

Risk of Treatment Emergent Resistance in *Citrobacter freundii* Infections Managed with Third Generation Cephalosporins

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Treatment of *Citrobacter freundii* infections with third-generation cephalosporins (3GC) poses a challenge due to the presence of an inducible chromosomal AmpC- β lactamase gene that renders 3GCs and other β -lactams ineffective. The Infectious Diseases Society of America guidelines recommend against the use of 3GCs in moderate risk AmpC β -lactamase producing organisms due to the potential of inducible resistance. However, the majority of clinical evidence that advises the guidelines focus on *Enterobacter spp.* with a small number of *C. freundii* clinical cases informing these recommendations. The purpose of this study is to examine the difference between 3GC vs. non-3GC antibiotics on the emergence of resistance in *C. freundii* infections. This is a multicenter, retrospective cohort study that included patients ≥ 18 years old, had a positive clinical culture for *C. freundii* susceptible to 3GCs, and treated with ≥ 1 dose of an antibiotic. Patients were stratified into 3GC and non-3GC groups. The primary outcome was treatment emergent resistance. Data were analyzed using RStudio with descriptive and inferential statistics. Our study enrolled 81 patients with 20 in the 3GC group and 61 in the Non-3GC group. Two patients in the 3GC group had a subsequent culture that developed resistance to 3GC as compared to zero patients in the non-3GC group ($p > 0.05$). In our clinical cohort, we did not detect a statistically significant difference in the rate of treatment emergent resistance in patients who received 3GC vs other antibiotics. Further analyses will be performed to support our findings. Supported by NJ ACTS CREST Program funded by NIH R25TR004777.

