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US Pediatric Multicenter Pneumococcal Surveillance Study Group

Session: O-34. Pediatric Vaccines

Background: The 2011 IDSA/PIDS Clinical Practice Guidelines for the Management of Community-acquired Pneumonia (CAP) in Children Older than 3 months recommended empiric treatment with either ampicillin/penicillin or ceftriaxone based on PCV13 vaccine status and the local antibiotic susceptibilities of IPD isolates. No study has addressed differences in antibiotic susceptibilities for isolates from children with pneumococcal pneumonia (PP) based on PCV13 status.

Methods: Investigators from 8 US children's hospitals identified infants and children with IPD between 1/1/2014 and 12/31/2019. IPD was documented by positive cultures from a normally sterile site. PP diagnosis required an abnormal chest radiograph. Clinical data were recorded and isolates analyzed for serotype (ST) by the capsular swelling method and antimicrobial susceptibilities by standard methods. Administration of PCV7/13 was documented through the patient's medical records, health care provider or a vaccine registry. Fisher Exact was performed; $p < 0.05$ was significant.

Results: 690 IPD patients with isolates were available (0–18 y); 24% (166/690) of the isolates were PCV13 STs (ST3-75, ST19F-45, ST19A-36, ST7F-5, other STs-5). The most common non-PCV13 ST isolates were ST35B-60, ST23B-59, ST33F-47, ST22F-43, ST15C-35, ST23A-27, ST15B-26, ST10A-26, ST15A-23. Of non-PCV13 isolates, 41% (217/524) were among the 7 additional STs in PCV20. For children with PP (n=157), the distributions of penicillin (Table) (p=0.8) and ceftriaxone MICs were no different for isolates obtained from children regardless of prior PCV13 doses. Less than 7% of PP isolates were resistant to penicillin (MIC >2 µg/mL).

Table. Minimal inhibitory concentrations (MIC) of pneumococcal isolates related to the number of PCV13 doses each patient received prior to pneumococcal pneumonia (PP).

Penicillin MIC (µg/mL)	Number of PCV13 doses				
	0	**1**	**2**	**3**	**4**
≤ 0.125	26*	12	8	17	43
0.25–0.5	4	2	1	1	5
1	1	0	0	3	1
2	4	0	0	2	5
≥4	1	2	1	2	4

*Number of pneumococcal pneumonia patients/isolates. 145/157 patients had immunization and isolate susceptibility data available for analysis.

Conclusion: PCV13 status should not modify empiric antibiotics for children with suspected pneumococcal CAP. 41% of non-PCV13 IPD isolates were among the 7 additional PCV20 STs.

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177. Safety of Measles and Pertussis-containing Vaccines in School-age Children Previously Diagnosed with Autism Spectrum Disorders

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Background: Some parents, especially those of children with autism spectrum disorders (ASD), are uncertain about the safety of childhood immunization. We compared rates of fever, febrile seizure and emergency room (ER) visits following measles and pertussis-containing vaccines recommended between ages 4–6 years among children with and without ASD.

Risk of Fever, Febrile Seizure and ER Visits following Measles and Pertussis-containing Vaccine Among Children with and without Autism Spectrum Disorders Diagnosis.

Outcomes after immunization	Risk/control intervals (days)	Difference-in-difference analysis comparing children with vs. without ASD Ratio of rate ratio (95% CI)	Risk interval analysis among children with ASD (N = 14,947) Rate ratio (95% CI)	Risk interval analysis among children without ASD (N=1,650,041) Rate ratio (95% CI)
Risk following Measles-containing vaccines				
Fever[1]	7 - 10/14 - 28	1.07 (0.58 – 1.96)	1.22 (0.67 – 2.23)	1.14 (1.06 – 1.22)
Febrile seizure[2]	7 - 10/14 - 28	NE	NE	1.64 (1.05 – 2.55)
ER visits	4 - 10/14 - 28	1.11 (0.80 – 1.54)	1.13 (0.82 – 1.56)	1.02 (0.98 – 1.06)
Risk following Pertussis-containing vaccines				
Fever[1]	1 -3/14 - 28	1.16 (0.63 – 2.15)	1.38 (0.75 – 2.55)	1.19 (1.10 – 1.29)
Febrile seizure[2]	0 - 3/14 - 28	NE	NE	2.40 (1.58 – 3.52)
ER visits	0 – 3/14 - 28	0.87 (0.59 – 1.28)	1.11 (0.76 – 1.62)	1.27 (1.22 – 1.33)

[1] Fever diagnosed in outpatient settings
[2] Febrile seizure diagnosed in ER or inpatient settings
NE: Not estimated because cells counts were zero "0"

Methods: The study included children who were born between 1995–2012, aged 4–7 years at vaccination, and members of six integrated healthcare delivery systems within the Vaccine Safety Datalink. Children with ASD were defined based on receipt of two separate International Classification of Diseases (ICD)-9 or 10 codes. Outcomes (fever, febrile seizures, and ER visits) were identified in electronic health records. To minimize confounding by unmeasured factors related both to avoidance of vaccination and to outcomes of interest, we compared rates of each outcome between children with and without ASD, in risk and control intervals, by estimating the difference-in-differences on a log scale (i.e. the ratio of rate ratios) using logistic regressions. We also conducted risk interval analyses comparing rates of outcomes in risk intervals and control intervals within each group.

Results: The study included 14,947 children with ASD and 1,650,041 children without ASD. After measles or pertussis-containing vaccination, there were no differences in association between the two groups for fever or ER visits (Table). There were no febrile seizures identified among children with ASD. Within the ASD group, rates of fever, seizure or ER visits did not differ significantly between the risk and control intervals after vaccination. However, among the non-ASD group, measles and pertussis-containing vaccines were associated with higher rates of fever and seizure in risk intervals compared to controls intervals. Pertussis-containing vaccines were associated with increased risk of ER visits in risk interval compared to control interval (Table).

Conclusion: We found no difference in the risk of fever, and ER visits comparing children with autism to children without autism after measles or pertussis-containing vaccines. The study provides some reassurance that these vaccines are not less safe in children with ASD.

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178. Vaccine Effectiveness Against Influenza-associated Hospitalizations and Emergency Department (ED) Visits Among Children in the United States in the 2019–2020 Season

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Session: O-34. Pediatric Vaccines

Background: The 2019–20 influenza season was predominated by early onset B/Victoria viruses followed by A(H1N1)pdm09 virus circulation. Over 95% of circulating B/Victoria viruses were subclade V1A.3, different from the Northern Hemisphere