NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
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2025 Health Advisory 13: Tick-borne Diseases in New York City

Please distribute to all emergency medicine, infectious disease, internal medicine, family medicine, and pediatric medicine staff in your facility.

- New York City (NYC) healthcare providers should remain vigilant for tick-borne diseases (TBDs) among New Yorkers during summer months.
  - Lyme disease, babesiosis, and anaplasmosis are the most common TBDs.
  - New Yorkers are usually infected while outside of NYC, although locally acquired cases of Lyme disease, babesiosis, anaplasmosis, and ehrlichiosis have been reported from Staten Island and, rarely, the Bronx.
- This Health Advisory summarizes TBDs in NYC as follows: 1. Epidemiology; 2. Clinical Presentation; 3. Diagnostic Testing and Treatment; and 4. Reporting Cases
- For more details, see the NYC Health Department's TBD Diagnostic Reference Poster for Providers.

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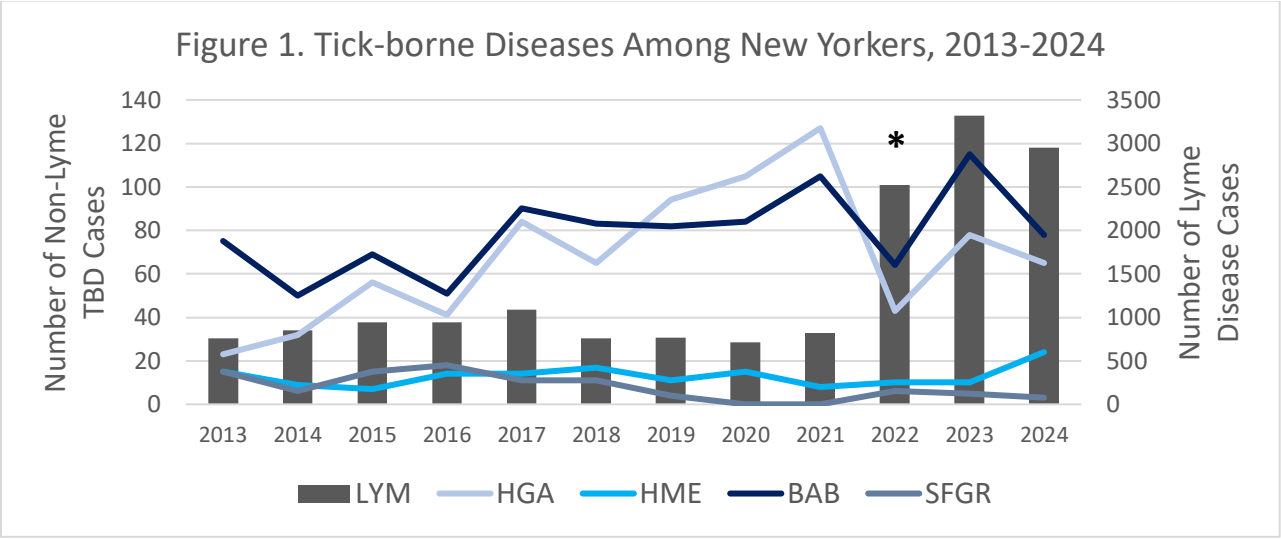
With the weather warming, New York City (NYC) providers should remain vigilant for tick-borne diseases (TBDs) as people spend more time outside in tick habitats. This advisory summarizes NYC TBD epidemiology, clinical presentation, diagnostic testing, treatment, and case reporting.

Epidemiology

TBD seasonality: Ticks are most active in spring, summer, and fall. Warmer average temperatures driven by climate change have led to longer summer, earlier spring, and shorter and milder winter, extending the geography and seasonality of ticks. However, dry conditions can negatively impact tick survival, and last fall's drought conditions followed by harsh winter weather may contribute to reduced tick populations this season.

TBD case counts: Cases of TBDs have been trending upwards (see Figure 1). In 2024, preliminary data show the following:

- **Lyme disease (LYM):** 2,952 cases (1,900 newly diagnosed and 1,052 new positive results for cases from prior years)
- **Babesiosis (BAB):** 78 cases
- **Anaplasmosis (HGA):** 65 cases
- **Ehrlichiosis (HME):** 24 cases
- **Spotted Fever Group Rickettsiosis (SFGR):** 2 cases of Rocky Mountain Spotted Fever, 1 case of rickettsialpox



* Changes to the CDC Lyme disease case definition in 2022 led to a substantial, though expected, increase in cases. The new case definition includes anyone with a positive result from an appropriate test (no clinical criteria required).

TBD incidence by borough: Manhattan and Brooklyn have the highest number of TBD reports, with most people reporting a history of travel outside NYC during the exposure period. Local transmission of TBDs is reported in Staten Island and, rarely, in the Bronx likely due to the limited presence of ticks.

Tick surveillance by the NYC Health Department: The blacklegged tick is widely established in Staten Island and focal areas of the Bronx, including Pelham Bay Park and Hunter Island. It is not known to be established in other areas of NYC. Tick testing has detected TBD pathogens, most commonly *Borrelia burgdorferi*, and to a lesser extent *Anaplasma phagocytophilum, Babesia microti and Borrelia miyamoto*i, and rarely Powassan virus, in NYC blacklegged ticks. *Rickettsia parkeri* has been detected in Gulf Coast ticks in Staten Island.

Incidence of rare and emerging TBDs in NYC:

- **Powassan virus** disease has been reported in one NYC resident who was infected while in the Hudson Valley in 2018.
- ***Borrelia miyamotoi*** disease is not reportable, though the number of human infections in NYC is believed to be low.
- ***Rickettsia parkeri*** rickettsiosis has not been reported among NYC residents.
- **Heartland and Bourbon viruses** have been detected in lone star ticks collected in parts of New York State but have not been detected among ticks in NYC or among NYC residents.
- **Alpha-gal syndrome** is an allergic reaction to meat and other mammalian products, associated with the bite of a lone star tick. The number of affected New Yorkers is under investigation following a late 2023 NYC Health Code change requiring laboratories to report alpha-gal syndrome to the NYC Health Department.

Clinical Presentation

TBD symptoms may be nonspecific and include fever, headache, myalgia, and gastrointestinal manifestations. Some people with TBDs also present with a rash. An erythema migrans rash occurs in 70-80% of Lyme disease cases; find images here.

Recent travel to tick endemic areas (such as upstate New York, Long Island, other parts of the northeast, the mid-Atlantic region, and the upper Midwest) or residency in Staten Island should prompt consideration of TBDs in people with a compatible clinical presentation. A known history of a tick bite is not a prerequisite for consideration, as only a small proportion of people with TBDs recall being bitten by a tick.

Additional information about signs and symptoms associated with specific TBDs can be found in the NYC Health Department's TBD Diagnostic Reference Poster for Providers.

Diagnostic Testing and Treatment

Testing: Diagnostic testing can help guide clinical management, but do not delay treatment if a TBD is suspected to prevent severe disease. Preferred testing methodologies include:

- **Lyme disease**: Modified two-tier test (MTTT) is now the preferred method instead of standard two-tier testing
- **Human anaplasmosis** and **babesiosis**: PCR (and blood smear for babesiosis) on whole blood within the first week of illness
- Testing for **rare or emerging TBDs**, such as Heartland, Bourbon and Powassan viruses, and *R. parkeri* rickettsiosis, may not be widely available. For diagnostic assistance, call the NYC Health Department Provider Access Line at 866-692-3641.

Lyme Disease Prophylaxis: **A single prophylactic dose of doxycycline** (200 mg for adults or 4.4 mg/kg for children of any age weighing less than 45 kg) given **within 72 hours of removing an engorged blacklegged tick** (typically attached for at least 36 hours) may be used to reduce the risk of Lyme disease for people bitten **while in a highly endemic area** (including Staten Island and the surrounding northeastern states). Prophylaxis has not been shown as effective in preventing other tickborne diseases.

Testing Ticks: **Testing ticks for pathogens is generally not recommended.** Ticks with a positive test result may not have been attached long enough to transmit the pathogens, and even with a negative test result the individual might have unknowingly been bitten by a different tick.

Detailed guidance on diagnostic testing, antimicrobial selection, and other treatment considerations for specific TBDs can be found in the references below.

Reporting Cases

Cases of TBDs are required to be reported to the NYC Health Department. Laboratories automatically report all positive results for Lyme disease, babesiosis, spotted fever group rickettsioses, ehrlichiosis, anaplasmosis, and alpha-gal syndrome. **Healthcare providers** should also report the following:

- Suspected cases of rickettsialpox based on clinical suspicion
- Cases of transfusion-associated TBDs, which must be reported to the NYS Department of Health Blood Resources Program by completing an Incident Form and submitting it via email to brp@health.ny.gov.

References

- Association of Public Health Laboratories (APHL): Lyme Disease Serologic Testing
- New York State Department of Health: Tick Removal Tutorial

- Centers for Disease Control and Prevention (CDC):
  - TBD Continuing Education (free)
  - Lyme Disease Rashes
- Infectious Disease Society of America (IDSA):
  - Lyme Disease Practice Guidelines
  - Babesiosis Practice Guidelines
- NYC Department of Health and Mental Hygiene (NYC Health Department):
  - TBD Diagnostic Reference Poster for Providers
  - Ticks (information, materials and resources for the general public)
  - TBD Disease Pages: Lyme Disease, Anaplasmosis, Babesiosis, Ehrlichiosis, Alpha-gal syndrome, Rocky Mountain spotted fever, Rickettsia parkeri rickettsiosis
  - Reporting Diseases to the Health Department