

Lyme Disease Diagnosis and Treatment

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Definition

Lyme disease is caused by *Borrelia burgdorferi*, which is transmitted by the bite of the tick species *Ixodes scapularis* and *Ixodes pacificus*. Clinical manifestations most often involve the skin, joints, nervous system, and heart. Extracutaneous manifestations are less commonly seen than in earlier years. Early cutaneous infection with *B. burgdorferi* is called erythema migrans, which is the most common clinical manifestation of Lyme disease. *I. scapularis* may also be infected with and transmit *Anaplasma phagocytophilum* (previously referred to as *Ehrlichia phagocytophila*) and/or *Babesia microti*, the primary cause of babesiosis. Thus, a bite from an *I. scapularis* tick may lead to the development of Lyme disease, human granulocytic anaplasmosis (HGA, formerly known as human granulocytic ehrlichiosis), or babesiosis as a single infection or, less frequently, as a coinfection. *I. scapularis* bite also associated with infection with *B. miyamotoi*. *Borrelia miyamotoi* is an emerging infection in the United States.

Diagnosis

See [Clinical Practice Guidelines by the Infectious Diseases Society of America \(IDSA\), American Academy of Neurology \(AAN\), and American College of Rheumatology \(ACR\): 2020 Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease](#) for full recommendations pertaining to clinically appropriate testing.

Guideline

- I. Members with a confirmed Lyme disease diagnosis are eligible for an initial 2–4-week course of intravenous (IV) [antibiotic therapy](#) when the following criteria are met; **any**:
 - A. Lyme arthritis that persists after failing to respond to a 4-week course of appropriate oral antibiotic therapy
 - B. Lyme carditis —moderate to severe cardiac involvement as evidenced by any of the following:

1. 1st-degree heart block with P-R interval \geq 300 milliseconds
 2. Myopericarditis
 3. 2nd- or higher degree atrio-ventricular block
- C.** Neurologic involvement of Lyme disease (neuroborreliosis) as evidenced by any of the following:
1. Encephalomyelitis, based on MRI imaging, CSF pleocytosis, and no other cause found
 2. Meningitis confirmed by CSF analysis showing a lymphocytic pleocytosis
 3. Sensory/motor radiculoneuropathy or peripheral neuropathy (weakness and/or pain in the extremities or chest)
- D.** All cases of Lyme disease in pregnant women who exhibit symptoms and signs of any of the following:
1. Stage II Lyme disease with early dissemination documented by organ-specific manifestations of infection (arthritic, cardiac, or neurologic)
 2. Stage III late Lyme disease documented by findings of arthritis and/or neurologic complications, such as encephalomyelitis and subacute encephalitis

II. The following antibiotics constitute medically necessary IV therapy:

- A.** Ceftriaxone (Rocephin®)
- B.** Cefotaxime (Claforan®)
- C.** Penicillin G
- D.** Azithromycin (Zithromax®) — for members intolerant to b-lactam antibiotics

Limitations/Exclusions

- I.** Intravenous therapy with the following drugs is not considered medically necessary due to insufficient evidence of therapeutic value; **any**:
- A.** Carbapenems (e.g., doripenem, ertapenem, imipenem, meropenem)
 - B.** First-generation cephalosporins (e.g., cefazolin)
 - C.** Azole antifungals
 - D.** Fluoroquinolones (e.g., levofloxacin, moxifloxacin)
- II.** Repeat 2–4-weeks of outpatient IV therapy is considered medically necessary when the following criteria are met; **all**:
- A.** The member has met the criteria for an initial course of intravenous antibiotic therapy, using lab results obtained within the past 3 months
 - B.** The member has completed an initial course of appropriate intravenous antibiotic therapy
 - C.** The member has objective evidence of either relapse of infection, progression of Lyme disease organ damage, and/or the finding of a new focus or type of organ damage
- III.** Intravenous therapy for the following indications is not considered medically necessary due to insufficient evidence of therapeutic value; **any**:
- A.** Early Lyme disease (i.e., erythema migrans without any systemic manifestations)
 - B.** Flu-like syndrome (fatigue, fever, headache, mildly stiff neck, arthralgias, and myalgias)
 - C.** Initial treatment of Lyme arthritis (e.g., headache, stiff neck, and irritability [inclusive of isolated manifestations such as Bell's facial nerve palsy/paralysis])

- D. Non-specific subjective symptoms, such as persistent, chronically debilitating fatigue (chronic fatigue syndrome), difficulty in concentrating, musculoskeletal pain (fibromyalgia), and headache
 - E. Pregnant woman presenting with localized Lyme disease manifested as a single lesion of erythema migrans without any other symptoms suggestive of disseminated disease
 - F. Treatment of "post-Lyme disease" syndrome (i.e., persistent fatigue)
 - G. Treatment of individuals with systemic symptoms without serologic or cerebrospinal fluid (CSF) studies confirming Lyme disease
 - H. Prophylactic treatment of asymptomatic members when the sole evidence of Lyme disease is a positive immunologic test (ELISA, IFA, or Western blot)
 - I. Treatment of persistent Lyme-associated arthritis after 2 prior courses of antibiotic therapy
 - J. Mild cardiac involvement of Lyme disease as evidenced by any of the following:
 - Transient ST-T depression
 - T-wave changes
- IV. Repeat or prolonged courses of IV antibiotics (> 4 weeks) has not been shown to improve net health outcomes and are not considered medically necessary
- V. Diagnostic testing is not considered medically necessary unless recommended within the [Clinical Practice Guidelines by the Infectious Diseases Society of America \(IDSA\), American Academy of Neurology \(AAN\), and American College of Rheumatology \(ACR\): 2020 Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease](#).
- VI. The following treatments are not considered medically necessary treatment for Lyme disease due to insufficient evidence of therapeutic value:
- A. Chelation
 - B. Hyperbaric oxygen therapy
 - C. Singlet oxygen therapy
 - D. Intravenous ascorbic acid
 - E. Intravenous magnesium

Revision History

Jan. 8, 2021	Expanded definition section regarding I scapularis and Borrelia miyamotoi Added link to the 2020 Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA), American Academy of Neurology (AAN), and American College of Rheumatology (ACR) Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease to diagnostic testing Modified initial/repeat IV therapy treatment course from greater than four weeks to two-four weeks Clarified that early Lyme disease refers to erythema migrans without any systemic manifestations Added that diagnostic testing is not considered medically necessary unless recommended within the IDSA/AAN/ACR Clinical Practice Guidelines
Oct. 13, 2017	Removed congestive heart failure from Lyme carditis indication sub-criteria list; clarified and simplified neurologic involvement sub- criteria; removed 1 st degree heart block and left ventricular dysfunction from mild cardiac involvement sub-criteria list

Applicable Procedure Codes

96365	Intravenous infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); initial, up to 1 hour
96366	Intravenous infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); each additional hour (List separately in addition to code for primary procedure)
96367	Intravenous infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); additional sequential infusion of a new drug/substance, up to 1 hour (List separately in addition to code for primary procedure)
96368	Intravenous infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); concurrent infusion (List separately in addition to code for primary procedure)
96369	Subcutaneous infusion for therapy or prophylaxis (specify substance or drug); initial, up to 1 hour, including pump set-up and establishment of subcutaneous infusion site(s)
96370	Subcutaneous infusion for therapy or prophylaxis (specify substance or drug); each additional hour (List separately in addition to code for primary procedure)
96371	Subcutaneous infusion for therapy or prophylaxis (specify substance or drug); additional pump set-up with establishment of new subcutaneous infusion site(s) (List separately in addition to code for primary procedure)
96374	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); intravenous push, single or initial substance/drug
96375	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); each additional sequential intravenous push of a new substance/drug (List separately in addition to code for primary procedure)
96376	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); each additional sequential intravenous push of the same substance/drug provided in a facility (List separately in addition to code for primary procedure)
99601	Home infusion/specialty drug administration, per visit (up to 2 hours);
99602	Home infusion/specialty drug administration, per visit (up to 2 hours); each additional hour (List separately in addition to code for primary procedure)

References

Lantos PM, Rumbaugh J, Bockenstedt LK, Falck-Ytter YT, Aguero-Rosenfeld ME, Auwaerter PG, Baldwin K, Bannuru RR, Belani KK, Bowie WR, Branda JA, Clifford DB, DiMario FJ Jr, Halperin JJ, Krause PJ, Lavergne V, Liang MH, Cody Meissner H, Nigrovic LE, Nocton JJJ, Osani MC, Pruitt AA, Rips J, Rosenfeld LE, Savoy ML, Sood SK, Steere AC, Strle F, Sundel R, Tsao J, Vaysbrot EE, Wormser GP, Zemel LS. Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA), American Academy of Neurology (AAN), and American College of Rheumatology (ACR): 2020 Guidelines for the Prevention, Diagnosis, and Treatment of Lyme Disease. *Arthritis Care Res (Hoboken)*. 2021 Jan;73(1):1-9. doi: 10.1002/acr.24495. Epub 2020 Nov 29. PMID: 33251700.