

Appendix 1 (as supplied by the authors): Supplemental tables

Supplemental Table S1: Vaccination schedule against pertussis disease in Canada (as of January 2020).

Vaccine	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	YT	NT	NU
DTaP-IPV-Hib¹	18 months	18 months	2, 4, 6, 18 months	2, 4, 6, 18 months	2, 4, 6, 18 months	12 months	2, 4, 6, 18 months	2, 4, 6, 18 months	18 months	2, 4, 6, 18 months	18 months	2, 4, 6, 18 months	2, 4, 6, 18 months
DTaP-HB-IPV-Hib²	2, 4, 6 months	2, 4, 6 months	N/A	N/A	N/A	2, 4, months	N/A	N/A	2, 4, 6 months	N/A	2, 4, 6 months	N/A	N/A
Tdap-IPV³	4-6 years	4 years	4-6 years	4-6 years	4-6 years	4-6 years	4 years	4-6 years	4-5 years	4-6 years	4-6 years	4-6 years	4-6 years
Tdap⁴	Grade: 9	Grade: 9	Grade: 8	Grade: 8	14-16 years	N/A	Grade: 7	Grade: 7	Grade: 9	Grade: 9	Grade: 9	Grade: 7	Grade: 6

Abbreviations: BC: British Columbia; AB: Alberta; SK: Saskatchewan; MB: Manitoba; ON: Ontario; QC: Quebec; NB: New Brunswick; NS: Nova Scotia; PE: Prince Edward Island; NL: Newfoundland and Labrador; YT: Yukon; NT: Northwest Territories; NU: Nunavut; N/A: not publically funded in the province/territory.

¹ DTaP-IPV-Hib: Diphtheria, Tetanus, acellular Pertussis, Inactivated Polio Virus, Haemophilus Influenzaetype B vaccine

² DTaP-HB-IPV-Hib: Diphtheria, Tetanus, acellular Pertussis, Hepatitis B, Inactivated Polio Virus, Haemophilus Influenzaetype B vaccine

³ Tdap-IPV: Tetanus, diphtheria, acellular pertussis, Inactivated Polio Virus vaccine

⁴ Tdap: Tetanus, diphtheria, acellular pertussis vaccine

Source: Government of Canada website. Provincial and territorial routine and catch-up vaccination schedule for infants and children in Canada. Available at: <https://www.canada.ca/en/public-health/services/provincial-territorial-immunization-information/provincial-territorial-routine-vaccination-programs-infants-children.html#fn1.6>. Accessed June 2nd, 2020.

Supplemental Table S2: Data input, assumptions and epidemiological data used for the base case analysis of the cost-effectiveness analyses of maternal immunization against pertussis in Canada.

Variable	Point Estimate	Probability Distribution	Source	
Probability of Pertussis infection in infant <1 year			1	
2006	0.001027	Beta (359, 349219)		
2007	0.000812	Beta (292, 359377)		
2008	0.000934	Beta (348, 372095)		
2009	0.000752	Beta (284, 377192)		
2010	0.000368	Beta (139, 377542)		
2011	0.000393	Beta (148, 376007)		
2012	0.001201	Beta (453, 376594)		
2013	0.000442	Beta (169, 382448)		
2014	0.000433	Beta (167, 385526)		
2015	0.000734	Beta (285, 387978)		
Age of infection by year of data				1
2006				
< 2 months	0.675	Dirichlet(81,22,9,8)		
2-4 months	0.183			
4-6 months	0.075			
6-12 months	0.067			
2007				
< 2 months	0.68	Dirichlet (66, 22, 4, 5)		
2-4 months	0.227			
4-6 months	0.041			
6-12 months	0.052			
2008				
< 2 months	0.678	Dirichlet (82, 19, 10, 10)		
2-4 months	0.157			
4-6 months	0.083			
6-12 months	0.082			
2009				
< 2 months	0.73	Dirichlet (81, 23, 5, 2)		
2-4 months	0.207			
4-6 months	0.045			
6-12 months	0.018			
2010				
< 2 months	0.711	Dirichlet (86, 19, 9, 7)		
2-4 months	0.157			
4-6 months	0.074			
6-12 months	0.058			
2011				
< 2 months	0.638	Dirichlet (74, 26, 7, 9)		
2-4 months	0.224			
4-6 months	0.060			
6-12 months	0.079			
2012				
< 2 months	0.739	Dirichlet (147, 35, 7, 10)		
2-4 months	0.176			
4-6 months	0.035			
6-12 months	0.050			
2013				
< 2 months	0.596	Dirichlet (65, 25, 7, 12)		
2-4 months	0.229			
4-6 months	0.064			

Variable	Point Estimate	Probability Distribution	Source
6-12 months	0.110		
2014			
< 2 months	0.638	Dirichlet (83, 30, 9, 8)	
2-4 months	0.231		
4-6 months	0.069		
6-12 months	0.063		
2015			
< 2 months	0.637	Dirichlet (86, 33, 6, 10)	
2-4 months	0.244		
4-6 months	0.044		
6-12 months	0.075		
Probability of Pertussis case hospitalized			2
< 2 months	0.867	Beta (738, 113)	
2-4 months	0.843	Beta (214, 40)	
4-6 months	0.685	Beta (50, 23)	
6-12 months	0.617	Beta (50, 31)	
Probability of death from Pertussis in <1 year if hospitalized			3
Infants	0.00811	Beta (17, 2079)	
Probability of encephalitis from Pertussis in <1 year if hospitalized			3
Infants	0.0052	Beta (11, 2085)	
Probability of chronic encephalitis if developed encephalitis in hospital			4
Infants	0.33	Beta (3.33,6.67)	
Effectiveness of vaccination against pertussis during pregnancy on:			5
Reduction in pertussis cases	0.91	1-Lognormal (-2.41, 0.69)	
Reduction in pertussis deaths	0.95	1-Lognormal (-3, 3.74)	
Probability of Pertussis in Adults	0.000006	Beta(2996, 499330337)	2
Distribution of Adult cases			6
Mild	0.31	Dirichlet (290, 627, 16, 3)	
Severe	0.67		
Pneumonia treated at home	0.017		
Pneumonia requiring hospitalization	0.003		
Duration of pertussis symptoms (days)			7
Adult	93	Gamma (7.11, 13.09)	
Infant	75	Gamma (41.15, 1.82)	
Utility Values			
Pertussis - child	0.27	Normal (0.27, 0.028)	8
Encephalitis	0.21	Normal (0.21, 0.024)	8
Healthy male aged 0-15	0.894	Normal (0.894, 0.004)	9
Healthy male aged 15-18	0.88	Normal (0.88, 0.004)	
Healthy male aged 18-20	0.89	Normal (0.89, 0.006)	
Healthy male aged 20-25	0.878	Normal (0.878, 0.004)	
Healthy male aged 25-30	0.888	Normal (0.888, 0.005)	
Healthy male aged 30-35	0.889	Normal (0.889, 0.005)	
Healthy male aged 35-40	0.89	Normal (0.89, 0.005)	
Healthy male aged 40-45	0.885	Normal (0.885, 0.005)	

Variable	Point Estimate	Probability Distribution	Source
Healthy male aged 45-50	0.859	Normal (0.859, 0.006)	
Healthy male aged 50-55	0.837	Normal (0.837, 0.005)	
Healthy male aged 55-60	0.837	Normal (0.837, 0.004)	
Healthy male aged 60-65	0.831	Normal (0.831, 0.004)	
Healthy male aged 65-70	0.849	Normal (0.849, 0.004)	
Healthy male aged 70-75	0.845	Normal (0.845, 0.005)	
Healthy male aged 75-80	0.808	Normal (0.808, 0.006)	
Healthy male aged 80+	0.734	Normal (0.734, 0.007)	
Healthy female aged 0-15	0.896	Normal (0.896, 0.004)	
Healthy female aged 15-18	0.867	Normal (0.867, 0.005)	
Healthy female aged 18-20	0.863	Normal (0.863, 0.007)	
Healthy female aged 20-25	0.878	Normal (0.878, 0.005)	
Healthy female aged 25-30	0.882	Normal (0.882, 0.004)	
Healthy female aged 30-35	0.892	Normal (0.892, 0.004)	
Healthy female aged 35-40	0.886	Normal (0.886, 0.004)	
Healthy female aged 40-45	0.875	Normal (0.875, 0.005)	
Healthy female aged 45-50	0.844	Normal (0.844, 0.006)	
Healthy female aged 50-55	0.825	Normal (0.825, 0.005)	
Healthy female aged 55-60	0.821	Normal (0.821, 0.004)	
Healthy female aged 60-65	0.831	Normal (0.831, 0.004)	
Healthy female aged 65-70	0.836	Normal (0.836, 0.004)	
Healthy female aged 70-75	0.824	Normal (0.824, 0.004)	
Healthy female aged 75-80	0.792	Normal (0.792, 0.005)	
Healthy female aged 80 +	0.712	Normal (0.712, 0.005)	
Disutility in adults			8
Mild pertussis	0.33	Normal (0.33, 0.045)	
Severe pertussis	0.42	Normal (0.42, 0.049)	
Pneumonia	0.38	Normal (0.38, 0.047)	
Disutility from adverse event			8
Local	0.09	Normal (0.09, 0.028)	
Systemic	0.17	Normal (0.17, 0.034)	
Anaphylaxis	0.4	Normal (0.4, 0.05)	
Time to full recovery (days)			10
Local reaction	7	Gamma (16, 0.4375)	
Systemic reaction	7	Gamma (16, 0.4375)	
Anaphylaxis	2	Gamma (16, 0.125)	
Prevalence of severe adverse events			11
Local reaction - pain	0.002	Beta (503,207160)	
Local reaction - rash	0.001	Beta (122,207700)	
Systemic reaction - fever	0.0006	Beta (129, 207692)	
Anaphylaxis	0.000005	Beta (1, 207850)	
Vaccine related costs			
Vaccine	12.50 CAD	Fixed	Assumed
Administration	4.50 CAD	Fixed	12
Cost Hospitalization			
Infant – pertussis	6911 CAD	Gamma (16, 431.9)	13
Infant – encephalitis	17445 CAD	Gamma (16, 1090.3)	14
Adult - pneumonia	12275 CAD	Gamma (16, 767.2)	13
Cost of chronic encephalitis			
Per annum	3457 CAD	Gamma (16, 216.1)	14

Variable	Point Estimate	Probability Distribution	Source
Cost of outpatient care for pertussis*			3,4,12,15-17
Child	158.20 CAD	Derived [^]	
Adult – mild	169.91 CAD	Derived [^]	
Adult – severe	202.56 CAD	Derived [^]	

All costs presented in 2019 Canadian dollars.

[^] Costs of outpatient care are combination of diagnostic costs, physician visits and drug treatment

* Comprised of an average number of physician visits, method of diagnosis and antibiotic treatment

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