Abstract

Background: The timely identification and management of bloodstream infections are critical to improving patient outcomes and promoting antimicrobial stewardship. The BioFire® Blood Culture Identification 2 (BCID2) panel offers rapid organism and resistance gene identification, allowing for earlier optimization of antimicrobial therapy. However, the full clinical value of this technology is best utilized when paired with pharmacist-driven protocols that guide antibiotic de-escalation based on diagnostic results. This study evaluates the impact of implementing BCID2 in conjunction with pharmacist-led interventions across the HSHS health system, with the goal of assessing their combined effect on patient outcomes and stewardship practices in real-world hospital settings.

Methods: This multicenter, retrospective chart review included adult patients (aged 18–89) hospitalized with positive blood cultures at selected HSHS facilities between March 1, 2024 and May 31, 2024. Patients were stratified into two groups based on whether BCID2 results were followed by pharmacist-led antimicrobial interventions or managed without pharmacist involvement. Hospital protocols and stewardship practices were reviewed to assess inter-site variability. The primary outcome was time to antibiotic de-escalation, defined as the interval between initiation of broad-spectrum antibiotics and the first documented intervention (either order entry or stewardship recommendation) following BCID2 result availability. Secondary outcomes included time to targeted therapy, duration of broad-spectrum antibiotic use, and documentation of pharmacist recommendations.

Results: Four hospitals within the HSHS health system were included, with one hospital (H1) utilizing a standardized pharmacist-driven protocol for BCID2 result interpretation and the remaining hospitals managing results without a formalized workflow. Baseline patient characteristics were similar across sites. Time to antibiotic de-escalation was shorter at H1 compared to all other sites (~21 hours; ~37 hours, ~81 hours; ~46 hours). Secondary outcomes demonstrated shorter time to targeted therapy and reduced duration of broad-spectrum antibiotic use at H1. No significant differences were observed in length of hospital stay or total duration of antibiotic therapy.

Conclusion: The integration of the BCID2 panel with pharmacist-driven antimicrobial stewardship interventions was associated with improved timeliness of antibiotic de-escalation and targeted therapy. These findings highlight the importance of interdisciplinary collaboration in maximizing the utilization of rapid diagnostic technologies. Standardizing pharmacist involvement across hospital sites may further enhance antimicrobial stewardship efforts and improve patient outcomes.