



MASSACHUSETTS

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Medical Policy

Intravenous Antibiotic Therapy and Associated Diagnostic Testing for Lyme Disease

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Related Policies

None

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO BlueSM and Medicare PPO BlueSM Members

Treatment of Lyme disease consists of oral antibiotics, except for the following indications:

I. A 2- to 4-week course of IV antibiotic therapy may be **MEDICALLY NECESSARY** in patients with neuroborreliosis with objective neurologic complications of documented Lyme disease.

Objective neurologic findings include:

- Lymphocytic meningitis with documented cerebrospinal fluid (CSF) abnormalities
- Cranial neuropathy, other than uncomplicated cranial nerve palsy, with documented CSF abnormalities
- Encephalitis or encephalomyelitis with documented CSF abnormalities
- Radiculopathy
- Polyneuropathy.

Lyme disease may be documented either on the basis of serologic testing or by clinical findings of erythema migrans in early infection. Documentation of CSF abnormalities is required for suspected CNS infection, as indicated above.

Serologic documentation of infection requires:

- Positive or indeterminate enzyme-linked immunosorbent assay (ELISA), AND
- Positive immunoblot blot by CDC criteria.

Documented CSF abnormalities include ALL of the following:

- Pleocytosis;
- Evidence of intrathecal production of *Borrelia burgdorferi* antibodies in CSF; and
- Increased protein levels.

Polymerase chain reaction (PCR)- based direct detection of *B burgdorferi* in CSF samples may be **MEDICALLY NECESSARY** and may replace serologic documentation of infection in patients with a short duration of neurologic symptoms (<14 days) during the window between exposure and production of detectable antibodies.

II. A single 2- to 4-week course of IV antibiotics may be **MEDICALLY NECESSARY** in patients with Lyme carditis, as evidenced by positive serologic findings (defined above) and associated with a high degree of atrioventricular block or a PR interval of greater than 0.3 second. Documentation of Lyme carditis may include PCR-based direct detection of *B burgdorferi* in the blood when results of serologic studies are equivocal.

III. A single 2- to 4-week course of IV antibiotic therapy may be **MEDICALLY NECESSARY** in the small subset of patients with well-documented Lyme arthritis who have such severe arthritis that it requires the rapid response associated with IV antibiotics. Documentation of Lyme arthritis may include PCR-based direct detection of *B burgdorferi* in the synovial tissue or fluid when results of serologic studies are equivocal.

IV. Intravenous antibiotic therapy is considered **NOT MEDICALLY NECESSARY** in the following situations (unless otherwise specified under State Mandate Chapter 183, see section V. below):

- Patients with symptoms consistent with chronic fatigue syndrome or fibromyalgia, in the absence of objective clinical or laboratory evidence for Lyme disease;
- Patients with seronegative Lyme disease in the absence of CSF antibodies;
- Initial therapy in patients with Lyme arthritis without coexisting neurologic symptoms;
- Cranial nerve palsy (eg, Bell palsy) without clinical evidence of meningitis;
- Antibiotic-refractory Lyme arthritis (unresponsive to 2 courses of oral antibiotics or to 1 course of oral and 1 course of intravenous antibiotic therapy);
- Patients with vague systemic symptoms without supporting serologic or CSF studies;
- Patients with a positive ELISA test, unconfirmed by an immunoblot or Western blot test (see definition above);
- Patients with an isolated positive serologic test in the setting of multiple negative serologic studies;
- Patients with chronic (≥6 months) subjective symptoms (“post-Lyme syndrome”) after receiving recommended treatment regimens for documented Lyme disease.

V. Per State Mandate¹[Chapter 183 of the Acts of 2016, "An Act Relative to Long-Term Antibiotic Therapy for the Treatment of Lyme Disease:](#)

- a. For the purposes of this section, “long-term antibiotic therapy” and “Lyme disease” shall have the meaning ascribed to them in section 12DD of chapter 112 (see below).
- b. A policy, contract, agreement, plan or certificate of insurance issued, delivered or renewed within the commonwealth that provides medical expense coverage shall provide coverage for long-term antibiotic therapy for a patient with Lyme disease when determined to be medically necessary and ordered by a licensed physician after making a thorough evaluation of the patient’s symptoms, diagnostic test results or response to treatment. An experimental drug shall be covered as a long-term antibiotic therapy if it is approved for an indication by the United States Food and Drug Administration; provided, however, that a drug, including an experimental drug, shall be covered for an off-label use in the treatment of Lyme disease if the drug has been approved by the United States Food and Drug Administration.

[Section 12DD: Administration of long-term antibiotic therapy upon diagnosis of Lyme disease](#)¹

- a. As used in this section, the following words shall have the following meanings unless the context clearly requires otherwise:

"Long-term antibiotic therapy", the administration of oral, intramuscular or intravenous antibiotics singly or in combination, for periods of time in excess of 4 weeks.

"Lyme disease", the clinical diagnosis of a patient by a physician licensed under section 2 of the presence of signs or symptoms compatible with acute infection with *Borrelia burgdorferi*; late stage, persistent or chronic infection with *Borrelia burgdorferi*; complications related to such infection; or with such other strains of *Borrelia* that become identified or recognized by the National Centers for Disease Control and Prevention as a cause of Lyme disease; provided, however, that "Lyme disease" shall also include an infection that meets the surveillance criteria set forth by the National Centers for Disease Control and Prevention and a clinical diagnosis of Lyme disease that does not meet the National Centers for Disease Control and Prevention surveillance criteria but presents other acute and chronic signs or symptoms of Lyme disease as determined by the treating physician; and provided further, that clinical diagnosis shall be based on knowledge obtained through medical history and physical examination only or in conjunction with testing that provides supportive data for such clinical diagnosis.

- b. A licensed physician may prescribe, administer or dispense long-term antibiotic therapy for a therapeutic purpose to eliminate infection or to control a patient's symptoms upon making a clinical diagnosis that the patient has Lyme disease or displays symptoms consistent with a clinical diagnosis of Lyme disease, if such clinical diagnosis and treatment are documented in the patient's medical record by the prescribing licensed physician.

VI. Repeat PCR-based direct detection of *B burgdorferi* is **INVESTIGATIONAL** in the following situations:

- As a justification for continuation of IV antibiotics beyond 1 month in patients with persistent symptoms
- As a technique to follow therapeutic response.

VII. PCR-based direct detection of *B burgdorferi* in urine samples is **INVESTIGATIONAL** in all clinical situations.

VIII. Genotyping or phenotyping of *B burgdorferi* is **INVESTIGATIONAL**.

IX. Other diagnostic testing is **INVESTIGATIONAL** including but not limited to "stand-alone" C6 peptide ELISA or determination of levels of the B lymphocyte chemoattractant CXCL13 for diagnosis or monitoring treatment.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	Prior authorization is required for IV therapy. Prior authorization is not required for diagnostic testing.
Commercial PPO and Indemnity	Prior authorization is required for IV therapy. Prior authorization is not required for diagnostic testing.
Medicare HMO BlueSM	Prior authorization is required for IV therapy. Prior authorization is not required for diagnostic testing.
Medicare PPO BlueSM	Prior authorization is required for IV therapy. Prior authorization is not required for diagnostic testing.

For IV therapy, providers are required to complete the [Home Infusion Therapy Prior Authorization Form, #430](#)

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The above medical necessity criteria MUST be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

CPT codes:	Code Description
86617	Borrelia burgdorferi (Lyme disease) confirmatory test (e.g., Western blot or immunoblot)
87475	Infectious agent detection by nucleic acid (DNA or RNA); Borrelia burgdorferi, direct probe technique
87476	Infectious agent detection by nucleic acid (DNA or RNA); Borrelia burgdorferi, amplified probe technique

The following CPT codes are considered investigational for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

CPT codes:	Code Description
0041U	Borrelia burgdorferi, antibody detection of 5 recombinant protein groups, by immunoblot, IgM
0042U	Borrelia burgdorferi, antibody detection of 12 recombinant protein groups, by immunoblot, IgG

DESCRIPTION

LYME DISEASE

Lyme disease is a multisystem inflammatory disease caused by the spirochete *Borrelia burgdorferi* and transmitted by the bite of an infected *Ixodes scapularis* (northeastern region) or *Ixodes pacificus* (Pacific coast, most often in Northern California) tick. The disease is characterized by stages, beginning with localized infection of the skin (erythema migrans), followed by acute dissemination, and then late dissemination to many sites. Manifestations of the early disseminated disease may include lymphocytic meningitis, facial palsy, painful radiculoneuritis, atrioventricular (AV) block, or migratory musculoskeletal pain. Months to years later, the disease may be manifested by intermittent oligoarthritis, particularly involving the knee joint; chronic encephalopathy; spinal pain; or distal paresthesias. While most manifestations of Lyme disease can be adequately treated with oral antibiotics, intravenous (IV) antibiotics are indicated in some patients with neurologic involvement or AV block. The following paragraphs describe the various manifestations of Lyme disease, therapies, and the various laboratory tests used to support the diagnosis of Lyme disease.

Neuroborreliosis

Lymphocytic meningitis, characterized by head and neck pain, may occur during the acute disseminated stage of the disease. Analysis of the cerebrospinal fluid (CSF) is indispensable for the diagnosis of Lyme meningitis. If the patient has Lyme disease, the CSF will show a lymphocytic pleocytosis (lymphocyte count greater than normal) with increased levels of protein. Intrathecal production of antibodies directed

at spirochetal antigens is typically present. A normal CSF analysis is strong evidence against Lyme meningitis. Usual treatment consists of 2 weeks of either oral (ambulatory setting) or IV (hospitalized patients) antibiotics.

Cranial neuritis, most frequently Bell palsy, may present early in the course of disseminated Lyme disease, occasionally before the development of antibodies, such that a Lyme disease etiology may be difficult to rule in or out. While Bell palsy typically resolves spontaneously with or without treatment with oral antibiotics, some physicians have recommended a lumbar puncture and a course of IV antibiotics if pleocytosis in the CSF is identified, primarily as a prophylactic measure to prevent further neurologic symptoms.

A subacute encephalopathy may occur months to years after disease onset, characterized by subtle disturbances in memory, mood, sleep, or cognition accompanied by fatigue. These symptoms may occur in the absence of abnormalities in the electroencephalogram, magnetic resonance imaging, or CSF. Also, the symptoms are nonspecific and overlap with fibromyalgia and chronic fatigue syndrome. Thus the diagnosis of Lyme encephalopathy may be difficult and may best be made with a mental status exam or neuropsychological testing. Treatment with IV antibiotics is not indicated unless CSF abnormalities are identified.

Much rarer, but of greater concern, is the development of encephalomyelitis, characterized by spastic paraparesis, ataxias, cognitive impairment, bladder dysfunction, and cranial neuropathy. CSF examination reveals pleocytosis and elevated protein. Selective synthesis of anti-spirochetal antibodies can also be identified. A course of IV antibiotics with 2 weeks of ceftriaxone is suggested when CSF abnormalities are identified.

A variety of peripheral nervous system manifestations of Lyme disease have also been identified. Symptoms of peripheral neuropathy include paresthesias or radicular pain with only minimal sensory signs. Patients typically exhibit electromyographic or nerve conduction velocity abnormalities. CSF abnormalities are usually seen only in those patients with a coexistent encephalopathy.

Lyme Carditis

Lyme carditis may appear during the early disseminated stage of the disease; symptoms include AV block, tachyarrhythmias, and myopericarditis. Antibiotics are typically given, although no evidence has demonstrated hastened resolution of symptoms. Both oral and IV regimens have been advocated. IV regimens are used in patients with high degree AV block or a PR interval on an electrocardiogram more than 0.3 seconds. Patients with milder forms of carditis may be treated with oral antibiotics.

Lyme Arthritis

Lyme arthritis is a late manifestation of infection and is characterized by an elevated immunoglobulin G (IgG) response to *B. burgdorferi* and intermittent attacks of oligoarticular arthritis, primarily in the large joints such as the knee. Patients with Lyme arthritis may be successfully treated with a 30-day course of oral doxycycline or amoxicillin, but care must be taken to exclude simultaneous involvement, requiring IV antibiotic treatment. In the small subset of patients who do not respond to oral antibiotics, an additional 30-day course of oral or IV antibiotics may be recommended.

Fibromyalgia and Chronic Fatigue Syndrome

Fibromyalgia and chronic fatigue syndrome are the diseases most commonly confused with Lyme disease. Fibromyalgia is characterized by musculoskeletal complaints, multiple trigger points, difficulty in sleeping, generalized fatigue, headache, or neck pain. The joint pain associated with fibromyalgia is typically diffuse, in contrast to Lyme arthritis, which is characterized by marked joint swelling in one or more joints at a time, with few systemic symptoms. Chronic fatigue syndrome is characterized by multiple subjective complaints, such as overwhelming fatigue, difficulty in concentration, and diffuse muscle and joint pain. In contrast with Lyme disease, both of these conditions lack joint inflammation, have normal neurologic test results, or have test results suggesting anxiety or depression. Neither fibromyalgia nor chronic fatigue syndrome has been shown to respond to antibiotic therapy.

Diagnostic Testing

Overview

The optimum method of testing for Lyme disease depends on the stage of the disease. Diagnostic testing may not be necessary when a diagnosis can be made clinically in patients with a recent tick bite or exposure and the presence of the characteristic rash of erythema migrans. While diagnosis of Lyme disease is generally based on the clinical picture and demonstration of specific antibodies (see below), polymerase chain reaction (PCR)–based technology can detect the spirochete in the central nervous system in cases of neuroborreliosis, in the synovial fluid of cases of Lyme arthritis, and rarely in skin biopsy specimens of those with atypical dermatologic manifestations.^{1,2} However, while PCR-based tests can identify organisms in skin biopsy specimens of patients with dermatologic manifestations (ie, erythema migrans), this diagnosis is typically made clinically, and antibiotic therapy is started empirically. Similarly, diagnosis of Lyme arthritis is based on clinical and serologic studies without the need for synovial tissue or fluid. Finally, intrathecal antibody production is considered a more sensitive test than PCR-based CSF detection in patients with suspected neuroborreliosis. PCR may be clinically useful as a second approach in patients with a short duration of neurologic symptoms (<14 days) during the window between exposure and the emergence of detectable levels of antibodies in the CSF.³ PCR-based detection is typically not performed with urine due to the variable presence of endogenous polymerase inhibitors that affect test sensitivity.

Serologic Tests

The antibody response to infection with *B. burgdorferi* follows a typical pattern. During the first few weeks after the initial onset of infection, there is no antibody production. The specific immunoglobulin M (IgM) response characteristic of acute infection peaks between the third and the sixth week. The specific IgG response develops only after months and includes antibodies to a variety of spirochetal antigens. IgG antibodies produced in response to Lyme disease may persist for months or years. Thus detection of IgG antibodies only indicates exposure, either past or present. In Lyme disease–endemic areas, underlying asymptomatic seropositivity may range up to 5% to 10%. Thus, as with any laboratory test, interpretation of serologic tests requires a close correlation with the patient's signs and symptoms. For example, patients with vague symptoms of Lyme disease, chronic fatigue syndrome, or fibromyalgia may undergo multiple serologic tests over many weeks to months to establish the diagnosis of Lyme disease. Inevitably, in this setting of repeat testing, 1 enzyme-linked immunosorbent assay (ELISA) or test, whether IgG or IgM, may be reported as weakly positive or indeterminate. These results most likely represent false-positive test results in the uninfected patient who has had long-standing symptoms from a different condition and previously negative test results.

Currently, the Centers for Disease Control and Prevention recommend a 2-tiered method for the serologic diagnosis of Lyme disease: (1) ELISA or immunofluorescence assay, followed by (2) a confirmatory Western blot (including both IgM and IgG when signs or symptoms have been present ≤30 days; IgG only if symptoms have been present >30 days). A negative ELISA or immunofluorescence assay may be followed by a later (eg, in 4 to 6 weeks) convalescent serum test when symptoms have been present 30 days or less.

ELISA for *B. Burgdorferi* Antibodies

This ELISA test is a screening serologic test for Lyme disease. ELISA tests are available to detect IgM or IgG antibodies or both antibody types together. More recently developed tests using recombinant or synthetic antigens have improved diagnostic sensitivity. For example, the U.S. Food and Drug Administration–approved C6 ELISA is highly sensitive to infection and is under study as an indicator of antibiotic therapy efficacy. A positive or indeterminate ELISA test result alone is inadequate serologic evidence of Lyme disease. All of these tests must be confirmed with a Western blot. Also, results must be correlated with the clinical picture.

(Western) Immunoblot

This immunoblot test is used to confirm the serologic diagnosis of Lyme disease in patients with positive or indeterminate ELISA tests. In contrast with the standard ELISA test, the immunoblot investigates the specific antibody response to the different antigens of *B. burgdorferi*. Typically, several clinically significant antigens are tested. According to Centers for Disease Control and Prevention criteria, the test

result is considered positive if 2 of the 3 most common IgM antibody bands to spirochetal antigens are present, or 5 of the 10 most frequent IgG antibody bands are present. Because the Centers for Disease Control and Prevention criteria were developed for surveillance, they are conservative and may miss true Lyme disease cases. Some support the use of more liberal criteria for a positive result in clinical diagnosis; however, alternative criteria have not been well-validated. U.S. criteria for interpreting immunoblot results differ from those in Europe due to differences in prevalent *Borrelia* species causing disease.

Polymerase Chain Reaction

In contrast to the previously discussed serologic tests, which indirectly assess prior or present exposure to *B. burgdorferi*, PCR directly tests for the presence of the spirochete. Because PCR technology involves amplification of DNA from a portion of *B. burgdorferi*, there is a high risk of exogenous contamination, resulting in false-positive results. Positive results in the absence of clear clinical indicators or positive serology are not definitive for diagnosis. Also, the test cannot distinguish between live spirochetes or fragments of dead ones. The PCR technique has been studied using various specimens. PCR has the best detection rates for skin biopsies from patients with erythema migrans (but who may not be indicated with a recent history of tick bite or exposure) and for synovial tissue (and synovial fluid, to a lesser extent) from patients with Lyme arthritis. CSF may be positive by PCR during the first 2 weeks of infection, but after that the detection rate is low. PCR is not recommended for urine or blood specimens. However, PCR-based direct detection of *B. burgdorferi* in the blood may be useful for documenting Lyme carditis when results of serologic studies are equivocal.

Borrelia PCR also provides information on which of the 3 major species pathogenic for humans has been found in the specimen tested (genotyping).

T-Cell Proliferative Assay

T-lymphocyte proliferation assays are not recommended as diagnostic tests because they are difficult to perform and standardize, and their sensitivity is not well characterized.

Evaluation of CSF

Aside from the standard evaluation of CSF for pleocytosis, protein levels, and glucose levels, various tests are available to determine whether anti-*B. burgdorferi* antibodies are being selectively produced within the central nervous system. Techniques include various immunoassays. For example, intrathecal antibody production can be detected by the CSF/serum index of *B. burgdorferi* antibodies. CSF and serum samples diluted to match the total IgG concentration in CSF are run in parallel in an IgG ELISA. Excess *Borrelia*-specific antibody in CSF indicates a positive result. As noted, PCR can also be used to detect the spirochete in the CSF, most successfully within the first 2 weeks of infection.

Evaluation of the Chemoattractant CXCL13

CXCL13 is a B-lymphocyte chemoattractant and has been reported to be elevated in acute neuroborreliosis and is a potential marker for successful treatment.

Treatment of Lyme Disease

As noted, treatment with IV antibiotics may be indicated only in patients with symptoms and laboratory findings consistent with the central nervous system or peripheral neurologic involvement and in a small subset of patients with heart block or documented Lyme arthritis who have not responded to oral antibiotics. Typical IV therapy consists of a 2- to 4-week course of ceftriaxone or cefotaxime or penicillin. No data have suggested that prolonged or repeated courses of IV antibiotics are effective. Lack of effect should suggest an incorrect diagnosis or slow resolution of symptoms, which is commonly seen in Lyme disease. Also, some symptoms may persist after treatment, such as Lyme arthritis; this phenomenon may be related to various self-sustaining inflammatory mechanisms rather than persistent infection.

SUMMARY

Lyme disease is a multisystem inflammatory disease caused by the spirochete *Borrelia burgdorferi* and transmitted by the bite of an infected *Ixodes scapularis* (northeastern U.S.) or *Ixodes pacificus* (Pacific coast, most common in Northern California) tick. The disease is characterized by stages, beginning with

localized infection of the skin (erythema migrans), followed by dissemination to many sites. Diagnostic testing for Lyme disease is challenging and can lead to overdiagnosis and overtreatment.

Suspected Lyme Disease

For individuals who are suspected of having Lyme disease who receive genotyping or phenotyping of *B. burgdorferi* subspecies or who receive CXCL13 chemokine concentration testing or C6 peptide assay testing, the evidence is limited. Relevant outcomes are change in disease status and morbid events. Polymerase chain reaction–based testing for *B. burgdorferi* genospecies is feasible. However, no evidence was identified that knowledge of the *B. burgdorferi* genotype or phenotype could be used to improve patient management and outcomes. Additional research is needed to determine the diagnostic utility of CXCL13 and C6 peptide levels. The evidence is insufficient to determine the effects of the technology on health outcomes.

Confirmed Lyme Disease

For individuals with confirmed Lyme disease who receive prolonged or repeated courses of antibiotic therapy, the evidence includes randomized controlled trials. Relevant outcomes are symptoms, change in disease status, morbid events, and health status measures. Oral antibiotics usually are adequate for treatment of Lyme disease, though, in some persistent cases, a 2- to 4-week course of intravenous antibiotics may be appropriate. Evidence from randomized controlled trials has not shown a benefit in prolonged (>4 weeks) or repeat courses of oral or intravenous antibiotics. The evidence is sufficient to determine that the technology is unlikely to improve the net health outcome.

It is well established that the optimum method of testing for Lyme disease depends on the stage of the disease. Guidelines from the Centers for Disease Control and Prevention and other sources have supported policy statements related to a tiered diagnostic testing strategy. Diagnostic testing may not be necessary when a diagnosis can be made clinically in patients with a recent tick bite or exposure and the presence of the characteristic rash of erythema migrans. When laboratory testing is indicated, 2-tiered serologic testing is recommended. Polymerase chain reaction may be clinically useful as a second approach in patients with a short duration of neurologic symptoms (<14 days).

Policy History

Date	Action
11/2018	BCBSA National medical policy review. No changes to policy statements. New references added.
8/2018	Medically necessary statements under Roman numeral V. State Mandate Chapter 183 of the Acts of 2016, An Act Relative to Long-Term Antibiotic Therapy for the Treatment of Lyme Disease clarified. 8/8/2018
4/2018	Clarified coding information.
12/2016	BCBSA National medical policy review. Policy clarified to add “stand-alone” to the statement on C6 peptide ELISA. 12/1/2016
11/2016	Clarified coding information.
10/2016	Policy updated to include mandated coverage for repeat or prolonged courses of IV antibiotic therapy. Effective 10/1/2016.
1/2016	New references added from BCBSA National medical policy.
11/2015	Added coding language.
3/2015	New references added from BCBSA National medical policy.
4/2014	New references added from BCBSA National medical policy.
2/2013	BCBSA National medical policy review. Changes to policy statement. Effective 2/4/2013.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
1/2011	Updated - Medical Policy Group - Neurology and Neurosurgery. No changes to policy statements.
3/1/2010	Medical policy 171 effective 3/1/2010.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

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Endnotes

¹ Based on [State Mandate Chapter 183 of the Acts of 2016, "An Act Relative to Long-Term Antibiotic Therapy for the Treatment of Lyme Disease" \("Chapter 183"\)](#) was enacted, retroactively effective as of July 1, 2016.
[Section 12DD: Administration of long-term antibiotic therapy upon diagnosis of Lyme disease](#)