

TREATMENT

- There is no specific treatment for Eastern Equine Encephalitis.
- Antibiotics are not effective against viruses, and no effective anti-viral drugs have been discovered.
- There is a case-fatality rate of about 50% for those people who develop Eastern Equine Encephalitis.
- Of those who survive, many suffer permanent brain damage and require lifetime institutional care.
- If symptoms such as fever, headache, muscle weakness, stiffness, confusion, coma, or seizures develop, seek medical attention immediately.
- Diagnosis is based on tests of blood or spinal fluid.
- Care of patients who have contracted the Eastern Equine Encephalitis virus centers on the treatment of symptoms and complications.



OTHER

- Background data for EEE can be found online at:
<http://www.cdc.gov/ncidod/dvbid/arbor/cases-eee-1964-2000.htm>



RESOURCES

UNH Office of Environmental Health and Safety
11 Leavitt Lane, Perpetuity Hall
Durham, NH 03824
603.862.4041 (Telephone)
603.862.0047 (Facsimile)

<http://www.unh.edu/ehs>

American College of Physicians-American Society of Internal Medicine

“Mosquitoes and Mosquito Repellents: A Clinician's Guide” (Mark S. Fradin, MD. *Annals of Internal Medicine*. June 1998. 128:931-940).

<http://www.acponline.org/journals/annals/01jun98/mosquito.htm>



Centers for Disease Control and Prevention

1600 Clifton Rd. Atlanta, GA 30333
800.311.3435 (Public Inquiries)
404.639.3311 (Telephone)

<http://www.cdc.gov/ncidod/dvbid/arbor/eeefact.htm>

State of New Hampshire - Bureau of Communicable Disease Control

Department of Health and Human Services
6 Hazen Drive, Room 209
Concord NH, 03301
800.852.3345 ext. 4496 (Toll Free)

<http://www.dhhs.state.nh.us>

United States Environmental Protection Agency

US EPA Headquarters
Washington, DC 20460
New England Region: 888.372.7341 (Telephone)

<http://www.epa.gov/opp00001/citizens/deet.htm>

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Eastern Equine Encephalitis

Safety Pamphlet

The University of New Hampshire's Office of Environmental Health and Safety has produced this pamphlet as a result of the increasing number of Eastern Equine Encephalitis cases in the United States. This document is a guide and should not replace the expertise of your health care provider.

BACKGROUND

- Eastern Equine Encephalitis (EEE) is an arbovirus, which is short for arthropod-borne virus. It is a large group of viruses that are spread by certain invertebrate animals (arthropods), most commonly blood-sucking insects.
- EEE is a rare viral disease that is spread by infected mosquitoes. It can affect the central nervous system and cause severe complications and death.
- The EEE virus is found mainly along the eastern coast of the United States and on the eastern Gulf Coast. States with the largest number of cases include Florida, Georgia, Massachusetts, and New Jersey.
- The virus was first isolated in the United States in 1933 and is considered to be an emerging infectious disease.
- Since 1964, there have been 163 confirmed cases in the United States.
- The CDC receives nearly 1,000 reports of encephalitis (transmitted by mosquitoes) annually. However, there are usually fewer than 5 confirmed EEE cases in most years.

TRANSMISSION

- The EEE virus is spread to horses and humans by infected mosquitoes.
- It has a complex life cycle involving birds and a specific species of mosquito known as *Culiseta melanura*. The natural life cycle for the EEE virus is in marsh and swamp habitats.
- *Culiseta melanura* feeds only on birds and not on humans or other mammals.
- In rare cases, the virus can escape from its marsh or swamp habitat in other mosquitoes that feed on both birds and mammals. These mosquitoes are considered “bridge vectors,” and can transmit the virus to animals and people.
- Mosquitoes become infected with the EEE virus after feeding on infected birds that serve as reservoir hosts for the virus.
- Infected wild birds do not usually become ill with the disease.
- Only mosquitoes can transmit the EEE virus to humans. People and horses that are infected with the virus cannot spread the disease to others.
- Mosquitoes cannot be infected by feeding on humans or horses with the disease.
- Risk of becoming infected with the EEE virus is highest from late July through early October.
- Mosquitoes that can transmit the virus are greatly reduced at about the time of the first frost.
- The over-wintering cycle of the virus is not clearly understood.



PREVENTION

- The main control in preventing EEE is to avoid being bitten by the mosquitoes carrying the virus.
- To minimize exposure to the EEE virus, people should stay indoors during dusk, dawn, and in the early evening from June to October, when mosquitoes are most active.
- Whenever outdoors, insect repellent containing permethrin or 30% N,N-diethyl-meta-toluamide (DEET) for adults and 10% DEET for children should be applied to exposed skin and to clothing.
- **DEET should only be used according to manufacturer's directions.** More information regarding insect repellent and its proper use, or pesticide sprays, can be found at:
<http://www.acponline.org/journals/annals/01jun98/mosquito.htm>
<http://www.epa.gov/pesticides/factsheets/chemicals/deet.htm>
- Long-sleeved shirts, long pants, and socks are recommended when spending time outdoors.
- Doors and windows to homes should remain closed and have tight-fitting screens.
- Mosquitoes breed in standing water (such as water in wheelbarrows, old tires and buckets). Remove all empty all vesicles containing standing water. Keep swimming pools and hot tubs clean, chlorinated and covered when not in use.
- Repair leaky outdoor faucets and change the water in bird baths and pet bowls at least twice a week. In addition, keep gutters clean and in good repair.
- Vaccinate horse against the EEE and West Nile viruses.



SYMPTOMS

- Although the EEE virus rarely affects people, it can be more deadly than the West Nile virus.
- Most people have no symptoms; however the infection can cause a range of illnesses.
- Symptoms include: flu-like illness, fever, headache, sore throat, muscle aches, vomiting, extreme tiredness, mental confusion, seizures, and coma.
- Symptoms usually appear 4-10 days after the bite of an infected insect. After infection, the virus invades the central nervous system and brain.
- The patient may show a fever up to 11 days before any neurological effects. The patient may then descend into somnolence or delirium, stupor, disorientation, coma, tremors, convulsions and death.
- For people with infection of the central nervous system, a sudden fever and headache can be followed quickly by seizures and coma. Death often follows.
- In severe cases the virus invades the central nervous system leading to encephalitis, disorientation, convulsions, paralysis and coma.
- EEE occurs mainly in young children and in persons over the age of 55.
- The EEE virus kills up to 50% of people who catch it, compared with up to 15% for West Nile virus.
- Seek medical attention immediately should symptoms of EEE occur.
- Discuss the signs and symptoms of EEE with your doctor if you live in affected areas or are concerned about the disease.

