

West Nile Fever

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West Nile fever, which is caused by the West Nile virus (WNV), is a viral disease seen primarily in birds, horses and people. The virus circulates in nature between mosquito vectors and bird reservoir hosts, with humans and horses as accidental or dead-end hosts.

A dead-end host is incapable of transmitting the virus to another host; however, the dead-end host may develop the disease once bitten by an infected mosquito. Outcomes of infection range from the common subclinical case (no apparent symptoms) to the rare fatality.

Experiments have shown that the virus can survive in overwintering mosquitoes. Human cases in the United States peaked in 1999 and 2000. West Nile virus has become endemic or resident in our state, and protecting yourself and your horse from WNV should be a routine management practice.

The Disease in Humans

- Suspect cases include patients over the age of 50 with fever, illness and neurologic symptoms, especially if associated with gastrointestinal complaints or muscle weakness.
- Most infections are mild: fever, headache, body aches, skin rash, swollen lymph nodes.
- Some infections are more severe: headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, death (rare).
- Various blood and molecular tests are available to detect and confirm the infection.
- Pregnant women are not known to be at increased risk of infection.

The Disease in Horses

- Clinical disease does not always occur.
- Handlers may see stumbling, weakness and rear limb incoordination.
- Fever is not always present.
- Mildly affected horses can recover in two to seven days.
- The virus can cause acute, fatal neurologic disease that affects the brain and spinal cord.
- Horses that survive appear to recover fully and carry some immunity to reinfection.
- The disease can be diagnosed with a blood sample from a suspect horse.
- Vaccines are available. Consult your veterinarian about which one to use and how to use it.
- Supportive treatments are given to affected animals, but no curative treatment is available for the viral infection.
- Many horses will survive if given aggressive supportive therapy.
- Do not destroy an animal simply because it has antibody to WNV; many horses never develop clinical illness.

Rabies always should be a consideration in horses with neurological symptoms. Work with your veterinarian in determining if this is a possibility.

The Disease in Birds

- The infection affects a variety of organ systems, but primarily the brain and heart.
- WNV has been reported in many species of birds, but corvids (crows and jays) appear to be particularly susceptible in North America.
- Most birds show no clinical illness.
- Migratory bird patterns likely play an important part in the spread of the disease; the stress of migration makes viral replication easier, and interhemispheric (between Northern and Southern) migratory patterns, displacement of birds by tropical storms, and legal and illegal bird importation all contribute to viral movement.
- Chickens develop high levels of antibody once infected but do not carry large amounts of virus in the blood. They are poor transmitters of the disease.
- House sparrows are implicated as an important reservoir host because they develop a high level of virus in the blood and may serve as a source of virus for mosquitoes.
- Experimentally, 3-week-old Canada geese can develop a high enough level of virus in the blood to infect mosquitoes, but adults do not. These goslings show depression, weight loss, death.
- The virus circulates between birds and mosquitoes. Mosquitoes feed on infected birds and may a) infect another bird and maintain the virus in nature or b) transmit it to humans and horses (dead-end host).

Prevention

(from NDSU Extension Service publication E-472, "Mosquito Management")

Steps to consider in managing mosquitoes near buildings:

- Remove water-holding containers.
- Trim shrubs and greenery.
- Cover trash containers.
- Clean gutters and drain flat roofs.
- Empty wading pools frequently.
- Properly care for backyard pools.
- Change water in bird baths and fountains.
- Consider stocking ornamental ponds with fish.
- Fill in or drain low areas to eliminate puddles.
- Ensure proper drainage (drains, ditches, culverts).
- Repair leaky plumbing.
- Limit activity at dawn/dusk/early morning; mosquitoes are most active during these time periods.
- Implement mosquito control measures; mosquitoes are attracted by perspiration, warmth, body odor, carbon dioxide and incandescent light.
- Use insect repellents.
- Wear long-sleeved shirts and pants.
- Spray clothing with repellents (permethrin or DEET).
- Spray skin with repellent (35 percent DEET).
- Assure tight screening on homes.

The only way a person, horse or bird can become infected with WNV is through the bite of an infected mosquito. Even in endemic areas, less than 1 percent of mosquitoes are infected, and less than 1 percent of people bitten by an infected mosquito become infected.

The virus is not transmitted from person to person, horse to person, horse to horse or bird to person.

For more information on this and other topics, see www.ag.ndsu.edu

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