

Conclusion. MRSA nasal PCR screening showed high NPV across blood and bone/soft tissue cultures. These results indicate the clinical utility of MRSA nasal PCR assays beyond respiratory infections and can further support antimicrobial stewardship activities.

Disclosures. All Authors: No reported disclosures

80. The Utility of Cultures for Isolated Fevers in Patients with Influenza or COVID-19 Receiving Extracorporeal Membrane Oxygenation

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Session: P-05. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background. Critically ill patients receiving extracorporeal membrane oxygenation (ECMO) are at elevated risk for nosocomial infection. Physiological responses to infection on ECMO are difficult to interpret as many clinical characteristics are controlled by the circuit including temperature. This study aimed to determine the culture positivity rates in patients receiving ECMO with influenza or COVID-19.

Methods. A single center retrospective study was performed on all patients who received ECMO support at a single institution between December 2014 and December 2020 with influenza or COVID-19. All cultures ordered were reviewed for indication. Patients with fever without specific clinical syndrome or signs of decompensation, such as increasing vasopressor requirement were included. Infections and contaminants were defined by treatment team.

Results. A total of 45 patients received ECMO with an admission diagnosis of influenza or COVID-19 during the study period. This cohort had a median age of 44 (interquartile range (IQR): 36-53) and was predominantly male (84%). The median time on ECMO was 360 hours (IQR: 183-666). 43/137 (31%) of infectious workups were ordered for isolated fever. The most common workup ordered for fever was combination blood cultures (BC) and urine cultures (UC) (13, 30%), followed by combination BC, UC, and respiratory cultures (RC) (11, 26%). Four (9%) infections were identified (3 blood stream, 1 respiratory) and five (12%) cultures grew contaminants (1 blood, 1 respiratory, 2 urine). Culture positivity rate was greatest for BC (3/35, 9%) followed by RC (1/19, 5%), and lowest for UC (0/26, 0%).

Conclusion. Although cultures are commonly ordered for isolated fever in patients with influenza and COVID-19 receiving ECMO, culture positivity rate is low. In particular, no urinary tract infections were identified and the screening for urinary tract infection in patients receiving ECMO with isolated fever is not beneficial. Further work identifying signs and symptoms associated with infection is needed to improve diagnostic stewardship in this population that is high risk for nosocomial infections.

Disclosures. All Authors: No reported disclosures

81. Reducing Unnecessary Blood Cultures Through Diagnostic Stewardship

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Session: P-05. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background. At our institution, we learned the frequency of blood cultures was sometimes being changed from "Once" to "Daily" without a defined number of days. We hypothesized this led to unnecessary blood cultures being performed.

Methods. Over a 3 month period from 12/6/2019-3/6/2020, we retrospectively evaluated the charts of patients who had a blood culture frequency changed to "Daily". We evaluated if there was an initial positive blood culture within 48 hours of the "Daily" order being placed and the number of positive, negative, or "contaminant" sets of cultures drawn with the order. Contaminant blood cultures were defined as a contaminant species, present only once in the repeat cultures, and not present in initial positive cultures.

Results. 95 unique orders were placed with 406 sets of cultures drawn from 89 adults. ~20% of the time (17 orders) the order was placed without an initial positive blood culture. This led to 62 sets of cultures being drawn, only 1 of which came back positive. 78/95 orders had an initial positive blood culture. The most common initial organisms were *Staphylococcus aureus* (SA) (38), *Candida sp* (10), *Enterobacteriales sp* (10), and coagulase negative staphylococci (7). 43/78 (55%) orders with an initial positive set had positive repeat cultures. SA (26) and *Candida sp* (8) were most common to have positive repeats. Central line associated bloodstream infections (CLABSI) were found in 5 of the orders and contaminant species were found in 4 of the orders. 54% of the patients who had a "Daily" order placed did not have positive repeat cultures. The majority of the cultures were drawn from Surgical (40 orders) and Medical (35 orders) services. Assuming that SA and *Candida sp* require 48 hours of negative blood cultures to document clearance and other species require 24 hours, it was estimated that 51% of the cultures drawn using the "Daily" frequency were unnecessary. Cost savings over a year of removing the "Daily" frequency would be ~\$14,000.

Results.

| Rates of "Daily" blood culture data at OHSU (12/6/2019-3/6/2020) | |
|--|----------|
| Number of "Daily" blood culture orders | 95 |
| Number of cultures drawn using "Daily" order | 406 |
| Orders placed with an initial positive culture | 78 |
| > <i>Staphylococcus aureus</i> | 46.7% |
| > <i>Candida sp</i> | 11.7% |
| > <i>Enterobacteriales</i> | 10.3% |
| > Polymicrobial | 8% |
| > Other | 23.3% |
| Percent of orders with repeat positive cultures | 56% |
| Percent of orders with repeat positive cultures the same as the initial positive set | 91% |
| Percent of time repeat positive cultures were due to SA, <i>Candida sp</i> , or CLABSI | 91% |
| Percent contaminant cultures | 9% |
| Estimated yearly number of unnecessary cultures | 900 |
| Estimated yearly cost savings of removing "Daily" frequency | \$14,000 |

Data from "Daily" blood culture orders drawn at Oregon Health & Science University from 12/6/2019-3/6/2020

Conclusion. Unnecessary blood cultures are drawn when the frequency of blood cultures is changed to "Daily". Repeat blood cultures had the greatest utility in bloodstream infections due to SA or *Candida sp*, and with CLABSI where the line is still in place. These results led to a stewardship intervention to change blood culture ordering at our institution.

Disclosures. All Authors: No reported disclosures

82. Assessment of Clinical Outcomes and Antibiotic Prescribing Patterns Following Implementation of the GenMark ePlex[®] Blood Culture Identification Panel for Gram-positive Bloodstream Infections

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Session: P-05. Antimicrobial Stewardship: Diagnostics/Diagnostic Stewardship

Background. Rapid diagnostic testing (RDT) of bloodstream pathogens provides key information sooner than conventional identification and susceptibility testing. The GenMark ePlex[®] blood culture identification gram-positive (BCID-GP) panel is a molecular-based multiplex platform, with 20 Gram-positive target pathogens and 4 bacterial resistance genes that can be detected within 1.5 hours of blood culture positivity. Published studies have evaluated the accuracy of the ePlex[®] BCID-GP panel compared to traditional identification methods; however, studies evaluating the impact of this panel on clinical outcomes and prescribing patterns are lacking.

Methods. This multi-center, quasi-experimental study evaluated clinical outcomes and prescribing patterns before (December 2018 – June 2019) and after (August 2019 – January 2020) implementation of the ePlex[®] BCID-GP panel in June 2019. Hospitalized, adult patients with growth of *Enterococcus faecalis*, *Enterococcus faecium*, or *Staphylococcus aureus* from blood cultures were included. The primary endpoint was time to targeted antibiotic therapy, defined as time from positive Gram-stain to antibiotic adjustment for the infecting pathogen.

Results. A total of 200 patients, 100 in each group, were included. Time to targeted therapy was 47.9 hours in the pre-group versus 24.8 hours in the post-group (p<0.0001). Time from Gram-stain to organism identification was 23.03 hours (pre) versus 2.56 hours (post), p<0.0001. There was no statistically significant difference in time from Gram-stain to susceptibility results, hospital length of stay (LOS), or all-cause 30-day mortality.

Conclusion. Implementation of the GenMark ePlex[®] BCID-GP panel reduced time to targeted antibiotic therapy by nearly 24 hours. Clinical outcomes including hospital LOS and all-cause 30-day mortality did not show a statistical difference, although analysis of a larger sample size is necessary to appropriately assess these outcomes. This study represents the effect of RDT implementation alone, in the absence of stewardship intervention, on antibiotic prescribing patterns. These findings will inform the design of a dedicated RDT antimicrobial stewardship intervention at our institution, while also being generalizable to other institutions with RDT capabilities.

Disclosures. All Authors: No reported disclosures

83. Impact of a Urine Culture Best Practice Advisory on Collection of Urine Cultures and Subsequent Antibiotic Therapy

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