

Workplace Health and Safety Bulletin



West Nile Virus and Workers

What is West Nile virus (WNV)?

The West Nile Virus (WNV) is a mosquito-borne virus that can cause swelling and inflammation of the brain and spinal cord in horses, birds, and humans. The virus is named after the West Nile region of Uganda, where the virus first appeared in 1937. It has since spread widely throughout Africa and Eurasia. Since being identified in the New York area in 1999, WNV has established itself and is spreading across North America. Canada had its first confirmed human case in Ontario in 2002. By the following year, the virus made its way west and Albertans were affected.

Symptoms of West Nile virus

Incubation period is usually from 2 to 6 days, but can be up to 14 days. Most people who are infected will not have symptoms, and approximately 20 percent will develop noticeable symptoms and have West Nile Non-Neurological Syndrome. West Nile Non-Neurological Syndrome can start out as a flu-like illness. Symptoms can include headache, body aches, nausea, vomiting, skin rash and swollen lymph glands. Fever may or may not be present. These symptoms usually resolve within 3 to 6 days. Occasionally, a very small percentage (approximately 1 in 150) of those infected will develop West-Nile Neurological Syndrome. The symptoms of this severe infection include headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness and paralysis. Some or all of the symptoms may be present. There is no

Most people infected have either mild symptoms or no symptoms at all.

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specific treatment for West-Nile Virus infection and no approved vaccine to prevent the infection in humans. Any worker who suspects he/she has symptoms should seek medical attention.

How workers become infected with West Nile virus

Humans can become infected with WNV after being bitten by an infected mosquito. In areas where WNV has been detected, less than one percent of mosquitoes carry the virus. Fewer than one percent of individuals bitten by a mosquito infected with WNV will develop serious symptoms. This makes the risk of contracting the disease very low.

The primary reservoir of the virus is birds, especially members of the Corvid family which includes crows, blue jays, ravens and magpies. Mammals in general are very resistant to WNV infection. Humans, horses, donkeys and mules are the most susceptible mammals. Many other animals may be infected, including cattle, chickens, mountain goats, wolves and squirrels, but clinical disease is rare. House pets such as cats and dogs are not at risk for serious illness from WNV, and do not transmit infection to humans.

Workers at risk

Workers most likely to be infected with WNV are those who work outdoors and have a chance of being bitten by a mosquito infected with WNV. Mosquito surveillance programs have been identifying areas of the province at greatest risk.

Although the risk is very low, evidence indicates that skin-penetrating injuries involving objects contaminated with infected blood or body fluids are potential sources of infection. Public safety personnel, health care workers, veterinary and laboratory workers whose work includes the possibility of skin-penetrating punctures or lacerations are also at risk while handling WNV-infected tissue or fluids. WNV may also be transmitted through organ transplantation and blood transfusion.

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There is evidence to suggest that an infected pregnant woman can pass the virus to her unborn baby or the virus may be passed to the nursing infant through breast milk.

For the majority of workers, the risk of WNV infection through normal contact with WNV infected persons or animals is low.

Control measures for workers

Under Alberta's occupational health and safety legislation, employers are required to assess the work site and identify hazards before work begins. When a hazard exists, it is the employer's responsibility to eliminate the hazard or when this is not reasonably practicable, to control the hazard.

Preventing exposure is the best way to protect health. Employers can protect outdoor workers by taking steps to reduce the chances of workers being bitten by infected mosquitoes. Employers should develop a plan outlining how they will eliminate or control potential worker exposure to WNV. The plan should be explained to workers.

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The plan should include:

- identifying workers at increased risk of exposure to WNV,
- explaining the hazards to workers
 - how workers can be exposed
 - how the infection is transmitted
 - control measures to reduce the chance of becoming infected
 - the low risk of WNV infection
 - signs and symptoms of WNV, and
 - what to do if a worker shows symptoms of WNV

Scheduling work

When scheduling work, consider the following:

- avoid having workers work outdoors at dawn and dusk when mosquitoes are most active.
- minimize work near standing water when mosquitoes are most active.

Clothing

Where there is a risk of being bitten by mosquitoes and it is not possible to re-schedule work, workers should wear light coloured, long-sleeved shirts, long trousers and socks. Wearing high boots and taping trouser legs is also recommended. Wearing two layers of clothing makes it more difficult for mosquitoes to bite, but may contribute to heat stress. If practical, a mesh “bug hat” can be worn on the head to protect the head, face and neck. Special “bug jackets” made of netting material may also be useful.

Workers should wear light coloured, long-sleeved shirts, long trousers and socks.

Anyone handling birds or found-dead wildlife should wear gloves to protect themselves. The gloves, such as household rubber gloves, should provide a protective barrier that prevents blood or other body fluids from passing through them. Dead wildlife should not be handled with bare hands.

Using insect repellent

Insect repellent containing DEET or other similar substance should be applied to exposed, unbroken skin according to the manufacturer’s directions. DEET is the common name for N, N-diethyl-m-toluamide, the active ingredient in the most widely used insect repellent applied to the skin. DEET prevents biting insects from detecting the source of carbon dioxide – the gas naturally given off by our skin and in our breath – which is what attracts mosquitoes to humans. Mosquitoes are not killed, they simply cannot locate their prey for a period of hours.

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The concentration of DEET that should be used depends on the length of time protection is needed:

- DEET 30% provides 6.0 hours of protection
- DEET 15% provides 5.0 hours of protection
- DEET 10% provides 3.0 hours of protection
- DEET 5% provides 2.0 hours of protection

If a lesser concentration of DEET is used, repellent may need to be re-applied at intervals to continue providing protection. Repellent does not need to be sprayed on skin covered by clothing treated with DEET.

Controlling mosquitoes

If possible, eliminate sources of standing water at the work site as mosquito breeding takes place in standing water. Eggs laid grow to flying adults in as few as 4 days. Workers at sites near stagnant pools, ponds, watering troughs, irrigation ditches, rain barrels, lakes or sloughs are at risk of mosquito exposure. Mosquitoes are also found in wooded and shaded areas, grass and weeds.

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Larvicides – pesticides used to kill mosquito larvae – are available, but most are restricted to use by certified pesticide applicators. It is doubtful that any isolated attempts at mosquito larviciding will prove effective in reducing the mosquito population. This strategy works best in a large-scale planned program.

For more information



[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex5455](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex5455)

Agriculture and Rural Development – West Nile Virus





www.cdc.gov/niosh/topics/westnile

National Institute for Occupational Safety and Health – West Nile Virus

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