

Murray Valley encephalitis is caused by a viral infection, transmitted through mosquito bites. It has the capacity to cause severe human disease and urgent treatment should be sought if suspected.

Murray Valley Encephalitis (MVE)

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What is MVE?

Murray Valley encephalitis (MVE) is a rare 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.

MVE usually occurs in remote north-western Australia. In south-eastern Australia MVE is occasionally seen when heavy rainfall, flooding and hot weather favour bird and mosquito breeding.

In NSW, the pattern of disease over the last century has been outbreaks occurring decades apart, with no or very few cases identified in between.

People who have visited or live in or around wetlands or rivers are most likely to be at risk. The Murray-Darling basin is sometimes affected but mosquitoes with the virus may also live in other rivers and wetlands around NSW.

What are the symptoms?

Most MVE infections in people cause no symptoms. Some people with MVE infections experience an illness with fever, headache, nausea, vomiting and loss of appetite, diarrhoea and muscle aches.

Rarely, the MVE virus can cause a severe brain infection known as encephalitis. The danger signs of MVE encephalitis include the following symptoms:

- severe headache
- neck stiffness
- sensitivity to bright lights (photophobia)
- drowsiness and confusion.

This can progress to cause trouble with coordination and speech, seizures, loss of consciousness, coma and even death. Some people who recover from MVE encephalitis are left with permanent neurological complications.

How is it spread?

- The MVE virus is spread by the common banded mosquito, *Culux annulirostris*. This mosquito breeds in fresh water and tends to be found in spring, summer and autumn around rivers, natural wetlands and irrigation waters and along coastal areas of NSW. The mosquito is especially common around the Murray Darling River basin areas in NSW during summer
- This mosquito tends to be most active at sunset and in the first few hours of the evening and again around dawn
- The virus infects some water bird species such as the Rufous Night Heron. Mosquitoes become infected by feeding on infected birds. An infected mosquito can then bite a human and transmit the infection

- People with Murray Valley encephalitis infection do not transmit the infection to other people or to mosquitoes, and people with MVE infection develop long lasting immunity that is probably life-long
- The virus can infect animals such as horses, kangaroos and non-water birds. MVE cannot be passed from these animals to humans.

Who is at risk?

People most at risk include people who have recently been bitten by mosquitoes in areas where MVE is circulating in local water birds and in the mosquitoes that bite them. Many people who have lived for a long time in MVE affected areas will be protected (immune) because they have been infected in the past.

When MVE is 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.

In NSW, the biggest risk for MVE appears to be in the warm months after there has been heavy rainfall or flooding. The greatest risk is in and around wild bird habitats where infected mosquitoes are most likely to live. This means that people who are bushwalking, camping, boating, fishing and bird-watching in MVE affected areas are at increased risk of infection.

NSW regularly test flocks of chickens located near known bird breeding sites for MVE during the mosquito breeding season. Detection of the virus in these "sentinel" chicken flocks or in mosquitoes is an early warning system that indicates that humans may be at increased risk of infection with MVE if they are bitten by mosquitoes.

How is it prevented?

There is currently no vaccine against Murray Valley encephalitis.

To protect against mosquitoes and reduce the risk of diseases they transmit:

- Cover-up with a loose-fitting long sleeved shirt and long pants when outside
- Apply mosquito repellent to exposed skin
- Take special care during peak mosquito biting hours, especially around dawn and dusk
- Remove potential mosquito breeding sites from around the home and screen windows and doors
- Take extra precautions when travelling or camping in areas with a higher risk of mosquito-borne diseases.

For more detailed information on reducing the risk of mosquito bites at home and while travelling see the [Mosquitoes are a Health Hazard](#) factsheet. This also includes more information on mosquito repellents.

How is it diagnosed?

MVE infection is usually diagnosed from measuring levels of antibody in samples of blood or cerebrospinal fluid or occasionally from detecting the virus nucleic acids in these samples. It can sometimes be difficult to distinguish recent infections from old infections from testing one specimen. Two samples of blood taken a week apart usually need to be tested to see if there has been an increase in the levels of antibody against the virus suggesting a recent infection.

How is it treated?

There is no specific treatment available for MVE. People with encephalitis require treatment in hospital, sometimes in intensive care.

What is the public health response?

Laboratories diagnosing cases of Murray Valley encephalitis must notify the local public health unit. Once the infection is confirmed, public health unit staff will collect detailed information about where the person has recently travelled and where they are likely to have been exposed to infected mosquitoes. The main public health response is to give people advice about avoiding mosquito bites and to search for new cases of human infection. Sometimes planned outdoor events in or near high risk areas may need to be cancelled or postponed.

For further information please call your local Public Health Unit on 1300 066 055 or visit the New South Wales Health website www.health.nsw.gov.au