

BUREAU OF ANIMAL HEALTH AND DIAGNOSTIC SERVICES

**Facts About West Nile Virus**

**1. What is West Nile encephalitis?**

West Nile encephalitis is an inflammation of the central nervous system, which is caused by infection with West Nile Virus. Prior to 1999 West Nile Virus was found only in Africa, Eastern Europe, and West Asia. In August of 1999 it was identified in the United States, and has spread across most of the country since then.

**2. How do people or animals become infected with West Nile Virus?**

Certain species of birds act as reservoirs for the virus, and certain species of mosquitoes act as vectors. People and animals can become infected from the bite of mosquitoes that are infected with the virus. Mosquitoes may pick up the virus when they bite, or take a blood meal, from wild birds that are infected with West Nile Virus. Those mosquitoes may then transmit the virus to people and other animals when biting to take a blood meal.

Person-to-person transmission has also been documented in 2002 through:

- Blood transfusion and organ donation
- Breast milk
- Pregnancy (mother to child prior to birth)
- Infection in 2 laboratory technicians through the skin from needle stick or scalpel cut while working with infected birds

**3. What animals can become infected with WNV?**

WNV has been identified in many animals, including but not limited to cattle, dogs, cats, and squirrels, since it first came to the United States. Horses and birds seem to be the most susceptible to illness from infection, but certain individuals of other species may also become ill. For a complete list of species in which WNV has been found, visit the National Wildlife Health Center website at [NWHC: Wildlife Species Affected by West Nile Virus](#)

**4. Does infection always lead to illness?**

Infection with West Nile Virus does not always lead to signs of illness in people or animals. Horses appear to be a species that is susceptible to illness after infection with the virus. Horses may become ill after the virus infects the central nervous system, causing symptoms of encephalitis. Clinical signs of encephalitis in horses (and in some other species) may include a general loss of appetite and depression, in addition to any combination of the following signs:

<input type="checkbox"/> fever	<input type="checkbox"/> aimless wandering
<input type="checkbox"/> weakness of hind limbs	<input type="checkbox"/> convulsions (seizures)
<input type="checkbox"/> paralysis of hind limbs	<input type="checkbox"/> inability to swallow
<input type="checkbox"/> ataxia (weakness)	<input type="checkbox"/> walking in circles
<input type="checkbox"/> impaired vision	<input type="checkbox"/> hyperexcitability
<input type="checkbox"/> down, trouble rising	<input type="checkbox"/> coma
<input type="checkbox"/> head pressing	

It is important to note that not all horses or other animals with clinical signs of encephalitis have West Nile encephalitis. Certain other diseases can cause an animal to have symptoms similar to those resulting from infection with West Nile Virus. If you are concerned that your animal may be exhibiting signs of encephalitis, please contact your veterinarian. Laboratory tests are necessary to confirm a diagnosis.

**5. Is treatment available for West Nile encephalitis in animals?**

There is no specific treatment for West Nile encephalitis. Supportive veterinary care is recommended and is often successful. It is important to diagnose WNV because infection is an indication that mosquitoes carrying the virus are in the area and need to be eliminated.

**6. How do I get my animal tested for WNV?**

Testing is available for horses at the Pennsylvania Veterinary Laboratory in Harrisburg. There is no charge for horses showing signs of illness consistent with WNV. A fee of \$4.00 will be charged at PVL for horses that are not ill. Testing for livestock is available at the National Veterinary Services Laboratory in Iowa, and testing for livestock and pets is available at Cornell Animal Diagnostic Laboratory. There will be charges for testing at these laboratories; have your veterinarian contact the laboratories for information concerning fees and submission of samples.

**7. Is a vaccine available to protect against infection with West Nile Virus?**

A WNV vaccine for horses is available through veterinarians. Because it is impossible to distinguish between vaccinated and naturally infected horses with current testing methods, it is important that vaccination records be kept updated for each horse that receives the vaccine. Horses vaccinated against Eastern, Western, and Venezuelan equine encephalitis **are not** protected against infection with West Nile Virus.

## 8. Should I vaccinate my horses?

Discuss this with your veterinarian. Although a small number of horses reportedly vaccinated according to manufacturer's directions did become ill from infection with WNV in 2002, the majority of sick horses were not vaccinated, or were not vaccinated properly. Reportedly, the vaccine is expected to reduce the severity of illness in those cases for which it does not provide complete protection.

## 9. How many horses have been affected by West Nile Virus?

In 2002, more than 14,000 cases of WNV were reported in horses in the United States. Many of these horses recovered. The majority of these cases were reportedly not vaccinated against WNV. In Pennsylvania, 97 cases were reported in 2002. It is thought that many more horses were infected without showing any clinical symptoms of disease.

## 10. How can I protect my animals against infection with West Nile Virus?

Vaccination of horses is not a guarantee of protection against infection, and does not offer any protection for other animals or people. **The best method of prevention of infection with West Nile Virus for people and animals is to reduce the risk of exposure to the mosquitoes that may carry the virus.** Reducing the risk involves eliminating mosquito breeding sites to reduce the number of mosquitoes. Mosquitoes lay eggs and develop in stagnant water, so reduction of these sites involves eliminating stagnant water sources. To reduce the number of sites:

- a. Dispose of tin cans, plastic containers, buckets, ceramic pots or other unwanted water-holding containers on your property.
- b. Pay special attention to discarded tires. Tires are important mosquito breeding sites.
- c. Drill holes in the bottom of recycling containers left outdoors. Containers with drainage holes located only on the sides collect enough water to act as mosquito breeding sites.
- d. Clean clogged roof gutters every year. Millions of mosquitoes can breed in roof gutters each season.
- e. Turn over plastic wading pools when not in use.
- f. Turn over wheelbarrows and don't let water stagnate in birdbaths.
- g. Empty and refill outdoor water troughs or buckets every few days.
- h. Aerate ornamental pools or stock them with fish. Water gardens can become major mosquito producers if they are allowed to stagnate.
- i. Clean and chlorinate swimming pools when not in use. Mosquitoes may even breed in the water that collects on pool covers.
- j. Use landscaping to eliminate standing water that collects on your property, especially near manure storage areas. Mosquitoes may breed in any puddle that lasts for more than four days.

*Additional steps can be taken to reduce the likelihood of exposure of animals to adult mosquitoes:*

- a. Avoid turning on lights inside the stable during the evening and overnight hours. Mosquitoes are attracted to yellow incandescent bulbs.
- b. If light is needed near the stable, place incandescent bulbs outside the stable to attract mosquitoes away from the horses. Black lights (bug zappers) don't attract mosquitoes well.
- c. Reduce the number of birds in and around the stable area. Eliminate roosting areas in the rafters of the stable. Certain species of wild birds are thought to be the main reservoir for the virus. (Although pigeons have been shown to become infected with West Nile Virus, they do not appear to act as reservoirs and therefore don't transmit the virus to mosquitoes).
- d. Periodically look around the property for dead birds, such as crows. Any suspicious birds should be reported to the Pennsylvania Department of Health at 1-877-PA-HEALTH. Use gloves to handle dead birds and place the birds in plastic bags, as directed by the Department of Health.
- e. Topical preparations containing mosquito repellents are available for horses. Read the product label before use.
- f. Fogging of stable premises can be done in the evening to reduce mosquitoes; read directions carefully before use.
- g. For pets, try to keep them indoors during peak mosquito activity times (dusk and dawn). Don't rely on flea products to repel mosquitoes. Try to keep pets from eating dead animals.

**For help in assessing mosquito exposure risks on your property and for suggested control practices, please contact your county extension office, county Department of Environmental Protection, county Department of Health, or mosquito and pest control company.**

**11. Can an animal infected with West Nile Virus infect other animals?**

There is no evidence that infected animals (other than birds) transmit the virus to other animals, people, or mosquitoes under naturally occurring conditions.

**12. What are the symptoms of West Nile Virus infection in people?**

Mild infections may be common and include fever, headache, and body aches, often with a skin rash and swollen lymph glands. In those susceptible to disease, signs can be severe and may include headache, high fever, weakness, neck stiffness, stupor, disorientation, coma, tremors, convulsions, paralysis, and possibly death.

**13. Is treatment available for West Nile encephalitis in people?**

There is no specific treatment. In severe cases, hospitalization and intensive supportive therapy may be needed. Contact the Department of Health for more information.

**14. Have many people been affected by infection with West Nile Virus?**

In 2002, more than 3,000 cases and 200 deaths attributed to WNV infection were reported in the United States.

#### **15. Do birds infected with the virus die or become ill?**

Many species of birds appear to be susceptible to infection with West Nile Virus, and may act as reservoirs of the virus, allowing mosquitoes to become infected when taking blood meals from these birds. Certain species, including crows and blue jays, often become ill and die as a result of infection. WNV has been identified in more than 110 species of birds.

#### **16. Can ticks spread West Nile Virus?**

Some ticks in Europe and Asia have been found to be infected with the virus. It is not yet known if ticks in the United States can spread the virus.

#### **17. What is Pennsylvania doing to monitor West Nile Virus?**

In response to the identification of WNV in the United States, and particularly in Pennsylvania, several state agencies, local governments, and health professionals have launched a plan to locate and control mosquitoes that may carry the virus. Pennsylvania's plan is focused on testing certain mosquito species, dead wild birds, and certain animal populations for the virus, as well as monitoring public health, to provide information about the location of the virus. Along with the monitoring activities, mosquito control measures may be used when necessary to reduce the risk of infection to animals and people. The Department of Agriculture is cooperating with the Departments of Health and Environmental Protection to find mosquitoes that may spread the virus in PA. WNV has been declared a reportable disease. If a positive horse or other animal is identified, DEP will contact the owner to set up a visit so that they can help the animal's owner evaluate the farm or home property for mosquitoes and mosquito breeding areas. Control measures may be carried out if it is necessary to reduce the risk. This risk analysis and mosquito control is free and may help prevent additional cases of WNV in the state. DEP has been alerted that owner information must be kept confidential.

#### **18. Where can I get more information about West Nile Virus?**

For more information:

- United States Department of Agriculture (717) 782-3442  
<http://www.aphis.usda.gov/oa/wnv/index.html>
- Pennsylvania Department of Agriculture (717) 783-6897 <http://www.pda.state.pa.us/>.
- Department of Health 1-877-PA-HEALTH (1-877-724-3258).  
<http://www.westnile.state.pa.us/>
- CDC  
<http://www.cdc.gov/ncidod/dvbid/westnile> ([CDC West Nile Virus Home Page - Division of Vector-Borne Infectious Diseases \(DVBID\)](#))
- National Wildlife Health Center  
[http://www.nwhc.usgs.gov/research/west\\_nile/west\\_nile.html](http://www.nwhc.usgs.gov/research/west_nile/west_nile.html) ([NWHC: West Nile Virus Emerges in North America](#))