Antimicrobial treatment did not reduce complications of urinary tract infection in diabetes and asymptomatic bacteriuria


**Question**
In women with diabetes and asymptomatic bacteriuria, does antimicrobial treatment decrease complications of urinary tract infection (UTI)?

**Design**
Randomized [allocation concealed]†, blinded [clinicians, patients, data collectors, outcome assessors, and data analysts]†, placebo-controlled trial with 3-year follow-up (mean follow-up 27 mo). Clinicians and patients were blinded only for the first 6 weeks of the study.

**Setting**
Endocrinology clinics in Winnipeg, Manitoba, Canada.

**Patients**
108 women ≥ 17 years of age with diabetes who had 2 consecutive positive urine cultures (≥ 10^5 colony-forming units [CFU] of a urinary pathogen/mL) within a 2-week period and remained asymptomatic. Exclusion criteria included pregnancy and serum creatinine level > 200 µmol/L. Follow-up was 97% (105 women) at 1 month and 45% (49 women) at 3 years.

**Intervention**
Women were allocated to trimethoprim-sulfamethoxazole, 160 mg and 800 mg, respectively, orally twice per day (n = 55); 49 women received antimicrobial therapy for 14 d, and 6 received antimicrobial therapy for 3 d or matching placebo (n = 50). Women who were allergic to trimethoprim-sulfamethoxazole or who were infected with resistant organisms received ciprofloxacin, 250 mg orally twice per day.

**Main Outcome Measures**
Rates of symptomatic UTI and time to first episode of symptomatic UTI. Definite symptomatic lower UTI was defined by acute onset of symptoms of irritation of the lower tract in the absence of fever or costovertebral-angle pain or tenderness and in the presence of a positive urine culture (≥ 10^5 CFU of a urinary pathogen/mL). Definite pyelonephritis was defined by the presence of costovertebral-angle pain or tenderness and a positive urine culture (≥ 10^5 CFU of a urinary pathogen/mL) with or without systemic symptoms.

**Main Results**
Analysis was by intention to treat. At a mean follow-up of 27 months, the proportion of patients having ≥ 1 episode of symptomatic UTI did not differ between the antimicrobial therapy and placebo groups (Table). Also, the antimicrobial therapy and placebo groups did not differ for the time to a first symptomatic UTI episode (P = 0.67 by the log-rank test) or for rates of any symptomatic UTI (0.93 and 1.10/1000 d of follow-up, respectively, P = 0.42), pyelonephritis (0.13 and 0.28/1000 d of follow-up, respectively, P = 0.13), cystitis (0.80 and 0.83/1000 d of follow-up, respectively, P = 0.89), or hospitalization for UTI (0.06 and 0.10/1000 d of follow-up, respectively, P = 0.36).

**Conclusion**
In women with diabetes and asymptomatic bacteriuria, antimicrobial treatment did not reduce complications related to urinary tract infection.

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†See Glossary. †Information provided by author.

### Antimicrobial therapy vs placebo for ≥ 1 episode of symptomatic urinary tract infection at mean 27-month follow-up‡

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<tr>
<th></th>
<th>Antimicrobial therapy</th>
<th>Placebo</th>
<th>RRI (95% CI)</th>
<th>NNH</th>
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<tr>
<td>n</td>
<td>55</td>
<td>50</td>
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<tr>
<td>1 episode of UTI</td>
<td>10 (20%)</td>
<td>12 (24%)</td>
<td>0.85 (0.55-1.34)</td>
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<tr>
<td>RRI</td>
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<td>NNH</td>
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‡Abbreviations defined in Glossary, RRI, NNH, and CI calculated from data in article.

**Commentary**
Consensus guidelines recommend periodic screening for microalbuminuria in patients with diabetes (1). The most convenient screening test for patients involves determination of the albumin-to-creatinine ratio in the absence of a UTI. Because of this screening practice, clinicians will have to judge who has glycosuria and neuropathy since this study did not define a cutpoint for the former or diagnostic criteria for the latter.

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**References**