

Viruses that are carried by mosquitoes are called **arboviruses**. Arbovirus stands for arthropod-borne virus. In North Carolina, there are three arboviruses that are spread by mosquitoes to people, eastern equine encephalitis (EEE), LaCrosse encephalitis (LAC), and West Nile Virus (WNV).

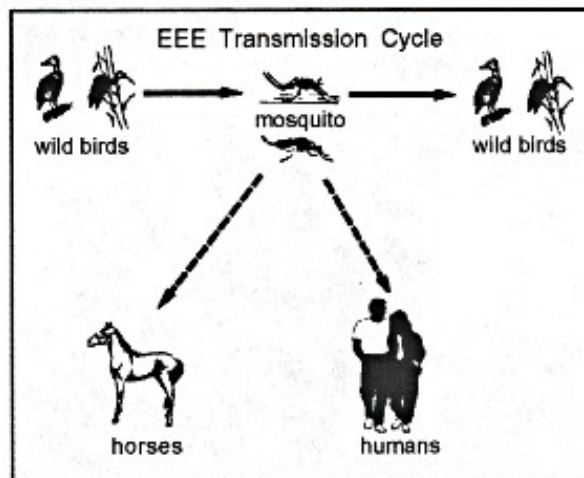
Most arboviruses occur in wild animals especially certain types of birds or small mammals. In nature the virus is spread from animal to animal by mosquito bites. Sometimes, however, an infected mosquito will bite a human or domestic animal (like a horse). The most common way for humans to get an arbovirus is from the bite of an infected mosquito. In rare situations virus has come from blood transfusions. The virus cannot be spread directly from infected animals or humans to another human. Several humans may be infected with an arbovirus each year. In North Carolina you can do several things to reduce your chance of getting an arbovirus.

### Eastern equine encephalitis (EEE)

Eastern equine encephalitis (EEE) is mainly a bird disease. Occasionally, when mosquito populations grow very large, the disease can be transmitted to horses or humans. EEE is a rare disease, but it can cause death in both humans and horses. Usually one to

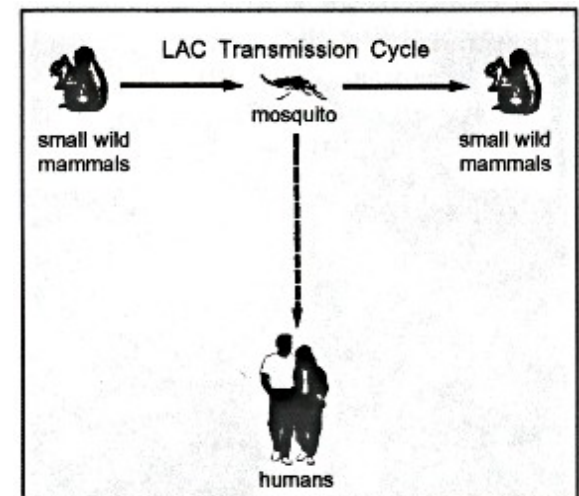
three human cases are reported in North Carolina each year. About 50 percent of human EEE cases are fatal. Young children and elderly people are most susceptible to the disease. In North Carolina this disease is more likely to occur in coastal or eastern piedmont areas late in the summer or early fall.

Symptoms can develop from a few days to two weeks after being bitten by an infected mosquito. They include rapid onset of fever and headache and can resemble a case of flu. In some cases, the disease can progress, causing tremors, convulsions, comas and death. Survivors of EEE infections may suffer from long-term effects to the nervous system. Therapy is limited to treating the symptoms of the disease but there is no specific cure. There is a vaccine for horses but not for humans.



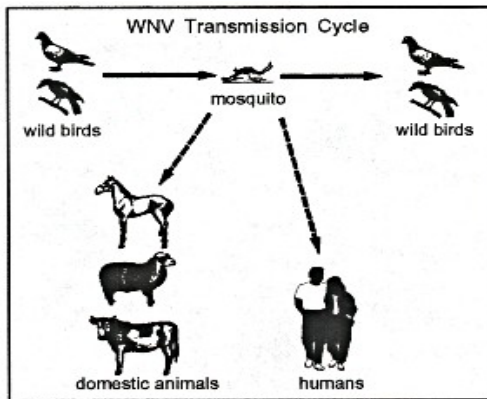
### LaCrosse encephalitis (LAC)

LaCrosse encephalitis (LAC) is a disease associated with small mammals like squirrels, chipmunks, rabbits, and mice. In North Carolina, the disease is found in the western part of the state. Symptoms occur from a few days to a couple of weeks after being bitten by an infected mosquito. These symptoms include fever, headache, nausea, and vomiting. In more severe cases, convulsions, tremors, and coma can occur. LAC usually causes a milder disease than EEE and rarely causes death. Young children seem to be most susceptible. About five cases of LaCrosse encephalitis are reported each year in North Carolina, but many other cases may be mild and unreported.



## West Nile virus (WNV)

West Nile virus (WNV) was first found in the United States during 1999. Since then the virus has spread throughout the country, including North Carolina. Like EEE, WNV is mainly a disease of birds and is carried by mosquitoes. In some birds, especially crows and blue jays, WNV may cause death. Sometimes WNV may infect people, horses, or other animals. Symptoms of the disease in humans are usually mild and include fever, headache, swollen glands, and a rash. Encephalitis and death may occur rarely. WNV is most serious in people who are 50 years of age or older. There is now a vaccine to protect horses against WNV, but there is no vaccine for people yet.



## Preventing Mosquito Bites

Because so few mosquitoes carry the viruses, reducing mosquito bites can help prevent the diseases:

- Wear long sleeve shirts and long pants.
- Avoid outdoor activity when mosquitoes are most active.
- Use one of the three mosquito repellants recommended by CDC. DEET (30% or less for adults and 10% or less for children) and Picaridin are considered to be the most effective mosquito repellants. Oil of lemon eucalyptus also repels mosquitoes but is less effective than DEET. Follow the label directions when using any of these products.
- Use screened windows and doors.

Another way to reduce mosquito bites is to get rid of mosquito breeding places around the home:

- Empty containers like flowerpots.
- Discard water-holding containers, especially used tires.
- Repair leaky outdoor faucets.
- Keep gutters clean and in good repair.
- Put fish in ponds.
- Fill in potholes and puddles.
- Change water in birdbaths and pet bowls every 3-4 days.

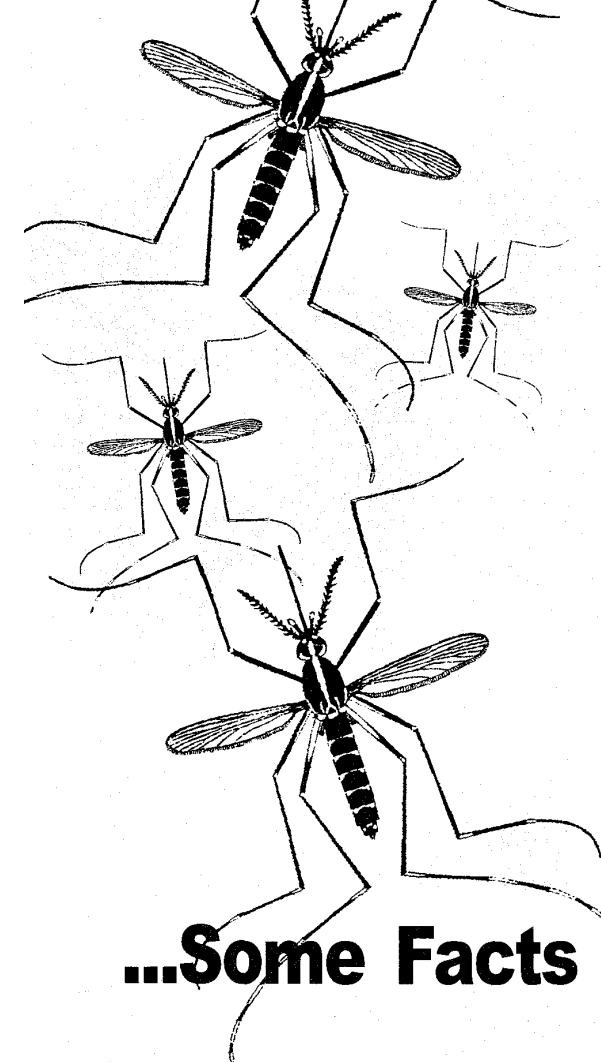
You can also treat standing water with products containing the bacteria *Bacillus thuringiensis, var. israelensis* (Bti).



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# Mosquito Viruses



## ...Some Facts