broaden serotype coverage. The aim of this study was to estimate the population-level impact of new PCVs to replace the existing 13-valent vaccine (PCV13) in infants.

**Methods.** An age-structured dynamic transmission model of Streptococcus pneumoniae before and after PCVs introduction was developed. The model was fit to longitudinal Active Bacterial Core surveillance (ABCS) data (1997–2015) in the United States on distribution and cases of IPD, as well as population level prevalence and serotype distribution data. It was assumed that total S. pneumoniae carriage remains constant over time, with full carriage replacement within four years of introduction of any PCV. Two alternative new PCVs with differing IPD coverage are tested with an introduction date of 2024.

**Results.** When compared with continuing vaccination of infants with PCV13, 10 years after a new PCV is introduced (2,034) cases of IPD are substantially reduced (shown in the table below). Broader serotype coverage leads to greater reductions in IPD. The greatest IPD reduction occurred in infant vaccine groups, but even similar reductions are also observed in the unvaccinated elderly population due to herd protection.

| Additional Vaccine Coverage Over PCV13 (2017/2024) | <2 Yrs | 2-5 Yrs | 5-64 Yrs | >65 Yrs | All Ages |
|-----------------------------------------------|--------|---------|---------|--------|---------|
| 11–21% | 22–35% | 36      | 35      | 33      | 31      |
| 15–30% | 42–45% | 42      | 42      | 41      | 39      |

*Defined as the proportion of IPD cases that are caused by serotypes covered by the new PCV in 2016/2018 (a range of values is given because of differences by age group; values differ between 2016 and 2024 as serotype prevalence has not reached steady state as of 2016).*

**Conclusion.** A new, higher valent PCV given to infants in the United States has the potential to reduce future cases of IPD. Vaccination of infants may also have a substantial indirect benefit on IPD cases in adults and the elderly.

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1428. Modeling Reductions in Antibiotic Prescriptions due to Otitis Media in Canada as a Result of Pneumococcal Conjugate Vaccination

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**Session:** 146. Pneumococcal Vaccines

**Background.** Vaccines are an important factor in combating the growing global health issue of antimicrobial resistance. Pneumococcal conjugate vaccines (PCVs) have substantially reduced the burden of otitis media (OM) caused by S. pneumoniae, one of the largest causes of antibiotic prescriptions (Abx) in children under 5. The purpose of this study was to quantify the number of Abx avoided since the introduction of a national PCV program in Canada.

**Methods.** We adapted a previously published forecasting model to estimate the reduction in OM cases in Canada since the introduction of PCVs in all routine provincial programs in 2005 through 2015 (the last year complete data were available). The impact of PCV on OM was modeled and compared with pre-PCV incidence to estimate net impact of the vaccine. We assumed that 90% of OM episodes were treated with an initial Abx given routine practice. All data were sourced from the published literature.

**Results.** Over 10 years, PCVs were estimated to avert 3.7 million cases of OM in Canada. This corresponded to an estimated reduction of 3.3 million Abx, or 0.96 Abx avoided per infant vaccinated with PCV.

**Conclusion.** PCVs have had a significant public health impact on reducing the burden of disease and Abx. While most of the PCV impact on reduction of Abx is due to reduction in OM cases, additional Abx reduction from prevention of other invasive and noninvasive pneumococcal diseases is of importance. Further research is necessary to understand the additional net benefit of reducing antibiotics across the disease spectrum given that reductions in net prescribing could avert further downstream resistance by other pathogens.

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1429. Emergence of Multidrug-resistant Serotype 24 Among Children Under 2 Years Old With Invasive Pneumococcal Disease After the Introduction of PCV13 in Argentina

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**Session:** 146. Pneumococcal Vaccines

**Background.** In Argentina PCV13 was included in the National Vaccination Program in January 2012 for children <2 years old Since 1993 S. pneumoniae Surveillance Program (SIREVA II-OPS/WHO) was conducted in the National Reference Laboratory (NRL). Serotype 24 rarely found before 2012, emerged after the introduction of PCV13. We aim to analyze the trend in serotype 24 distribution and its associated resistance in children <2 years old between 2010 and 2016.

**Methods.** A total of 1,821 Spn isolates (<6 years old) from sterile fluids were received at NRL between January 2010 and December 2016 from 150 hospitals, 24 provinces and Buenos Aires city; 1029 (56.5%) <2 years old. Isolates were serotyped by Quellung, MICs were performed by agar dilution (CLSI) and resistance genes by PCR. Diagnosis: pneumococcus (42%), meningitis (28%), sepsis, (16%), other. Eighty of 1,029 (7.8%) Spn were serotype 24. Three periods were defined: pre-PCV13 (2010–2011); transitional (2012) and post-PCV13 (2013–2016).

**Results.** Among 1,029 Spn isolated in <2 years old, PCV13 serotypes decreased from 86.4% (pre-PCV13) to 33.7% (post-PCV13) related to serotypes: 14, 6A, 6B and 5 (P < 0.05). Non-PCV13 serotypes increased from 13.6% (pre-PCV13) to 66.3% (post-PCV13), mainly due to serotypes 24, 12F and 23B (P < 0.05). Among 80 serotype 24 Spn, 44 (55%) were <1 year old. Serotype 24 increased from 2.1% to 16.2% (pre-/post-PCV13), and ranks first since 2013. Antimicrobial nonsusceptibility (NS) among serotype 24 in pre-/post-PCV13 periods was: penicillin (PEN) (MIC 20.12 µg/mL) 70/91.2%, cefotaxime (MIC 2 mg/mL) 60/89.7%, tetracycline (TET) 60/83.3%, moxifloxacin-sulfamethoxazole (SXT) 60/89.7%, NS to meropenem, chloramphenicol, levofloxacin, rifampicin, ceftaroline, and vancomycin was no detected. 97.1% of ERY-NS isolates carried ermB and 2.9% mecA genes. All the TET-NS isolates carried the ttmC gene. Multidrug resistance to PEN, ERY and SXT increased from 50% in pre-PCV13 to 85% in post-PCV13 period (P < 0.05).

**Conclusion.** Serotype 24 represents the main non-PCV13 serotype in <2 years old with IPD after the introduction of PCV13. We observed an increase in prevalence and antimicrobial resistance in post-PCV13 period. Our results suggest that this emerging serotype could represent a real threat among pneumococcal disease in the near future.

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