



July 13th, 2011

Veterinary Alert # 3: West Nile Virus in New York City

- The first West Nile virus (WNV) positive pool of mosquitoes was reported from the neighborhood of Eltingville in Staten Island on July 6, 2011.
- The New York City Department of Health and Mental Hygiene (DOHMH) reminds all veterinarians to be aware of West Nile virus (WNV) in companion animals during peak mosquito season (July 1 – October 31).
- In 2010, WNV was confirmed in mosquito pools and humans in all five boroughs of New York City (NYC).
 - 42 human cases of WNV were confirmed among New York City residents, with 1 death.
- For updated surveillance data and more information on WNV, visit our website at www.nyc.gov/health/wnv.

Dear Veterinary and Animal Health Colleagues:

The Department of Health and Mental Hygiene (DOHMH) is sending this letter to remind veterinarians to be aware of West Nile virus (WNV) in companion animals during peak mosquito season, which usually lasts from July 1st to October 31st. This alert provides updated information about WNV surveillance findings for last year, 2010, and information about the virus as it relates to pets.

Surveillance Findings for 2010: The DOHMH conducts surveillance for WNV each year during peak adult mosquito season. Laboratory testing of mosquitoes collected from traps set throughout New York City begins in the spring. The first positive pool of the 2011 season was reported from the Eltingville neighborhood of Staten Island on July 6, 2011.

In 2010 a total of 393 mosquito pools and 42 humans tested positive for WNV (compared to 2009, with 40 mosquito pools and 4 humans). The 2010 season was one of the most active WNV seasons in NYC history (surpassed only by 1999) with both human cases and positive mosquito pools being reported from all five boroughs (see Table 1). There were no reports of WNV in animals. A map indicating areas of the City with WNV activity in either mosquitoes or humans in 2010 by zip code is included in Map 1.

Table 1: 2010 West Nile Virus Positive Results Summary

WNV Positive Results	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Total
Mosquito Pools	77	36	19	164	97	393
Human Cases	7	6	6	14	9	42

New York State (excluding NYC) reported 87 human cases, all of which occurred in Nassau, Suffolk and Westchester counties, and 514 mosquito pools most of which were from the same counties with human cases as well as Rockland, Erie, Madison, Orange and Onondaga Counties.

Clinical Illness in Animals: Sero-surveys conducted in New York City of healthy dogs and in Louisiana and China of healthy dogs and cats indicate that dogs and cats are frequently infected with WNV, although most remain asymptomatic.^{1,2,3} While disease from WNV infection in dogs and cats is extremely rare, there are

published reports of naturally occurring WNV illness in dogs⁴⁻⁶ and mild illness in cats when experimentally inoculated.⁶ In some cases, cats infected with WNV may show mild, non-specific symptoms such as slight fever and mild lethargy during the first week after infection. In the same study, cats became infected after consuming WNV infected mice. None of the cats became clinically ill. There is no specific treatment for WNV infection in dogs or cats. Treatment is supportive. While dogs, cats and horses can become infected and develop viremia, they are not thought to play a role in amplification or spread of the virus, as the concentration of virus is not considered sufficiently high for subsequent transmission to a mosquito. Symptoms of WNV infection in horses include ataxia, knuckling, head tilt, muscle tremors, and recumbency with inability to rise. Fortunately, there are vaccines available to prevent illness but only for horses. And finally, recent findings from a research study suggest that macaques are resistant to infection with WNV⁷.

Epidemiology of WNV in Animals: In NYC, the following animals have tested positive for WNV since 1999: a harbor seal, equids, squirrels, bats and a chipmunk. In 1999, one stray kitten (in New Jersey) was found with clinical neurologic disease attributed to WNV infection. Since clinical disease due to WNV in mammals (with the exception of horses) appears to be very rare, it is important to consider more common causes of neurologic diseases, especially rabies virus, which is enzootic in NYC.

Human Disease: Most infections are asymptomatic. Approximately 20% of infected persons will develop West Nile fever; symptoms may include fever, headache, myalgia, fatigue, muscle weakness, and/or arthralgia. Less than 1% of infected persons may develop neuroinvasive disease, with more severe neurologic symptoms such as confusion, lethargy, muscle weakness, ocular disturbances, movement disorders, severe headache, stiff neck or photophobia.

Mosquito Control Activities: DOHMH will continue to work to reduce the number of potential mosquito-breeding sites and control mosquito larvae. Adulticiding activities are scheduled as needed and justified in areas where surveillance indicates that the risk of transmission to humans is high. The pesticide product used by NYC DOHMH in adult mosquito spraying is Anvil 10+10 ULV, a pyrethroid product designed to kill adult mosquitoes. This product is used at a very low dosage rate, 0.0036 lbs/acre, and poses little risk to humans and pets. We do recommend, however, that people and pets remain indoors during the applications. Information on upcoming spray events can be found by calling 311 or by visiting the DOHMH website at www.nyc.gov/health/wnv.

Infection Control Measures to Prevent Transmission from Infected Animals or Birds: There is no indication that a person can get WNV from simply handling live or dead infected birds or other animals, although evidence suggests that persons with occupational exposure to birds have occasionally become infected with WNV. In 2002, two laboratory workers were infected with WNV via percutaneous inoculation.⁸ That same year, turkey farm workers in Wisconsin were thought to have acquired WNV infections via percutaneous inoculation, or fecal-oral, or respiratory routes; an investigation on the farm detected WNV in the feces of infected turkeys.⁹ Additionally, a veterinary student became infected while performing an autopsy on an infected pony.¹⁰ The student handled the brain using latex gloves, although no protective inhalation or eye gear was used. The most likely route of transmission was thought to be mucous membrane exposure to droplets. Persons should avoid barehanded contact when handling dead animals and use gloves or double plastic bags to submit birds for testing or disposal. If performing an autopsy gloves, mask s and eye gear are indicated. Veterinarians and their staff should use infection control precautions when caring for an animal suspected to have WNV or any viral infection.

Prevention measures for pets: It is **not** advised to use insect repellents approved for human use, such as DEET, for pets as these products are not approved for veterinary use because animals tend to ingest them by licking.

While small mammal pets do not appear to be at risk for clinical illness due to WNV, pet birds (especially psittacines), and horses should be considered at equal risk as humans. We urge you to recommend precautionary measures to your clients including:

- **Vaccinate horses against WNV.**
- **Keep birds indoors, particularly at dawn and dusk, during the mosquito season.**
- **If pet birds are brought outdoors, provide a mosquito-proof enclosure using screens or mosquito netting.**
- **Check all windows for intact screens.**
- **Reduce possible mosquito-breeding habitats (standing water) on the property, or report standing water by dialing 311 or visiting DOHMH website (<http://www.nyc.gov/health>).**

Reporting: We ask your assistance in promptly reporting any diagnosed cases of arboviral infection in your patients to the NYC DOHMH by telephone to 347-396-2600. Our report form is available on line at <http://www.nyc.gov/html/doh/html/zoo/zoo-reporting.shtml> . In 2008, the reporting and testing of individual birds was discontinued as it was determined that these efforts were of limited value in the early detection of WNV. However, the DOHMH does respond to reports of clusters of 10 or more dead birds of any species or 3 or more water birds. WNV in humans and animals is reportable throughout the year.

The Department of Health and Mental Hygiene is available for consultation regarding possible WNV in your patients. If you have any questions regarding animal disease surveillance, please call Sally Slavinski at 347-396-2672.

As always, we appreciate your continued collaboration with our efforts to monitor public health issues in New York City.

Sincerely,

Sally Slavinski

Sally Slavinski, DVM, MPH, DACVPM
Assistant Director, Zoonotic, Influenza and Vector-Borne Disease Unit
Bureau of Communicable Disease
New York City Department of Health and Mental Hygiene

Waheed Bajwa

Waheed Bajwa, Ph.D., M. Phil.
Director of Vector Surveillance & Control
Office of Vector Surveillance & Control
Division of Environmental Health

1. Serologic survey of cats and dogs during an epidemic of West Nile virus infection in humans. Kile JC, Panella NA, Komar N et al. J AM Vet Med Assoc. 2005 Apr 15;226(8):1349-53.
2. Exposure of domestic mammals to West Nile virus during an outbreak of human encephalitis, New York City, 1999. Komar N, Panella NA, Boyce E. Emerg Infect Dis. 2001 Jul-Aug;7(4):736-8.
3. Serologic evidence of West Nile virus in dogs and cats in China. Lan D et. al. Arch Virol. 2011 May;156(5):893-5.
4. West Nile virus encephalitis in a dog. Read RW, Rodriguez DB, Summers BA. Vet Pathol. 2005 Mar;42(2):219-22.
5. West Nile virus encephalitis and myocarditis in wolf and dog. Lichtensteiger CA, Heinz-Taheny K, Osborne TS, Novak RJ, Lewis BA, Firth ML. Emerg Infect Dis. 2003 Oct;9(10):1303-6.
6. Serological, reverse transcriptase-polymerase chain reaction, and immunohistochemical detection of West Nile virus in a clinically affected dog. Buckweitz S, Kleiboeker S, Marioni K, Ramos-Vara J, Rottinghaus A, Schwabenton B, Johnson G. J Vet Diagn Invest. 2003 Jul;15(4):324-9.
7. Immune response to the West Nile virus in aged non-human primates. Wertheimer AM et. al. PloS One. 2010 Dec 2;5(12):e15514.
8. Experimental infection of cats and dogs with West Nile virus. Austgen LE, Bowen RA, Bunning ML, Davis BS, Mitchell CJ, Chang GJ. Emerg Infect Dis. 2004 Jan;10(1):82-6.
9. Laboratory-acquired West Nile virus infections--United States, 2002. MMWR Morb Mortal Wkly Rep. 2002 Dec 20;51(50):1133-5.
10. West Nile virus infection among turkey breeder farm workers--Wisconsin, 2002. MMWR Morb Mortal Wkly Rep. 2003 Oct

Map 1: Cumulative West Nile Virus Activity* in New York City by Zip Code, 2010

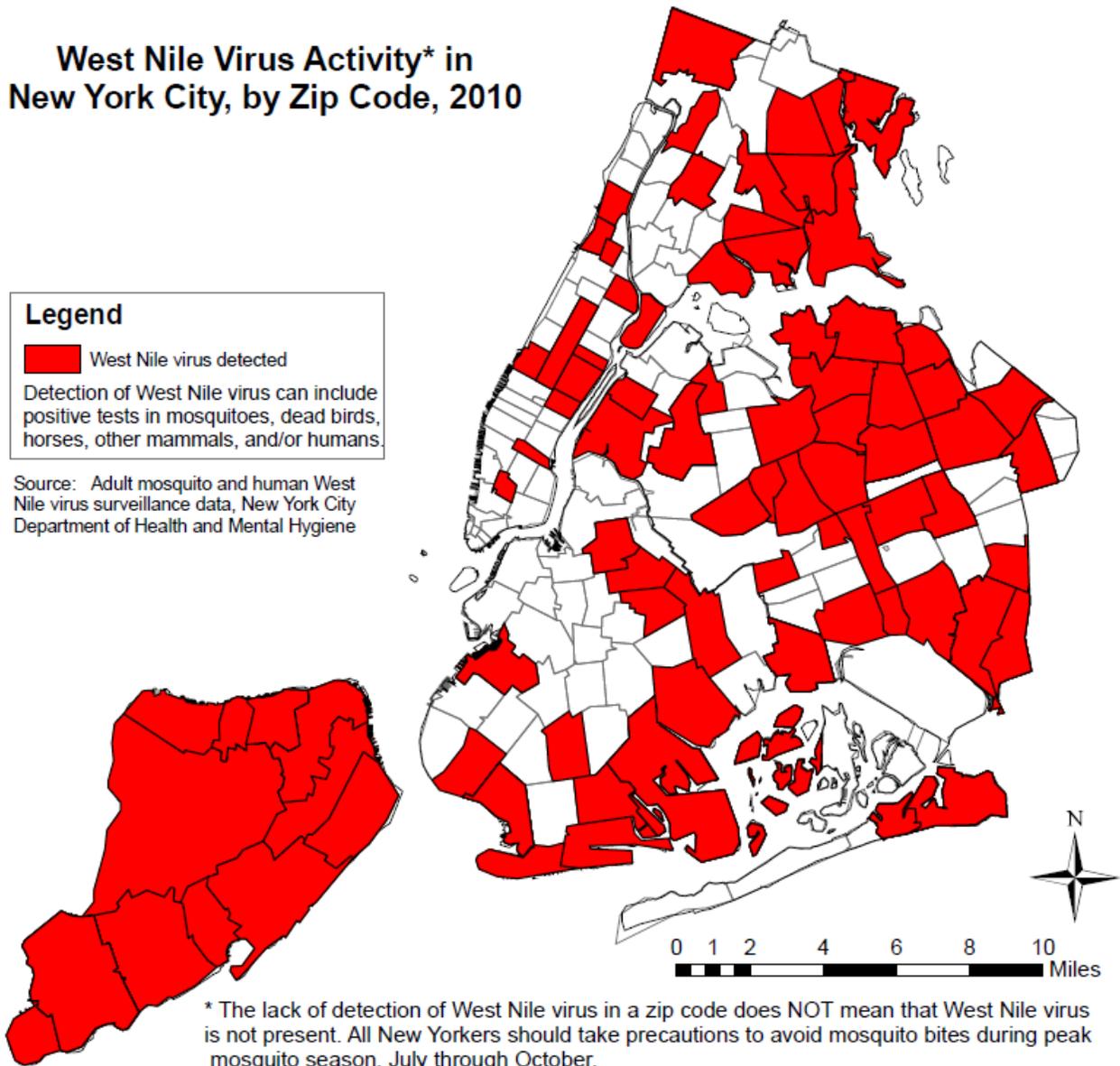
West Nile Virus Activity* in New York City, by Zip Code, 2010

Legend

 West Nile virus detected

Detection of West Nile virus can include positive tests in mosquitoes, dead birds, horses, other mammals, and/or humans.

Source: Adult mosquito and human West Nile virus surveillance data, New York City Department of Health and Mental Hygiene



* The lack of detection of West Nile virus in a zip code does NOT mean that West Nile virus is not present. All New Yorkers should take precautions to avoid mosquito bites during peak mosquito season, July through October.

* The lack of detection of West Nile virus activity in a zip code does NOT mean that West Nile virus is not present. All New Yorkers should take precautions to avoid mosquito bites during peak mosquito season, July through October.