

The New York Times <https://nyti.ms/2HFmJ38>

HEALTH

Tick and Mosquito Infections Spreading Rapidly, C.D.C. Finds

Global Health

By DONALD G. McNEIL Jr. MAY 1, 2018

Farewell, carefree days of summer.

The number of people getting diseases transmitted by mosquito, tick and flea bites has more than tripled in the United States in recent years, federal health officials reported on Tuesday. Since 2004, at least nine such diseases have been discovered or newly introduced here.

The Centers for Disease Control and Prevention did not suggest that Americans drop plans for softball games or hammock snoozes. But officials emphasized that it's increasingly important for everyone — especially children — to be protected from outdoor pests with bug repellent.

New tickborne diseases like Heartland virus are showing up in the continental United States, even as cases of Lyme disease and other established infections are growing. On island territories like Puerto Rico, the threat is mosquitoes carrying viruses like dengue and Zika.

Warmer weather is an important cause of the surge, according to the lead author of a study published in the C.D.C.'s Morbidity and Mortality Weekly Report.

But the author, Dr. Lyle R. Petersen, the agency's director of vector-borne diseases, declined to link the increase to the politically fraught issue of climate change, and the report does not mention climate change or global warming. Many other factors are at work, he emphasized, including increased jet travel and a lack of vaccines.

"The numbers on some of these diseases have gone to astronomical levels," Dr. Petersen added.

C.D.C. officials called for more support for state and local health departments. Local agencies “are our first line of defense,” said Dr. Robert Redfield, the new director at the agency, which is facing its own deep budget cuts. “We must enhance our investment in their ability to fight these diseases.”

Although state and local health departments get brief infusions of cash during health scares like the Zika epidemic in 2016, they are chronically underfunded. A recent survey of mosquito control agencies found that 84 percent needed help with such basics as surveillance and testing for resistance to pesticides, Dr. Petersen said.

[READ: Tips for Protecting Yourself Against Mosquitoes and Ticks]

Between 2004 and 2016, about 643,000 cases of 16 insect-borne illnesses were reported to the C.D.C. — 27,000 a year in 2004, rising to 96,000 by 2016. (The year 2004 was chosen as a baseline because the agency began requiring more detailed reporting then.)

The real case numbers were undoubtedly far larger, Dr. Petersen said. For example, the C.D.C. estimates that about 300,000 Americans get Lyme disease each year, but only about 35,000 diagnoses are reported.

The study did not delve into the reasons for the increase, but Dr. Petersen said it was probably caused by many factors, including two related to weather: ticks thriving in regions previously too cold for them, and hot spells triggering outbreaks of mosquito-borne diseases.

Other factors, he said, include expanded human travel, suburban reforestation and a dearth of new vaccines to stop outbreaks.

More jet travel from the tropics means that previously obscure viruses like dengue and Zika are moving long distances rapidly in human blood. (By contrast, malaria and yellow fever are thought to have reached the Americas on slave ships three centuries ago.)

A good example, Dr. Petersen said, was chikungunya, which causes joint pain so severe that it is called “bending-up disease.”

In late 2013, a Southeast Asian strain arrived on the Dutch Caribbean island of St. Maarten, its first appearance in this hemisphere. Within one year, local transmission had occurred everywhere in the Americas except Canada, Chile, Peru and Bolivia.

Tickborne diseases, the report found, are rising steadily in the Northeast, the Upper Midwest and California. Ticks spread Lyme disease, anaplasmosis, babesiosis, Rocky Mountain spotted fever, rabbit fever, Powassan virus and other ills, some of them only recently discovered.

Ticks need deer or rodents as their main blood hosts, and those have increased as forests in suburbs have gotten thicker, deer hunting has

waned, and rodent predators like foxes have disappeared.

[READ: Lyme Disease's Worst Enemy? It Might Be Foxes]

(A century ago, the Northeast had fewer trees than it now does; forests made a comeback as farming shifted west and firewood for heating was replaced by coal, oil and gas.)

Most disease outbreaks related to mosquitoes since 2004 have been in Puerto Rico, the Virgin Islands and American Samoa. But West Nile virus, which arrived in 1999, now appears unpredictably across the country; Dallas, for example, saw a big outbreak in 2012.

For most of these diseases, there are no vaccines and no treatment, so the only way to fight back is through mosquito control, which is expensive and rarely stops outbreaks. Miami, for instance, was the only city in the Western Hemisphere to halt a Zika outbreak with pesticides.

The only flea-borne disease mentioned in the C.D.C. report is plague, the bacterium responsible for the medieval Black Death. It remains rare but persistent: Between two and 17 cases were reported from 2004 to 2016, mostly in the Southwest. The infection can be cured with antibiotics.

Dr. Nicholas Watts, a global health specialist at University College London and co-author of a major 2017 report on climate change and health, said warmer weather is spreading disease in many wealthy countries, not just the United States.

In Britain, he said, tick diseases are expanding as summers lengthen, and malaria is becoming more common in the northern reaches of Australia.

But Paul Reiter, a medical entomologist at the Pasteur Institute, has argued that some environmentalists exaggerate the disease threats posed by climate change.

The 2003-2014 period fell during what he described as "a pause" in global warming, although the notion is disputed by other experts.

Still, the dynamics of disease transmission are complicated, and driven by more than temperature. For example, transmission of West Nile virus requires that certain birds be present, too.

In the Dust Bowl years of the 1930s, St. Louis encephalitis, a related virus, surged, "and it looked like climate issues were involved," Dr. Reiter said. But the increase turned out to depend more on varying hot-cold and wet-dry spells and the interplay of two different mosquito

species. St. Louis encephalitis virtually disappeared, weather notwithstanding.

“It’s a complicated, multidimensional system,” Dr. Reiter said.

A. Marm Kilpatrick, a disease ecologist at the University of California, Santa Cruz, said many factors beside hot weather were at work in the United States, including “a hump-shaped relationship between temperature and transmission potential.”

Warm weather helps mosquitoes and ticks breed and transmit disease faster, he explained. But after a certain point, the hotter and drier it gets, the more quickly the pests die. So disease transmission to humans peaks somewhere between mildly warm and hellishly hot weather.

Experts also pointed out that the increase in reports of spreading disease may have resulted partially from more testing.

Lyme disease made family doctors begin to suspect tick bites in patients with fevers. Laboratories began looking for different pathogens in blood samples, especially in patients who did not have Lyme. That led to the discovery of previously unknown diseases.

Like the Science Times page on Facebook. | Follow @NYTHealth on Twitter.

A version of this article appears in print on May 2, 2018, on Page A1 of the New York edition with the headline: More Reason To Avoid Bugs This Summer.