

West Nile virus

West Nile virus is a viral infection carried by mosquitoes. It belongs to a group of viruses called flaviviruses. A person infected with the virus may have no symptoms. About 20 per cent of people infected develop mild flu-like symptoms such as fever, fatigue and aching muscles. In rare cases, the West Nile virus can lead to serious complications such as meningitis and encephalitis (inflammations of the central nervous system). There is currently no drug to treat the infection or human vaccine to prevent it.

The West Nile virus was first identified in the West Nile district of Uganda in 1937. It is known to lethally infect horses, domestic birds and wild birds as well as humans. Until quite recently, the West Nile virus was confined to Eastern Europe, West Asia, the Middle East and Africa. However, outbreaks are now occurring in Western countries. For example, in the 2002 outbreak in the United States, 4,156 cases were reported (approximately 300 of whom died).

A subtype of the West Nile virus (called Kunjin virus, or KUNV) is found in parts of Australia, particularly the Northern Territory and northern Western Australia. Kunjin is less virulent than the current US strain of West Nile virus. People with antibodies to Kunjin virus may be immune to infection with the West Nile virus.

Symptoms

Infected people may have no symptoms. If symptoms occur, they can include:

- Fever
- Headache
- Aching muscles and/or joints
- Fatigue.

Complications target the brain

In rare cases, the infection can lead to serious complications including meningitis and encephalitis. Meningitis is infection or inflammation of the membranes surrounding the brain (meninges), while encephalitis involves inflammation of the brain itself. Once in the bloodstream, the virus multiplies then breaches the blood–brain barrier. The viral invasion disrupts normal nervous system functioning, and may result in death or serious disability.

Mosquitoes spread the virus

Mosquitoes feed on the blood of humans and other animals. If the mosquito is infected with the West Nile virus, it can pass on the infection through its bite. Humans cannot pass the virus on to others. An infected mosquito must bite you to be at risk of infection.

Since 1999, when the West Nile virus was first detected in Western countries, around 14 different types of mosquito have been found to be carriers. Most of these mosquitoes fall into one of three genera: *Culex*, *Aedes* and *Ochlerotatus*. In Australia, the most common carrier of the variant Kunjin virus is the freshwater mosquito *Culex annulirostris*.

In the US, some cases of West Nile virus infection appear to have been transmitted by blood or organ donation, or possibly also through breast milk. These forms of transmission are thought to be rare.

The risk of human illness is low

The risk of illness and of complications from infection is extremely low – for example, there have only been 15 cases of Kunjin virus ever reported in Australia. In areas known to harbour infected mosquitoes, it is estimated that less than one per cent of the mosquitoes carry the virus and, in a study in New York City in 1999 during the height of virus activity that year, only 2.6 per cent of residents were infected.

There is no need to panic if you get bitten while in an area known to harbour infected mosquitoes. Of the people unfortunate enough to get bitten by an infected mosquito, less than one per cent will experience severe illness or complications. Of those who experience complications, mortality (death) rates range from three to 15 per cent, depending on factors such as the person's age. Generally, older people (aged 50 years or more) are at greater risk of complications and death.

Diagnosis

West Nile virus infection is diagnosed using a number of tests including:

- Medical history
- The patient's recent travel history
- Blood tests for specific antibodies
- Scans, if necessary – such as computed tomography (CT) scans of the brain.

Treatment

There are currently no drugs that combat infection with the West Nile virus. Treatment aims to support the patient and ease the symptoms while their body fights the infection. Depending on the severity of infection and any complications, treatment could include:

- Hospital admission
- Intravenous fluids
- Drugs, such as antibiotics, to reduce the risk of secondary bacterial infections such as pneumonia.

Reduce the mosquito population around your home

All disease-carrying mosquitoes breed in water or require water to enable eggs to hatch. Suggestions for reducing mosquitoes breeding around your home environment include:

- Get rid of all containers around the garden that can hold water – such as jars, old tyres and plant pots. Keep fish in ponds or water features, because fish eat mosquito larvae.
- Properly maintain your swimming pool with the appropriate chemicals.
- Drain any puddles of water from the surface of your pool cover.
- Clean drains and gutters regularly.
- Fill any depressions in your lawns or gardens that collect water puddles.
- Empty and change water containers for birds and other domestic pets at least weekly.
- Empty wading pools and turn them over when not in use.
- Place screens on water tanks.
- Consult with your local council for further suggestions on 'mosquito-proofing' your property.

Personal protection

Suggestions to reduce the risk of mosquito bites include:

- Place flyscreens on all windows and external doors.
- Place flyscreens on tents.
- Try to avoid mosquito-prone areas, such as shallow swamps particularly at dusk and dawn.
- Wear long, loose-fitting clothing, preferably light in colour.
- Use insect repellent (containing DEET or picaridin) on exposed skin surfaces.

Australian research

Researchers from the University of Queensland have isolated four antibodies produced in response to the West Nile virus. The development of a simple test for the presence of these antibodies will, in the near future, mean quicker diagnosis and treatment for infected patients. There are hopes that the identification of these antibodies may one day point to a possible vaccine against the West Nile virus.

Where to get help

- Your doctor
- Your local council
- Communicable Disease Prevention and Control Unit, Department of Health, Victoria Tel. 1300 651 160

Things to remember

- West Nile virus is a viral infection transmitted by mosquitoes.
- Infection may be asymptomatic or can cause mild flu-like symptoms.
- In rare cases, infection can lead to serious complications such as meningitis and encephalitis.
- A subtype of the West Nile virus, called Kunjin virus, is found in parts of Australia, particularly the Northern Territory and northern Western Australia.

This page has been produced in consultation with, and approved by:

Department of Health - Communicable Disease Prevention and Control Unit

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