

**SUPPLEMENTAL DIGITAL CONTENT 3.** PT-IgG GMC (95% CI) and seroconversion rates (%) after each pertussis booster in Australian infants with different pertussis vaccination histories. Seroconversion<sup>†</sup> defined as ≥ 4-fold increase from pre-boost IgG levels.

IgG-GMC compared using linear regression analysis accounting for sex, maternal vaccination status and vaccination type at birth (aP+Hep B or HepB only) and 18-months (DTPa, dTpa or no booster). Seroconversion rates tested using logistic regression models accounting as for logistic regression.

PT-IgG GMC IU/mL											
Neonatal aP (95% CI)					Controls (95% CI)				Pval	Pval	Pval
Group ID	1 (ref)	2	3	Pval	4 (ref)	5	6	Pval	birth group	effect of booster type	interaction birth-boost
Boosters (18M + 4Yr)	DTPa + DTPa	dTpa + dTpa	None + DTPa		DTPa + DTPa	dTpa + dTpa	None + DTPa				
Baseline (Maternal sample at birth)	9.7 (6.86 - 13.78) n= 41	6.2 (4.66 - 8.36) n= 40	7.7 (6.47 - 9.21) n= 135	0.3142	9.0 (6.25 - 12.96) n= 39	6.6 (4.8 - 8.97) n= 39	6.1 (5.17 - 7.19) n= 139	0.3643	0.1362	0.1825	0.65
Pre- 18 month booster	5.1 (3.92 - 6.51) n= 40	6.3 (4.77 - 8.43) n= 35	N/A	0.2178	3.4 (2.73 - 4.2) n= 33	4.4 (3.49 - 5.51) n= 37	N/A	0.2053	0.003312 ***	0.07262	0.8313
Post- 18 month booster	58.7 (43.9 - 78.6) n= 36	47.3 (38.24 - 58.39) n= 37	N/A	0.2947	64.2 (49.3 - 83.65) n= 35	58.3 (46.94 - 72.29) n= 36	N/A	0.2602	0.2171	0.1152	0.6746
Pre- 4 year booster	3.3 (1.9 - 5.73) n= 21	3.2 (2.06 - 5.06) n= 23	1.8 (0.91 - 3.68) n= 21	0.2613	3.5 (1.7 - 7.16) n= 11	3.9 (2.42 - 6.31) n= 24	1.4 (0.77 - 2.61) n= 19 *	0.02348 *	0.8748	DTPa vs. N/A 0.007 **	0.8172
Post- 4 year booster	46.4 (26.54 - 81.08) n= 17	42.8 (32.08 - 56.98) n= 22	49.4 (27.62 - 88.38) n= 19	0.864	78.1 (46.7 - 130.5) n= 10	45.1 (33.25 - 61.11) n= 23 *	65.8 (40.4 - 107.14) n= 14	0.0458 *	0.1778	0.2939	0.3801
PT % seroconverted <sup>†</sup>											
18 month booster	94.1 (78.9 - 99.0) n= 32/34	78.1 (59.6 - 90.1) n= 25/32	N/A	0.0504	96.6 (80.4 - 99.8) n= 28/29	94.1 (78.9 - 99.0) n= 32/34	N/A	0.4932	0.0598	DTPa vs. dTpa 0.03 *	0.6187
4 year booster	100.0 (77.1 - 100.0) n= 17/17	90.9 (69.4 - 98.4) n= 20/22	83.3 (57.7 - 95.6) n= 15/18	0.1975	100.0 (59.8 - 100.0) n= 8/8	95.5 (75.1 - 99.8) n= 21/22	100.0 (73.2 - 100.0) n= 14/14	0.6215	0.1138	0.193	0.5722

aP; acellular pertussis; DTPa; high-dose pertussis booster (Infanrix), dTpa low-dose pertussis booster (Boostrix), None; did not return at 18-months, not studied, PT; pertussis toxin, GMC; geometric mean concentration, IU/mL; international units/ millilitre, 95% CI; 95% confidence intervals, ref; group used as reference standard for within stream (Neonatal aP or control) comparisons. \*p <0.05, \*\*p<0.01,\*\*\*p<0.001.