Impact of an Infectious Disease Consultation on Duration of Antibiotic Therapy in Uncomplicated Gram-Negative Bacteremia

Purpose: For the treatment of uncomplicated gram-negative bacteremia, multiple retrospective studies have shown that a shorter duration of antibiotic therapy was just as effective as a longer duration in terms of mortality, clinical cure, and readmission rates. Antimicrobial stewardship includes continuously evaluating need for antibiotic therapy constantly and considering patient factors to make recommendations for the best patient outcomes and avoiding unwanted antibiotic resistance and side effects. The purpose of this study was to compare the duration of antibiotic therapy used for the treatment of gram-negative bacteremia between those who received an infectious disease consult and those who did not.

Methods: This retrospective, single-center study collected data from HSHS St. John's Hospital in Springfield, IL from January 1st, 2023 to May 1st, 2024 via chart review. Patients aged 18 to 99 years old with a diagnosis of monomicrobial gram-negative bacteremia with either *Escherichia coli, Klebsiella spp.,* or *Pseudomonas aeruginosa* were analyzed for eligibility for this study and were included if the source was from the urinary tract, abdominal cavity, skin and soft tissue, or the respiratory tract and if the source was controlled. Patients were excluded if there was an alternative source of infection not listed above, infection that required prolonged duration of treatment, polymicrobial infection, or unable to obtain source control. The two treatment arms were based on if the patient was consulted by the infectious disease consult team or not. The study's primary outcome was to determine if there was a difference in the duration of antibiotic therapy per the infectious disease consult team recommendations compared to the primary internal medicine team recommendations. A secondary outcome, regarding the length of hospital stay, was compared between the two treatment groups to determine the effect of an infectious disease consult on the duration of hospital stay compared to only primary management with the internal medicine team.

Results: A total of 97 patients were eligible for 7 days of antibiotic therapy for the management of uncomplicated gram-negative bacteremia based on chart review, and over half (64/97 [66%]) of patients received an infectious disease consult. The source of bacteremia for most included patients was from the urinary tract (82.5%), and the most common pathogen was Escherichia coli (73.2%). There was not a significant difference in the total duration of antibiotic therapy between the infectious disease consultation group and the primary medicine team (14.0 vs 14.0 days; P-value: 0.379). The secondary outcome of length of hospital stay was significantly shorter in the non-infectious disease treatment arm.

Conclusions: With data to support the utilization of a shorter duration of antibiotic therapy in patients with uncomplicated gram-negative bacteremia, both primary internal medicine and infectious disease consultation teams should consider utilizing a shorter duration of antibiotic therapy in this study's patient population. Based on the results of our study, more education about when to recommend a 7-day course of antibiotics in the management of uncomplicated gram-negative bacteremia is needed.