Adjusted analysis for the association between Respiratory Film Array results and Days of Therapy among hospitalized patients

Table 1. Adjusted analysis for the association between Respiratory Film Array Results and Days of Therapy among hospitalized patients

| Variable                      | Incidence Rate Ratio (95% CI) | p-value |
|-------------------------------|------------------------------|---------|
| PCR result                    |                              |         |
| influenza                     | Baseline                     | -       |
| Negative                      | 0.50 (0.59-1.25)             | 0.696   |
| Other virus                   | 1.11 (0.64-1.92)             | 0.706   |
| Age                           | 1.01 (0.95-1.07)             | 0.154   |
| Fever                         | 1.24 (0.82-1.86)             | 0.312   |
| Urine culture obtained        | 1.85 (1.32-2.59)             | <0.001  |
| YWCC                          |                              |         |
| High                           | Baseline                     |         |
| Low                           | 1.17 (0.90-1.27)             | 0.723   |
| Normal/Not obtained           | 0.76 (0.54-1.11)             | 0.163   |
| Chest X-Ray                   |                              |         |
| CONSULTATION                  | 1.26 (0.71-2.20)             | 0.444   |
| Indeterminate                 | 0.91 (0.52-1.65)             | 0.747   |

Conclusion: Among inpatients, RFA results did not impact DOT, and in this group, antibiotic use was driven by urine cultures. In contrast, among patients discharged from the ED, a non-influenza virus or a negative RFA was associated with much higher rates of DOT. Our results suggest that different strategies need deployment in the ED compared to inpatient services in order to guide utilization of rapid molecular tests and antibiotic use.

Disclosures: All Authors: No reported disclosures

107. Impact of a Rapid Blood Culture Identification Panel at a Community Teaching Hospital: a Pre-Post Quasi-Experiment

Catherine Trinh, PharmD; Steven Richardson, PharmD; BCIDP, AAHIVP; Benjamin Ereshefsky, PharmD, BCIDP; 1 Kaweah Delta Medical Center, Visalia, California

Session: P-4. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background: Rapid diagnostic tests (RDT) for positive blood cultures can lead to quicker identification of organisms and key resistance elements. As a result time to targeted therapy may decrease, thus reducing the duration of broad, empiric antibiotic use. The purpose of this study was to determine the impact of implementing the BioFire® FilmArray® Blood Culture Identification (BCID) Panel for gram-positive organisms on antimicrobial process measures and patient outcomes at an academic community hospital.

Methods: This was a single-center, pre-post intervention, quasi-experimental study evaluating hospitalized adult patients who had at least one positive blood culture with gram-positive organisms from June 1, 2018 to August 31, 2018 and June 1, 2019 to August 31, 2019. Patients in the pre-intervention group were randomized and post-intervention patients were matched by identified organism. The primary outcome was the time to targeted therapy from blood culture collection. Secondary outcomes included time to targeted therapy from positive Gram stain, vancomycin and anti-pseudomonal ß-lactam length of therapy (LOT), institutional vancomycin days of therapy (DOT), length of stay (LOS), and estimated hospitalization costs.

Results: A total of 75 patients in each group were included. The time to targeted therapy from blood culture collection was significantly decreased after RDT implementation [32.9 (22.2–51.8) hours vs. 49.2 (37.1–76.3) hours, p < 0.001], as was time to targeted therapy from Gram stain results [8.5 (0.25–2.1) hours vs. 30 (19.4–52.9) hours, p < 0.001]. No difference was found between the groups with respect to LOS or estimated hospitalization cost. Overall the vancomycin LOT [0.86 (0.09–2.38) days vs. 2.18 (1.37–4.34) days, p = 0.001] and anti-pseudomonal ß-lactam LOT for MSSA, MSRA, Streptococcus, and Enterococcus subgroup [1.15 (0.06–2.07) vs. 1.78 (1.28–2.89) days, p = 0.026] were significantly decreased in the post-RDT group.

Disclosures: All Authors: No reported disclosures

108. Impact of a Rapid Blood Culture Identification Panel at a Community Teaching Hospital: a Pre-Post Quasi-Experiment

Catherine Trinh, PharmD; Steven Richardson, PharmD; BCIDP, AAHIVP; Benjamin Ereshefsky, PharmD, BCIDP; 1 Kaweah Delta Medical Center, Visalia, California

Session: P-4. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

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Table 1. Demographics and baseline characteristics of matched patients

| Parameter                      | Pre-RDT (n=75) | Post-RDT (n=75) | P-value |
|-------------------------------|---------------|----------------|---------|
| Age, mean (IQR)              | 65.3 (64.6–66.1) | 65.3 (65.3–66.9) | 0.56    |
| Sex                           | Females       | Males          |         |
| Present/Source                | 38 (46.1)     | 37 (46.9)      | 0.39    |
| Urine                         | 8 (10.7)      | 11 (14.7)      |         |
| Cateher-related               | 7 (9.3)       | 5 (6.7)        | 0.52    |
| Respiratory                   | 21 (28.0)     | 16 (21.3)      |         |
| Endobacterial                 | 6 (8.0)       | 11 (14.7)      | 0.22    |
| Sinus/soft tissue             | 9 (12.0)      | 12 (16.0)      |         |
| Benjamine                     | 5 (6.7)       | 6 (8.0)        |         |
| Intra-abdominal               | 7 (9.3)       | 8 (10.7)       | 0.71    |
| Other/Unidentified            | 12 (16.0)     | 7 (9.3)        |         |
| Location of Blood Culture Collection |   |               |         |
| ICU/DIVCU                    | 3 (4)         | 3 (4)          | 1.00    |
| Med/ Surg                    | 8 (10.7)      | 7 (9.3)        | 1.00    |
| Clinical status (during the first 72 hours of treatment) |   |               |         |
| ICU/DIVCU admission          | 17 (22.7)     | 12 (16.0)      | 1.00    |
| Vancomycin                   | 9 (12.0)      | 12 (16.0)      | 0.64    |
| Antibiotic                   | MRSA          | MSRA           | 0.03    |
| Coagulase-negative Staphylococcus | 41 (54.7) | 42 (55.9)      | 0.94    |
| Streptococcus spp.           | 14 (18.7)     | 10 (13.3)      | 0.74    |
| Streptococcus spp.           | 21 (28.0)     | 22 (29.3)      |         |
| Staphylococcus                | 36 (48.0)     | 38 (50.7)      | 0.94    |
| Pseudomonas                   | 10 (13.3)     | 11 (14.7)      | 0.74    |
| Enterococcus                  | 13 (17.3)     | 16 (21.3)      | 0.94    |
| Hemorrhage                   | 12 (16.0)     | 12 (16.0)      | 1.00    |
| Condition                    | 15 (20.0)     | 16 (21.3)      | 0.94    |
| Antipseudomonal ß-lactam      | 14 (18.7)     | 12 (16.0)      | 1.00    |
| Lot of therapy               | Vancomycin DOT/1000 Patient Days |   |         |
| Pre-RDT (n=75)               | 91.4 (73.9–118.1) | 97.9 (84.1–115.4) | 0.154   |
| Post-RDT (n=75)              | 95.4 (78.4–115.4) | 101.2 (87.3–125.1) | 0.052   |

Figure 1: Institutional Use of Vancomycin
Conclusion: Implementation of a rapid diagnostic test on gram-positive blood cultures was associated with decreased time to targeted therapy from blood culture collection, time to targeted therapy from positive culture, and vancomycin LOT.

Disclosures: All Authors: No reported disclosures

108. Impact of Accelerate Pheno System in the Management of Gram-Negative Rod Bacteremia
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Session: P-4. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background: Early pathogen identification and initiation of appropriate antimicrobial therapy is key in the management of Gram-negative rods (GNR) bloodstream infection (BSI). The Accelerate Pheno System (ACC) has been shown to reduce time to GNR identification compared to traditional culture-based methods. We aimed to determine the impact of ACC on the management of GNR BSI in the setting of a well-established antimicrobial stewardship program (ASP).

Methods: ACC was introduced in our institution on February 2019. Due to issues incorporating ACC, of patients with GNR BSI, 74% had ACC done and 26% had reporting through traditional methods. This allows for the design of a retrospective cohort study (instead of a pre-post analysis) to evaluate the association of interest. We included adult patients admitted to three affiliated hospitals in Des Moines, Iowa with BSI due to Enterobacteriaceae from February 2019 to February 2020. Exclusion criteria were Emergency Department visit only and death within 48 hours of blood culture collection. Primary outcomes were length of hospital stay, days to therapy optimization and in-hospital mortality. Continuous variables were compared by non-parametric methods and categorical variables were compared by Chi-square and Fisher-exact test. Logistic regression models were used to calculate odds ratio for the impact of the intervention on therapy optimization.

Results: A total of 268 patients were analyzed. The median length of stay among patients who had ACC done was 5.2 days (IQR 3.6–8.7) and in those on who ACC was not done it was 5.5 (IQR 3.8–8.9) (p=0.55). No differences in in-hospital mortality were found (p=0.942).

Changes in therapy and missed opportunities for optimization according to Accelerate Pheno

| Variable | ACC | No ACC | p-value |
|----------|-----|--------|---------|
| De-escalation within 48 hours from blood culture collection | 62 (31.1) | 13 (16.0) | 0.041 |
| Escalation within 48 hours from blood culture collection | 36 (18.2) | 11 (15.7) | 0.641 |
| Missed opportunity for de-escalation | 99 (51) | 42 (60) | 0.150 |
| Missed opportunity for escalation | 6 (10) | 2 (3.2) | 0.042 |

Disclosures: All Authors: No reported disclosures

110. Impact of Diagnostic and Antimicrobial Stewardship on Time to Appropriate Therapy and Clinical Outcomes in Multi-Drug Resistant Pseudomonas Infections
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Session: P-4. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background: Timely effective therapy in multi-drug resistant (MDR) Pseudomonas (Pa) infections has a direct impact on patient survival. We aimed to determine the impact of diagnostic and antimicrobial stewardship (AMS) on time-to-appropriate therapy (TAP) and clinical outcomes of patients with MDR Pa infections utilizing novel beta-lactam/beta-lactamase inhibitors (BL/BLIs).

Methods: Retrospective cohort study of adult patients with MDR Pa infections at a 1,500-bed University-affiliated public hospital in Miami, Florida who received ≥27 hours of ceftazidime-avibactam (CA) or cefepime-tazobactam (CT). During the pre-intervention period (1/2017-12/2018), additional susceptibilities for CA and CT were performed upon providers’ request. In the post-intervention period (1/2019-12/2019), we implemented automated reflex algorithms (Figure 1) for faster identification and susceptibilities for MDR Pa, including carbapenemase producers. Results were communicated in real-time to the AMS team.

Results: A total of 268 patients were analyzed. The median length of stay among patients who had ACC done was 5.2 days (IQR 3.6–8.7) and in those on who ACC was not done it was 5.5 (IQR 3.8–8.9) (p=0.55). No differences in in-hospital mortality were found (p=0.942).

Changes in therapy and missed opportunities for optimization according to Accelerate Pheno

| Variable | ACC | No ACC | p-value |
|----------|-----|--------|---------|
| De-escalation within 48 hours from blood culture collection | 62 (31.1) | 13 (16.0) | 0.041 |
| Escalation within 48 hours from blood culture collection | 36 (18.2) | 11 (15.7) | 0.641 |
| Missed opportunity for de-escalation | 99 (51) | 42 (60) | 0.150 |
| Missed opportunity for escalation | 6 (10) | 2 (3.2) | 0.042 |

Disclosures: All Authors: No reported disclosures

109. Impact of Accelerate Pheno™ System on Time to De-escalation of Antimicrobial Therapy
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Session: P-4. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background: The Accelerate Pheno™ system yields identification (ID) and antimicrobial susceptibility testing (AST) within 7 hours of growth in blood culture. The objective of this study was to determine its impact on time to de-escalation of antimicrobial therapy.

Methods: This retrospective quasi-experimental, observational cohort study included patients hospitalized at the St. Louis VA who received intravenous antibiotics for a positive blood culture. Patients with blood cultures positive for polymicrobial growth or fungi or those requiring antibiotics for other infections were excluded. The primary endpoint was time to de-escalation of antimicrobial therapy from before and after implementation of Accelerate Pheno™ (September 2017 to August 2018 and September 2018 to August 2019, respectively). Secondary outcomes included time to ID and AST, length of hospital stay, and days of antimicrobial therapy. The variables of gram-positive infections, use of Accelerate Pheno™ and presence of infectious diseases consult and/or pharmacist antimicrobial stewardship note were included in a univariate analysis. Variables with a p-value < 0.2 were included in a multivariate regression.

Results: Seventy-six patients were included; median age was 56 years (IQR 37.5–67.0), 40 (52.6%) were in an intensive care unit at time of culture collection; median APACHE II score was 20 (IQR 15.0 – 26.0). Three isolates were carbapenemase producers (VIM = 2, KPC = 1). The most common infections were pneumonia (56.6%) and bacteremia (18.4%). We found a significant decrease in median TAP (120.1 [IQR 82.5–164.6] vs 75.9 [IQR 51.3–101.7] hours, p = 0.003). Median time from culture collection to final susceptibility results was shorter in the post-intervention group (122.2 [IQR 82.5–164.6] vs 75.9 [IQR 51.3–101.7] hours, p < 0.001). Changes in therapy and missed opportunities for optimization according to Accelerate Pheno

| Variable | ACC | No ACC | p-value |
|----------|-----|--------|---------|
| De-escalation within 48 hours from blood culture collection | 62 (31.1) | 13 (16.0) | 0.041 |
| Escalation within 48 hours from blood culture collection | 36 (18.2) | 11 (15.7) | 0.641 |
| Missed opportunity for de-escalation | 99 (51) | 42 (60) | 0.150 |
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