BC Centre for Disease Control
An agency of the Provincial Health Services Authority

Communicable Diseases
and Immunization Service

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Immunization Uptake in Grade 6 Students

2019

October 18, 2019

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Data Sources and Definitions

Data Sources

1. As of 2018 for Fraser Health Authority (FHA), Vancouver Island Health Authority (VIHA) and Interior Health Authority (IHA) and in 2017 for the Rutland branch in the Okanagan Health Service Delivery Area (HSDA) of IHA: Panorama immunization registry data based on the grade cohort defined as students whose Panorama records indicated they attended grade 6 at a school within the region's service area.
2. For Vancouver Island Health Authority (VIHA) in 2014 to 2017: Panorama immunization registry and enrolment estimates from the BC Ministry of Education (BC MoE).
3. For all other health regions and years: summary reports by HSDAs and/or Health Authorities.

Coverage reported for any given year reflects coverage as of June 30 of that year (e.g., 2019 coverage is for students completing grade 6 by June 30, 2019 and considers only immunizations received by June 30, 2019).

Results presented in this report are based on data recorded in Panorama prior to August 14, 2019 and VCHA and Northern Health Authority (NHA) aggregate data reported by October 18, 2019.

Up-to-date for Age Definitions

Hepatitis B	The proportion of students enrolled in grade 6 as of June 30 who ever completed a series of hepatitis B vaccine (3 doses if series was started before 11 years of age; 2 doses if series was started on or after 11 years of age) by June 30.
Varicella	The proportion of students enrolled in grade 6 as of June 30 who reported a previous history of varicella disease or shingles or who received two valid doses of varicella vaccine by June 30. These children are only considered up-to-date if disease or immunization occurred on or after the first birthday. The evidence required to be recorded as having a previous history of varicella disease or shingles has changed over time. A self-reported history of varicella is adequate for those born before 2004; for those born in 2004 and later, a health care provider diagnosed history is required for reliability. Most children born in 2004 were in grade 6 during the 2015/16 school year. Prior to 2013, only one dose of varicella vaccine (on or after the first birthday) was required in order to be considered up-to-date for varicella vaccine. This change in definition reflects a change in immunization policy that was implemented during the 2012/13 school year, when a second dose of varicella vaccine was offered to susceptible students in grade 6.
Human Papillomavirus (up-to-date / complete series)	The proportion of female or male students enrolled in grade 6 as of June 30 that was up-to-date for age for Human Papillomavirus (HPV) vaccine by June 30. Starting in the 2017/18 school year, HPV vaccine was routinely offered to males in grade 6; previously, it was only offered to females. Starting in the 2010/11 school year, the HPV immunization schedule in grade 6 changed from requiring 3 doses of HPV vaccine (with at least 4 weeks between doses 1 and 2 and at least 12 weeks between doses 2 and 3) to requiring 2 doses of HPV vaccine (with at least 6 months between doses until 2013/14, which changed to at least 5 months between doses from 2014/15 onwards).
Human Papillomavirus (initiated, but did not complete series)	The proportion of female or male students enrolled in grade 6 as of June 30 who received at least one dose of HPV vaccine, but did not complete a 2-dose or a 3-dose series.

Meningococcal C	The proportion of students enrolled in grade 6 as of June 30 who received 1 dose of meningococcal C-containing conjugate vaccine by June 30 and on or after 10 years of age.

All analyses were conducted using business rules which calculated ages and time intervals at receipt of immunization. Each dose was 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.

See: Minimum Intervals between Eligible Doses

Caution

Data in this report should be interpreted with caution. Please refer to the Notes for additional information.

Grade 6 Students with Up-to-date Immunizations: Hepatitis B

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR									
	2010	2011	2012	2013	2014*	2015*	2016*	2017*	2018*	2019*
INTERIOR *	**85.6%**	**83.9%**	**83.8%**	**89.4%**	**90.5%**	**89.2%**	**89.9%**	**89.3%**	**90.2%**	**90.5%**
East Kootenay	82.0%	81.9%	82.9%	91.4%	91.4%	89.0%	91.2%	85.8%	90.5%	90.2%
Kootenay Boundary	77.7%	72.8%	73.6%	80.9%	82.9%	82.4%	80.5%	82.8%	80.2%	80.4%
Okanagan	84.3%	83.2%	83.5%	88.2%	89.1%	89.3%	89.7%	88.9%	89.9%	90.7%
Thompson Cariboo Shuswap	91.2%	89.6%	88.6%	93.5%	94.8%	91.3%	93.2%	93.5%	94.2%	93.9%
FRASER *	**82.5%**	**81.0%**	**83.5%**	**87.5%**	**89.0%**	**89.0%**	**90.6%**	**91.8%**	**88.3%**	**89.0%**
Fraser East	74.7%	76.7%	78.7%	86.9%	89.0%	86.9%	87.2%	90.5%	90.8%	89.9%
Fraser North	82.2%	79.6%	80.6%	82.9%	86.5%	86.3%	90.1%	91.5%	87.7%	88.0%
Fraser South	85.6%	83.6%	87.2%	91.0%	90.7%	91.7%	92.3%	92.5%	87.7%	89.3%
VANCOUVER COASTAL	**86.9%**	**90.9%**	**91.9%**	**92.4%**	**93.0%**	**93.2%**	**94.2%**	**93.6%**	**93.7%**	**93.4%**
Richmond	92.9%	97.0%	97.1%	97.3%	96.9%	96.9%	98.5%	96.8%	97.8%	97.7%
Vancouver	86.4%	91.4%	92.6%	92.8%	93.4%	93.8%	94.0%	94.3%	94.6%	94.4%
North Shore / Coast Garibaldi	83.5%	86.3%	87.4%	88.8%	90.0%	90.1%	91.8%	90.6%	90.1%	89.2%
VANCOUVER ISLAND *	**79.6%**	**80.8%**	**79.6%**	**90.5%**	**95.9%**	**97.9%**	**97.5%**	**98.5%**	**91.4%**	**91.1%**
South Vancouver Island	80.4%	81.3%	83.1%	92.2%	93.2%	98.5%	97.0%	97.9%	92.5%	91.2%
Central Vancouver Island	81.3%	81.9%	75.7%	89.6%	98.4%	96.2%	99.0%	97.9%	91.3%	91.4%
North Vancouver Island	74.4%	77.5%	78.5%	88.0%	98.1%	99.6%	96.0%	100.0%	88.6%	90.5%
NORTHERN	**86.8%**	**88.0%**	**85.9%**	**93.4%**	**94.4%**	**92.7%**	**92.9%**	**91.5%**	**91.5%**	**91.1%**
Northwest	82.5%	85.8%	83.9%	93.1%	95.2%	92.5%	94.4%	93.5%	90.6%	89.7%
Northern Interior	91.2%	90.0%	88.5%	94.3%	95.5%	94.4%	94.8%	92.5%	94.3%	92.7%
Northeast	82.5%	86.0%	83.2%	92.0%	91.2%	89.5%	88.0%	87.7%	86.7%	89.4%
BRITISH COLUMBIA *	**83.8%**	**84.0%**	**85.0%**	**89.7%**	**91.5%**	**91.5%**	**92.4%**	**92.8%**	**90.4%**	**90.6%**

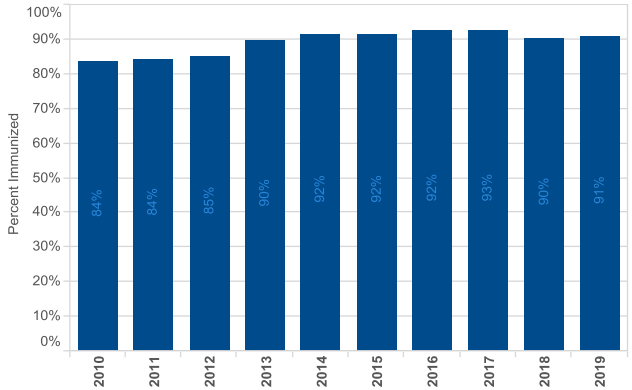
Hepatitis B uptake was assessed in 2002 onward. Data for 2005-2019 are available in the BCCDC Childhood Immunization Coverage Dashboard. Data for 2002-2004 are in previous coverage reports.

* The 2014-2019 estimates for BC and some of the health authorities are not directly comparable to previous years. Immunization coverage rates approaching 100% in VIHA in 2014-2017 are likely over-estimates resulting from the use of different data sources for numerators and denominators. See Notes.

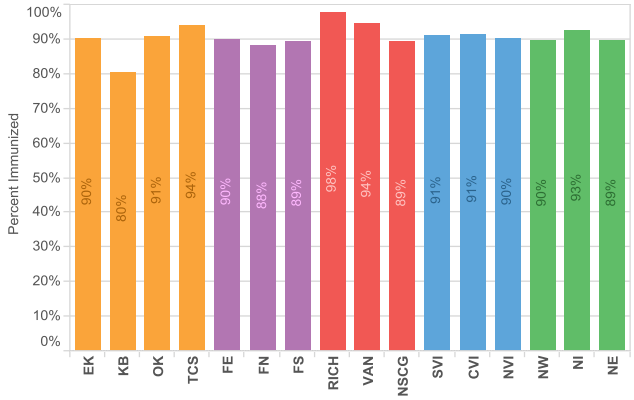
In 2019, Hepatitis B immunization coverage remained above 90% at the provincial level. Health authority rates changed only slightly. The high coverage rates for the years beginning in 2013 reflect immunization in infancy and thereafter. Rates and trends varied by Health Service Delivery Area. In 2019, hepatitis B coverage rates by Health Service Delivery Area ranged from 80.4% to 97.7%.

Grade 6 Students Immunized
Hepatitis B Vaccine, British Columbia

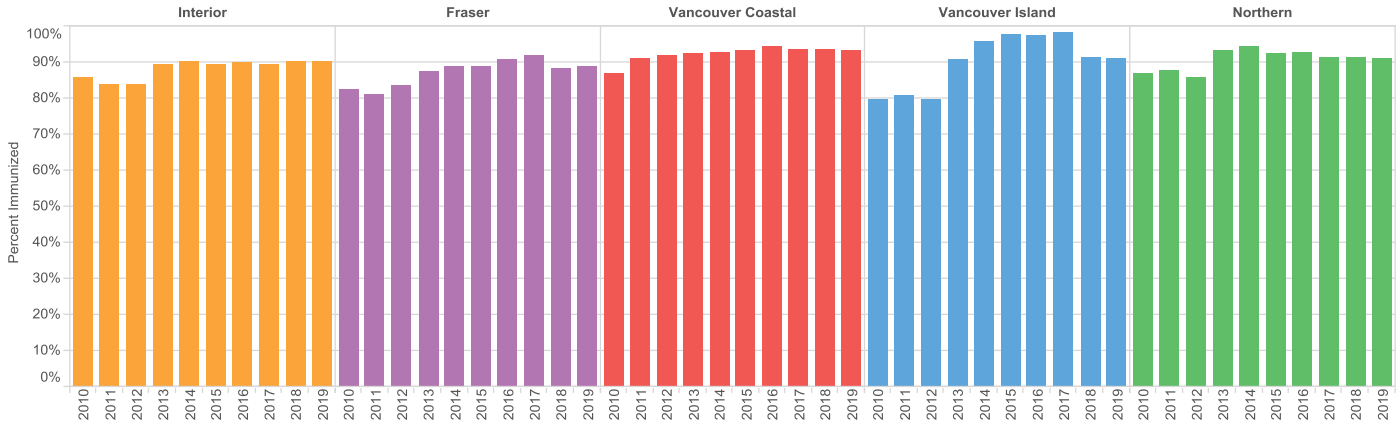
All British Columbia, by Year



By Health Service Delivery Area, 2019



By Health Authority and Year



Grade 6 Students with Up-to-date Protection: Varicella

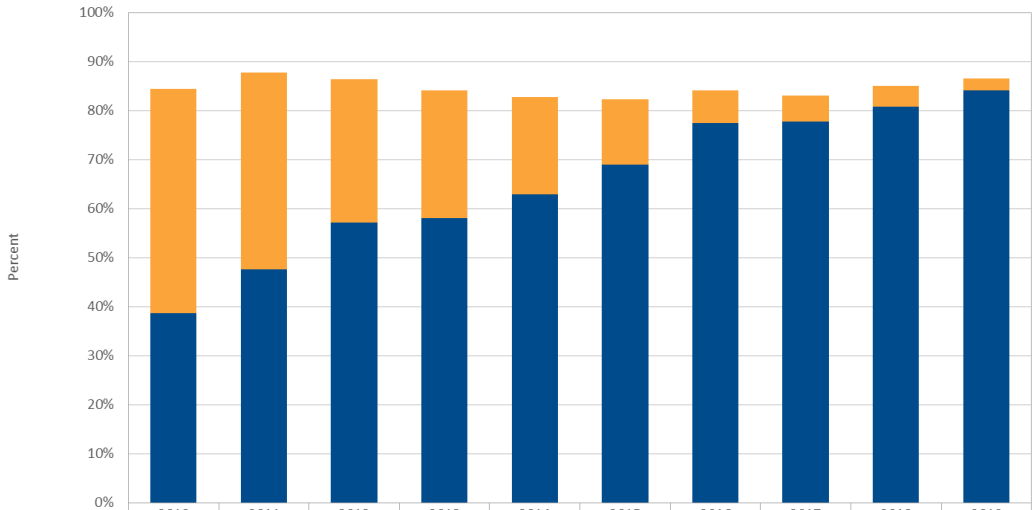
HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR									
	2010	2011	2012	2013	2014*	2015*	2016*	2017*	2018*	2019*
INTERIOR *	**86.0%**	**90.4%**	**88.3%**	**85.7%**	**84.7%**	**82.2%**	**83.4%**	**82.5%**	**87.4%**	**86.2%**
East Kootenay	81.0%	89.6%	91.7%	88.0%	90.0%	85.4%	82.8%	82.4%	88.9%	86.5%
Kootenay Boundary	74.6%	87.1%	81.9%	74.6%	74.3%	78.4%	76.7%	78.5%	86.8%	74.2%
Okanagan	85.9%	89.2%	87.0%	83.9%	82.5%	80.6%	82.6%	80.9%	85.8%	86.1%
Thompson Cariboo Shuswap	91.6%	94.0%	91.6%	91.6%	89.4%	84.9%	87.3%	86.5%	89.6%	90.4%
FRASER *	**81.8%**	**84.6%**	**83.5%**	**82.6%**	**82.6%**	**81.9%**	**82.8%**	**83.4%**	**81.4%**	**84.0%**
Fraser East	77.0%	84.8%	80.5%	80.9%	80.1%	80.6%	79.3%	79.8%	84.8%	84.3%
Fraser North	82.1%	79.9%	79.3%	80.0%	81.1%	79.0%	80.2%	80.9%	81.5%	83.3%
Fraser South	83.4%	87.7%	87.5%	85.1%	84.6%	84.3%	85.9%	86.2%	80.0%	84.4%
VANCOUVER COASTAL	**89.3%**	**89.3%**	**87.7%**	**85.0%**	**85.8%**	**85.6%**	**87.0%**	**85.9%**	**88.0%**	**91.7%**
Richmond	94.3%	84.4%	90.1%	92.0%	90.1%	91.8%	93.4%	86.8%	94.1%	96.0%
Vancouver	89.4%	90.4%	86.4%	84.5%	85.0%	84.8%	84.9%	86.8%	88.5%	92.2%
North Shore / Coast Garibaldi	85.7%	90.4%	88.2%	81.5%	84.6%	83.3%	86.6%	83.7%	84.0%	88.5%
VANCOUVER ISLAND *	**81.0%**	**89.2%**	**88.2%**	**82.5%**	**76.1%**	**78.0%**	**84.8%**	**82.3%**	**88.4%**	**86.9%**
South Vancouver Island	79.5%	89.3%	90.0%	82.6%	72.0%	78.0%	84.9%	81.8%	91.6%	87.3%
Central Vancouver Island	86.0%	92.1%	85.9%	81.7%	80.1%	78.5%	86.5%	82.7%	87.4%	86.9%
North Vancouver Island	74.8%	83.3%	88.0%	83.6%	79.2%	76.9%	81.3%	83.2%	81.8%	85.7%
NORTHERN	**88.4%**	**92.6%**	**91.1%**	**87.7%**	**86.1%**	**84.2%**	**84.6%**	**83.1%**	**85.3%**	**87.5%**
Northwest	86.5%	92.3%	92.0%	90.4%	87.9%	87.7%	84.5%	84.9%	85.1%	87.3%
Northern Interior	88.5%	93.3%	91.4%	86.8%	86.5%	83.8%	87.7%	86.1%	88.0%	90.1%
Northeast	90.3%	91.3%	89.7%	86.6%	83.7%	81.3%	78.7%	75.8%	80.4%	83.0%
BRITISH COLUMBIA *	**84.4%**	**87.8%**	**86.4%**	**83.9%**	**82.9%**	**82.3%**	**84.2%**	**83.6%**	**85.0%**	**86.6%**

Varicella coverage was assessed in 2006 onward. Data for 2006-2018 are available in the BCCDC Childhood Immunization Coverage Dashboard.

* The 2014-2019 estimates for BC and some of the Health Authorities are not directly comparable to previous years. The evidence required to record a previous history of varicella disease or shingles became more stringent as of the 2004 birth cohort (in grade 6 in the 2015/16 school year). See Notes.

The varicella coverage rate in 2019 was the highest observed since the definition of "up-to-date" for varicella vaccine changed to requiring two doses in 2013. Compared to 2018, the percent up-to-date in 2019 increased in FHA, VCHA and NHA and decreased in IHA and VIHA. The percent of children receiving vaccine has increased every year, with 84.1% of grade 6 students in 2019 having received 2 doses of varicella vaccine. The proportion of children reporting varicella disease has dropped from 67.7% in 2 007 to 2.5% in 2019, as fewer children are exposed to wild-type varicella. Rates and trends varied by Health Service Delivery Area. In 2019, varicella coverage rates by Health Service Delivery Area ranged from 74.2% to 96.0%.

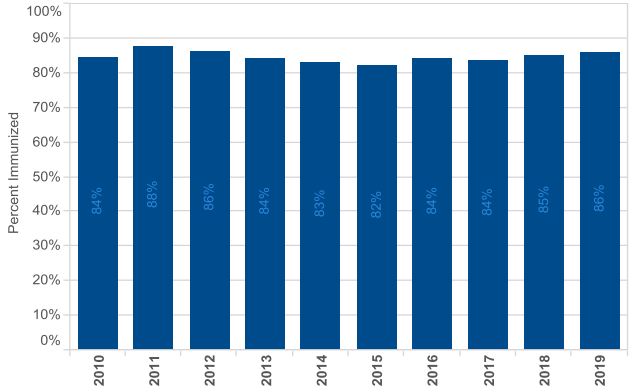
Grade 6 Students Immunized
Varicella Vaccine and Disease History, British Columbia



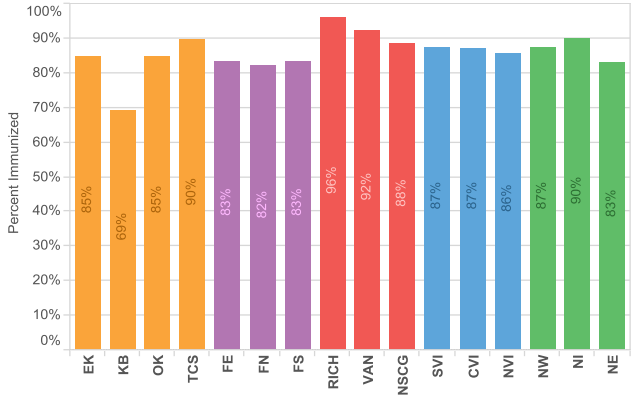
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Disease History	45.8%	40.2%	29.2%	26.2%	19.9%	13.3%	6.8%	5.3%	4.2%	2.5%
Vaccinated	38.6%	47.6%	57.2%	58.0%	62.9%	69.0%	77.4%	77.8%	80.8%	84.1%

Grade 6 Students Immunized
Varicella Vaccine, British Columbia

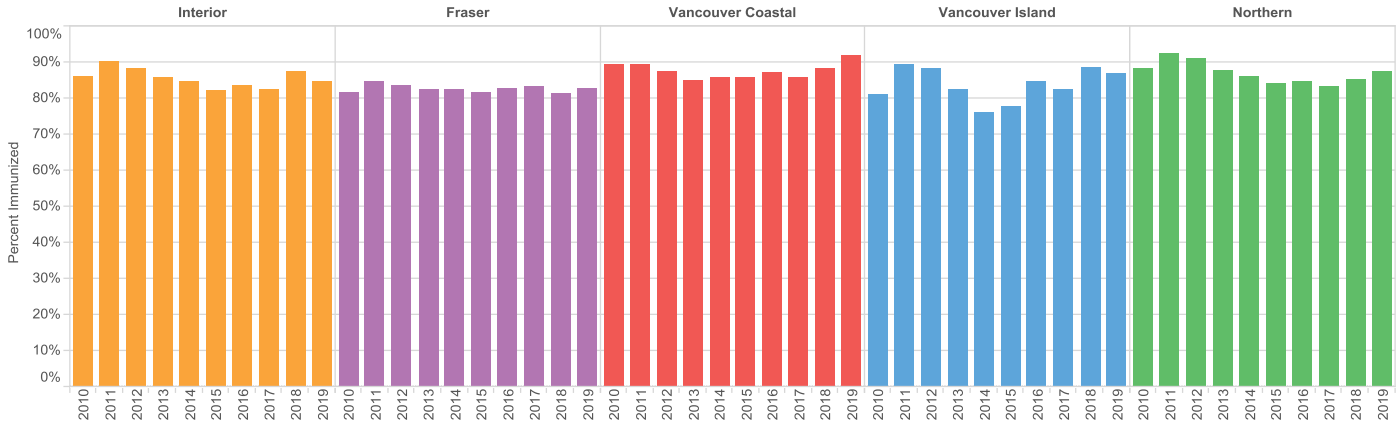
All British Columbia, by Year



By Health Service Delivery Area, 2019



By Health Authority and Year



Grade 6 Students with Up-to-date Immunizations: Human Papillomavirus (HPV)

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR											
	2010	2011	2012	2013	2014*	2015*	2016*	2017*	2018*		2019*	
	Females	Females	Females	Females	Females	Females	Females	Females	Females	Males	Females	Males
INTERIOR *	**62.2%**	**67.9%**	**67.7%**	**67.8%**	**68.1%**	**63.4%**	**64.6%**	**63.4%**	**64.7%**	**63.2%**	**65.2%**	**63.7%**
East Kootenay	59.6%	70.5%	65.5%	69.2%	65.6%	60.7%	57.1%	59.5%	62.6%	58.5%	61.7%	64.2%
Kootenay Boundary	52.7%	57.9%	57.7%	53.5%	55.9%	46.5%	56.3%	52.1%	55.5%	49.9%	51.6%	48.3%
Okanagan	61.3%	64.4%	66.4%	66.6%	66.6%	64.0%	64.3%	61.9%	64.7%	63.0%	65.0%	64.3%
Thompson Cariboo Shuswap	67.4%	75.9%	74.6%	74.3%	74.9%	69.8%	70.6%	71.4%	69.3%	69.3%	71.1%	68.2%
FRASER *	**59.4%**	**68.4%**	**68.7%**	**71.0%**	**69.9%**	**69.1%**	**69.6%**	**70.1%**	**69.3%**	**66.0%**	**65.2%**	**62.1%**
Fraser East	52.2%	60.9%	62.5%	63.6%	61.6%	57.5%	57.1%	58.2%	59.6%	55.0%	58.3%	53.9%
Fraser North	61.3%	66.9%	66.7%	70.9%	68.2%	65.7%	68.8%	68.6%	70.7%	66.3%	65.3%	63.0%
Fraser South	61.0%	72.4%	72.6%	74.0%	73.9%	75.4%	75.1%	75.5%	72.0%	70.0%	67.8%	64.6%
VANCOUVER COASTAL	**59.7%**	**68.9%**	**69.9%**	**66.2%**	**64.5%**	**66.4%**	**66.4%**	**66.7%**	**68.6%**	**65.8%**	**71.8%**	**68.8%**
Richmond	68.5%	77.2%	76.9%	71.7%	61.4%	74.8%	74.4%	68.4%	75.3%	72.7%	78.0%	73.6%
Vancouver	56.4%	67.7%	66.9%	66.1%	64.4%	64.3%	65.9%	67.7%	70.9%	65.6%	74.2%	70.6%
North Shore / Coast Garibaldi	59.1%	65.8%	70.5%	62.8%	66.2%	65.2%	62.7%	64.2%	61.1%	62.3%	64.1%	63.1%
VANCOUVER ISLAND *	**59.1%**	**67.2%**	**67.4%**	**67.4%**	**54.3%**	**54.3%**	**65.6%**	**60.8%**	**62.6%**	**61.9%**	**64.0%**	**61.9%**
South Vancouver Island	62.5%	68.8%	72.2%	67.3%	51.2%	55.6%	67.5%	63.1%	69.0%	65.7%	68.7%	66.5%
Central Vancouver Island	56.7%	65.6%	62.4%	68.4%	57.2%	52.9%	65.2%	57.4%	59.3%	61.2%	63.1%	59.4%
North Vancouver Island	55.7%	66.2%	65.4%	65.2%	56.8%	53.5%	60.9%	61.5%	52.6%	52.6%	53.3%	55.0%
NORTHERN	**59.4%**	**67.3%**	**69.7%**	**68.5%**	**66.2%**	**61.1%**	**62.8%**	**63.9%**	**62.1%**	**61.0%**	**61.6%**	**59.3%**
Northwest	61.3%	68.8%	71.7%	69.7%	67.7%	67.3%	65.5%	67.6%	66.0%	57.3%	61.2%	58.3%
Northern Interior	61.2%	67.9%	69.9%	69.1%	67.7%	58.9%	65.4%	68.4%	66.8%	65.5%	66.2%	60.7%
Northeast	53.2%	64.6%	67.2%	66.2%	62.0%	59.2%	55.4%	52.3%	48.2%	56.0%	53.5%	57.6%
BRITISH COLUMBIA *	**59.9%**	**68.2%**	**68.7%**	**68.8%**	**65.8%**	**64.8%**	**67.1%**	**66.5%**	**66.9%**	**64.6%**	**66.1%**	**63.5%**

HPV coverage was assessed in 2009 onward. Data for 2009 are available in the BCCDC Childhood Immunization Coverage Dashboard.

* The 2014-2019 estimates for BC and some of the health authorities are not directly comparable to previous years. See Notes.

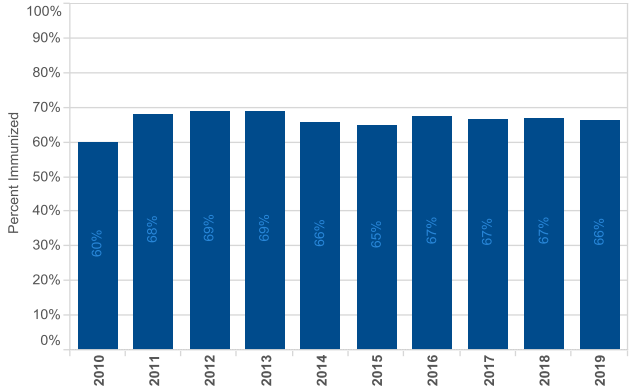
HPV coverage in grade 6 girls in BC was 61.8% in the first year of the program, and then dropped slightly to 59.9% in the 2009/10 school year. The drop in coverage during the 2009/10 school year was believed to be a result of re-allocating resources usually used to follow-up with school-based immunization to the influenza H1N1 pandemic response. The percent of grade 6 girls up-to-date for HPV increased in 2011-2013; some of this increase is likely due to the changing requirements (only 2 doses are required by the end of grade 6). When compared to 2018 rates, HPV

coverage in grade 6 girls in 2019 increased slightly in IHA, VCHA and VIHA and decreased slightly in FHA and NHA. Rates and trends varied by Health Service Delivery Area. In 2019, HPV coverage rates in girls by Health Service Delivery Area ranged from 51.6% to 78.0%.

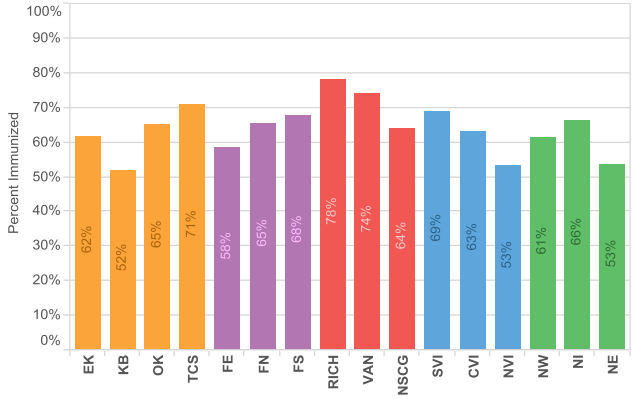
The 2018/19 school year was the second year of the HPV immunization program for boys in grade 6. HPV coverage among male students dropped slightly in 2019, compared to 2018 (63.5% vs. 64.6%). Uptake among male students was slightly lower than, female students in 2019 (63.5% in males compared to 66.1% in females) and higher than uptake among female students in the second year of the female program (2010, 59.9%). Rates and trends varied by Health Service Delivery Area. In 2019, HPV coverage rates in males by Health Service Delivery Area ranged from 48.3% to 73.6%.

Grade 6 Female Students Immunized
Human Papillomavirus (HPV) Vaccine, British Columbia

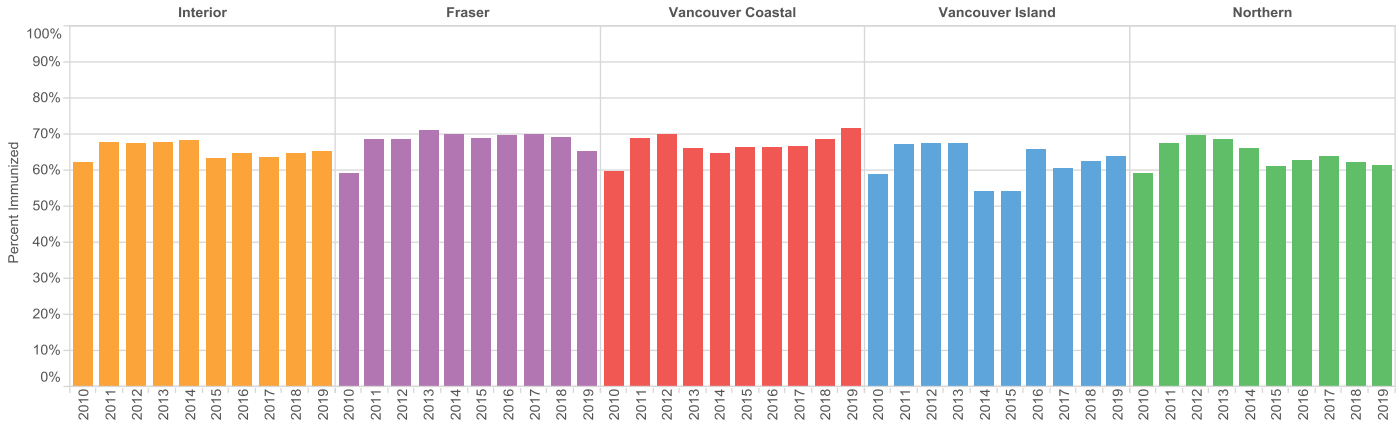
All British Columbia, by Year



By Health Service Delivery Area, 2019

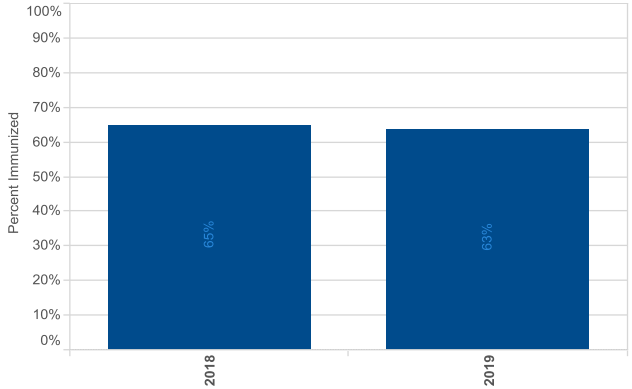


By Health Authority and Year

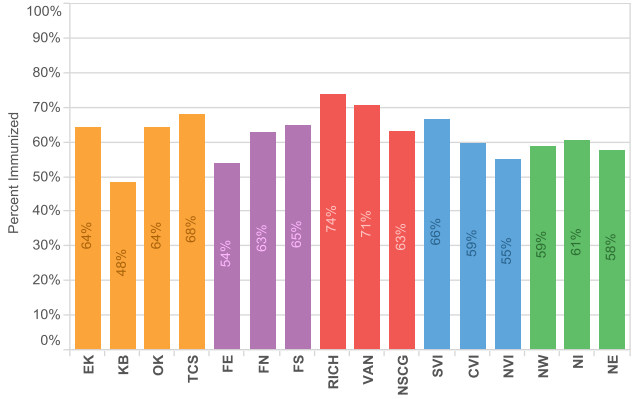


Grade 6 Male Students Immunized
Human Papillomavirus (HPV) Vaccine, British Columbia

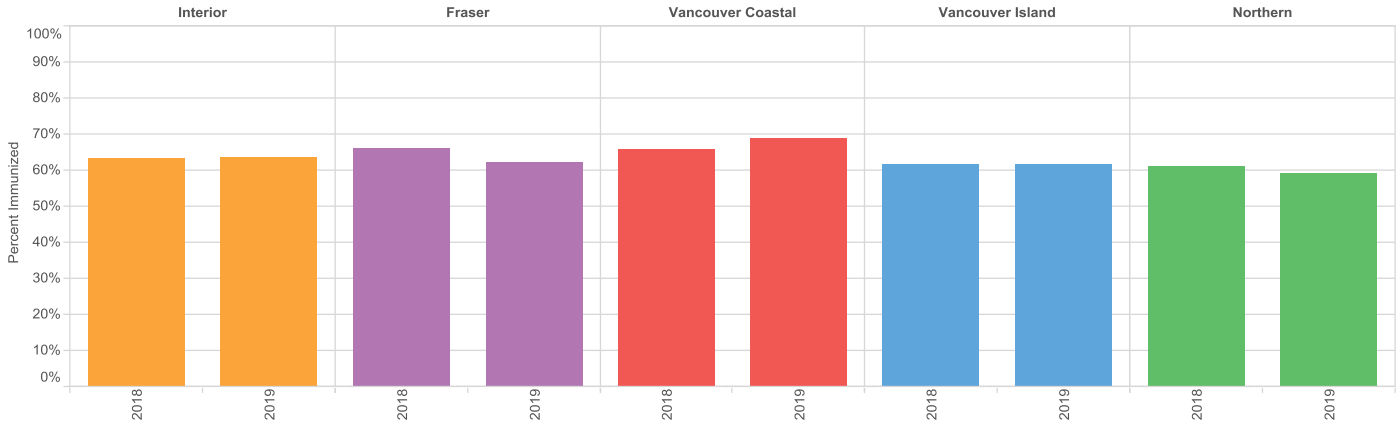
All British Columbia, by Year



By Health Service Delivery Area, 2019



By Health Authority and Year

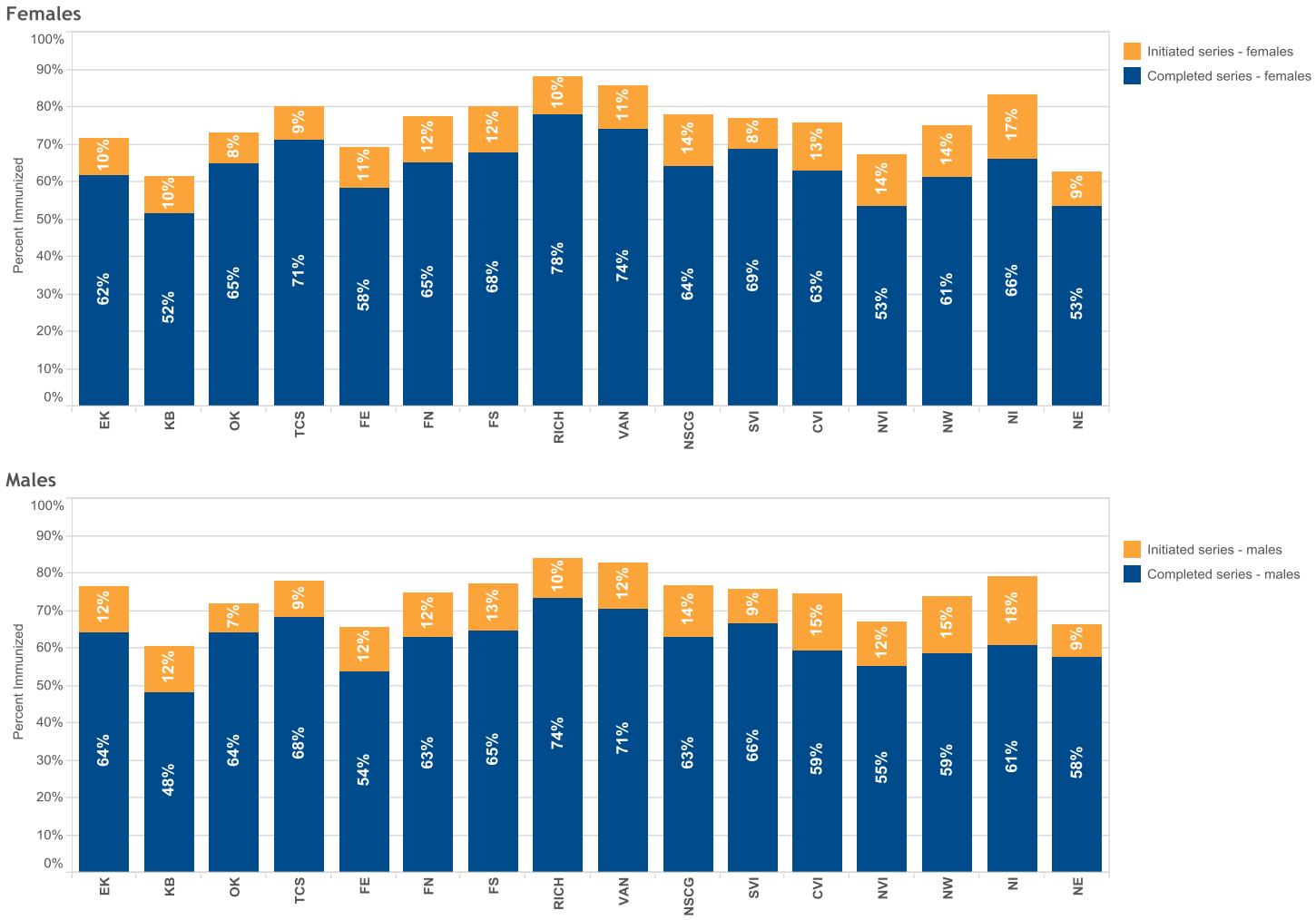


Grade 6 Students who Initiated, but did not Complete, a Human Papillomavirus (HPV) Vaccine Series

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	2018		2019	
	Females	Males	Females	Males
INTERIOR	**7.2%**	**7.3%**	**8.6%**	**9.2%**
East Kootenay	6.5%	5.7%	9.7%	12.1%
Kootenay Boundary	6.8%	7.8%	9.7%	12.1%
Okanagan	7.3%	7.6%	8.1%	7.5%
Thompson Cariboo Shuswap	7.5%	7.3%	8.8%	9.4%
FRASER	**6.6%**	**6.6%**	**11.9%**	**12.1%**
Fraser East	8.5%	9.6%	10.8%	11.6%
Fraser North	7.3%	6.6%	12.0%	11.8%
Fraser South	5.4%	5.5%	12.3%	12.6%
VANCOUVER COASTAL	**12.6%**	**13.4%**	**11.9%**	**12.3%**
Richmond	11.6%	12.3%	10.1%	10.5%
Vancouver	11.9%	13.4%	11.3%	11.9%
North Shore / Coast Garibaldi	14.2%	13.9%	13.9%	13.8%
VANCOUVER ISLAND	**10.1%**	**11.0%**	**10.9%**	**11.8%**
South Vancouver Island	7.6%	9.6%	8.4%	9.2%
Central Vancouver Island	11.8%	11.2%	12.7%	15.0%
North Vancouver Island	12.9%	14.3%	13.8%	12.0%
NORTHERN	**12.6%**	**11.7%**	**14.1%**	**14.8%**
Northwest	12.8%	12.0%	13.9%	15.1%
Northern Interior	14.4%	13.3%	17.0%	18.1%
Northeast	9.0%	8.3%	9.2%	8.5%
BRITISH COLUMBIA	**8.9%**	**9.1%**	**11.4%**	**11.8%**

In 2019, 11.4% of female students and 11.8% of male students in grade 6 in BC initiated, but did not complete, an HPV immunization series; this is a 3.4% increase for females and a 2.1% increase for males, compared to 2018. When partial series are counted, 77.5% of female students and 75.3% of male students received at least one dose of HPV vaccine, compared to 74.9% and 73.7% in 2018. Rates and trends varied by Health Service Delivery Area. In 2018, the proportions of female and male grade 6 students with incomplete HPV series by Health Service Delivery Area ranged from 8.1% to 17.0% and 7.5% to 18.1%, respectively.

Grade 6 Students Immunized
HPV Series Initiation and Series Completion by Gender, British Columbia, 2019



Grade 6 Students with Up-to-date Immunizations: Meningococcal C

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR									
	2007	2008	2009	2010	2011	2012	2013	2014*	2015*	2016*
INTERIOR	**91.4%**	**90.9%**	**90.5%**	**88.3%**	**88.4%**	**88.2%**	**86.5%**	**87.4%**	**85.8%**	**86.2%**
East Kootenay	93.7%	93.2%	92.3%	83.2%	89.7%	91.3%	89.4%	88.9%	87.5%	86.8%
Kootenay Boundary	86.9%	82.1%	82.0%	80.8%	80.8%	79.1%	76.7%	78.1%	79.4%	79.9%
Okanagan	91.2%	90.4%	89.6%	87.9%	86.8%	87.2%	85.3%	86.0%	84.7%	85.7%
Thompson Cariboo Shuswap	92.4%	93.6%	94.1%	93.3%	93.1%	91.9%	90.6%	92.1%	89.2%	88.9%
FRASER	**91.5%**	**91.9%**	**90.2%**	**88.4%**	**86.8%**	**87.9%**	**87.9%**	**86.4%**	**86.8%**	**86.7%**
Fraser East	88.6%	89.1%	85.9%	84.2%	83.3%	85.4%	85.2%	84.4%	84.5%	82.9%
Fraser North	92.3%	92.5%	90.0%	87.8%	87.3%	86.7%	86.0%	84.3%	83.9%	85.2%
Fraser South	92.1%	92.7%	92.1%	90.4%	87.8%	89.7%	90.3%	88.6%	89.7%	89.2%
VANCOUVER COASTAL	**91.1%**	**91.5%**	**90.5%**	**85.9%**	**87.1%**	**86.6%**	**90.0%**	**92.2%**	**94.7%**	**86.7%**
Richmond	95.3%	95.8%	94.4%	91.6%	94.2%	92.8%	94.5%	95.6%	97.5%	92.7%
Vancouver	89.5%	89.6%	89.8%	83.7%	86.1%	85.6%	89.6%	91.6%	95.1%	84.7%
North Shore / Coast Garibaldi	91.0%	91.6%	89.1%	85.8%	84.6%	84.4%	87.9%	91.0%	92.4%	86.3%
VANCOUVER ISLAND *	**91.8%**	**86.6%**	**91.9%**	**88.0%**	**88.1%**	**85.7%**	**86.9%**	**77.9%**	**79.3%**	**83.4%**
South Vancouver Island	92.1%	81.0%	91.0%	87.1%	87.6%	87.7%	88.1%	76.1%	79.6%	83.7%
Central Vancouver Island	91.2%	90.1%	94.3%	91.5%	90.1%	82.7%	86.0%	81.4%	80.1%	84.5%
North Vancouver Island	92.3%	92.0%	89.2%	83.6%	85.6%	86.8%	85.6%	75.9%	76.7%	80.2%
NORTHERN	**92.9%**	**93.6%**	**92.6%**	**92.2%**	**92.0%**	**91.0%**	**90.7%**	**90.2%**	**87.5%**	**89.1%**
Northwest	94.7%	93.4%	90.5%	90.6%	91.4%	90.6%	91.0%	91.8%	89.8%	89.6%
Northern Interior	91.8%	93.7%	94.2%	94.5%	93.2%	92.9%	91.6%	91.4%	86.9%	91.0%
Northeast	93.3%	93.7%	91.7%	89.0%	90.2%	88.0%	88.6%	86.3%	86.3%	84.9%
BRITISH COLUMBIA *	**91.6%**	**91.0%**	**90.7%**	**88.1%**	**87.7%**	**87.6%**	**88.2%**	**86.8%**	**87.3%**	**86.3%**

Meningococcal C vaccine uptake was assessed in 2004-2016. Data for 2005-2016 are available in the BCCDC Childhood Immunization Coverage Dashboard. Data for 2004 are available in previous coverage reports.

* The 2014-2016 estimates for VIHA and BC are not directly comparable to previous years. See Notes.

The grade 6 meningococcal C conjugate immunization program was discontinued in June 2016 and the grade 9 meningococcal quadrivalent conjugate immunization program was started in September 2016. Uptake rates for the new program are included in the grade 9 results for 2017 onward.

Notes

1. **Changes in Data Sources:**

   The data sources used for each of the health authorities changed over time as follows:

Health Authority	Year							
	2012 and Earlier	2013	2014	2015	2016	2017	2018	2019
IHA	Health Authority Summary Reports*						Pan-Grade*	
FHA	Health Authority Summary Reports						Pan-Grade	
VCHA	Health Authority Summary Reports							
VIHA	Health Authority Summary Reports		Pan-Year/MoE				Pan-Grade	
NHA	Health Authority Summary Reports							

   Health Authority Summary Reports: Health authorities provided summary reports including the number of students in grade 6 and, of those, the numbers up-to-date for each measure. These were usually based on class lists provided by schools and health authority records of immunizations given.

   Pan-Grade: The Panorama immunization registry records were included for children with active Panorama records that indicated they were in grade 6 as of June 30 of the school year of interest.

   Pan-Year/MoE: The numerator was the number of children in the birth cohort for which the majority of children attended grade 6 during the school year of interest with active records in Panorama immunization registry who were up-to-date for the specified agent. The denominator was the number of children in the birth cohort of interest attending grade 6 in schools within the health authority, based on estimates derived from BC Ministry of Education enrolment statistics.

   * In 2017, the Rutland Branch in the Okanagan Health Service Delivery Area used Pan-Grade, while the rest of the Interior Health Authority used Health Authority Summary Reports.

2. The numerator used to calculate percent uptake was the number of students enrolled in grade 6 as of June 30 of the specified year who were up-to-date for age for the vaccine in question (per up-to-date for age definitions).
3. Unless otherwise indicated, the denominator used to calculate percent uptake was the number of students enrolled in grade 6 as of June 30 of the specified year, according to class lists. For HPV uptake, only the number of female or male students enrolled in grade 6 as of June 30 was used.

   Exceptions:

   a. The Vancouver HSDA (2002-2019), Richmond HSDA (2002-2019), urban region of the North Shore/Coast Garibaldi HSDA (2012-2019) and rural region of the North Shore/Coast Garibaldi HSDA (2013-2019) used grade cohorts as identified in the PARIS immunization registry.
   b. In 2014-2017, all HSDAs in VIHA used enrolment estimates from the BC MoE.
   c. The Rutland branch in the Okanagan HSDA (2017) and all of FHA, VIHA and IHA in 2018 and 2019 used the grade cohorts as identified in the Panorama immunization registry.

4. Due to the difference in methods used to calculate coverage in FHA, VIHA and IHA in 2018 and 2019, the FHA, VIHA, IHA and corresponding provincial data are not directly comparable to previous years.
5. Starting in 2018 for FHA, IHA and VIHA, school and grade information is attached to students' records in the Panorama immunization registry in two ways:

   a. For schools using either the MyEdBC or the CIMS information systems and who have signed a letter of agreement (as of July 2019, this was 90% of schools in BC, representing 93% of students), information is uploaded from a Ministry of Education extract into Panorama using a tool called STIX. Health authority staff reconciles the school information against the Panorama record.
   b. For schools using other information systems, health authority staff either manually enters or uploads the school and grade information.

The following school types are included in the Panorama registry: Alternate, Distance, Distance Learning, Independent, Long Term Program, Self-Directed, Short Term Program, and Standard. Students attending First Nations schools may be under-represented in this dataset because some First Nations schools are not registered with the BC Ministry of Education and are therefore not captured in the provincial list of schools.

6. Due to the difference in methods used to calculate coverage in the Rutland branch in the Okanagan HSDA in 2017, the Okanagan and IHA results, and corresponding provincial data for 2017 are not directly comparable to previous years.
7. Due to a difference in methods used for enumerating the numerator and denominator, the VIHA results, and corresponding provincial data for 2014 to 2017 are not directly comparable to previous or later years. Related to implementation of the new public health information system (called Panorama) in July 2013, VIHA was unable to reconcile all records of students enrolled in schools; therefore coverage was calculated using numerator data from Panorama on active records for those born in 2002 (for 2014), 2003 (for 2015), 2004 (for 2016) and 2005 (for 2017) without the ability to confirm school/grade 6 enrolment; denominators were aggregate data from the BC MoE's data on enrolment in grade 6 to attempt to account for those who have moved out of VIHA. This change led to inaccurate ascertainment of coverage rates, which may be artefactually higher or lower than true coverage rates depending on the antigen.

   School district boundaries do not directly line up with health region boundaries. BC MoE enrolment data are based on a process that requires the Health Authority to identify schools corresponding to each HSDA. The BC MoE enrolment data exclude youth custody and continuing education schools.

   Ideally, numerators and denominators should be taken from the same data source. Using different data sources for numerators and denominators can result in inaccurate results, including coverage calculations exceeding 100%. Immunization coverage rates approaching 100% in the VIHA in 2014-2017 are likely over-estimates resulting from the use of different data sources for numerators and denominators.

   As an example of these limitations, when the 2011-2013 coverage estimates for the VIHA HSDAs that were calculated using class list enrolment reconciled against immunization registry for the numerator data and class lists for denominator data were compared to estimates obtained using the methods used in 2014-2017, large differences were identified. For instance, hepatitis B coverage estimates were 11% lower to 25% higher by HSDA and year using the routine methods.
8. The HPV immunization program for male students in grade 6 started in the 2017/18 school year. The HPV immunization program for female students in grade 6 started in the 2008/09 school year. As a result, the first year of assessment of HPV uptake for female students was 2009 and the first year for male students was 2018.
9. In 2015, three schools with grade 6 students in the Kootenay Boundary HSDA did not provide public health with class lists. As the children attending these schools could not be identified, they could not be included in the immunization coverage analysis. Based on information posted on the BC MoE's website, these schools accounted for approximately 3% of grade 6 students in Kootenay Boundary.
10. Starting in the 2009/10 school year, the definition of up-to-date for meningococcal C-containing vaccine specified that, in order to be up-to-date, the vaccine must have been received on or after 10 years of age. Previously, vaccines received on or after 12 months of age were counted. This more stringent definition may have caused an artefactual decrease in the reported meningococcal C coverage rate.
11. While all grade 6 students attending BC schools are intended to be included in this report, some students may be under-represented. This includes home-schooled students and international students. It also includes students who attend schools that do not receive services from regional public health, including some schools serviced by First Nations Health Services Organizations, some distance/distributed learning schools and schools refusing any contact with public health due to religious or philosophical reasons.
12. Data may not be comparable by HSDA from year to year due to ongoing changes in data collection methods and changes in geographic health area boundaries. However, assuming consistency in reporting practices, overall trends in immunization coverage can be assessed by examining these data.

13. Abbreviations

Health Authorities:

FHA	Fraser Health Authority	VCHA	Vancouver Coastal Health Authority
IHA	Interior Health Authority	VIHA	Vancouver Island Health Authority
NHA	Northern Health Authority		

Health Service Delivery Areas:

EK	East Kootenay	VAN	Vancouver
KB	Kootenay Boundary	NSCG	North Shore / Coast Garibaldi
OK	Okanagan	SVI	South Vancouver Island
TCS	Thompson Cariboo Shuswap	CVI	Central Vancouver Island
FE	Fraser East	NVI	North Vancouver Island
FN	Fraser North	NW	Northwest
FS	Fraser South	NI	Northern Interior
RICH	Richmond	NE	Northeast

For an explanation of BC Health Authorities, please visit: http://www.health.gov.bc.ca/socsec/index.html

14. The BCCDC Immunization Coverage Dashboard is available online at http://www.bccdc.ca/health-professionals/data-reports/childhood-immunization-coverage-dashboard.

Minimum Intervals Between Eligible Doses

Antigen/Agent	Minimum Age or Minimum Time Interval Between Eligible Doses		
	Dose 1 [A]	Dose 2	Dose 3
Hepatitis B			
Series started at any age:			
Received 3rd dose before June 2007	0 days	28 days	28 days
Received 3rd dose between June 2007 and May 2014	0 days	28 days	56 days [B]
Received 3rd dose in June 2014 or later	0 days	28 days	56 days [B,C]
Series started on or after 10 years and 8 months of age	10 years + 8 months	16 weeks [D]	
Varicella [E]	12 months	28 days	
Human Papillomavirus			
2 Dose schedule	9 years	150 days	
3 Dose schedule	9 years	28 days	12 weeks [F]
Meningococcal C Conjugate	10 years		

A. Dose 1 refers to the earliest age a child can receive the initial dose.
B. Dose 3 must be given at least 16 weeks (112 days) after dose 1.
C. Dose 3 must be given on or after 24 weeks of age.
D. Dose 2 must be given at least 24 weeks after dose 1 if either dose 1 or dose 2 is Engerix®-B.
E. To be counted as valid, varicella vaccine must be administered on or after 12 months of age. Guidelines also state that children with a history of varicella disease should only be considered protected if the illness occurred on or after 12 months of age. The date of varicella disease onset is not systematically entered into Panorama. For the purposes of this assessment, any child with a past history if varicella disease recorded in Panorama is considered protected, regardless of their age at the time of illness.
F. Dose 3 must be given at least 24 weeks after dose 1.