00661 Antimicrobial use in patients with bloodstream infections from 4 hospitals in the improving outcomes and antibiotic stewardship (IOAS) study: a quasi-experimental multi-centre study of the Accelerate PhenoTest® BC Kit

03. Bacterial susceptibility & resistance

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Background

Measuring impact of diagnostic technologies on clinically relevant metrics can be complex. For hospitals with established antimicrobial stewardship programs, initiatives focused on improving quality of care are key and can be demonstrated through antimicrobial use metrics. Effect of antibiotic optimization for patients with bloodstream infections (BSI) was evaluated in the Accelerate PhenoTest® BC kit (AXDX) registry program as part of the Improving Outcomes and Antibiotic Stewardship (IOAS) study.

Methods

This multicenter, quasi-experimental study compares clinical and antimicrobial stewardship metrics, prior to and after implementation of AXDX, to evaluate the impact this technology has on patients with BSI. Laboratory and clinical data from hospitalized patients with BSI (excluding contaminants) were compared between two groups, one that underwent testing on AXDX and one that underwent alternative organism identification and susceptibility testing (SOC). Interim analysis of data collected from 4 centers was performed. SOC methods utilized were MALDI-TOF MS (n=3 centers), VITEK® 2 (n=3), BD Phoenix® (n=2), Sensititre® (n=1), and Verigene® (n=1). All institutions had active antimicrobial stewardship programs throughout the study period.

Results
760 patients with BSI (385 SOC, 375 AXDX) were included in this analysis. Patient demographics, comorbidities, and severity of illness were similar between groups, as were distributions of gram-negative (65%) and gram-positive (28%) BSI. The most prevalent organisms were *E. coli* (28%), *Klebsiella* spp. (11%), and *S. aureus* (9%). Median time to optimal therapy was 40.9 hours (interquartile range [IQR], 21.1-58.4) in the SOC group and 23.2 hours (IQR, 10.2-36.6) in the AXDX group ($p<0.0001$). Median time to first antibiotic intervention occurred 10.7 hours faster in the AXDX vs. SOC [14.5 (4.9-31.3) vs 25.2 (7.2-46.9)], $p=0.0004$. Median hours to first antibiotic de-escalation was significantly faster in the AXDX vs. SOC group [27.6 (13.2-44.0) vs 35.3 (15.5-52.7); $p=0.0032$].

Conclusions
Implementation of AXDX significantly improved antimicrobial stewardship metrics for patients with BSI through reductions in time to optimal therapy and time to first antibiotic intervention. These findings highlight the clinical utility of rapid phenotypic AST for BSI across a diverse population of patients and healthcare settings.