



Just the Facts...

LaCrosse Encephalitis



- LaCrosse encephalitis is a rare viral disease that is spread by infected mosquitoes. It usually affects children.
- LaCrosse encephalitis is one of several mosquito-borne virus diseases that can affect the central nervous system and cause severe complications.
- LaCrosse encephalitis is found mainly in the upper midwestern United States and in the Appalachian region.
- There is no specific treatment for LaCrosse encephalitis.
- Prevention centers on controlling mosquitoes and avoiding mosquito bites.

What is LaCrosse encephalitis?

LaCrosse encephalitis is a rare disease that is spread by infected mosquitoes. It gets its name from LaCrosse, Wisconsin, where the infection was first recognized in 1963. LaCrosse encephalitis is one of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death. Other similar diseases are eastern equine encephalitis, western equine encephalitis, and St. Louis encephalitis.

What is the infectious agent that causes LaCrosse encephalitis?

LaCrosse encephalitis is caused by the LaCrosse encephalitis virus, 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.

Where is LaCrosse encephalitis found?

LaCrosse encephalitis is most common in the hardwood forest areas of the upper midwestern United States and in the Appalachian region (West Virginia, North Carolina, Tennessee, Virginia). Most recent cases are from West Virginia.

How do people get LaCrosse encephalitis?

The LaCrosse encephalitis virus has a complex life cycle involving chipmunks and squirrels and a specific type of woodland mosquito (*Aedes triseriatus*). This mosquito breeds in tree holes and manmade containers and bites during the day. People are not an important part of the life cycle of the virus. In rare cases, however, people who live in or visit an area where the virus lives can be infected by the bite of an infected mosquito. After infection, the virus invades the central nervous system, including the spinal cord and brain.

What are the signs and symptoms of LaCrosse encephalitis?

LaCrosse encephalitis is usually a mild illness, with fever, headache, nausea, vomiting, and tiredness. People with severe disease, usually children, can have seizures, coma, paralysis, and lasting brain damage.

How soon after exposure do symptoms appear?

It takes from 5 to 15 days after the bite of an infected mosquito to develop symptoms of LaCrosse encephalitis.

How is LaCrosse encephalitis diagnosed?

Diagnosis is based on tests of blood or spinal fluid.

Who is at risk for LaCrosse encephalitis?

Anyone can get LaCrosse encephalitis, but some people are at increased risk:

- Children
- People who live in or visit woodland habitats
- People who work outside or participate in outdoor recreational activities in areas where the disease is common

What is the treatment for LaCrosse encephalitis?

There is no specific treatment for LaCrosse 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.

What complications can result from LaCrosse encephalitis?

Some children have ongoing seizures and swelling of the brain, but deaths are rare.

How common is LaCrosse encephalitis?

During an average year, about 75 cases of LaCrosse encephalitis are reported. Most cases occur in children under age 16 years.

Is LaCrosse encephalitis an emerging infectious disease?

Yes. LaCrosse encephalitis virus was first isolated in the United States in 1963. The risk of exposures has been increasing as people move into previously undeveloped areas where the virus lives.

How can LaCrosse encephalitis be prevented?

There is no vaccine for LaCrosse encephalitis. Prevention centers on public health action to control mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that cause LaCrosse encephalitis:

- Use mosquito repellents on skin and clothing
- Use insect repellents that have been approved by the Environmental Protection Agency (EPA). They are safe and effective.
- For your skin, use a product that contains 20-50% **DEET** (N,N-diethyl-meta-toluamide). **DEET** in higher concentrations is no more effective. Do not use **DEET** on infants (children under 3 years old).
- Use **DEET** sparingly on children, and don't apply to their hands, which they often place in their mouths.
- Apply **DEET** lightly and evenly to exposed skin; do not use underneath clothing. Avoid contact with eyes, lips, and broken irritated skin.
- To apply to your face, first dispense a small amount of **DEET** onto your hands and then carefully spread a thin layer.
- Do not inhale aerosol formulations.
- Wash **DEET** off when exposure to mosquitoes ceases.
- For your clothing, use an insect repellent spray to help prevent bites through the fabric. Use a product that contains either **permethrin** or **DEET**. **Permethrin** is available commercially as 0.5% spray formulations.
- **Permethrin** should only be used on clothing; never on skin.
- When using any insect repellent, always FOLLOW LABEL DIRECTIONS.

- For optimum protection, soldiers should utilize the **DOD INSECT REPELLENT SYSTEM**. In addition to proper wear of the battle dress uniform (BDUs), which provides a physical barrier to insects, this system includes the concurrent use of both skin and clothing repellents:



Standard military skin repellent: 33% **DEET**, long-acting formulation, one application lasts up to 12 hours, **NSN 6840-01-284-3982**. Standard military clothing repellents, either: aerosol spray, 0.5% **permethrin**, one application lasts through 5-6 washes **NSN 6840-01-278-1336**; or impregnation kit, 40% **permethrin**, one application lasts the life of the uniform, **NSN 6840-01-345-0237**. Factory repellent-treated BDUs are also available through the military supply system.

Where can I get more information on Lacrosse Encephalitis and other forms of mosquito-borne viral encephalitis?

Contact the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), Aberdeen Proving Ground, Maryland 21010-5403: DSN 584-3613; CM (410) 436-3613; FAX -2037; or visit our website at: <http://chppm-www.apgea.army.mil/ento>. Additional information can also be obtained from your local, county or state health departments, your health care provider or by contacting the CDC email: dvbid@cdc.gov, or visit their website <http://www.cdc.gov/ncidod/dvbid/arbor/arboinfo.htm>.

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