of age (VE 61%, 95% CI 14, 82). VE was 26% (95% CI −58, 65%) against serotype 3 and 67% (95% CI 11, 88%) against other PCV13-types (+6C). PCV13 was not effective against nonvaccine types.

Conclusion. PCV13 was effective in preventing IPD caused by PCV13 types when excluding type 3; no effectiveness was demonstrated against serotype 3.

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152. Protective Antibody Levels 7.5 Years After Primary Vaccination in Adolescence With a Recombinant, 4-Component, Meningococcal Serogroup B Vaccine (4CMenB) and Response to a Booster Dose in Adolescents and Young Adults: Phase IIIb Clinical Findings

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Session: 44. Adult and Adolescent Vaccines
Thursday, October 4, 2018: 10:30 AM

Background. 4CMenB has been shown to be immunogenic with an acceptable safety profile in infants and young adolescents. However, no data on long-term persistence after primary vaccination in adolescents are available. This is the first study to assess antibody persistence, booster response, and safety of 4CMenB in adolescents and young adults up to 7.5 years following the primary vaccination in adolescence.

Methods. This phase 3b, open-label, extension study (NCT02446743) assessed the antibody persistence and booster response at 4 years (Canada and Australia, NCT01423084) or 7.5 years (Chile, NCT00661713) after primary vaccination with 4CMenB (following 0 + 1-, 0 + 2-, or 0 + 6-month schedules), compared with vaccine-naïve (VN), healthy controls. Chilean follow-on (FO) and VN participants aged 18–24 years received either a booster dose of 4CMenB 7.5 years postprimary series (Group FO, N = 131) or 2 primary doses, 1 month apart (Group VN, N = 150). Immunogenicity was measured using human serum bactericidal antibody assay (hSBA) against antigen-specific strains. Immune response was evaluated 1 month post-booster vaccination and compared with VN controls at 1 month post-first dose. Kinetics of antibody responses were measured at 3, 7, and 30 days post-vaccination. Safety was assessed.

Results. Antibody levels waned at 7.5 years postprimary vaccination in Group FO, but were higher than in Group VN at baseline, for all antigens except NHBA (table). At 1 month post-booster/post-first dose, 93–100% (Group FO) and 62–93% (Group VN) of participants had hSBA titres ≥4; GMTs ranged between 41 and 1,951 (Group FO) and 9.43–46 (Group VN) (table). The percentages of FO participants with hSBA titres ≥4 remained similar to prebooster for all 4 antigens at 3 days, increased at 7 days, and remained unchanged or increased further 30 days post-booster. The reactogenicity of 4CMenB was consistent with previous observations in this age group; no safety concerns were identified during the study.

Table. Antibody persistence and response to a booster (Group FO) or first dose (Group VN)

Antigen	Day	Group FO			Group VN		
		N	hSBA titres ≥4 % (95% CI)	GMT value (95% CI)	N	hSBA titres ≥4 % (95% CI)	GMT value (95% CI)
fHbp	1	131	44 (35.6; 53.2)	4.51 (3.57; 5.69)	150	13 (7.8; 19.1)	1.52 (1.23; 1.90)
	31	127	100 (97.1; 100)	269 (206; 351)	149	81 (73.3; 86.6)	24 (19; 31)
NadA	1	120	84 (76.4; 90.2)	31 (23; 42)	139	24 (16.9; 31.7)	2.30 (1.75; 3.04)
	31	102	100 (96.4; 100)	1951 (1425; 2671)	137	84 (76.7; 89.7)	31 (24; 41)
PorA	1	129	29 (21.1; 37.3)	2.56 (2.07; 3.17)	148	14 (9.0; 20.9)	1.50 (1.23; 1.84)
	31	120	93 (87.3; 97.1)	41 (30; 56)	148	62 (53.8; 70.0)	9.43 (7.15; 12)
NHBA	1	131	81 (73.1; 87.3)	22 (16; 29)	150	79 (72.0; 85.5)	18 (14; 24)
	31	127	99 (95.7; 99.98)	113 (90; 142)	149	93 (87.2; 96.3)	46 (37; 57)

Group FO, follow-on participants; **Group VN**, vaccine-naïve participants; **N (%)**, number (percentage) of participants with hSBA titres ≥4; **hSBA**, human serum bactericidal assay; **GMT**, geometric mean titre; **CI**, confidence interval; **Day 1**, pre-booster timepoint for Group FO and pre-vaccination for Group VN; **Day 31**, 1 month post-booster for Group FO and 1 month post-first dose for Group VN; **fHbp**, factor H binding protein; **NadA**, *Neisseria* adhesin A; **PorA**, Porin A; **NHBA**, neisserial heparin binding antigen.

Conclusion. Antibody levels in adolescents and young adults declined at 7.5 years after a 2-dose primary series of 4CMenB, but were higher than baseline levels in VN controls. An additional dose of 4CMenB elicited strong anamnestic responses—substantially higher than 1 dose in VN controls.

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153. The Effect of Timing of Tetanus–Diphtheria and Pertussis Vaccine Administration in Pregnancy on The Avidity of Pertussis Antibodies

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Session: 44. Adult and Adolescent Vaccines
Thursday, October 4, 2018: 10:30 AM

Background. Tetanus–diphtheria–pertussis (Tdap) vaccination in pregnancy is currently recommended in many countries. The optimal timing of pertussis immunization in pregnancy is not well established, leading to different recommendations. We aimed to determine the effect of timing of vaccination with Tdap in pregnancy on the umbilical cord avidity of antipertussis toxin (PT) immunoglobulin G (IgG).

Methods. Avidity of anti-PTIgG was assessed using ammonium thiocyanate (NH_4SCN) at concentrations between 0.25 M (to measure low avidity antibodies) and 3 M (to measure high avidity antibodies). Anti-PT IgG levels achieved at each NH_4SCN concentration were calculated. *T*-tests were used to compare anti-PT IgG levels between newborns of women vaccinated in early (28–32 weeks gestation) and late (33–36 weeks gestation) third trimester. Pearson correlation assessed the relationship between the timing of vaccination and anti-PT IgG levels.

Results. Newborns of women vaccinated with Tdap in early third trimester (n = 43) had higher anti-PT IgG levels at 1 M and 2 M NH_4SCN concentrations compared with newborns of women vaccinated in late third trimester (n = 47), 2.4 international units (IU)/mL vs. 1.9 IU/mL (P = 0.0073) and 2.3 IU/mL vs. 1.7 IU/mL (P = 0.0354), respectively, after adjustment for gestational age at birth. There was a negative association between later timing of vaccination in third trimester and anti-PT IgG levels achieved at 0.5 M, 1 M, 1.5 M, and 2 M NH_4SCN (all $P \leq 0.02$). There was a positive association between increasing time between vaccination and delivery and anti-PT IgG levels achieved at 0.5 M, 1 M, 1.5 M, and 2 M NH_4SCN (all $P \leq 0.02$).

Conclusion. Vaccination against pertussis during early third trimester results in higher levels of high avidity antibodies compared with vaccination in late third trimester. High avidity antibodies may confer greater protection to the neonate supporting recommendations for vaccination at 28–32 WG vs. 33–36 WG.

Disclosures. **All authors:** No reported disclosures.

154. Diagnosis and Genotyping of *Coxiella burnetii* Causing Endocarditis in a Patient With Prosthetic Pulmonary Valve Replacement (PVR) Using Next-Generation Sequencing (NGS) of Plasma

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Session: 45. Cool Findings in Bacteremia and Endocarditis
Thursday, October 4, 2018: 10:30 AM

Background. Identification of *Coxiella burnetii*, the etiologic agent of Q Fever, in culture-negative endocarditis (CNE) remains challenging, and strain-level information is typically unavailable through conventional testing. We used a novel next-generation sequencing (NGS) assay on plasma cell-free DNA to facilitate rapid diagnosis and genotyping in a patient with *C. burnetii* CNE.

Methods. NGS was performed on plasma by Karius, Inc. (Redwood City, California). Human reads were removed and remaining sequences were aligned to a curated database of over 1,000 pathogens. Organisms present above a predefined significance threshold were reported. For *C. burnetti* strain-typing, alignments to different *Coxiella* strains in the pathogen database were compared by BLAST bit-score to determine the most closely related strain to the infecting organism. *C. burnetii* genotype group was also determined by *in silico* analysis of polymorphic ORF deletion markers known to distinguish groups I–VI.

Results. Twenty-nine-year-old male with history of Tetralogy of Fallot, multiple pulmonary valve replacement (PVR), and 18 months of intermittent fever and night sweats were admitted. Relevant history included travel in South and South East Asia, the use of a LivaNova 3T Heater-Cooler device during surgery (i.e., at risk for *Mycobacterium chimaera*), and drinking unpasteurized milk. Cardiac CT showed 2 pulmonary opacities concerning for septic emboli and echocardiography showed echodensity on pulmonic valve. Blood cultures were negative. NGS detected *C. burnetii*