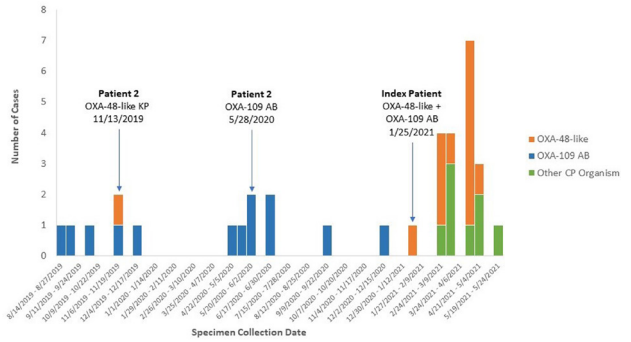
Figure 2. Epidemic Curve of OXA-109 AB, OXA-48-like AB, and Other CP Organism Cases, 2019-2021



Conclusion. The first reported case of OXA-48-like AB in the US was identified through public health sentinel laboratory surveillance, allowing prompt response to contain spread of a novel multidrug-resistant organism (MDRO). WGS detected a rare OXA-48-like gene in AB and KP and provides evidence for possible interspecies transfer of this gene from KP to AB through plasmid transfer followed by chromosomal integration.

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

180. Alterations to the Gut Microbiomes and Acquisition of Bacteria Resistance Elements among US International Travelers

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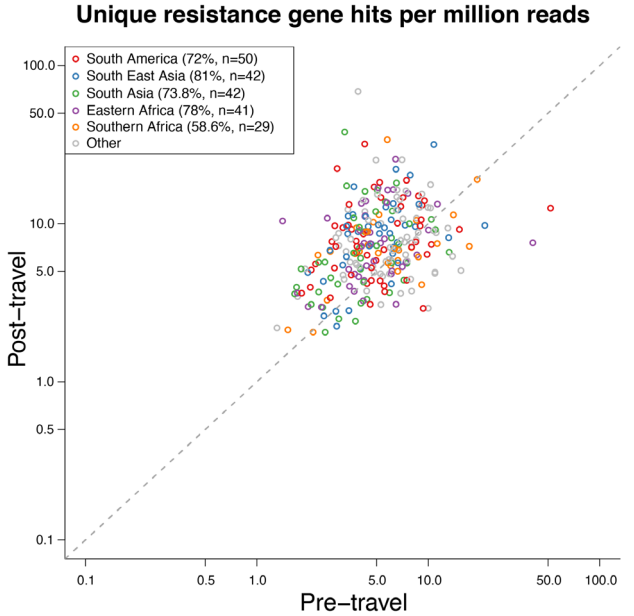
Session: O-35. Trends in Gram-negative Resistance

Background. This study investigated the impact of international travel on the acquisition and carriage of antimicrobial resistance (AMR). We prospectively assessed U.S. international travelers for the acquisition of resistant *Enterobacterales* species and evaluated changes in travelers' gut microbiomes.

Methods. Metagenomic sequencing was performed on DNA extracted from pre- and post-travel stool samples of 273 U.S. international travelers. We used Kraken2 to assess microbial gut composition and analyzed antibiotic resistance gene (ARG) content using the Resistance Gene Identifier (RGI) and ResFinder, and read mapping to ARG databases. We assessed the change in gut profile and resistome associated with (i) all international travel; (ii) travel to specific geographic regions; and (iii) traveler's diarrhea.

Results. International travel resulted in a perturbation of the gut microbiome, which was greater in travelers receiving treatment for diarrhea during travel (p = 4E-5). There was an overall loss in microbial diversity following travel, regardless of health outcome (p = 0.011); this was most consistently observed in travelers to South East Asia (SEA) (loss of gut diversity in 81% of SEA travelers). 78% of all travelers had a higher relative abundance of *E. coli* after travel, including 85% of travelers who acquired AMR bacteria during travel. Travel to South Asia was also associated with a significantly greater increase of *E. coli* relative to other destinations (p = 0.04). Additionally, the relative abundance of *Pasteurellales* was higher in the pre-travel samples of those who subsequently acquired AMR bacteria (FDR = 0.08). Furthermore, there was a significant increase in ARG content among the post-travel samples, with regional differences in the magnitude of acquisition (**Figure 1**). 72% of all travelers had a greater resistance burden post-travel. SEA was associated with the greatest increase in resistome diversity, while South America was associated with the greatest increase in overall ARG content.

Resistance genes present in the gut microbiome.



Genes mapping to the Comprehensive Antibiotic Resistance Database were measured pre- (x-axis) and post-travel (y-axis) to assess the acquisition of resistance genes in association with travel, distinguished by geographic region. Colors indicate geographic regions visited by travelers: South America (red), South East Asia (blue), South Asia (green), Eastern Africa (purple), Southern Africa (orange), Other (grey).

Conclusion. International travel is associated with a perturbation in the gut microbial community, with the acquisition of AMR bacteria and genes, and an increase in the relative abundance of *E. coli*. These perturbations following travel may be important factors in the global spread of AMR.

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

181. Potential Benefit of Masking and other COVID-19 Infection Prevention Measures on Late-Onset Infections in the NICU

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MASKING STUDY GROUP

Session: O-36. Trends in Pediatric Bacterial Disease

Background. Incidence of blood stream infections (BSI) among NICU admissions remains high, with associated mortality and morbidity. Due to COVID-19, there are increased infection prevention (IP) measures in NICUs including universal masking for all healthcare workers and families, social distancing, visitation restrictions, and increased attention to hand hygiene. These measures may also affect late-onset infection rates and offer understanding of novel interventions for prevention.

Methods. We examined infection rates during the 24 months prior to implementation of COVID-19 IP measures (PRE-period) compared to the months after implementation from April 2020 (POST-period). Late-onset infections were defined as culture-confirmed infection of the blood, urine, or identification of respiratory viral pathogens. An interrupted time series analysis of infection per 1000 patient days was performed based on a change-point Poisson regression with a lagged dependent variable and the number of patient days used as offsets. Each month was treated as independent with additional analysis using an observation-driven model to account for serial dependence.

Results. Multicenter analysis to date included all infants cared for at three centers (Level 3 and 4) from 2018-2020. Monthly BSI rates decreased in the POST-period at the three centers (**Figure 1).** At all centers actual BSI rate was lower than the expected rate in the POST-period (**Figure 2).** The combined BSI rate per 1000 patient days was 41% lower compared to the rate prior to implementation (95% CI, 0.42 to 0.84, P=0.004) (**Table 1**). In subgroup analysis by birthweight, infants< 1000g had a 39% reduction in BSI (P=0.023), for1000-1500g patients there was a 44% reduction (P=0.292) and in those > 1500g there was a 53% reduction (0.083).

Figure 1. PRE and POST MASKING and other COVID Infection Prevention Measures and Monthly BSI Rates.

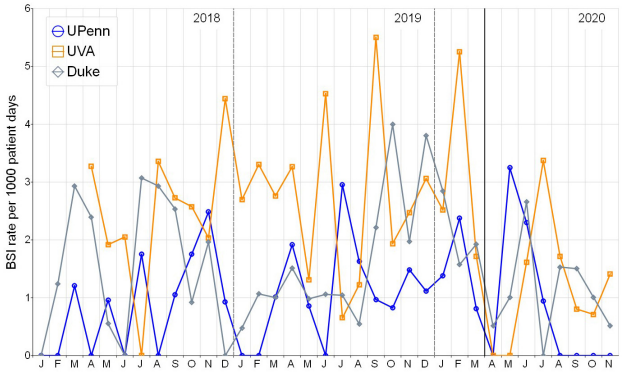
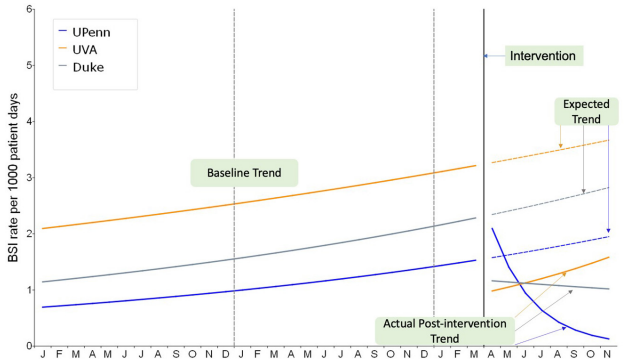


Figure 2. PRE and POST MASKING and other COVID infection prevention measures and BSI Trends.



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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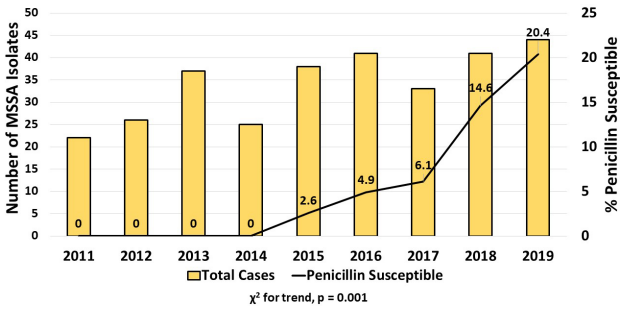
Session: O-36. Trends in Pediatric Bacterial Disease

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.

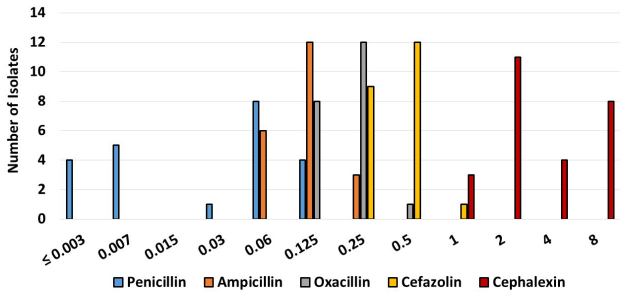
Results. 329 unique isolates were available and included in the study. The median patient age was 9.2 years (IQR: 5.1-12.2). Overall, 22 isolates were found to be penicillin susceptible (6.7%). No PSSA isolates were detected prior to 2015 but increased yearly thereafter; by the final study year 20.4% 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.