antimicrobial therapy (OAT) in pediatric patients with positive blood cultures growing gram-positive bacteria (GBP).

**Method.** METHOD A 2-year Quality Improvement study of admitted pediatric patients was carried out at UPMC Children’s Hospital of Pittsburgh (CHP) between June 25, 2019 and June 26, 2021. Pre-intervention data (6/25/19 - 6/25/20) was collected from the CHP EMR. During the post-intervention time period (6/26/20 - 6/26/21), BCID-GP panel was run daily from 6 AM to 10 PM on blood cultures with Gram stains revealing GBP. Results were provided to the ASP who generated recommendations and communicated them to the patient's primary team within 24 hours of testing. Statistical analyses were performed using Wilcoxon rank sum test and Chi-squared tests.

**Results.** RESULTS 317 and 265 blood cultures with GBP were evaluated in the pre- and post-intervention groups, with median ages of 4.26 and 3.2 years in the 2 groups, respectively. Overall panel accuracy was 97% with gene accuracy of 100%. Percent compliance with ASP recommendations within 12 hours was 89%. The median time to OAT was 48 (range of 0-175) and 33.1 hours (range of 0-165) in the pre- and post-intervention groups, respectively (p<0.001). The median time to OAT for patients in the BCID-GP was 37 to 20 hours (p=0.048) for those with MRSA. Antibacterial therapy was avoided in 42.2% of patients in the post-intervention group when results were interpreted as contaminants, compared with 23.8% in the pre-intervention group with this assessment. The stay and 30-day mortality was similar between groups, 6.1 days vs 6.9 days (p=0.23) and 3.5% vs 3.4%, (p=1.00) respectively.

**Conclusion.** CONCLUSION Use of BCID-GP panel significantly decreased the time to OAT in children with positive blood cultures growing gram-positive bacteria. This study population was also true for positive blood cultures due to MSSA and MRSA. However, significant differences in the length of stay or 30-day mortality were not identified between groups. We did find the overall accuracy, defined as the percentage of BCID panel targets meeting conventional laboratory culture and gene accuracy, defined as the percent of BCID panels with results detected confirmed by conventional laboratory susceptibility methods, of the panel mirrored with previously published data. We also found ASP recommendations based on the BCID-GP were followed 89% of the time within 12 hours of them being made.

#25

The highly conserved stem-loop II RNA element (s2m) is critical for the lifecycle of astrovirus VA1 but is dispensable for SARS-CoV-2.

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**Background.** RNA viruses often contain important elements for the viral lifecycle in the untranslated regions (UTR) of the genome. The stem-loop II (s2m) element is a RNA structure that is present in the 3' UTR that is conserved across many viruses which is translated into a protein known as nucleocapsid that is present in members of the Astroviridae, Caliciviridae, Picornaviridae, Reoviridae, and Coronaviridae viral families, including SARS coronavirus 1 and 2 (SARS-CoV-1 and 2).

Despite the first description of this element twenty-five years ago, the functional significance of the s2m sequence to the viral lifecycle remains poorly understood. The conservation of the s2m in many viral genomes suggests some fitness benefit to viruses that maintain it.

**Method.** To test the significance of the s2m element, we developed reverse genetic systems for astrovirus VA1 and SARS-CoV-2. For both viruses, we introduced deletions and mutations predicted to significantly disrupt the secondary structure of the s2m. Recombinant viruses were passaged and the infectious viral titers were measured. To evaluate the in vivo significance of the s2m, we used a hamster model of SARS-CoV-2 infection. Recombinant s2m-deleted and wild type recombinant viruses were inoculated via intranasal route and RNA and infectious viral titers measured from the lungs and brain at the time point to OAT for patients with MSSA decreased from 65 to 30.5 hours (p=0.004) and 37 to 20 hours (p=0.048) for those with MRSA. Antibacterial therapy was avoided in 42.2% of patients in the post-intervention group when results were interpreted as contaminants, compared with 23.8% in the pre-intervention group with this assessment. The stay and 30-day mortality was similar between groups, 6.1 days vs 6.9 days (p=0.23) and 3.5% vs 3.4%, (p=1.00) respectively.

**Conclusion.** CONCLUSION Use of BCID-GP panel significantly decreased the time to OAT in children with positive blood cultures growing gram-positive bacteria. This study population was also true for positive blood cultures due to MSSA and MRSA. However, significant differences in the length of stay or 30-day mortality were not identified between groups. We did find the overall accuracy, defined as the percentage of BCID panel targets meeting conventional laboratory culture and gene accuracy, defined as the percent of BCID panels with results detected confirmed by conventional laboratory susceptibility methods, of the panel mirrored with previously published data. We also found ASP recommendations based on the BCID-GP were followed 89% of the time within 12 hours of them being made.

#26

Skin and Soft Tissue Infections and Associated Complications in Children Aged 0-3 Years in Two Urban Multietnic Community Hospitals

Maria Celeste Ruiz Holgado, Flushing Hospital Medical Center

**Background.** Skin and soft tissue infections (SSTI) include cellulitis and abscesses. Cellulitis is an infection of the deep dermis and an abscess is a collection of pus within the dermis and subcutaneous space. Complications of SSTI include bacteremia, lymphadenitis, endocarditis, septic arthritis or osteomyelitis, metastatic infection, sepis, and toxic shock syndrome. There are no studies evaluating SSTI and complications and outcomes in children aged 0-3 years.

**Method.** This is a retrospective chart review of SSTI in children aged 0-3 years in Flushing Hospital Medical Center and Jamaica Hospital Medical Center between Jan 2015 and Oct 2020. Data extracted from EHR include demographics (age, gender, ethnicity), clinical presentation, laboratory studies, imaging studies, antibiotic used, treatment course, complications and length of stay (LOS). Data were analyzed using paired t-tests.

**Results.** Of 206 patients admitted for SSTI, a half (48%) were abscesses, less than half (44%) cellulitis, few impetigo (6%) and staphylococcal scaled skin syndrome (2%). Most were male (52%), Hispanic (70%) and Asian (26%). A fifth (18%) had a history of SSTI and a ten percent history of MRSA. Of the 20 patients who had imaging studies, three quarters (76%) had an ultrasound, less than a half (44%) confirmed an abscess and less than a third (29%) soft tissue infection. Almost all (94%) had a blood culture and most a wound culture (59%). Of the positive blood cultures (44%), (78%) were contaminants or normal skin flora and remainder (22%) Staphylococcus aureus. Of the positive wound cultures, most (86%) were Staphylococcus aureus. Meticillin-sensitive S. aureus (MSSA) was equal to meticillin-resistant S. aureus (MRSA) (44% vs 43%). Of the 11% having complications, the majority (70%) and 10% required a change in antibiotic due to susceptibility pattern. The median LOS was 3 days.

**Conclusion.** The most common SSTI in children aged 0-3 years is abscess and cellulitis. The yield of blood cultures is low. The prevalence of MRSA was equal to MSSA. Knowing the low prevalence of complications in children with SSTI, healthcare providers can provide appropriate antibiotic coverage and disposition for SSTI in our community.

#31

Bloodstream Infections and Microbiology during Induction Chemotherapy over a Decade in Cancer Center Patients

Julia Vandenheuvel, Lehigh Valley Reilly Children’s Hospital

**Background.** Bloodstream infections (BSIs) remain a significant cause of morbidity and mortality in children with leukemia. They are at an increased risk of infectious complications secondary to intense chemotherapeutic regimens during induction resulting in prolonged and profound neutropenia. To our knowledge, there is limited literature regarding pathogens and antibiotic resistance from smaller institutions similar to ours. The primary objective of this review was to describe the microbiology of BSIs, and second to evaluate our rates of BSIs during induction chemotherapy as compared to larger institutions.

**Method.** Retrospective chart review of 82 eligible patients between the ages of 1 and 21 years with newly diagnosed leukemia between May 1, 2010 and May 31, 2020. Patients who did not complete the entirety of induction chemotherapy at our hospital were excluded. A microbiologically documented infection was defined as a causative pathogen isolated from the blood in the setting of fever and/or neutropenia. Neutropenia was defined as an absolute neutrophil count (ANC) of less than 0.5x10^9 cells/L.

**Results.** Of the 82 patients, 12 (14.6%) had a BSI during induction chemotherapy. The most common organisms identified were Gram-positive cocci (75%), Gram-negative bacilli (16.6%), and Gram-negative cocci (8.3%). Meticillin-susceptible Staphylococcus aureus (MSSA) was the most frequently isolated organism (42%) overall. No meticillin-resistant Staphylococcus aureus (MRSA) was identified. Of the Gram-negative bacteria isolated, Escherichia coli (8%) and Pseudomonas aeruginosa (8%) were identified. No extended spectrum beta-lactamase (ESBL) or multi-drug resistant organisms were identified. No fungi were isolated.

**Conclusion.** The incidence of BSIs during induction chemotherapy at our institution is similar to what is reported from larger, academic centers. Gram-positive cocci comprise 75% of BSIs with no MRSA isolates in 10 years. Our antibioticogram shows no resistant Gram-negative bacteria. This is in contrast to larger pediatric cancer centers. Therefore, current empiric monotherapy with a fourth generation cephalosporin at the onset of febrile neutropenia remains adequate for our pediatric oncology patients.

#35

Elucidating key interactions between macrophages and Coccidioides

Jane Symington, University of California, San Francisco

**Background.** Coccidioidomycosis or Valley Fever is a fungal infection caused by Coccidioides spp., with potentially life-threatening sequelae. Infection is caused after inhalation of spores (arthroconidia) from the environment, which develop into spherules that contain internal cells called endospores. Spherules release their endospores, which in turn can differentiate into new spherules. Clinically, there are a wide range of outcomes of infection, from asymptomatic infection to meningitis, yet the host and fungal factors that underlie these differences remain largely unknown. We are investigating the role of innate immune cells in the early host response to infection, specifically the role of macrophages in host response to Coccidioides arthroconidia. Macrophages are key innate immune cells in the host response to many opportunistic fungal infections in the lung and can be subverted as a niche by some of those pathogens, yet little is known about the interaction between Coccidioides and macrophages. We chose to use a facile cell culture model (infection of murine bone marrow derived macrophages) to define key interactions between Coccidioides arthroconidia and macrophages.