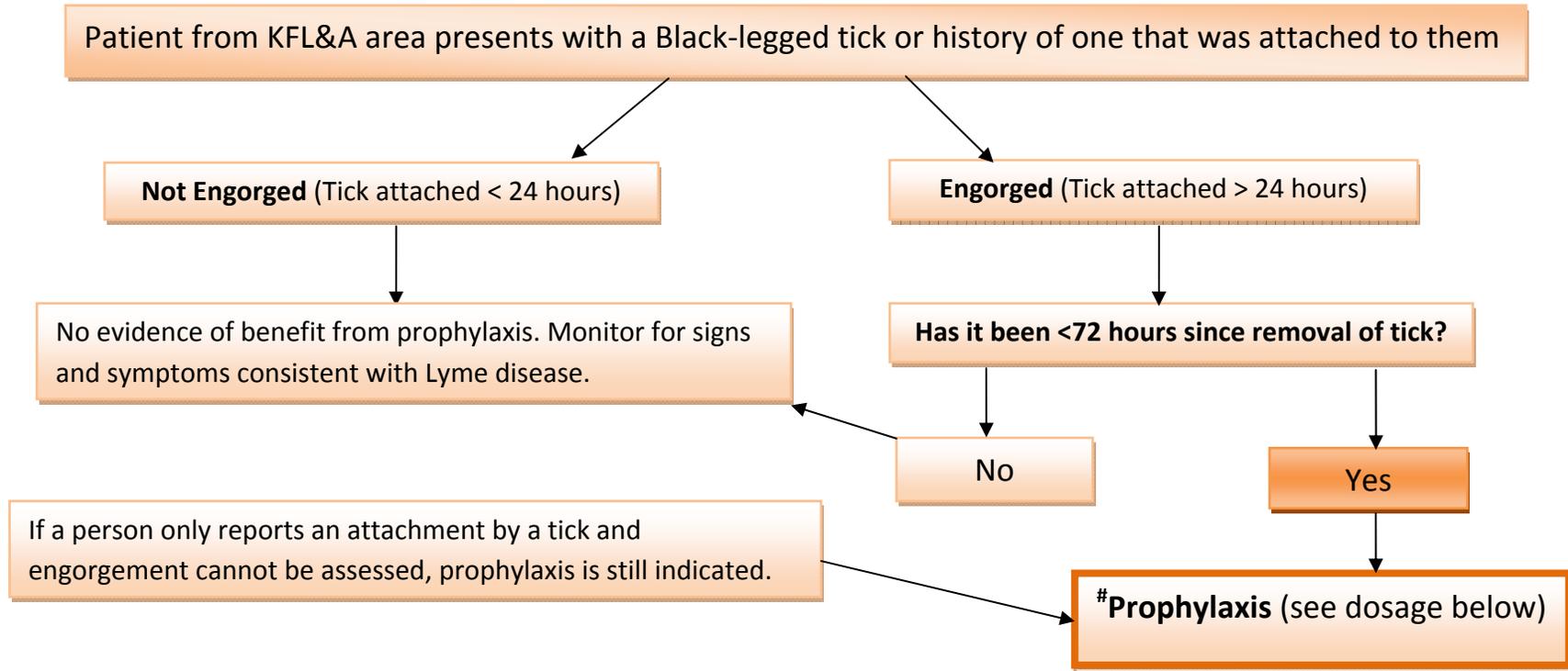


An Algorithm for Prophylaxis for Lyme disease in KFL&A area for an attached Black-legged Tick



Age	Antibiotic	Dosage
>12 years	Doxycycline	Single dose of 200 mg – not to be used in pregnancy or lactation
Sources: Nadelman RB, Nowakowski J, Fish D, Falco RC, Freeman K, McKenna D, et al. Prophylaxis with single-dose doxycycline for the prevention of Lyme disease after an ixodes scapularis tick bite. N Engl J Med. 2001;345(2). #Randomized Control Trial: engorged tick, prophylaxis within 72 hrs of removal – 1/235 got Lyme disease; no prophylaxis 8/247 got Lyme disease. Warshafsky S, Lee DH, Francois LK, Nowakowski J, Nadelman RB, Wormser GP. Efficacy of antibiotic prophylaxis for the prevention of lyme disease: an updated systematic review and meta-analysis. J Antimicrob Chemother. 2010; 65: 1137-1144		
Age	Antibiotic	Dosage
'8-12 years	Doxycycline	4 mg/kg per day in 2 divided doses (maximum, 100 mg per dose) x 1 day
* <8 years	Amoxicillin	50 mg/kg per day in 3 divided doses (maximum 500 mg per dose) x 14 days
* Limited evidence, precise benefit has not been established, limited evidence to use Amoxil in pregnancy		

***The overall risk of acquiring Lyme disease from an engorged tick (attached for at least 72 hours) is estimated to be between 2.2 to 3.2 percent based on local epidemiology.**

In 2011, 98 percent of ticks submitted to KFLA Public Health were Ixodes Scapularis. Seventeen percent of those carried Borrelia burgdorferi, which is the bacteria that causes Lyme disease. Based on this data and extrapolation of the results of the randomised controlled studies, there could be a RRR (relative risk reduction) of providing prophylaxis of up to 87 percent and a NNT (number needed to treat) of 34-50 to prevent one case of Lyme disease. All patients should still monitor for the signs and symptoms of Lyme disease.

LYME DISEASE ^{1,2,3,4} Treatment Guidelines*

Modifying Circumstances	Probable Organism(s)	Antibiotic Choice(s)	Usual Dosage*	Modifying Circumstances
ADULTS	<i>B. burgdorferi</i>	FIRST LINE	Amoxicillin Doxycycline ^{3,5}	500 mg TID 100 mg BID
		SECOND LINE	Cefuroxime-AX	500 mg BID
		THIRD LINE ⁶	Ceftriaxone IV	2 g q24h
			Cefotaxime IV Penicillin G IV	2 g q8h 3-4 MU q4H
CHILDREN	<i>B. burgdorferi</i>	FIRST LINE	Amoxicillin	50 mg/kg/day divided q8H
		SECOND LINE	Cefuroxime-AX	30 mg/kg/day divided q12h
			Doxycycline ^{3,5}	2-4 mg/kg/day divided q12h
		THIRD LINE ⁶	Ceftriaxone IV	75-100 mg/kg/day divided q24h
			Cefotaxime IV Penicillin G IV	100-180 mg/kg/day divided q6-8h 200000-400000 U/kg/day divided q4h

*Adapted from: Anti-infective guidelines for community-acquired infections/Anti-infective Review Panel-2012 ed.

- Adapted from IDSA Practice Guidelines for the Treatment of Lyme Disease (Wormser 2006).
- Reportable to Local Medical Officer of Health. Humans can contract Lyme disease without visiting endemic areas; it should not be excluded from differential diagnosis based on geographic location unless the location is sufficiently northern to preclude migratory birds from dropping their ticks in the area (PHAC 2008). Expansion of the geographic range of the tick vector in Canada is leading to increasing numbers of endemic areas for Lyme disease (Ogden 2009).
- Usual duration of therapy is 14-21 days. In patients with early localized disease, 10 days of doxycycline treatment has proven effective for erythema migrans/early localized stage of disease and where there is disseminated cardiac involvement (Wormser 2006). Prolonged courses of antibiotics provide no additional benefits and should be discouraged (Fallon 2008; Klempner 2001; Krupp 2003).
- Lyme disease must be considered whenever neurologic disease occurs in association with significant constitutional or extraneural features. Neurologic involvement occurs in 10-40% of symptomatic infections and occurs at all stages of infection. Patients with early local disease may experience mild headache, stiff neck, fatigue and myalgias. The dissemination stage is associated with certain neurologic syndromes that tend to improve spontaneously after several weeks to months without treatment. Cases have been documented in all regions of Ontario. Serologic testing to diagnose Lyme disease is a source of controversy since specific antibodies may not be detectable until four to six weeks after the initial infection. One should not complete the test in the absence of good epidemiological evidence of infection (PHAC 2008).
- The use of tetracyclines in children under 9 years of age and pregnant women is not generally recommended.
- Parental therapy (generally 14-28 days) should be considered in patients with acute neurological disease (meningitis or radiculopathy), 3rd degree heart block, CNS or peripheral nervous system disease in late Lyme disease, and in case of recurrent arthritis after oral regimens of 1-2 months have been used.
REFERENCES: Baker 2010; Fallon 2008; Halperin 2007; Hengge 2003; Klempner 2001; Krupp 2003; Lantos 2010; Ogden 2009; PHAC 2008; Wormser 2006.

Common oral dosage ranges are provided unless otherwise stated. Consult the drug monograph for details on age and condition-specific dosing.

Table 1 PERFORMANCE CHARACTERISTICS OF SEROLOGICAL ASSAY IN PATIENTS WITH LD (ADAPTED FROM AGUERO-ROSENFELD¹)

Test	% Reactivity in patients with			
	EM, acute	EM, convalescent*	Neurological involvement	Arthritis
Whole-cell ELISA	33-49	75-86	79 (IgG only)	100 (IgG only)
IgM WB	43-44	75-84	80	16
IgG WB	0-13	15-21	64-72	96-100
Two-tier testing	29-40	29-78	87	97

* Sera obtained after antibiotic treatment

% Reactivity in the above table refers to the frequency at which the different serological assays will show as positive depending of the stage of the LD infection