Antibiotic prophylaxis for urinary tract infection

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Clinical question

What is the efficacy of antibiotic prophylaxis for recurrent urinary tract infections (UTIs) in nonpregnant women?

Bottom line

Antibiotic prophylaxis lowers the risk of recurrent UTIs (12% vs 66% placebo) over 6 to 12 months. Yet, more women have adverse events with antibiotics (15% vs 8% placebo). Long-term bacterial resistance and its individual clinical impact have not been well studied. This does not apply to asymptomatic bacteriuria.

Evidence

Results are statistically significant unless otherwise noted. Recurrent UTIs were defined as 3 or more episodes in 12 months or 2 episodes in 6 months.[1]

- A comparison of antibiotic prophylaxis (6 to 12 months) versus placebo found the following:
  - In a meta-analysis (10 RCTs, 430 women) of various regimens of 5 antibiotics,[2] microbiological recurrence (8 RCTs, 372 women) was less likely among those taking antibiotics (12% vs 66% placebo; number needed to treat [NNT]=2). Occurrence of clinical UTI (eg, dysuria; 8 RCTs, 257 women) was lower with antibiotics (7% vs 51% placebo; NNT=3).
    - —Adverse events (eg, skin rash, nausea) were more common among those taking antibiotics (15% vs 8% placebo, number needed to harm [NNH]=14). Rates of serious adverse events did not differ.
    - —Limitations: small studies, many older than 25 years.
  - One RCT not included in the above meta-analysis (302 women, 3 g of fosfomycin every 10 days vs placebo for 6 months) found microbiological recurrence was lower with antibiotics (7% vs 75% placebo; NNT=2).[3]
- A comparison of antibiotic prophylaxis (6 to 12 months) versus nonantibiotic prophylaxis found the following:
  - In a meta-analysis (3 RCTs, 482 women) comparing antibiotic prophylaxis (50 mg or 100 mg of nitrofurantoin, or 80 mg trimethoprim [TMP] and 400 mg sulfamethoxazole [SMX] daily) with nonantibiotic prophylaxis (oral lactobacillus, vaginal estrogen, or D-mannose powder),[4] microbiological recurrence was less likely among those taking antibiotics (43% vs 54% nonantibiotics; NNT=9).
    - —Rates of adverse events did not differ.
    - —Limitations: large variation between comparators.
  - A small RCT not included in the meta-analysis above showed no difference.[5]

Context

- One RCT comparing TMP-SMX versus oral lactobacillus found TMP-SMX resistance increased to 80% to 95% during treatment but returned to baseline (20% to 40%) after treatment.[6] No difference in UTI recurrence was noted 3 months after prophylaxis was stopped.
- One cohort study reported bacterial resistance in 16% of control group and in 21% of prophylactic antibiotic group at 30 days to 1 year, but clinical impact was unclear.[7]

Implementation

Interventions include dosing daily (eg, 40 mg TMP and 200 mg SMX, or 100 mg TMP), 3 times per week (eg, 40 mg TMP and 200 mg SMX), or every 10 days (3 g fosfomycin). The optimal prophylaxis regimen is unclear. A reasonable trial of prophylaxis may be 6 months. Alternative interventions include increasing fluid intake by 1.5 L per day in those with lower baseline fluid intake, which is associated with approximately 1.5 fewer UTIs and antibiotic prescriptions per person at 1 year.[8] Similarly, vaginal estrogen (ring or cream) may reduce the risk of recurrent UTIs in postmenopausal women (by 34% to 61% vs 72% to 94% placebo at 6 months).[9]

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Competing interests
None declared

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