# Cochrane for Clinicians

*Putting Evidence into Practice*

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## Optimal Antibiotic Regimen for Treating Lower UTI in Children

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### Clinical Question

What is the optimal antibiotic regimen for treating lower urinary tract infection (UTI) in children?

### Evidence-Based Answer

For the afebrile child with a UTI, a short course (three to seven days) of antibiotics is as effective at preventing the recurrence of symptomatic UTI as a long course (seven to 10 days). There is no clear evidence of superiority for any one antibiotic regimen. (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

### Practice Pointers

Approximately 7% of girls and 2% of boys will have had a symptomatic UTI by six years of age.[1] Potential complications of UTI in children include urosepsis, renal abscess, and renal scarring. Guidelines recommend varying durations of treatment, ranging from five to seven days[2] to seven to 14 days.[3]

A 2003 Cochrane review of studies comparing different treatment durations of the same antibiotic found that two- to four-day courses of antibiotics were as effective as seven- to 10-day courses for eradicating lower UTIs in children without any increased risk of recurrence.[4] The authors of this Cochrane review further explored the relative harms and benefits of different antibiotic regimens for treating lower UTIs in children. After excluding the nine studies that were reviewed in 2003, the authors were left with 16 studies of children who had bacteriologically proven lower UTI and no systemic symptoms (e.g., fever, flank pain).

Short courses of gentamicin (one trial), trimethoprim (one trial), pivmecillinam (not available in the United States; one trial), and cephalexin (Keflex; one trial) were evaluated, and, in two other trials, short courses of ampicillin, sulfisoxazole (no longer available), trimethoprim/sulfamethoxazole, nitrofurantoin (Furadantin), or a cephalosporin were used based on organism sensitivities.

All three dosing comparisons that were evaluated (single dose vs. 10 days, single dose vs. three to seven days, and three to seven days vs. seven to 10 days) demonstrated no difference in the rate of recurrent symptomatic UTI following treatment or in the rate of reinfection with a different organism following treatment. Head-to-head comparisons among antibiotics in the included studies found no differences in the rates of recurrent symptomatic UTI for 10 days of trimethoprim vs. 10 days of trimethoprim/sulfamethoxazole, or in the rate of persistent symptoms for 10 days of cefadroxil vs. 10 days of ampicillin. The studies included in the review did not report on the risks of renal scarring, and adverse event reporting was too inconsistent among studies to allow for meta-analysis.

Evidence in all 16 studies was rated as low quality because of small sample sizes and methodologic weakness (including lack of reporting on randomization methods, allocation concealment and blinding, and large losses to follow-up in some studies). Thus, this review does not conclusively rule out the possible superiority of one antibiotic regimen over another. Nevertheless, there were no clear differences in patient-oriented outcomes between single-dose, short-course, and long-course treatment of lower UTI in afebrile children, meaning that short courses should probably be preferred in practice.

SOURCE: Fitzgerald A, Mori R, Lakhanpaul M, Tullus K. Antibiotics for treating lower urinary tract infection in children. *Cochrane Database Syst Rev.* 2012;(8):CD006857.

The practice recommendations in this activity are available at http://summaries.cochrane.org/CD006857.

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## Prevention of Herpes Zoster in Older Adults

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### Clinical Question

In older adults, is vaccination against herpes zoster effective and safe?

### Evidence-Based Answer

The herpes zoster (shingles) vaccine has demonstrated effectiveness in preventing shingles in older adults. Vaccination benefit was greater in persons 60 to 69 years of age than in those 70 years and older. Local injection site reactions were common. (Strength of Recommendation: A, based on consistent, good-quality, patient-oriented evidence.)

### Practice Pointers

Herpes zoster results from reactivation of latent herpes zoster virus within the dorsal root ganglia. This reactivation typically results in a painful, localized, vesicular, and unilateral cutaneous eruption. The prodromal symptoms of headache, photophobia, malaise, localized abnormal skin sensations, and, rarely, fever may occur one to five days before the rash appears.[1] In the United States, approximately 1 million new cases of herpes zoster occur annually, with an estimated 33% of the population developing the disease during their lifetime.[2]

This Cochrane review included eight randomized controlled trials with more than 52,000 participants. One-half of the trials directly compared herpes zoster vaccine with placebo. The largest study to measure the effectiveness of the vaccine in preventing the disease reported a median surveillance period of 3.12 years. In this study, which included more than 38,000 older adults, there was a significant reduction in confirmed cases of herpes zoster (risk ratio = 0.49; 95% confidence interval, 0.43 to 0.56). Among those 60 to 69 years of age, the number needed to treat to prevent one episode of shingles was 50, but the vaccine was less effective in those 70 years and older (number needed to treat = 100).

Adverse effects were reported more often in the vaccinated group than in the placebo group. In a meta-analysis performed using data from the four studies comparing vaccine with placebo, the incidence of injection site adverse effects such as erythema, pruritus, swelling, or warmth was significantly higher in the vaccinated group, with a number needed to treat to harm (NNTH) of 2.8. The risk of systemic adverse effects such as rash, fever, or hospitalization related to the vaccine was much lower (NNTH = 100) and was not statistically significant. This review also included a double-blind, randomized controlled trial comparing different concentrations of the herpes zoster vaccine with the 23-valent pneumococcal polysaccharide vaccine. Investigators found that the herpes zoster vaccine produced fewer injection site reactions, even at the highest concentration tested (risk ratio = 0.41; 95% confidence interval, 0.24 to 0.68).

Overall, the herpes zoster vaccine is safe, effective, and well tolerated, with primarily localized injection site reactions. The results of this review support the Advisory Committee on Immunization Practices recommendation that immunocompetent adults 60 years and older receive the vaccine, even if they have a history of herpes zoster.[2]

SOURCE: Gagliardi AM, Gomes Silva BN, Torloni MR, Soares BG. Vaccines for preventing herpes zoster in older adults. *Cochrane Database Syst Rev.* 2012;(10):CD008858.

The practice recommendations in this activity are available at http://summaries.cochrane.org/CD008858.

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