MSSA is a leading cause of bloodstream infection (BSI) and its incidence is on the rise. Standard of care (SOC) is prolonged parenteral therapy with nafcillin, oxacillin, or cefazolin. Ceftriaxone is active against MSSA and can be given conveniently as a daily infusion.

Methods. We conducted a retrospective analysis of hospitalized adults with MSSA BSI from December 2014 to May 2018, defined as ≥ 2 blood cultures positive for MSSA and discharged on outpatient parenteral antimicrobial therapy (OPAT) on either ceftriaxone, cefazolin, or oxacillin. We excluded patients with ESRD and polymicrobial infections. We collected demographics, comorbidities, outcome data, and treatment-related adverse events. The primary outcome was 90-day mortality with secondary outcomes of clinical failure and microbiologic failure. Clinical failure was defined as readmission for any infection within 90 days of discharge or a change in antibiotics from the planned course of therapy after discharge. Microbiologic failure was defined as reinfection with MSSA within 90 days of discharge from any site.

Results. In total, 167 patients had a BSI with MSSA. Of those patients, 66 (39.5%) were discharged on SOC and 101 (60.5%) on ceftriaxone. The two groups were similar in terms of their demographics (Table 1). The SOC group had more cases of endocarditis with 34 (51.5%) than ceftriaxone with 25 (24.8%) (P = 0.001). LOS for the SOC group had a median of 14.05 days whereas the ceftriaxone group had a median length of stay of 7.88 (P = 0.004). In the SOC group, 5 (7.6%) patients died compared with 8 (7.9%) patients in the ceftriaxone group within 90 days of the onset of bacteremia which was not statistically significant (P = 0.94) (Figure 1). There were 4 (6.1%) cases of microbiologic failure in SOC and 7 (6.9%) cases in the ceftriaxone group (P = 0.83). For clinical failures, the SOC had 6 (9.1%) cases compared with the 19 (18.8%) cases in the ceftriaxone group (P = 0.13).

Conclusion. Ceftriaxone was not statistically different when compared with SOC in terms of mortality, microbiologic failure, or clinical failure. Though clinical failures numerically were more frequent in the ceftriaxone group. Ceftriaxone maybe a reasonable and convenient option to SOC for patients with uncomplicated MSSA BSI discharged on OPAT, but further studies are needed.

### Table 1

| Demographics | Ceftriaxone (n=101) (%) | SOC (n=66) (%) | P-value |
|--------------|------------------------|---------------|---------|
| Median age on admission (ICU), years | 61.0 (48.0, 71.3) | 57.0 (42.7, 68.3) | 0.122 |
| Male sex | 64 (63.4) | 48 (72.7) | 0.208 |
| Race | - | - | 0.835 |
| Caucasian | 77 (76.2) | 51 (77.3) | - |
| African American | 21 (20.9) | 14 (21.2) | - |
| Other | 3 (3.0) | 1 (1.5) | - |
| LOS (ICU), days | 7.9 (5.8, 14.5) | 14.1 (8.7, 19.6) | 0.001 |
| Elixhu’s comorbidity index (95% CI) | 4.3 (3.6 - 5.0) | 4.2 (3.3 - 5.2) | 0.754 |
| ICU stay | 28 (27.7) | 33 (50.0) | 0.009 |
| Bacteremia > 72h | 23 (22.8) | 18 (27.3) | 0.500 |
| Insurance | - | - | 0.163 |
| Private | 42 (41.6) | 28 (42.4) | - |
| Government | 50 (49.5) | 26 (39.4) | - |
| None | 9 (8.9) | 12 (18.2) | - |

### Figure 1

Kaplan-Meier Survival Curve

**Disclosures.** All Authors: No reported Disclosures.

851. Validation of Quick Pitt Bacteremia Score in Patients with Staphylococcus aureus Bloodstream Infection

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Session: 84. Novel Insights into Bacteremia and Endocarditis

**Thursday, October 3, 2019: 2:45 PM**

**Background.** A quick version of the Pitt Bacteremia Score (qPitt) was recently derived based on five binary variables each assigned one point (Table 1). The qPitt broadened respiratory failure definition, simplified mental status, and eliminated fever from the original Pitt bacteremia score. The qPitt had high discrimination in predicting mortality in patients with Gram-negative bloodstream infection (BSI) and outperformed other acute severity of illness scores. This retrospective cohort study aims to evaluate the qPitt performance in patients with Staphylococcus aureus BSI and compare its discrimination to quick Sepsis Related Organ Failure Assessment (qSOFA).

**Methods.** Hospitalized adult patients with S. aureus BSI at Prisma Health-Midlands hospitals in South Carolina from January 1, 2015 to December 31, 2017 were identified. Multivariate logistic regression was used to examine risk factors for 28-day all-cause mortality. The area under receiver operating characteristic curve (AUROC) was used to evaluate discrimination of qPitt and qSOFA in predicting 28-day mortality (primary outcome). In-hospital and 90-day mortality were examined as secondary outcomes.

**Results.** Among the 398 patients with S. aureus BSI, the median age was 63 years, 241 (61%) were men, 173 (43%) had methicillin-resistant S. aureus (MRSA) BSI, and 45 (11%) died within 28 days of BSI. After adjustments for age, clinical and microbiologic characteristics in the multivariate model, all five individual components of qPitt were independently associated with 28-day mortality (Table 1). There was a 3-fold increase in 28-day mortality for each point increase in qPitt (odds ratio 3.11, 95% confidence intervals 2.40–4.02, P < 0.001). Mortality was 2% in patients with qPitt of 0 and increased to 14%, 24%, 50%, and 82% in patients with qPitt of 1, 2, 3, and 4, respectively. The qPitt had higher discrimination in predicting 28-day mortality than qSOFA (AUROC 0.82 vs. 0.77, P = 0.001). The qPitt also performed well in predicting in-hospital and 90-day mortality (AUROC 0.80 and 0.76, respectively).

**Conclusion.** The qPitt has good discrimination in predicting mortality in patients with S. aureus BSI. These results support the use of qPitt as an acute severity of illness score in future studies.

### Table 1

| Quick Pitt bacteremia score variables | OR (95% CI) | P-value |
|--------------------------------------|------------|---------|
| Temperature <36°C | 3.14 (1.45-6.79) | 0.004 |
| Systolic blood pressure <90 mmHg or vasopressor use | 2.95 (1.58-5.51) | <0.001 |
| Respiratory rate ≥25 breaths/minute or need for mechanical ventilation | 2.60 (1.34-5.08) | 0.004 |
| Cardiac arrest | 9.15 (2.36-35.43) | 0.001 |
| Altered mental status | 2.78 (1.54-4.06) | <0.001 |

*OR: odds ratio; CI: confidence intervals

**Disclosures.** All Authors: No reported Disclosures.

852. The Cefazolin Inoculum Effect and Methicillin-Susceptible Staphylococcus aureus Osteoarticular Infections in Children: Does It Matter?

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Session: 85. Pediatric Bacterial Diseases

**Thursday, October 3, 2019: 1:45 PM**

**Background.** Select methicillin-susceptible Staphylococcus aureus (MSSA) strains may produce β-lactamases with an affinity for first-generation cephalosporins (1GC). In the setting of a high inoculum, these β-lactamases may promote clinically meaningful cleavage of 1GCs, potentially resulting in antibiotic failure, a phenomenon known as the cefazolin inoculum effect (CIE). Acute hematogenous osteoarticular infections (AHOAIs, including osteomyelitis and septic arthritis) are the most common manifestation of invasive S. aureus infection in children. We evaluated the prevalence and potential impact of CIE among MSSA AHOAI isolates at two children’s hospitals.

**Methods.** MSSA AHOAI isolates were obtained through surveillance studies at Texas Children’s and St. Louis Children’s Hospitals from January 1, 2011 to December 2018. Isolates were tested for CIE via a macrobroth dilution assay with an inoculum of
10^6 CFU/mL; CIE was defined as a cefazolin MIC ≥ 16 µg/mL. Isolates were characterized by accessory gene regulator group (agr). The subsequent development of chronic osteomyelitis (CO) was regarded as a clinically important outcome.

**Results.** A total of 287 cases were included and the median patient age was 8.6 years, 14.3% of isolates exhibited CIE; CIE prevalence was similar across study sites. 74.6% of patients received a 1GC as definitive therapy. CIE isolates were more often resistant to clindamycin, belonged to agr III and associated with CO (Figure 1); a numerically higher rate of CO was observed with CIE isolates regardless of definitive antibiotic choice (Figure 2). In multivariable analyses, bone abscesses, agr III, positive blood cultures, multiple surgeries, and delayed source control but not CIE were independently associated with CO (Figure 3); similar results were seen if analyses were restricted to only those receiving 1GC.

**Conclusion.** CIE is exhibited by 14.3% of MSSA AHOAI isolates in children. CIE is associated with agr III and clindamycin-resistant strains. agr III strains are independently associated with CO; thus negative outcomes reported with CIE may more accurately reflect strain-dependent virulence factors rather than true antibiotic failure. Further studies are necessary to better understand the clinical significance of these findings.

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853. Epidemiology of Groups A, C, and G β-Hemolytic Streptococcal Pharyngitis
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**Session:** 85. Pediatric Bacterial Diseases
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**Background.** Treatment of Group A Streptococcus (GAS) pharyngitis is imperative to mitigate sequelae such as rheumatic heart disease. The need for treatment of Group C Streptococcus (GCS) and Group G Streptococcus (GGS) pharyngitis is unclear, as rheumatogenic sequelae have not been well documented. Our institution switched from culture to molecular confirmation testing for rapid streptococcal antigen detection test. Cultures reported GAS whereas molecular testing reported GAS, GCS, and GGS. We performed a retrospective chart review to examine the epidemiological differences of GAS, GCS, and GGS pharyngitis.

**Methods.** Records were obtained of pharyngeal samples from patients sent for testing at Beaumont Health Laboratory. In all, 92,369 records were analyzed. There were 47,106 records of cultures from May 2012 through December 2014 and 45,263 records of molecular testing from May 2015 to December 2017. Samples positive for either GCS or GGS were reported as positive for Group CG Streptococcus (GCCS). Epidemiological factors were evaluated. If available, electronic records from GCCS positive samples were evaluated for clinical features, antibiotics used, and sequelae or complications reported.

**Results.** Molecular testing showed GAS positivity of 9.3% (n = 4,189) and GCCS positivity of 1.5% (n = 687). GCCS pharyngitis was more likely during the summer months and in young adults 13 years and older than children under 13 years. GAS pharyngitis was more likely during spring months and in children aged 4–9 years. Mean age of GCCS pharyngitis was 13 vs. 8.6 years for GAS pharyngitis. Similar results were obtained for GAS between culture and molecular testing records. Amoxicillin was most often prescribed for treatment of GCCS. There were few instances of severe GCCS exudative or recurrent pharyngitis that required hospitalization or tonsillectomy. There were no cases of rheumatic fever or rheumatic heart disease associated with GCCS.

**Conclusion.** This is the largest study based on our literature review to evaluate the epidemiology of GAS, GCS, and GGS pharyngitis in children and adults. We found a seasonal and age difference between GAS and GCCS. Complications were rare, and no rheumatogenic sequelae were noted from GCCS infections.

**Disclosures.** All Authors: No reported Disclosures.