



West Nile Virus and People

What is West Nile virus?

West Nile virus (WNV) is a viral disease previously seen only in Africa, Asia and Southern Europe. This virus can cause encephalitis, an infection of the brain and the spinal cord. WNV was first detected in the United States in 1999 when at least 62 people became seriously ill, and seven of them died. Since then, WNV has rapidly spread throughout the continental United States. In Ohio, WNV was first identified in birds and mosquitoes in 2001. The following year, the first human cases and deaths were reported in Ohio. By the end of 2002, WNV was reported in all 88 Ohio counties, either in birds, mosquitoes, humans or horses. There were 441 human and 644 horse cases identified. WNV is now established in Ohio where cases occur each year and seasonal epidemics can flare up under certain conditions in the summer and continue into the fall.

WNV is spread to people by the bite of an infected mosquito. The principal transmitter of West Nile virus is the Northern house mosquito (*Culex pipiens*). Mosquitoes first become exposed to the virus when they feed on birds that are infected with WNV. Once the mosquito is infected, it may transmit the virus to people or other animals when it bites them. Many birds can be infected with WNV, but crows and blue jays are the most likely to die from the infection. Horses, too, are prone to severe WNV infection. People cannot get WNV from another person or horse that has the disease.

Do all mosquitoes carry West Nile virus?

No. Mosquitoes are generally considered a nuisance pest, but they occasionally can transmit disease. Fifty-eight different species of mosquitoes are known to occur in Ohio. While most cannot transmit WNV, several mosquito species common to Ohio are known to be carriers of WNV. Only female mosquitoes bite. They do this to get a blood meal for developing their eggs.

Where do mosquitoes live and breed?

The mosquito that carries WNV typically lays its eggs in stagnant water and water-holding containers. Weeds, tall grass and shrubbery provide an outdoor harborage for adult mosquitoes.

When are mosquitoes most active?

Many mosquitoes are most active two to three hours before and after dusk and again at dawn when the air is calm. This is the time when the females are most likely to bite. However, some species will feed at any time of the day.

When is the greatest risk of being exposed to an infected mosquito?

Most people have become infected in summer or early fall when mosquitoes are most numerous.

Can the virus survive the winter months?

Yes. During the winter months of 2000, health workers in New York City found over-wintering mosquitoes that contained evidence of WNV.

Are crows and blue jays the only birds that can be infected?

No. Since the introduction of WNV in the United States in 1999, WNV has been detected in more than 300 different bird species. Crows and blue jays frequently die of the infection and are more likely to be discovered, but most birds survive WNV.

Can other animals also be infected?

Yes. Other animals have also been found to be infected and have died from WNV. Horses are especially susceptible to infection, but other mammals have also been found to be infected.

Is it possible to get infected from an infected person or animal?

No. The virus is not spread by person-to-person contact, and there is no evidence that people can get the disease by handling infected animals.

What happens if a mosquito carrying the West Nile virus bites someone?

Most people who are bitten by an infected mosquito will not develop any symptoms. About 1 in 5 people who are infected develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea or rash. Less than 1% of people infected with WNV develop a serious neurologic illness such as meningitis or encephalitis, which can involve headache, high fever, neck stiffness, disorientation, coma, tremors, seizures or paralysis.

Are some people more susceptible to the infection?

While everyone exposed to a mosquito that carries the WNV is susceptible, people with certain medical conditions such as cancer, diabetes, hypertension and kidney disease are at greater risk for serious illness.

How is West Nile virus diagnosed?

To diagnose a WNV infection, a doctor will need to test either blood or cerebrospinal fluid from a spinal tap for antibodies to the virus. A second blood test may be required two to three weeks later to confirm the diagnosis.

Is there a treatment for West Nile virus?

No, there is no specific treatment for WNV infection. While many people will not know that they have been exposed, nearly all of those with symptoms will fully recover. However, in some severe cases, hospitalization may be needed. There is no vaccine for WNV. There are no antibiotics or antiviral medications that can be used in the treatment of WNV. All care is supportive.

Do mosquitoes in Ohio carry other diseases?

Yes. There are several other viruses circulating among mosquitoes in Ohio that can cause encephalitis and other illnesses. St. Louis encephalitis, which is closely related to WNV, caused a major epidemic in 1975, resulting in 416 human cases and 29 fatalities in Ohio. Every year, about 14 Ohioans, primarily children, are affected with La Crosse encephalitis. In 1991, an outbreak of Eastern equine encephalitis affected horses in the Killbuck Marsh area in Holmes and Wayne counties. Of the 19 laboratory-confirmed horses, 17 died. The Ohio Department of Health, in collaboration with local health departments, has an ongoing program to monitor for these diseases. Although each of these viruses is somewhat different, prevention is basically the same — reduce the mosquito population and protect yourself from mosquito bites, especially during the summer and early fall.

How can I control mosquitoes around my home and neighborhood?

You can reduce the number of mosquitoes around your home and neighborhood by eliminating places where they lay their eggs. Young mosquitoes are aquatic, and they must have standing water to develop from egg to adult. Here are some simple steps you can take:

- Dispose of tin cans, plastic containers, ceramic pots or similar water-holding containers that have accumulated on your property. Do not overlook containers that have become over-grown by vegetation.
- Properly dispose of discarded tires. Water in tires is an excellent breeding site for disease-carrying mosquitoes.
- Empty bird baths and fill with fresh water at least once a week.
- Check and clean clogged roof gutters at least twice annually so they will drain properly. Roof gutters are easily overlooked but can produce millions of mosquitoes each season.
- Turn over plastic wading pools when not in use.
- Turn over wheelbarrows and clean birdbaths weekly.
- Aerate ornamental pools or stock them with fish. Water gardens are fashionable, but they become mosquito producers if they are allowed to stagnate. Clean and chlorinate swimming pools that are not being used. A swimming pool that is left untended for a month can produce enough mosquitoes to infest an entire neighborhood. Mosquitoes may even breed in the water that collects on swimming-pool and hot-tub covers.
- Use landscaping to eliminate standing water that collects on your property. Mosquitoes will develop in any puddle that lasts for more than four days.
- Children's toys and tarps covering cars, boats and other equipment can also hold water and breed disease-carrying mosquitoes.

How can I protect myself from West Nile virus?

The best way is to avoid being bitten by mosquitoes. Use personal protection while outdoors when mosquitoes are present. These following actions will reduce your chances of being bitten by mosquitoes:

- Wear light-colored clothing, long-sleeved shirts or jackets and long slacks.
- Use mosquito netting when sleeping outdoors or in an unscreened structure. Protect small children when outdoors.
- Avoid mosquito-infested areas or stay indoors when mosquitoes are most active.

- Avoid physical exertion and use colognes and perfumes sparingly as these may attract mosquitoes.
- Consider the use of a mosquito repellent approved by the Environmental Protection Agency (EPA), according to directions, when it is necessary to be outdoors. Chemical repellents are available in aerosol sprays, sticks, lotions, towelettes and pills. Pills have questionable effect. Sprays and lotions are the commonly available formulations. The most common active ingredients are: N,N diethyl-meta-toluamide (DEET); ethyl hexanediol; dimethyl phthalate; dimethyl carbate. Some common brands are: Off; Rutgers 6-12; Cutter's; Repel; Deep Woods Off!; Muscol; Ben's 100.
- It is generally recommended that persons should use products that contain 30 percent or less DEET. Use repellents sparingly and in the weakest concentration that does the job, especially on children. Read and follow label directions in using DEET. The amount of active ingredients is important! The higher the percent of active ingredients in a mosquito repellent, the more pesticide is absorbed into the body. Health problems have been reported with the use of 75 to 100 percent DEET. Read the ingredients list on the container.
- In outdoor areas, aerosol bombs, smoke pots, and citronella candles all have limited use. Mosquito "Wands" usually contain "moth balls," e.g. "Skeeter Beater." Electrocuting devices attract mosquitoes into the yard. If used, place at the farthest distance from your area of person use. Sonic repellents do not work.
- In indoor areas, citronella candles and mosquito coils (which are actually a pesticide) can be used.
- Put 16 mesh screens on all doors and windows and keep them in good repair.

What is being done to protect Ohioans?

In Ohio, state and local governments follow a surveillance and response plan for WNV and other mosquito-borne viruses. Control measures are used to try to reduce mosquito breeding without harming the environment. You can support community-based mosquito control programs by preventing mosquito breeding on your property by eliminating standing water.

What is the current status of West Nile virus in Ohio?

Contact your local health department or visit the Ohio Department of Health's website for the current status of WNV in Ohio: <http://www.odh.ohio.gov/wnv>.