

## What is Eastern equine encephalitis?

Eastern equine encephalitis (EEE) is a rare but serious disease caused by a virus and spread by infected mosquitoes. The disease most commonly affects people and horses, but illness has been reported in other animals including alpacas, llamas, donkeys, pheasants and emus.

## Do we have EEE virus in Vermont?

EEE has recently been detected in Vermont. In 2012, two residents of Rutland County were confirmed to have of EEE. This is the first time that human illness was reported in the state. In 2013, no people became ill but two horses in Franklin County died from this disease.

In 2010 and 2011 blood was collected from deer and moose during hunting season, and evidence of current or prior infection was found in these species. This was the first time evidence of EEE virus had ever been found in Vermont. In 2011, several emus in a large flock died from EEE virus infection. This was the first illness in an animal documented in Vermont.

Although EEE virus has caused illness in just a few areas of the state, there is evidence that the virus is present in other parts of Vermont, so all Vermonters should [take precautions to avoid mosquito bites](#).

## How is eastern equine encephalitis virus spread?

EEE virus is transmitted by the bite of an infected mosquito. EEE virus typically infects birds, and in most years it remains in bird populations, posing minimal danger to humans and horses. Mosquitoes become infected by feeding on infected birds. If an infected mosquito bites a horse, human or other susceptible animal, the animal or person can become sick. The virus that causes EEE is only spread by mosquitoes. People, horses and deer do not spread the disease.

## What are the symptoms of EEE?

Symptoms of EEE typically occur 4 to 10 days after a bite from an infected mosquito. The severity of the illness is quite variable, and some people bitten by an infected mosquito may not become ill. Most people who become ill experience a flu-like illness with fever, headache, muscle aches, joint pain and fatigue. This illness can last 1 to 2 weeks.

In rare cases, infection of the brain and spinal cord occurs, causing sudden high fever (103° to 106°F), stiff neck, and a headache that keeps getting worse. Inflammation and swelling of the brain, called encephalitis, is the most dangerous complication. The disease can sometimes worsen quickly. About 1/3 of people who develop encephalitis will die. Among those who survive, many are left with mild to severe disabilities. People over age 50 or younger than age 15 are at greatest risk for developing severe disease.

## Who is at risk for getting EEE?

Anyone who spends time in an area where EEE virus activity has been identified is at risk of infection. Although the risk is thought to be low in Vermont, people should take steps to avoid mosquito bites. People who engage in outdoor work and recreational activities, especially near

wetlands and swamps, are at increased risk of infection. The risk of getting EEE is highest from late July through September.

### **What is the treatment for EEE?**

There is no specific treatment for EEE. Treatment consists of supportive therapy to lower the fever and ease the pressure on the brain and spinal cord.

### **Is there a vaccine to protect humans from EEE?**

No, there is no vaccine because EEE occurs so rarely in people. There is a very effective vaccine for horses, which can also be used in other susceptible animals.

### **How do you prevent EEE?**

The best way to prevent EEE is to prevent mosquito bites. These steps will reduce your chance of being bitten by mosquitoes that carry EEE virus or other viruses, such as the West Nile virus.

- Wear long-sleeved shirts and long pants when you are outdoors.
- You may want to limit the amount of time you spend outdoors at dawn and dusk, or at other times when mosquitoes are active.
- Use insect repellents that are labeled as effective against mosquitoes. Proven effective ingredients include DEET (N, N-diethyl-meta-toluamide), Picaridin (KBR 3023), and oil of lemon eucalyptus (p-menthane 3,8-diol [PMD] ). Be sure to carefully follow the directions on the label. Repellents should be applied sparingly to clothing and exposed areas of skin. They should not be applied to a child's face or hands, or to skin that is scratched or irritated. Wash skin where repellents were applied when mosquito exposure has ended.
- The repellent/insecticide permethrin can be used on clothing. It remains effective through several washes.
- Take special care to cover up the arms and legs of children playing outdoors.
- Cover baby carriages or outdoor playpens with mosquito netting.
- Fix any holes in your screens and make sure they are tightly attached to the doors and windows.
- Mosquitoes can lay eggs even in small amounts of standing water. Get rid of mosquito breeding sites by emptying standing water from flower pots, buckets, barrels, and tires. Change the water in pet dishes and replace the water in bird baths weekly. Drill holes in tire swings so water drains out. Empty children's wading pools and store on their side after use.
- If you own horses, donkeys, llamas or alpacas, ask your veterinarian about the vaccine.

### **Additional Information:**

Centers for Disease Control and Prevention:

<http://www.cdc.gov/EasternEquineEncephalitis/index.html>

Vermont Department of Health: <http://healthvermont.gov/prevent/arbovirus/index.aspx>