Pertussis Vaccine Uptake in the First Year of Life

2018-2025

Provincial Health Services Authority

BC Centre for Disease Control
Provincial Health Services Authority

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Report is available here.

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We acknowledge the Title and Rights of BC First Nations who have cared for and nurtured the lands, air and waters for all time, including the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh Úxwumixw (Squamish Nation), and səl̓ílwətaʔ (Tsleil-Waututh Nation) on whose unceded, occupied, and ancestral territory BCCDC is located. As a provincial organization, we also recognize and acknowledge the inherent Title and Rights of BC First Nations whose territories stretch to every inch of the lands colonially known as “British Columbia”.

BC is also home to many First Nations, Métis, and Inuit people from homelands elsewhere in Canada. We recognize the distinct rights of First Nations, Inuit, and Métis people and BCCDC is beginning its work to uphold a distinctions-based approach to Indigenous data sovereignty and self-determination. All Indigenous Peoples who live in BC have rights to self-determination, health and wellness, and respectful use of their data in alignment with Indigenous data governance principles, including but not limited to OCAP®.

BCCDC is working to address the consequences of settler-colonial policies, which continue to have effects on all Indigenous Peoples living in the province. Consistent with the Coast Salish teaching of Thee eat (truth) gifted to PHSA by Coast Salish Knowledge Keeper Siem Te Ta-in, we recognize that ongoing settler colonial harms and ideology in BC undermine the inherent rights of Indigenous Peoples who live in BC and significantly contributes to health inequities and data gaps. For further information, please see “In Plain Sight: Addressing Indigenous-specific Racism and Discrimination in B.C. Health Care”. We also recognize the direct impact of colonial policies, which led to violations of patient autonomy and consent, resulting in vaccine hesitancy and mistrust among Indigenous Peoples in Canada:

- TB vaccine experimentation in Saskatchewan in the 1930s and 1940s
- Medical experimentation and the roots of COVID-19 vaccine hesitancy among Indigenous Peoples in Canada
- Vaccine mistrust: A legacy of colonialism

While the data shown in this report represent BC residents, there is no stratification by Indigeneity and as such, the results are not reflective of the situation for First Nations, Métis and Inuit Peoples and communities. First Nations children may also be disproportionately under-represented in the immunization registry data. Please see the Limitations section of the Data Notes for further information.

Abbreviations

Health Authorities

IH	Interior Health	ISLH	Island Health
FH	Fraser Health	NH	Northern Health
VCH	Vancouver Coastal Health		

Additional abbreviations

BC	British Columbia	HSDA	Health Service Delivery Area
HA	Health Authority	PIR	Provincial Immunization Registry

For an explanation of BC Health Authorities, please visit this website.

Executive Summary

This report outlines pertussis immunization coverage among one-year-olds in BC from 2018 to 2025. Pertussis is a contagious respiratory disease with most hospitalizations occurring in infants under one year of age. Infants in BC are recommended to receive three doses of pertussis vaccine with recommended age milestones for vaccine receipt at 2, 4, and 6 months, and pertussis vaccine uptake in the first year of life is routinely assessed at 3, 7 and 12 months of age. Due to different methodology, Vancouver Coastal Health (VCH) data is excluded from provincial coverage estimates, and VCH coverage is reported separately in the appendix. As a signatory to Canada's Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025, BC aims to achieve 95% vaccination coverage for the first three doses of pertussis vaccine for infants. As of 2025, pertussis vaccine uptake in the first year of life in BC has not met this goal.

In BC, the proportion of one-year-olds who received at least one dose of pertussis vaccine by three months of age peaked in 2020, at 85.5%, before decreasing to 80.9% in 2021 and remaining relatively stable through to 81.6% in 2025. At seven months of age, the proportion of one-year-olds who received all three doses increased from 56.5% in 2023 to 62.9% in 2025, although this remains below the pre-COVID-19 pandemic peak of 65.2% in 2020. BC's coverage rate for receiving three pertussis doses by twelve months of age has remained relatively stable over the past five years, from 80.2% in 2021 to 79.0% in 2025.

The COVID-19 pandemic impacted the provision of public health services and in-person clinical services by physician providers, resulting in declines in on-time receipt of pertussis vaccines across milestone ages that have not yet recovered. Infants born in 2020 (2021 report) were the first cohort to have their early infancy vaccines impacted by the pandemic. From 2020 to 2021, the largest declines were seen at the three and seven-month milestones, which represent measures of delayed vaccine receipt. Although pertussis coverage rates in 2025 remain below the pre-COVID-19 pandemic rates of 2018-2020, recent increases in coverage may suggest a return towards pre-pandemic coverage levels.

In 2025, across health authorities, the proportion of one-year-olds who had received at least one dose of pertussis vaccine by three months ranged from 73.1-84.8%. Three-dose coverage by seven months in 2025 ranged between 50.1-68.8%. At twelve months of age, three-dose coverage increased across health authorities, relative to coverage at seven months, and was between 71.0-82.3% in 2025.

- Interior Health (IH): In IH, one-dose coverage had steadily declined at the three-month milestone, from a peak of 84.3% in 2020 to 76.4% in 2024, before slightly increasing in 2025 to 77.2%. At seven months of age, three-dose coverage in IH increased from 55.6% in 2022 to 60.9% in 2025. At twelve months of age, three-dose coverage in IH has continued to steadily decline, from 84.7% in 2020 to 76.6% in 2025.
- Fraser Health (FH): Pertussis coverage in FH for one-dose at three months of age increased from 78.9% in 2023 to 83.2% in 2025. Three-dose coverage at seven months of age also increased, from 52.9% in 2023 to 63.7% in 2025. At twelve months of age, three-dose coverage in FH has remained relatively stable since 2021 (between 78.6-80.0%), and was 80.0% in 2025.
- Island Health (ISLH): Among health authorities, ISLH had the highest rates of pertussis vaccine uptake in the first year of life. One-dose coverage in ISLH at three months of age decreased from a peak of 87.0% in 2022 to 84.8% in 2025. Three-dose coverage at seven months increased from 63.1% in 2022 to 69.7% in 2024, before slightly decreasing to 68.8% in 2025. At twelve months of age, three-dose coverage declined from a peak of 85.3% in 2022 to 82.3% in 2025.
- Northern Health (NH): Although coverage across the age milestones remain lowest in NH, coverage rates for all three measures increased in 2025. One-dose coverage in NH at three months of age was 73.1% in 2025, an increase from 70.1% in 2024. Three-dose coverage at seven months of age increased from 47.7% in 2024 to 50.1% in 2025. At twelve months of age, three-dose coverage was 71.0% in 2025, an increase from 67.8% in 2024.

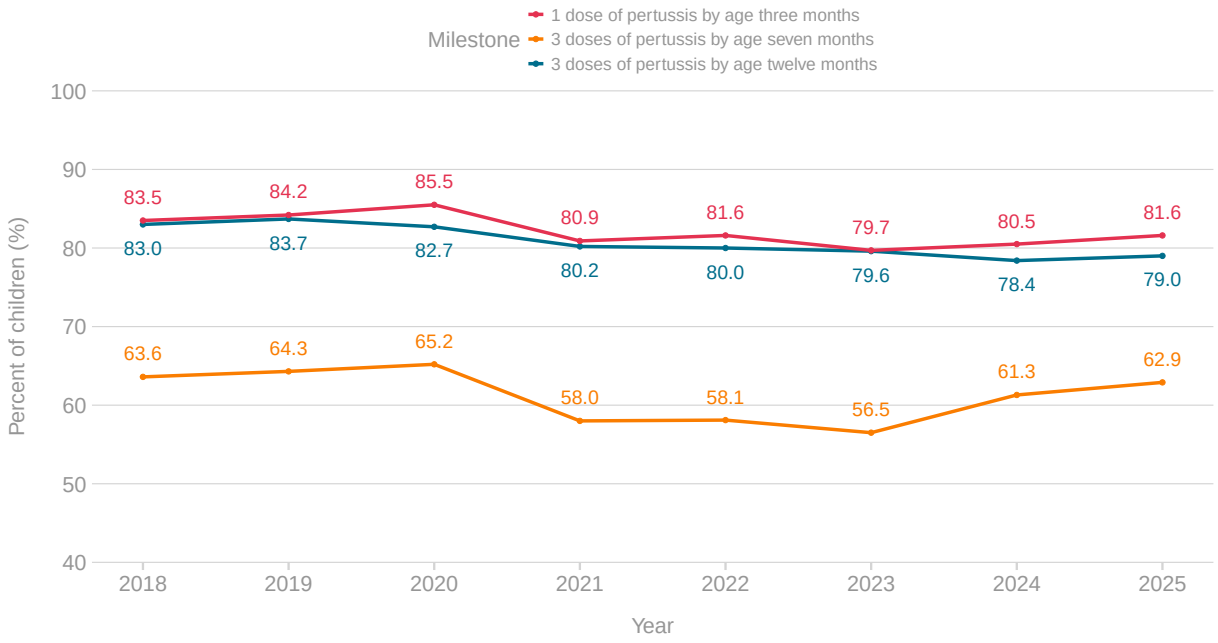
- Vancouver Coastal Health (VCH): VCH infant immunization coverage is assessed through a different methodology to the other health authorities, through the use of a survey. The most recent survey was completed for the 2020 birth cohort, who turned one year old in 2021, and was first included in the 2024 pertussis immunization coverage report. From this survey, one-dose coverage of pertussis in VCH for three months of age was 85.9% in 2021. Three-dose coverage by seven months of age was 77.3%, and increased to 86.4% by twelve months of age.

Across health service delivery areas (HSDAs), excluding those in VCH, 2025 coverage rates at the three-month milestone was lowest in the Northeast (63.2%) and highest in South Vancouver Island (89.2%). At seven months of age, coverage estimates were lowest in the Northeast (44.3%) and highest in South Vancouver Island (76.5%). Coverage rates increased by the twelve month milestone, and continued to be lowest in Northeast (61.1%) and highest in South Vancouver Island (87.1%).

Please refer to the data notes for additional information and data limitations. Data tables used to create the figures in this report can be downloaded here.

Pertussis Immunization Coverage in BC

Up-to-date for Age Milestone

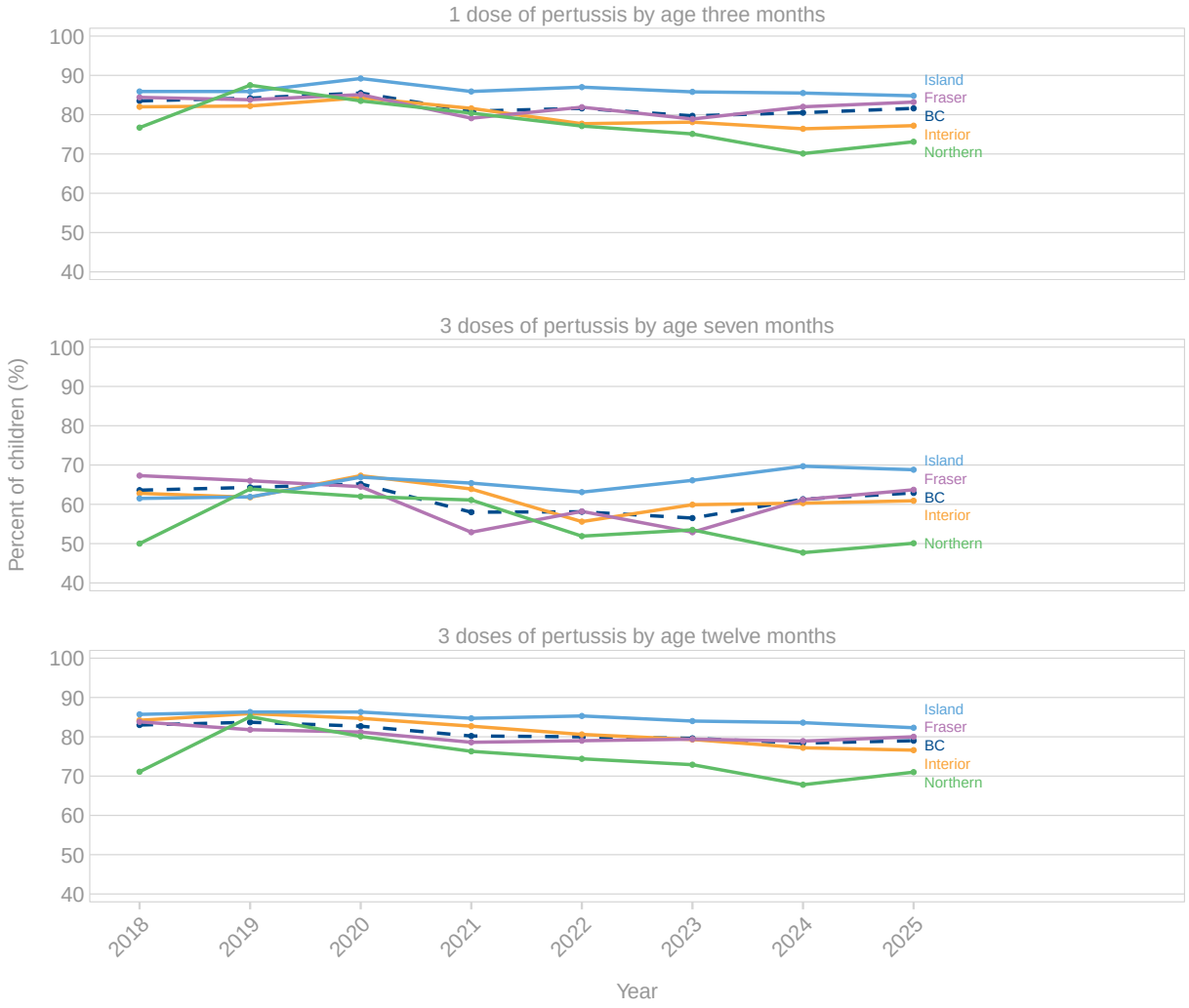


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 1. Pertussis coverage by age milestone, 1-year-olds, British Columbia

Pertussis Immunization Coverage by Regional Health Authority

Summary



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 2. Pertussis coverage by milestone, year and health authority, 1-year-olds, British Columbia

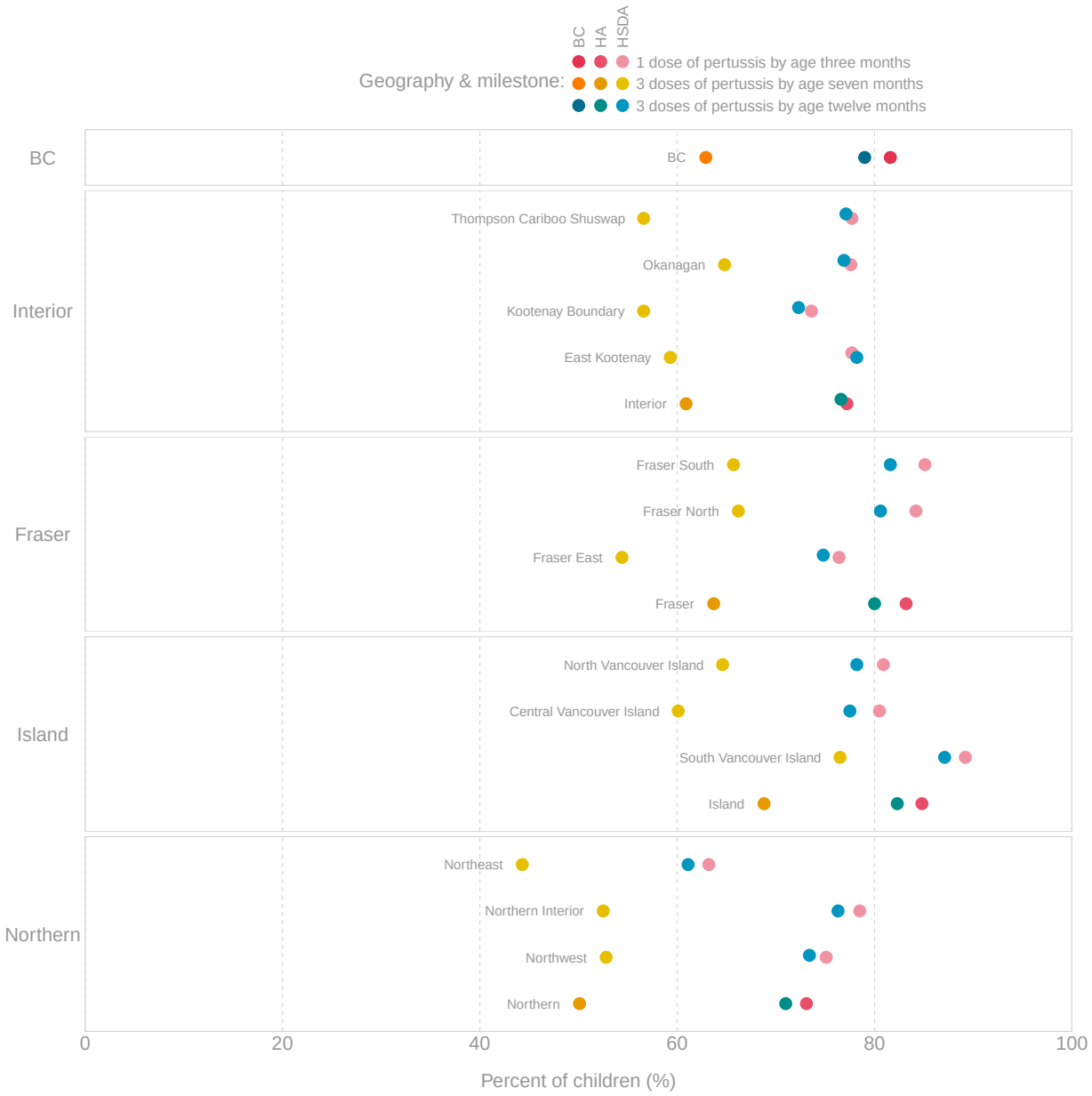
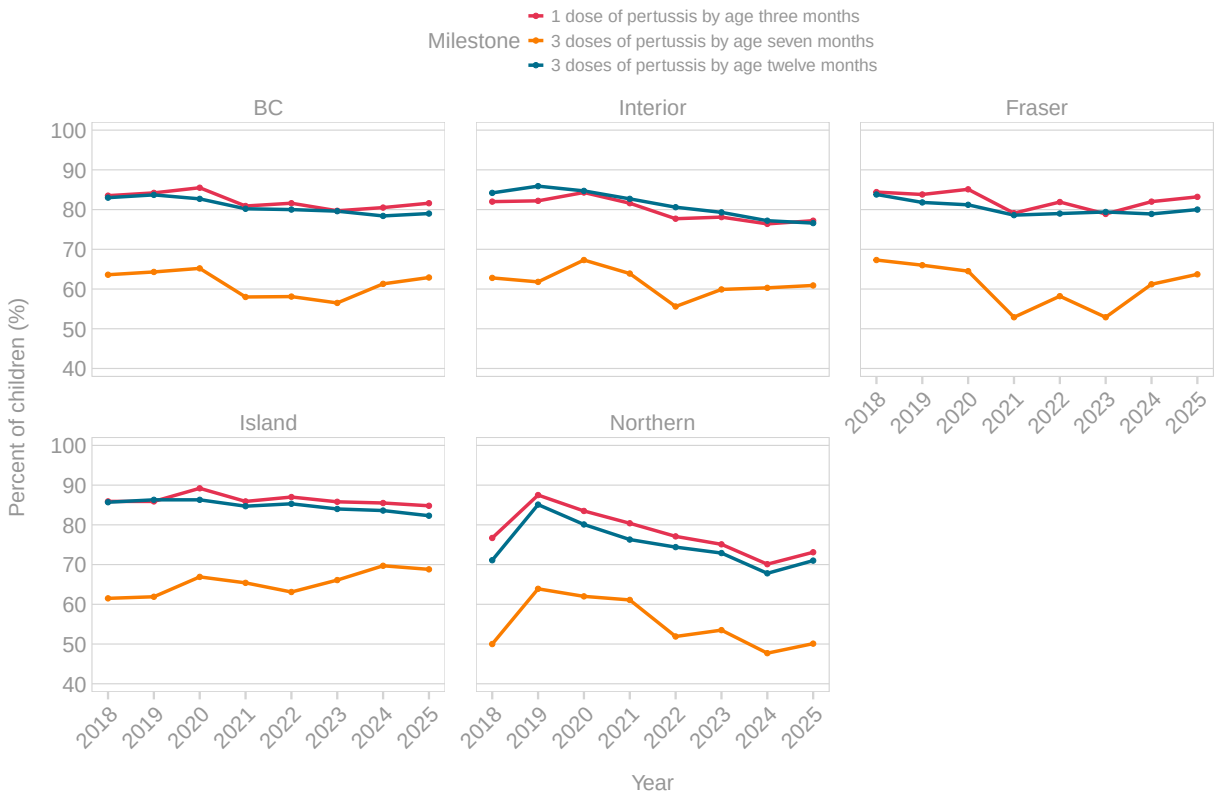


Figure 3. Pertussis coverage by age milestone and geographic region, 1-year-olds, British Columbia, 2025

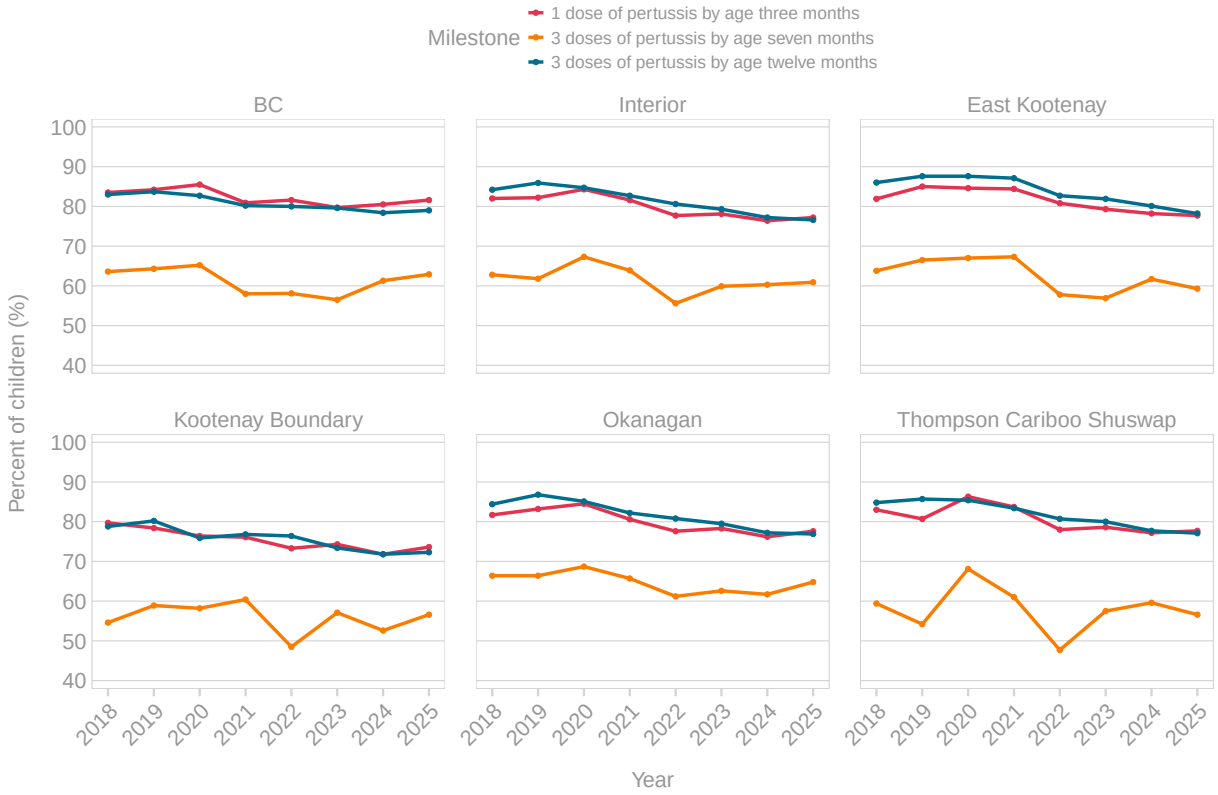


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 4. Pertussis coverage by age milestone, year and health authority, 1-year-olds, British Columbia

Interior Health

Up-to-date for age milestone

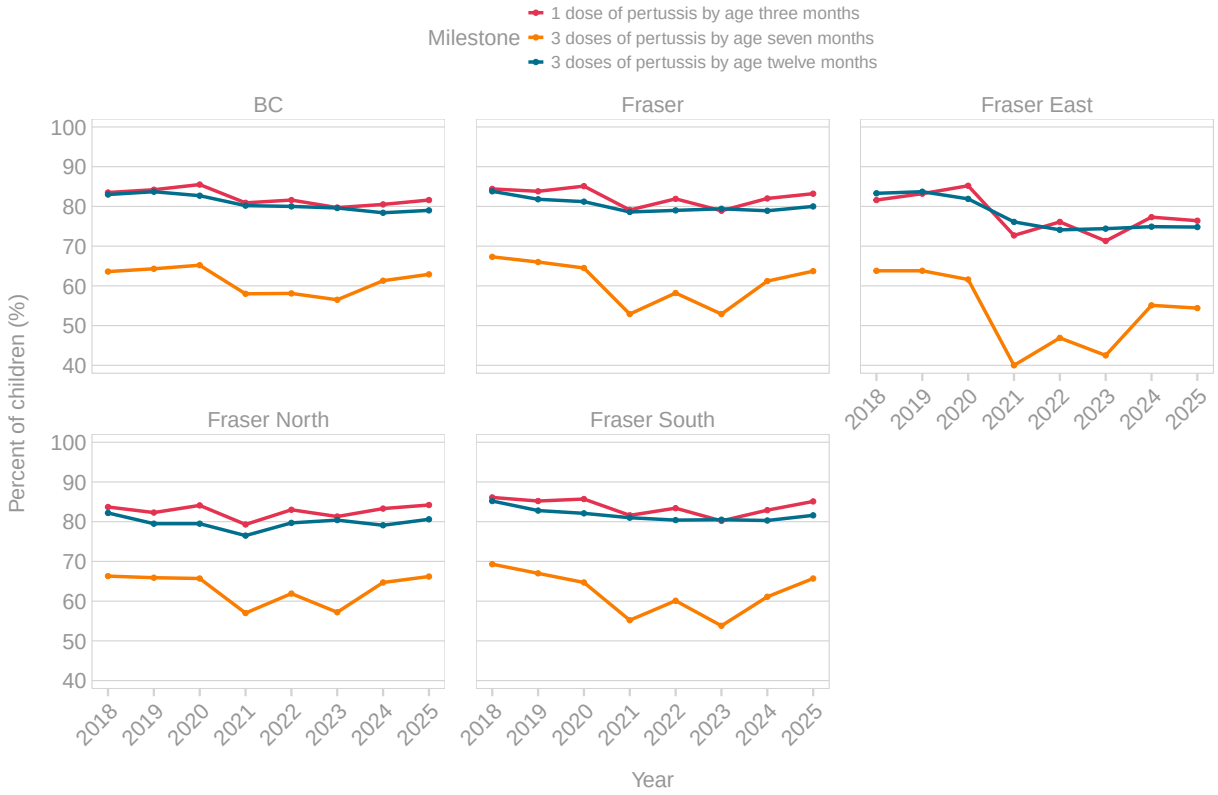


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 5. Pertussis coverage by milestone, year and health service delivery area, 1-year-olds, Interior Health

Fraser Health

Up-to-date for age milestone

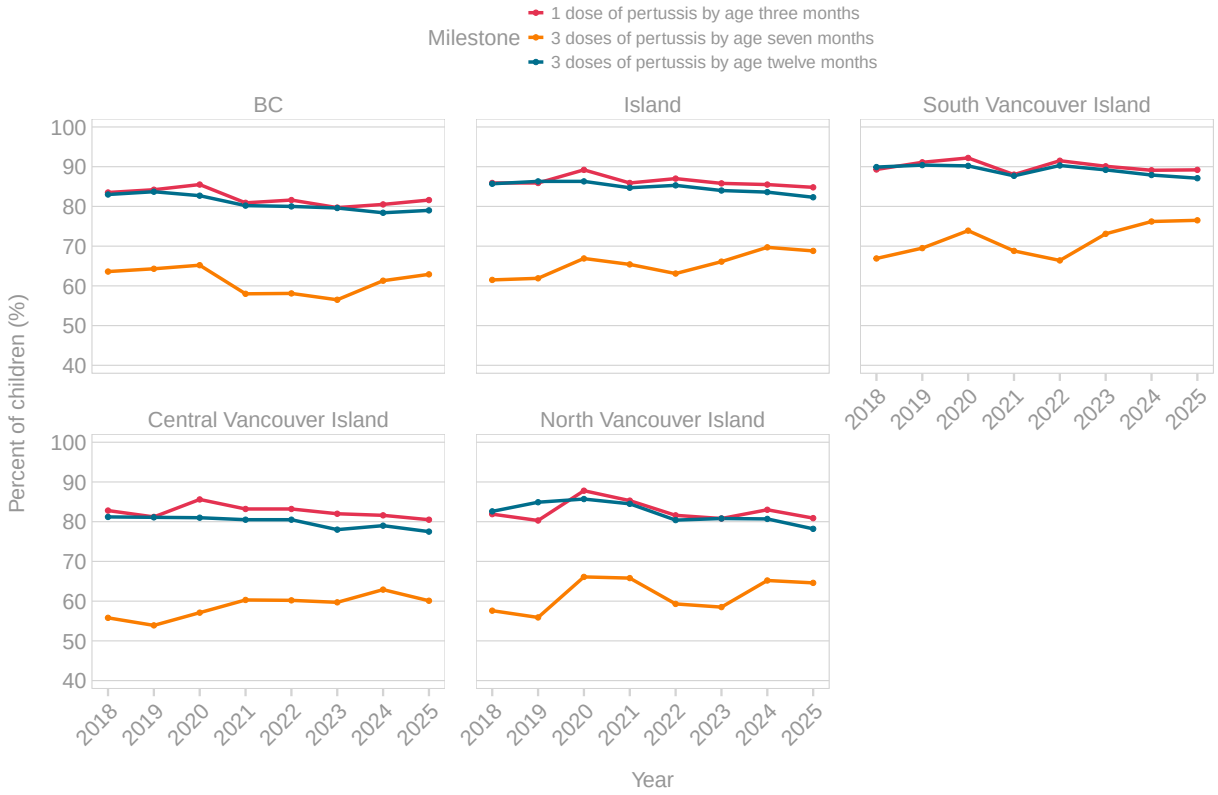


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 6. Pertussis coverage by milestone, year and health service delivery area, 1-year-olds, Fraser Health

Island Health

Up-to-date for age milestone

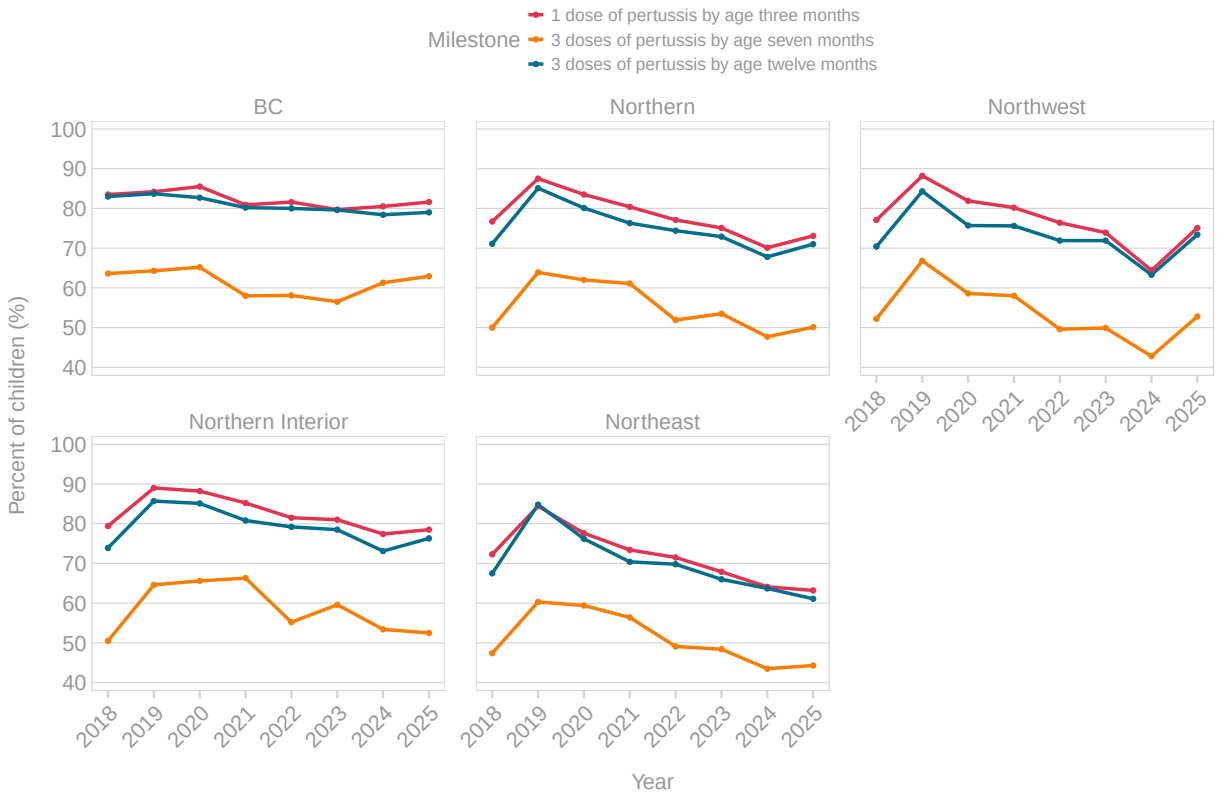


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 7. Pertussis coverage by milestone, year and health service delivery area, 1-year-olds, Island Health

Northern Health

Up-to-date for age milestone



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 8. Pertussis coverage by milestone, year and health service delivery area, 1-year-olds, Northern Health

Data Notes

Data Sources

Coverage estimates are based on immunization and client records in the Provincial Immunization Registry (PIR). Results for 2020 onwards are based on reporting to PIR as of January 15th of the subsequent year (i.e., 2025 results are based on reporting to January 15, 2026). In 2019, results were based on reporting to January 16, 2020 and in 2018, results included data to February 27, 2019 for Fraser Health, Interior Health and Island Health and March 18, 2019 for Northern Health.

All doses are recorded in PIR if administered by public health, reported by a parent/guardian to public health (e.g., for children arriving from outside of BC), or if reported by a primary care provider to public health. Additionally, doses administered by pharmacists and entered in PharmaNet are also recorded in PIR.

In VCH, one-year-old pertussis coverage estimates were assessed through a recent coverage study conducted for the 2020 birth cohort (Appendix: Vancouver Coastal Health one-year-old pertussis immunization coverage estimates). See other data notes for additional information on the different methodology.

Cohort

Coverage reported for any given year reflects uptake among children who turned one year old during that calendar year (i.e., 2025 results are for children born in 2024 and who turned one year old in 2025).

Calculations

Each dose is counted as a valid dose only if given at or after the earliest eligible age, or at a time interval equal to or greater than the shortest recommended interval. The earliest age at which a child can receive a valid dose of pertussis-containing vaccine is 42 days. The shortest valid interval between consecutive doses is 28 days.

Numerators: Number of children with active records in PIR who were born in the previous calendar year and are up-to-date for pertussis by the specified age milestone in Interior Health, Fraser Health, Island Health, and Northern Health.

Denominators: Number of children with active records in PIR who were born in the previous calendar year in Interior Health, Fraser Health, Island Health, and Northern Health.

Coverage results are reported by the health authority and HSDA of the child. In each cohort, there is generally a small number of children with PIR records indicating that they lived in BC but did not have a specific health region assigned (i.e., the client health region was missing). These children are excluded from the analysis.

Limitations

In IH, ISLH, FH, and NH, immunization coverage rates presented here are impacted by:

- All calculations are based on vaccine doses recorded in the PIR or regional clinical systems. To be considered up-to-date for age, documentation of every dose in the immunization registry (PIR) or a clinical system (PARIS) is required and underreporting at the age 1 milestone is primarily driven by incomplete submission of immunization records to PIR.
- Children whose immunization records are incomplete in the PIR, include:
  - Those immunized in communities or clinical settings where records are not consistently submitted to PIR (e.g., private clinics or providers outside Regional Health Authority Public Health)
  - Children who have recently moved to or out of British Columbia
  - Children immunized outside of BC whose records have not been submitted or reconciled

In VCH:

- Due to different methodology, VCH data is excluded from provincial coverage estimates and their coverage is reported separately (see other data notes and appendix: Vancouver Coastal Health one-year-old pertussis immunization coverage estimates).

Definitions

Up-to-date for age

Milestone	Definition
3 months	Received at least one valid dose of pertussis-containing vaccine by 3 months of age
7 months	Received at least three valid doses of pertussis-containing vaccine by 7 months of age
12 months	Received at least three valid doses of pertussis-containing vaccine by 12 months of age

Minimum Intervals and Ages Between Doses

Antigen/Agent	Minimum Age or Minimum Time Interval Between Eligible Doses		
	Dose 1[A]	Dose 2	Dose 3
Pertussis-containing vaccine	42 days	28 days	28 days

A. Dose 1 refers to the earliest age a child can receive the initial dose.

Other Data Notes

Vancouver Coastal Health (VCH) one-year-old pertussis immunization coverage estimates:

- VCH provides their early childhood coverage data through a mechanism that differs from other health authorities:
  - One-year-old pertussis immunization coverage data for VCH have not been included with provincial data because VCH data (based on a survey of a sample of the population) may not be comparable with population-based immunization data obtained from PIR for the rest of the province.
  - Immunization data from PIR are not used for VCH one-year-old estimates as although immunizations provided to infants by public health in VCH are captured in the health authority's electronic information system (called PARIS) and transmitted to the PIR, the majority of VCH infants are immunized by physicians. BC's public health legislation does not require reporting of immunizations administered by physicians to public health; thus, immunizations delivered by physicians are not systematically captured in PARIS.
  - A coverage survey for one-year-old pertussis immunization was conducted for the 2020 birth cohort and is included in this report.
  - From 2018-2025, VCH represented approximately 21% of BC's one-year-old population (Source: BC Stats Population Estimates and PEOPLE projections).
- See Appendix: Vancouver Coastal Health one-year-old pertussis immunization coverage estimates.

Immunization program and coverage assessment rule changes:

Immunization programming:

- Each health authority has different recall/follow-up practices that may impact coverage in each region at different milestones.

COVID-19 pandemic impacts:

- In March 2020, the COVID-19 pandemic was declared and initially resulted in a province-wide shut down that impacted the provision of public health services including routine immunization services.
- The impacts of the COVID-19 pandemic on the provision of public health services and in-person clinical services by physician providers continued through 2022 and may have affected provision of routine childhood immunizations.

Northern Health (NH):

- Coverage rates for pertussis declined in 2024 across NH and remained low in 2025 in Northern Interior and Northeast HSDAs, while increasing in Northwest HSDA. An investigation of these declines is underway at NH to determine the cause (e.g., true declines vs. data flow issues).
- In NH, some communities are not part of the routine immunization record submission process which may result in a delay in immunization records being entered into PIR; this may result in lower coverage rates being reported.

PIR notes:

- In spring 2020, PIR was updated to include all clients from the Ministry of Health (MoH) Client Roster. The population is maintained via regular feeds from MoH's Registration and Premium Information Determination (RAPID) system for new clients eligible for Medical Services Plan (MSP) coverage and Enterprise Master Patient Index (EMPI) for births and deaths. This should provide more complete information on the entire BC population in PIR.
- Client records with no or inadequate immunizations recorded may reflect children who have moved out of the province or died. When public health is not aware of these events, they cannot update the Panorama records to reflect the status of these children. Records reported by provinces with reciprocal agreements with MSP for individuals who have moved out of BC and established health insurance in other Canadian jurisdictions are inactivated through the RAPID system process outlined above.

Appendix

Vancouver Coastal Health One-year-old Pertussis Immunization Coverage Estimates

Data sources:

Vancouver Coastal Health Authority, Vaccine Evaluation Centre, 2020 Cohort Two-Year-Old Immunization Coverage Survey. Prepared by: Vancouver Coastal Health Public Health, July 2024.

2020 coverage rates: based on respondents from a random sample generated by the Ministry of Health.

Coverage definitions:

See Up-to-date for age definitions for information on the applied coverage rules.

Table 1. Up-to-date for age by birth cohort, 1-year-olds, Vancouver Coastal Health.

HSDA	Milestone	Children born in 2020
Richmond	1 dose of pertussis by age three months	91.1
	3 doses of pertussis by age seven months	83.9
	3 doses of pertussis by age twelve months	89.7
Vancouver	1 dose of pertussis by age three months	77.9
	3 doses of pertussis by age seven months	71.3
	3 doses of pertussis by age twelve months	77.9
North Shore (Coastal Urban)	1 dose of pertussis by age three months	87.7
	3 doses of pertussis by age seven months	79.9
	3 doses of pertussis by age twelve months	90.0
Coast Garibaldi (Coastal Rural)	1 dose of pertussis by age three months	93.6
	3 doses of pertussis by age seven months	76.0
	3 doses of pertussis by age twelve months	96.0
Vancouver Coastal	1 dose of pertussis by age three months	85.9
	3 doses of pertussis by age seven months	77.3
	3 doses of pertussis by age twelve months	86.4