

Abstract 2372

Using the Antibiotic Spectrum Index (ASI) score to assess antibiotic exposure for patients with Bloodstream Infections (BSI): an analysis of the Accelerate PhenoTest BC Kit (AXDX) IOAS study

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Background: Rapid diagnostic tests (RDTs) that expediate organism identification (ID) and antimicrobial susceptibility testing (AST) allow clinicians to optimize antibiotic therapy sooner. Measuring antibiotic use is essential to assessing an RDT's effectiveness. The purpose of this study to investigate the impact of fast ID/AST on antibiotic exposure in the early course of BSI.

Materials/methods: Antibiotic exposure received during the initial 96 hours following blood culture positivity from the IOAS study were assessed using the antibiotic spectrum index (ASI). This multicenter, quasi-experimental study compares clinical and antimicrobial stewardship metrics among patients with BSI before and after implementation of AXDX. Total ASI scores for each patient were calculated using the Gerber et al scoring system (with a lower score representing a shorter duration and/or narrower spectrum of antibiotic exposure) and compared between pre-AXDX and post-AXDX groups. To objectively measure antibiotic exposure, the ASI scoring system assign points to each antibiotic based on the antibiotic's spectrum of activity against clinically relevant pathogens, ranging from a score of 1 to 13. Antibiotic exposure was calculated by multiplying duration of antibiotic exposure (days) by the ASI. All hospitals had antimicrobial stewardship programs throughout the study period.

Results: There were 462 patients with BSI who contributed ASI scores; 238 pre-AXDX, 224 post-AXDX. Patient demographics, comorbidities, and severity of illness were similar between groups, as were distributions of gram-negative (60%) and gram-positive (35%) BSI. The most prevalent gram-negative and gram-positive organisms were *E. coli* and *S. aureus*, respectively. The average total ASI score for pre-AXDX was 36.7 (SD 16.6) compared to post-AXDX 32.8 (SD 15.0), an overall reduction in ASI of 3.9 (95% Confidence Interval, 1.0 to 6.7; $P=0.009$) in the post-AXDX group.

Conclusions: In this study, implementation of the AXDX improved antibiotic prescribing among patients with BSI as evident by a reduction in the ASI score of approximately 4 units (equivalent to a day of ceftazidime or clindamycin exposure). Use of antibiotic spectrum index scoring in patients with BSI can enhance the understanding of the impact of RDTs on antibiotic use, particularly when compared across several institutions that may have differing formulary or antibiotic prescribing practices.

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