as compared with the pre-BCID group [40.2 hours (pre) vs 24.6 hours (post) vs 25.9 hours (ASP); $P = 0.46$].

Conclusion. Implementation of the BCID in a cancer hospital was associated with reduced time to appropriate antimicrobial therapy; however, additional reductions were not seen when coupled with AS intervention. Further large-scale evaluation is warranted due to unbalanced study groups and small study size to understand the role of rapid diagnostics and AS interventions for BSIs in immunocompromised populations.

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2127. Impact of Multiplex Polymerase Chain Reaction Technology with Antimicrobial Stewardship Interventions in the Management of Patients with Positive Blood Cultures

Jenny Gibson, PharmD and Linda Johnson, PharmD; CHI Memorial, Chattanooga, Tennessee

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Background. Traditional blood culture identification methods often lead to delayed time to optimal antimicrobial agents. This delay may increase morbidity and mortality. Rapid diagnostic tests decrease time to organism identification. The BioFire FilmArray®, a multiplex Polymerase Chain Reaction (mPCR) technology, was implemented at CHI Memorial in October 2016. We aimed to evaluate the tool's blood culture identification panel in conjunction with antimicrobial stewardship (AS) on improving the management of patients with blood stream infections.

Methods. During the post-mPCR period, the AS team received real-time notifications of blood culture results via a pager system, reviewed available patient data, and made recommendations to the primary service as necessary. A retrospective chart review was conducted in adult inpatients with positive blood cultures from November 1, 2015 to December 31, 2015 (pre-mPCR period) and November 1, 2016 to January 31, 2017 (post-mPCR period). The primary endpoint was the time to effective and de-escalated antimicrobial therapy in the pre- and post-mPCR periods. Secondary endpoints included differences in pre- and post-mPCR periods in the time to pathogen identification, adverse drug reactions, *Clostridium difficile* infections, length of stay, in-hospital mortality, 30-day readmission and antimicrobial costs.

Results. A total of 149 patients were included; 77 in the pre-mPCR and 72 in the post-mPCR period. The median age was 70 years, 30% of patients were admitted to ICU, most common source of infection was urinary tract and most common organisms were *Escherichia coli* and *Staphylococcus aureus*. There were more patients with sepsis in the post-mPCR group. Time to pathogen identification was significantly reduced from 68.7 to 34.1 hours ($P < 0.01$). Median times to effective and de-escalated therapy were also significantly reduced from 5.8 to 3.8 hours ($P = 0.04$) and 73.6 to 36.3 hours ($P < 0.01$), respectively. No significant differences in secondary outcomes were noted between groups.

Conclusion. mPCR blood culture identification tool combined with antimicrobial stewardship leads to faster time to effective and de-escalated antimicrobial therapy.

Disclosures. **All authors:** No reported disclosures.

2128. Direct Disk Diffusion Susceptibility Testing for *Staphylococcus aureus* from Blood Cultures: Diagnostic Accuracy and Impact on Antimicrobial Stewardship

Michael Payne, MD, FRCPC[1,2]; Christopher F. Lowe, MD, FRCPC[1,2,3]; Victor Leung, MD, FRCPC[2,3,4]; Marc G. Romney, MD, FRCPC[1,2] and Sylvie Champagne, MD, FRCPC[1,2]; [1]Pathology and Laboratory Medicine, Providence Health Care, Vancouver, BC, Canada, [2]Pathology and Laboratory Medicine, University of British Columbia, Vancouver, BC, Canada, [3]Infection Prevention and Control, Providence Health Care, Vancouver, BC, Canada, [4]Infectious Diseases, Providence Health Care, Vancouver, BC, Canada

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Background. In order to detect multidrug resistant strains of bacteria, our laboratory routinely performs direct susceptibility (DS), in addition to standardized susceptibilities (SS), testing from positive blood cultures. We conducted a prospective study to determine the accuracy, reporting time (RT), and antimicrobial stewardship impact of DS testing for *Staphylococcus aureus* positive blood cultures.

Methods. From March–December 2016, first time positive blood cultures for *S. aureus* were included. Broth from positive blood culture bottles was inoculated to standard media, as well as to Mueller–Hinton agar with a cefoxitin disk. CLSI breakpoints for *S. aureus* were used to guide interpretation. If DS results were to be reported to clinicians, a penicillin-binding protein 2a (PBP2a) Alere™ test was performed. When the PBP2a result was concordant with the CLSI interpretation, the isolate was reported as either Methicillin-susceptible *S. aureus* (MSSA) or Methicillin-resistant *S. aureus* (MRSA). Antibiotic therapy changes made based on reporting of DS results were recorded. In order to determine RT, the following time points were recorded: blood culture positivity, reading of DS, and reporting of SS

Results. Of the 100 patients with *S. aureus* bacteremia, 97 showed pure growth of MSSA or MRSA; 3 patients had mixed infections, all of which were only detected using the DS plates. Average RT was 23 hours and 36h for DS and SS, respectively. There were 32 MRSA isolates, with a cefoxitin zone size range of 6–15 mm (median = 8 mm). PBP2a was performed on 11 isolates; all were positive. Of the 69 MSSA isolates, the cefoxitin range was 22 to 32 mm (median = 27 mm). PBP2a was performed on 26 isolates; all were negative. Direct susceptibility results were reported on 31 patients. Of the 21 patients with MSSA bacteremia, 15 changed therapy from vancomycin/daptomycin to cloxacillin/cefazolin. These results were reported an average of 23 hours prior to SS.

Conclusion. DS testing is an accurate and rapid method to determine whether isolates are MSSA or MRSA. We had no major or minor errors. PBP2a testing was concordant for all isolates tested. DS also has the added benefit of detecting mixed *S. aureus* infections. Clinicians acted on the reported results of DS testing, with 15/21 (71%) of our patients narrowed to a cloxacillin/cefazolin 23 hours before the availability of SS.

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2129. MALDI-TOF MS in Adult Inpatients with Bloodstream Infections: Pre- and Post-intervention Study

Salman Khan, MD[1]; Dallas Dunn, MD[2]; Gargi Patel, PharmD[3]; Patricia Saunders-Hao, PharmD, BCPS[3]; Meenakshi Rana, MD[2]; Gopi Patel, MD, MS[3] and Camille Hamula, PhD[3]; [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Infectious Disease, Icahn School of Medicine at Mount Sinai, New York, New York, [3]Mount Sinai Hospital, New York, New York

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Background. Delays in diagnosis of bloodstream infections (BSI) can lead to adverse outcomes. Matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) can rapidly identify bacteria directly from blood culture bottles. We describe our experience in patients with BSI before and after implementation of MALDI-TOF MS.

Methods. Patients: adult inpatients with BSI. Design: pre-intervention group (August-November 2015); bacterial identification and susceptibility testing performed by Vitek®2. Post-intervention group (August–November 2016); bacterial identification on liquid blood culture broth by MALDI-TOF MS; susceptibility testing performed by Vitek®2. Both groups received baseline antimicrobial stewardship program (ASP) intervention. Outcomes: times to bacterial identification, susceptibilities, effective and optimal antibiotics, length of stay (LOS), 30-day readmission and 30-day all-cause mortality. Statistical analysis: univariable analysis performed; continuous variables analyzed using a two-tailed t-test; discrete variables analyzed using a chi-square test or Fisher exact test.

Results. 267 cases of BSI occurring in 256 patients were analyzed (137 pre-intervention, 130 post-intervention). Time to bacterial identification was significantly shorter in the MALDI-TOF MS group (40 vs. 63 hours, $P < 0.001$). Times to susceptibilities, effective, and optimal antibiotic therapy did not differ between the two groups. There was no significant difference in LOS or 30-day readmission rates. 30-day mortality was significantly higher in the pre-intervention group (25 vs. 13 percent, $P = 0.026$). The pre-intervention group had significantly more BSI due to multidrug-resistant (MDR) Gram-negative bacteria and vancomycin-resistant enterococci (VRE).

Conclusion. MALDI-TOF MS significantly shortened time to bacterial identification in patients with BSI. Differences in times to effective and optimal antibiotic therapy were not observed. This may be due to high rates of early appropriate empiric antibiotic use at our institution and limited real-time MALDI-TOF MS and ASP interventions. Higher mortality in the pre-intervention group may be due to higher prevalence of multidrug-resistant bacteria.

Disclosures. **All authors:** No reported disclosures.

2130. Outcomes of Rapid Identification of Multi-Drug Resistant Gram-Negative Organisms Causing Bacteremia in Combination with Antimicrobial Stewardship in a Community Health System.

Sarah Ross, Doctor of Pharmacy; Scripps Mercy Hospital, San Diego, California and Scripps Antimicrobial Stewardship Program

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Background. Rapid initiation of effective antibiotic therapy has been strongly associated with a decrease in mortality in gram-negative (GN) bacteremia. In an effort to improve time to effective antibiotic therapy in the treatment of multi-drug resistant (MDR) GN bacteremia, we implemented Verigene GN Blood Culture (BC-GN) assay, which can rapidly identify GN bacteria at the genus/species level and specific resistance markers from blood cultures within 2 hours of positivity.

Methods. The objective of this multi-center, pre-post quasi-experimental study was to assess outcomes of Verigene BC-GN in combination with antibiotic stewardship in treatment of MDR GN bacteremia. A retrospective chart review was performed one year prior and four months post-implementation of Verigene BC-GN. Patients > 18 years old with MDR GN bacteremia identified by Verigene BC-GN within 5 days of admission were included. The primary endpoint was time to effective antibiotic therapy for MDR GN bacteremia. Secondary outcomes included overall and ICU length of stay (LOS) and 30-day mortality. Education regarding interpretation of resistance markers and selection of optimal antibiotic therapy was provided to pharmacists and physicians prior to implementation.

Results. A total of 110 patients were included, 86 in the pre-intervention group and 24 in the post-intervention group. Mean time to effective antibiotic therapy decreased significantly from 47.6 ± 23.1 vs. 18.8 ± 9.1 hours, respectively ($P < 0.0001$). Median overall LOS was 6.0 vs 5.5 days ($P = 0.88$), ICU LOS was 3.0 vs 4.0 days ($P = 0.57$), and 30-day mortality was 4.7% vs 4.2% ($P = 1$) pre and post-implementation, respectively.