Preventing Mosquito Bites

Why is it important to prevent mosquito bites?

Mosquitoes can spread diseases that make you sick. In Massachusetts, mosquitoes can give you eastern equine encephalitis (EEE) virus and West Nile virus (WNV).

Eastern equine encephalitis is a rare but serious disease. Symptoms include high fever, stiff neck, headache, and lack of energy. Swelling of the brain, called encephalitis, is the most dangerous complication, and can cause coma and death. Most cases in Massachusetts occur in the southeastern part of the state.

West Nile virus infections are more common than EEE, but most do not cause any symptoms. Mild WNV infections can cause fever, headache and body aches, often with a skin rash and swollen lymph glands. A small number of people (less than 1 out of 100) who get infected with West Nile virus develop more serious illness; this is more common in people over the age of 50. Symptoms of serious illness include headache, high fever, stiff neck, confusion, muscle weakness, tremors (shaking), convulsions, coma, paralysis, swelling of the brain, and sometimes death.

See your doctor if you develop these symptoms.

Only a small number of mosquitoes are infected at any given time, so being bitten by a mosquito does not mean you will get sick. However, the best way to avoid both of these illnesses is to prevent mosquito bites.

What is the best way to prevent mosquito bites?

- Use mosquito repellent any time you are outdoors. Even being out a short time can be long enough to get a mosquito bite. Make sure to follow directions on the label.
- Be aware of mosquitoes around you. If mosquitoes are biting you, reapply repellent, or think about going inside.
- Be aware of peak mosquito hours. The hours from dusk to dawn are peak biting times for many species of mosquitoes. Take extra care to use repellent and protective clothing during evening and early morning — or consider avoiding outdoor activities during these times.
- Use mosquito netting on baby carriages or playpens when your baby is outdoors.
- When weather permits, wear long-sleeves, long pants and socks when outdoors.
- Make sure screens are repaired and are tightly attached to doors and windows.
- Remove standing water from places like ditches, gutters, old tires, wheel barrows, and wading pools. Mosquitoes can begin to grow in any puddle or standing water that lasts for more than four days, so don't let water collect around your home.
- Avoid camping overnight near freshwater swamps to reduce your risk of exposure to mosquitoes that carry the EEE virus. If you do go camping, use a tent with mosquito netting and use appropriate repellents.

What kind of mosquito repellent should I use?

Different repellents work against different bugs. It is important to look at the active ingredient on the product label.

Repellents that contain DEET, permethrin, picaridin or IR3535 provide protection against mosquitoes. In addition, oil of lemon eucalyptus has been found to provide as much protection as low concentrations of DEET.

DEET products should not be used on infants under 2 months of age. Children older than two months should use products with DEET concentrations of 30% or less. In general, the higher the percentage of DEET, the longer it lasts. Products with DEET concentrations higher than 30% do not provide better protection, but they do last longer. Be sure to read the label to see what the concentration of DEET is, and how often it should be reapplied.

Permethrin products are intended to be used on items such as clothing, shoes, bed nets and camping gear and should not be applied to skin. Apply the permethrin to your clothes before you put them on and follow the instructions on the label.

Oil of lemon eucalyptus products should not be used on children under the age of three.

Do "natural" repellents work?

A number of "natural" products are available for use as mosquito repellents. Tests show that most of these products do not provide the same level of protection, or work as long as products like DEET or permethrin. The exception is oil of lemon eucalyptus, which provides as much protection as low concentrations of DEET.

Use these products wisely!

- Follow the instructions on the product label. If you have questions after reading the label, contact the manufacturer.
- Don't use repellents under clothing.
- Don't use repellents on cuts or irritated skin.
- Don't use repellents near the mouth or eyes— and use them sparingly around the ears. When using spray products, spray the product onto your hands first and then apply it to your face.
- Use just enough to lightly cover exposed skin and/or clothing. Putting on more does not provide better protection.
- Don't let children handle the product. When using repellents on children, put some on your hands first, and then apply it to the child. Don't put repellent on a child's hands.
- When you come inside, wash your skin and the clothes that had repellent on them.

What should I do if I have a reaction to a repellent?

If you suspect that you or your child is having an adverse reaction to a repellent (for example, if you develop a rash or other symptoms you think were caused by using a repellent), remove any treated clothing, wash the affected area with soap and water, and contact your doctor or local poison control center. If you go to the doctor, take the repellent with you; the label information may be useful. The toll-free telephone number for the Regional Center for Poison Control is (800) 222-1222.

What can I do to protect my animals?

Mosquitoes can infect horses and other animals. Horses are susceptible to WNV; and horses, llamas, alpacas, emus, ostriches and certain exotic game birds can get EEE. WNV and EEE viruses are not spread from horses or other mammals to humans in any way.

- Vaccines licensed for horses are considered highly protective and can even be used in some other species. Talk to your veterinarian about vaccinating your animals.
- Eliminate standing water by avoiding water overflow from troughs, reducing run-off and pooling of irrigation water, eliminating accumulated water in flower pots, and removing old tires and other containers in which water can collect.
- Eliminate piles of leaves, lawn clippings, and manure.
- Keep animals indoors during peak periods of mosquito activity (dusk and dawn).
- Avoid turning on lights inside barns during the evening and overnight. Mosquitoes are attracted to light.
- Apply mosquito repellents approved for use in animals. Read the product label before using, and follow all instructions carefully.

Where can I get more information?

For additional information on EEE and WNV:

Massachusetts Department of Public Health (MDPH)
Division of Epidemiology and Immunization
(617) 983-6800 or toll-free at (888) 658-2850
www.mass.gov/dph/wnv

For information on mosquito control in your city or town:

Massachusetts Department of Agricultural Resources
State Reclamation and Mosquito Control Board
(617) 626-1777
www.mass.gov/agr/mosquito/index.htm

Or call your local Board of Health.

Massachusetts Department of Public Health
Bureau of Infectious Disease
Division of Epidemiology and Immunization
305 South Street
Jamaica Plain, MA 02130
Phone: 617-983-6800

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Frequently Asked Questions about Mosquitoes in Massachusetts

Massachusetts Department of Public Health, 305 South Street, Jamaica Plain, MA 02130

Are there different kinds of mosquitoes?

Yes. About 3000 different kinds (also called "species") of mosquitoes have been identified worldwide, with more than 150 different kinds of mosquitoes found in North America. Fifty-one different kinds of mosquitoes have been found in Massachusetts.

Where are mosquitoes usually found?

Most adults spend the day in damp, shady areas where they can find protection from the sun; some of them will even hide in your house. Mosquitoes need water to lay their eggs in and plants to hide in so they are usually found around water and plants. Mosquito eggs are laid on water or damp soil where the young mosquitoes grow and develop.

Different mosquitoes prefer different kinds of water. Some like swamps or ponds and others prefer water in swimming and wading pools, old tires, watering cans, flower pots, trash cans, etc. When the young mosquito turns into an adult, it leaves the water and flies away.

How long do mosquitoes live?

Most female mosquitoes live for less than 2 weeks and most male mosquitoes live for less than a week. However, when the conditions are right, some mosquitoes will live up to 8 weeks. The life cycle of all mosquitoes includes four different stages: egg, larva, pupa, and adult. Adult mosquitoes are the only ones that fly.

Why do mosquitoes bite?

Only female mosquitoes bite to suck blood. The female uses the blood to make eggs. Male and female mosquitoes use plant nectars and fruit juices as their main source of food.

Do all female mosquitoes bite humans?

No. Different kinds of mosquitoes like different types of blood. Some mosquitoes feed on animals like frogs, turtles and birds. Other kinds bite mammals, including horses and humans. Some will bite both birds and mammals including humans. These mosquito species play an important role in spreading disease between birds and other mammals, including humans. *Diseases that are usually found in birds can be transmitted to humans (and some other mammals, like horses) by mosquitoes that bite both birds and mammals.*

When am I most likely to be bitten by a mosquito?

You can be bitten at any time. Different kinds of mosquitoes are active at different times of the day. Most mosquitoes are active from just before dusk, through the night until dawn.

Did you know?

Some kinds of mosquitoes can fly 1.5 miles per hour.

How does a mosquito find an animal or human to bite?

Female mosquitoes are attracted to the gas (carbon dioxide) that humans and other animals breathe out. Mosquitoes can follow a stream of carbon dioxide from as far as 50 feet away. Mosquitoes are also attracted to substances like lactic acid on your skin, which your body produces in greater amounts when exercising. Mosquitoes may also be attracted to certain scents or fragrances and are more attracted to dark colors than light colors.

Why are mosquito bites a concern?

Some mosquitoes carry germs that can make people and some animals sick. Mosquitoes can transmit germs when they bite. In Massachusetts, the diseases linked to mosquitoes are West Nile virus (WNV) and eastern equine encephalitis (EEE) virus.

Do all mosquitoes spread germs to people?

No. In fact, most mosquito bites will only cause itching or skin irritation. However, some species found in Massachusetts carry viruses that can cause illness.

Where can I get more information?

- **For information on diseases spread by mosquitoes and how to prevent them:** call the MDPH, Division of Epidemiology and Immunization at 617-983-6800 or visit the MDPH Arbovirus website at http://www.mass.gov/dph/mosquito
- **For information on mosquito species found in Massachusetts** visit the MDPH Arbovirus website at http://www.mass.gov/dph/mosquito
- **For information on mosquito repellents:** review the MDPH Public Health Fact Sheet on Mosquito Repellents online at https://www.mass.gov/fact-sheets-on-infectious-diseases. If you can't go online, call the MDPH at (617) 983-6800 for a hard copy.
- **For information on mosquito control**: The State Reclamation and Mosquito Control Board (SRMCB) within the Massachusetts Department of Agricultural Resources oversees mosquito control in Massachusetts (https://www.mass.gov/state-reclamation-and-mosquito-control-board-srmcb). The SRMCB can be contacted at 617-626-1723. There are nine established mosquito control districts in the state that provide service to many cities and towns. Information for each district can be found at https://www.mass.gov/service-details/srmcb-mosquito-control-projects-and-districts-information.
- **For information about mosquito-borne disease and your community:** call your local board of health (listed in the telephone directory under local government).

This document was developed in conjunction with the State Reclamation and Mosquito Control Board and the Massachusetts Mosquito Control Projects.

Updated February 2018

West Nile virus (WNV)

What is West Nile Virus (WNV)?

West Nile virus (WNV) is a mosquito-carried virus that can cause illness ranging from a mild fever to more serious disease like encephalitis or meningitis. It was first identified in the United States in 1999.

How is WNV spread?

WNV is most commonly spread to people through the bite of an infected mosquito. More information about different types of mosquitoes that can spread WNV can be found on the MDPH website at www.mass.gov/dph/mosquito.

WNV may also be spread through blood transfusion or organ transplant. In addition, there are rare reports of WNV being passed from pregnant or breastfeeding women, who are infected with WNV, to their babies. Since these reports are rare, the health effects on an unborn or breastfeeding baby are unclear and still being studied. People do not become infected by having direct contact with other infected people, birds or animals.

Why don't I need to report dead birds anymore?

From 2000 to 2008, MDPH collected reports and ran tests for WNV on dead birds in Massachusetts as one of several ways to monitor WNV activity across the state. In recent years, this method has become less useful for finding the virus. Many other states have discontinued dead bird reporting and testing. Mosquito collection and testing gives the most reliable indication of current WNV activity and this is where monitoring activities will continue to be focused.

Dead birds are no longer being tested for WNV and do not need to be reported to MDPH. Dead birds can be safely disposed of in the trash. Using gloves, a shovel or plastic bags covering your hands, the dead bird should be double-bagged and placed in the trash. You should then wash your hands.

What are the symptoms of WNV?

The majority of people who are infected with WNV (approximately 80%) will have no symptoms.
A smaller number of people who become infected (~ 20%) will have symptoms such as fever, headache, body aches, nausea, vomiting, and sometimes swollen lymph glands. They may also develop a skin rash on the chest, stomach and back.

Less than 1% of people infected with WNV will develop severe illness, including encephalitis or meningitis. The symptoms of severe illness can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. Persons older than 50 years of age have a higher risk of developing severe illness.

How common is WNV in Massachusetts?

Because most people who are exposed to WNV have no symptoms, it is difficult to know exactly how many people have been infected. People who develop severe illness with WNV are most often reported. Between 2008 and 2017, 81 people were reported with WNV infection in Massachusetts. Four of these people died. Cases have been identified from around the state.

What can you do to protect yourself from WNV?

Since WNV is most commonly spread by mosquitoes, here are some things you can do to reduce your chances of being bitten:

- Schedule outdoor events to avoid the hours between dusk and dawn, when mosquitoes are most active.
- When you are outdoors, wear long pants, a long-sleeved shirt and socks. This may be difficult to do when the weather is hot, but it will help keep mosquitoes away from your skin.
- Use a repellent with **DEET** (N, N-diethyl-m-toluamide), **permethrin, picaridin** (KBR 3023), **IR3535** (3-[N-butyl-N-acetyl]-aminopropionic acid) or **oil of lemon eucalyptus** [p-menthane 3, 8-diol (PMD)] according to the instructions given on the product label. DEET products should not be used on infants under two months of age and should be used in concentrations of 30% or less on older children. Oil of lemon eucalyptus should not be used on children under three years of age. Permethrin products are intended for use on items such as clothing, shoes, bed nets and camping gear and should not be applied to skin.
- Keep mosquitoes out of your house by repairing any holes in your screens and making sure they are tightly attached to all your doors and windows.
- Remove areas of standing water around your home. Here are some suggestions:
  - Look around outside your house for containers and other things that might collect water and turn them over, regularly empty them, or dispose of them.
  - Drill holes in the bottom of recycling containers that are left outdoors so that water can drain out.
  - Clean clogged roof gutters; remove leaves and debris that may prevent drainage of rainwater.
  - Turn over plastic wading pools and wheelbarrows when not in use.
  - Change the water in birdbaths every few days; aerate ornamental ponds or stock them with fish.
  - Keep swimming pools clean and properly chlorinated; remove standing water from pool covers.
  - Use landscaping to eliminate standing water that collects on your property.
- More information on choosing and using repellents safely is included in the MDPH Mosquito Repellents fact sheet which can be viewed online at www.mass.gov/dph/mosquito. If you can't go online, contact MDPH at (617) 983-6800 for a hard copy.

Did you know?

Mosquitoes can begin to multiply in any puddle or standing water that lasts for more than four days! Mosquito breeding sites can be anywhere. **Take action** to reduce the number of mosquitoes around your home and neighborhood. Organize a neighborhood clean up day to pick up containers from vacant lots and parks and to encourage people to keep their yards free of standing water. Mosquitoes don't care about fences, so it's important to remove areas of standing water throughout the neighborhood.

Where can I get more information?

- Your doctor, nurse, or health care clinic, or your local board of health.
- The Massachusetts Department of Public Health (MDPH), Division of Epidemiology and Immunization at (617) 983-6800 or on the MDPH Arbovirus website (www.mass.gov/dph/mosquito).
- **Health effects of pesticides,** MDPH, Bureau of Environmental Health at 617-624-5757.
- **Mosquito control in your city or town:** Mosquito control in Massachusetts is conducted through nine mosquito control districts. The State Reclamation and Mosquito Control Board (SRMCB) oversees all nine districts. Contact information for each district can be found online at https://www.mass.gov/state-reclamation-and-mosquito-control-board-srmcb. You may also contact the SRMCB within the Massachusetts Department of Agricultural Resources at 617-626-1777 or your local board of health.

Virus del Nilo Occidental

¿Qué es el virus del Nilo Occidental (WNV, West Nile Virus)?

El virus del Nilo Occidental (WNV, por sus siglas en inglés) es un virus portado por un mosquito y que puede causar una enfermedad que va desde una fiebre leve hasta una enfermedad más grave como la encefalitis o la meningitis. Fue identificado por primera vez en Estados Unidos en 1999.

¿Cómo se transmite el WNV?

La forma más común de transmisión del WNV a los seres humanos es por la picadura de un mosquito infectado. En el sitio web del MDPH, www.mass.gov/dph, en la letra A por "arbovirus" del índice de la A a la Z de Temas de Salud, puede encontrar más información sobre los diferentes tipos de mosquitos que pueden transmitir el WNV.

El WNV también puede transmitirse por transfusión sanguínea o transplante de un órgano. Además, se han informado muy infrecuentemente casos de transmisión del WNV al bebé por mujeres infectadas con el WNV embarazadas o que están amamantando. Dado que estos informes son muy infrecuentes, los efectos sobre la salud del feto o del lactante no se conocen bien y todavía se están estudiando.

Las personas no se contagian a través del contacto directo con otras personas, pájaros o animales infectados.

¿Por qué ya no es necesario que notifique sobre pájaros muertos?

Desde 2000 hasta 2008, el MDPH recogió notificaciones y se realizaron pruebas para detectar al WNV en pájaros muertos en Massachusetts, como uno de varios métodos de control de la actividad del WNV en todo el estado. En los últimos años, este método se ha vuelto menos útil para detectar el virus. Muchos otros estados han discontinuado los informes sobre pájaros muertos y las pruebas en los mismos. La recolección de mosquitos y la realización de pruebas en éstos proporcionan la indicación más fiable de la existencia de actividad del WNV y es en esto en lo que se concentrarán de aquí en más las actividades de vigilancia.

Ya no se realizan pruebas para el WNV en los pájaros muertos y ya no es necesario notificarlos al MDPH. Los pájaros muertos pueden eliminarse sin peligro en la basura. Utilizando guantes, una pala o cubriéndose las manos con bolsas de plástico se debe colocar al pájaro muerto en dos bolsas y luego en la basura. Luego hay que lavarse las manos.

¿Cuáles son los síntomas del WNV?

La mayor parte de las personas infectadas con el WNV (aproximadamente el 80%) no tienen ningún síntoma.

Una porción más pequeña de las personas que contraen la infección (~ 20%) tendrán síntomas como fiebre, dolor de cabeza, dolores en el cuerpo, náuseas, vómitos y algunas veces agrandamiento de los ganglios linfáticos. Es posible que también tengan una erupción cutánea en el pecho, el abdomen y la espalda.

Menos del 1% de las personas infectadas con el WNV sufrirán una enfermedad grave, como encefalitis o meningitis. Los síntomas de una enfermedad grave pueden ser fiebre alta, dolor de cabeza, rigidez del cuello, somnolencia, desorientación, coma, temblores, convulsiones, debilidad muscular, pérdida de la visión, disminución de la sensibilidad y parálisis. Las personas de más de 50 años de edad tienen un riesgo más alto de sufrir una enfermedad grave.

¿Qué tan común es el WNV en Massachusetts?

Debido a que la mayor parte de las personas expuestas al WNV no tienen síntomas, es difícil saber con exactitud cuántas personas han sido infectadas. Los casos que se notifican más frecuentemente son los de personas que sufren una enfermedad grave a causa del WNV. Entre los años 2000 y 2008, se notificaron 60 casos de personas infectadas por el WNV en Massachussetts. Seis de estas personas murieron. Se identificaron casos de todo el estado de Massachusetts.

¿Existe algún tratamiento para el WNV?

No hay un tratamiento específico para las infecciones por el WNV. Las personas con infecciones leves por el WNV usualmente se recuperan por sí solas. Aquellas que tienen una infección grave por el WNV casi siempre deben ser hospitalizadas. Sus síntomas pueden durar varias semanas y los efectos neurológicos pueden ser permanentes. Aproximadamente el 10% de las personas que desarrollan una enfermedad grave morirán a causa de la infección.

¿Qué puede hacer para protegerse del WNV?

Dado que el WNV se transmite más comúnmente por los mosquitos, le ofrecemos a continuación una lista de cosas que puede hacer para reducir las probabilidades de que le piquen mosquitos:

- Programe sus actividades al aire libre de manera de evitar las horas que van desde el atardecer al amanecer, durante las cuales los mosquitos están más activos.
- Cuando esté al aire libre, use una camisa de pantalones largos, camisa de manga larga y medias. Puede resultar difícil cuando el tiempo es muy caluroso, pero ayudará a mantener a los mosquitos alejados de su piel.
- Use un repelente que contenga **DEET** (N-N-dietil-m-toluamida), **permetrina**, **picaridina** (KBR 3023), el **IR3535** (ácido 3-[N-butil-N-acetil] aminopropiónico) o **aceite de eucalipto limón** [p-mentano 3, 8-diol (PMD)] y siga las instrucciones de la etiqueta del producto.
    - No se deben utilizar productos que contienen DEET en niños de menos de dos meses, y estos productos deben emplearse en concentraciones de 30% o menos en niños mayores de esa edad.
    - No debe utilizarse aceite de eucalipto limón en niños de menos de tres años.
    - Los productos con permetrina se usan en elementos como ropa, zapatos, telas mosquiteras para la cama y en equipos para campamento, y no se deben aplicar sobre la piel.
    - La hoja informativa del MDPH sobre los repelentes de mosquitos proporciona más información sobre cómo elegir y usar de manera segura estos productos, y puede consultarse en Internet en www.mass.gov/dph. Si no tiene acceso a Internet, llame al MDPH al (617) 983-6800 para pedir una copia en papel.
- Para mantener los mosquitos fuera de su casa, repare todos los agujeros que pudieran tener las mallas (*screens*) y asegúrese de que estén muy bien fijadas a las puertas y ventanas.
- Elimine las áreas de agua estancada alrededor de su hogar. Éstas son algunas sugerencias:
    - Inspeccione el terreno alrededor de su casa para ver si hay recipientes u otros objetos que pudieran contener o juntar agua y póngalos boca abajo, vacíelos regularmente o bótelos.
    - Haga perforaciones en el fondo de los contenedores para reciclaje que se dejan afuera de la casa, de modo que el agua pueda drenarse.
    - Elimine las obstrucciones de los desagües del techo que puedan estar bloqueados; retire las hojas y los desechos que puedan impedir el drenaje del agua de lluvia.

- Ponga las piscinas plásticas para niños y las carretillas boca abajo cuando no estén en uso.
- Renueve periódicamente el agua de las fuentes para aves; airee los estanques ornamentales o habítelos con peces.
- Mantenga las albercas limpias y debidamente desinfectadas con cloro; elimine el agua acumulada en las cubiertas de las albercas.
- Trabaje la forma de su terreno para crear pendientes adecuadas y eliminar el agua estancada.

¿Lo sabía?

¡Los mosquitos pueden comenzar a multiplicarse en cualquier charco o lugar con agua estancada que tenga más de cuatro días! Cualquier lugar es bueno para la reproducción de los mosquitos. **Actúe ya** con el objetivo de reducir la cantidad de mosquitos en los alrededores de su casa y en su barrio. Organice un día de limpieza en su barrio para recoger recipientes de terrenos baldíos y parques, y fomentar entre los vecinos la costumbre de mantener sus jardines libres de agua estancada. A los mosquitos las cercas los tienen sin cuidado, y por eso es importante eliminar el agua estancada en todo el barrio.

¿Necesita más información?

- **Para el WNV y protección personal:** División de Epidemiología y Vacunación del MDPH en el 617-983-6800 o en Internet www.mass.gov/dph. Puede también ponerse en contacto con el organismo sanitario de su zona (que aparece en la guía telefónica bajo "*Government*").
- **Para control de mosquitos en su ciudad o localidad:** el control de mosquitos en Massachusetts se realiza a través de nueve distritos de control de mosquitos. La Junta de Reclamación y Control de Mosquitos (SRMCB) supervisa los nueve distritos. La información de contacto para cada distrito puede consultarse en Internet en www.mass.gov/agr/mosquito/districts.htm. También puede llamar a la SRMCB dentro del Departamento de Agricultura en el 617-626-1777 o del organismo sanitario de su zona.
- **Para efectos de los pesticidas sobre la salud:** Centro de Salud Ambiental del MDPH en el 617-624-5757.

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

West Nile virus

Prevention

The most effective way to prevent infection from West Nile virus is to prevent mosquito bites. Mosquitoes bite during the day and night. Use insect repellent, wear long-sleeved shirts and pants, treat clothing and gear, and take steps to control mosquitoes indoors and outdoors.

Protect yourself and your family from mosquito bites

Use Insect Repellent

Use Environmental Protection Agency (EPA)-registered insect repellents with one of the active ingredients below. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.

- DEET
- Picaridin (known as KBR 3023 and icaridin outside the US)
- IR3535
- Oil of lemon eucalyptus (OLE)
- Para-menthane-diol (PMD)
- 2-undecanone

Find the right insect repellent for you by using EPA's search tool.

Tips for babies and children

- Always follow instructions when applying insect repellent to children.
- Do not use insect repellent on babies younger than 2 months old.
  - Instead, dress your child in clothing that covers arms and legs.
  - Cover strollers and baby carriers with mosquito netting.
- Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years old.
- Do not apply insect repellent to a child's hands, eyes, mouth, cuts, or irritated skin.
  - Adults: Spray insect repellent onto your hands and then apply to a child's face.

Tips for Everyone

- Always follow the product label instructions.
- Reapply insect repellent as directed.
  - Do not spray repellent on the skin under clothing.

- If you are also using sunscreen, apply sunscreen first and insect repellent second.

Natural insect repellents (repellents not registered with EPA)

- We do not know the effectiveness of non-EPA registered insect repellents, including some natural repellents.
- To protect yourself against diseases spread by mosquitoes, CDC and EPA recommend using an EPA-registered insect repellent.
- Choosing an EPA-registered repellent ensures the EPA has evaluated the product for effectiveness.
- Visit the EPA website to learn more.

Wear long-sleeved shirts and long pants

Treat clothing and gear

- Use permethrin to treat clothing and gear (such as boots, pants, socks, and tents) or buy permethrin-treated clothing and gear.
  - Permethrin is an insecticide that kills or repels mosquitoes.
  - Permethrin-treated clothing provides protection after multiple washings.
  - Read product information to find out how long the protection will last.

If treating items yourself, follow the product instructions.

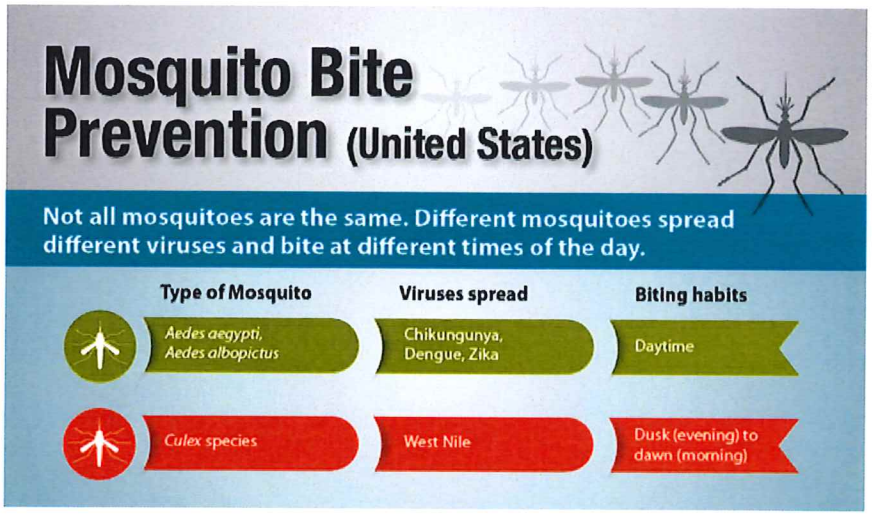
- Do not use permethrin products directly on skin.

Take steps to control mosquitoes indoors and outdoors

- Use screens on windows and doors. Repair holes in screens to keep mosquitoes outdoors.
- Use air conditioning, if available.
- Stop mosquitoes from laying eggs in or near water.
  - Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers.
  - Check indoors and outdoors.

Prevent mosquito bites when traveling overseas

- Choose a hotel or lodging with air conditioning or screens on windows and doors.
- Sleep under a mosquito bed net if you are outside or in a room that does not have screens.
  - Buy a bed net at your local outdoor store or online before traveling overseas.
  - Choose a WHOPES-approved bed net: compact, white, rectangular, with 156 holes per square inch, and long enough to tuck under the mattress.
  - Permethrin-treated bed nets provide more protection than untreated nets.
    - Do not wash bed nets or expose them to sunlight. This will break down the insecticide more quickly.
  - For more information on bed nets, visit CDC's page on insecticide-treated bed nets.
  - For more information on traveling overseas, visit Travelers' Health.



Fact Sheet: Mosquito Bite Prevention for the United States

- English [PDF – 2 pages]

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Centros para el Control y la Prevención de Enfermedades
CDC 24/7: Salvamos vidas. Protegemos a la gente™

El virus del Nilo Occidental

Prevención y control

La mejor manera de prevenir la enfermedad del virus del Nilo Occidental es evitar las picaduras de mosquitos. Infórmese sobre la actividad del virus del Nilo Occidental en su área para que pueda tomar medidas de protección para usted y su familia.

Evite las picaduras de mosquitos

- **Use repelente de insectos cuando salga al aire libre.** Los repelentes que contengan DEET, picaridina, IR3553, y algunos productos que contienen aceite de eucalipto de limón o p-mentano-diol proporcionan protección por más tiempo. Para optimizar la seguridad y la eficacia, los repelentes deben ser usados de acuerdo a las indicaciones de la etiqueta.

A continuación podrá encontrar más información sobre los repelentes de insectos (en inglés).

- **Cuando esté al aire libre y el tiempo lo permita, use camiseta de manga larga, pantalones largos y medias.** Los mosquitos pueden picar a través de la tela delgada, por lo que rociar la ropa con repelente que contenga permetrina u otro repelente registrado por la EPA le dará mayor protección. No aplique repelentes que contengan permetrina directamente en la piel. No se aplique repelentes en la piel debajo de la ropa.
- **Tome mayor precauciones durante las horas pico de los mosquitos.** Tenga más cuidado y use repelente y ropa de protección desde el anochecer hasta el amanecer, o evite actividades al aire libre durante estas horas.

Haga su hogar a prueba de mosquitos

- Instale mosquiteros en las ventanas y puertas para que los mosquitos no entren o repárelos si están rotos. Si tiene aire acondicionado en su casa, úselo.
- Reduzca la cantidad de mosquitos alrededor de su casa al vaciar frecuentemente el agua estancada de las macetas, canaletas, baldes, cubiertas de piscinas, recipientes para el agua de mascotas, llantas desechadas y bañeras de aves.

Ayude a los programas de su comunidad para el control y la vigilancia del virus del Nilo Occidental

- **Apoye los programas locales de su comunidad para el control de mosquitos.** Las actividades para el control de mosquitos generalmente se manejan a nivel local, por ejemplo a través del condado o la municipalidad. Los tipos de métodos para el control de mosquitos que use un programa dependen del momento del año, el tipo de mosquito que debe controlarse y la estructura de su hábitat. Los métodos pueden ser la eliminación de los hábitats de las larvas de mosquitos, la aplicación de insecticidas para matar las larvas de los mosquitos o el rocío de insecticidas desde camiones o aviones para matar a los mosquitos adultos. El programa local para el control de mosquitos de su área o el departamento de salud le puede proporcionar información acerca de los productos que se están utilizando en el área. Comuníquese con su departamento de salud local para obtener más información. La información de contacto puede encontrarse en las páginas azules (del gobierno) de la guía telefónica.

A continuación encuentre más información sobre el control de mosquitos (en inglés).
Recursos para profesionales en el control de vectores (en inglés).

- **Notifique a las autoridades locales sobre aves muertas.** Las aves muertas pueden ser una señal de que el virus del Nilo Occidental está circulando entre las aves y los mosquitos en un área dada. Al informar sobre la muerte de aves a los departamentos de salud locales y estatales, usted puede desempeñar un papel importante en la vigilancia del virus del Nilo Occidental. Las agencias locales y estatales tienen diferentes políticas en cuanto a la recolección y muestreo de aves, por lo que debe visitar la página de los departamentos de salud estatales (en inglés) para encontrar información sobre la notificación de aves muertas en su área.

Información adicional sobre los repelentes de insectos

- Protection against Mosquitoes, Ticks, & Other Insects & Arthropods (CDC) (en inglés)
- National Pesticide Information Center (en inglés)

Enlaces de la Agencia de Protección Ambiental (EPA)

- EPA mosquito control (en inglés)
- Using Insect Repellents Safely (en inglés)

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