October 2018 and will conclude in June 2019. BCID2 Panel performance is compared with reference methods of microbial culture as well as PCR/sequencing for AMR genes. In addition, BCID2 Panel MRSA results are compared with the FDA-cleared Xpert MRSA/SA BC system (Cepheid, Inc.). Relevant bacterial isolates recovered from PBCs are also evaluated by various phenotypic antimicrobial susceptibility testing (AST) methods. The prospective evaluation was supplemented with a second study that involves testing of >500 pre-selected and archived PBCs containing rare organisms. The third study includes over 500 seeded blood cultures containing very rare organisms with an evaluation of co-spiked samples.

Results. With over 1,200 samples tested to date (out of an anticipated 1,800 total), the BCID2 Panel has demonstrated an overall sensitivity of >98% and specificity of <99% for identification of microorganisms compared with culture. Concordance between the BCID2 Panel and the Xpert MRSA/SA BC test is >99% for identification of MRSA. Evaluation of BCID2 Panel AMR gene detection relative to AST and PCR is ongoing.

Conclusion. The BCID2 Panel is a gonccurate, specific, and robust test for rapid detection of microorganisms and MRSA in PBCs. With the use of this comprehensive test, improved antimicrobial stewardship is anticipated.

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652. Impact of FilmArray Meningitis Encephalitis Panel on HSV Testing and Acyclovir Use in Children Beyond the Neonatal Period
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Background. Testing and empiric use of acyclovir for herpes simplex virus (HSV) in children beyond the neonatal period undergoing lumbar puncture for suspected central nervous system (CNS) infection has doubled in the past decade while the incidence of HSV CNS infection is unchanged. A new syndromic multiplex PCR panel (FilmArray Meningitis Encephalitis Panel [MEP]) rapidly detects 14 pathogens in cerebrospinal fluid (CSF), including HSV. The impact of MEP implementation on HSV testing and acyclovir use is unknown.

Methods. We retrospectively compared CSF testing and acyclovir use in the pre-MEP era January 1, 2007–January 22, 2017 to post-implementation era of MEP January 23, 2017–December 31, 2017 amongst children >60 days with a CSF specimen sent to the Children’s Hospital Colorado microbiology laboratory. HSV singleplex PCR testing was available in both the pre-MEP and MEP eras.

Results. The proportion of CSF specimens from children with suspected CNS infection undergoing HSV testing (MEP or HSV PCR) doubled from 25% in the pre-MEP era to 54% in the MEP era (P < 0.01; Figure 1). In the MEP era, HSV testing was conducted by MEP in 96% of cases and HSV PCR in 8% of cases. In both eras, a majority of CSF specimens undergoing HSV testing had no pleocytosis (63% vs. 59%, P = 0.27). Children with negative HSV testing by MEP were less likely to be started on acyclovir than those with negative HSV testing by singleplex PCR (18% vs. 50%, P < 0.01) and, amongst those started, acyclovir was discontinued sooner, after a median 3 vs 5 doses (P = 0.05). Overall, however, a similar proportion of children with suspected CNS infection received acyclovir in the MEP and pre-MEP eras (13% vs. 12%), despite a low rate of HSV positivity (0.5% vs. 0%).

Conclusion. Implementation of MEP for syndromic CSF testing in children >60 days with suspected CNS infection doubled HSV testing without affecting the rate of empiric acyclovir initiation. Patients with negative HSV testing on MEP were less likely to be started on acyclovir, and if started, received fewer doses than those who tested negative on HSV singleplex PCR, likely due to more rapid turnaround time. However, increased MEP testing offset this, suggesting increased use of newer rapid syndromic tests will not cure creeping empiricism. Diagnostic stewardship targeting MEP use toward children with pleocytosis to decrease unnecessary test utilization are warranted.

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653. Diagnosis of Burn Sepsis Using the FcMBL ELISA: A Pilot Study in Critically Ill Burn Patients
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Background. Infection is the leading cause of death among burn survivors, with sepsis associated with more extensive burns. Conventional diagnostic criteria are insensitive in this population. We examined a novel diagnostic ELISA based on Mannose-Binding Lectin (MBL) linked to an immunoglobulin Fc domain, which measures the concentration of Pathogen-Associated Molecular Patterns (PAMPs) across a broad range of bacterial and fungal organisms, for diagnosis and antimicrobial management of sepsis in burn patients.

Methods. We prospectively enrolled burn patients with ≥15% Total Body Surface Area (TBSA) burns into groups of noninfected, sepsis, or incipient infection, and healthy volunteers. Sepsis was defined by clinical actions responsive to sepsis. The FcMBL ELISA was performed daily using fresh whole blood. Burn subjects were sampled daily until completing antimicrobials, for 14 days if noninfected, and once for healthy controls. Differences in median PAMP concentrations between groups were assessed with the Kruskal–Wallis test, including multiple comparisons between categories.

Results. 14 burn patients (3 noninfected, of whom 1 died prior to sampling, 4 Sepsis, 7 Incipient) were enrolled. The median (25–75% CI) PAMP concentration was 0.53 (0.12–1.34) ng/mL in healthy controls, 3.725 (2.53–5.34) ng/mL in noninfected, 2.22 (1.42–4.62) ng/mL in incipient, and 1.59 (0.83–2.29) ng/mL in sepsis groups. PAMP concentrations in sepsis differed (P = 0.0057) from noninfected, but infection did not differ from noninfected (P = 0.2025). The dynamic range was lower in healthy controls (2.69 ng/mL) than incipient (4.57 ng/mL), sepsis (4.76 ng/mL), or noninfected (5.90 ng/mL). PAMP deletions correlated with clinical deterioration from infection, and were not associated with OR visits for debridement and grafting. 7 of 11 infected patients had declining PAMP levels at completion of antimicrobial therapy; 2 subjects had PAMP elevations associated with Aspergillus molds in their burn wounds.

Conclusion. The FcMBL ELISA assay may be useful for diagnosis of infection in burn patients, and may facilitate earlier discontinuation of antimicrobials. This assay may also have a novel utility for early diagnosis of Invasive Fungal Infection.

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654. Evaluation of the FebrilDs Host Response Point-of-Care Test to Differentiate Viral From Bacterial Infection in Adults Hospitalized with Acute Respiratory Illness During Influenza Season
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Background. Antibiotics are overused in patients hospitalized with acute respiratory illness (ARI). Diagnostic uncertainty regarding microbial etiology contributes to this practice and so a host response test that can distinguish between viral and bacterial infection has the potential to reduce unnecessary antibiotic use. The FebrilDs is a low cost, rapid, host response POCT that uses fingerpick blood samples to distinguish between viral and bacterial infection but has not been evaluated in hospitalized adults with ARI.

Methods. We took fingerpick blood samples from adult patients with ARI, hospitalized during influenza season, and tested them on the FebrilDs Respiratory Panel (FARP). The FebrilDs was evaluated for ease of use, failure rate and accuracy of the results (Viral, Bacterial, Negative).

Results. 149 patients were approached and 10 patients declined fingerpick testing. A valid result was obtained from 124/139 (89%) overall. Common user comments included test failure due to difficulty of getting blood to fill the capillary tube and difficulty in interpreting the results lines due to the variability of color change. 111/124 (89%) were tested for viruses by FARP: 69/111 (62%) had viruses detected. Of 69 patients with viruses detected, 41 (59%) had influenza, 12 (17%) rhino/enterovirus and 16 (23%) other viruses. 44/69 (64%) had a viral FebrilDs result. For influenza-positive patients 34/41 (83%) and 1/36 (2%) for rhino/enterovirus-positive patients had a viral FebrilDs result and 9/16 (56%) of patients with other viruses detected had a viral FebrilDs result. These are interim results. Full results for 200 patients will be available at presentation.

Conclusion. The use of the FebrilDs POC was associated with a failure rate of 10% and problems with the interpretation of result lines. FebrilDs was not sufficiently accurate in differentiating viral and bacterial infection when using detection of virus by PCR as the definition of viral infection; however, FebrilDs had a high PPV for all viral
655. Detection of Antibiotic Resistance Genes in Clinical Samples using T2 Magnetic Resonance

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Background. Antibiotic-resistant bacteria are spread through selective pressure from the use of broad-spectrum empirical therapies, mobile genetic elements that pass resistance genes between species, and the inability to rapidly and appropriately respond to their presence. Resistance gene identification is often performed with post culture molecular diagnostic tests. The T2Resistance Panel, which detects meticillin resistance genes mecA/C, vancomycin resistance genes vanK/R, carbapenemases blaOXA, blaKPC, and β-lactamases blaPER, and blaNDM, and extended-spectrum β-lactamases blaESBL directly from patient blood samples, is based on T2 magnetic resonance (T2MR), an FDA-cleared technology with demonstrated high sensitivity and specificity for culture-independent bacterial and fungal species identification. Here we report the clinical performance of T2MR detection of resistance genes directly from patient blood samples.

Methods. Patients with a clinical diagnosis of sepsis and an order for blood culture (BC) were enrolled in the study at two sites. BCs were managed using standard procedures and MALDI-TOF for species identification. Resistance testing with the T2MR assay was performed on a direct patient draw and compared with diagnostic test results from concurrent BC specimen and BC specimen taken at other points in time. The potential impact on therapy was evaluated through patient chart review.

Results. T2MR detected the same resistance genes as detected by post culture procedures and MALDI-TOF for species identification. Resistance gene identification is often performed with post culture molecular testing. Resistance gene identification is often performed with post culture molecular testing.

Conclusion. The T2Resistance Panel detected antibiotic resistance genes in clinical samples and displayed agreement with post culture genetic testing. T2MR results were achieved faster than culture-dependent diagnostic testing results and may allow for an earlier change from empiric to directed therapy. The use of culture-independent diagnostics like T2MR could enable a quicker response to antibiotic-resistant organisms for individual patients and developing outbreaks.

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656. Prioritizing Gram-Negative Bacteremia (GNB) Cases for Rapid Detection by β-Lactam Resistance (BLR) and Patient Outcomes

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Background. GNB is associated with significant morbidity and mortality. The availability of rapid diagnostic tests (RDTs) provides an opportunity to improve outcomes. Our goal was to review GNB and its empiric treatment at our center in order to devise rational approaches to diagnostic stewardship and use of RDTs.

Methods. All patients with GNB from 2010 to 2018 were evaluated. BLR was defined by 2019 CLSI breakpoints; phenotypes are shown in Table 1.

Conclusions. IET is common against GNB and associated with poor pt outcomes. IET may allow for an earlier change from empiric to directed therapy. The use of culture-independent diagnostics like T2MR could enable a quicker response to antibiotic-resistant organisms for individual patients and developing outbreaks.

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