

# Mosquitoes and West Nile Virus



## What You Should Know

And

## What You Can Do

An informational bulletin prepared by the St. Tammany Parish Mosquito Abatement District

### What is West Nile virus?

West Nile virus is a mosquito-borne virus that in extreme cases cause encephalitis (inflammation of the brain), meningitis (inflammation of the lining of the brain and spinal chord or death. However, human symptoms are generally mild and often mimic the flu. Only about one in every 150 people bitten by an infected mosquito will become severely ill. The risk of severe illness is highest for people over 50 years old.

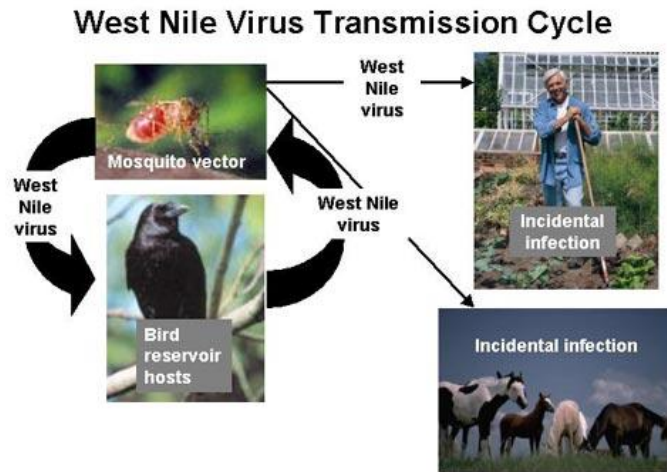
**Symptoms: West Nile fever** – It is estimated that 20% of the people who become infected will develop West Nile fever which causes mild symptoms that include fever, headache and body ache, occasionally a skin rash on the trunk of the body and swollen lymph glands. West Nile fever generally lasts only a few days.

**Symptoms: West Nile neuroinvasive disease** – Symptoms of this severe infection include headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and death in 5 – 10% of the cases.

When someone is infected with West Nile virus, they will typically have one of three outcomes: (1) asymptomatic (no symptoms), (2) West Nile fever in about 20% of the people, or (3) West Nile neuroinvasive disease, the severe form of the disease. There is no treatment for West Nile virus infection. People with West Nile fever recover on their own, though symptoms can be relieved through various treatments (e.g. medication for headache and body aches, etc.). People with West Nile meningitis often need

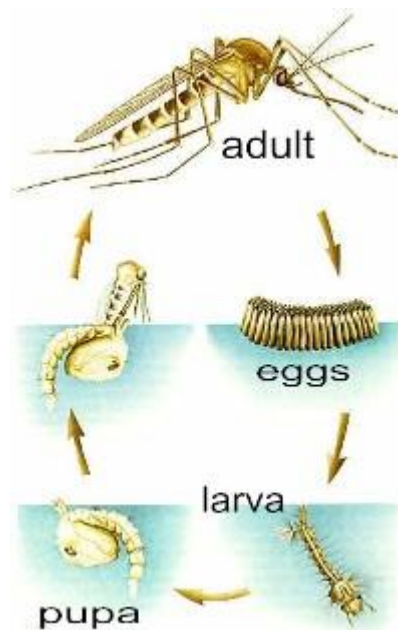
hospitalization. Care may involve nursing IV fluids, respiratory support and prevention of secondary infections.

## How is West Nile virus spread?



West Nile virus is transmitted to humans by the bite of an infected mosquito and cannot be spread from person-to-person. When a mosquito bites an infected bird, the mosquito becomes infected. Once a mosquito is infected, it may transmit the virus to people or animals by biting them. Horses are among the animals most prone to West Nile virus infection.

## How do mosquitoes grow?



Mosquitoes need water to develop. Eggs are laid on the surface of the water in the form of rafts or singly on the soil surface or some other substrate. The eggs hatch while in water to become a larva. The larva grows in the water, then changes into a pupa, then finally the adult emerges from the pupa stage and begins to search for a blood meal. During the summer, the life cycle from egg to adult takes only 5 – 8 days.

### What types of mosquitoes transmit West Nile virus?

The primary carrier of West Nile virus is the southern house mosquito. This mosquito species breeds in polluted water commonly found in roadside ditches that receive effluent from residential filter beds and septic tanks. There are approximately 300 miles of roadside septic ditches in St. Tammany Parish. Other species that have the potential for transmitting the virus are *Culex salinarius* and *Culex nigripalpus* which both breed in fresh and brackish water commonly found in the marshes and permanent water pools. *Aedes vexans*, the inland floodwater mosquito, which breeds in temporary pools, also is capable of transmitting WNV. Finally, circumstantial evidence suggests that the Asian tiger mosquito, which breeds in artificial containers commonly found in yards, will also transmit the disease.

### What can homeowners do to reduce the potential risk for West Nile virus?



#### 1. Eliminate mosquito breeding.

The key to reducing mosquito populations is to deny them a place to breed. Some mosquito species capable of transmitting West Nile virus are able to breed in small amounts of water commonly found in artificial containers. These mosquitoes typically deposit their eggs on the inside wall of containers and when rainfall floods them, the eggs hatch and the development process begins. Within 5-7 days, the adult mosquito will emerge to search for a blood meal. To eliminate mosquito breeding on your property, check the following and take measures to correct.



- Discard cans and containers: remove, store inside or turn upside down so they cannot collect water
- Old tires: store tires where they can't collect rainwater
- Bird baths and pet bowls: clean and change water at least every 4 days
- Wading pools: change water regularly and turn over when not in use
- Canoes and boats: cover with a tight-fitting tarp or turn upside down
- Tarps: remove sagging areas that can collect rainwater
- Roof gutters: clean out leaves and debris blocking and holding water
- Flower pot saucers: check and discard water frequently
- Miscellaneous: empty water from toys, wheelbarrows, wagons, unused hot tubs, rain barrels.

## 2. Avoid mosquito bites



- Apply insect repellent containing DEET to exposed skin when going outdoors in mosquito prone areas. Be sure to follow the directions for use on the label. The more DEET a repellent contains, the longer time it can protect you from mosquito bites. A high percentage of DEET in a repellent does not mean that your protection is better – just that it will last longer. Also, remember to spray clothing because mosquitoes may bite through clothing. DEET can also be used on children but not in concentrations to exceed 10%. Be sure to have an adult apply the repellent to a child. Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children.

- Install or repair window and door screens so that mosquitoes cannot go indoors.
- Wear long pants and long sleeves in mosquito prone areas.
- The hours from dusk to dawn are peak mosquito biting times for many species of mosquitoes. Take extra care to use repellent and protective clothing during evening and early morning – or consider avoiding outdoor activities during these times.

## Operations of the St. Tammany Parish Mosquito Abatement District



The mosquito abatement district's program is based upon scientific approaches that have been incorporated into a comprehensive strategy of Integrated Mosquito Management (IMM). This management strategy includes several components that work together to accomplish effective mosquito control. Operations are directed primarily at controlling the mosquito species that are responsible for transmitting West Nile virus. The following are some of the components of the IMM program:

- (1) **Mosquito sampling and surveillance** – The District utilizes numerous light traps located throughout the parish as well as landing rate counts to monitor adult mosquito populations. In addition, inspections are performed for mosquito breeding at hundreds of sites. These data are used for the purpose of monitoring changes in mosquito adult and larva density in order to evaluate and schedule treatments.



- (2) **Arbovirus surveillance** – The District monitors for the presence of West Nile virus and other mosquito borne diseases by the analysis of wild caught mosquitoes from various locations and specialized traps are utilized throughout the parish to collect live mosquitoes to test for the presence of West Nile virus, St. Louis encephalitis and eastern

equine encephalitis. Mosquitoes are separated by species and pooled together in numbers less than 50 and then sent to LSU Veterinary Diagnostic Lab for analysis.



(3) **Source Reduction** – Source reduction refers to any method of physically altering a mosquito breeding site to render it unsatisfactory for completion of its life cycle. Some of these practices include: (1) removal of tires and artificial containers to prevent the breeding of mosquitoes, mainly the Asian tiger mosquito, (2) maintenance, cleaning and repairing broken sewer lines and ditches of debris, etc., (3) filling of low lying depressions to eliminate the potential of standing water and, (4) drainage of standing water to promote rapid runoff of rainwater.

(4) **Larvicide** – This is a strategy which involves the use of materials to control the aquatic or immature stage of the mosquito. One primary operation involves the routine treatment of the southern house mosquito breeding in roadside septic ditches. The southern house mosquito is a medically important species because it is the primary carrier of West Nile virus. The District also employs the use of aerial applications to control several marshland breeding species, some of which are capable vectors for West Nile virus. *Bacillus thuringiensis israeliensis* (Bti), a bacterial agent that acts specifically on mosquito larvae, is the material of choice for all larvicide treatments.



(5) **Adulticide** – This strategy involves the use of truck and aircraft mounted ultra low volume (ULV) aerosol sprayers to control the flying adult mosquito. All materials used by the District are approved by the U.S. Environmental Protection Agency (EPA) and the Louisiana Department of Agriculture and Forestry (LDAF) and when used according to

label directions, do not pose unreasonable risks to humans, animals or the environment. Treatments are performed only when warranted after analysis of arbovirus and mosquito surveillance data.



(6) **Public information** – The District provides educational presentations and demonstrations to schools, homeowner associations and civic organizations throughout the parish on many mosquito- related topics. In addition, educational brochures describing District operations and other topics of interest are distributed to the general public. Also, news releases in newspapers, TV and radio are regularly used to inform the public of ongoing mosquito control activities.

(7) **Mosquito Susceptibility Tests** – Routine lab tests are conducted on mosquito larvae and adults to monitor and detect changes in mosquito susceptibility to various products used for their control. It is important that mosquitoes do not become resistant to the products used to control them. These tests are designed to detect when a slight change occurs so that the District can take steps to prevent resistance.



### **Help fight the bite**

In order for effective, community wide mosquito control to be accomplished, a partnership must be established between the Mosquito Abatement District and parish

residents. The District assumes its role in providing the most up-to-date and scientifically sound Integrated Mosquito Management approach for controlling mosquitoes. It is important that area residents also do their part to reduce mosquito breeding on their property. In doing so, the risk of contracting a mosquito borne disease such as West Nile virus is also reduced. The most effective way to control the Asian tiger mosquito, a capable vector for West Nile virus that breeds in containers commonly found in residential yards, is to eliminate the source in which they breed. Steps you can take to eliminate breeding is outlined in this bulletin under, "What homeowners can do to reduce the potential risk of West Nile virus".

For further information on mosquitoes and West Nile virus please call the Mosquito Abatement District office at 985-643-5050 or 985-893-0818. The normal working hours are Monday through Friday from 7:00 am to 3:30 pm.