

8 dangerous bugs to avoid this summer and a few pointers on Ticks.

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First a few pointers about ticks.

While burning a tick off the skin may seem like a satisfying and fool-proof way to get the blood-sucker off, it's also the worst way to remove it.

Burning it may actually increase the risk of getting a tick-borne disease.

Applying heat can increase [the tick's] saliva production and if it's infected with something increase pathogen transmission. The best way to remove a tick is to use tweezers and grab the tick as close to the skin as possible and pull straight out. Ticks can't jump; they don't even have the biomechanics to jump. Ticks crawl from your leg area, so when you get a tick on different parts of your body, it's because they crawled there. **Rocky Mountain spotted fever** is a tick-borne illness caused by the bacteria *Rickettsia rickettsii*. It's potentially fatal in humans and is transmitted in the U.S. by bites from the American dog tick, Rocky Mountain wood tick, and brown dog tick, according to the Centers for Disease Control and Prevention.

Powassan is a potentially fatal virus transmitted by tick bites. Powassan can be fatal, and some of those who survive may have long-term neurological damage. There are no treatments for Powassan.

When it comes to Lyme disease and all tick-related bites people should be vigilant about checking their bodies for ticks and if one is found remove it quickly.

Ticks must be attached to humans for 36 to 48 hours or more before the Lyme bacteria can be transmitted.

The CDC said that some 96,075 diseases caused by bites by mosquitoes, ticks, and fleas were reported in 2016, up from 27,388 in 2004, in an analysis of data from the CDC's National Notifiable Diseases Surveillance System. In essence we are seeing a very significant increase in these diseases from mosquitoes and ticks predominately.

So what symptoms or signs do you look for with some of these diseases?

Rocky Mountain spotted fever (RMSF) is a potentially lethal, but curable tick-borne disease, which was first described in Idaho in the 19th century. The classic clinical triad of fever, headache, and rash may be present in less than 5% of patients in the first 3 days of illness but increases to 60-70% by the second week after tick exposure. The absence or delayed appearance of a rash increases the difficulty of diagnosis.

1. The most common symptom complaints include the following:
2. Fever greater than 102°F - 94% of reported cases
3. Fever within 3 days after tick bite - 66% of reported cases
4. Headache, frequently severe - 86% of reported cases
5. Myalgias - 85% of reported cases
6. CNS symptoms - 25% of patients develop signs of encephalitis (i.e., confusion, lethargy); this may progress to stupor, delirium, seizures, or coma
7. GI symptoms - Some patients present with anorexia, nausea, vomiting, diarrhea, and abdominal pain

RMSF should be considered in patients with unexplained febrile illness even if they have no history of a tick bite or travel to an endemic area. History of a tick bite is reported by only 70% of patients. (Most tick bites are painless and may be in hidden areas of the body.)

Lyme disease has a broad spectrum of clinical manifestations, and it also varies in severity due, in part, to differences in the infecting species. Lyme disease was first described in 1977 as "Lyme arthritis" in studies of a cluster in Connecticut of children who were thought to have juvenile rheumatoid arthritis. Physical findings in patients with early disease are as follows:

- Flulike illness - Fever, chills, malaise, myalgias (muscle aches), arthralgia (painful joints), headache
- Tender local adenopathy (lymph nodes) (local, not diffuse)
- Erythema migrans (EM) – Rash



- This is similar to a bull's eye rash seen in early Lyme disease.

Look out for more and increasingly dangerous insect encounters this summer. With the erratic winter and spring weather patterns we've had across the country—deep snows,

driving rains and widespread flooding—this could be a bad year for insect-borne illnesses. Standing water is a breeding ground for mosquitoes, for instance, and the flooding and rainfall in the Midwest this spring has led to an increased number of breeding sites.

Illnesses from mosquito bites, along with bites from ticks and fleas, have tripled in the United States in the past 15 years. "The data show that we're seeing a steady increase and spread of tickborne diseases, and an accelerating trend of mosquito-borne diseases introduced from other parts of the world," said Lyle Petersen, MD, MPH, director, Division of Vector-Borne Diseases, CDC National Center for Emerging and Zoonotic Infectious Diseases.

Notable insect-borne infections include West Nile virus, dengue fever, Zika virus, Lyme disease, chikungunya, ehrlichiosis, and anaplasmosis. But disease-carrying mosquitoes, ticks, and fleas aren't the only dangers lurking in your backyard or near your campground. For more, check out this list of the most dangerous bugs this summer.

Killer bee



Honey bees, as you've probably heard, are in danger. But Africanized honey bees (commonly called "killer bees") *are* a danger, having caused the deaths of more than 1,000 people worldwide. Africanized bees look like average honey bees, but are a hybrid strain that can get extremely defensive to the point of aggression—they can chase people for more than a quarter of a mile. Although their stings are no worse than those of typical honey bees, killer bees attack in swarms, resulting in hundreds or thousands of stings. Killer bees have colonized in Texas, Arizona, Nevada, New Mexico, Florida, California, Louisiana, and Arkansas, and continue to move northward.

Kissing bug



Triatomine bugs—more commonly called "**kissing bugs**" because they tend to bite victims around the mouth or eyes while asleep—are now found in 28 states, particularly in Southern states. Approximately 50% of these nocturnal bloodsuckers carry a parasite (*Trypanosoma cruzi*), which they pass to humans, dogs, rodents, and other mammals that they bite. Humans or animals infected with this parasite have about a 30% risk of developing chronic Chagas disease, which can lead to cardiac and/or intestinal complications even years later.

Lone Star tick



Named after the white, star-like splotch on its back, the Lone Star tick (*Amblyomma americanum*) is a very aggressive, human-biting insect. Found primarily in the Southern and Eastern states, the Lone Star tick can cause infection that can lead to a number of conditions—one of which is **alpha-gal allergy**, a severe reaction to eating meat. "It's a case of cruel irony indeed that a tick named after Texas can render you unable to eat red meat," observed the author of a *Popular Science* article. Other diseases caused by infection from the Lone Star tick include **ehrlichiosis**, **Heartland virus**, **Southern tick-associated rash illness (STARI)**

, and **tularemia**.

The Lone Star tick has also been linked to the newly discovered **Bourbon virus**, a disease that appears similar to ehrlichiosis but with no known treatment. The disease was named after the first-known fatal victim's home county of Bourbon, KS. But people in Northern states aren't necessarily immune—warming temperatures are making a comfortable climate throughout the nation for this aggressive tick.

Yellow sac spider



Yellow sac spiders are one of the most aggressive spiders in North America, often biting without provocation. They're probably responsible for more human bites than any other species of spider. Rather than waiting in their sac-like webs, they roam about in search of prey. Their bite causes a burning pain that can last up to an hour, along with redness, swelling, and itching, followed by rash and blistering. Yellow sac spiders have been commonly found in New England and the Midwest, but their range has likely increased over time, spreading throughout most of the United States.

Arizona bark scorpion



The Arizona bark scorpion is the most venomous scorpion in North America—the only native scorpion considered to be life-threatening. Its sting can cause excruciating pain, numbness, tingling, and vomiting. Although it dwells throughout Arizona (as its name implies), the bark scorpion is found from southern California into western New Mexico. It's a good climber and can be found in between rocks, in trees, or high on rock walls—but also in houses: in a sink or bathtub, a dark closet, or climbing up a wall. They hide during the day to avoid the heat, but come out in the cool of the night to hunt.

Brown recluse spider



These harmless-looking brown spiders like to stay hidden in small dark areas, but bites from these venomous arachnids are believed to rise during summer months, perhaps because people rouse these creatures from the dark corners of garages, basements, attics, and yards. The brown recluse is found in 15 states, chiefly in the South and Southwest. Their venom is known to be extremely painful. The bite wound usually reddens within several hours. This is followed by a systemic reaction within 24-36 hours, characterized by restlessness, fever, chills, nausea, weakness, joint pain and, in rare cases, convulsions and death. The bite wound and the surrounding tissue may blacken and die, and eventually shed.

Deer tick



Also known as blacklegged ticks (*Ixodes scapularis*), deer ticks carry Lyme disease and other infections—and are now found even in America's largest cities. While frequently reported in New England, Lyme disease carried by deer ticks also occurs in Eastern and Midwestern states, and coastal California; however, Lyme has been reported in nearly every state. Deer ticks also transmit pathogens that cause **anaplasmosis**, ehrlichiosis, **babesiosis**, and the rare but deadly **Powassan virus**. And their territory is expanding—the number of counties in which deer ticks are now established **has more than doubled** in the past 20 years.

Mosquito



Mosquitoes cause more human suffering than any other organism, with more than 1 million people worldwide dying from mosquito-borne diseases each year, according to the American Mosquito Control Association. Mosquitoes not only cause annoying summertime itches, but they also spread malaria, West Nile virus, Zika virus, dengue fever, yellow fever, and St. Louis encephalitis. Every state harbors some sort of disease-carrying mosquito. Malaria-carrying mosquitoes are found in the Southern and Eastern states as well as in coastal California. Mosquitoes carrying West Nile virus may appear in flood-ravaged Midwestern states this summer. Dengue fever has occurred in Florida and Puerto Rico, and cases of dengue **are expected to rise and spread** to more states in coming years.

Don't let this article disturb you since knowledge is always a good thing. So, in short, don't forget your insect repellent this summer! Thanks Alan Safdi, MD, FACC

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Alan V. Safdi MD, FACG

Medical Director Telluride Longevity Institute

Co-founder Emerge Healthcare Solutions, Ohio GI and Liver Institute, and Consultants for Clinical Research

Past President Ohio Gastroenterology and Liver Institute

Served as Chairman Section of Gastroenterology at Deaconess Hospital

President Consultants for Clinical Research

Past Chairman Cincinnati Crohn's & Colitis Medical Advisory Committee

Former Medical Director Tri-State Endoscopy Center

Served as President of the Ohio Gastroenterology Society

Lecture Nationally and Internationally on Health and Wellness

Office voice mail: 513-399-4125