

Don't Let the BAD Bugs Bite

RISK AND PREVENTION IN THE OUTDOORS

Perceived risk plays a role in our decisions to spend time outdoors. Outdoors, we might encounter wildlife, including those that carry disease. Is this risk increasing? Populations of certain wildlife species are on the rise, in part as a result of restoration efforts and legal protection. Human populations are increasing as well, and expanding into wildlife habitats. Perhaps it's the perceived risk that is increasing.

There are historic cases, dating back hundreds of years, of the same wildlife diseases we are dealing with today, including rabies and West Nile Virus. In all, there are 1,407 different species of human pathogens, and 816 (58%) of those are borne by wildlife. Two of the greatest causes of their increased impact on humans have been changes in human land use and agricultural practices.

Don't let potential wildlife conflicts keep you trapped indoors. As long as you take some basic, sensible precautions, the advantages of being outdoors far outweighs the risk. Educate yourself and get outside!

Lyme Disease

Borrelia burgdorferi is the bacterium in humans and animals that causes Lyme disease. In most cases, the bacteria are transmitted by the bite of an infected black leg tick (aka deer tick). If a tick feeds on an animal infected with Lyme disease and then on a person, the bacteria can be transmitted. Lyme disease was first detected in humans in 1977 in Lyme, Connecticut, where it infected a cluster of children. Ticks transmit the bacteria by inserting their



With a barbed mouth and special glue, the deer tick holds fast to its host while feeding.

mouths into the skin of a host and drawing blood.

Who is at risk for Lyme disease? Any person who spends any time in wooded or grassy areas or where ticks may be present is at risk for the disease. Lyme disease is not contagious and cannot be transmitted from person to person.

Protect yourself from ticks

When in wooded or grassy areas, you should do the following:

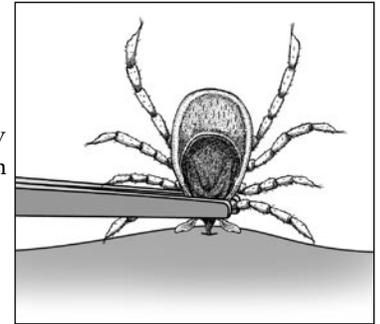
- Wear light-colored clothing to make the ticks easy to see (keep in mind that deer ticks are small – the size of the head of a pin).
- Tuck pants into socks and shirts into pants.
- Consider using an insect repellent.
- After every two or three hours of outdoor activity, check for ticks on clothing and skin.
- Complete a thorough check of your whole body for attached ticks at the end of the day.

How should a tick be removed?

It is important to remove a tick as soon as it is discovered. Use tweezers or fingers shielded with tissue or rubber gloves. Do not handle a tick with bare hands. Grasp the mouthparts of the tick with the tweezers or with your fingers, as close to the skin site as possible. Be careful not to squeeze, crush or puncture the body of the tick, as you may come in contact with infectious fluids. After removing the tick, thoroughly disinfect the tick site with rubbing alcohol or an antibacterial wash and then wash your hands with hot water and soap. See or call a doctor if there are concerns about incomplete tick removal.

Symptoms of Lyme disease

Symptoms usually begin within a month of exposure. The illness often starts as a large,



reddish circular rash near the site of a tick bite. Other symptoms, such as chills, fever and muscle or joint pain, may be present and may last for several weeks. If the disease is left untreated, complications such as meningitis, facial palsy, arthritis and heart abnormalities may occur and other body systems may be affected. Swelling and pain in the large joints (i.e., knees) may recur over many years. These later symptoms may appear in people who did not have early symptoms or did not recognize them.

Protect Yourself!

If outside during evening, nighttime and dawn hours when mosquitoes are most active and likely to bite, wear protective clothing such as long pants, long-sleeved shirts and socks.

Consider using an effective insect repellent, such as one containing 30% or less of DEET (N,N-diethyl-methyl-meta-toluamide), for children and adults. Use DEET according to the manufacturer's directions. Children should not apply DEET to themselves. Repellents that contain Picaridin or oil of lemon eucalyptus are also effective. Vitamin B, ultrasonic devices, incense and bug zappers have not been shown to be effective in preventing mosquito bites.

Eastern Equine Encephalitis

Eastern equine encephalitis (EEE) is a rare but serious viral disease. EEE is an arbovirus (short for arthropod-borne) that can be carried by some kinds of mosquitoes. When a mosquito bites an infected bird, the mosquito becomes infected. These infected mosquitoes can then transmit the virus to the animals they bite, including horses and, rarely, humans. No known transmission has

occurred from birds to people. However, since dead birds may have the virus, you should not handle birds or any dead animals with your bare hands.

Who is at risk for EEE?

EEE is a rare disease, with fewer than five cases reported in the U.S. in most years. There is concern, however, that EEE is re-emerging. In New Hampshire, there were several human cases in the past 25 years. Anyone can catch EEE, but some people are at increased risk, such as those 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. Children and those over age 55 are more susceptible to the disease. The risk of getting EEE is highest from late July through September.

Symptoms and treatment

Symptoms of EEE usually appear four to ten days after the bite of an infected mosquito. Diagnosis is based on tests of blood or spinal fluid. Infection can cause a range of symptoms. While most people have no symptoms, others get a mild flu-like illness with fever, headache and sore throat. Some people's central nervous systems, however, become infected, resulting in a sudden high fever (103°F to 106°F), severe headaches, and a stiff neck, which can be quickly followed by seizures and coma. About one-third of these patients die from the disease. Of those that survive, many suffer permanent brain damage and require lifetime institutional care.

There is no specific treatment for EEE. Care of patients centers around treatment of symptoms and complications.

West Nile Virus

West Nile Virus (WNV) was first seen in the U.S. in 1999, in the Queens area of New York City. Like Eastern Equine Encephalitis, West Nile Virus is passed bird to bird by certain types of mosquitoes. Occasionally, an infected mosquito will pass the virus to humans or other animals.

Who is at risk for West Nile Virus?

Most healthy people don't get sick from the virus, but sometimes it may cause symptoms. Like EEE, West Nile Virus is not spread by person-to-person contact such as touching, kissing or caring for someone who is infected. No known transmission has occurred from birds to people, however, since dead birds may have the virus, you should not handle birds or any dead animals with your bare hands.

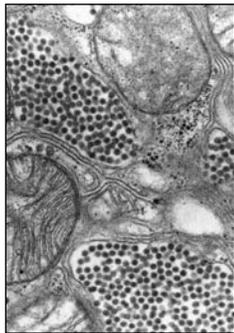
Many teachers and parents wonder if children bitten by mosquitoes at school should be tested for WNV. The answer is no, they don't need to be tested, because most mosquitoes are not infected with the WNV. Even in areas where mosquitoes do carry the virus, less than 1% of the insects are infected. Therefore, the chance that one bite will be from an infected mosquito is very small.

Symptoms of West Nile Virus

Most people who are bitten by mosquitoes carrying the WNV will experience no symptoms or very mild illnesses. The chances are slight that a child could become infected with WNV, but contact a doctor immediately if a child develops symptoms such as high fever, confusion, muscle weakness, severe headache, stiff neck, or if his or her eyes become sensitive to light.

Infected humans may have symptoms including encephalitis (inflammation of the brain) or meningitis (inflammation of the lining of the brain and spinal cord); these can also be caused by head injury, bacterial infections or, more commonly, by other viral infections.

Adapted from N.H. Department of Health and Human Services fact sheets.



EEE virus
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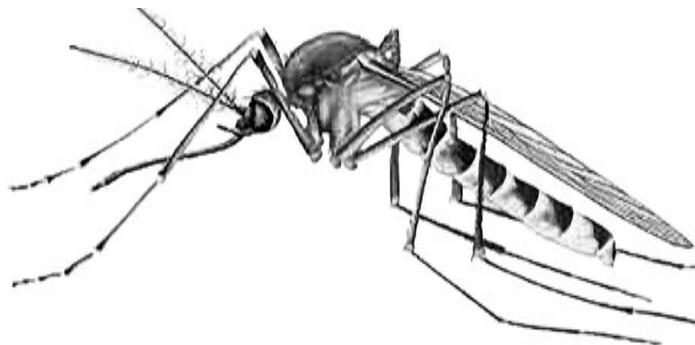
Minimize Exposure to Mosquito-borne Diseases

In warm weather, mosquitoes can breed in any puddle that lasts more than 4 days! To minimize exposure, **eliminate standing water** and other mosquito-breeding locations:

- Drill holes in the bottom of recycling containers that are left outside.
- Aerate garden ponds or stock with fish.
- Turn over wheelbarrows and change water in birdbaths at least twice weekly.
- Remove old tires from your property.
- Dispose of tin cans, plastic containers, ceramic pots, or other containers. Don't overlook containers that have become overgrown by aquatic vegetation.
- Make sure roof gutters are clean and draining properly.
- Clean and chlorinate swimming pools and hot tubs. If not in use, keep empty and covered and keep covers free of standing water.
- Turn over plastic wading pools.

Mow and trim: Although mosquitoes lay their eggs in standing water, weeds, tall grass and bushes provide an outdoor home for the adult *Culex pipiens* mosquito (the common northern house mosquito), which is most commonly associated with West Nile Virus.

Screen your house: Mosquitoes can enter homes through unscreened windows or doors, or broken screens. Make sure that doors and windows have tight-fitting screens. Repair or replace all screens in your home that have tears or holes. Resting mosquitoes can often be flushed from indoor resting sites by using sweeping motions under beds, behind bedside tables etc. and once in flight, exterminated prior to sleeping at night.



Transmission of the EEE and West Nile viruses comes through the bite of an infected mosquito.

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