

# POEMs

## Patient-Oriented Evidence That Matters

### Clinical Diagnosis of Lyme Disease Frequently Misses the “Bull’s Eye”

#### Clinical Question

In children, how accurate is the clinical suspicion for Lyme disease in areas of high prevalence?

#### Bottom Line

For children with suspected Lyme disease but without a classic bull’s-eye lesion (erythema migrans of at least 5 cm), check serology rather than rely on your clinical impression. In this study, 12% of the children not suspected of having Lyme disease did have Lyme disease, and 31% of children thought to have Lyme disease did not have serologic findings at that time or within 30 days. (Level of Evidence = 1b)

#### Synopsis

The researchers assembled a convenience sample of children, one year and older, who underwent evaluation for Lyme disease at one of five hospital emergency departments in endemic areas, mostly on the east coast of the United States (one site was in Wisconsin). The children were evaluated by clinicians who had received training on the diagnosis of Lyme disease. The diagnostic criterion was a single characteristic lesion of at least 5 cm in diameter with or without central clearing, or a single smaller but enlarging lesion associated with a known or suspected tick bite and a known interval between the bite and the onset of the lesion. Lyme disease was confirmed in 23% of the 1,021 children via a positive two-tiered serology result within 30 days of presentation (82.4% of diagnoses) or a physician-diagnosed erythema migrans lesion at the time of presentation. Clinician suspicion in cases without clear erythema migrans was minimally accurate in ruling in or ruling out Lyme disease (concordance statistic = 0.75; 95% confidence interval, 0.71 to 0.79). Of the 554 children (54%) thought to be unlikely to have Lyme disease, 12% had a positive laboratory diagnosis, and 39 (31%) of the 127 children deemed

to be very likely to have Lyme disease by clinicians did not have Lyme disease.

**Study design:** Cohort (prospective)

**Funding source:** Foundation

**Setting:** Emergency department

**Reference:** Nigrovic LE, Bennett JE, Balamuth F, et al.; Pedi Lyme Net. Accuracy of clinician suspicion of Lyme disease in the emergency department. *Pediatrics*. 2017;140(6):e20171975.

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### Broad-Spectrum Antibiotics Increase Adverse Events in Children with Acute Respiratory Infections with Minimal Benefit

#### Clinical Question

Are broad-spectrum antibiotics the preferred treatment in children with acute respiratory tract infections?

#### Bottom Line

Broad-spectrum antibiotics are no more effective than narrow-spectrum antibiotics for treating acute respiratory tract infections in infants and children, and adverse events are significantly more common in children treated with broad-spectrum antibiotics. (Level of Evidence = 2b-)

#### Synopsis

Investigators collected data retrospectively and prospectively from a network of pediatric primary care practices on outcomes of infants and children, six months to 12 years of age, who met international standards for the diagnosis of acute respiratory tract infection, including otitis media, group A streptococcal pharyngitis, and sinusitis. Exclusion criteria included not receiving a prescription for an oral antibiotic, antibiotic use in the past 30 days, and being younger than three years with a diagnosis of group A streptococcal

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pharyngitis. The children who were prescribed broad-spectrum antibiotics, including amoxicillin/clavulanate (Augmentin), cephalosporins, and macrolides, were defined as exposed; children who were prescribed narrow-spectrum antibiotics, including penicillin and amoxicillin, were defined as unexposed. The authors do not specifically state whether the individuals who assessed outcomes remained masked to group assignments.

Of the 30,159 children in the retrospective cohort that met inclusion criteria with complete data, 4,307 (14%) were prescribed broad-spectrum antibiotics. Broad-spectrum antibiotic use was not significantly associated with a lower rate of treatment failure compared with narrow-spectrum antibiotics (3.4% vs. 3.1%, respectively). Similarly, broad-spectrum antibiotics were not associated with a clinically significant difference in quality-of-life scores compared with narrow-spectrum antibiotics. However, broad-spectrum antibiotics were significantly associated with a higher risk of reported adverse events compared with narrow-spectrum antibiotics (3.7% vs. 2.7%, respectively, as documented by clinicians, and 35.6% vs. 25.1%, respectively, as documented by the parents and/or patients). Adverse events included diarrhea, candidiasis, rash, other unspecified allergic reactions, and vomiting.

**Study design:** Cohort (retrospective)

**Funding source:** Government

**Setting:** Population-based

**Reference:** Gerber JS, Ross RK, Bryan M, et al. Association of broad- vs narrow-spectrum antibiotics with treatment failure, adverse events, and quality of life in children with acute respiratory tract infections. *JAMA*. 2017;318(23):2325-2336.

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## Early PT for Acute Low Back Pain Is Cost-Effective, but Gain in Quality of Life Is Likely Too Small to Notice

### Clinical Question

Is physical therapy (PT) cost-effective in the initial management of patients with acute low back pain?

### Bottom Line

At \$30,000 per quality-adjusted life year (QALY) gained, early PT for acute low back pain in primary care is cost-effective by the usual criteria of \$50,000 to \$100,000 per QALY. However, the magnitude of improvement in quality of life is small and is probably not clinically meaningful. PT is an option to consider if it is not too difficult to find nor too expensive for patients. (Level of Evidence = 3b)

### Synopsis

A previous randomized trial compared early PT with delayed referral in primary care patients with acute low back pain. It found better short-term outcomes with early PT, and although the results were statistically significant, the effect sizes did not meet the prespecified criteria for a minimal clinically important difference. There were also no differences at one year. Of note, the PT consisted of only four sessions over four weeks, and the smoking rates were lower than in the general population. In this study, the authors used those results to determine if early PT was cost-effective when considering broader outcomes, such as lost productivity and impact on quality of life. They performed a basic cost-effectiveness analysis, although it is limited by only performing a sensitivity analysis for those patients with complete diary data. The model appears to be fairly simplistic, and was not performed using standard modeling software, such as TreeAge. They found that although early PT results in higher total costs in their adjusted analysis (\$1,442 vs. \$862 over one year), it was also associated with a small increase in QALYs (0.02) and quality-of-life scores. They calculated an incremental cost-effectiveness ratio of \$29,000 per additional QALY, and found a similar \$32,058 per QALY using a bootstrapping analysis.

**Study design:** Cost-effectiveness analysis

**Funding source:** Government

**Setting:** Outpatient (any)

**Reference:** Fritz JM, Kim M, Magel JS, Asche CV. Cost-effectiveness of primary care management with or without early physical therapy for acute low back pain: economic evaluation of a randomized clinical trial. *Spine (Phila Pa 1976)*. 2017;42(5):285-290.

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