



Bonus Health Tips
Mosquitos and EEE

How to Protect Your Home and Self from Mosquito-borne Illness



Earlier this month, the state of Massachusetts upgraded the risk of EEE (Eastern Equine Encephalitis) virus for several townships in Worcester County. While there have been few human cases (the risk is based on number of mosquitos that test positive for the virus), EEE and other mosquito-borne illnesses can be quite serious and life-threatening. As a result, we present the following health tips to help educate and hopefully reduce your risk of exposure. For more information regarding the risk levels, see the state website at mass.gov/info-details/massachusetts-arbovirus-update

EEE

Eastern Equine Encephalitis is a virus that is typically spread through the bite of an infected mosquito. The virus cannot be prevented by vaccine at this time, and there is no specific treatment available. In addition, the virus has a very high mortality rate if it progresses to the neurological stage, so prevention is considered very important.

EEE presents itself in one of three ways. For most exposed individuals, they manifest no symptoms at all. For others, they might have what are called febrile symptoms (i.e. fever). These symptoms tend to start 4 – 10 days after exposure, and include fever, chills, body aches, and joint pain. The symptoms last 1 – 2 weeks and can be managed (but not treated) with over-the-counter fever and pain medication. Most people who only get febrile symptoms recover without issue.

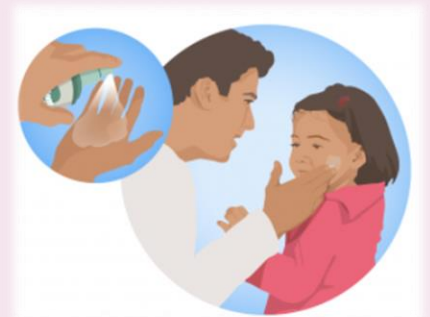
However, the most serious form of EEE presents with neurological symptoms, causing possibly long-term impairment to your nervous system. These symptoms include fever, headache, vomiting, diarrhea, seizures, behavioral changes, drowsiness, and even coma. Patients who develop these symptoms typically require hospitalization for supportive care, but even with care, about 1/3 of patients succumb to the illness. Even those that recover have a high risk for developing long-term disability, ranging from mild to significant. Some patients continue to require long-term care.

While this last version of the illness is relatively rare, it cannot be treated or prevented medically. As a result, the most important thing to know about EEE is that it's best avoided altogether by limiting your exposure to infected mosquitos. Luckily, there are steps you can take to help protect yourself and insulate your home from mosquitos.

Personal Protection

One of the steps for mosquito protection involves protecting yourself on the personal level. This means using an approved insect repellent, wearing proper protective clothing, and using mosquito nets to reduce night-time exposure.

- One of the simplest bits of personal protection is to use an EPA-approved insect repellent. Approved repellents containing the following ingredients are ideal: DEET, Picardin (also called KBR 3023 or icardin), IR3535, Oil of Lemon Eucalyptus (OLE), Para-menthane-diol (PMD), or 2-undecanone.
- There is no evidence on whether so-called “natural” insect repellents work. As a result, it is not recommended to use any substance that has not been approved by the EPA for use as an insect repellent.
- Remember to **follow the instructions on the label** for any insect repellent you apply.
- Be careful when applying insect repellent to children. **DO NOT** apply repellent onto the child's hands, eyes, mouth, cuts, or areas of irritated skin. Instead, apply the repellent to your hands and carefully apply it to their face.
- **DO NOT** apply repellent containing OLE or PMD to a child of 3 years or younger.
- **DO NOT** reapply repellent directly onto skin under clothing.
- Make sure to wear loose-fitting, long-sleeved shirts and pants when going outside.
- If you apply sunscreen, apply the sunscreen first and then insect repellent.



- You can also treat clothing with 0.5% permethrin (the same substance which can act as a tick repellent). **DO NOT** apply permethrin directly to your skin. It is instead used to coat outer clothing or equipment to repel pests.
- You can also purchase clothing that has been pre-treated with permethrin, which can persist through multiple wash cycles. As always, consult the manufacturer label to determine how long the protection lasts.
- When sleeping outdoors or in an area not otherwise protected from mosquitos (such as a home without screens on windows and doors), you should sleep with a mosquito net (permethrin-treated nets are also available and are more effective).
- Mosquito nets can also be placed over strollers or baby carriers to protect very young children from exposure when outside.
- To use a mosquito net, tuck it under the mattress. When protecting children, make sure the net is pulled tightly so as to prevent it from becoming a choking hazard.
- Hook or tie the sides of the net to other objects to prevent it from sagging into the sleeping area.
- Do not sleep directly in contact with the net, since mosquitos can still bite through the mesh even if they cannot pass through it fully.
- Do not leave the net near any open sources of flame, such as candles or cigarettes, to prevent a fire hazard.
- Inspect the net for holes or tears frequently and replace it if any are noted.
- As always, **follow any instructions on the product label.**



Keeping Mosquitos Out of the Home and Off Your Property

While personal protection is important, it's also important to reduce the chance of mosquito exposure by keeping your home and its surroundings as free of pests as possible. Mosquitos like to lay their eggs in places near standing water, and they can do this both in and out of doors. Mosquitos can and do bite at any time of day, so it's important to try and reduce the spaces where they can hide and procreate.

Outdoors

- Make sure to keep an eye on any locations on your property that support standing water, such as old tires, flowerpots, or other such containers. Dump these out at least once a week and keep them clean.
- Containers that could act as places where water can pool should be kept tightly closed, if possible. When that isn't practical, you can also apply mesh netting to any openings, so long as the mesh is small enough to exclude an adult mosquito.
- Fill things like tree holes in your backyard where water can collect.
- If you have a septic tank or pipes exposed to the elements, repair any cracks or holes. Any holes that cannot be sealed should be protected with a mesh as noted above.
- If you have large areas containing standing water that can't be properly emptied or covered, you can apply an EPA-approved larvicide to the water. **DO NOT** do this for any water intended as drinking water. As always, follow all instructions on the product label.
- Mosquitos can hide and rest in damp, dark areas, such as under patios and garages. These can be treated with an EPA-approved adulticide. As always, follow all instructions on the product label.

Indoors

- Keep mosquitos out of your home by installing tight mesh netting to windows and doors (especially ones small enough to exclude adult mosquitos). Repair/replace these nets if they become torn or damaged.
- Keep doors and windows closed whenever possible. Use air conditioning if/when available.
- Just as with the outdoors, take note of any locations that contain standing water (such as vases for flowers). Empty and clean these weekly at the minimum.
- Mosquitos also like damp, dark places, like the interior of laundry rooms and under sinks, so make sure to keep these areas clean and free of standing water.

- If methods of keeping mosquitos out fail, you can apply an EPA-approved insecticide provided all instructions on the manufacturer's label are followed and the insecticide is appropriate for use indoors. Insecticide alone cannot prevent mosquitos. Any pest management plan should contain multiple ways of treatment and exclusion (such as mesh screens, etc.).
- If the problem persists, you can hire a licensed pest control operator for additional treatment.

References

CDC Factsheet for Mosquito Prevention -

[cdc.gov/easternequineencephalitis/prevention/index.html](https://www.cdc.gov/easternequineencephalitis/prevention/index.html)

CDC Factsheet for EEE Virus –

[cdc.gov/easternequineencephalitis/symptoms-diagnosis-treatment/index.html](https://www.cdc.gov/easternequineencephalitis/symptoms-diagnosis-treatment/index.html)

EPA Insect Repellant Finder Tool - [epa.gov/insect-repellents/find-repellent-right-you](https://www.epa.gov/insect-repellents/find-repellent-right-you)

CDC Factsheet Outdoor Mosquito Control –

[cdc.gov/mosquitoes/mosquito-control/athome/outside-your-home/index.html](https://www.cdc.gov/mosquitoes/mosquito-control/athome/outside-your-home/index.html)

CDC Factsheet Indoor Mosquito Control –

[cdc.gov/mosquitoes/mosquito-control/athome/inside-your-home.html](https://www.cdc.gov/mosquitoes/mosquito-control/athome/inside-your-home.html)