Abstract 2390

Improving Outcomes and Antibiotic Stewardship for patients with bloodstream Infections (IOAS): a quasi-experimental multi-centre analysis of time to optimal therapy

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Background: Measuring impact of diagnostic technologies on patient care can be complex. For hospitals with established antimicrobial stewardship programs, initiatives focused on improving quality of care are key and can be demonstrated by measuring the impact on time to optimal therapy. Effect of antibiotic optimization for patients with bloodstream infections (BSI) was evaluated in the Accelerate PhenoTest™ BC kit (AXDX) registry program, with emphasis on time to optimal therapy (TTOT).

Materials/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 (post-AXDX) and one that underwent alternative organism identification and susceptibility testing (pre-AXDX). Interim analysis of data collected from 3 centers was performed. Pre-AXDX methods for each of the 3 sites were: Verigene®, MALDI-TOF MS, and BD Phoenix™ at Hospital A; MALDI-TOF MS and VITEK® 2 at Hospital B; and MALDI-TOF MS, VITEK® 2, and Sensititre™ at Hospital C. All institutions had active antimicrobial stewardship programs throughout the study period. Primary outcome was TTOT; multiple linear regression analysis was performed to identify clinical factors associated with TTOT.

Results: 464 patients with BSI (239 pre-AXDX, 225 post-AXDX) were included in this analysis. Patient demographics, comorbidities, and severity of illness (median Pitt bacteremia score of 2) were similar between groups, as were distributions of gram negative (ff60%) and gram positive (ff35%), with polymicrobial (ff11%) BSI. The most prevalent gram-negative and gram-positive organisms were E. coli and S. aureus, respectively. Median TTOT was 42.0 hours (interquartile range [IQR], 20.5 - 65.3) in the pre-AXDX group and 28.2 hours (IQR, 12.8 - 49.2) in the post-AXDX group (p=0.003). Independent factors associated with shorter TTOT were BSI with AXDX on-panel organisms (p=0.01), absence of intravenous vasopressors (p=0.01), and post-AXDX group (p=0.01).

Conclusions: Implementation of AXDX improves antimicrobial stewardship in patients with BSI reducing both TTOT and unnecessary antimicrobial exposure.

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