West Nile Virus

The West Nile virus, which can cause encephalitis, is commonly found in humans, birds, and other animals in Africa, Europe, Asia, and the Middle East. The virus was first isolated in the West Nile province of Uganda in 1937. The earliest recorded epidemics of West Nile encephalitis occurred in Israel between 1951 and 1954 and again in 1957. Since the mid-1990s, the frequency and severity of West Nile virus outbreaks have increased. West Nile encephalitis had never been documented in the Western Hemisphere before the late summer of 1999, when an outbreak occurred in the New York City metropolitan area.

Disease Transmission

West Nile virus is transmitted by infected mosquitoes, which become infected after being bitten by wild birds—the primary hosts of the virus. This transmission cycle involves the following steps:

1. **Mosquito Bites:** Mosquitoes become infected when they bite infected wild birds, such as crows or jays. A female’s persistent search for blood makes her more likely to be infected.

2. **Transmission:** Infected mosquitoes transmit the virus to both humans and animals through bites.

3. **Infection:** Infected mosquitoes may be able to transmit the virus for up to 10 days after being bitten, although the virus is present in their saliva for a shorter period.

4. **Infection Routes:** There are two main ways in which humans can become infected:
   - **Inhalation:** Breathing in the virus through droplets of infected saliva or nasal secretions.
   - **Intramuscular:** Direct contact with the virus through an infected mosquito bite.

5. **Inactivation:** The virus is inactivated by the human immune system, but infected mosquitoes may continue to transmit the virus for up to 10 days after being bitten).

6. **New Transmission Cycles:** Mosquitoes infected with the virus can continue to transmit it to other birds, completing the transmission cycle.

Prepared by the West Nile virus coordinating committee at Penn State Extension.

How to Submit a Dead Bird

The Commonwealth of Pennsylvania is strongly encouraging citizens to report and submit dead birds for West Nile virus testing. Reporting can be done online, while submissions must be done through your local West Nile county coordinator. All species of birds, except chickens and waterfowl, will be tested; however, only a limited number of birds will be tested each week. The information you provide is important and will be entered into a database for tracking purposes since birds provide an early warning that the virus is active in an area. For more information, please visit the Pennsylvania Department of Health’s website at www.westnile.state.pa.us or call toll-free at 1-877-PA-HEALTH (724-3258).
The CDC is working with other agencies to track and further investigate these types of cases. Remember, the vast majority of human WNV infections occur through the bite of a WNV-infected mosquito.

Symptoms of West Nile Encephalitis

The incubation period of a West Nile virus infection in humans is usually 3 to 14 days. Most people who are infected with the virus have either no symptoms or mild ones such as fever, headache, body aches, and occasionally a mild skin rash or swollen lymph glands. Less than 1 percent of those infected with WNV develop a more severe infection, which may lead to encephalitis, meningitis, meningoencephalitis, or aseptic meningitis. These symptoms include fever, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, and paralysis. In some cases, death can occur.

All residents living in areas where West Nile virus has been detected potentially can become infected with the virus. However, only a small number of people who become infected will develop a serious case of encephalitis. People over 50 years of age are at greater risk of becoming severely ill. Nevertheless, anyone, regardless of age, is at risk.

Diagnosis and Treatment

Although there is no specific treatment, medication, or cure, the symptoms and complications of West Nile encephalitis can be treated. Severely ill patients may require hospitalization, intravenous (IV) fluids, airway management, respiratory support, and treatment of secondary infections such as pneumonia. Please check with your health care provider regarding current preventative and treatment actions. Currently, many scientists are working on developing a vaccine against West Nile encephalitis for humans.

Use DEET Repellents Properly

DEET remains one of the most widely used insect repellents. Products containing 10 to 35 percent DEET will provide reasonable protection for people under most conditions. The American Academy of Pediatrics (AAP) has updated its DEET recommendations for children, citing: “Insect repellents containing DEET with a concentration of 10 percent appear to be as safe as products with a concentration of 30 percent when used according to the directions on the product labels.” A higher percentage of DEET in a repellent does not indicate better protection—nor does the protection last longer. To use a repellent properly, regardless of its active ingredient, follow these guidelines:

- Verify that the product has an Environmental Protection Agency (EPA) registration number. In the absence of the label the product was approved for use by the EPA.
- Before using any product, read and understand the directions on its label.
- Do not apply a repellent in an enclosed area or near facial skin that you do not want to protect.
- According to the AAP, DEET should not be used on infants under two months of age. Other guidelines cite not using DEET until children are two years of age.
- Use just enough repellent to lightly cover exposed skin and clothing. Never apply repellent to cuts, wounds, or irritations. Do not put the skin or apply paints beneath clothing.
- To apply a repellent to your face, first dispense or spray it onto your palms and rub your hands together. Then apply a thin layer to the surface of your skin. Do not saturate the skin or clothing. Never apply repellents to cuts, wounds, or irritations. Do not put the skin

Prevention and Control

You can reduce the number of mosquitoes around your home and neighborhood by eliminating standing water, in which mosquitoes can breed.

- Do not allow water to stagnate in bird baths, ornamental pools, water gardens, and swimming pools or their covers. Ornamental pools can be aerated or stocked with fish. Swimming pools should be cleaned and chlorinated when not in use.

- Do not allow children to apply DEET by themselves. Do not apply a repellent directly to a child’s skin. First apply it to the palms of your own hands and then apply it to the child. Do not apply repellent to children’s hands since they may touch their eyes and mouth, causing irritation.

- DEET can damage some plastics, synthetic fabrics, leather, and painted or varnished materials. DEET does not damage natural fibers such as cotton or wool.

- After applying a repellent, wash or wash from your hands.

- A single application of a repellent is sufficient under most conditions. Avoid prolonged or excessive use of DEET.

- If a sunscreen product is needed, it should be applied first, followed by a DEET repellent product. The CDC does not recommend using a combination sunscreen/DEET product.

- Once indoors, wash all treated skin and clothing with soap and water. Wipe treated clothing wearing it again.

- If you suspect someone is reacting negatively to an insect repellent, discontinue its use, wash treated skin, and call the National Poison Center number: 1-800-222-1222. If you must see a doctor, take the repellent with you.

A very small segment of the population may be sensitive to DEET and/or other insect repellents. For more information about DEET, contact the National Pesticide Information Center at 1-800-858-7379 or your health care provider.

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West Nile virus was first detected in just four northeastern states in 1999. Since then, West Nile virus has been detected in wild birds, mosquitoes, horses, and humans and its distribution has continued to spread across the United States. In 2000, West Nile virus was detected in the Northeast and Mid-Atlantic states and then in the Southeast and Midwest in 2001. By 2002, West Nile virus had reached the West Coast. In Pennsylvania, West Nile virus has been detected every year since 2000. The number of human cases in Pennsylvania peaked in 2003 at 227, but since then an average of 24 cases per year has been reported.

1. Storm drains
2. Clogged roof gutters
3. Clogged root gutters
4. Uncovered containers
5. Leaky faucets and standing water
6. Garden ponds
7. Satirizing pools
8. Tires and wheelbarrows
9. Birdhouses and children’s toys

Mosquito Breeding Sites

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