



Western Equine Encephalitis

FACT SHEET 18-045-0317

Just the Facts... *Western equine encephalitis (WEE) is a disease that is spread to humans and horses by infected mosquitoes. It is one of a group of mosquito-borne viral diseases that can affect the central nervous system and cause severe complications and even death. Other similar diseases are West Nile virus (WNV), Eastern equine (EEE), St. Louis (SLE) and La Crosse encephalitis. WEE is an infection found throughout North, Central and South America. In the United States, the disease is most commonly reported from the plains regions of the Western and Central United States. WEE is a rare disease in humans, the Centers for Disease Control and Prevention (CDC) reports a total of 639 confirmed cases in the U.S. since 1964.*

How do people become infected with Western equine encephalitis?

People contract WEE primarily through the bite of infected *Culex tarsalis* mosquitoes. This mosquito prefers biting birds in the spring and large mammals (including humans) as the summer progresses. *Culex tarsalis* only bites at dawn and dusk. Mosquitoes acquire this virus by feeding on infected birds. Infected mosquitoes then transmit the virus to more birds, as well as to humans and horses. After a bite from an infected mosquito, the virus invades the persons' central nervous system. WEE is NOT transmitted from person-to-person. For example, you cannot get the virus from touching or kissing a person who has the disease or from a health care worker who has treated someone with WEE.



Map: Denice Adams, APHC. Source USGS disease map

Distribution of WEE in the U.S. as of 2012
States with a potential risk for contracting WEE are shaded in grey.



Photo: J.K. Clark, University of California

An adult female *Culex tarsalis* mosquito is the primary species of mosquito that transmits the WEE virus in the U.S.

Can you get Western equine encephalitis directly from birds or other animals?

There is no evidence that a person can get WEE from handling either live or dead infected animals. However, as a general precaution, always wear gloves when handling dead animals, including dead birds and use double plastic bags when disposing of them.

What are the symptoms of Western equine encephalitis infection?

WEE occurs in all age groups. Infection with the WEE virus can cause illness ranging from very mild to fatal. Symptoms usually appear 5 to 10 days after the bite of an infected mosquito. People with mild illness often experience only a headache and sometimes fever. People with the more severe form of the disease, can exhibit sudden high fever, headache, drowsiness, irritability, nausea and vomiting; followed by confusion, weakness, coma and death. Infants with WEE infection often suffer seizures. Major complications, including brain damage, are reported in about 13% of infected persons overall and in about one-third of infants. The disease is fatal in about 3% of people who develop severe symptoms.

Is there a treatment for Western equine encephalitis infection?

There is no specific medical treatment for WEE. Therapy is supportive only, directed at relieving the symptoms and preventing complications. Diagnosis is based on tests of blood or spinal fluid. There is no vaccine for humans, but a vaccine is available for horses.

What should I do if I think I have Western equine encephalitis?

If you develop symptoms such as sudden high fever, unusually severe headaches, nausea or vomiting seek medical attention immediately. Individuals with suspected WEE illness should be evaluated by a healthcare provider.

How can Western equine encephalitis be prevented?

AVOID MOSQUITO BITES! The best method of protection from mosquitoes is the use of the DOD Insect Repellent System. It incorporates permethrin repellent on the uniform, DEET or picaridin repellent on exposed skin, a properly worn uniform and sleeping under a permethrin-treated bed net. Another important preventive measure is to eliminate mosquito breeding sites. Empty water from old tires or any outdoor containers that can collect water. When indoors, stay in air-conditioned areas. Make sure door and window screens are in place and do not have holes. Minimize time outdoors when mosquitoes are most active.

What can I use to treat my clothing with permethrin?

Army Combat Uniforms (ACUs) that are factory-treated with permethrin (ACU Permethrin) are now available to all Soldiers. Uniforms factory-treated with permethrin, have a sewn-in label on both the trouser and the blouse indicating the uniform has been factory-treated with permethrin (photo right). If not factory-treated, apply permethrin to uniforms in the field before wearing using either the IDA Kit (NSN 6840-01-345-0237), which can last up to 50 washings, or aerosol can (NSN 6840-01-278-1336), which lasts 5-6 washings. Other aerosol products containing 0.05% permethrin and permethrin-impregnated garments are also commercially available for civilian use.

What are the standard military insect repellent products available for use on exposed skin?

Approved military insect repellents for use on exposed skin come in a variety of formulations. Always refer to the label to determine frequency of repellent application based on activity. **Do not apply repellent to eyes, lips, or to sensitive or damaged skin.** Available military repellents are:

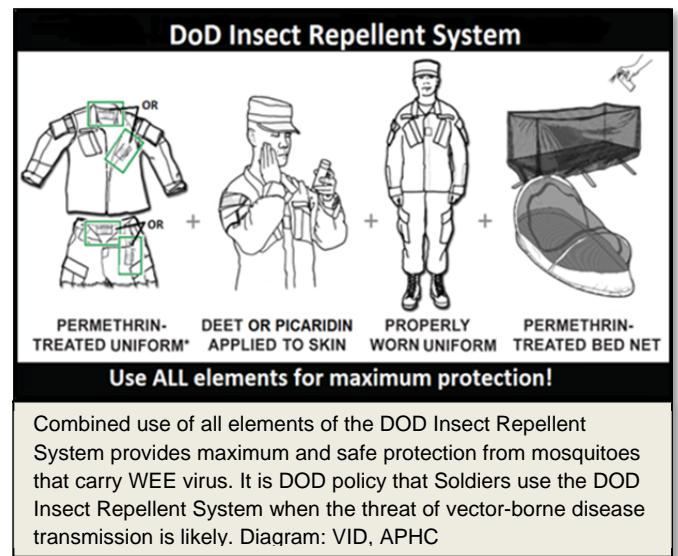
- **Ultrathon™** (NSN 6840-01-284-3982) 33% controlled-release DEET lotion; one application protects for 12 hours.
- **Ultra 30 Insect Repellent Lotion** (NSN 6840-01-584-8393) contains 30% Lipo DEET; one application protects for up to 12 hours.
- **Cutter® pump spray** (NSN 6840-01-584-8598) contains 23% DEET; one application protects for up to 8 hours.
- **Sunsect** combination sunscreen & repellent (6840-01-288-2188) contains 20% DEET and SPF 15 sun protection.
- **Natrapel® pump spray** (NSN 6840-01-619-4795) contains 20% picaridin; provides improved protection against Anopheles mosquitoes (carriers of malaria).

What is considered a “properly worn uniform”?

Worn properly, your uniform acts as a physical barrier against insects. Wear the sleeves rolled down. Close all openings in your clothing that might provide access to insects: tuck your pants into your boots and your undershirt into your pants. Wear your uniform loosely since mosquitoes can bite through fabric that is pulled tight against the skin.

What are the standard bed nets available to help protect Soldiers from mosquito bites while sleeping?

Lightweight, Self-Supporting, Pop-Up Bed Nets factory-treated with permethrin are available in Coyote Brown (NSN 3740-01-518-7310) or OD Green (NSN 8415-01-516-4415). Untreated Mosquito Bed Nets (NSN 7210-00-266-9736) should be treated with permethrin aerosol before setting up to prevent mosquitoes from biting through the net.



Standard military insect repellents for use on exposed skin come in a variety of formulations (left). All standard skin repellents contain the active ingredient DEET or picaridin and are registered by the USEPA. These products are safe to use and effective at repelling mosquitoes that carry the WEE virus. Photo: VID, APHC.