New Hampshire Health Alert Network
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Severity:	Moderate
Sensitive:	Not Sensitive
Message Identifier:	NH-HAN #20090508 Tick-borne Disease in NH Update
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Originating Agency:	NH Department of Health and Human Services, Division of Public Health Services

DATE: May 8, 2009 **TIME:** 12:00 PM EDT

TO: Physicians, Infection Control Practitioners, Infectious Disease Specialists, Community Health Centers, Hospital Emergency Departments, NHHA, Manchester Health Department, Nashua Health Department, Portsmouth Health Department, DHHS Outbreak Team, DPHS Investigation Team, Zoonotic Alert Team, and DPHS Management Team

FROM: José T. Montero, MD, Director of the NH Division of Public Health Services

SUBJECT: Tick-borne Disease in New Hampshire – Update

NH Department of Health and Human Services (NH DHHS) recommends:

- Awareness of emerging tick-borne diseases in NH, including Lyme disease, anaplasmosis, and babesiosis.
- Review attached guidance to assist in determining when prophylaxis following a tick bite is indicated.
- Vigilance and prompt treatment for tick-borne disease in patients with compatible clinical features.
- Timely reporting of suspect and confirmed cases of tick-borne diseases to NH DHHS Communicable Disease Control and Surveillance Section at 603-271-4496 (after hours 800-852-3345 ext. 5300).
- Patient education regarding prevention of tick bites.

During recent years, the New Hampshire Department of Health and Human Services (NH DHHS) has observed an increase in the number of reported cases of Lyme disease in NH residents. In addition, cases of other tick-borne diseases, namely anaplasmosis and babesiosis, have been reported in NH residents who acquired the disease locally. During 2008, 1205 confirmed (and 385 probable) cases of Lyme disease were reported in NH residents; this is an increase of 34% from 2007. The highest rates of disease occurred in Rockingham, Strafford, Hillsborough, and Merrimack Counties. For other Counties and years and rates by town please visit: http://www.dhhs.nh.gov/DHHS/CDCS/lymedisease.htm. Additionally, there was an increase in the number of cases of babesiosis (8) and anaplasmosis (14) reported to NH DHHS.

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 black-legged 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.

During 2007 and 2008, NH DHHS collected and tested black-legged ticks in order to determine estimates for human risk. Results from this study suggest the following:

- Black-legged 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 Strafford, Rockingham, and Hillsborough Counties were infected with the bacteria causing Lyme disease.
- Approximately 40% of ticks tested in Merrimack County were infected with the bacteria causing Lyme disease.
- Ticks tested from Belknap, Carroll, and Cheshire Counties were infected with the bacteria causing Lyme disease, however given the low number of ticks collected it was not possible to accurately determine a percentage infected.
- 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.

Background: Lyme disease is a tick-borne disease caused by the spirochete *Borrelia burgdorferi*, and is characterized by a distinctive rash and systemic symptoms, with possible progression to neurologic, rheumatologic, and cardiac involvement if untreated. The likelihood of disease transmission increases with duration of time an infected tick is attached; if a tick is attached for fewer than 24 hours the chance of disease transmission is extremely small.

The incubation period for Lyme disease is 3-32 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). Early systemic manifestations may include malaise, fever, headache, stiff neck, muscle and joint pains, and lymphadenopathy. Individuals who are not treated at this stage of infection may develop a variety of other conditions 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.

Diagnosis of Lyme disease is based on clinical findings supported by two-stage serologic testing, when appropriate. Persons presenting with a possible EM rash should be diagnosed and treated on the basis of history and clinical examination, as laboratory tests may not be reactive at this early stage of infection. Treatment is based on age of patient and clinical manifestations. Patients treated with antibiotics in the early stages of the infection usually recover rapidly and completely, therefore early diagnosis and treatment of Lyme disease is important.

Anaplasmosis [Human granulocytic anaplasmosis (HGA), previously human granulocytic ehrlichisosis] 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 suceessfully treated with antibiotics.

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.

Prevention: For prevention of tick-borne diseases, the public should be educated to avoid tick-infested areas when feasible, to wear light-colored clothing that covers arms and legs so ticks can be more easily seen, to tuck pants into socks and apply tick repellent to exposed skin, and after being outdoors to search the body for ticks and remove them promptly. Persons who have removed attached ticks from themselves should be monitor for signs and symptoms of tick-borne disease for 30 days.

In November 2006, the Infectious Disease Society of America (IDSA) updated their guidelines for the clinical assessment, treatment, and prevention of Lyme disease. These guidelines are available free-of-charge and can be accessed through the Centers for Disease Control and Prevention (CDC) website (http://www.cdc.gov/ncidod/dvbid/lyme/index.htm). Under certain circumstances, IDSA suggests the use of antimicrobial prophylaxis following a tick bite. In order to assist providers in following the IDSA guidelines, NH DHHS has produced the attached guidance, "Tick bites and single-dose doxycycline as prophylactic treatment for Lyme disease."

Reporting: In New Hampshire, the diagnosis of Lyme disease, anaplasmosis, or babesiosis should be considered in a patient with a relevant history, including possibility of tick exposure, and compatible clinical manifestations. Suspect or confirmed cases should be reported to NH DHHS within 72 hours.

When reporting Lyme disease cases, please use the Health Care Provider Lyme Disease Case Report Form (available at http://www.dhhs.nh.gov/DHHS/CDCS/lymedisease.htm). Providers are encouraged to proactively utilize this form for all Lyme disease reporting with NH DHHS.

For additional information on incidence, diagnoses, and treatment of tick-borne diseases including Lyme disease, anaplasmosis, and babesiosis, please visit the following websites or resources:

http://www.dhhs.state.nh.us/DHHS/CDCS/lymedisease.htm

http://www.cdc.gov/ncidod/dvbid/lyme/index.htm

Diagnosis and management of tick-borne rickettsial diseases: Rocky Mountain Spotted Fever, Ehrlichioses, and Anaplasmosis – United States. Morbidity and Mortality Weekly Report. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5504a1.htm.

For any questions regarding the contents of this message, please contact NH DHHS Communicable Disease Control and Surveillance Section at 603-271-4496 (after hours 1-800-852-3345 ext.5300).

DEFINITION OF TERMS AND ALERTING VOCABULARY

Message Type

Alert:	Indicates an original alert
Update:	Indicates prior alert has been updated and superseded
Cancel:	Indicates prior alert has been cancelled
Error:	Indicates prior alert has been retracted

Status

Actual:	Communication or alert refers to a live event
Exercise:	Designated recipients must respond to the communication or alert
Test:	Communication or alert is related to a technical, system test and should be disregarded

Severity

Extreme:	Extraordinary threat to life or property
Severe:	Significant threat to life or property
Moderate:	Possible threat to life or property
Minor:	Minimal threat to life or property
Unknown:	Unknown threat to life or property

Sensitive

Sensitive:	Indicates the alert contains sensitive content
Not Sensitive:	Indicates non-sensitive content

Message Identifier: A unique alert identifier that is generated upon alert activation.

Delivery Time: Indicates the timeframe for delivery of the alert.

Acknowledgement: Indicates whether an acknowledgement on the part of the recipient is required to confirm that the alert was received, and the timeframe in which a response is required.

Originating Agency: A guaranteed unique identifier for the agency originating the alert.

Alerting Program: The program sending the alert or engaging in alerts and communications using PHIN Communication and Alerting (PCA) as a vehicle for their delivery.

You have received this message based upon the information contained within our emergency notification database.

If you have a different or additional e-mail or fax address that you would prefer to be used please contact:

Denise M. Krol, MS
NH HAN Coordinator
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Business Hours 8:00 AM – 4:00 PM
Tel: 603-271-4596
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Tick Bites and Single–Dose Doxycycline as Prophylactic Treatment for Lyme Disease

In November 2006, the Infectious Disease Society of America (IDSA) updated their guidelines for the clinical assessment, treatment, and prevention of Lyme disease. These guidelines are available through the Centers for Disease Control and Prevention website (http://www.cdc.gov/ncidod/dvbid/lyme/index.htm). Under certain circumstances, the IDSA suggests the use of antimicrobial prophylaxis following a tick bite. Since the publication of the guidelines, the New Hampshire Department of Health and Human Services (NH DHHS) has received questions about the prophylactic treatment regimen and the conditions required for its full effectiveness. This document is intended to clarify for healthcare providers in New Hampshire the conditions under which single-dose prophylactic treatment is recommended and resources available to assist in determining if conditions are met.

Per the IDSA recommendations, a full course of antimicrobial treatment, as used in the treatment of active Lyme disease (i.e., 10-14 days), is NOT recommended for prevention of Lyme disease after a recognized tick bite in the absence of clinical symptoms. A single dose of doxycycline (200 mg) may be offered to adult patients and to children ≥8 years of age (4 mg/kg up to a maximum dose of 200 mg) when ALL of the following conditions exist.

1. **The attached tick is a black-legged tick (deer tick, *Ixodes scapularis*).** Tick identification is most accurately performed by an individual trained in this discipline. However, black-legged ticks are very common in southeastern and central New Hampshire and there are many images available to help in general identification.

   Centers for Disease Control and Prevention (CDC) Lyme Page
   http://www.cdc.gov/ncidod/dvbid/lyme/ld_transmission.htm

   University of Rhode Island – Tick Encounter Resource Center
   http://www.tickencounter.org/education/tick_identification/

   NH DHHS Lyme disease website
   http://www.dhhs.nh.gov/DHHS/CDCS/lymedisease.htm

   Ticks can be submitted to the NH Department of Agriculture, Markets and Food for free tick identification for New Hampshire residents. Given inherent delays in shipping and identification, providers should not wait for results before considering prophylaxis.
   http://www.dhhs.nh.gov/DHHS/CDCS/lymedisease.htm

2. **The tick has been attached for at least 36 hours.** This determination is most reliably made by an entomologist, but simply asking the patient about outdoor activity in the time before the tick bite was

noticed can often lead to an accurate estimate of attachment time. Unengorged (unfed) black-legged ticks are typically flat. Any deviation from this "flatness," which is often accompanied by a change in color from brick red to a gray or brown, is an indication that the tick has been feeding.

3. **Prophylaxis can be started within 72 hours of the time that the tick was removed.** This time limit is suggested because of an absence of data on the efficacy of prophylaxis for tick bites following longer time intervals after tick removal.

4. **Doxycycline treatment is not contraindicated.** Doxycycline is contraindicated in pregnant women and children less than 8 years old. The other common antibiotic treatment for Lyme disease, amoxicillin, should NOT be used for prophylaxis because of an absence of data on an effective short-course regimen for prophylaxis and the likely need for a multiday regimen and its associated adverse effects.

5. **The geographic site where the tick was acquired has a local black-legged tick infection rate with *Borrelia burgdorferi* of at least 20%.** Preliminary studies suggest that greater than 20% of black-legged ticks in central and southeastern NH are infected with *Borrelia burgdorferi*. Due to low tick numbers, NH DHHS does not currently have sufficient data to estimate infection rates in other parts of the State. It is important to note, that infectivity rates can vary widely, even across short geographic distances, and in the same location over time.

   Based on the above, the NH DHHS is recommending that if conditions 1-4 above are present, physicians consider use of single-dose prophylaxis according to the table below:

County of Probable Tick Exposure	***Single-Dose Prophylaxis?***
Hillsborough, Merrimack, Rockingham, Strafford	Single-dose prophylaxis **should be considered**, as described above
All other counties not listed above	Given inadequate data at this time, NH DHHS is unable to make a recommendation for prophylaxis

Note that single-dose doxycycline is not 100% effective for prevention of Lyme disease; consequently, patients who receive this therapy should monitor themselves for the development of Lyme disease as well as other tick-borne diseases including anaplasmosis and babesiosis. Testing of ticks for tick-borne infectious agents is not recommended for guiding individual patient's prophylaxis or treatment decisions.

Personal protection remains the most reliable method of tick-borne disease prevention. Please continue to recommend personal protective measures to your patients. These include the use of protective clothing and tick repellents, checking the entire body for ticks after outdoor activities, and prompt, proper removal of attached ticks before transmission of pathogens can occur. These steps are especially important during the period of greatest risk (May through August), when the nymph (juvenile) stage of the black-legged tick is active; nymphs are very small (< 2mm) and often go unnoticed while attached to people. Additional information and educational materials can be found at http://www.dhhs.nh.gov/DHHS/CDCS/lymedisease.htm.