



Commonwealth Primary Care

Mosquitos, Ticks & Other Insect Bites



Contents

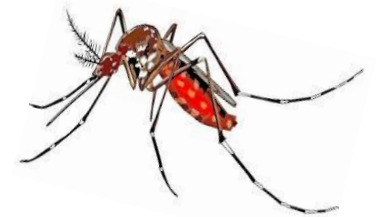
- [Mosquitos, Ticks and Other Insect Bites – General Information](#)
- [Mosquito-Borne Illnesses](#)
- [Tick-Borne Illnesses](#)
- [Bee Stings](#)
- [Spider Bites](#)



Mosquito, Ticks and Other Insect Bites

General Information about these insects:

- Can be the **carrier for many types of viruses and bacteria**
- Cause illnesses such as **West Nile, Zika, Lyme and Rocky Mountain Spotted Fever**
- **All of these have been reported in Virginia**
- There are currently **no vaccines** to prevent these insect-borne illnesses



Mosquito, Ticks and Other Insect Bites

- **If bitten by an infected insect, most people have no signs or symptoms of illness.**
- A few people will develop symptoms, and some can be severe.
- **If symptoms occur after an insect bite, see your provider to determine most effective treatment.**
- **People with certain medical conditions**, such as cancer, diabetes, hypertension, kidney disease, and compromised immune systems **are at greater risk if bitten by insects carrying viruses.**
- Symptoms can be more severe for people at risk and, therefore, they should seek medical treatment soon after onset.
- If you plan travel to foreign countries, be aware of insect-borne illnesses.
- Centers for Disease Control (CDC) has a map for various outbreaks at <https://wwwnc.cdc.gov/travel>



Prevention from Mosquitos, Ticks & Insect Bites

To reduce your risk of illness from mosquito, tick and insects you should:

- **Use insect repellent containing DEET**
- **Wear long-sleeved shirts and long pants** when doing outside work
- **Eliminate standing water** around your home by overturning or covering containers where water collects
- **Use mosquito dunks** in ponds or large fountains to prevent mosquitos from breeding
- **Use permethrin-treated clothing and gear**, or treat your gear and clothing with permethrin before departure

Specific for tick prevention:

- Stay out of tall grass, brush, or heavily wooded areas
- Walk in the center of hiking trails

For more information on insect bites in Virginia:

<http://www.vdh.virginia.gov/environmental-epidemiology/bugs-human-health/?tab=1>





Mosquito- borne Illnesses



Mosquito-Borne Illnesses



- **West Nile (WNV), Zika, and La Crosse (LACV) encephalitis** are viruses that can be carried by mosquitos.
- **Most people bitten by an infected mosquito carrying WNV or Zika will not become ill or have any symptoms.**
- Few cases will develop mild symptoms such as fever or body aches.
- **Zika virus can be dangerous to pregnant women** since this virus can pass to the fetus and cause certain birth defects such as microcephaly.
- Once infected, a person with Zika is usually protected from future infections.
- Cases of LACV encephalitis have been reported in upper Midwestern, mid-Atlantic and southeastern states.
- Like WNV and Zika, **many cases by an infected mosquito carrying LACV show no symptoms**, however, some cases develop severe symptoms of encephalitis.



Common Symptoms of WNV, Zika & LACV:



- Fever
- Headache
- Body aches
- Joint pain
- Vomiting
- Diarrhea
- Rash
- Fatigue
- Weakness
- Encephalitis or meningitis in severe cases



Treatment of Mosquito-Borne Illnesses

- **No vaccine or antiviral treatments exist** for West Nile, Zika or La Crosse virus.
- **Pain relievers, such as Ibuprofen (Advil) or Acetaminophen (Tylenol),** can be used to reduce fever, headache and body aches.
- **For persistent vomiting and/or diarrhea, it may be necessary to get urgent care for intravenous fluids.**
- **Symptoms that progress and become more severe, or cause fatigue and weakness should be reported to your healthcare provider for diagnosis and treatment.**



Prevention of Mosquito-Borne Illnesses



- **Use insect repellents** with Environmental Protection Agency approved ingredients known to be safe and effective for adults, such as DEET
- **Eliminate standing water around your home** by overturning or covering containers where water collects
- **Use mosquito dunks** in ponds or large fountains to prevent breeding
- **Use permethrin-treated clothing and gear,**
- **Wear long sleeves and long pants** when working outdoors
- **Wear head cover, gloves and shoes** if working in areas with dense mosquitoes or breeding grounds





Tick-borne Illnesses

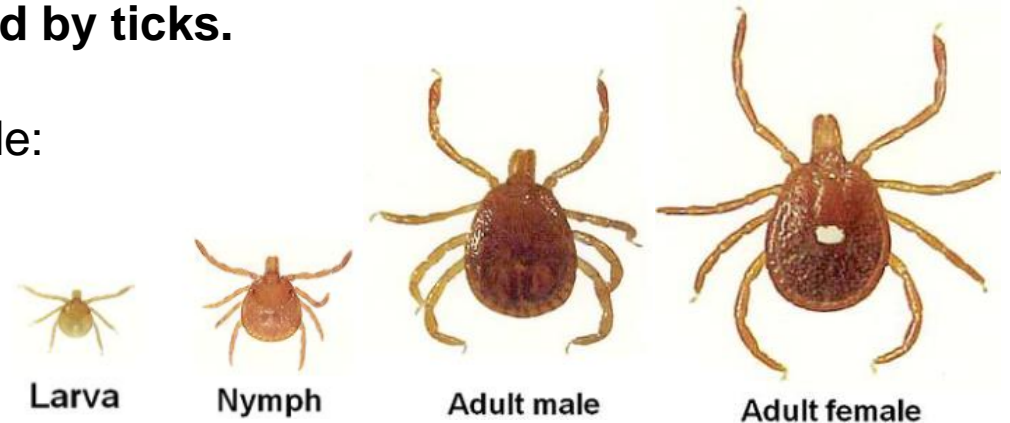


Tick-borne Illnesses

- **Diseases spread by ticks are among the most common travel-related illnesses.**
- Contact your doctor if you feel seriously ill, especially if you have a fever.
- Tell your doctor about your travel history, including what countries you visited and what you did there.
- Be sure to mention if you remember seeing or being bitten by a tick.
- Keep in mind that symptoms can appear after you return home or while abroad.
- **No vaccine is available to prevent diseases spread by ticks.**

Common symptoms of diseases spread by Ticks include:

- Fever/chills
- Headache
- Fatigue
- Muscle or joint pain
- Rash



Tick Bite Prevention



- **Dress appropriately:** wear light-colored clothing, wear long pants and sleeves, tuck in shirts, tuck pants into socks, and wear closed-toe shoes.
- **Use insect repellents** on the skin that contain at least 20% DEET. (“Natural” products, such as citronella, are not effective.)
- **Use permethrin-treated clothing and gear**, or treat your gear and clothing with permethrin before departure.
- **Stay out of tall grass, brush, or heavily wooded areas;** walk in the center of hiking trails.
- **Brush off clothing** before entering your home.
- **Inspect your skin** carefully for ticks.



Tick Removal

- Pull upward, with steady even pressure, until the tick releases to avoid breaking the mouth-parts of the tick or rupturing the tick's body.
- After tick removal, clean the skin and bite area with rubbing alcohol or soap and warm water.
- Save the tick in a bag or container with rubbing alcohol for identification in case an illness develops in the days after tick attachment.
- Never crush a tick with your fingers.

<http://www.vdh.virginia.gov/blog/2018/12/05/new-and-invasive-tick-species-in-virginia/>



Rocky Mountain Spotted Fever (RMSF)

RMSF is a bacterial disease spread through the bite of an infected tick (*Rickettsia rickettsia*).

Signs and symptoms:

- Fever
- Headache
- Rash
- Nausea
- Vomiting
- Stomach pain
- Muscle pain
- Lack of appetite

RMSF Rash:

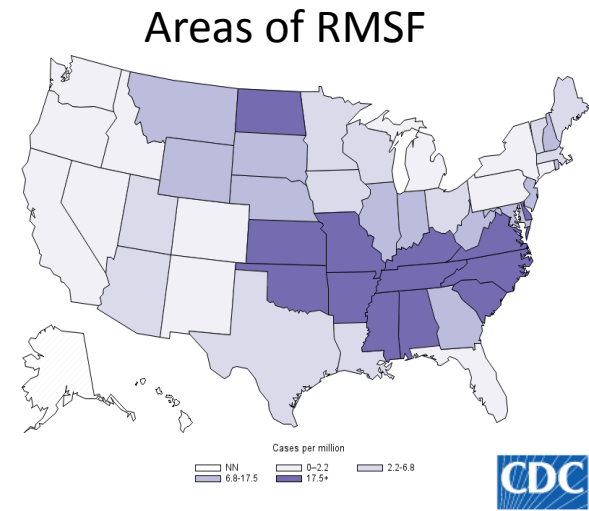
- Rash is a common sign in people who are sick with RMSF - usually develops 2-4 days after fever begins
- Some can have red splotches and some look like pinpoint dots
- While almost all patients with RMSF will develop a rash, it often does not appear early in illness, which can make RMSF difficult to diagnose.



Rocky Mountain Spotted Fever (RMSF)

Treatment

- RMSF can be deadly if not treated early with the right antibiotic (doxycycline often used).
- If you had a known tick bite and develop signs and symptoms, seek medical treatment soon. If you suspect a bite of some type, seek medical treatment to rule out possible insect-borne illness.
- RMSF does not result in chronic or persistent infections.
- Some patients who recover from severe RMSF may be left with permanent damage, including amputation of arms, legs, fingers, or toes (from damage to blood vessels in these areas); hearing loss; paralysis; or mental disability.
- For more information: <https://www.cdc.gov/rmsf/index.html>



<https://www.cdc.gov/rmsf/stats/index.html>

Lyme Disease



- Lyme disease is caused a bacterial infection from an infected blacklegged ticks.
- **Most people are infected by tiny immature tick nymphs during spring and summer which are less than 2 mm in size.**
- Adult ticks are bigger to see and usually more prevalent in the fall.
- **This tick-borne disease can be very serious.**
- **If left untreated, infection can spread to joints, the heart, and the nervous system, including facial paralysis, and arthritis.**
- Be aware of states where Lyme Disease has been reported. New England, mid-Atlantic, Great Lakes region and Northern California has the highest number of cases reported.
- A CDC map showing location is available at <https://www.cdc.gov/lyme/datasurveillance/index.html>



Lyme Disease

Symptoms:

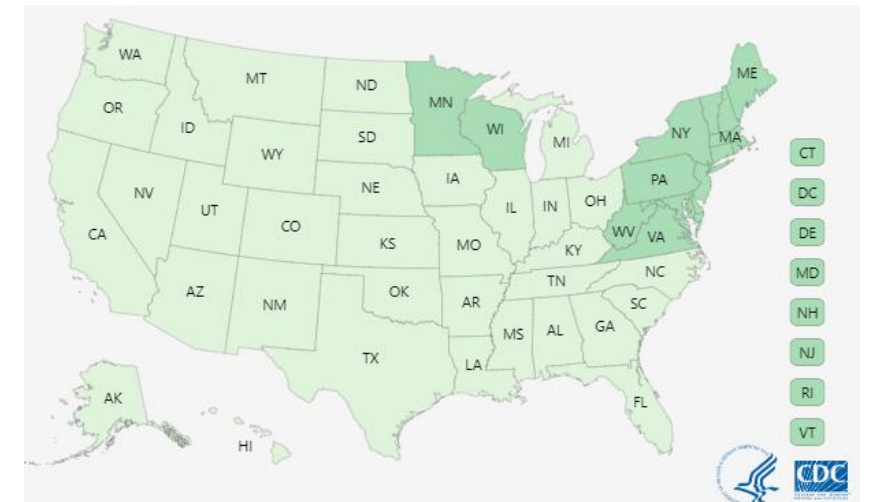
- Fever
- Headache
- Fatigue
- Characteristic “bulls eye” skin rash bulls eye with a large red ring around a central red spot



Treatment:

- Seek medical attention
- Antibiotics are usually prescribed for several weeks

Lyme Disease in US - 2017



Legend

Incidence Category

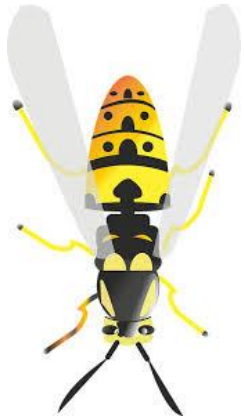
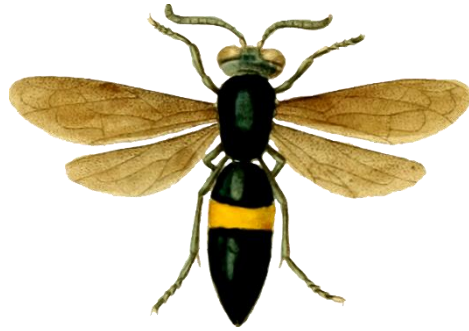
Low incidence High incidence

<https://www.cdc.gov/lyme/datasurveillance/maps-recent.html>

Lyme Disease Prevention

- Use Environmental Protection Agency (EPA)-registered insect repellents containing DEET, picaridin, IR3535, oil of lemon eucalyptus, para-menthane-diol, or 2-undecanone.
- Wear clothing treated with 0.5% permethrin. Re-treat clothing annually according to label instructions.
- Shower as soon as possible after spending time outdoors.
- Check for ticks daily. Ticks can hide under the armpits, behind the knees, in the hair, and in the groin.
- Tumble clothes in a dryer on high heat for 10 minutes to kill ticks on dry clothing after you come indoors.
- If the clothes are damp, dry them completely and then dry for 10 minutes on high heat.
- **For more information:** <https://www.cdc.gov/lyme/>





Bee Stings

including Hornets, Wasps and
Yellow Jackets

Bee Sting Reactions

- Bees, hornets, wasps and yellow jackets are hard to tell apart and all sting, usually painful and red.
- Most stings will have a local allergic response but anaphylaxis reaction causing difficulty breathing is a true emergency.
- Usually after stinging, the insect leaves it's venom sac behind so it is important to brush off the skin.
- **Symptoms - mild reaction:**
 - Red bumps
 - Itchiness
 - Mild swelling
- **Symptoms - severe allergic reaction:**
 - Swelling in face or mouth
 - Trouble swallowing or speaking
 - Chest tightness, wheezing, or trouble breathing



Bee Sting Treatment

If there are no signs of a severe reaction:

- If you are stung and you can see the insect's stinger, remove it as quickly as possible by scraping the skin horizontally with the edge of a credit card or your fingernail.
- Wash the area with soap and water.
- Apply ice wrapped in a towel or cloth or a cool wet cloth to the area to relieve pain and swelling.

If there are signs of a severe reaction:

- If you have an injectable epinephrine (EpiPen), give it right away, then **call 911**.
- Tell them someone is having a life-threatening emergency.
- If someone is with you, have that person **call 911** while you give the epinephrine.
- If the person is conscious and you don't have epinephrine, give diphenhydramine (Benadryl or a store brand), then **call 911** as above.

Get medical care if:

- The sting or bite is near or inside the mouth
- The site looks infected - has increasing redness, warmth, swelling, pain, or pus several hours or longer after the sting or bite



Bee Sting Prevention

Prevention:

- Avoid walking barefoot while on grass
- Avoid playing in areas where insects nest or congregate
- Avoid drinking from soda cans left outside (these attract insects)

For more information:

Bees, wasps and hornet stings: <https://www.cdc.gov/niosh/topics/insects/beeswasphornets.html>





Spider Bites

including Black Willows, Brown
Recluse and Yellow Sacs



Spiders in Virginia

- There are **more than 30 spider species in Virginia** according to Virginia Tech Extension Service (dated 2019).
- **Most spider species in Virginia are not aggressive or dangerous and will not bite unless tampered with.**
- If a spider should bite, it may inject very little venom if any into the bite.
- With any spider bite, **it is best to capture and bring the spider for proper identification**, even if it is smashed.
- **Black widow, Brown Recluse and Yellow Sac Spiders** - these few species of spiders found in Virginia have a harmful venom and if bitten often require medical attention. Black widow spiders are the ones of greatest medical concern in Virginia.



Spider Bite Prevention

- Wear long sleeves and gloves when moving firewood or other items that may harbor spiders, such as cardboard boxes, stored papers, or anything left undisturbed for a length of time.
- Long sleeves, pants and gloves are also a good idea when doing yard work.
- Shake out clothing, towels, or bedding before use.
- For spider bites: shake out clothing, towels, or bedding before use.
- Shake out your shoes or gloves before putting them on.
- When finished, brush off clothing and shoes.
- Spiders cannot bite through fabric, but they can bite if trapped or pressed against the skin.
- Repair screens and regularly vacuum entry points.



Signs & Symptoms

General spider bite symptoms for most people include:

- Stinging sensation pain
- Swelling
- Itching at the site

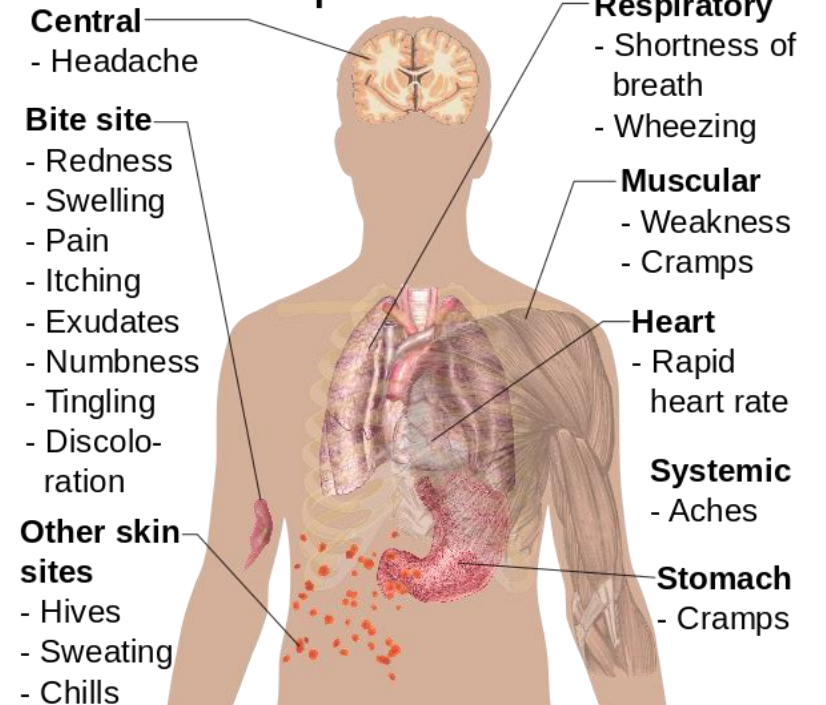


Treatment:

- Ice and pain reliever such as Tylenol (acetaminophen) or Advil (ibuprofen).
- Topical hydrocortisone

Persons at risk: there is always the possibility that spider venom from a normally harmless species can cause severe symptoms in very sensitive individuals, especially in the young, the old, or the immunocompromised. Medical assistance should be received as soon as possible.

Severe Symptoms of Spider bite



Black Widow Spiders

- Black shiny body with red hourglass marking on their abdomen
- Typically found outdoors near the ground within rock walls, woodpiles, and in dark, sheltered places around buildings and outdoor structures
- May wander indoors but are not typically found inside houses

Symptoms:

- First feels like a pinprick
- May develop swelling, redness, and intense pain several hours later
- Sweating, nausea, and abdominal cramps may follow and last for several days

Treatment:

- Anti-venom for widow spider bites is available



Brown Recluse Spiders

- Commonly known as violin spiders or “fiddlebacks” because of a characteristic fiddle-shaped pattern on their head (not the abdomen)
- Often golden brown in color but range from tan to dark brown
- Commonly live in basements and garages of houses and often hide behind boards and boxes
- Do not make webs out in the open

Symptoms:

- Seldom bites, but severity varies person to person - ranging from no harm to a severe reaction
- Initial bite may be painless followed by a systemic reaction within 24–36 hours including fever, chills, nausea, weakness, joint pain and restlessness.



Yellow Sac Spiders

- Small spider, usually less than ½ inch, have a light yellow, beige body or greenish tinge in their abdomen
- Has a darker midline stripe behind the head and partially into the abdomen
- May be found inside man-made structures on the wall or ceiling, or outdoors on foliage and in the grasses
- Often have a silken spun tube-like sac they retreat in and are usually nocturnal
- If disturbed, Yellow Sac spider bites are often mild and heal in a few weeks if the wound is kept clean and free of secondary infection.



For More Information

<http://www.vdh.virginia.gov/environmental-epidemiology/bugs-human-health/>

https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/ENTO/ENTO-73/ENTO-73-pdf.pdf

<https://www.cdc.gov/media/releases/2018/p0501-vs-vector-borne.html>)

<https://www.cdc.gov/lyme>

<https://wwwnc.cdc.gov/travel>

<https://www.cdc.gov/niosh/topics/insects/beeswasphornets.html>

