



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Thomas Farley, MD MPH
Commissioner

2013 DOHMH Advisory #21: Tick-borne Disease Advisory

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Please share with your colleagues in Internal and Family Medicine, Pediatrics, Infectious Disease, Infection Control, Laboratory Medicine, Hematology, Cardiology, Neurology, Rheumatology, Critical Care and Emergency Medicine:

- **The following tick-borne diseases are reportable in NYC: Lyme disease, Rocky Mountain spotted fever, babesiosis, ehrlichiosis, and anaplasmosis.**
- **Rocky Mountain spotted fever is locally-transmitted in NYC.**
- **Lyme disease, babesiosis, ehrlichiosis, and anaplasmosis are associated primarily with travel outside of NYC.**
- **New and updated resources for tick-borne diseases are available on the DOHMH website.**

Dear Colleagues,

From June through October, New York City clinicians should be on the alert for tick-borne diseases. This advisory presents key epidemiologic and clinical findings regarding reportable tick-borne diseases in New York City and reminds clinicians of available laboratory tests and reporting requirements.

The following tick-borne diseases are reportable in NYC:

1. **Lyme disease:** caused by the bacterium *Borrelia burgdorferi* and transmitted by the *Ixodes scapularis* tick (black-legged or deer tick)
2. **Babesiosis:** caused by the parasite *Babesia microti* and transmitted by the *I. scapularis* tick
3. **Anaplasmosis:** caused by the bacterium *Anaplasma phagocytophilum* and transmitted by the *I. scapularis* tick
4. **Rocky Mountain spotted fever:** caused by the bacterium *Rickettsia rickettsii* and transmitted by the *Dermacentor variabilis* (American dog) tick
5. **Ehrlichiosis:** caused primarily by the bacterium *Ehrlichia chaffeensis* and transmitted by the *Amblyomma americanum* (lone star) tick

The most common tick-borne disease affecting New Yorkers is Lyme disease (Table). Among reportable tick-borne diseases, only Rocky Mountain spotted fever has been known to be transmitted within all five boroughs of New York City. Recent travel to upstate New York, Long Island, Connecticut, Massachusetts, Pennsylvania, or New Jersey in particular should prompt consideration of tick-borne diseases. A history of a tick bite is not a prerequisite for considering these diseases in the differential diagnosis for patients with compatible illness, since only a small proportion of patients with these diseases recall having been bitten by a tick.

NYC Tick Surveillance Data

Information on tick populations present in New York City is limited. Periodic tick surveillance has been conducted since 1995, and annual surveillance by the Health Department started in 2009 has identified *I. scapularis* ticks in several NYC parks, some of which have been shown to carry *B. burgdorferi*. *D. variabilis* (American dog tick) is the vector for Rocky Mountain spotted fever and has

been detected in great abundance in all boroughs of NYC. *A. americanum* (lone star tick) is the vector for ehrlichiosis. Surveillance data suggest that this tick is not established in NYC.

NYC Tick-borne Disease Epidemiology

In 2012, there was a decrease in the number of cases of tick-borne diseases compared to 2011, with the exception of ehrlichiosis (Figure). Rates of Lyme disease, anaplasmosis, ehrlichiosis, and babesiosis are significantly higher in Manhattan residents than in residents of the other boroughs, and the majority of these cases reported a history of travel outside the city during the incubation period. Patients with these diseases had traveled most commonly to upstate New York, Long Island, Connecticut, New Jersey, and Massachusetts. In contrast, only 61% of Rocky Mountain spotted fever cases reported travel. Locally-acquired Rocky Mountain spotted fever cases have been reported most frequently from Brooklyn, the Bronx and Staten Island.

Highly endemic areas for *B. microti* in the greater New York City region include Suffolk County (especially Fire Island and Shelter Island) and parts of Connecticut and New Jersey. Reports of transfusion-associated babesiosis continue, with 2 cases identified in 2012; both cases had underlying illnesses. The incubation period for transfusion-associated babesiosis is two to nine weeks. Consider babesiosis in the differential diagnosis for patients with febrile illnesses and/or hemolytic anemia who have received blood components or transplanted organs in the preceding three months. Because these patients often have co-morbidities, and the potential exists for infection with other pathogens, consideration of babesiosis as a possible etiology may be delayed.

Clinical Description and Guidance on the Laboratory Diagnosis of Tick-borne Diseases

Detailed guidance on identifying, diagnosing and treating tick-borne diseases can be found in two new online reference manuals for health care providers about tick-borne diseases from the NYC Health Department and the CDC (see links below). Additionally, the Infectious Diseases Society of America treatment guidelines for Lyme disease, anaplasmosis, and babesiosis are available online at <http://cid.oxfordjournals.org/content/43/9/1089.full.pdf+html>.

The CDC released a Health Alert regarding a nationwide shortage of doxycycline. The current understanding is that most manufacturers have doxycycline, and that pricing may be coming down. Doxycycline remains the treatment of choice and the only recommendation for treatment of rickettsial infections. For more information visit <http://emergency.cdc.gov/HAN/han00349.asp>.

Tick Bite Management

Attached ticks should be removed promptly with tweezers or forceps, ensuring that mouthparts have not been left in the skin. Testing ticks for disease agents has no diagnostic value, because such testing lacks sensitivity for detecting pathogens. Additionally, detection of a pathogen in a tick does not necessarily signify transmission of that pathogen to the person bitten. Guidelines developed by the Infectious Disease Society of America support limited use of a single dose of doxycycline as prophylaxis for Lyme disease when all of the following conditions are met:

- The patient has traveled to a Lyme-endemic region
- Tick has been attached for ≥36 hours, based on engorgement or history
- Prophylaxis can be started within 72 hours of tick removal
- Tick can be reliably identified as *I. scapularis*
- Patient does not have any contraindications to treatment with doxycycline

Additional Resources Available on the DOHMH Website

- Information on ticks and tick-borne diseases in the New York City area
<http://www.nyc.gov/html/doh/html/environmental/ticks.shtml>
- *City Health Information Bulletin on Preventing and Managing Lyme and Other Tick-Borne Diseases*
http://www.nyc.gov/html/doh/html/data/chi31-3_index.html
- NEW! *Tick-Borne Diseases in the NYC Area, A Physician's Reference Manual*
<http://www.nyc.gov/html/doh/downloads/pdf/ehs/tick-borne-dx-physician.pdf>
- NEW! CDC's Tick-borne Diseases of the United States, A Reference Manual for Health Care Providers
<http://www.cdc.gov/lyme/resources/TickborneDiseases.pdf>
- A tick bite prevention brochure from the Health Department is available in English and Spanish on the Health Department website at <http://www.nyc.gov/html/doh/downloads/pdf/zoo/zoo-preventing-tick-bites.pdf>. Copies may also be ordered by calling 311.

Reporting Cases

Clinicians and laboratories must report all cases of Lyme disease, babesiosis, Rocky Mountain spotted fever, ehrlichiosis, and anaplasmosis to the Bureau of Communicable Disease. Cases of transfusion-associated babesiosis must also be reported to the NYSDOH Blood and Tissue Resources Program at 518-485-5341 and your hospital's transfusion service.

Cases may be reported by telephone (347-396-2600), mail (Bureau of Communicable Disease, 2 Gotham Center, CN# 22A, 42-09 28th Street, Queens, New York 11101-4132), or fax (347-396-2753) using the Universal Reporting form (URF), or the electronic URF. The URF and instructions may be downloaded from the Health Department website at <http://home2.nyc.gov/html/doh/html/hcp/hcp-urf.shtml>. Visit <http://home2.nyc.gov/html/doh/html/hcp/hcp.shtml> to join NYC-MED to submit a URF online.

As always, we appreciate your continued collaboration with our efforts to monitor trends in these diseases in New York City.

Sincerely,

Sally Slavinski, DVM, MPH, ACVPM

Sally Slavinski, DVM, MPH, ACVPM

Assistant Director

Zoonotic, Influenza and Vector-borne Disease Unit

Bureau of Communicable Disease

Asha Abdool, MPH

Asha Abdool, MPH

Epidemiologist

Zoonotic, Influenza and Vector-borne Disease Unit

Bureau of Communicable Disease

TABLE. Tick-borne Diseases in NYC Residents by Year of Diagnosis

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Babesiosis	18	16	25	16	18	39	24	39	43	37	57	28
Anaplasmosis	9	17	8	29	24	29	27	17	9	11	36	20
Ehrlichiosis	5	3	3	19	6	16	16	5	10	5	4	11
RMSF	2	10	14	23	7	24	28	11	8	11	12	7
Lyme Disease	228	280	224	357	399	310	416	538	643	413	439	330

FIGURE. Tick-borne Diseases in NYC Residents by Year of Diagnosis

