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By Stephanie Cloutier, Pharm.D.

Prevention of Lyme Disease after a Recognized Tick Bite*

Adults	Children
Doxycycline 200 mg x 1 dose	Doxycycline** 4 mg/kg x 1 dose (max 200 mg x 1 dose)

*A single dose of doxycycline may be offered to adults and children > 8 years of age when ALL of the following circumstances exist:

- The attached tick can be reliably identified as an adult or nymphal I. scapularis tick that is estimated to have been attached for > 36 hours on the basis of the degree of engorgement of the tick with blood or of certainty about the time of exposure to the tick.
- Prophylaxis can be started within 72 hours of the time that the tick was removed.
- Ecologic information indicates that the local rate of infection of these ticks with B. burgdorferi is >20%.
- Doxycycline treatment is not contraindicated.

**Children > 8 years of age.

First Line Treatment Options for Early Lyme Disease: 3-30 Days Post-Tick Bite

Adults	Children
Doxycycline* 100 mg twice daily x 14 days	Amoxicillin 50 mg/kg/day in 3 divided doses, max 500 mg/dose
Amoxicillin 500 mg three times a day x 14 days	Cefuroxime 30 mg/kg/day in 2 divided doses, max 500 mg/dose
Cefuroxime 500 mg twice daily x 14 days	Doxycycline* 4 mg/kg/day in 2 divided doses, max 100 mg/dose

Adults	Children

Chronic Lyme Disease

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Chronic Lyme disease is a condition that has been controversial for years. Many health professionals question it as a real disease, while others believe

it is a manifestation of an infection with *Borrelia burgdorferi*, a parasite found in ticks. Chronic Lyme disease or Post-Treatment Lyme Disease Syndrome (PTLDS) is a condition that may affect many different organ systems including but not limited to the central nervous system, musculoskeletal, circulatory, digestive, reproductive, and skin.

The standard diagnostic test for Lyme disease is a two-tiered blood test used to determine the patient's antibody response to the infection rather than infection itself! ELISA or enzyme-linked immunosorbent assay is the first test the Center for Disease Control (CDC) recommends, followed by confirmation with a Western blot. The tests are most reliable when the body has developed antibodies, several weeks after infection with *B. burgdorferi*. The ELISA test looks for antibodies to the parasite while the Western blot test uses electricity to separate antigens into bands and compares it to known cases of Lyme disease. Other tests that are not commonly used due to inaccuracy include a polymerase chain reaction (PCR), antigen detection, and culture testing. These are direct tests that measure the bacteria and not the patient's response to the infection.

The pathophysiology of PTLDS is unknown. It is believed to be caused by residual damage to the tissues and immune system that occurred during the acute infection. Symptoms can be vague and can wane off and on, making a confirmed diagnosis almost impossible. According to the CDC, treatment with antibiotics have not shown better outcomes than placebo. Patients with PTLDS are limited to waiting out the disease, which has been successful but may take months.

According to the Infectious Diseases Society of America (IDSA), patients with PTLDS have a prior history of Lyme disease treated with an acceptable regimen, but the subjective symptoms (wide spread musculoskeletal pain, fatigue, headaches) have occurred within 6 months of diagnosis and are persistent/relapsing for at least 6 months. Exclusion criteria for Chronic Lyme includes a diagnosis of bromyralgia prior to onset of Lyme

disease, diagnosis of underlying disease or condition that might explain the patient's symptoms such as morbid obesity, sleep apnea or narcolepsy, or laboratory or imaging abnormalities that may suggest an underlying disease post-Lyme disease.

The portion of patients found with PTLDS is relatively small. There are not many randomized trials because of the vagueness of symptoms and laboratory findings. According to the IDSA, further antibiotic treatment has not proven to be useful nor effective for patients with chronic subjective symptoms greater