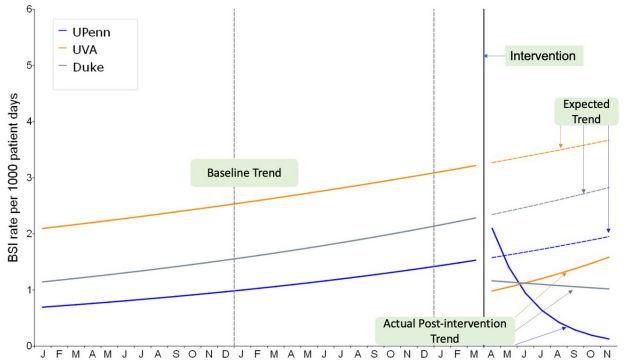
Figure 2. PRE and POST MASKING and other COVID infection prevention measures and BSI Trends.



At all centers actual BSI rate was lower than the expected rate for that center in the POST period. UVA and Duke showed a baseline decrease and Pennsylvania Hospital showed a downward trend in infection rates. There was an approximate decrease in expected bloodstream infection events at Pennsylvania Hospital by 7 events, at UVA by 22 events and at Duke by 23 events. Overall, all three centers saw a decrease in their expected infections after COVID-19 infection prevention measures were implemented.

Table 1. Percent reduction in Bloodstream Infection at each center.

Outcome (site)	Pre-Rate	Post-Rate	Percent Reduction	P value
Blood stream infection, BSI				
Penn	1.03	0.78	24%	0.54
UVA	2.66	1.28	52%	0.01
Duke	1.66	1.09	34%	0.11
BSI Pooled estimate			41%	0.004

Combined BSI rate per 1000 patient days in the three NICUs after implementation of COVID-19 IP measures (Apr-Nov 2020) was 41% lower compared to the rate prior to implementation (95% CI, 0.42 to 0.84, P=0.004).

Conclusion. In this preliminary analysis, we found a reduction of BSI after the implementation of COVID-19 infection prevention measures. Additionally, there were fewer viral infections, though there were a limited number of episodes. Further analyses of multicenter data and a larger number of patients will elucidate the significance of these findings and the role some of these IP measures such as universal masking may have in infection prevention in the NICU.

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

182. Back to The Future: Increasing Penicillin Susceptibility among Methicillin-Susceptible *Staphylococcus aureus* Osteoarticular Infections in Children

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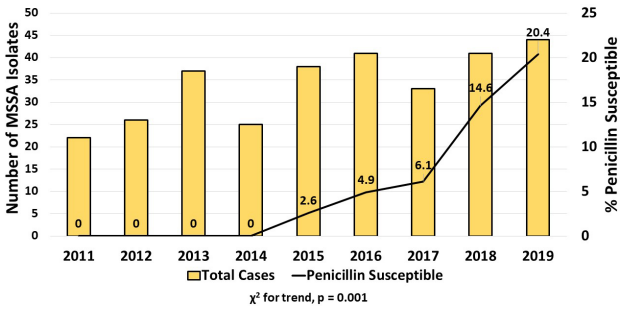
Session: O-36. Trends in Pediatric Bacterial Disease

Background. Starting in the late 1940s-1950s *Staphylococcus aureus* isolates gained resistance to penicillin largely through the acquisition of β-lactamases. In recent years, some centers have described an increase in the proportion of methicillin susceptible *S. aureus* (MSSA) which are also susceptible to penicillin (PSSA). There are little data on the prevalence or clinical significance of PSSA in children. Acute hematogenous osteoarticular infections (AHOAIs, including osteomyelitis and septic arthritis) are the most common manifestation of invasive *S. aureus* disease in children. We investigated the prevalence of penicillin susceptibility among MSSA AHOAI isolates at two children's hospitals.

Methods. MSSA AHOAI isolates were obtained through surveillance studies at Texas Children's (TCH) and St. Louis Children's Hospitals (SLCH) from 1/2011-12/2019. All isolates underwent PCR for *blaZ* β-lactamase, PVL genes and *agr* group. All *blaZ* negative isolates then underwent penicillin susceptibility testing using macrobroth dilution. Isolates which were *blaZ* negative and had a penicillin MIC ≤ 0.125 μg/ml were regarded as PSSA.

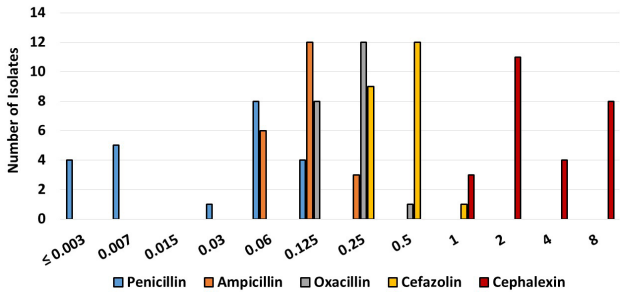
Results. 329 unique isolates were available and included in the study. The median patient age was 9.2 years (IQR: 5.1-12.2). Overall, 22 isolates were found to be penicillin susceptible (6.7%). No PSSA isolates were detected prior to 2015 but increased yearly thereafter; by the final study year 20.4% of isolates were PSSA (p=0.001, **Figure 1**). Patients with PSSA isolates were slightly older than those with resistant isolates (median age 11.8 years vs. 9.1 years, p=0.08) and PSSA were more commonly identified at SLCH (12.9% vs. 5.2%, p=0.04). PSSA were similar to penicillin-resistant isolates in terms *agr* group and PVL carriage as well as clinical presentation and outcomes. For PSSA, the MIC_{90} for penicillin (0.06 μg/ml) was much lower than that for other β-lactams (**Figure 2**).

Figure 1: Temporal Trends in PSSA



The figure describes the relative frequency of penicillin susceptible S. aureus (PSSA) over time among MSSA osteoarticular infection isolates in children.

Figure 2. β-Lactam MICs in Penicillin Susceptible Isolates



Distribution of MICs to penicillin, ampicillin, cefazolin, cephalexin and oxacillin among PSSA isolates.

Conclusion. PSSA appears to be increasing among AHOAI isolates in US children, although geographic variability does occur. Overall, PSSA isolates are associated with a similar clinical presentation as penicillin-resistant isolates. Penicillin susceptibility testing may serve as an avenue for future stewardship intervention in staphylococcal infections.

Disclosures. **Jonathon C. McNeil, MD**, **Agency for Healthcare Research and Quality** (Research Grant or Support)**Allergan** (Grant/Research Support)**Nabriva** (Grant/Research Support, Other Financial or Material Support, Site PI for a multicenter trial) **Kristina G. Hulten, PhD**, **Pfizer** (Research Grant or Support) **Sheldon L. Kaplan, MD**, **Pfizer** (Research Grant or Support)

183. Decrease in Invasive Pneumococcal Disease in 7 United States Children's Hospitals during the COVID-19 Pandemic

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Session: O-36. Trends in Pediatric Bacterial Disease

Background. During the 2020 SARS-CoV-2 pandemic, physical distancing and mask use guidelines were implemented resulting in a decline in the number of infections caused by influenza, respiratory syncytial virus and otitis media. A surveillance analysis from England and Taiwan showed a decline in invasive pneumococcal disease (IPD) (Clin Infect Dis. 2021;72: e65-75 and J Infect. 2021;82:296-297). We hypothesized that COVID mitigation efforts resulted in a decrease in incidence of pediatric IPD within the U.S. during 2020 compared to previous years.

Methods. We reviewed all cases of IPD among 7 children's hospitals from the U.S. Pediatric Multicenter Pneumococcal Surveillance Group from 2017-2020. IPD was defined by the isolation of *Streptococcus pneumoniae* from normally sterile sites (eg. blood, cerebrospinal, pleural, synovial or peritoneal fluid). Pneumococcal pneumonia was defined as an abnormal chest radiograph in the presence of a positive blood, pleural fluid or lung culture. Mastoiditis was identified by positive middle ear, subperiosteal abscess or mastoid bone culture. Serotypes were determined by the capsular swelling method. Hospital admission numbers were obtained for incidence calculations. Statistical analyses were performed using STATA11. A p< 0.05 was considered significant.

Results. A total of 410 IPD cases were identified. The cumulative incidence of IPD (0-22 years of age) decreased from 99.2/100,000 admissions in 2017-2019 to 53.8/100,000 admissions in 2020 (risk ratio 0.54, CI: 0.40-0.72, p< 0.00001). Pneumococcal bacteremia and pneumonia decreased significantly in 2020 (p< 0.05), and although not statistically significant, there were fewer cases of meningitis and mastoiditis when compared to previous years (p=0.08) (Figure 1). Sex, race, age or presence of comorbidities were not significantly different between groups. Most common serotypes in 2020 were 35B, 3 and 15B/C (Figure 2).

Figure 1. Number of IPD cases per year according to site of infection

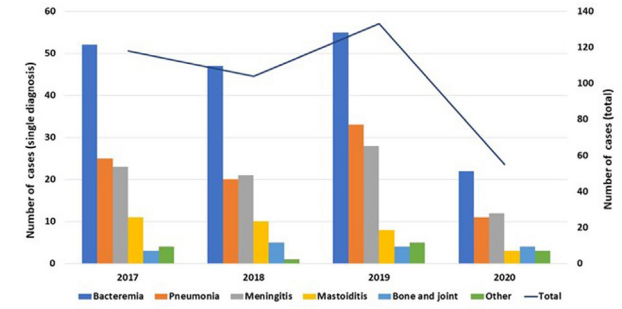
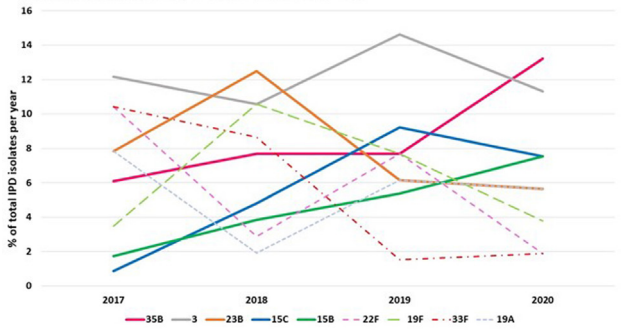


Figure 2. Most common *S. pneumoniae* IPD serotypes, 2017-2020



Conclusion. The observed decline in IPD cases during the first year of the SARS-CoV-2 pandemic is likely associated with mask use and physical distancing limiting transmission of *S. pneumoniae* via droplets and viral infections frequently preceding IPD. These precautions might be useful in the future to decrease IPD, especially in high-risk patients.

Disclosures. **Sheldon L. Kaplan, MD**, **Pfizer** (Research Grant or Support) **Tina Q. Tan, MD**, GSK (Individual(s) Involved: Self): Advisor or Review Panel member, Grant/Research Support; ILiAD (Individual(s) Involved: Self): Advisor or Review Panel member; Merck (Individual(s) Involved: Self): Advisor or Review Panel member, Grant/Research Support; Moderna (Individual(s) Involved: Self): Advisor or Review Panel member; Pfizer (Individual(s) Involved: Self): Advisor or Review Panel member **Pia S. Pannaraj, MD, MPH**, **Pfizer** (Grant/Research Support)**Sanofi-Pasteur** (Advisor or Review Panel member)**Seqirus** (Advisor or Review Panel member) **Larry Givner, MD**, **AstraZeneca** (Advisor or Review Panel member) **Kristina G. Hulten, PhD**, **Pfizer** (Research Grant or Support)

184. Inducible Clindamycin Resistance Testing on Pediatric *Streptococcus pneumoniae* Isolates

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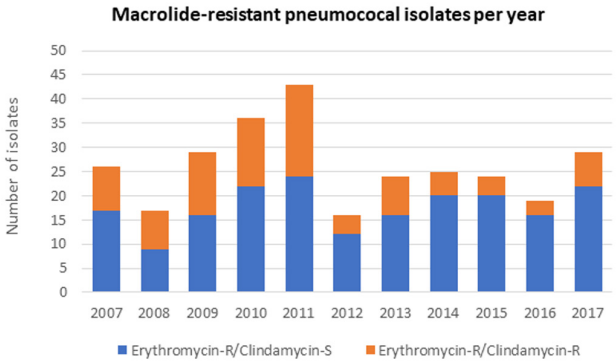
Session: O-36. Trends in Pediatric Bacterial Disease

Background. In 2013, the Clinical and Laboratory Standards Institute recommended inducible clindamycin resistance (ICR) testing on macrolide-resistant *Streptococcus pneumoniae* isolates, which arises due to the *erm*B gene. Ribosomal methylation by *erm*B confers resistance to macrolides (high-level resistance), lincosamides and streptogramin B. The goal of our study is to characterize the prevalence of ICR among pediatric pneumococcal isolates.

Methods. We identified erythromycin-resistant(R) (minimum inhibitory concentration [MIC] ≥ 1 µg/mL) and clindamycin-susceptible(S) (MIC ≤ 0.25 µg/mL) pneumococcal isolates from pediatric patients seen at Children's Mercy Hospital from 2007 to 2017. Determination of ICR was achieved via disk approximation (D-zone test) with standard erythromycin (15 µg) and clindamycin (2 µg) disks. Isolates with high-level erythromycin resistance (MIC ≥ 32µg/mL) were also tested for *erm*B gene by PCR. Positive and negative controls were used for D-zone test and *erm*B PCR.

Results. We identified 289 erythromycin-R pneumococcal isolates; of those 194 (67.1%) were clindamycin-S (**Figure 1**). One-hundred and sixty-nine isolates were available for ICR testing, 166 (98%) isolates represented non-invasive disease samples. Median age of patients with erythromycin-R and clindamycin-S isolates was 19 (range 0.1 – 180) months. None of the isolates expressed ICR based on the D-zone test. Thirteen of those isolates (7.7%) expressed high-level erythromycin-R (MIC range 32-128 µg/mL); all were negative for *erm*B. The most common serotypes/serogroups among erythromycin-R and clindamycin-S isolates were: 15 (n=22), 35B (n=19), 11 (n=16), 6 (n=16), 19A (n=14) and 33 (n=12).



Conclusion. Erythromycin-R and clindamycin-S pneumococcal isolates did not express ICR and isolates with high-level erythromycin-R did not carry *erm*B. Multicenter studies are needed to determine if ICR testing is required for macrolide-resistant pneumococcal isolates in the PCV13 era.

Disclosures. **Liset Olarte, MD, MSc**, **GSK** (Research Grant or Support)**Merck** (Research Grant or Support)**Pfizer** (Research Grant or Support)**Sanofi** (Research Grant or Support) **Douglas S. Swanson, MD**, **Merck** (Research Grant or Support)**Pfizer** (Research Grant or Support)**Sanofi** (Research Grant or Support)

185. Trends in Clinical Presentation and Antibiotic Resistance of Viridans Group Streptococci Bloodstream Infections in Immunocompromised Children

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Session: O-36. Trends in Pediatric Bacterial Disease

Background. Levofloxacin prophylaxis (LVXp) is recommended in children with severe neutropenia from underlying malignancy or hematopoietic cell transplantation (HCT). The impact of LVXp on the epidemiology of viridans group streptococcus bloodstream infections (VGS-BSI) is unknown. At our center, LVXp was prescribed to high-risk children with expected prolonged neutropenia (ANC < 100, > 7 days) as part of a clinical trial (2013-17) and routinely since November 2018. We aim to describe our local epidemiology, antibiotic susceptibilities, and clinical outcomes of VGS-BSI over time.

Methods. VGS-BSI from 1/1/10-1/31/21 were identified via the laboratory database. Clinical data of patients followed at NCH with underlying malignancy, severe neutropenia, or HCT were extracted from the electronic health record. Available VGS isolates were subcultured, species identification confirmed by MALDI-ToF or 16s rDNA sequencing and susceptibility to penicillin (PCN), cefepime (CEF), vancomycin (VAN), and LVX performed via Etest per CLSI M100 guidelines. Non-parametric descriptive statistics were applied.

Results. Over a 10-yr period, 111 VGS-BSI occurred in 93 patients (Table 1); 15 (16%) patients had ≥ 2 VGS-BSI. 80 (86%) patients had fever and neutropenia (F&N); 26 (28%) required ICU care for vasopressors (N=17, 18%) or mechanical ventilation (N=10, 11%). Most VGS isolates were *S. mitis/oralis* group. In total, 15 (16%) patients received LVXp ≤ 6 months before VGS-BSI; 9 (10%) had breakthrough VGS-BSI while receiving LVXp and all isolates were LVX resistant. Figure 1 shows susceptibilities: overall, 24% of isolates had frank resistance to PCN, 19% CEF, 13% LVX; all were VAN susceptible. When evaluating for changes in susceptibilities over time, there was a significant difference in the proportion of LVX-resistant isolates (p=0.009, Cochran-Armitage χ^2), but not CEF (p=0.08) or PCN (p=0.86).