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## Identifying and avoiding the West Nile Virus

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With all the attention that the West Nile Virus (WNV) has been receiving lately, I thought that this month's column should be devoted to this issue in order to shed some light on the matter and perhaps dispel some myths. WNV is a flavivirus commonly found in Africa, Western Asia, and the Middle East. It is closely related to St. Louis encephalitis virus found in the United States. In the temperate zone of the world (i.e., between latitudes 23.5° and 66.5° north and south), West Nile encephalitis (inflammation of the brain) cases occur primarily in the late summer or early fall. In the southern climates where temperatures are milder, West Nile virus can be transmitted year round.

Since the 1930s, the WNV has been commonly reported to cause infections in humans in the Eastern Hemisphere but human and animal infections had never been documented in the United States until recently. In 1999 and 2000, outbreaks of WNV encephalitis were reported in persons living in the New York City metropolitan area. In these two years, 83 human cases of West Nile illness were reported resulting in 9 deaths. Last summer, 2 cases were reported from a rural Florida county in July and August. The continued expansion of West Nile virus in the United States indicates that it is becoming established in the Western Hemisphere. It is not known from where the U.S. virus originated, but it is most closely related genetically to strains found in the Middle East. According to the Centers for Disease Control and Prevention, there have been a total of 138 human infections reported this year, most of them in Louisiana (85), followed by Mississippi (34), and Texas (13). So far, seven people have died this year

from West Nile, all of them from Louisiana. Since authorities are awaiting the results of blood tests on dozens of people, I expect this number to rise as the summer progresses.

WNV is usually transmitted to humans through mosquito bites. Mosquitoes become infected when they feed on infected birds that have high levels of WNV in their blood. Infected mosquitoes can then transmit WNV when they feed on humans or other animals such as horses or birds. After a bite from an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of brain tissue or encephalitis. Despite what you may have heard, WNV is not transmitted from person to person or from animal to person. However, some experts feel that if birds or other potentially infected animals must be handled, a protective barrier (e.g., gloves, inverted plastic bags) should be used. Dead birds in an area may mean that West Nile virus is circulating between the birds and the mosquitoes in that area. Over 100 species of birds are known to have been infected with West Nile virus. Although birds, particularly crows and jays, infected with WN virus can die or become ill, most infected birds do survive.

Even though we've been reading much in the press lately about deaths occurring from WNV, most people with the WNV infection have no symptoms. A small proportion develops mild symptoms that include fever, headache, body aches, skin rash and swollen lymph glands but these symptoms alone are not enough to diagnose someone with WNV as other viral infections may have a similar course. Less than

1% of infected people develop more severe illness that includes meningitis (inflammation of the spinal cord) or encephalitis. The symptoms of these illnesses can include headache, high fever, neck stiffness, confusion, and paralysis. According to the Center for Disease Control and Prevention, human illness from West Nile virus is rare. Even in areas where the virus is circulating such as Texas or Louisiana, very few mosquitoes are infected with the virus. Even if the mosquito is infected, less than 1% of people who get bitten and become infected will get severely ill. The chances you will become severely ill from any one mosquito bite are extremely small.

At this time, there is no specific treatment for WNV infection. There are no immunization schedules against this virus but several companies are working towards developing a vaccine. Since this illness is caused by a virus, antibiotics are useless. Treatment of severe illnesses includes hospitalization, use of intravenous fluids and nutrition, respiratory support, and prevention of secondary infections. What should you do if you think you have the symptoms of WNV encephalitis? Contact your health care provider if you have concerns about your illness. If you or your family members develop symptoms such as high fever, confusion, muscle weakness, and severe headaches, you should see your doctor immediately. Your physician will first take a medical history to assess your risk for West Nile virus. People who live in or traveled to areas where West Nile virus activity has been identified are at risk of getting West Nile encephalitis; persons older than 50 years of age have the highest risk of severe disease. If you are determined to be at high risk and have symptoms of West Nile en-

cephalitis, your doctor will draw a blood sample and send it to a laboratory for confirmation.

So what can one do to minimize the chance of getting WNV? Individuals can reduce their contacts with mosquitoes by taking these actions:

- Apply insect repellent containing permethrin or DEET (N,N-diethyl-meta-toluamide) when outdoors. Read and follow the product directions whenever you use insect repellent.

- Avoid applying repellent to children less than 2 years old. Use care in applying repellent to small children, and don't put repellent on their hands because it may get into their mouth or eyes and cause irritation.

- Wear long-sleeved clothes and long pants treated with repellent will further reduce your risk, as will staying indoors during peak mosquito feeding hours (dusk until dawn).

- Limit the number of places available for mosquitoes to lay their eggs by eliminating standing water sources from around your home.

- Install or repair window and door screens so that mosquitoes cannot get indoors.

Since WNV has now been reported in our state, I tell my patients to protect their elderly relatives, children, and pets. The best way to do this is by arming themselves with knowledge and by taking action to minimize the risks of contacting infected mosquito. For more information on this topic, I invite readers to talk with their physicians or contacting the Texas Department of Health at (888) 963-7111.

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