

Timely diagnosis and early, accurate treatment are imperative to **managing tick-borne diseases**



Tick-borne diseases can cause severe health complications and are often difficult to diagnose. There are important considerations for making a diagnosis earlier to help prevent serious, chronic illness.



Geography/location matters

Certain tick-borne diseases are more prevalent in certain areas of the country. **To further complicate diagnosis, many patients may be coinfecting with multiple tick-borne diseases.** Their risk of this is impacted by the number of tick-borne diseases in their location.



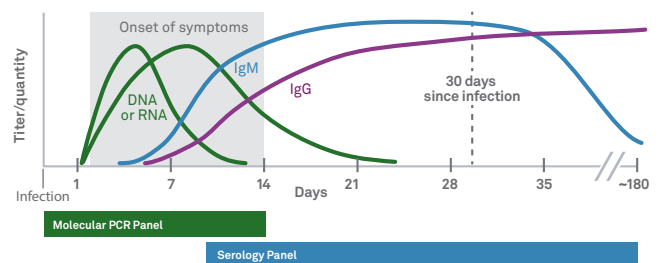
Accuracy and specificity are key

The same vague and common symptoms that can make tick-borne disease difficult to identify can also make it challenging to pinpoint whether it is a tick-borne disease or another condition, like an autoimmune disorder.



Timing of testing is critical

In general, molecular testing is indicated during the acute phase of infection prior to antibody development, and this window of time may differ among various tick-borne pathogens.



Quest Diagnostics offers a **comprehensive menu for tick-borne disease testing** that aligns with CDC recommendations

A comprehensive menu for tick-borne disease testing

Test name	Test code	CPT® code(s)
Antibody panels		
Alpha-Gal Panel Includes: Beef (f27) IgE (2827), Lamb (f88) IgE (2888), Pork (f26) IgE (2826), Galactose-Alpha-1,3-Galactose (Alpha-Gal) IgE (10554).	10555	86003 (x3), 86008
<i>Anaplasma phagocytophilum</i> and <i>E. chaffeensis</i> Antibody Panel with Reflex to Titers ^{a,b} Includes: <i>Anaplasma phagocytophilum</i> Antibodies (IgG, IgM) with Reflex to Titers (16189) and <i>Ehrlichia chaffeensis</i> Antibodies (IgG, IgM) with Reflex to Titers (16197).	16212	86666 (x4)
Colorado Tick Fever Antibody Panel, IFA Includes: Colorado Tick Fever IgG and Colorado Tick Fever IgM	34986	86790 (x2)
Febrile Antibodies Panel ^a Includes: <i>Rickettsia</i> (RMSF) Antibodies (IgG, IgM) with Reflex to Titers (6419). If <i>Rickettsia</i> (RMSF) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (CPT code(s) 86757 per titer performed); <i>Rickettsia</i> (Typhus Fever) Antibodies (IgG, IgM) with Reflex to Titers (37503). If <i>Rickettsia</i> (typhus fever) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (CPT code(s) 86757 per titer performed); <i>Salmonella</i> , Total Antibody, EIA (10582). Includes (<i>Salmonella</i> H Type A, <i>Salmonella</i> H Type B, <i>Salmonella</i> H Type D, <i>Salmonella</i> O Type D, <i>Salmonella</i> O Type Vi); <i>Brucella</i> Antibodies (IgG, IgM), EIA with Reflex to Agglutination (91068). ^b If <i>Brucella</i> IgM is ≥ 1.10 , then <i>Brucella</i> Antibody, Agglutination will be performed at an additional charge, (CPT code(s): 86622). ^b	91121	86757 (x4), 86622 (x2), 86768 (x5)
<i>Rickettsia</i> Antibody Panel with Reflex to Titers ^a Includes: <i>Rickettsia</i> (RMSF) Antibodies (IgG, IgM) with Reflex to Titers (6419); <i>Rickettsia</i> (Typhus Fever) Antibodies (IgG, IgM) with Reflex to Titers (37503). If <i>Rickettsia</i> (RMSF) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (CPT code(s) 86757 per titer performed). If <i>Rickettsia</i> (typhus fever) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (CPT code(s) 86757 per titer performed).	37507	86757 (x4)
<i>Rickettsia conorii</i> Antibody Panel, IFA ^{b,c} Includes: <i>Rickettsia conorii</i> (IgG) and <i>Rickettsia conorii</i> (IgM)	15332	86757(x2)
Rickettsial Disease Panel ^a Includes: <i>Rickettsia</i> (RMSF) Antibodies (IgG, IgM) with Reflex to Titers (6419). If <i>Rickettsia</i> (RMSF) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (CPT code(s) 86757 per titer performed); <i>Rickettsia</i> (Typhus Fever) Antibodies (IgG, IgM) with Reflex to Titers (37503). If <i>Rickettsia</i> (typhus fever) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (CPT code(s) 86757 per titer performed); Q Fever (<i>Coxiella burnetii</i>) Antibodies (IgG, IgM), with Reflex to Titers (37071). If Q fever screen is positive, IgG or IgM phase I or phase II, the appropriate titer will be performed at an additional charge (CPT code(s): 86638 per titer performed).	37478	86638 (x4), 86757 (x4)
Tick-Borne Disease Antibodies Panel with Reflexes ^a Includes: Lyme Disease Antibody with Reflex to Immunoassay (IgG, IgM) (39733); <i>Anaplasma phagocytophilum</i> Antibodies (IgG, IgM) with Reflex to Titers (16189); <i>Babesia microti</i> Antibodies (IgG, IgM) with Reflex to Titers (16194); <i>Ehrlichia chaffeensis</i> Antibodies (IgG, IgM) with Reflex to Titers (16197)	16220	86666 (x2), 86753 (x2), 86618, 86666 (x2)
Antibody tests		
<i>Anaplasma phagocytophilum</i> Antibodies (IgG, IgM) with Reflex to Titers ^b	16189	86666 (x2)
<i>Babesia duncani</i> (WA1) Antibody (IgG), IFA ^b	17231	86753
<i>Babesia microti</i> Antibodies (IgG, IgM) with Reflex to Titers ^b	16194	86753 (x2)
<i>Borrelia miyamotoi</i> Antibodies (IgG, IgM), Immunoassay ^b	39684	86619 (x2)
<i>Ehrlichia chaffeensis</i> Antibodies (IgG, IgM) with Reflex to Titers ^b	16197	86666 (x2)
<i>Francisella tularensis</i> Antibody, IgM and IgG, ELISA, Serum ^b	12707	86668 (x2)
Galactose-Alpha-1,3-Galactose (Alpha-Gal) IgE	10554	86008

^a Components of panels can be ordered separately.

^b This test was developed and its analytical performance characteristics have been determined by Quest Diagnostics. It has not been cleared or approved by FDA. This assay has been validated pursuant to the CLIA regulations and is used for clinical purposes.

^c Not included in Tick-borne Disease, Acute Molecular Panel, Non-Lyme.

Test name	Test code	CPT® code(s)
Antibody tests (continued)		
Lyme Disease Ab with Reflex to Blot (IgG, IgM)	6646	86618
Lyme Disease Antibodies (IgG, IgM), Immunoblot	8593	86617 (x2)
Lyme Disease Antibody (IgG), Immunoblot	29477	86617
Lyme Disease Antibodies (IgG, IgM), Immunoblot, CSF	70028	86617 (x2)
Lyme Disease Antibody with Reflex to Immunoassay (IgG, IgM) If Lyme disease antibody is positive or equivocal (≥0.91), then Lyme Disease Supplemental Antibodies (IgG, IgM), Immunoassay will be performed at an additional charge (CPT code(s): 86617(x2)).	39733	86618
Lyme Disease Antibody Index for CNS Infection	34194	82040, 82042, 82784 (x2), 86618 (x4)
<i>Rickettsia</i> (RMSF) Antibodies (IgG, IgM) with Reflex to Titers If <i>Rickettsia</i> (RMSF) antibodies (IgG, IgM) are detected, the appropriate titer will be performed at an additional charge (CPT code(s): 86757 per titer performed).	6419	86757 (x2)
<i>Rickettsia</i> (Typhus Fever) Antibodies (IgG, IgM) with Reflex to Titers ^a Includes: If <i>Rickettsia</i> (typhus fever) screen is detected, IgG or IgM, the appropriate titer will be performed at an additional charge (37503) (CPT code(s) 86757 per titer performed).	37503	86757 (x2)
Molecular panels		
Tick-borne Disease, Acute Molecular Panel ^a Includes: <i>Anaplasma phagocytophilum</i> DNA, Qualitative Real-Time PCR, <i>Babesia microti</i> DNA, Real-Time PCR, <i>Borrelia miyamotoi</i> DNA, Real-Time PCR, <i>Ehrlichia chaffeensis</i> DNA, Real-Time PCR, <i>Borrelia</i> Species DNA, Qualitative Real-Time PCR.	94322	87801, 87468, 87469, 87478, 87484
Tick-borne Disease, Acute Molecular Panel, Non-Lyme ^a Includes: <i>Anaplasma phagocytophilum</i> DNA, Qualitative Real-Time PCR, <i>Babesia microti</i> DNA, Real-Time PCR, <i>Borrelia miyamotoi</i> DNA, Real-Time PCR, Miscellaneous, <i>Ehrlichia chaffeensis</i> DNA, Real-Time PCR.	32338	87468, 87469, 87478, 87484
Molecular tests		
<i>Anaplasma phagocytophilum</i> DNA, Qualitative Real-Time PCR ^b	17320	87468
<i>Babesia microti</i> DNA, Real-Time PCR ^b	37314	87469
<i>Borrelia miyamotoi</i> DNA, Real-Time PCR, Miscellaneous ^b	93795	87478
<i>Borrelia</i> Species DNA, Real-Time PCR, with Reflexes, Blood ^{a,b} When appropriate, <i>Borrelia burgdorferi</i> DNA, Qualitative Real-Time PCR, Miscellaneous (39209) and <i>Borrelia miyamotoi</i> DNA, Real-Time PCR, Miscellaneous (93795) will be performed at an additional charge (CPT code(s): 87476, 87478).	39219	87801
<i>Borrelia</i> Species DNA, Real-Time PCR, with Reflexes, Synovial Fluid/CSF ^{a,b} When appropriate, <i>Borrelia burgdorferi</i> DNA, Qualitative Real-Time PCR, Miscellaneous (39209) and <i>Borrelia miyamotoi</i> DNA, Real-Time PCR, Miscellaneous (93795) will be performed at an additional charge (CPT code(s): 87476, 87478).	39218	87801
<i>Borrelia</i> Species DNA, Qualitative Real-Time PCR, Miscellaneous ^{b,c}	15777	87801
<i>Borrelia</i> Species DNA, Qualitative Real-Time PCR, Tick ^b	15510	87801
<i>Borrelia miyamotoi</i> DNA, Real-Time PCR, Tick ^b	93794	87478
<i>Ehrlichia chaffeensis</i> DNA, Real-Time PCR ^b	11353	87484
Tick ID with Reflex to <i>Borrelia</i> Species DNA, Real-Time PCR, Tick When applicable, <i>Borrelia</i> Species DNA, Qualitative, Real-Time PCR, Tick will be performed at an additional charge (15510), (CPT code(s): 87801).	90558	87168
<i>Rickettsia</i> Species DNA, Real-Time PCR ^b	70191	87798
Other tests		
Malaria/ <i>Babesia</i> /Other Blood Parasites	831	87207
Tick (and Other Arthropods) Identification	3946	87168

^a Components of panels can be ordered separately.

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^c Not included in Tick-borne Disease, Acute Molecular Panel, Non-Lyme.

Make timely, differential tick-borne disease diagnoses with comprehensive testing from Quest

The annual number of tick-borne disease cases has more than doubled in the US in the past 2 decades.¹ While Lyme disease is the most common of those diseases—affecting approximately 476,000 Americans each year^{2,3}—there are 17 other known pathogens associated with tick-borne illnesses, with 6 new illnesses discovered in the past 20 years alone.

Knowing which test to choose and when

CDC-recommended and FDA-approved laboratory tests for confirmation of tick-borne diseases include serology and molecular testing, such as PCR.⁴



In general, **molecular testing is indicated during the acute phase of infection prior to antibody development**, and this window of time may differ among various tick-borne pathogens. For example, the DNA of *Borrelia burgdorferi* (Lyme) may only be present in the blood for up to 48 hours.⁵



Antibodies may begin to develop 4-7 days or later after disease onset and can take up to several weeks to become well established.⁵



Depending on the timing and presence of symptoms, **Quest offers individual testing and panels for tick-borne diseases**, which can help provide the diagnostic insight you need.

The CDC recommends 2-step serologic testing for Lyme disease,

using a validated standard two-tier test (STTT) or modified two-tier test (MTTT) algorithm.⁶

During early-stage Lyme disease (first 30 days of infection), the MTTT has been shown to have improved sensitivity and detect more cases of Lyme compared to STTT.

MTTT advantages

- ✓ Doesn't include the Western blot, which can be time consuming, and interpretation of results can be subjective
- ✓ Has a higher sensitivity than the STTT in the early stages of infection and maintains similar specificity as the STTT
- ✓ Its algorithm has a higher positive predictive value than the STTT

MTTT

TEST NAME: Lyme Disease Antibody with Reflex to Immunoassay (IgG, IgM)
TEST CODE: 39733

STTT

TEST NAME: Lyme Disease Ab with Reflex to Blot (IgG, IgM)
TEST CODE: 6646

Learn more at [QuestDiagnostics.com/Tick](https://www.questdiagnostics.com/Tick)



References

1. Winny A. Tickborne diseases are on the rise—here's what to know. Johns Hopkins University. June 21, 2023. Accessed March 19, 2024. <https://publichealth.jhu.edu/2023/lyme-disease-isnt-the-only-tickborne-disease-to-watch> 2. Schwartz AM, Kugeler KJ, Nelson CA, et al. Use of commercial claims data for evaluating trends in Lyme disease diagnoses, United States, 2010-2018. *Emerg Infect Dis.* 2021;27(2):499-507. doi:10.3201/eid2702.202728 3. Kugeler KJ, Schwartz AM, Delorey M, et al. Estimating the frequency of Lyme disease diagnoses—United States, 2010-2018. *Emerg Infect Dis.* 2021;27(2):616-619. doi:10.3201/eid2702.202731 4. CDC. Testing and diagnosis for Lyme disease. May 15, 2024. Accessed February 14, 2025. <https://www.cdc.gov/lyme/diagnosis-testing/index.html> 5. CDC. Emerging tickborne diseases: CDC public health grand rounds emerging tickborne diseases. Encore presentation on Tuesday, July 16, 2019. Accessed April 10, 2023. <https://www.cdc.gov/grand-rounds/pp/2017/20170321-tickborne-diseases.html> 6. CDC. Tickborne diseases of the United States: a reference manual for healthcare providers. 6th edition, 2022. Accessed April 10, 2023. <https://www.cdc.gov/ticks/hcp/data-research/tickborne-disease-reference-guide/index.html>

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