Disclosures. **Marian G. Michaels, MD, MPH**, **Viracor** (Grant/Research Support, performs assay for research study no financial support) **John V. Williams, MD**, **GlaxoSmithKline** (Advisor or Review Panel member, Independent Data Monitoring Committee)**Quidel** (Advisor or Review Panel member, Scientific Advisory Board) **Elizabeth P. Schlaudecker, MD, MPH**, **Pfizer** (Grant/Research Support)**Sanofi Pasteur** (Advisor or Review Panel member) **Natasha B. Halasa, MD, MPH**, **Genentech** (Other Financial or Material Support, I receive an honorarium for lectures - it's a education grant, supported by genetech)**Quidel** (Grant/Research Support, Other Financial or Material Support, Donation of supplies/kits)**Sanofi** (Grant/Research Support, Other Financial or Material Support, HAI/NAI testing) **Natasha B. Halasa, MD, MPH**, Genentech (Individual(s) Involved: Self): I receive an honorarium for lectures - it's a education grant, supported by genetech, Other Financial or Material Support, Other Financial or Material Support; Sanofi (Individual(s) Involved: Self): Grant/Research Support, Research Grant or Support **Janet A. Englund, MD**, **AstraZeneca** (Consultant, Grant/Research Support)**GlaxoSmithKline** (Research Grant or Support)**Meissa Vaccines** (Consultant)**Pfizer** (Research Grant or Support)**Sanofi Pasteur** (Consultant)**Teva Pharmaceuticals** (Consultant) **Christopher J. Harrison, MD**, **GSK** (Grant/Research Support)**Merck** (Grant/Research Support)**Pfizer** (Grant/Research Support, Scientific Research Study Investigator, Research Grant or Support) **Flor M. Munoz, MD**, **Biocryst** (Scientific Research Study Investigator)**Gilead** (Scientific Research Study Investigator)**Meissa** (Other Financial or Material Support, DSMB)**Moderna** (Scientific Research Study Investigator, Other Financial or Material Support, DSMB)**Pfizer** (Scientific Research Study Investigator, Other Financial or Material Support, DSMB)**Virometix** (Other Financial or Material Support, DSMB)

1179. PCV13 Pediatric Routine Schedule Completion and Adherence Before and During the COVID-19 Pandemic in the US

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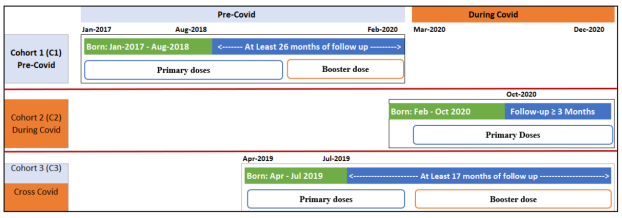
Session: P-69. Pediatric Vaccines

Background. Coronavirus Disease 2019 (COVID) mitigation measures may have unintended consequences, such as reduced or delayed access to routine immunizations. This study examined (1) PCV13 routine vaccination completion and adherence (C&A) among US infants before and during the COVID pandemic and (2) the relationship between primary dose C&A and booster dose C&A.

Methods. Retrospective data from the Optum's de-identified Clinformatics Data Mart Database were used to create 3 cohorts: C1, Pre-COVID; C2, During COVID; C3, Cross-COVID (Figure 1). The completion was defined as number of PCV13 doses received within 8 months of birth, and the adherence was defined number of doses received at ACIP recommended time (@2, 4, 6 months, +/- 5 days). Univariable logistic regression was used to compare the odds of primary dose C&A in cohorts C1 and C3 vs C2 and descriptive analyses were used to explore primary dose C&A in relation to booster dose C&A.

Figure 1: Study population and inclusion criteria



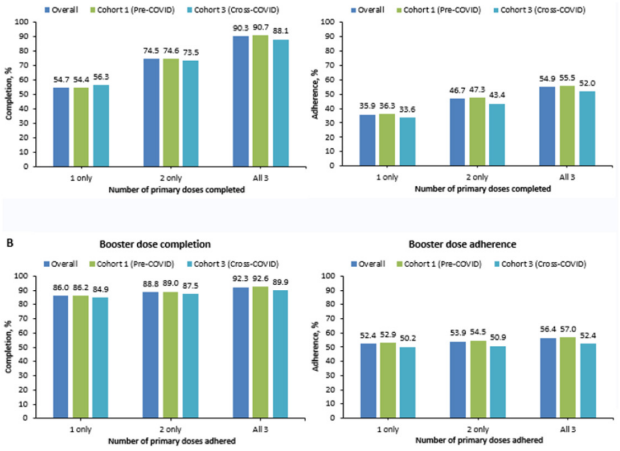
Results. A total of 172,916, 70,049, and 34,854 infants were included in C1, C2, and C3. Among infants with > 8 months of follow-up from birth (N=132,183 for C1&C3, 16,522 for C3), 3-primary dose completion was statistically significantly higher before COVID than during COVID (crude OR = 1.10, 95% CI: 1.06-1.15). The 3-primary dose adherence was also higher before COVID than during COVID (crude OR = 1.10, 95% CI: 1.05-1.15). Among infants with ≥2, 4 and 6 months of follow-up, adherence of each individual dose was consistently higher before COVID than during COVID (1st dose: OR = 1.03, 95% CI: 1.01–1.04; 2nd dose: OR = 1.04, 95% CI: 1.01 – 1.06; 3rd dose: OR = 1.12, 95% CI: 1.08 – 1.15) (Table 1). Booster dose completion was higher in infants who completed or adhered to 3 primary doses than infants who completed or adhered to only 1 or 2 primary doses (Figure 2, Overall) and booster dose C&A was generally higher before COVID than during COVID (Figure 2, Cohort 1 vs. Cohort 3).

Table 1. Comparison of completion and adherence of primary dosing series per-COVID vs. during-COVID era

	Cohorts 1 & 3 (Pre-COVID, N=132,183)			Cohort 2 (During COVID, N=16,522)			Crude Odds Ratio (95% CI) (Cohorts 1 & 3 vs. Cohort 2)
	N	Proportion	Cumulative	N	Proportion	Cumulative Proportion	
Completion							
Completed 3 doses	104302	78.91%	78.91%	12758	77.22%	77.22%	1.10 (1.06-1.15)
Completed 2 doses	15362	11.62%	90.53%	1963	11.88%	89.1%	0.98 (0.93-1.03)
Completed 1 dose only	4376	3.31%	93.84%	569	3.34%	92.44%	0.96 (0.88-1.05)
Adherence							
Adhered all 3 doses	14110	9.80%	9.80%	2540	8.98%	8.98%	1.10 (1.05 – 1.15)
Adhered 2 doses only	41077	28.52%	38.32%	8411	29.74%	38.72%	0.94 (0.92-0.97)
Adhered 1 dose only	52044	36.13%	74.45%	10078	35.63%	74.35%	1.02 (0.99 – 1.05)
1st dose adherence	96516	57.10%	NA*	32289	56.49%	NA	1.03 (1.01 – 1.04)
2nd dose adherence	60842	38.78%	NA*	15942	37.91%	NA	1.04 (1.01 – 1.06)
3rd dose adherence	37723	26.19%	NA*	6817	24.10%	NA	1.12 (1.08 – 1.15)

*Based on infants with at least 2, 4, 6 months of follow up, respectively.

Figure 2: Booster dose completion and adherence in relation to primary dosing completion (A) and adherence (B)



Conclusion. These results indicated that PCV13 full completion was statistically lower during COVID, but the magnitude of the difference in infants was not extensive. Infants who completed or adhered to all three primary doses were more likely to complete or adhere to the booster dose. Further research is warranted as structured datasets mature to capture the full time span of COVID-19 mitigation measures.

Disclosures. **Liping Huang, MD, MA, MS**, **Pfizer Inc** (Employee) **Jennifer L Nguyen, ScD, MPH**, **Pfizer Inc.** (Employee) **Johnna Perdrizet, MPH**, **Pfizer Inc** (Employee) **Tamuno Alfred, PhD**, **Pfizer Inc.** (Employee) **Adriano Arguedas, MD**, **Pfizer** (Employee)

1180. Comparing Changes in Pneumococcal Meningitis Incidence to all Invasive Pneumococcal Disease Following Introduction of PCV10 and PCV13: The PSERENADE Project

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The PSERENADE Team

Session: P-69. Pediatric Vaccines

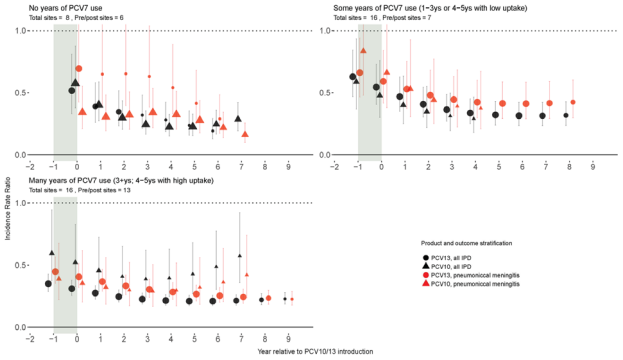
Background. The introduction of higher valency pneumococcal conjugate vaccines (PCV10 and PCV13) has reduced invasive pneumococcal disease (IPD) incidence. It is unknown whether the degree of reduction differs for pneumococcal meningitis, a small subset of pneumococcal disease but a major cause of severe childhood morbidity and mortality globally. We compared the impact of PCV10/13 on pneumococcal meningitis and all IPD by estimating the changes in incidence following the introduction of PCV10/13 among children < 5 years of age.

Methods. Data on confirmed positive cases for pneumococcus in cerebrospinal fluid (CSF) were obtained directly from surveillance sites. PCV10/13 impact on all-serotype pneumococcal meningitis and all IPD were estimated using site-specific incidence rate ratios (IRRs) at each post-PCV10/13 year relative to the pre-PCV period, using Bayesian multi-level, mixed effects Poisson regression. All-site weighted average

IRRs were estimated using linear mixed-effects regression. Results were stratified by product (PCV10 vs. PCV13) and amount of prior PCV7 use (none; some (1-3 years or 4-5 years with < 70% uptake); or many (≥ 4 years with ≥ 70% uptake).

Results. 40 surveillance sites (9 PCV10, 31 PCV13) in 28 countries, primarily high-income (82%) that had both CSF and IPD data were included in analyses. CSF+ accounted for 9.0% of IPD cases (IQR across sites: 6.2%-15.6%). The rate and amount of decline was generally similar between meningitis and IPD across all strata. At 5 years after PCV10/13 introduction, the IRRs across PCV7-use strata were 0.28-0.32 for pneumococcal meningitis and 0.22-0.43 for all IPD at PCV10-using sites, and 0.27-0.41 and 0.21-0.32, respectively, for PCV13-using sites. Only one site from the African meningitis belt contributed eligible data, which lacked pre-PCV data to estimate IRRs, but incidence rate of both IPD and meningitis decreased following PCV introduction.

Figure 1. All-Site Weighted Average Incidence Rate Ratios, Children < 5 years



* Total sites indicate the number of sites with incidence rate data included and pre/post sites indicate the number of sites with both pre– and post–PCV data to estimate site–specific IRRs for each outcome. The size of point estimates is relative to the number of sites with both pre– and post– data. ** Year 0 indicates the year of PCV10/13 introduction and year –1 indicates the last year of PCV7 use prior to PCV10/13 introduction.

Conclusion. Net declines in all-serotype IPD and CSF+ meningitis in children < 5 years were similar on average for both PCV10 and PCV13. Data from low-income, high-burden, and meningitis-belt regions were limited.

Disclosures. **Maria Deloria Knoll, PhD**, **Merck** (Research Grant or Support)**Pfizer** (Research Grant or Support)

1181. Serotype Distribution by Age of Remaining Invasive Pneumococcal Disease After Long-Term PCV10/13 Use: The PSERENADE Project

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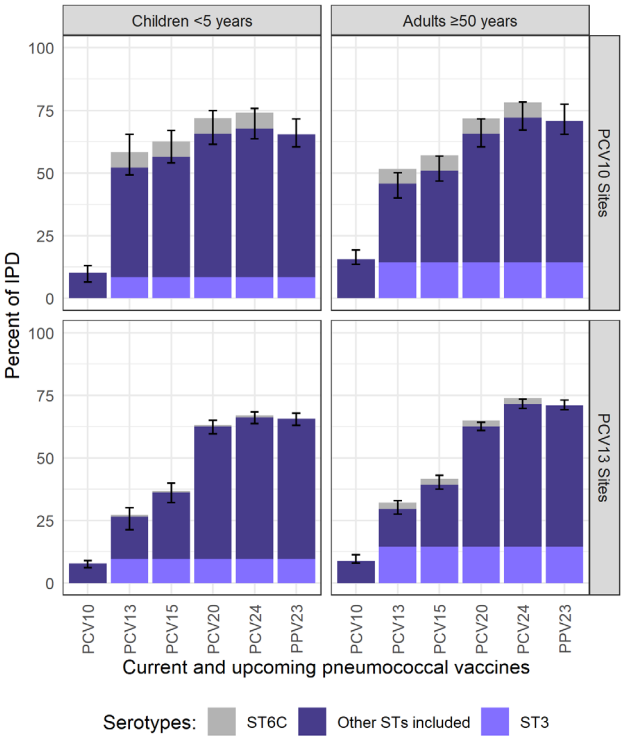
Session: P-69. Pediatric Vaccines

Background. Pneumococcal conjugate vaccines (PCV) have reduced invasive pneumococcal disease (IPD) (see other PSERENADE abstract), of which > 70% was vaccine-type pre-PCV. We described the serotype (ST) distribution of remaining IPD in countries with mature infant PCV10/13 programs.

Methods. IPD ST distribution data were obtained directly from surveillance sites, supplemented with published literature. Mature programs were defined as exclusive use of PCV10 or PCV13 for at least 5-7 years (depended on if prior PCV7 use and/or PCV10/13 catch-up) with primary series uptake > 70%. The distribution was estimated using a multinomial Dirichlet regression, stratified by PCV product and age (< 5 years, ≥ 50 years).

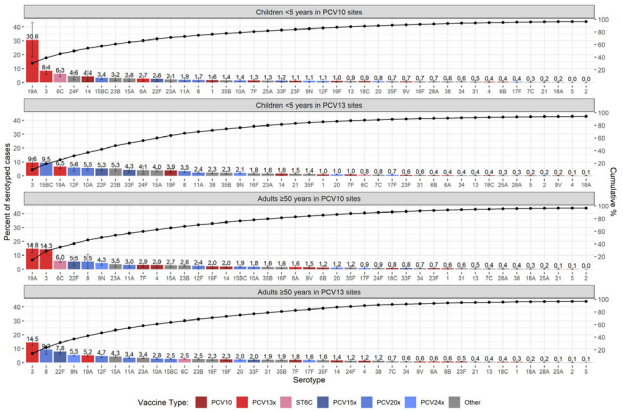
Results. Serotyped IPD cases from 42 PCV13- (n=78,912) and 12 PCV10-using sites (n=8,429) in 41 countries were analyzed. Most sites were from high-income countries (67%) and used a booster dose schedule (81%). For low- and middle-income countries, only 5 and 7 sites had more than 20 eligible cases for children and adults, respectively. In PCV10 sites, 10.0% (95% CI: 6.3-12.9%) and 15.5% (95% CI: 13.4-19.3%) of the remaining IPD during the mature period was PCV10-type among children and adults, respectively (Figure 1). For PCV13 sites, PCV13-type was 26.4% (95% CI: 21.3-30.0%) among children and 29.5% (95% CI: 27.5-33.0%) among adults. PCV20-, PCV24-, and PPV23-type cases ranged from 62-72% across all age and PCV-use groups. ST 19A was the leading ST at PCV10 sites, though more so for children (30.6%, 95% CI: 18.2-43.1%) than adults (14.8%, 95% CI: 11.9-17.8%; Figure 2). ST 3 was a top ST in both PCV10 and PCV13 sites, causing about 9% of cases in children and 14% in adults. ST 6C was the third most common ST in PCV10 sites, causing 6% of cases in both age groups. Some top non-PCV13 STs are included in higher-valent investigational PCVs (15BC, 12F, 22F, 8, 9N) but others are not (24F, 23B, 23A, 15A).

Figure 1. Percentage of IPD cases in the mature PCV10/13 period due to serotypes included in current and upcoming products.



Serotype (ST) 3 is illustrated separately in lighter purple in the bars corresponding to products that include ST3 due to the uncertain effectiveness against ST3 in current products. ST6C is illustrated in grey above the bars where ST6A is included. Although ST6C is not included in PCV10 or PCV13, PCV13 offers cross-protection through ST6A. ST6A also benefits from cross-protection with ST6B, included in both PCV10 and PCV13. Therefore, ST6A causes a very small fraction of disease in both settings and age groups, and it is not shown. Confidence intervals do not include ST6C, as this serotype is not included in PCV10/13. PCV13 is Pfizer's Prevnar13/Prevenar13; PCV10 is GSK's Synflorix.

Figure 2. Serotype-specific distribution of IPD in the mature PCV10/13 period.



Serotypes are colored by the lowest valency PCV product they are included in. The "x" in the PCV legend represents the extra serotypes included in that product relative to the next lower product (i.e., PCV13x includes serotypes 3, 6A, and 19A not in PCV10). Serotype (ST) 6C is colored separately because, although it is not included in any product, it is covered through cross-protection with PCV13-type serotype 6A. PCV13 is Pfizer's Prevnar13/Prevenar13; PCV10 is GSK's Synflorix.

Conclusion. IPD due to vaccine STs was low for both children and adults in countries with mature PCV programs. ST distribution of remaining IPD differed between PCV10 and PCV13 sites and between age groups. Higher-valency PCVs under evaluation target over half of remaining IPD cases, but some prevalent STs are not included in known investigational products.