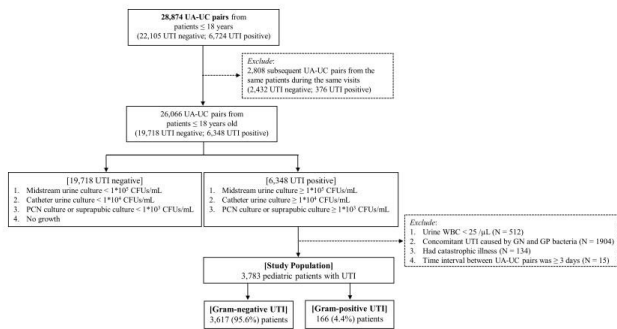collected into analysis. We built a multivariable logistic regression model to predict the GP-UTI. The model performance was examined by using calibration and discrimination plots. We demonstrated a nomogram to predict GP-UTI that could be feasible in the clinical practice.

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.
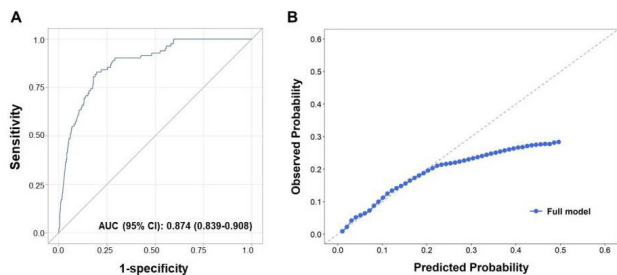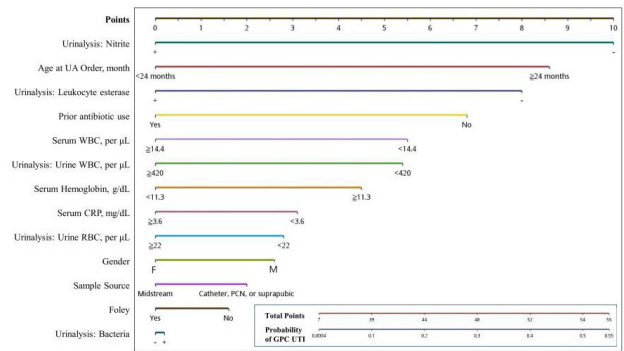

Figure 3. Nomogram of the Prediction Model for Pediatric Urinary Tract Infections Caused by Gram-Positive Bacteria.

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
Kristina G. Hulten, PhD[1]; William Barson, MD[2]; P. Ling Lin, MD[3]; John S. Bradley, MD[4]; Timothy R. Peters, MD[5]; Tina Q. Tan, MD[6]; Jose R. Romero, MD[7]; Pia S. Pannaraj, MD, MPH[8]; Sheldon L. Kaplan, MD[1]; [1]Baylor College of Medicine, Houston, Texas; [2]Ohio State University College of Medicine and Public Health and Nationwide Children's Hospital, Columbus, Ohio; [3]University of Pittsburgh School of Medicine and Children's Hospital of Pittsburgh of UPMC, Pittsburgh, Pennsylvania; [4]University of California, San Diego, San Diego, CA; [5]Wake Forest School of Medicine and Wake Forest Baptist Health, Winston Salem, NC; [6]Feinberg School of Medicine, Northwestern University, Chicago, Illinois; [7]University of Arkansas for Medical Sciences and Arkansas Children's Hospital, Little Rock, Arkansas; [8]Children's Hospital Los Angeles, Los Angeles, California

The U S Pediatric Multicenter Pneumococcal Surveillance Group

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

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%

Figure. Antimicrobial susceptibility to penicillin and ceftriaxone
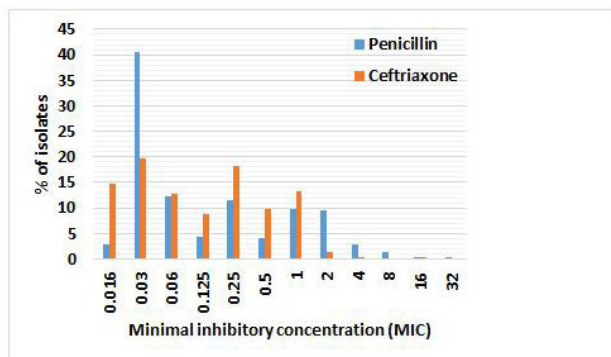
Conclusion. Non-PCV13 Sts caused most pneumococcal OM. St35B was the most common St. St 19A decreased as a cause of otitis. In this study the VE of≥3 PCV13 doses was 86% for pneumococcal OM.

1374. Carbapenem-Resistant Enterobacterales Infection in Children: Clinical and Molecular Data from a Prospective Multicenter Cohort Study

Matthew Fisher, MD[1]; Weixiao Dai, MS[2]; Yohei Doi, MD, PhD[3]; Yohei Doi, MD, PhD[3]; Lauren Komarow, MS[2]; Gopi Patel, MD[4]; Sara Revolinski, PharmD, BCPS[5]; W. Charles Huskins, MD, MSc[6]; Bettina C. Fries, MD/FIDSA[1]; Ritu Banerjee, MD, PhD[7]; Ritu Banerjee, MD, PhD[7]; [1]Stony Brook University Hospital, Stony Brook, New York; [2]George Washington University, Washington, District of Columbia; [3]University of Pittsburgh, Pittsburgh, Pennsylvania; [4]Icahn School of Medicine at Mount Sinai, New York, NY; [5]Medical College of Wisconsin, Milwaukee, WI; [6]Mayo Clinic College of Medicine and Science, Rochester, Minnesota; [7]Vanderbilt University Medical Center, Nashville, Tennessee

Antibiotic Resistance Leadership Group

Session: P-62. Pediatric Healthcare-associated Infection Epidemiology and Prevention

Background. Carbapenem Resistant Enterobacterales (CRE) are an urgent public health threat. We describe the clinical and molecular epidemiology of CRE infection in a multicenter pediatric cohort.

Methods. Patients under 18 years of age with CRE positive cultures between April 30 2016 and August 31 2017 were identified from among 49 hospitals participating in the Consortium on Resistance Against Carbapenems in Klebsiella and Other Enterobacteriaceae. Isolates representing colonization or infection were included. Bacterial identification and antimicrobial susceptibility testing were performed in each contributing clinical microbiology laboratory. Carbapenem resistance was defined per CDC criteria as those isolates displaying imipenem, doripenem, or meropenem MIC ≥4 µg/mL or ertapenem MIC ≥2 µg/mL. Clinical and epidemiological data were obtained from the electronic health record. Carbapenemase genes were detected using PCR.

Results. 51 pediatric patients with CRE were identified at 17 hospitals. All regions of the United States were represented, with highest prevalence in the South (46%), followed by the Northeast (24%), Midwest (20%) and West (10%). The mean age at time of positive culture was 4 years. 66% of children were under age 2. 53% were male. 40% were white, 38% black, and 18% Hispanic. Mean time from admission to culture was 25 days. 72% of children were in an ICU at the time of culture, including 18% in the neonatal ICU. 42% required mechanical ventilation prior to culture. History of malignancy was present in 14% of children. The most common source was urine (31%), followed by respiratory (25%), and blood (18%). The most common species were *Enterobacter cloacae* (29%), *Klebsiella pneumoniae* (24%) and *E. coli* (20%). Carbapenemase genes were detected in 8 out of 35 (23%) isolates tested. 90-day mortality was 18%. Mortality was highest for *K. pneumoniae* (42%). The majority of subjects (88%) did not receive effective antibiotic therapy on the day of culture collection.

Table 1

Summary of pediatric cohort by age group

| | | Age subgroups | | | | |
		0-2 Months (N=14)	3 Months - 23 months (N=20)	2 Years+ (N=17)	Total (N=51)	P-Value*
Gender	Female	6 (43%)	9 (45%)	9 (53%)	24 (47%)	0.8314
	Male	8 (57%)	11 (55%)	8 (47%)	27 (53%)	
Admitted at Birth	No	5 (36%)	19 (95%)	17 (100%)	41 (80%)	
	Yes	9 (64%)	1 (5%)	0 (0%)	10 (20%)	
White	No	11 (79%)	10 (50%)	10 (59%)	31 (61%)	0.2391
	Yes	3 (21%)	10 (50%)	7 (41%)	20 (39%)	
Black	No	4 (29%)	15 (75%)	12 (71%)	31 (61%)	0.0144
	Yes	10 (71%)	5 (25%)	5 (29%)	20 (39%)	
Asian	No	14 (100%)	20 (100%)	16 (94%)	50 (98%)	0.3606
	Yes	0 (0%)	0 (0%)	1 (6%)	1 (2%)	
American Indian	No	14 (100%)	20 (100%)	17 (100%)	51 (100%)	
Other race	No	14 (100%)	18 (90%)	17 (100%)	49 (96%)	0.1992
	Yes	0 (0%)	2 (10%)	0 (0%)	2 (4%)	
Race unknown	No	13 (93%)	17 (85%)	13 (76%)	43 (84%)	0.456
	Yes	1 (7%)	3 (15%)	4 (24%)	8 (16%)	
Ethnicity	Hispanic or Latino	0 (0%)	4 (20%)	5 (29%)	9 (18%)	0.4679
	Not Hispanic or Latino	11 (79%)	12 (60%)	10 (59%)	33 (65%)	
	Not Reported	2 (14%)	3 (15%)	2 (12%)	7 (14%)	
	Unknown	1 (7%)	1 (5%)	0 (0%)	2 (4%)	

*Chi-Square Test

Table 2

CRACKLE Pediatric Cohort Comorbidities by Age

| | | Age subgroups | | | | |
		0-2 Months (N=14)	3 Months - 23 months (N=20)	2 Years+ (N=17)	Total (N=51)	P-Value
Charlson score	Mean (s.d.)	1.86 (1.99)	0.60 (0.88)	0.88 (1.05)	1.04 (1.40)	0.0942*
	Min, Max	0, 7	0, 3	0, 3	0, 7	
	Median (Q1, Q3)	2 (0, 3)	0 (0, 1)	0 (0, 2)	0 (0, 2)	
	10%, 90%	0, 4	0, 2	0, 2	0, 3	
Pitt score	Mean (s.d.)	3.07 (2.20)	3.90 (2.90)	2.59 (2.45)	3.24 (2.59)	0.3887*
	Min, Max	0, 6	0, 10	0, 7	0, 10	
	Median (Q1, Q3)	2.50 (2.00, 6.00)	4 (2, 6)	2 (0, 4)	3 (1, 6)	
	10%, 90%	0, 6	0, 8	0, 6	0, 6	
Solid organ transplant	No	12 (86%)	18 (95%)	15 (94%)	45 (92%)	0.6686**
	Yes	2 (14%)	1 (5%)	1 (6%)	4 (8%)	
	Missing	0	1	1	2	
Stem cell transplant	No	12 (92%)	18 (100%)	12 (86%)	42 (93%)	0.2636**
	Yes	1 (8%)	0 (0%)	2 (14%)	3 (7%)	
	Missing	1	2	3	6	
Any malignancies	No	12 (86%)	19 (95%)	13 (76%)	44 (86%)	0.2988**
	Yes	2 (14%)	1 (5%)	4 (24%)	7 (14%)	

*Kruskal-Wallis Test
**Fisher's Exact Test

Conclusion. CRE infection or colonization in children in the U.S. was geographically widespread, likely hospital-acquired, and associated with high mortality. A significant portion of patients were infants. Ineffective antibiotic therapy was common at illness onset.

1375. Characterization of Recurrent Central Line-associated Bloodstream Infections at Texas Children's Hospital

Catherine Foster, MD[1]; Lucila Marquez, MD, MPH[2]; Tjin Koy, MPH, CIC[3]; Judith Campbell, MD[2]; [1]Baylor College of Medicine, Houston, TX; [2]Baylor College of Medicine and Texas Children's Hospital, Houston, Texas; [3]Texas Children's Hospital, Houston, Texas