Questions and Answers About West Nile Virus

Q. What is West Nile virus?
A. West Nile is a mosquito–borne virus that was first detected in the United States in 1999. The virus, which causes encephalitis, or inflammation of the brain, has been found in Africa, Western Asia, the Middle East, the Mediterranean region of Europe, and, most recently, in the Eastern United States. Mosquitoes acquire the West Nile virus (WNV) from birds and pass it on to other birds, animals, and people. While humans and horses may be infected by the virus, there is no documentation that infected horses can spread the virus to uninfected horses or other animals. Migrating birds appear to play a role in spreading the disease.

Q. Why is the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) involved?
A. APHIS is the agency within USDA responsible for protecting the health of U.S. livestock and poultry, which can both be affected by this virus. APHIS' National Veterinary Services Laboratories (NVSL), the only Federal facilities in the United States dedicated to the diagnosis of both domestic and foreign animal diseases, provide support for agency programs designed to protect the health of the Nation's livestock and poultry. NVSL uses state–of–the–art diagnostic techniques to rapidly determine what disease agent is present and what risk it presents to U.S. animal health. Because WNV was killing birds at the Bronx Zoo in 1999, zoo officials went to NVSL for assistance in isolating the agent causing the outbreak.

Q. How did APHIS help the U.S. Department of Health and Human Services' Centers for Disease Control and Prevention (CDC) identify the virus?
A. On September 14, 1999, NVSL isolated an unknown virus from neurological and other tissues of flamingos and tragopans (pheasants) from the Bronx Zoo and crows from the New York City area. NVSL sent samples of the isolated virus to CDC for identification. On September 27, 1999, CDC officials announced that the virus was very similar to that of WNV, previously unseen in the Western Hemisphere. CDC later confirmed the virus as West Nile and connected it to the encephalitis outbreak that killed 7 people and infected at least 55 others in the New York City area in 1999. The virus has since been identified in horses, mosquitoes, or wild birds in at least 43 States and the District of Columbia.

Q. What other monitoring activities is APHIS undertaking?
A. The CDC, the U.S. Geological Survey's National Wildlife Health Center, and APHIS are cooperating to survey for WNV in a wide range of wild birds. This Federal working group, in conjunction with relevant State agencies, gathers and analyzes surveillance data to define the extent to which the virus may be distributed in mosquito and bird populations in the United States. In addition, APHIS will continue to monitor horses for encephalitis that could be caused by WNV.

Q. What other actions is USDA taking?
A. APHIS officials are working with Federal, State, and local health and agricultural officials to coordinate efforts to ensure that future WNV outbreaks do not become a significant animal health problem. APHIS developed a diagnostic test for the virus, conducted inoculation studies to determine the effects on U.S. livestock, and developed a virus surveillance plan. USDA's Agricultural Research Service conducted WNV inoculation studies with turkeys. NVSL did the same with chickens, and NVSL's Foreign Animal Disease Diagnostic Laboratory conducted studies with horses. Only chickens showed the likely potential to produce enough virus in their blood to infect mosquitoes. Each species developed antibodies after being inoculated, and encephalitis was not observed in any of the animals. Although no clinical signs of the virus have been reported in U.S. poultry, APHIS will treat all situations where birds show neurological signs as having the potential for hosting a foreign animal disease. Such a response allows NVSL to rule out exotic diseases, such as Newcastle disease and highly pathogenic avian influenza, before testing for WNV.

Q. Was the WNV outbreak the result of a deliberately introduced attack?
A. There is no reason to believe that WNV was deliberately introduced into the United States.

Q. Are animals other than birds and horses affected by the virus?
A. Experimental tests suggest that sheep, chickens, and pigs could be affected by WNV. Two cases of illness caused by WNV were detected in sheep in the United States in 2002. In tests, the virus caused pregnant sheep to abort. Cows may show antibodies to the virus, which means they have contracted it without showing any clinical signs or becoming ill.

Q. What signs of illness do horses exhibit when infected with the virus?
A. NVSL positively identified WNV as the cause in horses showing signs of encephalitis. Clinical signs of the virus in horses included ataxia (stumbling or incoordination), weakness of limbs, partial paralysis, or death. A fever was not often observed.

Q. What precautions can be taken to protect animals from WNV?
A. Preventing animals' exposure to mosquitoes is essential. The best way to do this is by removing any potential sources of water in which mosquitoes can breed. Dispose of any water–holding containers, including discarded tires. Drill holes in the bottom of containers that are left outside. Clean clogged roof gutters on an annual basis. Turn over wading pools or wheelbarrows when not in use, and do not allow water to stagnate in bird baths. Aerate ornamental pools or stock them with fish. Clean and chlorinate swimming pools that are not in use and be aware that mosquitoes can breed in the water that collects on swimming pool covers. Use landscaping to eliminate standing water that collects on your property; mosquitoes can breed in any puddle that lasts more than 4 days. Thoroughly clean livestock–watering troughs on a monthly basis. Local mosquito–control authorities can help in assessing the mosquito–breeding risks associated with your property.

Pet birds can also be protected by limiting their exposure to mosquitoes. In areas reporting large numbers of wild bird deaths, investigations are conducted and samples collected to determine the cause of the deaths. People finding dead wild birds should notify local health officials. No treatment is currently available for WNV; however, APHIS Veterinary Services is working to assist all companies interested in producing a vaccine. On August 1, 2001, USDA issued a conditional license to Fort Dodge Animal Health of Fort Dodge, IA, a division of Wyeth, for a vaccine intended to aid in the prevention of the disease in horses. In November 2002, a full license was granted for this product. Use of this product is restricted to licensed veterinarians.

Q. Must horses affected by the virus be euthanized?
A. No. Because horses are incidental hosts, it is highly unlikely that mosquitoes feeding on an infected horse could ingest enough of the virus to transmit it to other animals. Horses are humanely euthanized only when the viral infection is so severe they will not be able to recover. For those that survive, a full recovery is likely. About two out of every three horses that become ill will survive.

Q. Will horses affected by the virus be quarantined?
A. No. Since infected horses do not appear to be carriers for the disease, it is unlikely a quarantine would be necessary.

Q. What was the horse mortality rate in the affected area?
A. In 2002, more than 15,000 equine were diagnosed with cases of illness caused by WNV. Of those, it is estimated that approximately 33 percent died or were euthanized. This does not rule out the possibility that other horses may have been infected with the virus. It is likely that many horses recover from infection without clinical illness.

Q. Are dogs and cats affected by the virus?
A. It is unlikely that dogs or cats will show signs of clinical illness, although any mammal or bird could potentially be exposed to the virus through mosquito bites. A survey of blood samples from dogs and cats in the New York City epidemic area showed a low infection rate.
