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Frequently Asked Questions: Eastern Equine Encephalitis

What is Eastern Equine Encephalitis?

Eastern Equine Encephalitis is a rare disease that is spread to horses and humans by infected mosquitoes. It is among the most serious of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death. Similar diseases are Western Equine Encephalitis, St. Louis Encephalitis, and LaCrosse Encephalitis.

What is the infectious agent that causes Eastern Equine Encephalitis?

Eastern Equine Encephalitis is an arbovirus. Arbovirus is short for arthropod-borne virus. Arboviruses are a large group of viruses that are spread by certain invertebrate animals (arthropods), most commonly blood-sucking insects. In the United States, arboviruses are spread mainly by infected mosquitoes. Birds are the source of infection for mosquitoes, which can sometimes transmit the infection to horses, other animals and, in rare cases, people.

Where is Eastern Equine Encephalitis found?

Eastern Equine Encephalitis is found in North America, Central and South America and the Caribbean. In the United States, most cases have been reported from the eastern seaboard states, the Gulf Coast and some inland Midwestern areas.

How do people get Eastern Equine Encephalitis?

The Eastern Equine Encephalitis virus has a complex life cycle involving birds and a specific type of mosquito, *Culiseta melanura*, that lives in marshes and swamps. These mosquitoes feed only on birds; they do not feed on humans and other mammals. In rare cases, however, the virus can escape from its marsh habitat in other mosquitoes that feed on both birds and mammals (including horses and humans). These mosquitoes can transmit the virus to animals and people. After infection, the virus invades the central nervous system, including the spinal cord and brain. In addition to horses, other animals such as ratites (emus and ostriches) and camelids (alpacas and llamas) can also be impacted by Eastern Equine Encephalitis infection. Emus in particular are highly vulnerable to infection and exposure to body fluids (particularly feces, saliva, and blood) from infected birds can lead to additional birds and people to become sick.

What are the signs and symptoms of Eastern Equine Encephalitis?

Infection can cause a range of illnesses. Most people have no symptoms; others get only a mild flu-like illness with fever, headache and sore throat. For people with infection of the central nervous system, a sudden fever and severe headache can be followed quickly by seizures and coma. About half of these patients die from the disease. Of those who survive, many suffer permanent brain damage and require lifetime institutional care.

How soon after exposure do symptoms appear?

Symptoms usually appear four to 10 days after the bite of an infected mosquito.

How is Eastern Equine Encephalitis diagnosed?

Diagnosis is based on tests of blood or spinal fluid.

Who is at risk for Eastern Equine Encephalitis?

Anyone can get Eastern Equine Encephalitis, but some people are at increased risk due to bites of infected mosquitoes:

- People living in or visiting areas where the disease is common.
- People who work outside or participate in outdoor recreational activities in areas where the disease is common.
- Eastern Equine Encephalitis occurs mainly in young children and in persons older than age 55.
- People involved with the care of emus with Eastern Equine Encephalitis virus infection can also be exposed by direct contact with infected birds or their bodily fluids or feces.

What complications can result from Eastern Equine Encephalitis?

The disease is fatal to about half of those who develop severe symptoms. Of those who survive, many suffer permanent brain damage.

What is the treatment for Eastern Equine Encephalitis?

There is no specific treatment for Eastern Equine Encephalitis. Antibiotics are not effective against viruses, and no effective anti-viral drugs have been discovered. Patient care centers on treatment of symptoms and complications.

How common is Eastern Equine Encephalitis?

Eastern Equine Encephalitis is a rare disease. Fewer than five cases are reported in most years. Although small outbreaks of human disease have occurred in the United States, epidemics in horses can be common during the summer and fall.

Is Eastern Equine Encephalitis an emerging infectious disease?

Yes. Eastern Equine Encephalitis virus was first isolated in the United States in 1933. The risk of exposure has been increasing as people move into previously undeveloped areas where the virus lives. Deaths in horses are a sign of increased spread of the virus in a community.

How can Eastern Equine Encephalitis be prevented?

A vaccine is available for horses, but not for humans. A vaccine has also been used off-label for ratites (ostriches and emus) and camelids (alpacas and llamas). The best defense against these viruses is prevention. The best preventive measure for residents living in areas infested with mosquitoes is to eliminate the places where the mosquito lays her eggs, primarily artificial containers that hold water. For individuals in contact with sick emus, consult with your veterinarian right away and limit contact with the birds. Anyone working with emus that might be infected with Eastern Equine Encephalitis should always use proper personal protective equipment. This includes wearing disposable or washable outerwear, shoe covers, gloves, face shield, and an N95 fit-tested respirator. Please contact your county health department for any questions related to emus and Eastern Equine Encephalitis exposure risks.

To prevent mosquitoes from living and multiplying around your home or business:

DRAIN standing water:

- Drain water from garbage cans, buckets, pool covers, coolers, toys, flowerpots or any other containers where sprinkler or rainwater has collected.
- Discarded old tires, drums, bottles, cans, pots and pans, broken appliances and other items that aren't being used.
- Empty and clean birdbaths and pet's water bowls at least once or twice a week.
- Protect boats and vehicles from rain with tarps that don't accumulate water.

- Maintain swimming pools in good condition and appropriately chlorinated. Empty plastic swimming pools when not in use.

COVER your skin with:

- CLOTHING - If you must be outside when mosquitoes are active, cover up. Wear shoes, socks, long pants and long sleeves.
- REPELLENT - Apply mosquito repellent to bare skin and clothing. Always use repellents according to the label. Repellents with 10-30 percent DEET, Picaridin, oil of lemon eucalyptus, para-menthane diol, and IR3535 are effective.
- Use mosquito netting to protect children younger than 2 months old.

COVER doors and windows with screens:

- Keep mosquitoes out of your house. Repair broken screening on windows, doors, porches, and patios.

For additional information visit

www.floridahealth.gov/diseases-and-conditions/eastern-equine-encephalitis/index.html.

For information from the Centers for Disease Control and Prevention (CDC) visit

www.cdc.gov/EasternEquineEncephalitis/.