

Murray Valley encephalitis (MVE)

By Prav Prathapan, Encephalitis International and reviewed by Dr Sarah McGuinness, Consultant Physician, Department of Infectious Diseases, Alfred Hospital (Travel Medicine Clinic) and Senior Research Fellow, Infectious Diseases Epidemiology Unit, School of Public Health and Preventive Medicine at Monash University, Australia

What is Murray Valley encephalitis?

Murray Valley encephalitis (MVE) is a viral disease spread by mosquitoes. Like other types of encephalitis, it is characterised by brain inflammation. MVE occurs naturally in northern Australia, Papua New Guinea, and parts of Indonesia, and sometimes causes outbreaks in parts of southeastern Australia. These outbreaks are thought to be related to the movement of migratory waterbirds from areas where the virus is always present.

The MVE virus is related to the Japanese encephalitis (JE) virus. It was first found in 1951 during an outbreak in the Murray Valley region of south-eastern Australia. The virus may have caused similar outbreaks in 1917, 1919, and 1925, and has recently caused outbreaks in 1974, 2011, and 2023.

In April 2024, MVE virus was reported to have spread to a new part of Western Australia, namely the Pilbara region. This led to a call for residents and travellers to protect against mosquito bites. Sadly, in June, two people died from MVE in Western Australia.

Symptoms

People of all ages can be affected by MVE.

After being exposed to the virus, it takes 1-4 weeks (usually 2 weeks) for symptoms to appear. The first signs usually include high fever (often over 40°C) and headache, lasting 2-5 days. These symptoms can be hard to tell apart from those of JE and Kunjin virus encephalitis, which also occurs in Australia. Other symptoms of MVE include nausea, vomiting, and muscle aches. Early on, neurological symptoms (affecting the brain and nerves) may appear, such as extreme tiredness (lethargy), irritability, and confusion. Seizures almost always occur in children and sometimes in adults. In severe cases, people may develop neck stiffness, sensitivity to bright light (photophobia), and may lose consciousness or fall into a coma.

Most people who get infected with the MVE virus do not show any symptoms. In fact, only around one in every 150-1000 infected people develop severe disease.

Diagnosis

Blood tests are the main way to confirm infection by the MVE virus. These tests look for antibodies that the body makes to fight the virus. These antibodies usually appear in the blood 4-9 days after symptoms start and can last for months. A lumbar puncture (sometimes called a spinal tap) and/or urine tests can also help diagnose MVE.

Brain scans can't diagnose MVE but can help support the diagnosis. They can show signs of infection before blood test results are available and help rule out other conditions. MRI is the most sensitive type of scan and can show signs of infection within a week of developing symptoms.

Treatment

There is no specific cure for MVE. Treatment focuses on supporting the patient's body while it fights the infection. It's important to quickly move patients to hospitals with an intensive care unit (ICU). Finding new treatments is challenging because MVE cases are rare. While similar conditions have been studied more, like JE, effective treatments haven't been found for them either.

Outcomes

MVE affects each person differently. Among those with severe disease, outcomes vary. About 15-30% of people with severe MVE die. Among survivors, 30-50% have lasting brain or nerve problems. Only about 40% of patients recover fully without long-term effects.

In milder cases, symptoms may just be fever and headache. This broad range of outcomes, from mild to severe, shows how unpredictable MVE can be.

Prevention

There is currently no vaccine available to prevent MVE virus infection.

The best prevention is to protect against mosquito bites by wearing long, light-coloured clothing and applying mosquito repellents containing picaridin or DEET to exposed skin. People who work, live or spend time outdoors in rural areas must be extra careful and try to limit outdoor activity at times when mosquitos are prevalent. It is also important to remove stagnant water where mosquitos can breed. Fitting homes with netting or screens can also help prevent contact with mosquitos.

Travellers visiting risk areas should protect against mosquito bites and avoid spending time outdoors between dusk and dawn when mosquitoes are most active. Risk areas include the Top End, Katherine, and Barkly regions in the Northern Territory of Australia; the Kimberley, Pilbara, Gascoyne, and Midwest regions of Western Australia; and riverine areas including the Murray River region in south-eastern Australia. Most cases occur between January and June.

FS074V1 Murray Valley encephalitis

Date created: June 2024 / Last updated: June 2024 / Review date: June 2027

Disclaimer: We try to ensure that the information is easy to understand, accurate and up to date as possible. If you would like more information on the source material and references the author used to write this document, please contact Encephalitis International. None of the authors of the above document has declared any conflict of interest, which may arise from being named as an author of this document.

Support our information

With our support, no one has to face encephalitis alone. Our advice and information are available free of charge to everyone affected but we are truly grateful when supporters feel able to contribute a little to the cost of these resources. Please donate today by visiting www.encephalitis.info/donate or text the word DOCTOR to 70085 to donate £5.

Thank you!

Encephalitis International, 32 Castlegate, Malton, North Yorkshire, YO17 7DT, UK

Administration: +44 (0) 1653 692583 **Support:** +44 (0) 1653 699599

Email: mail@encephalitis.info **Website:** www.encephalitis.info

Encephalitis International is the operating name of the Encephalitis Support Group.

Registered Charity England and Wales No: 1087843; Registered Charity in Scotland No: SC048210

Charitable Company registered in England and Wales No: 04189027