

Tick bite prevention methods are failing our children

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Investigators from the University of Massachusetts conducted a [passive surveillance study of 3551 ticks](#) submitted to the University's Laboratory of Medical Zoology. The vast majority of ticks provided over a 7-year period (2006 – 2012) were *Ixodes scapularis* (deer ticks) from Massachusetts (N = 2088). [4]

Xu and colleagues reported children under age of 9 were the group most at-risk for being bitten. The youngest host age group, 0 – 9 years old had the largest proportion of ticks: 39.7% were identified as nymphs, while 34.6% were adult ticks. Nearly 200 ticks were collected from children under age 5. Another 200 ticks were collected from children ages 5 to 9. Nearly 90 ticks were collected from adolescents. [4]

The most common bites were from deer ticks. Out of the 3,551 tick bites, 89% were due to deer ticks. And, 98% of the 1700 adult ticks submitted were female. The overall infection rate for *Borrelia burgdorferi*, *Anaplasmosis phagocytophilum*, and *Babesia microti* in human-biting ticks were 29.6%, 4.6%, and 1.8%, respectively. [4]

The study's authors also found the ticks were co-infected.

- 1.8% were co-infected by *B. burgdorferi* and *A. phagocytophilum*, the causative agents of Lyme disease (LD) and Anaplasmosis;
- 1.0% were co-infected by *B. burgdorferi* and *B. microti*, the bacteria causing Babesiosis;
- 0.4% were co-infected by *A. phagocytophilum* and *B. microti*.

Triple co-infections were found in 0.3% of the ticks, reported Xu and colleagues. [4] The investigators did not check for other infections, such as *Bartonella henselae* or *Borrelia miyamotoi*.

The most bites were reported in the Spring and Fall when children are participating in school activities and sports. "1700 adult ticks that displayed two discrete peaks: the April – June peak representing questing activity of the overwintering population and the October – December peak representing large autumnal populations." [4] Between April and October, 360 nymphs were received, with a clear peak in June.

The rate of engorged ticks is arguably the best measure of success or failure of tick bite prevention methods since ticks typically do not become engorged for at least 24 hours. [5] According to one study, 35.6% of attached ticks are engorged in children younger than 9 years. [2] When one in three children have an engorged tick attached and studies indicate the chances increase of developing LD from an engorged tick increases 20-fold [6], then it's a good indicator that preventive measures are not working.

Another group of investigators offers insight into why children are still being bitten by ticks. A school-based intervention program was offered to 1,562 elementary children. [7] Answers to several questions demonstrate the need for ongoing educational efforts on tick bite preventative measures.

When asked "How often do you check yourself for ticks?" 56.8% of the children responded "sometimes," while only 12% answered "always" and 25.8% responded "usually." When asked "Who helps you check for ticks most of the time?" 77.8% responded "grownup at home," while 14.6% said "themselves." Only 2% said a grownup at school checked for ticks, while 4.4% did not check at all.

In short, deer ticks keep biting our children and potentially exposing them to harmful bacterium that cause Lyme and other tick-borne diseases.

"As long as there are no effective measures for controlling tick populations and there is no vaccine available, we rely solely on health education and communication efforts to prevent tick bites and Lyme Borreliosis (LB)" writes Beaujean, Centre for Infectious Disease Control, National Institute for Public Health and the Environment Bilthoven, the Netherlands in *Vector Borne Zoonotic Diseases*.

"We call on researchers and funders to prioritize research in the field of public health interventions for tick bites and LB because, in the words of Benjamin Franklin, 'an ounce of prevention is worth a pound of cure.'" [8]

To learn about the dangers in being bitten by a partially fed tick (not fully engorged), where infection is postulated to occur in less than 6 hours, read [Have you been bitten by a partially fed tick?](#)

Read more about [children and Lyme disease](#).

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