213. Successful Implementation of BCID Across Large Healthcare System Using a Central Testing Laboratory and Multidisciplinary Pharmacy Team

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Background. Molecular testing has been shown to improve turnaround time (TAT) for identifying bloodstream pathogens. Early results can inform directed escalation or de-escalation of antimicrobial therapy. Paired with antibiotic stewardship, rapid pathogen identification has been shown to reduce antibiotic utilization and improve patient outcomes. However, many of these studies were in single site institutions. We evaluated implementation of the BioFire® FilmArray Blood Culture Identification System (BCID) across 3 acute care facilities utilizing a central testing laboratory at Carolinas Healthcare System.

Methods. BCID testing was implemented over a 2-month period. A multidisciplinary team developed standard protocols for processing, transporting, and testing with communication of results across teams of stewardship pharmacists. Standard algorithms were used across all facilities to guide antibiotic prescribing. Data were collected for one-inpatient year from January 1, 2017 to April 30, 2017. The central testing laboratory at Carolinas Healthcare was the only source of results for each site, and the same algorithm was used for each facility. Analysis was performed.

Results. 20,437 positive blood cultures were identified at 3 acute care facilities and tested using BCID. TAT from positive bottle to BCID result was 4.6% (95% CI 4.4–4.8) hours. 86.7% (16,147/18,708) were appropriate decisions for antimicrobial therapy. For patients with a de-escalation, there was a significant variation across shifts or sites except where there was greater than 10% assigned to TAT with the system.

Conclusion. BCID testing was successfully implemented across a large integrated healthcare system using central testing laboratory paired with a team of stewardship and virtual care pharmacists. Our strategy provided timely and reproducible results across facilities and shifts. Implementation of BCID allowed for more pathogen-directed therapy at all facilities with variability in need for escalation and de-escalation of therapy based on system.

Disclosures. All authors: No reported disclosures.

213. Evaluation of the Clinical Impact of the Biofire Filmmarray® Rapid Multiplex PCR Assay in Blood Culture Identification Combined with Antimicrobial Stewardship Intervention

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Background. Bloodstream infections are a major cause of morbidity and mortality worldwide, with favorable clinical outcomes associated with early optimal antimicrobial selection. Rapid diagnostics have become a key part in achieving this. BioFire Filmmarray® PCR assay has been shown to improve antimicrobial stewardship (AS) interventions. We aimed to assess the impact of the test on appropriate antimicrobial therapy in a setting with pre-existing effective AS interventions.

Methods. An observational retrospective chart review, pre and post study was performed. We reviewed adult positive BC before and after implementation of BioFire. Outcomes were: (1) time from BC result reported to health care provider to start of adequate antimicrobial therapy, (2) time to stopping antimicrobial therapy in BC thought to be contaminants, (3) time to any change in antimicrobial therapy and (4) a composite outcome of outcomes 1 and 2. A univariable Cox proportional hazards model was performed. Results. 326 positive BC were analyzed, 173 before and 153 after BioFire implementation. At the time of healthcare provider notification, 77 were not on adequate antimicrobials, with median time to adequate therapy of 6.98 hours. (IQR 3.93–23.90) before and 6.1 hours. (IQR 1.84–20.95) after implementation, P = 0.48. There were 75 BC classified as contaminants and median time to stopping antimicrobials was 48.28 hours. (IQR 18.56–89.36) vs. 45.25 hours. (IQR 15.12–100.60), P = 0.61. Time to any change in antimicrobial therapy was similar with a median of 13.05 hours. (IQR 4.00–38.77) vs. 11.90 hours. (IQR 2.97–31.10), P = 0.87. Analysis of the composite outcome revealed a median of 23.95 hours. (IQR 6.29–58.50) vs. 14.82 hours. (IQR 4.07–44.79) hours. (Hazard ratio 1.33, 95% confidence interval 0.96–1.84, P = 0.09)

Conclusion. Implementation of the Biofire Filmmarray® did not have a statistically significant effect on our composite outcome of time to adequate therapy and time to discontinuation in the case of contamination. Our findings suggest that when added to other effective AS surveillance and interventions, the magnitude of the clinical impact of rapid PCR diagnostics for BC identification is minimal.

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213. Clinical Utility of Universal PCR and its Real-World Impact on Patient Management

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Background. Real-time PCR in combination with antimicrobial stewardship interventions has been shown to improve antimicrobial stewardship. Our institution implemented Biofire® FilmArray Blood Culture Identification (BCID) across 3 acute care facilities utilizing a central testing laboratory at Carolinas Healthcare System. The standard of care (SOC) laboratory protocol consisted of matrix-assisted laser desorption ionization time of flight (MALDI-TOF) for pathogen identification and VITEK® 2 for AS results. Our findings suggest that when added to other effective AS surveillance and interventions, the magnitude of the clinical impact of rapid PCR diagnostics for BC identification is minimal.

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213.4 Impact of Accelerate Pheno System on Time to Antimicrobial Stewardship Intervention in Patients with Gram-Negative Blood Stream Infections

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Background. Rapid diagnostic tests in combination with antimicrobial stewardship interventions have been shown to improve antimicrobial stewardship outcomes in patients with blood stream infections (BSIs). The Accelerate Pheno® System (APS) has a potential advantage over many currently approved rapid diagnostic tests in that it can quickly provide both identification and antimicrobial susceptibility (AS) information. This study aimed to explore the impact of utilization of the APS when compared with VITEK® 2 on time to simulated antimicrobial stewardship service intervention (ASTEW-I) in patients with Gram-negative BSIs. Potential impact of availability of ASTEW-I based on time of day was also examined.

Methods. Consecutive patients with Gram-negative rod blood stream isolates were enrolled during a 3 month time frame (February-May 2017). The standard of care (SOC) laboratory protocol consisted of matrix-assisted laser desorption ionization time of flight (MALDI-TOF) for pathogen identification and VITEK® 2 for AS results. Data were extracted from medical records. Odds ratios were calculated using a paired t-test. Sensitivity, specificity, positive predictive value and negative predictive values were calculated. Time to any change comparing the test result with a gold standard composite final clinical diagnosis determined by 3 independent reviewers based on all available clinical information.

Results. 71 positive samples were included, of which 21 (29.6%) were positive. 12 bacteria, 3 mycobacteria and 7 fungi were identified. The number of leukocytes in the gram stain (odds ratio, OR 1.57, P = 0.04) and presence of inflammation on histopathological examination (OR 5.69, P = 0.02) were found to be significantly associated with a positive result. The sensitivity, specificity, positive predictive value and negative predictive values were 56%, 91%, 91% and 79% respectively. Management was altered in 22 patients, 9 of whom had a positive and 13 had a negative result.

Conclusion. These findings suggest that the universal PCR assay has significant clinical utility, but the yield of this test can be optimized by careful patient/specimen selection. Utility was highest in patients with microscopic evidence of inflammation by gram stain or histopathological examination. Sensitivity was high. The use of this complex, difficult to interpret, and expensive test should be limited to infectious disease physicians incorporating all available clinical information to optimize performance.

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