

Eastern Equine Encephalitis (EEE)

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What is eastern equine encephalitis?

Eastern equine encephalitis (EEE) is an extremely rare but serious and often fatal infection that causes encephalitis or inflammation of the brain. It is spread by the bite of a mosquito infected with EEE virus (EEEV). EEEV can also infect a wide range of animals including mammals, birds, reptiles, and amphibians. The spread of EEEV to mammals (including humans and horses) occurs through the bite of infected mosquitoes that feed on both birds and mammals.

Who gets eastern equine encephalitis?

Anyone can be infected with EEEV, especially if they live, work, or visit areas where EEEV is present. However, people over the age of 50 and younger than the age of 15 are at greatest risk for developing severe disease when infected with EEEV.

How is eastern equine encephalitis virus spread?

EEEV is maintained through a natural cycle between the *Culiseta melanura* mosquitoes and birds. The spread of EEEV to mammals (including humans and horses) occurs through the bite of certain infected mosquito species (i.e. *Aedes*, *Coquilleltidia*, and *Culex*) that feed on both birds and mammals. EEE is only spread to humans through the bite of an infected mosquito. EEE is not spread person-to-person, people to animals, or animals to people.

What are the symptoms of eastern equine encephalitis and when do they appear?

It is possible that some people who are infected with EEEV will not develop any symptoms. Symptoms of EEEV infection typically appear 4-10 days after being bitten by an infected mosquito.

The type of symptoms usually depend on the age of the person. People over age 50 and younger than age 15 are at greatest risk for developing severe disease. Severe cases of EEE infection begin with the sudden onset of headache, high fever, chills, and vomiting that may progress into disorientation, seizures, encephalitis (inflammation of the brain), and coma. Approximately a third of patients who develop EEE die, and many of those who survive have mild to severe brain damage.

How is eastern equine encephalitis diagnosed?

Health care providers diagnose EEE based on the patient's clinical symptoms and laboratory diagnosis

by testing blood or spinal fluids, which will show if the virus or antibodies against the virus are present in the person.

What is the treatment for eastern equine encephalitis?

There is no specific treatment for EEE. Treatment focuses on supportive therapy, including hospitalization, respiratory support, intravenous fluids, and prevention of other infections.

How can people reduce the chance of getting infected with EEE?

There is no human vaccine for EEE. The best way to protect yourself is to keep mosquitoes from biting you. Consider wearing long sleeves and tucking pants into socks and shirts into pants when outdoors at dusk or dawn, the time of day when mosquitoes are most active. People spending time outdoors in mosquito-infested areas can use insect repellents containing DEET. More information on repellents can be found at [Environmental Protection Agency- insect-repellents](#). In addition:

- Be sure to follow the insect repellent label directions.
- Try to reduce the use of repellents by dressing in long sleeves and pants tucked into socks or boots.
- Children should not handle repellents. Instead, adults should apply repellents to their own hands first and then gently spread on the child's exposed skin. Avoid applying directly to children's hands. After returning indoors, wash your child's treated skin and clothing with soap and water or give the child a bath.
- Do not apply near eyes, nose or mouth and use sparingly around ears.
- After returning indoors, wash treated skin with soap and water.

To reduce the mosquito population around your home and property, reduce or remove all standing water:

- Dispose of tin cans, plastic containers, ceramic pots or similar water-holding containers.
- Remove and recycle all discarded tires on your property. Used tires are a significant mosquito-breeding site.
- Drill holes in the bottoms of recycling containers that are kept outdoors.
- Make sure roof gutters drain properly and clean clogged gutters in the spring and fall.
- Remove leaf debris from yards and gardens.
- Turn over wading pools and wheelbarrows when not in use.
- Change the water in birdbaths twice weekly.
- Clean vegetation and debris from edges of ponds.
- Clean and chlorinate swimming pools, outdoor saunas, and hot tubs.
- Drain water from pool covers.
- Use landscaping to eliminate standing water that collects on your property.
- Make sure window and door screens fit properly and are in good condition.

What can be done to protect horses from eastern equine

encephalitis?

Vaccines are available to help protect horses from getting sick from the EEEV. Horse owners should also minimize exposure to infected mosquitoes by frequently changing water in troughs and buckets and eliminating other standing water sources. For more information about EEE in horses, talk to your veterinarian.