86. Use of a Novel Clinical Decision Support Tool for Pharmacist-Led Antimicrobial Stewardship in Patients with Normal Procalcitonin

Andrew B. Watkins, PharmD[1]; Trevor C. Van Schooneveld, MD, FACP[2]; Craig Reha, PharmD, BCPS[1]; Jayme Anderson, PharmD, BCPS[1]; Kelley McGinnis, PharmD, BCPS[1]; Scott Bergman, PharmD, FCCP, FIDSA, BCPS[1]; [1]Nebraska Medicine, Omaha, Nebraska; [2]University of Nebraska Medical Center, Omaha, Nebraska

Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Our Antimicrobial Stewardship Program (ASP) instituted review of patients on antibiotics with procalcitonin (PCT) < 0.25 mcg/L in 2012. In 2018, a clinical decision support (CDS) tool was implemented as part of a "daily checklist" for frontline pharmacists to assist in this patient review. We sought to validate the effectiveness of this tool for pharmacist-led PCT-based antibiotic stewardship.

Methods: A retrospective cohort design was used to assess antibiotic de-escalation after PCT alert in patients on antibiotics for lower respiratory tract infections (LRTI). Secondary outcomes included antibiotic use and length of stay (LOS) in patients with PCT interventions vs those without.

Results: From 1/2019 to 11/2019, 652 of 976 (66.8%) PCT alerts were addressed by pharmacists. Of these, 331 were in patients with a respiratory-related diagnosis at discharge and 165 alerts were in patients on antibiotics specifically for LRTI over 119 encounters. Pharmacists made or attempted interventions after 34 (20.6%) of these alerts, with narrowing spectrum or converting to oral therapy being the most common interventions. Antibiotics were completely stopped in 4 of these interventions (11.8%). Patients with pharmacist intervention had 125 fewer antibiotic days of therapy (DOT) in the hospital, and changes were made to an additional 56 DOT (narrower therapy, IV to PO, dose optimization) following the alert. Two cases (5.9%) subsequently had therapy escalated within 48 hours. Vancomycin was the most commonly discontinued antibiotic with an 85.3% use reduction in patients with interventions compared to 27.4% discontinuation in patients with no documented intervention (p=0.0156). Alerts eligible for de-escalation but with no pharmacist intervention represented 140 DOT. LOS was similar in patients from both groups (median 6.4 days vs. 7 days, p=0.81).

Conclusion: Interventions driven by a CDS tool for pharmacist-driven antimicrobial stewardship in patients with normal PCT resulted in fewer DOT and significantly higher rates of vancomycin discontinuation. Additional interventions could have potentially prevented 140 DOT. We feel refinement of this tool can lead to more meaningful CDS, reduce alert fatigue, and likely increase intervention rates.

Disclosures: **All Authors**: No reported disclosures

87. Utilization of Methicillin-Sensitive/Resistant Staphylococcus aureus Nares Screen to Decrease Vancomycin and Linezolid Use in Hospitalized Patients with Respiratory Infections

Noor F. Zaidan, PharMD[1]; Rachel S. Britt, PharmD[2]; David Reynoso, MD, PhD[2]; R. Scott Ferren, PharmD, BCIDP[2]; [1]UTMB Health, HOUSTON, Texas; [2]University of Texas Medical Branch, Galveston, Texas

Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Pharmacist-driven protocols for utilization of methicillin-resistant *Staphylococcus aureus* (MRSA) nares screenings have shown to decrease duration of empiric gram-positive therapy and rates of acute kidney injury (AKI) in patients with respiratory infections. This study evaluated the impact of a pharmacist-driven MRSA nares screening protocol on duration of vancomycin or linezolid therapy (DT) in respiratory infections.

Methods: Patients aged 18 years and older with a medication order of vancomycin or linezolid for respiratory indication(s) were included. The MRSA nares screening protocol went into effect in October 2019. The protocol allowed pharmacists to order an MRSA nares polymerase chain reaction (PCR) for included patients, while the Antimicrobial Stewardship Program (ASP) made therapeutic recommendations for de-escalation of empiric gram-positive coverage based on negative MRSA nares screenings, if clinically appropriate. Data for the pre-intervention group was collected retrospectively for the months of October 2018 to March 2019. The post-intervention group data was collected prospectively for the months of October 2019 to March 2020.

Results: Ninety-seven patients were evaluated within both the pre-intervention group (n = 50) and post-intervention group (n = 57). Outcomes for DT (38.2 hours vs. 30.9 hours, P = 0.601) and AKI (20% vs. 14%, P = 0.4105) were not different before and after protocol implementation. A subgroup analysis revealed a significant reduction in DT within the pre- and post-MRSA PCR groups (38.2 hours vs. 24.8 hours, P = 0.0065) when pharmacist recommendations for de-escalation were accepted.

Conclusion: A pharmacist-driven MRSA nares screening protocol did not affect the duration of gram-positive therapy for respiratory indications. However, there was a reduction in DT when pharmacist-driven recommendations were accepted.

Disclosures: **All Authors**: No reported disclosures

88. A Behavioral Economic Approach to C. difficile Testing Stewardship

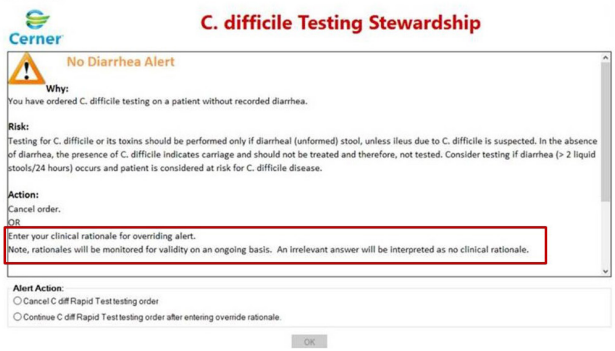
Marci Drees, MD, MS[1]; Michael Winiarz, BS, MS[2]; Zugui Zhang, PhD[2]; Robert Dressler, MD, MBA[2]; Stephen C. Eppes, MD[1]; [1]Christiana Care Health System, Newark, DE; [2]ChristianaCare, Newark, Delaware

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

Background: To decrease inappropriate testing for *C. difficile* patients, we first employed an alert, followed by a hard stop (based on lack of documented diarrhea or laxative use), that could be overridden only by calling the laboratory. We describe a behavioral economic approach to test overrides that decreased the burden on both clinicians and laboratory staff without encouraging unnecessary testing.

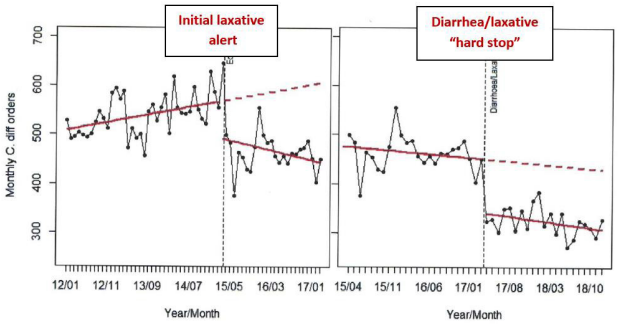
Methods: Our 2-hospital, > 1200-bed community-based academic healthcare system has performed PCR-only C. diff testing since January 2015. We implemented our initial laxative alert, which did not prohibit testing, in March 2015. In April 2017, we launched a "hard-stop" alert that cancelled orders without documented diarrhea or recent laxative use. The provider could override by calling the laboratory and documenting the laboratorian's name in the order; no further justification was required, but entries were intermittently monitored. In August 2019, we allowed clinicians to document their clinical justification instead of making this additional call, while emphasizing that rationales would be monitored for validity (Fig 1). We measured number of C. diff tests completed/month, overrides, and CDI standardized infection ratios (SIRs). We performed time-series analysis to account for each of these test ordering changes.

Figure 1: Image of C. diff alert



Results: At baseline, we observed a mean of 448 (SD, ±25) C. diff orders per month. The initial laxative alert led to a sustained decrease in monthly C. diff orders by 17% (p < 0.001; Fig 2). Another sustained decrease in monthly C. diff orders of an additional 29% (p< 0.001) occurred after the "hard stop" alert. Overall, C. diff orders decreased by 40% (3.5% per month). After introduction of the clinical justification documentation, to date we have not observed significant trends in C. diff override rates. The CDI SIR decreased from 0.9 (95% CI, 0.77- 1.04) in 2016 to 0.52 (0.42–0.64) in 2019.

Figure 2: Interrupted time series analysis



Conclusion: An iterative process to improve C. diff testing stewardship resulted in sustained improvements in C. diff ordering and hospital onset CDI cases. Behavioral economic approaches emphasizing the importance of clinical reasoning allowed us to reduce burden on clinicians and laboratory staff without increasing inappropriate testing.

Disclosures: **All Authors**: No reported disclosures

89. A Collaborative & Novel Antimicrobial Stewardship Initiative– Mandatory Approval of Peripherally Inserted Central Venous Catheters

Sonal Patel, PharmD[1]; Jose A. Vazquez, MD, FIDSA[2]; Aaron Chase, PharmD[3]; Eti Ebong, PharmD[3]; [1]Hospital of the University of Pennsylvania, Kendall Park, New Jersey; [2]Medical College of Georgia at Augusta University, Augusta, Georgia; [3]The University of Georgia, Augusta, Georgia

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

Background: Central line-associated bloodstream infections result in thousands of deaths and billions of dollars annually. At the Augusta University Medical Center (AUMC), it was identified that ~50% of peripherally inserted central venous catheters (PICCs) that were placed for intravenous (IV) antibiotic administration were unnecessary. A novel initiative was implemented, which required antimicrobial stewardship/infectious diseases approval for PICC insertions if the indication was for IV antibiotic administration only. The objective of this study was to determine the impact of this initiative.

Methods: A retrospective observational study was conducted at the AUMC. All adult patients with a PICC line insertion order for IV antibiotic administration,

between December 2017 and May 2019 were included. The vascular access team would forward requests for PICC insertions to the antimicrobial stewardship pharmacist. The pharmacist would approve/disapprove the PICC or recommend an infectious diseases consult. The variables collected were: infection types, infectious diseases consultation, reason for PICC denial and 30-day PICC-related complications.

Results: A total of 215 requests for PICC insertion (for IV antibiotics) were placed. Of these, 54% of the requests were denied, while 46% were approved. The reasons for PICC denial included: midline catheter preferred (47%), switched to oral antibiotics (33%), further work-up required (10%), or no antibiotics needed (7%). The types of infections treated were: bone and joint infections (28%), urinary tract infections (13%), intra-abdominal infections (12%), endocarditis/endovascular infections (11%), skin soft tissue infections (9%), pneumonia (7%), catheter-related bloodstream infections (6%), central nervous system infections (6%), bacteremia (4%) and others (4%).The infectious diseases consult team was involved in the care of 79% of the patients. Of those that received a PICC line, only 5% experienced any PICC-related complications. The overall cost savings for PICCs that were denied was ~ $294,000.

Conclusion: Mandatory antimicrobial stewardship/infectious diseases approval for PICC insertion can decrease healthcare cost and reduce the number of unnecessary PICC lines placed.

Disclosures: **All Authors**: No reported disclosures

90. Impact of Discrepant Rapid Diagnostic Test (RDT) Results on Antimicrobial Stewardship Program (ASP) Interventions in Patients with Bloodstream Infections (BSI) due to Gram-Negative Bacilli (GNB)

Evan D. Robinson, MD[1]; Heather L. Cox, PharmD, BCPS-AQID, BCIDP[2]; April E. Attai, BS, MA, MLS (ASCP)[3]; Lindsay Donohue, PharmD, BCIDP[4]; Megan Shah, PharmD, BCIDP[2]; Brandon Hill, PharmD, BCIDP, BCPS[4]; Zach Elliott, PharmD, BCIDP[4]; Amy J. Mathers, MD, D(ABMM)[1]; Amy J. Mathers, MD, D(ABMM)[1]; [1]University of Virginia, Charlottesville, Virginia; [2]University of Virginia Health System, Charlottesville, VA; [3]University of Virgnia Health System, Charlottesville, VA; [4]UVA Health, Charlottesville, Virginia

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

Background: Implementation of the Accelerate Pheno™ Gram-negative platform (AXDX) paired with ASP intervention projects to improve time to definitive institutional-preferred antimicrobial therapy (IPT). However, few data describe the impact of discrepant RDT results from standard of care (SOC) methods on antimicrobial prescribing. Here we evaluate the prescribing outcomes for discrepant results following the first year of AXDX + ASP implementation.

Methods: Consecutive, non-duplicate blood cultures for adult inpatients with GNB BSI following combined RDT + ASP intervention were included (July 2018 – July 2019). AXDX results were emailed to the ASP in real time then released into the EMR upon ASP review and communication with the treating team. SOC identification (ID; Vitek® MS/Vitek® 2) and antimicrobial susceptibility testing (AST; Trek Sensititre™) followed RDT as the reference standard. IPT was defined as the narrowest susceptible beta-lactam, and a discrepancy was characterized when there was categorical disagreement between RDT and SOC methods. When IPT by AXDX was found to be non-susceptible on SOC, this was characterized as "false susceptible". Conversely, "false resistance" was assessed when a narrower-spectrum agent was susceptible by SOC. Results were also deemed discrepant when the AXDX provided no/incorrect ID for on-panel organisms, no AST, or a polymicrobial specimen was missed.

Results: Sixty-nine of 250 patients (28%) had a discrepancy in organism ID or AST: false resistance (9%), false susceptible (5%), no AST (5%), no ID (4%), incorrect ID (2%), and missed polymicrobial (2%). A prescribing impact occurred in 55% of cases (Table 1), where unnecessarily broad therapy was continued most often. Erroneous escalation (7%) and de-escalation to inactive therapy (7%) occurred less frequently. In-hospital mortality occurred in 4 cases, none of which followed an inappropriate transition to inactive therapy.

Table 1: Discrepant RDT Results and Outcomes

Discrepancy Type	Continued Unnecessary Broad Therapy	Erroneous Escalation	De-escalation to Inactive Therapy	No Impact
Identification				
No ID* (10)	6 (60)	-	-	4 (40)
Incorrect ID (6)	3 (50)	-	-	3 (50)
Missed Polymicrobial* (6)	1 (17)	-	2 (33)	3 (50)
Susceptibility				
False Resistance (23)	7 (30)	5 (22)	-	11 (48)
False Susceptible (12)	3 (25)	-	3 (25)	6 (50)
No AST Result (12)	8 (67)	-	-	4 (33)
Total (69)	**28 (41)**	**5 (7)**	**5 (7)**	**31 (45)**

Data presented as n (% of row).
*On-panel organisms only

Conclusion: Though the AXDX platform provides rapid ID and AST results, close coordination with Clinical Microbiology and continued ASP follow up are needed to optimize therapy. Although uncommon, the potential for erroneous ASP recommendations to de-escalate to inactive therapy following AXDX results warrants further investigation.

Disclosures: Amy J. Mathers, MD, D(ABMM), Accelerate Diagnostics (Consultant)

91. Implementing Criteria to Reduce Blood Cultures Ordering: A Pre- and Post-Intervention Retrospective Study in a Critical Access Hospital

Rattanaporn Mahatanan, MD[1]; Gina Gomez, MD[2]; Bridget Olsen, MS[3]; Racheal Henderson, MS[4]; [1]Harvard T.H Chan school of public health, Skowhegan, ME; [2]Redington Fairview General Hospital, Skowhegan, Maine; [3]Tufts school of medicine, Portland, Maine; [4]Tufts School of Medicine, Portland, Maine

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

Background: Blood culture utilization has been performed widely. Typically, clinicians order blood cultures in patients whom bacteremia is suspected. Our previous study showed that 35% of blood cultures performed in May 2019 could have been prevented since they did not meet the certain criteria. This study sought to examine the outcomes after education intervention by implementing criteria of blood culture ordering whether it could reduce unnecessary blood cultures.

Methods: Electronic medical records of adult patients who had blood cultures done during pre-and post-study period were reviewed. Demographic data, clinical presentation, vital signs, location, quantities and sites of blood cultures were obtained. The measurement of qSOFA, SIRS and severe sepsis criteria were collected on the presentation. There were some clinical prediction rules for blood stream infection described in the previous studies. For this study, we use the criteria of at least 2 SIRS and/or at least one of the qSOFA criteria or severe sepsis to be a minimum indication for ordering blood cultures. The follow-up study was done after 6 weeks of educational intervention with implementation of criteria. Chi-square was used to compare the differences between two groups.

Results: There were a total of 165 patients included in our study (112 in pre- and 53 in post-intervention group). There were a total of 18 patients with positive blood cultures (12/112;10.71% in pre-intervention gr. vs 6/53;11.32% in post-intervention gr., p=0.91). Six out of 18 (33%) were deemed to be contaminated (3/12;25% vs 3/6;50%, p=0.29). Gram positive cocci were the most common organisms of the true positive blood cultures (10/12;83%). Of 165 patients, 78 (47%) had at least one of qSOFA (47/112;41% vs 31/53;58%, p=0.05), 18 (11%) had met severe sepsis criteria (9/112;8% vs 9/53;17%, p=0.09). There were 47 (28%) patients who had less than 2 criteria of SIRS and did not meet either criteria of qSOFA or severe sepsis (39/112; 35% vs 8/53; 15%, chi 6.87, p< 0.01). There was no true bacteremia in this group of patients.

Conclusion: Our study found that implementation of criteria for blood cultures successfully reduces the unnecessary blood cultures orders approximately 20% without missing true bacteremia in suspected patients.

Disclosures: **All Authors**: No reported disclosures

92. Utility of Sinus CT in the Evaluation of Patients with Febrile Neutropenia

Pooja Gurram, MBBS[1]; Natalia E. Castillo Almeida, MD[1]; Prakhar Vijayvargiya, MBBS[2]; Christopher Grimont, BS[2]; Zerelda Esquer Garrigos, MD[3]; Sarwat Khalil, MBBS[4]; Ruaa Al Ward, MD[2]; Maryam Mahmood, M.B., ChB[2]; M. Rizwan Sohail, MD[5]; [1]Mayo Clinic, Rochester, Rochester, MN; [2]Mayo Clinic, Rochester, MN; [3]Mayo Clinic College of Medicine, Rochester, Minnesota; [4]University of Minnesota, Minneapolis, Minnesota; [5]Infectious diseases, Rochester, Minnesota

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

Background: The etiology of febrile neutropenia in patients with hematological malignancy is identified in only 20–30% of cases. Sinus computed tomography (CT) is often used, regardless of symptoms, to rule out rhinocerebral source of infection. There are no clear guidelines on when to perform sinus CT in this population. In this study, we evaluated the role of sinus CT in febrile neutropenic patients.

Methods: We retrospectively reviewed medical records of all adults (age ≥18 years) with febrile neutropenia (T≥ 38.3°C, ANC < 0.5 x 10^9/L) and hematological malignancies who underwent sinus CT from January 2014 to May 2020. We present the preliminary analysis of the impact of sinus CT findings on the management of febrile neutropenia.

Results: 47 patients with a total of 56 episodes of febrile neutropenia met the inclusion criteria. The median age at presentation was 57 years (IQR: 42 - 68 years). The most common underlying malignancy was acute myeloid leukemia (51%), followed by myelodysplastic syndrome (19%). At presentation, 47% had refractory disease, 21% were newly diagnosed, 15% had relapsed, 15% were in complete remission, and 2% were in partial remission. Of the total 56 episodes, 29 (52%) had symptoms of rhinorrhea (20%), facial pain (14%), and sinus congestion (14%). The remaining 27 of 56 episodes (48%) had no sinus symptoms. Sinus CT was abnormal in 48 of 56 episodes (86%); the most common finding was mucosal thickening (47/48; 98%), followed by air-fluid levels (7/48; 14.5%), partial opacification (6/48; 12.5%), complete opacification (2/48; 4%), and bony invasion (2/48; 4%). The source of febrile neutropenia was attributed to the CT sinus findings in 9 cases (9/48; 29%), leading to a change in therapeutic management. All 9 patients were symptomatic, with evidence of necrosis in 22% (2/9) and purulence in 22% (2/9) on nasal endoscopy.