

## Malaria

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### **What is Malaria?**

Malaria is a parasitic disease transmitted through the bite of *Anopheles* mosquitoes. There are five types of parasites that cause malaria: *Plasmodium falciparum*; *P. vivax*; *P. malariae*; *P. ovale* and *P. Knowlesi*. The most common parasites are *P. falciparum* and *P. vivax*.

Thousands of travellers become ill with malaria each year either during their holiday to malaria endemic countries, or after they return home.

### **How is it spread?**

Malaria is transmitted by infected female mosquitoes of the *Anopheles* genus. These mosquitoes bite mainly at night (between sunset and sunrise). When a mosquito bites a person with malaria they become infected with the parasite. When an infected mosquito bites another person, the parasite enters the body via the mosquito's saliva. The parasites multiply rapidly in the liver before being released into the blood stream, where they infect red blood cells and continue to multiply.

### **Where is it found?**

Malaria is found throughout the tropical and subtropical regions of the world. Areas of high transmission are found in rural areas in South America (e.g. Brazil), south-east Asia (e.g. Indonesia), Western Pacific (e.g. Papua New Guinea) and throughout sub-Saharan Africa.

Australia was certified as being malaria free by the World Health Organization (WHO) in 1981. However, there are several hundred imported cases of malaria recorded in Australia each year.

### **What are the symptoms?**

The most common symptoms of malaria are high fever, chills, rigors (shakes), profuse sweating, headache, backache, nausea, vomiting, and muscle and joint pains. Sometimes people have a few days of feeling better before symptoms return, and this cycle of symptoms going away and reappearing can repeat many times. Untreated, infection can progress rapidly and become life threatening as a result of anaemia (not having enough healthy red blood cells to carry oxygen around the body). Anaemia affects the function of vital organs such as the brain (cerebral malaria), lungs or kidneys.

### **What is the incubation period?**

The period between the bite of an infected mosquito and the appearance of symptoms is most commonly 7 to 30 days. Some people will not become ill until 6-12 months after infection.

## ***Why does malaria relapse?***

The parasites *P. vivax* and *P. ovale* can exist as dormant forms that remain in the liver for months or years before producing the disease. With *P. falciparum*, the disease may sometimes reoccur after apparent recovery, due to either inadequate treatment or infection with a drug resistant strain. Rarely, *P. malariae* can persist with very low levels of parasite in the blood for decades.

## ***How is it diagnosed?***

Malaria is diagnosed by a blood test. All travellers from areas where malaria is prevalent should be tested if they become ill or develop a fever.

## ***Who are most at risk?***

Pregnant women, children (especially the very young) and elderly travellers are particularly at risk. Malaria in pregnancy increases the risk of maternal death, miscarriage, stillbirth and neonatal death. Pregnant women should be advised to avoid travel to areas with malaria if possible.

## ***What is the treatment?***

There are several effective medications for treating malaria, although treatment has become more complicated with the development of treatment-resistant malaria parasites. Early malaria can usually be easily treated but late, severe or complicated malaria can be a life-threatening medical emergency. Some types of malaria may reoccur and require additional treatment.

## ***Before travelling overseas***

Before travelling overseas, check whether there is malaria in the countries you are visiting by contacting your GP, Travel Health Clinic or referring to the internet. The following sites provide useful information:

- <https://smartraveller.gov.au/Pages/default.aspx>
- <http://www.who.int/malaria/en/>
- <https://wwwnc.cdc.gov/travel>

If you are travelling to a country with malaria, you may need preventative medication. Contact your GP or Travel Health Clinic to organise anti-malarial medication for your trip. It is essential to take appropriate anti-malarial medications strictly as directed by your doctor. Some medication must be started one week prior to entry to malaria affected areas. However, no anti-malarial regime gives complete protection against the disease and people should take measures to avoid being bitten by mosquitoes.

## ***How to protect yourself from mosquito bites***

While in malaria affected areas there are measures that can be taken to reduce the risk of mosquito bites. The mosquito that can transmit malaria is mainly active at night, between sunset (dusk) and sunrise (dawn).

- Avoid going outdoors between dusk and dawn in rural and urban fringe areas.
- After dusk, wear light coloured, long sleeved clothing and long trousers. Perfumes or aftershave lotion may attract mosquitoes.
- Sleep in properly screened rooms and use insect spray to kill any mosquitoes present in the room. Mosquito coils or vaporisers should be used at night.
- Use mosquito nets when sleeping. Check for holes and tuck the edges under the mattress. Insecticide Treated Nets (ITNs) can enhance protection.
- Use insect repellents containing “DEET” or Picaridin on exposed skin and garments, particularly at night. If you have children or babies, ask for an insect repellent that is suitable for them.

## ***What to do if you return from an area with malaria and develop symptoms***

If you develop symptoms after visiting an area with malaria, contact your GP or hospital emergency department immediately for a medical assessment. Remember to tell the medical officer where you have travelled as this will help determine your risk of malaria and the type of treatment required.

## ***Need more information?***

For more information about malaria, contact your doctor or call the Health Protection Service, Communicable Disease Control Information Line during business hours on **(02) 6205 2155**.

**Communicable Disease Control Section at Health Protection Service** is responsible for the investigation and surveillance of notifiable or infectious conditions in the ACT in order to control or prevent their spread in the community. This includes the promotion of immunisation, education and other strategies that help to limit the spread of diseases.

Malaria is a notifiable disease. Cases notified to ACT Health are investigated by Public Health Officers.

## ***Acknowledgements***

1. Heymann DL. Control of Communicable Diseases Manual. 20th edn. Washington: American Public Health Association, USA; 2015.
2. Communicable Diseases Section Department of Human Services (2005). *The blue book - guidelines for the control of infectious diseases*. Melbourne: Victorian Government Department of Human Services. Available at: <https://www2.health.vic.gov.au/about/publications/researchandreports/The-blue-book>

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