



WEST NILE VIRUS

Other names: WNV

CAUSE AND TRANSMISSION

West Nile virus (WNV) is an arbovirus, which is a group of viruses spread by arthropod vectors. In the case of WNV, it is transmitted through a bite from an infected mosquito.

SIGNIFICANCE

WNV primarily causes disease in wild birds, having the potential to infect over 250 avian species. It is most prevalent in corvids (e.g. crows, jays, magpies, ravens, etc.) but also commonly infects some common passerine species (e.g. house sparrow, house finch, common grackle, shrikes) and raptors (e.g. goshawks, eagles, red-tailed and Cooper's hawks). Since the introduction of WNV in North America populations of blue jays, American robins, chickadees, eastern bluebirds, tufted titmice, and house wrens have declined by as much as 30% in the US. House wren and blue jay populations did, however, return to pre-WNV levels by 2005. In Canada, deaths of loggerhead shrikes from WNV was cause for concern as the species' population was already in decline and was at the risk for extirpation in part of its Canadian range.

WNV has also been identified in wild mammalian (e.g. caribou, chipmunks, squirrels, skunks, and wolves) and herpetofaunal species. Symptoms do not develop in the majority of infected mammalian species. However, there appears to be greater potential for horses and humans to develop illness from infection. For this reason, WNV represents a potential public health risk since it can cause serious, life threatening disease in some individuals.

Since 2001, the CWHC's targeted surveillance program has tested over 62000 birds and identified over 4300 positive incidents of WNV.

CLINICAL SIGNS

In wild birds, WNV impacts the central nervous system causing neurological symptoms including loss of coordination, head tilts, tremors, weakness, and lethargy. Most corvids will die within three weeks of infection. Most mammals exhibit no symptoms, though humans and horses are more likely to exhibit flu-like symptoms, or may develop neurologic disease.

RISK TO HUMAN AND DOMESTIC ANIMAL HEALTH

Human infections are relatively rare, and the vast majority of individuals who do become infected are asymptomatic (70-80%). Some individuals (~20%) may experience flu-like symptoms including fever, headache, body aches, mild rash, and swollen lymph glands. In very rare cases (< 1%) individuals may experience serious symptoms including rapid onset of severe headaches, high fever, stiff neck, nausea/vomiting, difficulty swallowing, drowsiness, confusion, loss of consciousness, lack of coordination, muscle weakness, and/or paralysis.



Individuals experiencing mild symptoms often recover after approximately a week, while severe cases could take many months to recover, and in rare instances the disease can be fatal. In some cases people may experience chronic physical, mental, and/or functional effects post recovery.

In very rare cases the virus has the potential to also be transmitted among humans through the transference of blood or organs (i.e. blood transfusions and organ transplants), transmission during pregnancy from infected mothers to unborn children, through breast milk, and exposure to infected medical specimens.

When horses exhibit symptoms these often include fever, weakness or paralysis of hind limbs, impaired vision, weakness, pressing head against a wall or object for no apparent reason (head pressing), aimless wandering, seizures, inability to swallow, walking in circles, hyperexcitability, and/or coma.

MANAGEMENT AND PREVENTION

Surveillance and prevention are the primary means of managing West Nile virus. Early detection of the virus in wildlife and/or mosquitos can be used to alert medical practitioners to the potential for human infections. Preventative and treatment measures include:

- The use of insect repellents containing 20-30% DEET, picaridin, or IR3535 to avoid transmission through mosquito bites.
- Wear full length pants, shirts, long socks, and a mosquito jacket or head net in order to prevent mosquito bites.
- Install window screening and use air conditioning instead of opening windows to reduce potential for mosquitos to enter your house.
- Empty all sources of standing water around your home.
- Seek medical or veterinary assistance if you think a person or domestic animal is exhibiting symptoms of West Nile. There are no specific treatments, however, supportive care can be administered to improve survival and recovery.
- Report any sick or dead birds to the Canadian Wildlife Health Cooperative. Find your closest regional centre at: <http://www.cwhc-rcsf.ca/contact.php>

SUGGESTED READING

- http://www.cwhc-rcsf.ca/surveillance_data_wnv.php
- <http://blog.healthywildlife.ca/west-nile-virus-and-wild-birds/>
- <https://www.canada.ca/en/public-health/services/diseases/west-nile-virus/causes-west-nile-virus.html>



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