Methods. We used claims data from 4 large national insurers in the FDA-sponsored Sentinel Initiative, which was developed to monitor the safety of FDA-regulated medical products. With a self-controlled risk interval design, the risk of FS in 0–1 days following IV and following PCV13 was compared with a comparison interval (14–20 days), adjusting for confounding by age, calendar time, and concomitant vaccination with the other vaccine. In exploratory analyses, we assessed whether the effect of IV is modified by concomitant administration of PCV13.

Results. During the study period, 355,486 children received IV and 581,868 received PCV13. We observed an incidence rate ratio (IRR) of 1.12 (95% CI 0.80, 1.56) for the risk of FS following IV after adjusting for age, calendar time and concomitant PCV13. PCV13 was associated with an increased risk of FS (IRR adjusted for age, calendar time and concomitant IV, 1.80, 95% CI 1.29, 2.52). The attributable risk for PCV13 ranged from 0.33 to 5.16 per 100,000 doses.

The age and calendar-time adjusted IRR comparing exposed time to unexposed time was greater for concomitant IV and PCV13 (IRR 2.80, 95% CI 1.63, 4.83), as compared with that for PCV13 without concomitant IV (IRR 1.54, 95% CI 1.04, 2.28). However, the formal test assessing for interaction between IV and PCV13 was not statistically significant.

Conclusion. We found an elevated risk of FS after PCV13 vaccine but not after IV, when adjusting for concomitant administration of the other vaccine. We found some evidence to suggest that concomitant administration of IV with PCV13 might increase the risk beyond the independent effects of PCV13, but the study was not powered to assess this interaction. The risk of seizures associated with PCV13 is low compared with a child’s lifetime risk of FS. Findings should be interpreted in the context of the importance of preventing influenza and pneumococcal infections in young children.

Disclosures. L. Li, sanofi pasteur: The author is currently employed by Sanofi Genzyme, which shares the same parent company as sanofi pasteur, the manufacturer of the Flu vaccine. However, the work was done while this author was still employed by Harvard Pilgrim Health Care Institute. No financial benefit received

1492. Incidence of Invasive Pneumococcal Disease Before and During an Era of Use of Three Different Pneumococcal Conjugate Vaccines in Quebec

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Background. In Quebec, 7-valent (PCV7), 10-valent (PCV10) and 13-valent (PCV13) pneumococcal conjugate vaccines were successively used for children immunization according to a 2+1 doses schedule.

Objective. To assess the impact of this program on the epidemiology of invasive pneumococcal disease (IPD).

Methods. Notification (2000–2016) and laboratory surveillance (2005–2016) data were analyzed and the immunization status of IPD cases in 2011–2015 was checked.

Results. In children <5 years, IPD rate decreased from 69/100,000 in 2003 to 12/100,000 in 2016 (83% reduction). Following PCV7 introduction in 2004, there was a rapid decline in incidence of homologous serotypes. 7F cases and 19A decreased following PCV10 introduction in 2009 and PCV13 in 2011, whereas decrease in serotype 3 (3F) was minimal. Non-vaccine types IPD increased and represented 79% of cases in 2016. The same pattern was seen in adults but replacement was complete and there was no decrease in overall IPD rate. In those years 65 and over, PCV13 serotypes represented 28% of cases in 2016, and 62% were covered by the 3-valent conjugate vaccine. Out of 7 IPD cases caused by serotype 3 in children vaccinated with PCV13, 5 occurred more than one year following the booster dose, which suggests short-term protection. Out of 27 breakthrough 19A cases, 17 occurred between 8 and 14 months of age in children who had received the 2 primary PCV13 doses but not the toddler booster dose, which suggests a window of susceptibility in a 2+1 schedule.

Conclusion. Hopefully, 19A incidence in children will continue to decrease and herd protection would eventually close the window of susceptibility. Serotype 3 is fortunately not frequent in children but a hard nut to crack. In elderly adults, PCV13 serotype coverage is diminishing year after year but a majority of cases remains potentially covered by the 23-valent polyval saccharide vaccine.

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1493. Enhanced Detection of Vaccine Type Colonization and Dual Serotype Carriage with Molecular Strategies for Identification of Streptococcus pneumoniae Colonization

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Background. Detecting Streptococcus pneumoniae (SP) carriage in children via conventional microbiological methods lacks sensitivity as high density is required for routine culture and identification of dual serotype colonization is a technical challenge. To increase understanding of post vaccine nasopharyngeal (NP) carriage, comparison of persistence of vaccine serotypes, strategies for molecular identification of SP have been developed. These methods most often rely on the identification of the SP autolysin gene lytA through non-quantitative PCR or semi-quantitative real-time PCR (RTFPCR).

Methods. We collected NP swabs from 60 healthy or sick children <5 years old at Boston Medical Center from Nov 2015 – Mar 2016 and used enhanced microbiologic logic and molecular identification strategies to characterize SP colonization. NP specimens were broth enriched for 4 hours and cultured on selective blood agar; routine microbiologic methods were used to isolate and identify SP. A second aliquot of enriched broth was used for DNA isolation. RTFPCR assays were performed targeting the lytA, piaB (SP membrane permease), cpsA (SP capsule operon), genes, and 21 SP serotypes: all serotypes included in 13-valent pneumococcal conjugate vaccine and 8 additional non-vaccine serotypes.

Results. In our sample, 16% of specimens were SP positive via culture and 33% were RTFPCR-positive (Cq<35) for the lytA gene. Multiplex RTFPCR assays with both the lytA and piaB genes yielded a positive result for 24% of samples. Further RTFPCR confirmed that 99% of the lytA/piaB positive samples were positive for cpsA (a second marker being 70% of the lytA positive samples were cpsA positive). Serogroup 19 was the most frequently isolated vaccine serogroup using both culture and RTFPCR; molecular analysis identified 6% of specimens with concurrent carriage of more than one serotype.

Conclusion. Compared with enhanced culture, we found a 50% increase in SP detection using combined lytA and piaB multiplex RTFPCR. Similarly, the proportion of children colonized with vaccine serotypes increased from 2% to 7%. This work is funded by an investigator initiated grant to BUMC from Pfizer.

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1494. Antibiotic Prescription Rates in Children <24 Months Old Following PCV7/PCV13 Sequential Implementation

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Background. PCV7/PCV13 (PCV) implementation markedly impacted on acute respiratory infection rates in young children, and is thus expected to reduce antibiotic use. We conducted a community-wide study to determine the extent of antibiotic prescription rates (APRs) following PCV implementation.

Methods. The study was conducted from July 2005 through June 2016 among all Jewish children <24m, insured by the Clalit Health Maintenance Organization (HMO) in southern Israel (74% of all the region’s Jewish children; n = 8,483, 2005; n = 13,604, 2016). All dispensed prescriptions for oral antibiotics at the HMO were recorded and yearly APRs were calculated by antibiotic category. PCV7 and PCV13 were implemented in July 2009 and November 2010 respectively and rapidly reached 90% coverage for 3 doses. Epidemiological years were from July through June.

Results. Overall, high APRs were seen throughout the study. A total of 226,035 antibiotic prescriptions were dispensed. Overall annual APR means (per 1,000 ± SD) were 2068.9 ± 15.2 and 1841.1 ± 39.1 in 2005–2009 and 2013–2016, respectively (11% reduction; 95% CI 10–12%) (Figure 1). Aminocillin, the most commonly prescribed antibiotic drug (60.8% of all prescriptions) was reduced by 14% (95% CI 13–15%) (Figure 2). Similar reductions were seen for oral cephalosporins and amoxicillin/clavulanate. However antibiotic implementation was continuous throughout the study. Calculation of linear trends before and after PCV implementation demonstrated a significant change in trends for amoxicillin, oral cephalosporin and total APRs, strongly suggesting a causative role of PCVs. PCV implementation resulted in an overall reduction of 45,320 prescriptions for a cohort of 100,000 children during their first 2 years of life (95% CI 41,512 to 49,007).

Conclusion. A clear and significant change in all APR trends associated with PCV implementation was observed in children <24 months old with a baseline high APR. This resulted in a marked decline in antibiotic use. Continuous surveillance is needed to determine further trends, including those for specific antibiotic categories.