# West Nile Virus



## What is West Nile virus?

West Nile virus is a microorganism belonging to the Flavivirus genus and is carried by infected mosquitos. West Nile virus has been commonly found in humans, birds and other animals in Africa, Eastern Europe, West Asia and the Middle East. The virus first reported in Canada in 2002 – since then, it has been reported in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Quebec.

### How is West Nile virus transmitted?

West Nile virus is spread to humans by the bite of an infected mosquito. Mosquitoes become infected when they feed on infected birds. Infected mosquitoes can then transmit West Nile virus to humans and animals while biting to take blood.

The risk of being bitten by a mosquito is greatest between mid-April and the first hard frost in late September or October. Also, mosquitoes are often most active at dawn and dusk.

West Nile virus can spread through blood transfusions, and organ or tissue transplants. Pregnant women can pass the virus to their babies and the virus can be passed through breast milk. In addition, laboratory workers can get the West Nile virus through needlestick injuries.

There is no evidence to indicate that the virus is transmitted from person-to-person contact or by donating blood. There is also no evidence that a person can get the virus from handling infected birds or other animals such as cats, dogs and horses.

The Public Health Agency of Canada tracks West Nile virus in Canada with the help of its partners. For information about current statistics, please see the Surveillance page.

### What type of birds carry West Nile virus?

The West Nile virus has been found in more than 150 bird species in North America. Some species may have no obvious signs of illness when infected.

Others, such as crows, blue jays, and ravens get sick more often and can die. People who find a dead bird should contact their local public health unit office. For information about submitting a dead bird in your area contact the Canadian Cooperative Wildlife Health Centre.

There is no evidence that a person can get the virus by handling a dead infected bird. However, it may be prudent to avoid barehanded contact with dead animals. People handling dead birds should wear gloves and double bag the bird. After handling dead birds it is advisable to wash hands with soap and water.

## What are the symptoms of West Nile virus infection?

The symptoms of West Nile virus infection can begin 2 to 15 days following the bite of an infected mosquito. The majority of infections are mild and most people who become infected have no symptoms at all. Some people may experience mild flu-like symptoms, such as fever, headache, and body aches. Some may also develop a skin rash and swollen lymph glands.

People of any age can be at risk of adverse health effects from West Nile virus infection. However, the elderly, and those with weak immune systems may develop severe infection. The severe infection can affect the brain (encephalitis) or the lining of the brain or spinal cord (meningitis). In these cases, the symptoms can include severe headache, high fever, neck stiffness, vomiting, disorientation, muscle weakness, coma, and in some cases, death.

## Are there long term effects from West Nile virus infection?

Because West Nile virus is an emerging disease the long-term effects are not fully understood. To date, most people with serious symptoms and health effects recover completely. However, others experience prolonged health problems including muscle weakness, fatigue, headache, confusion, depression, problems with concentration and memory loss. It is not known why some people recover while others continue to have varying degrees of health problems.

## Can West Nile virus infection be treated?

There is no specific treatment for West Nile virus infection. However, many of the symptoms and complications of the infection can be treated.

There is no human vaccine for West Nile virus. People contracting the infection develop immunity assumed to be lifelong.

## How is West Nile virus infection recognized?

The first thing doctors look for are symptoms of West Nile virus infection. Blood tests confirm the infection. They are done on two separate blood samples taken about three weeks apart.

## Which occupations are at risk for West Nile Virus?

Persons whose occupation may place them at risk for West Nile virus infection include:

- Outdoors workers.
- People involved in collecting dead birds.

- Veterinarians
- Laboratory workers.

## What kind of precautions should workers take?

Outdoors workers should wear long sleeved shirts and long pants. They should spray clothing with insect repellent since mosquitoes may bite through thin clothing. Always read the entire label carefully before using insect repellents. Persons involved in collecting dead birds should use gloves and double bag the specimen. After handling dead birds people should wash their hands with soap and water.

Veterinarians are advised to use their usual personal protective equipment such as gowns, gloves, masks and eye protection. Laboratory workers should follow the recommendations of the "West Nile Virus – Pathogen Safety Data Sheet – Infectious Substances" produced by the Public Health Agency of Canada.

**How can we prevent West Nile virus infection?**

Prevention and control of West Nile virus is best accomplished by implementing appropriate mosquito control measures and taking appropriate personal precautions.

## What are the measures to control mosquitoes?

Provincial and local health authorities are responsible for deciding whether to use pesticides to control the number of mosquitoes in the area. Many municipalities have planned to use larvicides in standing water and catch basins where mosquitoes lay their eggs. Methoprene, a chemical larvicide will be used in catch basins. Bti (bacillus thuringiensis israelensis) a biological larvicide will be used in standing water. With this strategy officials hope to drammatically reduce the number of mosquitoes.

The Pest Management Regulatory Agency (PMRA) Health Canada has registered both methoprene and Bti for use in Canada. As part of the registration process the products undergo a strict scientific assessment to determine whether they are safe.

## How can people control mosquitoes around homes?

Mosquitoes lay their eggs in standing water. Here are some ways to reduce mosquito breeding sites around homes:

- Remove water collecting on pool covers, garbage cans, etc.
- Turn over wading pools after use or change the water regularly.
- Cover groundwater barrels.
- Change water in bird baths and pet or livestock water dishes regularly.
- Chlorinate your swimming pool according to manufacturer's directions.
- Chlorinate ornamental ponds or consider getting fish that will eat mosquito larvae.
- Remove unused items (like old tires) that can collect water.

## What kind of precautions should people take?

People should consider staying indoors at dawn, dusk and in the early evening,

which are peak mosquito biting times. If you are outdoors during these times, wear long-sleeved shirts and long pants. Wear light coloured clothing as it is less attractive to mosquitoes.

If you choose to use an insect repellent always read the entire label carefully and follow the label directions. The Pest Management Registry Agency has registered five different active ingredients for use in Canada as personal insect repellents.

**Icaridin:** It is a personal insect repellent for application on human skin. Health Canada states that its mode of action is not fully understood. One hypothesis is that icaridin affects arthropod olfactory neurons, resulting in their inability to detect host attractants. Another is that the repellent evaporates from the skin into the air, forming a layer of scent that camouflages the attractants (carbon dioxide and lactate) emitted by the human host, and therefore the arthropod cannot find the host.

**p-Menthane-3,8-diol and related oil of lemon eucalyptus compounds:** Like Icaridin, the mode of action is not known, but it appears the product may repel mosquitoes. This product cannot be used on children under three years of age. It can be applied two times per day.

**Soybean oil:** Products containing soybean oil provide protection against mosquitoes.

**Citronella oil:** These products provide between 30 minutes to two hours protection against mosquitoes. These products cannot be used on infants or toddlers.

**DEET (N,N-diethyl-meta-toluamide):** DEET was re-evaluated recently to ensure acceptable use and protection. The following safety tips are based on the Pest Management Regulatory Agency evaluation of DEET:

- Children under 6 months of age – DO NOT use personal insect repellents containing DEET. Use a mosquito net instead.
- Children aged 6 months to 2 years – the use of one application per day of DEET may be considered. 10% DEET or less should be used.
- Children between 2 to 12 years – 10% DEET or less should be used. DO NOT apply more than three times per day.
- People 12 years of age or older – use insect repellents containing no more than 30% DEET.

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