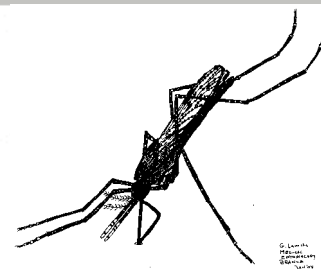


# Malaria



## What is Malaria?

Malaria is a parasitic disease transmitted by Anopheles mosquitoes. There are 4 types of parasites that cause malaria: *Plasmodium ovale*, *P. malariae*, *P. vivax*, and *P. falciparum*. The last 2 are the most common.

Primarily, malaria is an infection of the red blood cells, causing recurring fever of sudden onset. Malaria caused by *P. falciparum* is life threatening and can cause multiple organ damage, coma and death.

## How is it spread?

Malaria is spread by female *Anopheles* mosquitoes. The parasite enters the body in mosquito saliva when a person is bitten by an infected mosquito. The parasite first infects the liver where it begins to multiply. After some days, the resulting parasites are released into the blood stream to infect the red blood cells, where they continue to multiply, eventually bursting the red blood cells and further infecting others. If they reach high numbers they may cause severe disease or even death. Some of the parasites in the red blood cells develop into the sexual stages (gametocytes). If these stages are ingested when a mosquito bites an infected person, they develop in the gut of the mosquito for 10 –14 days, and then enter the salivary glands, ready for the next bite.

The last case of locally acquired malaria in the Northern Territory was in 1962 and Australia was declared free of malaria by the World Health Organisation (WHO) in 1981. However, a number of species of *Anopheles* mosquitoes exist in the NT and the malaria parasite could be re-introduced into local mosquitoes if infected travellers from overseas are bitten here. The disease could become established anywhere in the Top End, down to a latitude of 19 degrees which is just north of Tennant Creek.

## What are the symptoms?

Symptoms appear about 9-14 days after a bite from an infected mosquito, and coincide with the rupture of the red blood cells. Symptoms are often delayed in people who have lived in malarious areas and who may have developed some immunity.

Typically malaria produces fever, rigors (shakes), sweating, headache, vomiting and other flu-like symptoms. Sometimes there is a 2 or 3 day period of reduced symptoms before a recurrence on the third or fourth day. Untreated, infection can progress rapidly and become life threatening. Malaria can kill by destruction of red blood cells (anaemia) and by altering the function of vital organs such as the brain, (cerebral malaria) lungs or kidneys.

## Why does malaria relapse?

*P. vivax* and *P. ovale* exist as dormant forms that remain in the liver for months or years before producing the disease.

With *P. falciparum*, the disease can reoccur after apparent recovery, due to either inadequate treatment or infection with a drug resistant strain. *P. malariae* can rarely persist with very low levels of parasite in the peripheral blood for decades.



## How is it diagnosed?

Malaria is diagnosed by a blood test. The blood is examined under a microscope looking for malaria parasites inside the red blood cells. All travellers from malarious areas who become ill or develop a fever should be tested.

## What is the treatment?

All cases of *P. falciparum* malaria in the NT are admitted to hospital because this form of malaria can rapidly become life threatening. Cases of malaria other than *P. falciparum* can sometimes be treated at home if the house is adequately screened and if the patient agrees to stay indoors between dusk and dawn. This is to avoid any risk of transmission of the parasite to the local *Anopheles* mosquitoes.

Treatment must be given in consultation with specialist physicians.

Before travelling overseas

Check whether the countries to which you are travelling are affected by malaria by contacting your GP, Travel Health Clinic or referring to the internet:

WHO International Travel and Health website:

<http://www.who.int/ith/index.html>

Or the Centers for Disease Control and Prevention:

<http://www.cdc.gov/travel/diseases.htm#malaria>

If you are travelling to an affected country you will often need preventative medication. Contact your GP or Travel Clinic to organise anti-malarial medication for your trip. Some medication must be started 1 week prior to entry to the affected area.

## How to protect yourself from mosquito bites

While in affected areas there are measures which should be taken to reduce the risk of mosquito bites.

- Avoid being outdoors between dusk and dawn to avoid mosquito bites, particularly in poorly lit areas, rural areas, or the outskirts of large towns.
- Cover your body (especially arms, legs and feet) between dusk and dawn. Loose, light coloured clothing is best.
- Apply insect repellent to exposed skin at risk times; choose one containing either DEET or picaradin.
- Avoid scents on the body, e.g. perfume, deodorants, and sweat, since these can attract mosquitoes.
- If accommodation is not well screened, sleep inside mosquito netting. Use insecticide impregnated bed nets and clothing in high risk areas.
- Use mosquito coils or insecticide vaporisers in enclosed areas.

## If you return from a malarious area and develop symptoms

If you develop symptoms of malaria within 2 years of visiting a malarious area contact your GP or hospital emergency department immediately for an urgent medical assessment. Remember to inform the medical officer of where you have travelled as this will help determine your risk of malaria and the type of treatment required.

If you have malaria, the people you have travelled with (particularly to high risk areas such as Africa, PNG, East Timor and parts of Indonesia including Flores, Lombok and surrounding islands) should also be tested.

## For more information contact your nearest CDC or Medical Entomology Branch.

Medical Entomology	89228548
CDC Darwin	89228044
CDC Katherine	89739049
CDC Nhulunbuy	89870359
CDC Tennant Creek	89624259
CDC Alice Springs	89517549

Further fact sheets and treatment protocols are available at: <http://www.nt.gov.au/health/cdc>