

British Columbia Provincial Pertussis Summary

March 14, 2024

This bulletin provides updated information on pertussis activity in British Columbia (BC) and elsewhere, including recent trends since the last [September 2023 BC Provincial Pertussis Summary](#).

Summary findings and messages

- 1) As for other respiratory pathogens, *Bordetella pertussis* (*B. pertussis*) activity in BC was much diminished during the COVID-19 pandemic while mitigation measures were in place beginning March 2020. Given 2-5-year cyclical peaks, with the last observed in BC in 2016, post-pandemic increase in pertussis may be anticipated. Resurgent activity has been reported in other provinces of Canada and other countries.
- 2) Year-to-date (YTD) as of March 11, 2024, pertussis activity in BC remains within historical levels, albeit higher YTD in 2024 (n=37) than over the same YTD period since the COVID-19 pandemic (n=0, 1 and 1 in 2021, 2022, 2023, respectively).
- 3) Notwithstanding current pertussis activity within historical levels, close monitoring and readiness for potential increase are warranted. Cyclical increases are more prominent during the summer months in BC, but as for other respiratory pathogens post-pandemic, atypical seasonality may occur.
- 4) Proactive measures may include reinforcing the importance of up-to-date vaccination and regional outreach to communities where vaccination coverage may be suboptimal.

Background

In BC, as elsewhere, pertussis is an endemic disease with cyclical peaks occurring every 2-5 years¹. Infants <1 year are at highest risk of severe disease, including hospitalization, intensive care unit admission and death, with the highest risk occurring among infants <3 months of age¹. Because of their more severe presentation, pertussis in infants, compared to other age groups, may be more readily detectable and indicative of community trends overall. In 1997, most Canadian provinces (including BC) replaced the whole cell pertussis vaccine with a more efficacious (and less reactogenic) acellular vaccine, and in 2004 added a Grade 9 booster dose (generally adolescents 14-15 years of age)¹.

Between 2004 and 2011, BC experienced trough pertussis levels, followed by cyclical peaks in 2012, 2015, and 2016, which subsequently subsided between 2017 and 2019 ([Figure 1A](#))¹. As elsewhere, BC may have been spared an expected cyclical peak during the period that COVID-19 pandemic mitigation measures were in place beginning in March 2020²⁻⁴, with much reduced *B. pertussis* detections thereafter ([Figure 1A](#)). Following the relaxation of pandemic mitigation measures, other areas have experienced resurgent activity. In 2023, it has been reported that Alberta experienced the second-highest pertussis case count of the last decade with 884 lab-confirmed cases, second to its 1,054 total cases in 2017^{5,6}, with most cases in 2023 considered not fully immunized⁵. Increased pertussis activity has also been reported in Ontario, Manitoba, and Saskatchewan, as well as elsewhere internationally (e.g., United States, Europe)^{7,8}. The extent to which these reports may be considered expected or exceptional awaits more detailed examination (e.g., for consistency in case definitions, testing and monitoring periods or approaches over time). Updated national pertussis surveillance data for Canada remain pending⁹.

Updated BC observations as of March 11, 2024

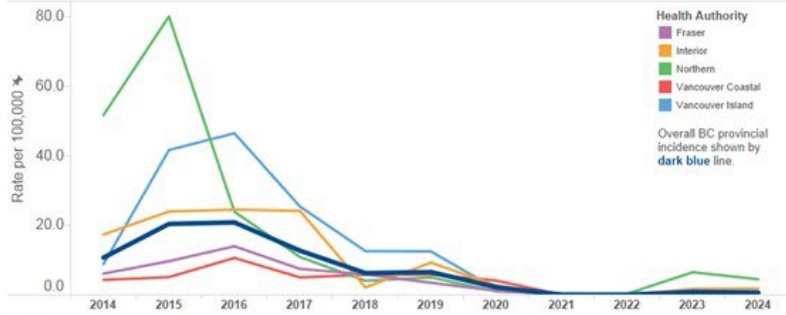
As of March 11, 2024, BC health authorities have reported 37 laboratory-confirmed or epidemiologically linked pertussis cases, an increase from the negligible case counts in 2021 (n=2) and 2022 (n=1), but already 80% of the full annual tally in 2023 (n=46) ([Figure 1A](#)). The 2024 year-to-date (YTD) incidence of 0.7 cases per 100,000 remains lower than any pre-pandemic YTD incidence between 2014 and 2020 (ranging 0.9 per 100,000 in 2014 to 3.3 per 100,000 in 2015), but slightly exceeds YTD incidences in 2021-2023 when there were 0, 1, and 1 confirmed cases, respectively, during the same ~10-week YTD period (versus 37 in 2024) ([Figure 1B](#)). In 2024, weekly case tallies were higher in January than February with Interior and Northern Health Authorities disproportionately contributing ([Figure 2](#)); however, recent week tallies may increase as reporting becomes more complete and/or as we approach the typical spring/summer period of increase ([Figure 3](#)). Potential links to Alberta and/or contribution by unvaccinated clusters is possible. As per usual, infants <1 year have the highest incidence in 2024 ([Figure 4A](#)), with the steepest YTD increase relative to 2023 compared to other age groups ([Figure 4B](#)). However, the infant YTD incidence in 2024 (9 per 100,000) is comparable or lower than other pre-pandemic years between 2014 and 2020 (ranging 11 per 100,000 in 2016 to 27 per 100,000 in 2015).

We continue to monitor and will update as relevant to inform ongoing risk assessment and response in BC.

References

1. Chambers, C. *et al.* Pertussis Surveillance Trends in British Columbia, Canada, over a 20-year Period: 1993-2013. *Can. Commun. Dis. Rep.* **40**, 31–41 (2014).
2. Matczak, S. *et al.* Association between the COVID-19 pandemic and pertussis derived from multiple nationwide data sources, France, 2013 to 2020. *Eurosurveillance* **27**, (2022).
3. Sandoval, T., Bisht, A. & Maurice, A. de S. The impact of COVID-19 and masking practices on pertussis cases at a large academic medical center (2019-2021). *Am. J. Infect. Control* **51**, 844–846 (2023).
4. Tessier, E. *et al.* Impact of the COVID-19 pandemic on Bordetella pertussis infections in England. *BMC Public Health* **22**, 405 (2022).
5. Lee, J. Whooping cough cases in Alberta on track for one of the worst years in a decade. *Canadian Broadcasting Corporation (CBC)* (2023).
6. Lee, J. Whooping cough outbreaks persist in Alberta as health officials urge vaccination. *Canadian Broadcasting Corporation* (2024).
7. European Centre for Disease Prevention and Control. *Communicable disease threats report, 17-23 December 2023, week 51*. <https://www.ecdc.europa.eu/sites/default/files/documents/communicable-disease-threats-report-week-51-2023.pdf> (2023).
8. Suffolk County Department of Health Services. *Suffolk Health Officials Alert Public of Rise in Pertussis Cases*. <https://suffolkcountyny.gov/Departments/Health-Services/Health-News/ArtMID/3434/ArticleID/11317/Suffolk-Health-Officials-Alert-Public-of-Rise-in-Pertussis-Cases> (2023).
9. Public Health Agency of Canada. Reported cases from 1924 to 2021 in Canada - Notifiable diseases on-line. <https://diseases.canada.ca/notifiable/charts?c=pl>.

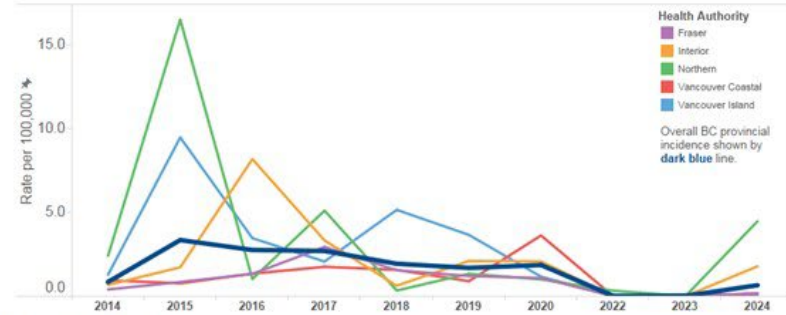
Figure 1A. Annual incidence (per 100,000)
BC overall and by Health Authority



Annual incidence (per 100,000)											
BC	10.9	20.5	20.9	12.7	6.3	6.6	2.2	0.0	0.0	0.8	0.7
Fraser	6.1	9.7	14.0	7.5	5.9	3.5	1.2			0.2	0.2
Interior	17.4	24.0	24.5	24.2	2.1	9.3	2.7			1.7	1.8
Northern	51.7	80.1	23.9	10.9	4.0	5.0	1.0	0.3	0.3	6.5	4.5
Vancouver Coastal	4.3	5.1	10.6	5.0	5.8	5.8	4.1			0.2	0.2
Vancouver Island	8.8	41.7	46.5	25.4	12.6	12.5	1.6	0.1		0.4	0.1
Annual case counts											
BC	513	978	1,015	627	315	335	113	2	1	46	37
Fraser	106	171	252	137	110	66	23			5	4
Interior	129	181	189	189	17	75	22			15	16
Northern	150	233	70	32	12	15	3	1	1	20	14
Vancouver Coastal	50	60	126	60	70	72	51			2	2
Vancouver Island	69	330	376	209	105	106	14	1		4	1

Data Source: VPD Data Mart, current to March 11, 2024

Figure 1B. YTD (Jan 1 – Mar 11) incidence (per 100,000)
BC overall and by Health Authority

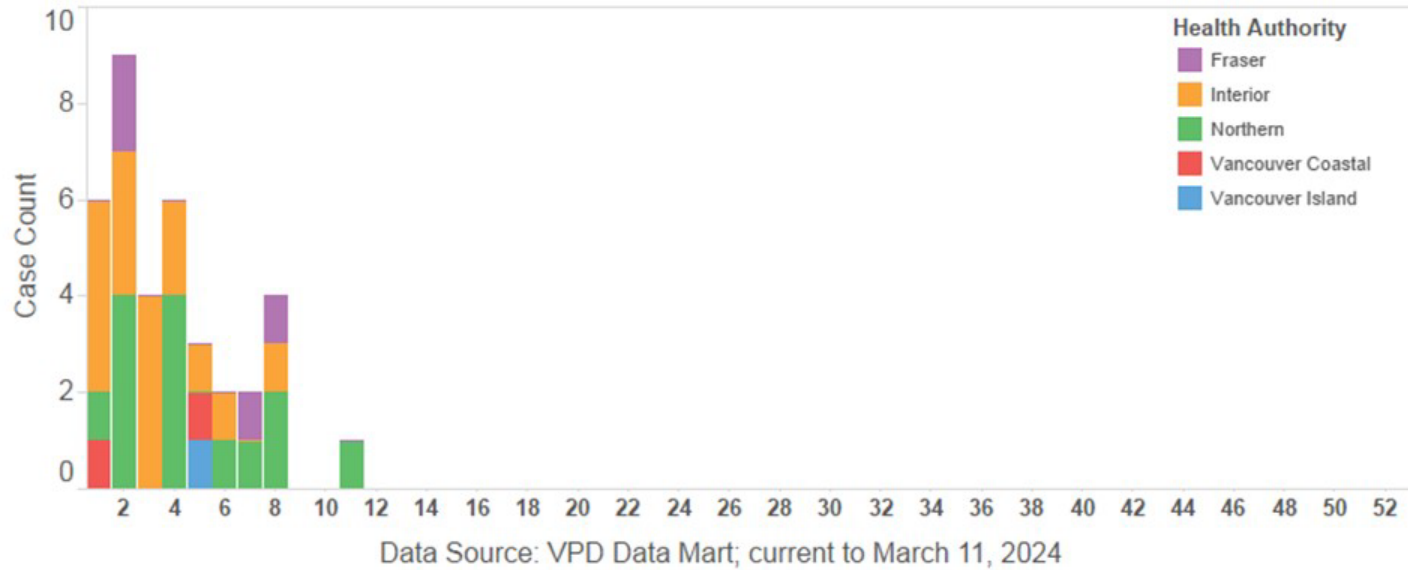


YTD incidence (per 100,000)											
BC	0.9	3.3	2.8	2.7	1.9	1.7	1.9	0.0	0.0	0.7	
Fraser	0.4	0.8	1.3	2.9	1.5	1.2	1.1			0.2	
Interior	0.7	1.7	8.2	3.3	0.6	2.1	2.1			1.8	
Northern	2.4	16.5	1.0	5.1	0.3	1.3	1.0	0.3		4.5	
Vancouver Coastal	0.9	0.8	1.3	1.8	1.6	0.9	3.6			0.2	
Vancouver Island	1.3	9.5	3.5	2.1	5.2	3.7	1.2			0.1	0.1
YTD case counts											
BC	42	160	135	133	97	86	96	1	1	37	
Fraser	7	15	24	54	29	23	21			4	
Interior	5	13	63	26	5	17	17			16	
Northern	7	48	3	15	1	4	3	1		14	
Vancouver Coastal	11	9	16	21	19	11	45			2	
Vancouver Island	10	75	28	17	43	31	10			1	1

Data Source: VPD Data Mart, current to March 11, 2024

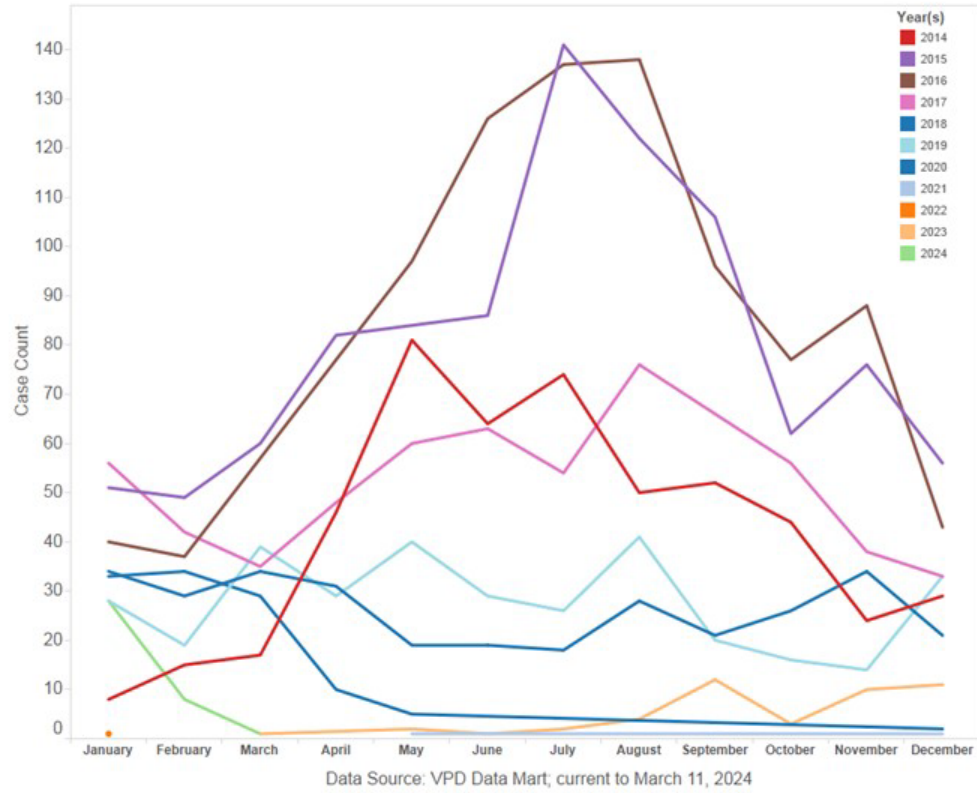
Tallies reflect confirmed cases, including laboratory-confirmed or epidemiologically-linked events.
For 2024, data are for the period between January 1 and March 11, 2024.

Figure 2. Case counts by epi-week and Health Authority, 2024



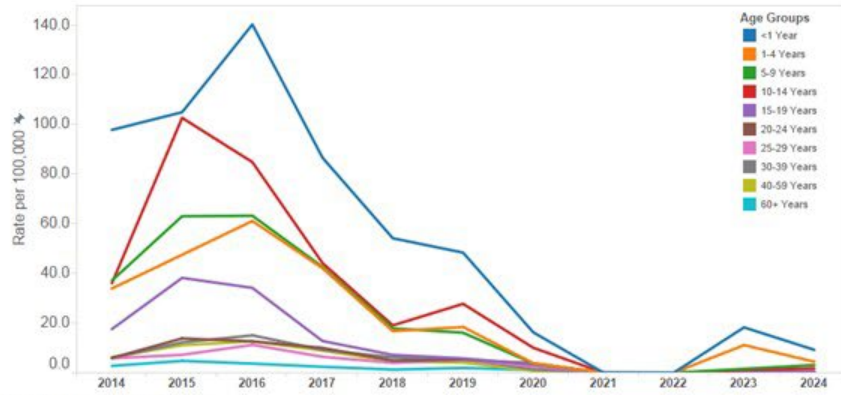
Tallies reflect confirmed cases, including laboratory-confirmed or epidemiologically-linked events. For 2024, data are for the period between January 1 and March 11, 2024.

Figure 3. Case counts by month and year, BC



Tallies reflect confirmed cases, including laboratory-confirmed or epidemiologically-linked events. For 2024, data are for the period between January 1 and March 11, 2024.

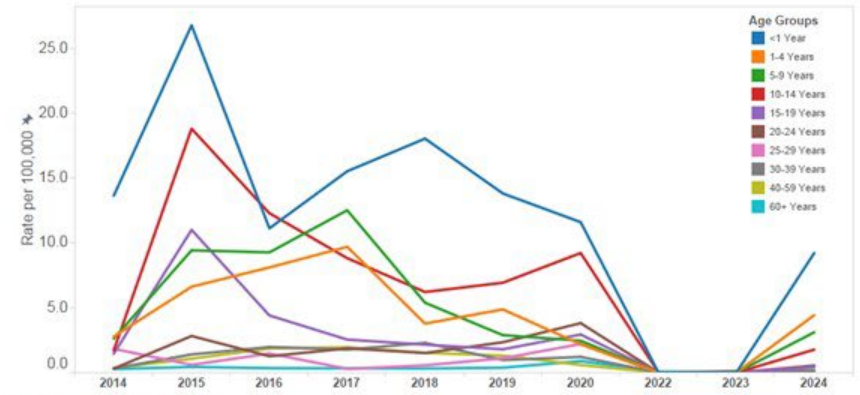
Figure 4A. Annual incidence (per 100,000) BC overall and by Age Group



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Annual incidence (per 100,000)											
BC	10.9	20.5	20.9	12.7	6.3	6.6	2.2	0.0	0.0	0.8	0.7
<1 Year	97.7	104.9	140.2	86.5	54.1	48.3	16.2			18.3	9.2
1-4 Years	33.9	47.5	60.5	42.0	16.7	18.4	3.8			11.1	4.4
5-9 Years	37.1	62.6	63.2	42.6	17.8	16.1	3.7			1.6	3.1
10-14 Years	36.0	102.2	84.8	44.1	19.1	27.7	10.0			1.1	1.8
15-19 Years	16.8	38.2	33.8	12.7	6.8	5.8	3.3			0.5	0.4
20-24 Years	5.9	13.8	12.6	10.0	4.8	5.3	3.8				0.5
25-29 Years	5.5	7.2	11.2	6.4	4.0	5.0	2.5				0.3
30-39 Years	5.6	12.0	15.0	9.2	6.2	5.4	1.3	0.1			0.4
40-59 Years	6.1	11.1	12.6	8.9	4.5	4.1	0.7				0.1
60+ Years	2.7	4.8	3.7	2.4	1.3	1.9	1.0	0.1	0.1	0.2	0.2

Data Source: VPD Data Mart, current to March 11, 2024

Figure 4B. YTD (Jan 1 – Mar 11) incidence (per 100,000) BC overall and by Age Group



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
YTD incidence (per 100,000)											
BC	0.9	3.3	2.8	2.7	1.9	1.7	1.9	0.0	0.0	0.0	0.7
<1 Year	13.6	26.8	11.1	15.5	18.0	13.8	11.6				9.2
1-4 Years	2.8	6.6	7.6	9.7	3.8	4.9	2.2				4.4
5-9 Years	2.6	9.4	9.3	12.5	5.4	2.9	2.5				3.1
10-14 Years	1.7	18.8	12.3	8.8	6.2	6.9	9.2				1.8
15-19 Years	1.1	11.0	4.4	2.5	2.2	1.8	2.9				0.4
20-24 Years	0.3	2.8	1.3	1.9	1.5	2.3	3.8				0.5
25-29 Years	1.8	0.6	1.5	0.3	0.6	1.1	2.2				0.6
30-39 Years	0.3	1.4	2.0	1.8	2.3	1.0	1.2			0.1	0.1
40-59 Years	0.3	1.1	1.9	1.9	1.5	1.3	0.6				0.1
60+ Years	0.3	0.4	0.3	0.3	0.3	0.4	0.9	0.1			0.2

Data Source: VPD Data Mart, current to March 11, 2024

Tallies reflect confirmed cases, including laboratory-confirmed or epidemiologically-linked events. For 2024, data are for the period between January 1 and March 11, 2024.