



## Cefuroxime PO for Bacteremic UTI

The 2025 Infectious Diseases Society of America complicated urinary tract infection (cUTI) guidelines recommend that patients with cUTI, including those with gram-negative (GN) bacteremia, be transitioned from intravenous to oral step-down therapy if they are clinically improving, able to absorb oral medications, and an effective oral option is available.<sup>1</sup> The guidelines note that for bacteremic patients, the oral step-down antibiotic should achieve therapeutic levels in the bloodstream, urine, and tissue. However, no specific antibiotics are recommended. Cefuroxime is a listed oral option for cUTI, but can it be used for patients with bacteremia?

### What are the pharmacokinetic-pharmacodynamic (PK-PD) considerations?

In one PK-PD study, cefuroxime 500 mg PO BID was likely to achieve a PK-PD target (40% time above MIC) up to an MIC of 0.5 µg/mL in serum.<sup>2</sup> However, this is below the oral susceptibility breakpoint of 4 µg/mL per Clinical and Laboratory Standards Institute (CLSI)<sup>3</sup> and such low MIC detection may not be possible with standard susceptibility testing methods. The United States Committee on Antimicrobial Susceptibility Testing (USCAST) recommends against the use of oral cefuroxime for systemic infections due to Enterobacterales.<sup>4</sup> Notably, a 2021 consensus guidance for uncomplicated GN bacteremia omitted oral cefuroxime when providing optimized dosing recommendations for oral β-lactams.<sup>5</sup>

### What is the clinical outcomes data in cUTI with and without bacteremia?

All available data is observational, and cefuroxime is often grouped with other oral β-lactams with different degrees of PK-PD optimization. Cefuroxime is usually dosed at 500 mg BID. Although higher doses may produce better outcomes, limited data exists to support this practice.

Comparison	Patients	Outcomes	Comments
Oral β-lactams vs FQs or TMP-SMX <sup>6</sup>	Adults hospitalized with urinary source Enterobacterales bacteremia receiving median 4-5 days IV lead in therapy and 14 days total duration	<b>30-day all-cause mortality or recurrent bacteremia:</b> FQs or TMP-SMX: 94/3134 (3%) Oral β-lactams: 42/955 (4.4%) <b>Cefuroxime: 2/97 (2.1%)</b>	No mortality with cefuroxime
High bioavailability β-lactams (HBBL) vs FQ vs TMP-SMX <sup>7</sup>	Adults (majority of whom were hospitalized) with urinary source Enterobacterales bacteremia with structural or functional urologic abnormalities receiving median 3-4 days of IV lead in therapy and 13 days total duration	<b>60-day bacteremia or UTI recurrence:</b> FQs: 21/289 (7.3%) TMP-SMX: 7/73 (9.6%) HBBL: 46/214 (21.5%) <b>LBBL: 15/75 (20%)</b>	HBBL group included amoxicillin, amoxicillin-clavulanate, and cephalexin. HBBL dosing not optimized for majority of patients.
Low bioavailability β-lactams (LBBL) included for sensitivity analyses			LBBL included cefuroxime and cefdinir without specific numbers provided.

**Key Takeaway:** Alternatives may be preferred over cefuroxime as PO step-down in cUTI with bacteremia due to concerning PK-PD data and observational clinical data suggesting higher rates of recurrence, particularly in patients with structural or functional urologic abnormalities.

### References:

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