coma and death. Other possible complications include kidney failure, fluid in the lungs, low blood sugar, increases in the body's acid levels, anaemia, abnormal blood clotting and internal bleeding.

You should be aware of the signs and symptoms of malaria, especially fever, and must seek immediate medical attention if you experience any, either while you are away or for up to year after you return home.

## Treatment

Anyone with fever who has travelled to malaria risk areas must be tested urgently for malaria. *Falciparum* malaria is a medical emergency. If you are diagnosed with malaria, you should be admitted to hospital as you usually need specialist treatment.

Malaria tests are arranged by your doctor, specialist tropical diseases clinic or Accident and Emergency department. Your doctor will send a sample of your blood to a laboratory. Staff use microscopes to look for malaria parasites on glass slides which have been smeared with small amounts of blood (known as thick and thin blood films). The results should always be available on the same day. If you have any type of malaria treatment must be started straight away.



Malaria testing kits were given to travellers in the past that could be used to check for malaria during travel. However, they are often not used correctly and now are not recommended for travellers.

The kind of treatment your doctor will give you depends on which type of parasite has caused the malaria and whether or not it is resistant to any drugs. Generally, tablets or capsules are given, but if you are very ill you will need to have medicine given to you through your veins (this is often called a drip). Doctors should get advice about the best treatment from experts in infectious diseases or tropical medicine. There are also formal written treatment guidelines for doctors.

Travellers with signs of malaria who are in very remote areas during their trip can consider self-treatment with emergency standby medicines, after discussion with their nurse or doctor before the trip. These drugs are only meant for use in isolated regions when malaria symptoms are present and there is no access to immediate medical care. To make sure the correct treatment is given and confirm that the illness is malaria, you must still see a doctor as soon as possible. Standby treatment drugs are not a replacement for malaria prevention tablets. Before you travel, your doctor or specialist travel clinic will advise you if these drugs are right for you, but usually they are only prescribed in exceptional circumstances.

## Prevention

Preventing malaria involves several steps that are known as the A, B, C, and D of malaria prevention:

- Awareness of the risk
- [Bite avoidance measures](#)
- Compliance with appropriate malaria prevention tablets
- Diagnosis and treatment if symptoms develop

You should see your GP or Practice Nurse or go to a Travel Clinic for specific advice and appropriate preventative tablets for the country you are visiting before you travel.

## Links

Health Protection Agency

[http://www.hpa.org.uk/infections/topics\\_az/malaria/default.htm](http://www.hpa.org.uk/infections/topics_az/malaria/default.htm)

NaTHNaC Health Information Sheets. Insect bite avoidance.

[http://www.nathnac.org/travel/misc/travellers\\_mos.htm](http://www.nathnac.org/travel/misc/travellers_mos.htm)

NaTHNaC Health Information Sheets. Malaria chemoprophylaxis

[http://www.nathnac.org/travel/factsheets/malaria\\_chemoprophylaxis.htm](http://www.nathnac.org/travel/factsheets/malaria_chemoprophylaxis.htm)

