



# Extension FactSheet

Veterinary Preventive Medicine, 1900 Coffey Road, Columbus, Ohio 43210

## People and West Nile Virus: Frequently Asked Questions

### What is West Nile Virus?

West Nile Virus (WNV) is a viral disease that can cause encephalitis or meningitis, infection of the brain and the spinal cord or their protective covering. Prior to 1999, the disease was found only in Africa, Asia, and southern Europe. Over the past several years, WNV has caused disease in the United States. In 1999, at least 62 people became seriously ill, and seven of those died. Since then, WNV has rapidly spread throughout North America. During the year 2000, 21 human cases of WNV encephalitis were reported in the United States, with two deaths. In 2001, there were 66 cases with nine deaths. In 2002, 4,156 human cases of WNV encephalitis or WNV fever were reported with 284 fatalities. During 2003, almost 10,000 human cases of WNV encephalitis and fever were reported from 46 states, with 264 fatalities. Since 2003, WNV cases and fatalities have continued to remain fairly high. The yearly number of cases and number of fatalities have fluctuated depending on the weather conditions throughout the nation. It is expected that WNV will continue to be a serious disease threat well into the future.

West Nile Virus 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

Year	United States		Ohio	
	Cases	Deaths	Cases	Deaths
1999	62	7	0	0
2000	21	2	0	0
2001	66	9	0	0
2002	4,156	284	441	31
2003	9,862	264	108	8
2004	2,539	100	12	2
2005	3,000	119	61	2
2006	4,266	177	48	4
2007	3,623	124	23	3

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 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.

Continued spread of this disease among wild birds and mosquitoes is anticipated. State, federal, and local agencies are working together to address the health risks of WNV to Ohio families and their animals. Ohio public health officials test for WNV in many species of birds, mosquitoes, and horses. Once infected areas are identified, mosquito control efforts are increased in those areas to protect people from the disease.

### Prepared by:



Ohio Department of Health • Ohio Department of Agriculture • Ohio Department of Natural Resources

The Ohio State University • Ohio Environmental Protection Agency • Association of Ohio Health Commissioners

Ohio Mosquito Control Association • Ohio Environmental Health Association • United States Department of Agriculture

### **Do all mosquitoes carry West Nile Virus?**

No. Mosquitoes are generally considered a nuisance pest, but they occasionally can transmit disease. Sixty-four 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. During the last six years, the states reporting WNV activity found many different bird species infected with WNV. However, crows and blue jays appear to be the most susceptible. This observation is not completely understood.

### **Can other animals also be infected?**

Yes. Other animals have also been found to be infected and have died from WNV. During the year 2000, reports from the Eastern states found WNV infecting 58 horses, two bats, a domestic rabbit, skunk, a cat, gray squirrel, and a chipmunk.

### **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 demonstrate no signs or symptoms. However, some will experience a mild infection with a slight fever, headache, body aches, and sometimes a skin rash or swollen lymph glands. Symptoms usually occur five to 15 days after being bitten by an infected mosquito. A very small number of people will suffer from a severe infection that is marked by a rapid onset of a high fever, a severe headache, neck stiffness, nausea or vomiting, confusion, muscle weakness or paralysis, seizures, coma, and, rarely, death.

### **Are some people more susceptible to the infection?**

While everyone exposed to a mosquito that carries the WNV is susceptible, people at greatest risk are those older than 50. Those who are immune-compromised may also be at greater risk. During the outbreak in New York City in 1999, everyone who died from WNV infection was 75 years of age or older. However, in 2001, two people in their forties died from WNV infection.

### **How is WNV 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 is required two to three weeks later to confirm the diagnosis.

### **Is there a treatment for WNV Encephalitis?**

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. St. Louis Encephalitis, which is closely related to WNV, caused a major epidemic in 1975, resulting in 416 human cases and 29 fatalities. 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 cases, 17 horses died. The Ohio Department of Health, in collaboration with local health departments, has an on-going 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 unwanted tin cans, plastic containers, flower 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.
- 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 WNV?

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 mosquito repellent, 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. Products that contain 15 percent or less are considered "child safe." 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 that 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 if well ventilated.
- Put 16 mesh screens on all doors and windows and keep them in good repair.

### What is Ohio doing to prevent a West Nile Virus outbreak?

During the fall of 2000, the Ohio Department of Health, in conjunction with the Ohio departments of Agriculture, Environmental Protection Agency, and

Natural Resources; The Ohio State University; the United States Department of Agriculture; and our local partners and other colleagues, organized a working group to address this emerging problem. The goal of the workgroup is to protect people and domestic animals from West Nile and other arboviral diseases. An integrated pest management (IPM) approach to accomplish this goal includes the following:

- **Surveillance** — identify disease activity in birds and mosquitoes in time to warn the public.
- **Source reduction** — eliminate places for mosquitoes to breed.
- **Larvaciding** — treat standing water sources that cannot be eliminated in order to kill the immature mosquito.
- **Adulticiding** — spray for adult mosquitoes when deemed necessary.

### What is the status of WNV in Ohio?

WNV has been confirmed in Ohio every year since 2001. Infected mosquitoes, birds, horses, and humans have been found in all Ohio counties. Therefore, the virus is present throughout the state. Contact your local health department in your area, or visit one of the web sites.

For the current status on WNV in Ohio and for more information, you can log on to the following web sites:

The Ohio State University:

<http://vet.osu.edu/1516.htm>

Ohio Department of Health:

<http://www.odh.ohio.gov/odhprograms/idc/zoodis/wnv/wnv1.aspx>

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