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Background: Many jurisdictions report a significant reduction in invasive pneumococcal disease (IPD) in adults following implementation of the pneumococcal conjugate vaccines, 7-valent (PCV7) and 13-valent (PCV13) in childhood immunization programs. This study evaluates the indirect effect of conjugate vaccines on IPD in British Columbia, Canada over a 14 year period (2002–2016).

Methods: Using provincial IPD laboratory surveillance data, we calculated the annual incidence following implementation of PCV7 (September 2004), and PCV13 (September 2010) in adults 18 years of age and older. We also compared incidence rate ratios (IRR) against pre-PCV13 (2004–2010) and pre-PCV7 (2002–2003) baselines for overall and age-specific IPD rates using Poisson regression.

Results: A total of 3793 cases were reported over the 14 year period. The overall annual incidence increased from 4.32 cases per 100,000 population in 2002 to 8.61 cases per 100,000 population in 2015. Overall, IPD has increased by 80% (IRR: 1.80; 95% CI: 1.59–2.04) compared with baseline, especially in adults ≥85 years of age (PCV13 vs baseline: IRR: 1.90; 95% CI: 1.25–3.03). This increase was the highest after introduction of PCV7 (IRR: 1.87; 95% CI: 1.65–2.11); the incremental change after introduction of PCV13 was non-significant (IRR 0.96; 95% CI: 0.90–1.03). While PCV7 type IPD plummeted by 76% (IRR 0.24; 95% CI: 0.18–0.31) since introduction of PCV7 compared with baseline, a modest decline in PCV13 type IPD of 20% was seen (IRR 0.80; 95% CI: 0.71–0.89) since introduction of PCV13.

Conclusion: Although PCV7-type IPD has decreased substantially, only a modest reduction in PCV13 type IPD was observed in BC adults from 2010 to 2016.

Disclosures. All authors: No reported disclosures.

2707. Non 13-Valent Pneumococcal Conjugate Vaccine Serotypes Precede as Causes of Pneumococcal Otitis Media in Children

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Background: Pneumococcal acute otitis media (AOM) in children due to vaccine-related serotypes (ST) has declined after the introduction of the 13-valent pneumococcal conjugate vaccine (PCV13), although some serotypes, such as 3, 19A and 19F have persisted. Among non-vaccine serotypes, 35B has been shown to contribute substantially to both OM and invasive infections. This study describes the current epidemiology of pneumococcal OM isolates obtained from the U S Pediatric IMmunization Surveillance System (USPIMSS).

Methods: From the USPIMSS database, we collected data from patients <18 years of age with pneumococcal OM isolates from 2014 to 2018. Analysis included demographic, immunization status, antimicrobial susceptibility data and serotype. Statistical comparisons included Fisher's exact and Wilcoxon rank-sum tests.

Results: A total of 494 patients with isolates were identified within the time period from 2014 to 2018. Median age was 1.7 years (range 0–17.6) and 60% were male; 176 (35.7%) had an underlying condition. Thirty-two patients had received treatment for AOM to standard dose amoxicillin-clavulanate from high dose amoxicillin-clavulanate in PCV13 immunized children (Pediatr Infect Dis J 2018;37:1255–1257).

Conclusion: Although PCV7-type IPD has decreased substantially, only a modest reduction in PCV13 type IPD was observed in BC adults from 2010 to 2016.

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2708. Genetic Structure of Streptococcus pneumoniae Isolated from Invasive Disease in Korea, 2014–2018

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Background: The extended-valency pneumococcal conjugate vaccines (PCVxs) were implemented into Korean national immunization program in 2014. This study investigated the change in genetic structures of Streptococcus pneumoniae causing invasive pneumococcal disease (IPD) in Korean children after 10- and 13-valent conjugate vaccine (PCV10 and PCV13, respectively).

Methods: Between January 2014 and December 2016, invasive isolates were collected from 23 hospitals throughout Korea. Cases of IPD were defined by isolating pneumococci from normally sterile sites. Each pneumococcal isolate was identified using standard microbiological techniques and serotyped by Quellung reaction. The multi-focus sequence typing (MLST) was analyzed for randomly selected isolates.

Results: A total of 91 pneumococcal isolates were analyzed. Common serotypes were 10A (18.7%), 12F (11.0%), 15A (9.9%), 19A (9.9%), 15B/C (7.7%), 23A (6.6%), 35B (5.5%), and 23B (4.6%). The isolates belonged to 38 sequence types (STs), including 4 newly discovered STs. Of the 4 clonal complexes (CCs), 3 clonal complexes were antibiotic-resistant international clones. CC166 (11.9%) were associated with non-vaccine serotypes (NVTs; 11A, 15B/C, 23A, and 13). Serotypes of CC320 (10.9%) comprised of serotype 19A and 19F. The main serotypes responsible for CC81 (10.9%) were serogroup 15. New sero-type-ST combinations were observed, especially in serotype 13 and serogroup 15. Also, a possibility of capsular switch event was noted between serogroup 6 and serogroup 15A.

Conclusion: The introduction of extended-valency PCVs has resulted in the change of the genetic structure of pneumococcal isolates in Korean children. This study demonstrates that selective pressure from PCV10/13 caused predominant serotypes to be NVTs and genetic changes such as capsular switch events.

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2709. Immune Response After Diphtheria and Tetanus Toxoid Booster in Patients with Adult-Onset Immunodeficiency with Anti-Interferon-γ Autoantibody

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Background: Immunization were the key of prevention in tetanus and diphtherial disease. Nevertheless, in previous observational study, low seroprotection rate of both diphtheria and tetanus were observed in Thai healthy population. Reduced-dose diphtheria and tetanus toxoid vaccine (dT) was recommended to all adult patients regardless of immunodeficiency status. However, data on vaccine efficacy in interferon gamma (IFN-γ) autoantibody were limited. We therefore conducted clinical study to evaluate efficacy and safety of one dose of dT in IFN-γ autoantibody patient compared with healthy individuals at 4 weeks after vaccination.

Methods: Study was conducted from February to April 2019. Total 18 patients with confirmed IFN-γ autoantibody were enrolled. Baseline diphtheria and tetanus serology study and 4 weeks after vaccination were examined. Antibody levels were measured with a solid-phase IgG-specific ELISAs (EUROIMMUN, Germany). Geometric mean titers (GMTs) were calculated using the log transformation of serological titers and from taking the antilog mean of the transformed values.

Results: Seroprevalence of tetanus was 94.5% in healthy population compared with 60.1% in IFN-γ autoantibody patients. While, seroprevalence of diphtheria was 78.8% and 77.8%, respectively. After vaccination, all healthy adults had reached seroprotection level in both diphtheria and tetanus. For patients with IFN-γ autoantibody; 88.9% and 94.4% had anti-tetanus toxin IgG and anti-diphtheria toxin IgG level above 0.1 IU/mL, respectively. These results indicated seroconversion rate of 71% for tetanus and 75% for diphtheria after dT vaccination. (Table 2). In the subgroup analysis, unboosted IFN-γ autoantibody patient had lower tetanus seroconversion rate compared with previously boosted patient (50% vs 100%). Active infection was also associated with lower immune response after tetanus vaccination. There was no severe adverse event in both group.

Conclusion: This is the first study on immune response after dT vaccination in IFN-γ autoantibody patient. Seroconversion rate of dT vaccine in IFN-γ autoantibody patient were slightly lower than healthy adults. Active infection and previously unboosted patient provided lower immune response of tetanus.

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