



Healthy Insights

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Prevention news for the medical community of New Hampshire

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Lyme Disease and Other Tick-Borne Diseases Are *Preventable*

Main Messages:

1. Rate of Lyme disease in NH is among the highest in the nation and in most NH counties over 50% of deer ticks are infected with the bacteria causing Lyme disease.
2. Removal of a deer tick within 36 hours of attachment can prevent disease transmission.
3. During early stages of Lyme disease (bull's eye rash) treatment should be based on clinical suspicion as all serology tests (including IgM) may be falsely negative.
4. All tick-borne diseases, confirmed or suspected, should be reported to the Division of Public Health Services (DPHS) within 72 hours. To report please call 603-271-4496 (after hours 1-800-852-3345, x5300). Please document the occupation of the patient so work-related tick-borne diseases can be tracked.

During recent years we have seen an increase in the number of reported cases of Lyme disease. During 2010, 826 confirmed (and 509 probable) cases of Lyme disease were reported with the highest disease rate occurring in Rockingham, Hillsborough, and Strafford counties. Lyme disease data and maps by county and town are available at <http://www.dhhs.nh.gov/dphs/cdcs/lyme/publications.htm> Reporting of other tick-borne diseases was less frequent: anaplasmosis 19 cases, babesiosis 10 cases.

Lyme disease, babesiosis, and anaplasmosis are transmitted by the bite of the black-legged tick (*Ixodes scapularis*), commonly called the deer tick. The greatest risk for these diseases is between May and August when the nymph (juvenile) stage of the deer tick is active; nymphs are very small (< 2mm) and often go unnoticed while attached to people. A single tick can be co-infected with any of the above pathogens and thus transmit multiple diseases during a single bite which should be considered when testing for a tick-borne disease.

The risk of infection depends on the abundance of ticks and their rate of infection. Based on tick surveillance, performed during 2007-2010, deer ticks are common in southeastern NH, less common in southwestern and mid-central NH, and rare in northern and mid-western NH. Over 50% of the ticks tested in all NH counties with the exception of Belknap, Carroll, and Coos counties were infected with the bacteria causing Lyme disease, though infected ticks were also found in Belknap and Carroll counties. The pathogen causing babesiosis was detected in ticks collected from southeastern and mid-central NH. The pathogen causing anaplasmosis was detected in ticks collected from southeastern NH.

Clinical presentation: Immediately after a tick bite there could be redness around the attachment site due to an inflammatory response. This reaction by itself does not warrant treatment. Depending on prevalence of Lyme disease in the community and time from tick bite you can consider prescribing prophylaxis with single doxycycline dose if not contraindicated (see attached prophylaxis recommendations)

Lyme Disease is caused by the bacteria *Borrelia burgdorferi*. Incubation period is 3-30 days after tick exposure. In approximately 70% of patients, illness first manifests with a red rash that expands slowly, often with central clearing (erythema migrans = EM or bulls eye rash). Early systemic manifestations may include malaise, fever, headache, stiff neck, muscle and joint pains, and lymphadenopathy. At this stage serologic testing is often negative and treatment should be based on clinical diagnosis and would generally lead to full and rapid recovery. Individuals who are not treated at this stage of infection may develop a variety of symptoms over days to weeks including aseptic meningitis, cranial neuritis, and cardiac abnormalities such as heart block or myopericarditis. Weeks to years after onset a patient may develop chronic or intermittent episodes of arthritis and / or neurological symptoms. Within 4 weeks of disease transmission the production of specific antibodies is high enough to be detected and the clinical diagnosis should be supported by two-stage serologic testing using FDA approved methods: ELISA, as a screening test, confirmed by Western Blot if positive. A patient is considered to have positive Lyme serology if 2 of the following 3 IgM bands are reactive: 24, 39, 41 kDa OR if 5 of the following 10 IgG bands are reactive: 18, 21, 28, 30, 39, 41, 45, 58, 66, 93 kDa. In November 2006, the Infectious Disease Society of America (IDSA) updated their guidelines for tick-borne diseases and these can be accessed at <http://cid.oxfordjournals.org/content/43/9/1089.full.pdf+html>. A summary of treatment recommendations based on these guidelines is attached.

Anaplasmosis [Human granulocytic anaplasmosis (HGA), previously human granulocytic ehrlichiosis] is an infection of neutrophils caused by the rickettsia *Anaplasma phagocytophilum*. Clinical manifestations are nonspecific and may include fever, chills, headache, and myalgia. Some people, particularly elderly persons or those with weakened immune systems, may have a more severe illness. Symptoms typically occur 5-21 days following the bite of an infected tick. People can be successfully treated with antibiotics (see attached treatment guideline table).

Babesiosis is caused by the intraerythrocytic protozoa *Babesia microti*. Most people infected with *Babesia* are asymptomatic or experience a viral infection-like illness with fever, chills, sweats, myalgia, arthralgia, anorexia, nausea, vomiting, or fatigue. Severe and fatal cases most often occur in patients who are older or have a weakened immune system, such as those without a spleen. Symptoms typically occur within one to four weeks following the bite of an infected tick. People can be successfully treated with antimicrobial therapy (see attached treatment guideline table)

Educate your patients on tick-borne diseases prevention: Avoid tick-infested areas when feasible, wear light-colored clothing that covers arms and legs so ticks can be more easily seen, tuck pants into socks and apply tick repellent to exposed skin, and after being outdoors search the body for ticks and remove them promptly. Removal of ticks within 36 hours of attachment can prevent disease transmission. Persons who have removed attached ticks from themselves should be monitored for signs and symptoms of tick-borne diseases for 30 days. It is important to document the patient's occupation in order to better recognize and understand the potential risk factors associated with the patient's work and his or her illness.

- Attachments:**
1. Tick-borne diseases treatment table
 2. Lyme Prophylaxis guidelines following tick bite

