

## WEST NILE VIRUS (WN virus)



# West Nile Virus

South Dakota Animal Industry Board

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### → What is West Nile Virus?

West Nile is a Flavivirus. It is a member of the Japanese encephalitis virus complex that contains St. Louis encephalitis (SLE), Japanese encephalitis, Kunjin, and Murray Valley encephalitis viruses, as well as others.

### → When was West Nile first found?

West Nile virus was first isolated in the West Nile province of Uganda in 1937. The first recorded epidemics occurred in Israel during 1951-1954 and in 1957. The largest recorded epidemic caused by WN virus occurred in South Africa in 1974. A large human outbreak of WN encephalitis occurred in Israel in 2000. European epidemics of WN encephalitis have occurred in southern France in 1962, in southeastern Romania in 1996, and in south central Russia in 1999. European equine outbreaks also have occurred in Italy in 1998 and in France in 2000. The first time WN virus was seen in the Western Hemisphere was 1999 in New York. Now it has been found in all 48 contiguous United States.

### → How did WN virus get to the US?

It is not known when or how WN virus was introduced to North America. It is possibly from international travel of infected persons to New York, importation of infected birds or mosquitoes, or migration of infected birds.

### → What species may be infected?

WN virus can infect a wide range of Vertebrates (animal with bony skeleton). In humans it usually produces either asymptomatic infection or mild febrile disease, sometimes accompanied by rash, but it can cause severe and fatal infection in a small percentage of patients.

WN virus can infect many animal species, including ruminants, camels, dogs, non-human primates, rodents, bats, pigs, rabbits, and amphibia. Clinical disease is most important in birds, horses, and humans.

### → How is WN virus maintained in the US?

Principally, mosquitoes of the genus Culex are found to contain the virus. There is strong evidence to support the overwintering of the virus in the mosquito as a means of maintaining an endemic mosquito population. The exact means of harboring the virus, whether by transovarial vertical transmission to offspring or by mosquitoes taking a blood meal just prior to hibernation, is not well known.

### → How is WN virus transmitted?

An infected Culex mosquito obtains a blood meal from a bird. During this feeding process virus is transferred to the bird, the bird develops infection with viral particles multiplying and circulating in the blood system of the bird. As other mosquitoes feed on the infected bird, they too become infected with WN virus.

→ **What species of birds are infected?**

Virtually all species of birds have become infected with WN virus in the US since 1999. Crows, blue jays, hawks, robins, sparrows, warblers, cormorants, black birds, starlings, gulls, pigeons, finches, owls, to name a few.

→ **How are humans and horses infected?**

The same way – by the bite of infected mosquitoes. When mosquitoes bite or feed on the horse or human, the virus is injected into the blood stream. The virus multiplies and may cause illness.

→ **What symptoms and signs of WN virus infection will you see in the horse?**

WN virus infection in horses may be sub-clinical or may produce diseases ranging from mild peripheral neuritis (central nervous system dysfunctioning) to encephalitis (inflammation of the brain).

The incubation period appears to be 5 to 15 days. Clinical signs reported include hind limb and forelimb paralysis, difficulty rising, hyperesthesia, altered chewing-swallowing ability, hyper-responsiveness to sound, muscle twitching on the nose and triceps region, drooping lower lip, stupor, falling to the knees, blindness, seizures and death. Fever has been reported in less than 25% of affected horses.

Clinical signs may be evident for 5 to 14 days prior to death. Most affected horses recover from this infection. Horses showing less severe clinical signs have the best chance for recovery, which may last a few weeks to months.

→ **What other diseases show the same clinical signs?**

Other horse diseases showing some of these clinical signs are Rabies, botulism, equine protozoal myeloencephalitis, equine herpes virus and other encephalitides such as sleeping sickness (WEE, EEE, and VEE). Rule-outs are necessary, as WN virus may look similar to commonly diagnosed neurologic diseases. Rabies must always be a priority concern in central nervous system abnormalities.

→ **When should I look for WN virus?**

West Nile virus infection in humans and horses have peaked in late summer and fall (the peak mosquito season).

→ **How do I know if my sick horse has WN virus?**

Contact your veterinarian to examine the animal. Blood samples can be drawn. Cerebral-spinal fluid can be obtained. Various tests are available for WN virus. Your veterinarian needs the horse vaccination history to help the lab interpret the results. Postmortem sampling uses brain tissue to determine WN virus infection.

→ **Can my horse be treated for WN virus infection?**

There is no standard treatment regimen for horses. Contact your veterinarian to administer support care in hopes of recovery.

→ **Is there a vaccine available?**

Yes, vaccines are available for horses. Annual booster injections should be repeated as label prescribed. Contact your veterinarian about the vaccine for your horse(s).

→ **Will my pets and other farm animals become infected?**

Studies to date indicate these animals are not susceptible to WN virus.

→ **Can I get WN virus by caring for an infected horse?**

There is no evidence of horse to human nor horse to horse transmission of WN virus. Horses are not considered contagious and are therefore NOT quarantined.

→ **How do I keep mosquitoes away?**

Reducing the mosquito population involves reducing their breeding environment.

- ◆ Dispose of all non-essential water-holding containers
- ◆ Drain or remove all discarded tires
- ◆ Drain water ponds, pools, and stagnant seeps
- ◆ Clean vegetation from edges of ponds
- ◆ Minimize time outdoors between dusk and dawn
- ◆ Use mosquito repellents according to label directions
- ◆ Provide screened housing
- ◆ Turn over water holding containers such as garbage cans, buckets, toys, unused feeders, wheel barrows, wagons, bird bath, wading pools, potted plant trays, etc.
- ◆ Clean clogged gutters

**For more information contact:  
The South Dakota State Veterinarian's Office  
605-773-3321  
Or  
Visit their website:  
[www.state.sd.us/aib/](http://www.state.sd.us/aib/)  
Or  
Visit the USDA website:  
[www.aphis.usda.gov/vs/nahss/equine/wnv/](http://www.aphis.usda.gov/vs/nahss/equine/wnv/)**