Figure: Distribution of spectrum of antibiotics ordered to treat bacteremia in pediatric patients. Antibiotic spectrum, as measured by the antibiotic spectrum index, is represented in this Sankey diagram on the Y-axis. The height of each group indicates the proportion of patients with an aggregate antibiotic spectrum falling in that category at three time points. The ASI of empiric antibiotics was measured just before the DST result to provide time for a treating physician to settle on an empiric regimen. The ASI with the DST result was measured just before the AST result. The ASI with the AST result was measured 24 hours after the AST result was available. Green bars indicate the proportion of patients within a group whose ASI remained unchanged between time points. Blue bars indicate the proportion of patients within a group whose ASI decreased, and red bars indicate the proportion of patients whose ASI increased between time points.

Conclusion: DST is highly accurate at identifying susceptibility to antibiotics for many bug-drug combinations in pediatric blood culture isolates, but its ability to identify non-susceptibility is less robust. The observed spectrum of prescribed antibiotics was narrower after DST results, suggesting some clinicians may be using the result to de-escalate therapy. DST may be a useful low-cost tool for antimicrobial stewardship.

Disclosures: All Authors: No reported disclosures

98. Clinical and Pharmacoeconomic Impact of Rapid Diagnostic Pneumonia Panel in Critically Ill Patients Admitted with Nosocomial Pneumonia

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

Background: Rapid identification of causative organisms and tailored antibiotic therapy is essential to improving patient outcomes in critically ill patients with nosocomial pneumonia (NP). The BioFire[®] FilmArray[®] Pneumonia Panel (BFPP) can identify and semi-quantify the causative organisms via PCR. However, there is limited evidence of its implementation and utility within antimicrobial stewardship program (ASP) in managing NP.

Methods: This was an IRB-approved retrospective pre- and post-interventional study at an acute care hospital. Critically ill patients were included in the intervention group (IG) with a confirmed diagnosis of NP and had BFPP performed. Patients in IG were matched on a 2:1 ratio to a comparator group (CG) who did not receive BFPP. The primary endpoint was clinical cure (CC), defined as: 1) resolution of symptoms and/or leukocytosis; or 2) radiographic improvement; or 3) expression of CC noted by infectious disease physician. Secondary endpoints include time to escalation, de-escalation, or discontinuation of antibiotics, and inpatient mortality (IM). In addition, a pharmaco-economic analysis of the utilization of this panel was conducted.

Results: There were 52 patients evaluated, of which 26 were included in IG and 13 were matched to be included in CG. Demographics were similar between the two groups. No difference in CC was observed between IG and CG (38.5% vs 38.5%, $p = 1$). However, when evaluating ASP interventions, more patients in IG had de-escalation (53.8% vs 15.4%, $p = 0.01$) and discontinuation (50% vs 7.7%, $p = 0.003$) performed compared to CG. No difference was seen in escalation of therapy (34.6% vs 30.8%, NS) and IM (26.9% vs 46.2%, $p = 0.27$). Time to ASP intervention was quicker by 24 hours in IG vs CG (24 vs 48 hours, $p = 0.01$). No difference was seen in total cost of therapy between the two groups (\$289,500 vs \$243,705, $p = 0.6$). However, cost savings of \$31,000 was seen in total cost of ICU care in IG vs CG (\$144,000 vs \$175,000, $p = 0.032$).

Figure 1: ASP Intervention

Conclusion: There was no observed impact of BFPP on CC and IM in critically ill patients. However, utilization of BFPP led to faster time to ASP interventions and higher rates of de-escalation and discontinuation of antibiotics. When utilized as part of ASP, BFPP can serve to be a cost-effective option for critically ill patients.

Disclosures: All Authors: No reported disclosures

99. Comparison of Procalcitonin Testing to a Targeted Audit-and-Feedback Strategy on Prescribed Durations of Therapy for Community-Acquired Pneumonia

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

Background: The procalcitonin (PCT) assay is FDA-approved to help guide antimicrobial treatment of respiratory tract infections, however, conflicting data exist regarding its impact on shortening durations of therapy. The purpose of this study was to compare the impact of PCT to a targeted audit-and-feedback (TAF) strategy on prescribed antibiotic durations of therapy for community-acquired pneumonia (CAP).

Methods: A retrospective cohort study was conducted at two community teaching hospitals, one implementing PCT with routine audit-and-feedback and one implementing a TAF strategy recommending 5 days of therapy for uncomplicated CAP. The primary objective of this study was to compare the impact of PCT implementation to TAF implementation on durations of therapy prescribed for suspected CAP. Secondary objectives included comparing length of stay, 30-day readmission, mortality, and rates of *Clostridioides difficile*. Adult inpatients with an antibiotic ordered with an indication of pneumonia were eligible for inclusion. Those who were critically ill, immunocompromised, had concurrent infections, were made comfort care, discharged or expired within 48 hours were excluded.

Results: 311 patients were included (Pre-TAF n=80, Pre-PCT n=80, Post-TAF n=80, Post-PCT n=71). Average duration of therapy prescribed for CAP at baseline was similar between groups, Pre-TAF 7.0 days vs. Pre-PCT 7.8 days ($p=0.1$). After implementation of the respective interventions, there remained no difference in the average duration of therapy between groups, Post-TAF 5.5 days vs. Post-PCT 5.4 days ($p=0.8$). Both PCT and TAF strategies demonstrated significant improvement in prescribed durations for CAP between their respective Pre- and Post-intervention groups ($p<0.001$ and $p=0.002$, respectively). The PCT protocol was followed 41% of the time in the Post-PCT group. There were no differences in readmission, mortality, or *C. difficile* between groups.

Conclusion: PCT and TAF were equally effective antimicrobial stewardship strategies in reducing total days of antibiotic therapy prescribed for CAP with no differences observed in patient outcomes.

Disclosures: All Authors: No reported disclosures

100. Development and Implementation of a 2-Tier Testing Algorithm for *Clostridioides difficile*: An Evaluation of Outcomes on Patients with Indeterminate Results at 90 Days

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

Background: There is no definitive gold standard for accurate diagnosis of *Clostridioides difficile* (*C. difficile*) infection. There is ample evidence that relying on a molecular test such as Polymerase Chain Reaction (PCR) for diagnosis, can lead to over diagnosis and unnecessary treatment. Combined, multi-step algorithms have been proposed to improve specificity of testing. The challenge remains in interpreting discordant or indeterminate results. Additionally, the risk of hospitalization due to lack of treatment for indeterminate results remains unclear.