

# Murray Valley Encephalitis

Murray Valley encephalitis (MVE) is an uncommon disease caused by the Murray Valley encephalitis virus. It is spread to humans by infected mosquitoes. Most people with this infection remain completely well while others may only develop a mild illness with fever. A small proportion of those infected develop a severe brain infection called encephalitis.

## How is the disease spread?

Murray Valley encephalitis (MVE) is spread by the bite of an infected mosquito.

The most important species of mosquito to carry the virus is the common banded mosquito, *Culex annulirostris*. This mosquito is widespread throughout Australia and breeds in fresh water such as surface pools and natural wetlands.

The *Culex annulirostris* is a nocturnal mosquito most active in the early evening and pre-dawn period. They have a flight range of several kilometres.

Water birds, such as herons, are an important natural reservoir of MVE virus, allowing the virus to spread to new areas. Mosquitoes become infected by feeding on infected birds. An infected mosquito can then bite a person and transmit the infection.

Due to the diverse habitats of mosquitos that transmit this virus, targeted mosquito control activities can produce varied results.

## Where does MVE occur?

Although MVE can occur throughout Australia, it is more common in the Top End of the Northern Territory and north-west of Western Australia. MVE can also occur in inland north Queensland during some years. The MVE virus is present during the wet and post-wet seasons (February to July) with most cases being reported between March and May. During extensive wet seasons the range of viral activity may extend to southern and south eastern regions.

Only five cases have been acquired in Queensland since 1990: Cape York (1991), near Burketown (1994), Karumba/Mount Surprise (1997), Mt Isa (2001), and Karumba (2005). Three other cases have been reported in Queensland since 2005, however these cases were acquired outside of Queensland in the Northern Territory (2009), Papua New Guinea (2012) and Indonesia (2013).

## Who is at risk of developing MVE?

People visiting areas where MVE virus is circulating, in local water birds and mosquitoes, are at risk after being bitten. Many people who have lived for a long time in MVE affected areas will be protected (immune) because they have been exposed to the virus in the past.

When MVE virus is present in local mosquitoes, some people are more likely to develop MVE infections because they have not been exposed before. This includes:

- Babies and young children
- People who are visiting or have recently moved to MVE affected areas.

## Signs and Symptoms:

MVE virus usually infects people without producing apparent illness. It may also cause a comparatively mild illness. A very small proportion of those infected develop a severe brain infection called encephalitis.

Symptoms of MVE usually appear 5 to 28 days (average 14 days) after being bitten by an infected mosquito. The early symptoms include:

- headache
- fever
- nausea and vomiting
- muscle aches

Symptoms can progress to drowsiness, confusion, seizures or fits (especially in young children) and in severe cases delirium, coma and death. Some who recover are left with ongoing problems such as deafness or epilepsy.

Anyone with the above symptoms should seek immediate medical advice. A blood test is available to test for recent or past MVE infection.

## Treatment:

There is no specific treatment for MVE. The treatment of severe MVE is supportive and often requires admission to an intensive care unit.

## Prevention:

There is no vaccine against MVE. The only way to prevent MVE is to avoid being bitten by mosquitoes. This is particularly important during the wet

season. Everyone should use personal protective measures to avoid mosquito bites, especially young children and babies, and those visiting or camping near swamps, lagoons, dams and temporary pools of water in grassy areas.

Personal protective measures:

- Stay indoors when mosquitoes are most active, from just before sunset and all night.
- Wear loose, light-coloured clothing with long sleeves, long trousers and socks (mosquitoes can bite through tight-fitting clothes).
- Apply a protective repellent containing up to 20 percent diethyl toluamide (DEET) or picaridin to exposed areas of skin and reapply as directed by the manufacturer. Repellents usually only protect against mosquito bites for up to four hours, not all night.
- Use other mosquito protection devices such as mosquito lanterns.
- Apply residual pyrethroids around the home or campsite, and/or to nearby shrubbery that provide a harbourage for mosquitoes.
- Ensure flyscreens in houses or caravans are in good condition.
- If camping out, sleep in a mosquito-proof tent or under a mosquito net.

### Help and assistance:

For further information please contact your local doctor, community health centre or nearest [public health unit](https://www.health.qld.gov.au/system-governance/contact-us/contact/public-health-units) (<https://www.health.qld.gov.au/system-governance/contact-us/contact/public-health-units>).

For further information regarding mosquito control issues contact your nearest environmental health or medical entomology unit or council.

Information regarding [mosquito borne diseases](http://www.health.qld.gov.au/mozziediseases/) (<http://www.health.qld.gov.au/mozziediseases/>)

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[Japanese encephalitis fact sheet](http://conditions.health.qld.gov.au/HealthCondition/condition/14/217/83/japanese-encephalitis) (<http://conditions.health.qld.gov.au/HealthCondition/condition/14/217/83/japanese-encephalitis>)

### References

Communicable Disease Network Australia, 2014, Murray Valley Encephalitis Virus,

[CDNA National Guidelines for Public Health Units](http://www.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-mvev.htm#app3) (<http://www.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-mvev.htm#app3>), Department of Health, Canberra.

Heymann D., ed. 2008, *Control of Communicable Diseases Manual*, 19th edition, American Public Health Association: Washington.