

Findings suggest few people get sick after bite from ticks infected with Powassan virus

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Scientists at the University of Massachusetts Amherst-based New England Center of Excellence in Vector-Borne Diseases (NEWVEC) have published new findings on Powassan virus, an emerging tick-borne

illness that can cause life-threatening encephalitis and meningitis. The study reports that people bitten by black-legged (or deer) ticks that tested positive for the virus did not show signs or symptoms of disease.

The research, led by Stephen Rich, NEWVEC [executive director](#) and professor of microbiology—"Passive surveillance of Powassan virus in human-biting ticks and health outcomes of associated bite victim"—was [published](#) recently in a letter to the editor in the journal *Clinical Microbiology and Infection*.

"Our findings explain why there may be so few cases of Powassan virus, even as the number of Powassan-positive ticks appears to be increasing," Rich says. "This situation may be similar to West Nile virus, another flavivirus, spread by mosquitoes."

The paper suggests that "most Powassan-positive bites may cause nonspecific presentations that do not result in health care seeking or trigger testing for Powassan virus infection when health care is accessed."

The NEWVEC research "represents the first instance of connecting passive surveillance of ticks with an indicator of clinical disease in humans," the paper states. "Though a crude measure, interacting with bite victims gave a very simple picture that the clinical disease was not manifesting following exposure."

The researchers also extrapolated for the first time the estimated number of people in the U.S. bitten each year by *I. scapularis* ticks, the commonly known deer ticks that spread the most prevalent tick-borne infection, Lyme disease, as well as other illnesses.

The blood-sucking *I. scapularis*—found in the eastern half of the U.S. and especially in the Northeast and upper Midwest—bite and feed off

some 1.36 million people a year, whether they know it or not, the researchers estimate.

"Each case of Lyme started with a tick bite, although people often don't recall being bitten by a tick," says Rich, senior author. "Our simplified calculation of the total number of human tick bites emphasizes how many people are at potential risk of exposure to the myriad of different germs these ticks transmit."

The estimate came amid an examination of data involving the application of Rich and team's new and more accurate method of detecting the Powassan virus in ticks. The researchers looked to the TickReport, a tick pathogen testing service in Massachusetts, to describe the escalating presence of Powassan virus in the Northeast.

At least 476,000 cases of Lyme disease occur annually, the Centers for Disease Control and Prevention (CDC) estimates, which means at least 476,000 ticks feed on humans long enough to transmit the *Borrelia burgdorferi* bacteria that causes Lyme. *Borrelia* prevalence in ticks is conservatively estimated at

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