



Lyme Disease

Lyme Disease (LD) is caused by the bacteria *Borrelia burgdorferi* and is transmitted to humans through the bite of infected black-legged ticks: *Ixodes scapularis* in Eastern and Central Canada and *Ixodes pacificus* in British Columbia. The primary hosts (carriers) of black-legged ticks are small rodents, small mammals, birds and white-tailed deer. Lyme disease is the most common tick-borne infection in Canada and much of the United States, with the peak incidence for Lyme disease among children being five to nine years of age.



CLINICAL MANIFESTATIONS

The clinical manifestations of Lyme disease depend on the stage of illness.

Early, Localized Disease: The incubation period for early, localized Lyme disease is 3-30 days with Erythema Migrans (EM) - a rash at the site of a recent tick bite - being the most common presentation in both children and adults.

- EM typically develops 7-14 days (range 3-30 days) after a tick bite
- EM is usually > 5cm and mainly flat. There may be central clearing or some bluish discoloration
- EM is usually asymptomatic, non-painful to touch (unlike a cellulitis) & non-pruritic
- There can be either a single EM rash, or multiple rashes without extracutaneous manifestations
- Fever, malaise, headache, mild neck stiffness, myalgia, and arthralgia often accompany EM
- EM typically resolves spontaneously over a 4-week period, on average

Later Extracutaneous Disease: If untreated, *B. burgdorferi* can disseminate via the bloodstream & lymphatic system, causing damage to body tissues at other sites, most commonly in the nervous and musculoskeletal systems. Other manifestations (with or without rash) include:

- Cranial nerve palsy (especially facial nerve palsy)
- Heart block (or carditis)
- Meningitis with severe headache, fever (usually lymphocytic predominant)
- Arthritis (most common late-stage symptom). Particularly pauciarticular arthritis affecting large joints, especially the knees (involved in more than 90% of cases)
 - In Lyme arthritis, the affected joint is usually swollen, and may be tender but the pain is usually less intense than that associated with bacterial arthritis
 - Most children can ambulate without difficulty despite some limited ROM, where most children with acute bacterial arthritis refuse to weight bear
 - Associated fever is uncommon in Lyme arthritis
 - Arthritis can occur without a history of earlier stages of illness
 - The prognosis of children with treated Lyme arthritis is excellent



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DIAGNOSIS

Early, Localized Disease:

- Diagnosis is clinical (erythema migrans), supported by a history of known or potential tick bite in a location that black-legged ticks have been established
- Patients with erythema migrans should be diagnosed and treated without laboratory confirmation, as antibodies against *B. burgdorferi* are often not detectable by serodiagnostic testing within the first 4 weeks after infection

Later Extracutaneous Disease:

- All other clinical manifestations of possible LD should be supported by laboratory confirmation
- Two-tiered serological testing, including an ELISA screen test, followed by a confirmatory Western blot test (looking at IgM & IgG blots) is used to supplement clinical suspicion. Two-tiered testing is necessary as the ELISA can yield false positives
- Most individuals with disseminated disease have antibodies against *B. burgdorferi*
- Consider admission to hospital for patients with heart block and syncope for continuous monitoring, as it can rapidly worsen enough to require a pacemaker

TREATMENT

- Patients > 8 years of age: Doxycycline 2.2mg/kg/dose (MAX 100mg/dose) PO BID
- Patients < 8 years of age: Amoxicillin 16mg/kg/dose (MAX 500mg/dose) PO TID
- Penicillin allergy: Cefuroxime 15mg/kg/dose (MAX 500mg/dose) PO BID
- If IV therapy required: Ceftriaxone 50-75mg/kg/dose (MAX 2g/dose) IV q24h
- Duration of treatment is dependent on the stage of disease and clinical manifestation. See [Firstline](#) for specific antimicrobial therapy recommendations

POST EXPOSURE THERAPY

- The risk of acquiring LD from a tick bite is approx. 25% if the tick is engorged. Therefore, consensus is that there may be some benefit to postexposure prophylaxis when the tick is engorged
- Doxycycline 200mg or 4.4mg/kg as a single dose for children & youth after a tick bite
- Prophylaxis can be started within 72h of removing a tick, even if it has been attached for > 36 hours
- Insufficient data to recommend Amoxicillin prophylaxis in younger children

POST LYME DISEASE PERSISTENT SYMPTOMS

- Non-specific post LD persistent symptoms (fatigue, headache, neurocognitive difficulties) can occur after adequate treatment of the initial infection
- Does not require further treatment with antibiotics, not beneficial



NS Infectious Diseases Expert Group



[Guidance for Primary Care &
Emergency Medicine Providers in the
Management of Lyme Disease](#)

Government of Canada



[How to Properly Remove a
Tick \(Video\)](#)

Nursing Grand Rounds

May 21st 1300-1400
Nursing Strategy
Microsoft Teams
D: 221 033 804 390 10
Passcode: h9d2gF29

Pediatric Grand Rounds

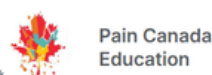
Every Wednesday morning 0900-1000
Microsoft Teams
D: 264 377 837 697 98
Passcode: x73be3sz

Comfort Corner



Pain Canada is a national initiative supported by Pain BC. It connects eight million people across Canada living with chronic pain and creates opportunities for action by connecting people, ideas, organizations and resources to improve pain care. Pain Canada is where people with lived pain experiences and healthcare providers are at the centre of decision-making and priority-setting. They mobilize resources to build capacity, improve care and support for people with pain.

They have a variety of educational modules available. One module being, Chronic Pain Insights is an online evidence-based program designed to support health care providers to build skills and knowledge about pain in the perioperative context. Aiming to increase knowledge on surgical pain and considerations postoperatively.



References

- CPS (2020). *Lyme Disease in Canada. Focus on Children*. <https://cps.ca/en/documents/position/lyme-disease-children>
- Government of Canada (2025). *Lyme Disease: For Health Professionals*. <https://www.canada.ca/en/public-health/services/diseases/lyme-disease/health-professionals-lyme-disease.html>
- Up to Date (2026). *Lyme Disease. Clinical Manifestations in Children*. <https://www.uptodate.com/contents/lyme-disease-clinical-manifestations-in-children>

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Need to Know - Quick Hits

Important Practice Point:

The IWK is using a new product to secure PICC lines in our pediatric patients. If you have a patient with a SecurAcath, please see the website for teaching resources.

[Home -SecurAcath](#)



Upcoming Events from our IWK Transition Team:

- [You're in Charge](#) for patients and caregivers to focus on building health management skills
 - We would love your support with referrals—a great way to help patients and caregivers get ready for adult care
 - May 5 & 19th 6:00 - 7:30pm
- [Youth Learning Series](#) for health care providers and community partners for a series on complex transitions of care
 - We have some great guest speakers lined up, including family physician, Dr Karen MacNeil, and will share our new guidelines that outline the different components of transition and resources in one place
 - May 20th & June 8th 1:00 - 2:30pm



Collaborating with Maritime Child Health:

Have an Idea, Challenge, or Opportunity in Pediatric Care?

Maritime Child Health (MCH) has launched a new intake form to help clinicians and teams share requests for collaboration. Whether related to quality improvement, research, clinical education, or data. This is a simple way to connect with the MCH team to explore opportunities, strengthen care closer to home, and collaborate across the Maritimes.

Submissions can be made individually or on behalf of a team and take just a few minutes to complete. Click [here](#) to submit an idea!