

NIH News in Health

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An Uptick in Ticks

Don't Let Ticks Make You Sick

Warm weather might make you want to get outdoors and enjoy walks in the woods, picnics, gardening, and more. But tiny ticks also emerge when temperatures rise. And they can take a big bite out of warm-weather fun.

Bites from infected ticks are responsible for about a half-million new illnesses each year in the U.S. And those numbers are rising. Lyme disease is by far the most common. It accounts for more

than 80% of tickborne illnesses nationwide. Other tick-related diseases include babesiosis, tularemia, and anaplasmosis.

Symptoms of these infections can range from mild rashes and discomfort to long-lasting health problems. Some tick bites have been linked to a severe allergy to red meat.

There is good news, though—you can take steps to keep ticks from making you sick. And NIH-supported scientists are looking for better ways to diagnose, treat, and prevent tick-related illnesses.

Risks From Ticks • The chance that you'll get sick from an infected tick mostly depends on where you live. Different types of ticks live in different parts of the country. Each type can pass on the germs that cause different diseases. Nationwide, more than 17 human diseases are known to be caused by at least nine kinds of



ticks. And all these ticks are moving into new regions.

“As the climate warms and changes, it’s likely that we’ll see more tickborne diseases in more locations,” says Dr. Erol Fikrig, an expert in tick-related diseases at Yale University. He and his colleagues are working to better understand the relationships between ticks, the germs they carry, and the animals they infect.

Ticks might seem easy to avoid. They can’t fly or jump. But they can detect heat, breath, and other signals from warm-blooded creatures. Ticks need blood to develop and to produce eggs. To find meals, they often cling to the tips of grass blades or leaves with their back legs. They wave their front legs if they sense that you or another potential victim is nearby. If you brush against a tick, it can climb on and look for a patch of skin to bite.

Once a tick digs into the skin and starts sucking blood, any germs it carries can enter its victim. But it can take a couple of hours for a tick to choose a spot and begin feeding.

“If you catch and remove a tick early, and it has not yet taken a full blood meal, your chance of getting an infection is greatly reduced,” Fikrig says. If you don’t remove a tick, it can stay attached for several days. As it slowly fills with blood, the tick may swell in

size by 10 times or more.

All known tickborne diseases can cause fever. Other common symptoms include headache, fatigue, and achy muscles. Some diseases can cause distinctive rashes. Lyme disease, for example, often causes an expanding rash that looks like a bull’s-eye. Ehrlichiosis, tularemia, and Rocky Mountain spotted fever can also cause rashes.

Unusual Meat Allergy • Most tick-related illnesses are caused by infections. But over a decade ago,

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NIH-supported researchers found that certain tick bites might instead lead to a food allergy. The condition is called alpha-gal syndrome (AGS). The allergy is to a sugar molecule called alpha-gal that is found in red meat.

“This includes beef, pork, lamb, venison, rabbit, and even the products from these animals, such as milk and dairy,” says Dr. Scott Commins, an allergist at the University of North Carolina. He worked with the research team that identified the link between red meat allergy and the bite of the lone star tick.

“AGS can cause hives, itching, swelling, shortness of breath, or gastrointestinal distress after eating red meat,” Commins says. AGS can sometimes lead to a severe allergic reaction called anaphylaxis, which can be deadly without emergency care. So affected people must avoid eating red meats.

Most food allergies cause symptoms several minutes after eating. But AGS symptoms tend to appear three to six hours after eating red meat. This delayed reaction

can make it hard to realize that red meat is to blame. Scientists don’t yet understand how the bite of a tick can lead to this allergy.

AGS is relatively rare, but its numbers are rising as the lone star tick spreads to new areas. Today, this tick is found widely from Texas to New England.

“On a positive note, there’s pretty good evidence that over time, the allergy can go away in some people,” Commins says. “We think that avoiding tick bites is key.” A simple blood test can show whether a person still has AGS.

Blocking Tickborne Illness • Even though tick-related diseases are becoming more common, you can still enjoy the outdoors if you take some precautions.

“You don’t need to be afraid of ticks,” says Dr. Sam Telford, a tick disease researcher at Tufts University. “Depending on where you live, most tick bites don’t necessarily carry an infection. And even if they do, if you remove the tick promptly—by taking a shower, feeling for ticks, or looking for them—you will greatly reduce your risk.”

To provide even more protection, NIH supports several lines of research that aim to block tick-related illness. Telford and colleagues are focused on stopping the spread of tickborne infections in the wild. They’re testing different ways to keep the disease-causing germs from infecting small creatures that ticks love to bite, like mice.

“The idea is that if you target mice, they will no longer pass infections to ticks. And then presumably there will be fewer infected ticks in the environment to infect humans,” Telford explains.

Fikrig and colleagues are working to create a new type of vaccine



Wise Choices Block Tick Bites

When outside:

- **Treat clothing and gear** with products containing permethrin.
- **Use insect repellents as directed.** Find effective ones from the EPA at www.epa.gov/insect-repellents.
- **Avoid areas where ticks hide**, including high grass and leaf litter.

When back indoors:

- **Change your clothes when you come inside.** Wash the clothes you used outdoors in hot water.
- **Check your whole body for ticks.** Ticks can be as small as a poppy seed. Remove ticks with tweezers. Pull upward with steady, even pressure.
- **Shower within two hours after coming indoors**, to wash away ticks before they latch on.

Adapted from the U.S. Centers for Disease Control and Prevention



that keeps ticks from attaching to the skin long enough to transmit disease-causing germs. Their experimental vaccine has been shown to prevent Lyme disease in animals. They are testing to see if this approach can block other types of tickborne infections.

Fikrig notes that many tick-related diseases can be effectively treated if caught early. “If you’ve been in an area where ticks are common and you develop a fever, it’s possible that you had a tick bite but just didn’t realize it,” he says. “You should seek medical attention to get advice. Early medical attention is always the best.” ■

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Web Links

For more about ticks, see “Links” in the online article: newsinhealth.nih.gov/2023/06/uptick-ticks

What Are Frontotemporal Disorders?

Dementias That Happen in Midlife

If you start to see changes in the way a loved one under 60 acts, speaks, or moves, you may not think of dementia as a cause. Dementia is a loss of thinking, memory, and reasoning that seriously affects your daily activities. It's more common in older adults. But a group of dementias called frontotemporal disorders, or FTD, occurs most often in people between 45 to 64 years old.

"Many people with FTD start having symptoms in the prime of their life," says Dr. Bradley Boeve, an FTD researcher at the Mayo Clinic.

FTD is rare. It sometimes runs in families and can be inherited through certain **genes**. But in most cases, the cause isn't known.

People with FTD have a buildup of certain proteins in brain cells called neurons. This damages the cells

and eventually causes them to die. Symptoms depend on where the proteins damage the brain.

The most common symptoms of FTD are changes in behavior and personality. But some people with FTD may instead develop problems with speech and language, called aphasia. FTD can also cause movement problems. (See the Wise Choices box for more symptoms.)

FTD can be challenging to diagnose. "When symptoms arise, it's very common that other disorders or life circumstances are suspected as the cause," says Boeve. Causes can include substance use or certain mental health disorders, like depression or psychosis.

"Symptoms may also tend to ebb and flow at first," says Boeve. "Someone may act very odd, and then things are kind of normal for weeks or months." But symptoms get worse and become more consistent over time.

Blood tests or imaging tests like MRI or PET scans can sometimes detect certain signs of FTD. "But some people with mild FTD can have normal findings on many of these tests," Boeve says. If FTD is suspected, talking with a health care provider who's experienced with FTD can help with a diagnosis.

People with FTD typically live six to eight years. There's no cure, but some symptoms can be managed. Certain antidepressant drugs can help some patients with mental health symptoms, like apathy, depressed mood, or irritability. "They can also help curb inappropriate behaviors," Boeve explains. Speech therapy is used for some types of aphasia. Physical therapy can help with some movement problems.

"But the mainstay of management is education and empowerment for



family members," Boeve says. This includes learning ways to keep the home environment safe, manage the loved one's behavior, and prevent caregiver burnout.

Boeve's team and other NIH-funded researchers are working to develop better tests and treatments for FTD. Recently, a study by Boeve and others found that exercise slowed the progression of FTD in people with an inherited form of the condition. "For those who were more physically active, their rate of decline was slower," he says.

"We don't have dramatic therapies yet," Boeve adds, "but we've learned so much about FTD over the past three to five years that there's true hope. Plus, there are several clinical trials currently in progress or being developed for people with FTD." ■



Wise Choices

Know the Symptoms of FTD

- Problems planning or thinking through the steps to finish a task.
- Difficulty prioritizing tasks or activities.
- Repeating the same activity or same words over and over.
- Acting impulsively or saying or doing inappropriate things.
- Losing interest in family or previously enjoyed activities.
- Losing the ability to demonstrate sympathy or empathy.
- Changes in the types of food a person wants to eat.
- Trouble speaking or understanding words. Difficulty finding the words to say what one means.
- Problems using hands or arms, despite having normal strength.
- Problems with balance and walking.



Definitions

Genes

Stretches of DNA you inherit from your parents that define features, like your risk for certain diseases.



Web Links

For more about frontotemporal dementia, see "Links" in the online article: newsinhealth.nih.gov/2023/06/what-are-frontotemporal-disorders





Health Capsules

For links to more information, please visit our website and see these stories online.

Easing Depression in Older Adults

Depression is common among older adults. But treatment with the standard type of drugs, called antidepressants, doesn't always work. When depression remains after trying a couple of these drugs, it hasn't been clear what approach might be best.

Researchers studied over 600 adults, ages 60 and older, who had hard-to-treat depression. Participants were divided into three groups. One group added the drug aripiprazole (Abilify) to their prescribed antidepressant. The second group added an

antidepressant called bupropion (Wellbutrin). The third group stopped taking their prescribed antidepressant and switched to bupropion.

After 10 weeks, the group that added aripiprazole showed the most improvements. They had a significant increase in well-being compared with the group that switched to bupropion. The groups with either of the added drugs had less depression symptoms than the group that switched to bupropion. Symptoms improved in 29% of patients with added aripiprazole

and 28% of patients with added bupropion. But they improved in only 19% of those who switched to bupropion.

“Often, unless a patient responds to the first treatment prescribed for depression, physicians follow a pattern in which they try one treatment after another until they land on an effective medication,” says lead researcher Dr. Eric J. Lenze of the Washington University in St. Louis. “It would be beneficial to have an evidence-based strategy we can rely on to help patients feel better as quickly as possible.” ■

Living With Gout

Gout is a common and painful type of arthritis (swelling in one or more of your joints). It usually first appears in a big toe or lower limb. But other joints can be affected. Most types of gout are treatable, especially if caught early.

Gout is more common in men. It tends to first arise for them in middle age. Women usually develop gout only after menopause.

Flares of gout often start suddenly

at night, with intense pain that may wake you up. Usually, just one joint is affected. It may feel swollen, red, warm, and stiff. Flares usually get better within a couple of weeks.

If left untreated, flares can begin to arise more often and last longer. They may be triggered by certain foods, alcohol, some medications, or illnesses.

Treatment plans are based on symptoms and the cause of your gout. Over-the-counter and prescription

medications may help reduce pain and swelling during flares.

Lifestyle changes can also help you manage gout and reduce flares. Eating a heart-healthy diet can help. Also, avoid alcohol, red meats, and seafood to reduce the chance of gout flares. Losing excess weight may help minimize the number of flares you have. Learn more about gout at www.niams.nih.gov/health-topics/gout. ■



Featured Website

NIH Spanish Health Information Portal

salud.nih.gov

Find Spanish-language health information from across NIH in one place. This recently redesigned site offers a wealth of free, science-based health information in Span-

ish. The “Ask Carla” feature invites your questions and comments on health info. Access the site from your PC or mobile device to get the health information you need.



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