CONDITION

West nile virus infection

West Nile virus infection is a mosquito-borne infection that is usually mild but can sometimes affect the brain, spinal cord, or nerves.

WHAT IT IS
Mosquito-borne viral infection, usually mild or symptom-free

BODY SYSTEM
Whole body and sometimes the nervous system

MAIN SYMPTOMS
Fever, headache, body aches, rash

WHAT CAUSES IT
Infection with West Nile virus

HOW IT IS DIAGNOSED
West Nile IgM testing of blood or spinal fluid

MAIN TREATMENT
Supportive care and rehabilitation when needed

CAN IT BE CURED?
No - no specific antiviral cure exists

IS IT AN EMERGENCY?
Sometimes - confusion, paralysis, seizures, or breathing trouble

LONG-TERM OUTLOOK
Most recover; severe nervous system effects may persist

Overview

West Nile virus infection is mainly spread through mosquito bites. Mosquitoes become infected after feeding on infected birds. They can then pass the virus to people and some other animals.

Most infected people never develop symptoms. About 1 in 5 develop a short-term illness with fever and other flu-like symptoms. A much smaller number develop an infection of the brain, spinal cord, or surrounding tissues. This is called a neuroinvasive infection.

Neuroinvasive means that the virus has entered the nervous system. It may cause meningitis, which is inflammation around the brain and spinal cord; encephalitis, which is inflammation of the brain; or acute flaccid myelitis, which causes sudden muscle weakness or paralysis.

West Nile virus occurs in many parts of the world. In areas where it circulates, infections are more common during mosquito season. The timing of mosquito season depends on the local climate.

There is no human vaccine or specific antiviral treatment for West Nile virus. Care focuses on relieving symptoms, supporting the body during recovery, and treating complications.

Symptoms

Symptoms usually begin 2 to 14 days after an infected mosquito bite. The incubation period, meaning the time between infection and symptoms, can sometimes be longer in people with weakened immune systems.

Most people have no symptoms and may never know that they were infected.

When symptoms do occur, the infection may cause:

This milder illness is sometimes called West Nile fever. Symptoms often improve on their own, although tiredness and weakness may last longer than the fever.

A neuroinvasive infection can cause more serious symptoms, including:

Older adults may not always have a clear fever. A sudden change in alertness, strength, movement, or behaviour can be an important sign.

- Fever
- Headache and body aches
- Tiredness or weakness
- Nausea, vomiting, or diarrhoea
- Swollen lymph nodes
- A rash, often on the chest, back, or arms
- Severe headache or a stiff neck
- Confusion, unusual sleepiness, or difficulty staying awake
- Tremor or uncontrolled movements
- New muscle weakness or paralysis
- Problems with balance or walking
- Seizures
- Difficulty breathing

Causes and risk factors

West Nile virus is most often passed to people by an infected mosquito. Mosquitoes usually acquire the virus from birds, which are its main natural hosts.

You cannot usually catch West Nile virus through everyday contact. It is not spread by touching, coughing, kissing, or sharing food with an infected person.

Rare routes of transmission include:

Donated blood is screened in many countries, including the United States, which greatly reduces the risk from transfusion.

Anyone bitten by an infected mosquito can develop West Nile virus infection. The chance of severe nervous system involvement increases with age, especially after age 60. People with weakened immune systems or certain long-term conditions may also face a higher risk. These include people who have received an organ transplant and some people with cancer, diabetes, high blood pressure, or kidney conditions.

Risk also rises with mosquito exposure. This may include spending time outdoors around dawn or dusk, living or working near mosquito breeding areas, or having damaged window and door screens.

- Blood transfusion or organ transplantation
- Pregnancy or birth
- Breastfeeding
- Laboratory exposure

Diagnosis

Symptoms alone cannot confirm West Nile virus infection. Many other infections and medical conditions can cause fever, headache, confusion, or weakness.

A healthcare professional will consider your symptoms, recent mosquito exposure, travel, time of year, medical history, and examination findings. They may also ask about blood transfusions or organ transplantation.

The main diagnostic test looks for IgM antibodies against West Nile virus in blood or cerebrospinal fluid. IgM antibodies are immune proteins that appear in response to a recent infection. Cerebrospinal fluid is the clear liquid surrounding the brain and spinal cord. It is collected through a lumbar puncture, sometimes called a spinal tap.

Testing too early can produce a negative result because antibodies may not yet be detectable. If West Nile virus remains a concern, testing may be repeated. Antibody tests may also react to closely related viruses, so a specialised laboratory may perform additional testing to confirm the result.

Brain scans do not confirm West Nile virus, but they may help rule out a stroke, bleeding, a tumour, or another cause of neurological symptoms. Other blood tests and spinal fluid tests may be needed to check for different infections.

Treatment and management

There is no approved antiviral medicine that specifically cures West Nile virus infection. Antibiotics like amoxicillin or doxycycline do not work against viruses.

Mild infections are generally managed with rest, fluids, and symptom relief. A healthcare professional or pharmacist can help you choose an appropriate medicine for fever or pain, particularly if you have other medical conditions, are pregnant, or take regular medicines.

Severe infections usually require hospital care. Treatment may include:

Sudden weakness or paralysis may affect swallowing and breathing muscles. These problems need close monitoring.

After a neuroinvasive infection, rehabilitation can be an important part of treatment. Physical therapy may help with strength, balance, and walking. Occupational therapy can support everyday tasks, while speech and swallowing therapy may be needed if communication or eating has been affected.

Some antiviral medicines and immune-based treatments have been studied, but none has been shown to provide a standard, proven cure. Clinical trials may be available in some settings.

- Fluids and nutrition
- Oxygen or breathing support
- Treatment for seizures
- Prevention of pressure sores and blood clots during reduced movement
- Monitoring for brain swelling or other complications

Complications

Most people with West Nile virus infection do not develop complications. The main concern is infection involving the nervous system.

Possible complications include meningitis, encephalitis, and inflammation affecting the spinal cord or nerves. These can lead to muscle weakness, paralysis, tremor, balance problems, difficulty concentrating, memory changes, or ongoing tiredness.

Severe weakness can reduce mobility and increase the risk of falls, blood clots, skin sores, and chest infections. Problems with swallowing may allow food or liquid to enter the lungs.

Some neurological effects improve over time, while others may last for months or years. A small number of severe infections are fatal, particularly when the brain or breathing muscles are affected.

Prevention

West Nile virus infection cannot always be prevented, and there is currently no human vaccine. Reducing mosquito bites is the main way to lower your risk.

When mosquitoes are active:

Mosquitoes can breed in small amounts of standing water. Regularly empty water from buckets, plant saucers, toys, gutters, bird baths, and other outdoor containers. Cover stored water so mosquitoes cannot reach it.

Do not handle dead birds with bare hands. Local public health or wildlife agencies may provide instructions for reporting or disposing of them.

People who have recently had West Nile virus infection may be asked to delay donating blood. Blood and organ donation services use screening and eligibility procedures to reduce transmission.

- Use an insect repellent approved by your national regulator and follow its label
- Wear long sleeves, long trousers, and socks when practical
- Use window and door screens and repair any holes
- Use air conditioning where available
- Follow local public health advice about mosquito activity

Living with it and what to expect

People without symptoms do not usually need treatment and generally have no lasting effects.

A mild fever illness often settles over several days, but energy levels may take longer to return. Tiredness, headaches, or weakness can continue for weeks. A gradual return to work, school, exercise, and other activities may be easier than trying to resume everything at once.

Recovery from a neuroinvasive infection is less predictable. Improvement may continue for months, especially with rehabilitation. Strength and function can return gradually, but some people have lasting weakness, tremor, pain, memory problems, or reduced stamina.

Regular follow-up after a severe infection may include reviewing mobility, mood, sleep, concentration, swallowing, and the ability to manage daily activities. Rehabilitation goals may change as recovery progresses.

Seek routine follow-up if symptoms are not improving, interfere with daily life, or return after initial improvement. Persistent tiredness and thinking difficulties are not usually emergencies, but they deserve assessment and practical support.

When to get medical help

Arrange prompt medical advice if you develop fever, headache, body aches, or a rash after significant mosquito exposure, especially if you are older, immunocompromised, pregnant, or have had an organ transplant. These symptoms have many possible causes, so an assessment may be needed rather than assuming West Nile virus is responsible.

Seek urgent same-day care for:

Call emergency services for:

Routine follow-up is appropriate for lingering tiredness, reduced strength, balance problems, or concentration difficulties after the acute infection. Emergency care is not usually needed for stable, slowly improving symptoms.

- Fever with a severe headache or stiff neck
- New muscle weakness, shaking, or difficulty walking
- Repeated vomiting or signs of dehydration
- Symptoms that are rapidly getting worse
- Severe confusion or difficulty waking
- A seizure
- Sudden paralysis or inability to move a limb
- Trouble breathing or swallowing

- Loss of consciousness

Common questions

Is West Nile virus contagious between people?

Not through ordinary contact. You cannot usually catch it by touching, hugging, kissing, coughing, or sharing household items. Transmission through blood, donated organs, pregnancy, birth, or breastfeeding is possible but rare.

How long does West Nile virus last?

A mild fever illness often improves within several days, although tiredness and weakness may continue for weeks. Recovery from brain, spinal cord, or nerve involvement can take months or longer. Some effects may be permanent.

Can I have West Nile virus without knowing it?

Yes. Most infected people do not develop symptoms. Testing people without symptoms is not usually useful because a positive antibody test may reflect an older infection rather than a current illness.

Can you get West Nile virus more than once?

Infection is thought to produce lasting immunity, so repeat infection appears uncommon. However, mosquito protection is still important because mosquitoes can spread other infections.

Is there a vaccine for West Nile virus?

There is no licensed West Nile virus vaccine for people. Vaccines are available for horses, but these are not suitable for human use.

Should I avoid breastfeeding if I have West Nile virus?

West Nile virus has rarely been reported through breast milk. Public health guidance generally considers the known benefits of breastfeeding important. If you have a suspected or confirmed infection, discuss your circumstances promptly with your maternity or paediatric care team rather than stopping on your own.

Sources

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