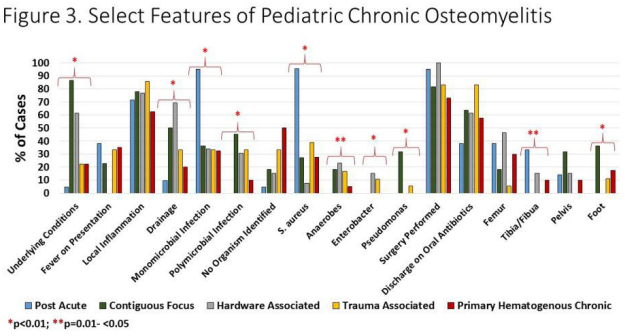
Figure 3. Clinical Features of Pediatric Chronic Osteomyelitis



Conclusion. Children with chronic osteomyelitis are diverse both in terms of pathogenesis and microbiology. Pathogenesis and clinical presentation can provide clues to microbiologic etiology. Prolonged intravenous therapy does not appear to improve functional outcomes in chronic osteomyelitis

Disclosures. **Jonathon C. McNeil, MD**, **Allergan** (Research Grant or Support, Allergan provided ceftaroline powder for use in studies described in this abstract)

1370. Three of Hearts: A Case Series and Literature Review of Pediatric Purulent Pericarditis

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Session: P-61. Pediatric Bacterial Studies (natural history and therapuetic)

Background. Purulent pericarditis is rare in the pediatric population. Three children with purulent pericarditis complicated by tamponade were seen at a children's hospital from 2018-2019. A review of the literature was conducted to investigate the clinical significance and features of purulent pericarditis.

Methods. Cases of purulent pericarditis in children (age < 18 years) published in English from 2000 to 2020 were reviewed. Patients were included if there was presence of purulent pericardial fluid or if a bacterial pathogen was isolated from pericardial fluid.

Results. Three children with purulent pericarditis and tamponade with associated pneumonia were cared for at our institution. These infections were caused by methicillin-susceptible *Staphylococcus aureus*, *Haemophilus influenzae*, and *Streptococcus pyogenes*. Review of the literature identified 93 children with purulent pericarditis. The median age of the cohort is 4 years old. In 68.8% of children the etiology was identified from culture of pericardial fluid. The most common organism detected was *S. aureus* (38.7%) and a concurrent infection was seen in 49.4% -pneumonia (36.5%), osteomyelitis (17.2%), soft tissue (7.5%), and meningitis (2.1%). In North America specifically, methicillin-resistant *S. aureus* was most common 35% (7/20) and associated infection was seen in 80% (16/20). Clinical course was complicated by pericardial tamponade in 68.5% (37/54) of patients, 48.6% (18/37) of those children with tamponade also had pneumonia. Pericardiocentesis is the most frequent initial intervention, performed in 77.4% of cases. The mortality rate was 4.3%.

Conclusion. In pediatric purulent pericarditis, Gram-positive organisms account for 81.2% of all children with positive pericardial fluid culture, and 75% of infections in North America. A bacterial pathogen can be isolated from the pericardial fluid in a majority of patients with purulent pericarditis. There is a high rate of concurrent infection, most notably pneumonia, and there is a strikingly high percentage of tamponade in those cases.

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

1371. Trends in Antibiotic Resistance Among Uropathogens in the Pediatric Population: A Single Center Experience in the US

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Session: P-61. Pediatric Bacterial Studies (natural history and therapuetic)

Background. Urinary tract infections (UTIs) are common infections in children. Overuse of antibiotics has led to an increasing prevalence of antibiotic resistance among uropathogens in adults; however, data on pediatric trends have not been previously reported. Our objective was to characterize antibiotic resistance trends in uropathogens among children at a tertiary care hospital in a diverse urban US city.

Methods. Positive urine culture data (>20,000 CFU/ml) from January 1st, 2010 through December 31st, 2019 were obtained from the electronic medical records (inpatient and outpatient). Yearly antibiotic agent-specific resistance rates were calculated based on culture, patient, and organism level data.

Results. A total of 7,512 patients had ≥1 positive urine culture, with 13,327 positive individual cultures. The average age at sample collection was 6 yrs (IQR 2-11). Overall, 66% of cultures showed resistance to at least 1 antibiotic. Ampicillin resistance (50.1% IQR: 48.2%-52.4%) was the most common and remained stable over the study period. However, resistance against amoxicillin-sulbactam, third and fourth generation cephalosporins, and fluoroquinolones has increased significantly over this period (Figure 1). There was also a corresponding increase in the prevalence of extended spectrum beta-lactamase (ESBL) Enterobacteriaceae (Figure 2). Among infants < 1 year, a similar trend in increasing resistance against beta-lactams was noted (ampicillin-sulbactam 0% to 38%, ceftriaxone 0% to 9% and cefepime 0% to 4%, Figure 3).

Figure 1

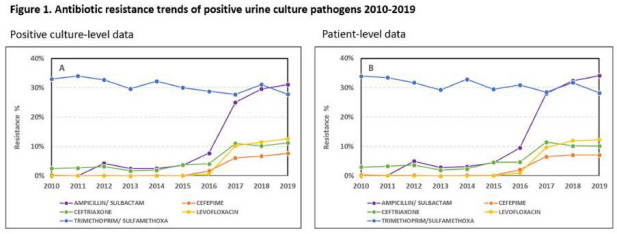


Figure 2

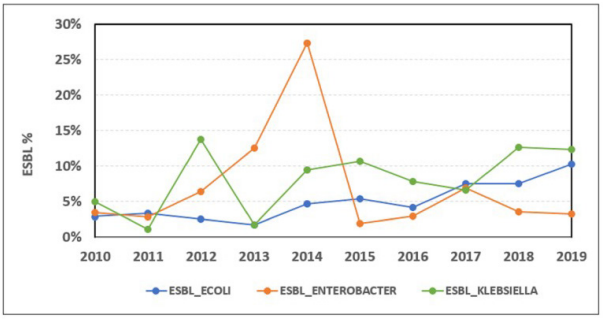
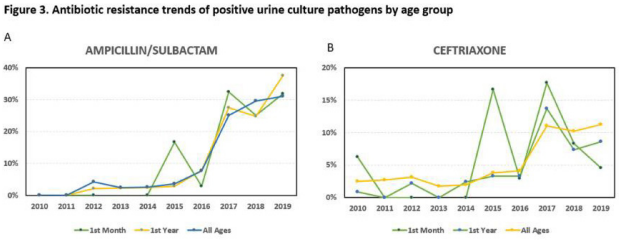


Figure 3



Conclusion. There are rising rates of antibiotic resistance to broad spectrum antibiotics, including beta-lactams and quinolones, in a pediatric population over the last 10 years, with a notable increase in resistance starting in 2015-2016. While we were not able to distinguish patients with community acquired UTI, the increase in resistance among infants < 1 year suggests a community reservoir of multi-drug resistant gram-negative bacteria. Colonization by resistant uropathogens has implications for empiric antibiotic choice, limited oral therapy options, and clinical outcomes which necessitate further study.

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

1372. Urinary Tract Infections Caused by Gram-Positive Bacteria in Patients Younger than 19 Years: Prediction Analysis in a 13-year Hospital-Based Cohort

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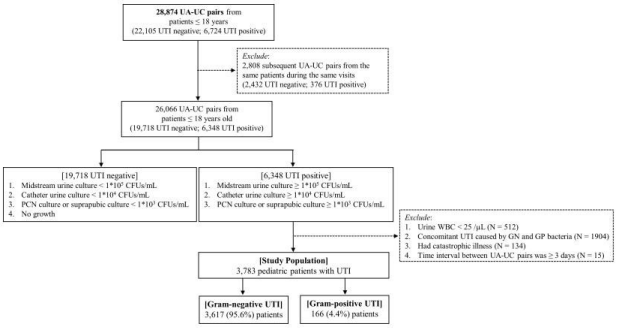
Session: P-61. Pediatric Bacterial Studies (natural history and therapuetic)

Background. Urinary tract infection (UTI) is one of the common pediatric bacterial infections. Gram positive (GP) pathogens, in contrast to gram negative (GN) bacilli such as *E. coli*, are less accounted for pediatric UTI. The aim of this study was to identify predictors to enable clinicians to detect GP uropathogens from mostly causative GN bacteria in children with UTI.

Methods. This retrospective cohort study identified 26,066 paired urinalysis and urine culture obtained from the pediatric patients during 2003-2016. Of patients with UTI meeting our criterial, we included children with first-time UTI and classified them into GP-UTI and GN-UTI (**Figure 1**). Demographic, clinical and laboratory data were

collected into analysis. We built a multivariable logistic regression model to predict the GP-UTI. The model performance was examined by using calibration and discrimination plots. We demonstrated a nomogram to predict GP-UTI that could be feasible in the clinical practice.

Figure 1. Flowchart of the Selection Process of the Study Population (N = 3,783 patients).



Results: Of 3,783 children with first-time UTIs, 166 (4.4%) were infected by GP and 3,617 (95.6%) by GN bacteria. The top 3 pathogens for GP uropathogens were vancomycin-resistant (VR) *E. faecalis*, *S. saprophyticus*, and coagulase-negative *Staphylococcus*. Significant risk factors associated with GP-UTI in the multivariable analysis were: age >= 24 months [odds ratio (OR) 3.40, 95% confidence interval (CI) 1.40-8.26], serum white blood cell (WBC) (compared to ≥14.4 x 10^3/μL) [OR 2.18, 95% CI 1.26-3.77], hemoglobin (compared to < 11.3 g/dL) [OR 1.89, 95% CI 1.04-3.45], negative urine leukocyte esterase [OR 3.12, 95% CI 1.83-5.33], negative urine nitrite [OR 4.14, 95% CI 1.88-9.14] and urine WBC (compared to ≥420/μL) [OR 2.16, 95% CI: 1.09, 4.26] (**Table 1**). This model had good discrimination (C-statistic 0.874; 95% CI 0.839-0.908) and calibration performance (**Figure 2**). By using our nomogram, physicians can estimate the probability of UTI that is caused by a GP pathogen, with a probability ranges from 0.04% to 55% (**Figure 3**).

Table 1. Multivariable Prediction Model for Pediatric Urinary Tract Infections Caused by Gram-Positive Bacteria.

Table 1. Multivariable Prediction Model for Pediatric Urinary Tract Infections Caused by Gram-Positive Bacteria.

Variable	Crude		Multivariable		
	OR	(95% CI)	OR	(95% CI)	P-value
Age at UA order >=24 months	5.90	(4.19, 8.31)	3.40	(1.40, 8.26)	0.007
Boy	0.54	(0.40, 0.75)	1.44	(0.84, 2.48)	0.183
Sample obtained from catheter, PCN, or suprapubic	4.54	(3.24, 6.36)	1.32	(0.58, 3.03)	0.506
No prior antibiotic use	2.43	(1.39, 4.24)	2.62	(0.90, 7.60)	0.076
No prior Foley catheterization	4.15	(2.61, 6.59)	1.26	(0.64, 2.48)	0.509
Serum biochemical profiles					
WBC (compared to ≥14.4)	3.96	(2.46, 6.38)	2.18	(1.26, 3.77)	0.005
CRP (compared to ≥3.6)	2.47	(1.53, 4.00)	1.56	(0.92, 2.66)	0.099
Hemoglobin (compared to <11.3)	4.54	(2.74, 7.5)	1.89	(1.04, 3.45)	0.038
Urinalysis					
Bacteria +	0.35	(0.25, 0.50)	1.03	(0.60, 1.79)	0.902
Leukocyte esterase -	5.11	(3.58, 7.29)	3.12	(1.83, 5.33)	<0.001
Nitrite -	8.15	(4.51, 14.73)	4.14	(1.88, 9.14)	<0.001
WBC (compared to ≥420)	3.45	(2.39, 4.96)	2.16	(1.09, 4.26)	0.027
RBC (compared to ≥22)	1.38	(1.01, 1.88)	1.49	(0.87, 2.56)	0.144
C-statistic			**0.874**	**(0.839, 0.908)**	

Abbreviations: CI, confidence interval; CRP, c-reactive protein; OR, odds ratio; PCN, percutaneous nephrostomy; RBC, red blood cell; UA, urinalysis; WBC, white blood cell.

Figure 2. Discrimination Plot (A) and Calibration Plot (B) of the Prediction Model for Pediatric Urinary Tract Infections Caused by Gram-Positive Bacteria.

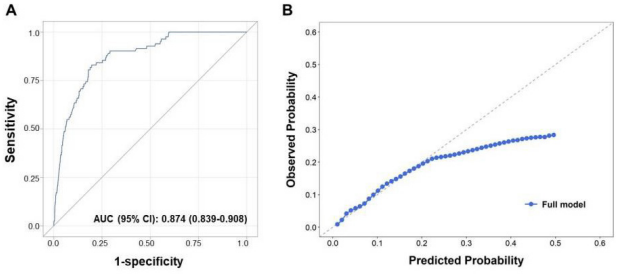
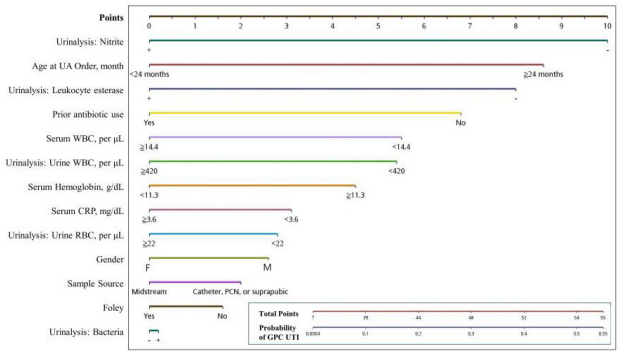


Figure 3. Nomogram of the Prediction Model for Pediatric Urinary Tract Infections Caused by Gram-Positive Bacteria.



Conclusion. VR *E. faecalis* is the leading GP uropathogen in the children less than two years of age which need notice of infection control. Our proposed prediction model for GP UTI in children could help clinicians detect potential GP uropathogen and enable them to choose adequate antibiotic regimen early.

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

1373. Vaccine Effectiveness and Pneumococcal Serotypes in Pediatric Otitis Media in the Era of Routine 13-valent Pneumococcal Vaccination in the United States

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The U S Pediatric Multicenter Pneumococcal Surveillance Group

Session: P-61. Pediatric Bacterial Studies (natural history and therapuetic)

Background. Pneumococcal acute otitis media (AOM) in children due to vaccine related serotypes (St) declined after the introduction of the 13-valent pneumococcal conjugate vaccine (PCV13).

Methods. Patients < 18 years with pneumococcal OM isolates from 2014-2019 from the U S Pediatric Multicenter Pneumococcal Surveillance Group were analyzed for demographics, immunization status, antimicrobial susceptibility and St distribution. p< 0.05 was considered statistically significant. Vaccine effectiveness (VE) was calculated using a standard formula: 1-([PCV13St vaccinated (≥3 PCV13 doses) x Non-PCV13St unvaccinated (0-1 PCV13 doses)]/[PCV13St unvaccinated x Non-PCV13St vaccinated])

Results. 646 patients were identified. Patients with PCV13 St were older compared to patients with non-PCV13 serotypes (3.3 vs 1.5 median years, p< 0.0001). Most isolates were from spontaneous drainage (71.4 %) and PE tube placements (26.9%). 36 different Sts were identified; 83.4% of isolates were non-PCV13 Sts; 35B represented 18.3% of all isolates. St 19A decreased over time (p=0.0003). 14% of isolates had penicillin MIC ≥2 μg/ml and 2.4% had ceftriaxone MIC >1 μg/ml. (Figure) 633 patients had known vaccine status. VE was 86.4% (Table).

Table.

Vaccine Effectiveness	0-1 Doses of PCV13	3 or More Doses of PCV13
PCV13 serotype	**39**	**59**
Non-PCV13 serotypes	**41**	**456**

VE: 86.4%, 95%CI 77.2%-91.9%