

Need more information?

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References:

1. OIE Manual of Diagnostic Tests and Vaccines for Domestic Animals, Chapter 2.1.20
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2. The website of Center for Disease Control
<http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>
3. California department of public health
<http://www.westnile.ca.gov/resources.php>
<http://www.west-nile-virus-prevention.com/index.html>
4. Health Canada
<http://www.hc-sc.gc.ca/hc-ps/dc-ma/wnv-vno-eng.php>

Key Facts

- The primary host of West Nile Virus is birds. Mosquitoes spread the virus to other birds and incidentally to humans and horses.
- In the Camargue area of France, West Nile fever first reappeared in 2000 after an absence of 35 years. It has affected humans and horses, and has been found in wild and domestic birds.
- West Nile fever spread across the continent of North America in less than 10 years after first being detected in New York in 1999. It is a good example of an emerging disease.
- Most West Nile Virus infections are inapparent, but severe illness and mortality occur in horses, humans and birds.

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West Nile Fever

What is West Nile Fever?

West Nile fever is a disease caused by West Nile Virus (WNV), which is a *flavivirus* related to the viruses that cause St. Louis encephalitis, Japanese encephalitis, and yellow fever. It causes disease in humans, horses, and several species of birds. Most infected individuals show few signs of illness, but some develop severe neurological illness which can be fatal.

West Nile Virus has an extremely broad host range. It replicates in birds, reptiles, amphibians, mammals, mosquitoes and ticks.

West Nile Fever is a disease listed in the World Organisation for Animal Health (OIE) *Terrestrial Animal Health Code 2011* (Chapter 8.6) and must be reported to the OIE (Chapter 1.1 – notification of diseases and epidemiological information).



Where is the disease found?

First isolated in Uganda in 1937, West Nile Virus was described as the cause of a West Nile fever epidemic in humans in Israel in 1951. The role of mosquitoes in viral transmission was clearly delineated in Egypt in the 1950s. Wild birds were identified as the reservoir of the virus around the same time. Cases of West Nile fever in horses were reported several years later. The virus was first associated with disease in domestic avian species in 1997, when flocks of young geese in Israel were affected with a disease causing paralysis.

In August 1999, the disease appeared for the first time in the Western Hemisphere, most likely through the importation of an infected bird, causing deaths in wild and zoo birds, horses, and humans in the New York City area. In less than 10 years it spread across all of North America including Mexico and Canada, and entered South America.

Since 1998, outbreaks of equine West Nile encephalitis have been reported from Italy, France, and North America. Surveys in parts of Europe and the Middle East have shown that up to a third of horses tested have been exposed to the virus even in the absence of clinical disease.

How is the disease transmitted and spread?

The reservoir of the virus is in birds. Mosquitoes become infected when they bite an infected bird ingesting the virus in the blood. The mosquitoes act as carriers (vectors) spreading the virus from an infected bird to other birds and to other animals. Thus, there is a cycle of the virus circulating from bird to bird by way of mosquito bites, being amplified at each cycle. Some bird species are more susceptible to the virus than others, especially the crow family (*corvidae*). Finding dead crows can therefore signal the presence of West Nile disease so surveillance programs often target dead crows.

Infection of other animals (e.g. horses, and also humans) is incidental to the cycle in birds since most mammals do not develop enough virus in the bloodstream to spread the disease.

What are the clinical signs of the disease?

West Nile fever is primarily a disease of humans, equines and some birds.

In horses, clinical signs of the neurologic disease caused by West Nile Virus may include loss of appetite, depression, stumbling, muscle twitching, partial paralysis, impaired vision, head pressing, teeth grinding, aimless wandering, convulsions, circling, and an inability to swallow. Weakness, usually in the hind limbs, is sometimes followed by paralysis. Coma and death may occur. Fever has been seen in some but not all cases.

Many species of birds are resistant to the disease. Susceptible birds such as geese show various degrees of neurologic involvement ranging from lying down to leg and wing paralysis. They are either reluctant or unable to move when disturbed, and may be uncoordinated.

Mortality rates of 20-60% have been reported in geese.

There are no specific treatments for the disease other than supportive care for the patient. Most animals or people affected recover spontaneously.

How is the disease diagnosed?

Clinical symptoms as described above may hint at the presence of West Nile fever. The diagnosis is confirmed by finding the antibodies in the blood of infected animals or persons. OIE recommendations can be found at Chapter 2.1.20 of the *Manual of Diagnostic Tests and Vaccines for Domestic Animals* (2011).

West Nile Fever

What is being done to prevent or control this disease?

West Nile fever is a disease listed by the OIE requiring member countries to report its occurrence.

Key to preventing the spread of West Nile fever is to control mosquito populations. Horses should be protected from exposure to mosquitoes. Likewise, people should avoid exposure to mosquitoes especially at dusk and dawn when they are most active, use insect screens and insect repellents, and limit places for mosquitoes to breed.

There is a vaccine for horses. In areas where the disease is common, vaccination of horses is considered to be an effective control measure. The international standards for the use of West Nile vaccine can be found in Chapter 2.1.20 of the OIE *Manual of Diagnostic Tests and Vaccines for Domestic Animals*.

Surveillance programmes in wild or sentinel birds allow the competent authorities to take appropriate measures to protect animals and people. As birds in the crow family are very susceptible, these programmes often encourage people to report dead crows for testing.

What is the public health risk associated with this disease?

West Nile fever is a zoonosis (an animal disease affecting humans). People are susceptible to the disease, however most have no symptoms. About twenty percent have mild flu-like symptoms of fever, headaches and rashes. In rare cases it can cause encephalitis. However, less than one percent of infected persons will go on to develop severe symptoms. In 2007 in the United States 121 persons died due to West Nile fever.

