

Western Equine Encephalitis

What is Western Equine Encephalitis?

Western equine encephalitis is a viral illness that is transmitted to people and horses through the bite of an infected mosquito. The virus is an alphavirus and is closely related to eastern equine encephalitis and Venezuelan equine encephalitis viruses.

Illness caused by western equine encephalitis is very rare in the United States. In 1941, there was a large regional outbreak of western equine encephalitis that spanned several states and Canada. That year, there were nearly 800 cases in Minnesota with 90 deaths. Since then, Minnesota has had very infrequent and much smaller outbreaks of western equine encephalitis.

How serious is Western Equine Encephalitis?

Most people infected with this virus will have either no symptoms or a mild flu-like illness. Symptoms usually show up suddenly within 1-2 weeks of being bitten by an infected mosquito. A small percentage of people, especially infants and elderly persons, may develop encephalitis (inflammation of the brain).

Most severe human cases begin with a sudden onset of fever, headache, stiff neck, vomiting, or weakness. The illness may progress to disorientation, irritability, seizures and coma. Approximately 5-15% of these encephalitis cases are fatal, and about 50% of surviving infants will have permanent brain damage. There is no treatment for western equine encephalitis

other than supportive care. Hospitalization may be needed for severe cases.

Who is at risk for Western Equine Encephalitis?

Western equine encephalitis is most commonly reported from states and Canadian provinces west of the Mississippi River. During past Minnesota outbreaks, the virus has been found over much of western and southern Minnesota. The mosquitoes that can spread western equine encephalitis virus are often abundant in this area because they are able to use semi-permanent grassy wetlands in agricultural parts of the state as breeding sites. People who work outside or participate in outdoor activities are at greater risk because of exposure to mosquitoes.

What kind of mosquito spreads Western Equine Encephalitis?

In Minnesota, we have approximately 50 species of mosquitoes but not all mosquitoes feed on people. The primary vector of western equine encephalitis virus in our state is *Culex tarsalis*. This mosquito is commonly found in open areas such as farmland and prairie where it can lay its eggs in standing water like drainage ditches and wetlands. The mosquito is a strong flyer and can fly several miles from the area where it developed. It feeds primarily at dusk and dawn. The highest risk of mosquito-borne disease in Minnesota is typically from mid-July through mid-September.

What can people do to prevent Western Equine Encephalitis?

The best way to prevent western equine encephalitis is to protect yourself and your family from mosquito bites:

- Avoid outdoor activities at dusk and dawn, the peak feeding time for many mosquitoes, particularly from July through September.
- Use repellents containing DEET according to label directions – up to 30% DEET is safe and effective for adults and children over two months of age. Other effective repellents include picaridin, IR3535, and oil of lemon eucalyptus. Only use products that are registered by the Environmental Protection Agency.
- Pre-treat clothing and gear with permethrin-based products.
- Wear loose-fitting, long sleeved shirts and pants.
- Keep mosquitoes out of your home by maintaining screens on windows and doors.

To protect yourself and your family from other mosquito-borne illnesses in Minnesota:

- Empty standing water from around your home at least once a week to prevent mosquitoes from using containers as breeding sites.
 - Buckets, flower pots/saucers, pet bowls, birdbaths, kiddie pools, etc.
- Check gutters and remove leaves frequently to ensure proper drainage.
- Tighten up loose tarps/covers so water does not pool.

- Tightly cover or screen water storage containers (e.g., rain barrels).
- Fill water-holding tree holes with dirt or sand.
- Recycle old tires or store them where they can't collect rainwater.

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