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Provincial Health Services Authority

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Immunization Coverage in Grade 9 Students

2012-2022

March 2024

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Abbreviations

Health Authorities

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

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 |

Additional abbreviations

| | | | |
|-----------|--------------------------------------|--------|--|
| BC | British Columbia | MyEdBC | MyEducation BC |
| HPV | Human papillomavirus | PIR | Provincial Immunization Registry |
| MoE | Ministry of Education | Tdap | Tetanus, diphtheria, acellular pertussis |
| MenC-ACYW | Meningococcal conjugate quadrivalent | | |

For an explanation of BC Health Authorities, please visit [this website](#).

The BCCDC Immunization Coverage Dashboard is available online [here](#).

Executive Summary

The 2012-2022 grade 9 report contains coverage information for students who were enrolled in grade 9 in British Columbia (BC) for four antigens: tetanus/diphtheria, pertussis, meningococcal quadrivalent, and human papillomavirus (HPV). In 2022, data reflects coverage as of the 2021/2022 school year. Meningococcal quadrivalent assessment is based on a single dose of MenC-ACYW administered in grade 9, whereas the tetanus/diphtheria and pertussis series are based on completion of a primary series in early childhood and a single booster dose (Tdap) primarily offered in grade 9. Any students who did not initiate or complete the HPV series in grade 6 are offered any missed doses in grade 9.

Overall, provincial coverage was relatively similar across all four antigens, but was highest for meningococcal quadrivalent (73.2%), followed by HPV in females (73.1%), tetanus/diphtheria (71.6%), pertussis (71.4%), and HPV in males (71.0%). Coverage for tetanus/diphtheria and pertussis in 2022 increased largely compared to 2021 (approximately 31% for both antigens). Coverage rates in 2021 were likely impacted by disruptions to school-based immunization programs from the COVID-19 pandemic. Tetanus/diphtheria and pertussis coverage in 2022 was higher than 2018 and 2019 but remained below 2020 (74.9%). Meningococcal quadrivalent also increased compared to 2021 (27.8%) but remained below pre-pandemic years (2018-2019) and 2020. Coverage for HPV in both females and males has been increasing since 2018.

Reasons for non-immunization (i.e., documented refusals, exemptions, or contraindications) were also assessed among partially immunized and unimmunized students for tetanus/diphtheria, pertussis, and meningococcal quadrivalent. Partially immunized students are defined as those who have received one or more vaccines in a series, but are not up-to-date (see [Notes](#) and Table A1 in the [Appendix](#) for further details). A notable trend is that many students were partially immunized or unimmunized with no documented refusals or contraindications (i.e., their reason for non-immunization was unknown). Improving documentation of immunization doses, refusals, and contraindications may provide better estimates of the proportion of grade 9 students in BC with protection against tetanus/diphtheria, pertussis, meningococcal quadrivalent, and HPV and indicate where to focus catch-up efforts.

A catch-up analysis for tetanus/diphtheria, pertussis, and meningococcal quadrivalent was conducted to determine whether coverage assessed for grade 9 students at the end of the 2020/2021 school year (2021 report) improved by the end of the 2021/2022 school year, when these students were in grade 10. Most HAs had increased coverage in the 2021/2022 grade 10 cohort compared to the 2020/2021 grade 9 cohort, however, coverage in grade 10 was generally lower than the pre-pandemic grade 9 rates, suggesting that further catch-up may be needed.

Limitations

All calculations are based on vaccine doses recorded in the provincial or regional immunization registry and enrolment records maintained by regional health authorities (HAs) using electronic enrolment records from the Ministry of Education (MoE), or records received directly from schools. Doses administered by providers other than public health, including doses administered outside of BC to newly arrived students whose records have not yet been received by public health, may not be reported in the registry. Students attending First Nations schools may be under-represented in this dataset because some First Nations schools are not registered with the BC MoE and are therefore not captured in the provincial list of schools. Data from 2018 onwards are not comparable to historical data due to data source changes. Categorization of reasons for non-immunization as refusal or contraindication is likely to be incomplete for Fraser Health (FH) and Northern Health (NH) due to lack of supplemental data transfer between regional and provincial immunization registries. There may be lag times in data entry.

Please refer to the [Notes](#) for additional information.

Grade 9 students with up-to-date immunizations: Tetanus/Diphtheria

Following a large decrease in tetanus/diphtheria coverage to 31.5% in the 2021 school year, provincial coverage more than doubled to 71.6% in 2022 (**Table 1**). Increases occurred in all HAs apart from NH, which had a stable coverage from last year, with the most notable increase for FH from 4.8% to 69.7% (**Figure 1**). Rates and trends varied by HSDA, with 2022 tetanus/diphtheria coverage rates ranging from 49.7% to 92.8%.

In the 2021/2022 school year, only 2% and 1% of BC grade 9 students were partially immunized and unimmunized with a documented refusal for tetanus/diphtheria, respectively, while 19% and 5% were partially immunized and unimmunized for unknown reasons (**Table 2**). Since tetanus/diphtheria is a part of early childhood immunization programs, the “Partially immunized” categories will reflect those who have received any valid dose of these antigens but have not had a complete series per the BC immunization schedule (see Table A1 and Table A2 in the [Appendix](#)).

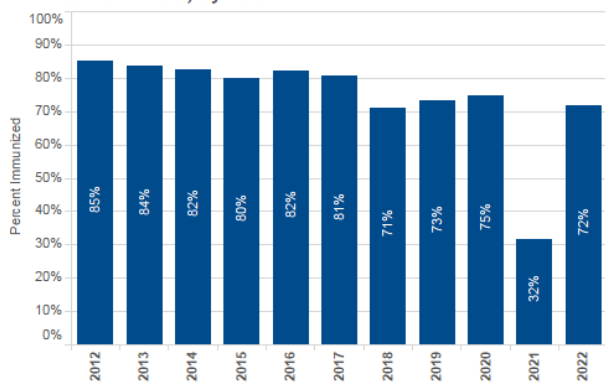
Table 1. Percent of Grade 9 students with up-to-date immunizations: Tetanus/Diphtheria

| HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA | YEAR | | | | | | | | | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2012 | 2013 | 2014* | 2015* | 2016* | 2017* | 2018* | 2019* | 2020* | 2021* | 2022* |
| INTERIOR * | 83.8% | 83.4% | 82.2% | 81.0% | 83.0% | 82.4% | 75.5% | 78.0% | 76.9% | 41.0% | 67.7% |
| East Kootenay | 91.0% | 87.7% | 82.8% | 85.0% | 89.1% | 87.7% | 78.4% | 80.5% | 83.2% | 77.4% | 73.0% |
| Kootenay Boundary | 81.1% | 82.0% | 77.9% | 74.3% | 79.2% | 75.4% | 69.2% | 73.5% | 64.9% | 64.9% | 61.7% |
| Okanagan | 78.5% | 78.8% | 78.8% | 78.0% | 78.5% | 81.2% | 73.5% | 76.9% | 75.1% | 36.6% | 69.8% |
| Thompson Cariboo Shuswap | 90.5% | 89.4% | 88.2% | 86.9% | 89.6% | 84.7% | 79.9% | 80.3% | 81.7% | 26.6% | 64.4% |
| FRASER * | 85.4% | 84.6% | 84.3% | 79.0% | 82.1% | 80.8% | 60.7% | 63.9% | 70.4% | 4.8% | 69.7% |
| Fraser East | 80.3% | 83.7% | 84.4% | 75.9% | 79.4% | 78.7% | 66.8% | 68.4% | 68.1% | 6.0% | 62.3% |
| Fraser North | 85.2% | 81.1% | 83.4% | 75.0% | 79.9% | 78.4% | 57.8% | 58.4% | 68.8% | 3.9% | 71.6% |
| Fraser South | 87.6% | 87.5% | 85.0% | 83.0% | 84.7% | 83.2% | 60.6% | 66.1% | 72.3% | 5.0% | 71.0% |
| VANCOUVER COASTAL | 85.2% | 82.4% | 84.5% | 83.9% | 83.4% | 84.2% | 84.2% | 85.3% | 83.6% | 37.1% | 82.5% |
| Richmond | 93.5% | 93.3% | 94.8% | 93.4% | 90.1% | 89.8% | 91.5% | 92.9% | 92.5% | 57.2% | 92.8% |
| Vancouver | 83.8% | 85.5% | 86.5% | 85.5% | 84.5% | 84.6% | 84.4% | 85.3% | 82.1% | 20.9% | 81.6% |
| North Shore / Coast Garibaldi | 82.3% | 69.8% | 75.1% | 75.6% | 77.5% | 80.4% | 79.9% | 81.1% | 81.4% | 52.6% | 77.8% |
| ISLAND * | 83.5% | 80.6% | 73.4% | 73.6% | 75.8% | 71.8% | 70.1% | 73.0% | 74.3% | 70.9% | 72.0% |
| South Vancouver Island | 85.3% | 81.7% | 71.1% | 72.6% | 78.7% | 72.7% | 69.0% | 72.3% | 74.3% | 73.6% | 74.6% |
| Central Vancouver Island | 81.9% | 80.2% | 75.8% | 74.9% | 73.0% | 69.5% | 70.4% | 73.6% | 74.6% | 69.3% | 72.6% |
| North Vancouver Island | 82.0% | 78.3% | 74.3% | 73.6% | 74.0% | 74.2% | 72.7% | 74.2% | 73.4% | 66.8% | 64.4% |
| NORTHERN * | 90.1% | 87.8% | 85.6% | 83.6% | 87.5% | 86.3% | 84.7% | 83.5% | 70.9% | 59.7% | 59.4% |
| Northwest | 91.5% | 86.6% | 86.5% | 91.5% | 91.0% | 87.0% | 85.6% | 81.1% | 70.0% | 71.6% | 64.3% |
| Northern Interior | 89.4% | 92.0% | 86.6% | 83.9% | 87.8% | 88.7% | 87.5% | 84.1% | 72.6% | 68.1% | 62.6% |
| Northeast | 89.9% | 79.8% | 82.2% | 74.3% | 83.2% | 80.7% | 78.3% | 84.4% | 68.7% | 31.4% | 49.7% |
| BRITISH COLUMBIA * | 85.2% | 83.6% | 82.3% | 79.9% | 81.9% | 80.8% | 70.8% | 73.1% | 74.9% | 31.5% | 71.6% |

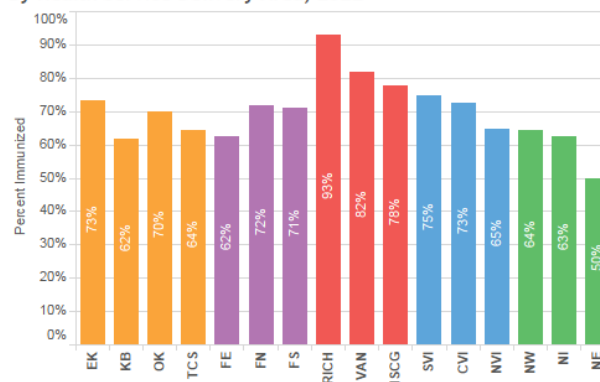
* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. See [Notes](#).

**Grade 9 Students Immunized
Tetanus/Diphtheria Vaccine, British Columbia**

All British Columbia, by Year



By Health Service Delivery Area, 2022



By Health Authority and Year

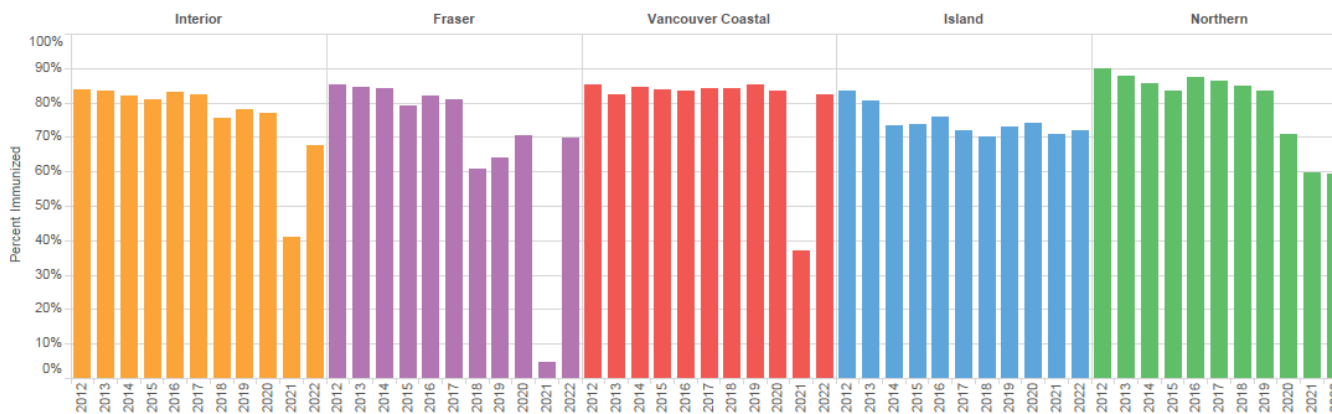


Figure 1. Percent of Grade 9 students with up-to-date immunizations: Tetanus/Diphtheria

Table 2. Reasons for non-immunization for Grade 9 students: Tetanus/Diphtheria, 2022

| Region | Population | Count | | | | Percent | | | |
|-------------------------------|---------------|---------------------|----------------------|-------------|----------------------|---------------------|----------------------|-------------|----------------------|
| | | Partially Immunized | | Unimmunized | | Partially Immunized | | Unimmunized | |
| | | Refusal | Unknown ^a | Refusal | Unknown ^a | Refusal | Unknown ^a | Refusal | Unknown ^a |
| British Columbia | 51,486 | 1,279 | 10,006 | 664 | 2,668 | 2% | 19% | 1% | 5% |
| Interior | 8,439 | 466 | 1,686 | 235 | 342 | 6% | 20% | 3% | 4% |
| East Kootenay | 941 | 53 | 147 | 20 | 34 | 6% | 16% | 2% | 4% |
| Kootenay Boundary | 847 | 68 | 171 | 42 | 43 | 8% | 20% | 5% | 5% |
| Okanagan | 4,000 | 248 | 672 | 116 | 171 | 6% | 17% | 3% | 4% |
| Thompson Cariboo Shuswap | 2,651 | 97 | 696 | 57 | 94 | 4% | 26% | 2% | 4% |
| Fraser^b | 20,821 | 143 | 4,616 | 114 | 1,440 | 1% | 22% | 1% | 7% |
| Fraser East | 3,647 | 51 | 1,055 | 53 | 215 | 1% | 29% | 2% | 6% |
| Fraser North | 7,120 | 37 | 1,471 | 24 | 487 | 0% | 21% | 0% | 7% |
| Fraser South | 10,054 | 55 | 2,090 | 37 | 738 | 0% | 21% | 0% | 7% |
| Vancouver Coastal | 10,404 | 294 | 1,111 | 125 | 293 | 3% | 11% | 1% | 3% |
| Richmond | 1,882 | 17 | 107 | 5 | 7 | 1% | 6% | 0% | 0% |
| Vancouver | 5,324 | 165 | 578 | 53 | 182 | 3% | 11% | 1% | 3% |
| North Shore / Coast Garibaldi | 3,198 | 112 | 426 | 67 | 104 | 4% | 13% | 2% | 3% |
| Island | 8,286 | 315 | 1,415 | 139 | 449 | 4% | 17% | 2% | 5% |
| South Vancouver Island | 3,844 | 121 | 525 | 71 | 261 | 3% | 14% | 2% | 7% |
| Central Vancouver Island | 2,955 | 130 | 539 | 45 | 97 | 4% | 18% | 2% | 3% |
| North Vancouver Island | 1,487 | 64 | 351 | 23 | 91 | 4% | 24% | 2% | 6% |
| Northern^b | 3,536 | 61 | 1,178 | 51 | 144 | 2% | 33% | 1% | 4% |
| Northwest | 858 | 18 | 241 | 11 | 36 | 2% | 28% | 1% | 4% |
| Northern Interior | 1,702 | 25 | 541 | 23 | 48 | 2% | 32% | 1% | 3% |
| Northeast | 976 | 18 | 396 | 17 | 60 | 2% | 41% | 2% | 6% |

Notes: a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH and NH. Therefore, the proportion of partially immunized and unimmunized students with unknown reasons for non-immunization is likely to be overestimated, see [Note #12](#).

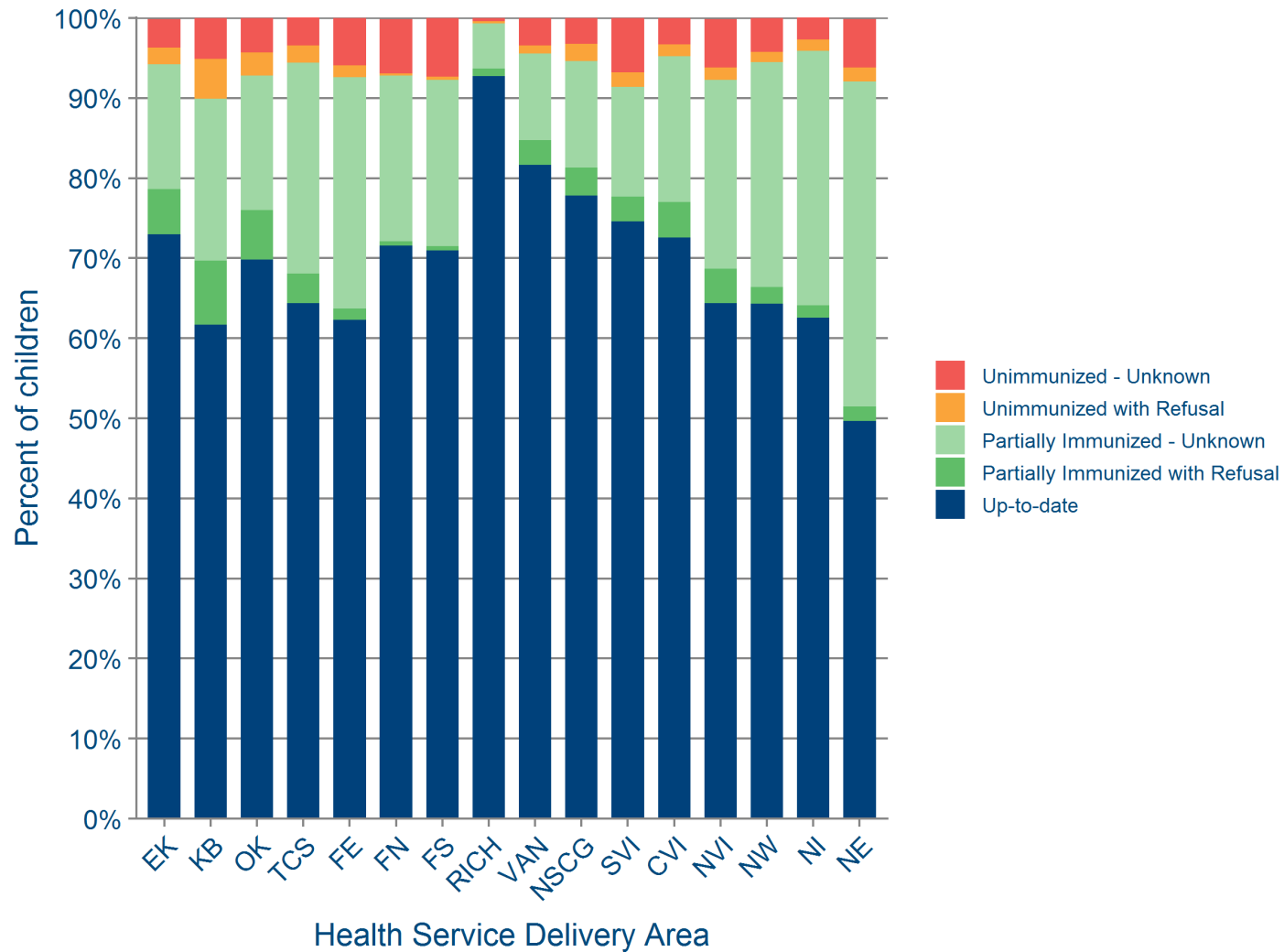


Figure 2. Reasons for non-immunization for Grade 9 students: Tetanus/Diphtheria, 2022

Grade 9 students with up-to-date immunizations: Pertussis

Similar to the pattern in grade 9 tetanus/diphtheria coverage, a significant provincial increase was observed for pertussis coverage in the 2021/2022 school year from 31.3% to 71.4% (**Table 3**). Apart from NH, which had a slight decrease in coverage (0.5%), and Island Health (ISLH) with a 1% increase, coverage in 2022 in the remaining three health authorities went up by more than 20% (**Figure 3**). The largest difference was in FH, which went from 4.6% to 69.6%. Rates and trends varied by HSDA, with 2022 pertussis coverage rates ranging from 49.2% to 92.6%.

In the 2021/2022 school year, only 3% and 1% of BC grade 9 students were partially immunized and unimmunized with a documented refusal for pertussis, respectively, while 20% and 5% were partially immunized and unimmunized for unknown reasons (**Table 4**). Since pertussis is a part of early childhood immunization programs, the “Partially immunized” categories will reflect those who have received any valid dose of this antigen but have not had a complete series per the BC immunization schedule (see Table A1 and Table A2 in the [Appendix](#)).

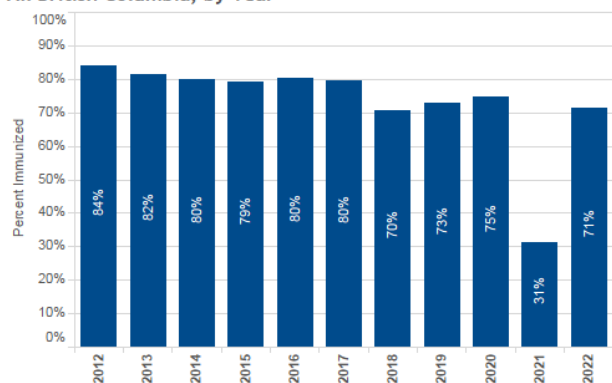
Table 3. Percent of Grade 9 students with up-to-date immunizations: Pertussis

| HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA | YEAR | | | | | | | | | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2012 | 2013 | 2014* | 2015* | 2016* | 2017* | 2018* | 2019* | 2020* | 2021* | 2022* |
| INTERIOR * | 82.8% | 81.4% | 80.5% | 80.3% | 79.8% | 80.5% | 75.3% | 77.7% | 76.7% | 40.8% | 67.4% |
| East Kootenay | 89.8% | 84.3% | 81.5% | 84.6% | 85.0% | 85.9% | 78.2% | 80.3% | 82.9% | 77.1% | 72.7% |
| Kootenay Boundary | 78.6% | 79.6% | 73.7% | 72.2% | 73.8% | 72.1% | 69.0% | 72.3% | 64.0% | 64.4% | 61.5% |
| Okanagan | 78.0% | 77.1% | 77.8% | 77.7% | 76.1% | 79.4% | 73.4% | 76.7% | 74.9% | 36.5% | 69.6% |
| Thompson Cariboo Shuswap | 89.3% | 87.6% | 86.4% | 86.1% | 86.2% | 83.2% | 79.7% | 80.2% | 81.5% | 26.6% | 64.2% |
| FRASER * | 83.5% | 81.6% | 79.1% | 78.4% | 80.1% | 79.4% | 60.6% | 63.8% | 70.2% | 4.6% | 69.6% |
| Fraser East | 78.5% | 74.0% | 73.8% | 73.2% | 73.8% | 75.2% | 66.8% | 68.4% | 68.0% | 6.0% | 62.2% |
| Fraser North | 82.9% | 80.2% | 77.5% | 74.8% | 78.6% | 77.6% | 57.7% | 58.3% | 68.7% | 3.7% | 71.4% |
| Fraser South | 85.8% | 85.5% | 82.1% | 82.8% | 83.5% | 82.2% | 60.4% | 66.0% | 72.1% | 4.8% | 70.9% |
| VANCOUVER COASTAL | 84.5% | 81.8% | 84.0% | 83.3% | 82.9% | 83.9% | 83.9% | 85.0% | 83.3% | 36.8% | 82.2% |
| Richmond | 93.3% | 93.0% | 94.7% | 93.2% | 90.0% | 89.5% | 91.1% | 92.6% | 92.4% | 57.1% | 92.6% |
| Vancouver | 83.3% | 85.1% | 86.2% | 85.1% | 84.1% | 84.3% | 84.1% | 85.0% | 81.8% | 20.7% | 81.4% |
| North Shore / Coast Garibaldi | 81.0% | 68.8% | 74.1% | 74.5% | 76.7% | 79.9% | 79.5% | 80.6% | 81.0% | 52.2% | 77.3% |
| ISLAND * | 82.4% | 79.2% | 72.9% | 73.1% | 75.4% | 71.5% | 69.9% | 72.7% | 73.9% | 70.6% | 71.7% |
| South Vancouver Island | 84.1% | 79.3% | 71.0% | 72.3% | 78.4% | 72.4% | 68.8% | 71.9% | 73.9% | 73.3% | 74.3% |
| Central Vancouver Island | 81.1% | 80.0% | 75.2% | 74.2% | 72.5% | 69.2% | 70.2% | 73.1% | 74.2% | 69.1% | 72.2% |
| North Vancouver Island | 80.4% | 77.1% | 73.0% | 73.1% | 73.0% | 73.9% | 72.6% | 73.9% | 73.1% | 66.7% | 64.2% |
| NORTHERN * | 88.9% | 86.4% | 84.7% | 82.5% | 82.3% | 83.6% | 82.5% | 83.1% | 70.6% | 59.3% | 58.9% |
| Northwest | 90.5% | 85.8% | 84.3% | 89.1% | 81.6% | 82.0% | 83.7% | 80.5% | 69.7% | 71.2% | 62.8% |
| Northern Interior | 87.7% | 89.8% | 86.1% | 83.2% | 85.3% | 86.0% | 84.6% | 83.9% | 72.4% | 67.6% | 62.4% |
| Northeast | 89.9% | 79.8% | 81.9% | 74.1% | 77.1% | 80.4% | 76.9% | 84.2% | 68.5% | 31.3% | 49.2% |
| BRITISH COLUMBIA * | 83.8% | 81.6% | 79.8% | 79.3% | 80.1% | 79.6% | 70.5% | 72.9% | 74.9% | 31.3% | 71.4% |

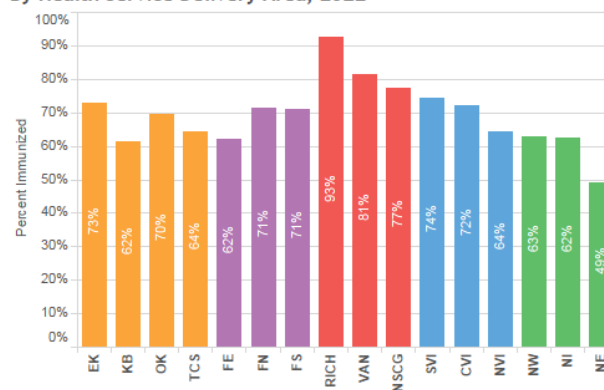
* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. See [Notes](#).

Grade 9 Students Immunized Pertussis Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2022



By Health Authority and Year

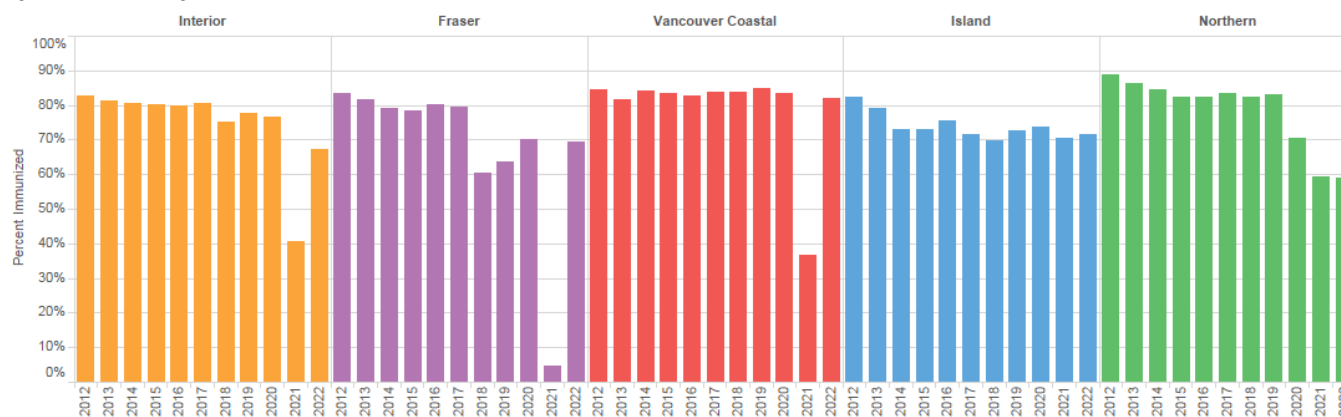


Figure 3. Percent of Grade 9 students with up-to-date immunizations: Pertussis

Table 4. Reasons for non-immunization for Grade 9 students: Pertussis, 2022

| Region | Population | Count | | | | Percent | | | |
|-------------------------------|---------------|---------------------|----------------------|-------------|----------------------|---------------------|----------------------|-------------|----------------------|
| | | Partially Immunized | | Unimmunized | | Partially Immunized | | Unimmunized | |
| | | Refusal | Unknown ^a | Refusal | Unknown ^a | Refusal | Unknown ^a | Refusal | Unknown ^a |
| British Columbia | 51,486 | 1,294 | 10,069 | 689 | 2,683 | 3% | 20% | 1% | 5% |
| Interior | 8,439 | 466 | 1,697 | 242 | 343 | 6% | 20% | 3% | 4% |
| East Kootenay | 941 | 53 | 149 | 21 | 34 | 6% | 16% | 2% | 4% |
| Kootenay Boundary | 847 | 66 | 173 | 44 | 43 | 8% | 20% | 5% | 5% |
| Okanagan | 4,000 | 249 | 678 | 118 | 172 | 6% | 17% | 3% | 4% |
| Thompson Cariboo Shuswap | 2,651 | 98 | 697 | 59 | 94 | 4% | 26% | 2% | 4% |
| Fraser^b | 20,821 | 141 | 4,629 | 120 | 1,444 | 1% | 22% | 1% | 7% |
| Fraser East | 3,647 | 49 | 1,057 | 55 | 215 | 1% | 29% | 2% | 6% |
| Fraser North | 7,120 | 37 | 1,481 | 27 | 491 | 0% | 21% | 0% | 7% |
| Fraser South | 10,054 | 55 | 2,091 | 38 | 738 | 0% | 21% | 0% | 7% |
| Vancouver Coastal | 10,404 | 304 | 1,126 | 128 | 297 | 3% | 11% | 1% | 3% |
| Richmond | 1,882 | 17 | 110 | 5 | 7 | 1% | 6% | 0% | 0% |
| Vancouver | 5,324 | 172 | 581 | 54 | 183 | 3% | 11% | 1% | 3% |
| North Shore / Coast Garibaldi | 3,198 | 115 | 435 | 69 | 107 | 4% | 14% | 2% | 3% |
| Island | 8,286 | 320 | 1,427 | 146 | 450 | 4% | 17% | 2% | 5% |
| South Vancouver Island | 3,844 | 121 | 529 | 76 | 262 | 3% | 14% | 2% | 7% |
| Central Vancouver Island | 2,955 | 133 | 545 | 47 | 97 | 4% | 18% | 2% | 3% |
| North Vancouver Island | 1,487 | 66 | 353 | 23 | 91 | 4% | 24% | 2% | 6% |
| Northern^b | 3,536 | 63 | 1,190 | 53 | 149 | 2% | 34% | 2% | 4% |
| Northwest | 858 | 19 | 249 | 13 | 38 | 2% | 29% | 2% | 4% |
| Northern Interior | 1,702 | 26 | 541 | 23 | 50 | 2% | 32% | 1% | 3% |
| Northeast | 976 | 18 | 400 | 17 | 61 | 2% | 41% | 2% | 6% |

Notes: a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH and NH. Therefore, the proportion of partially immunized and unimmunized students with unknown reasons for non-immunization is likely to be overestimated, see [Note #12](#).

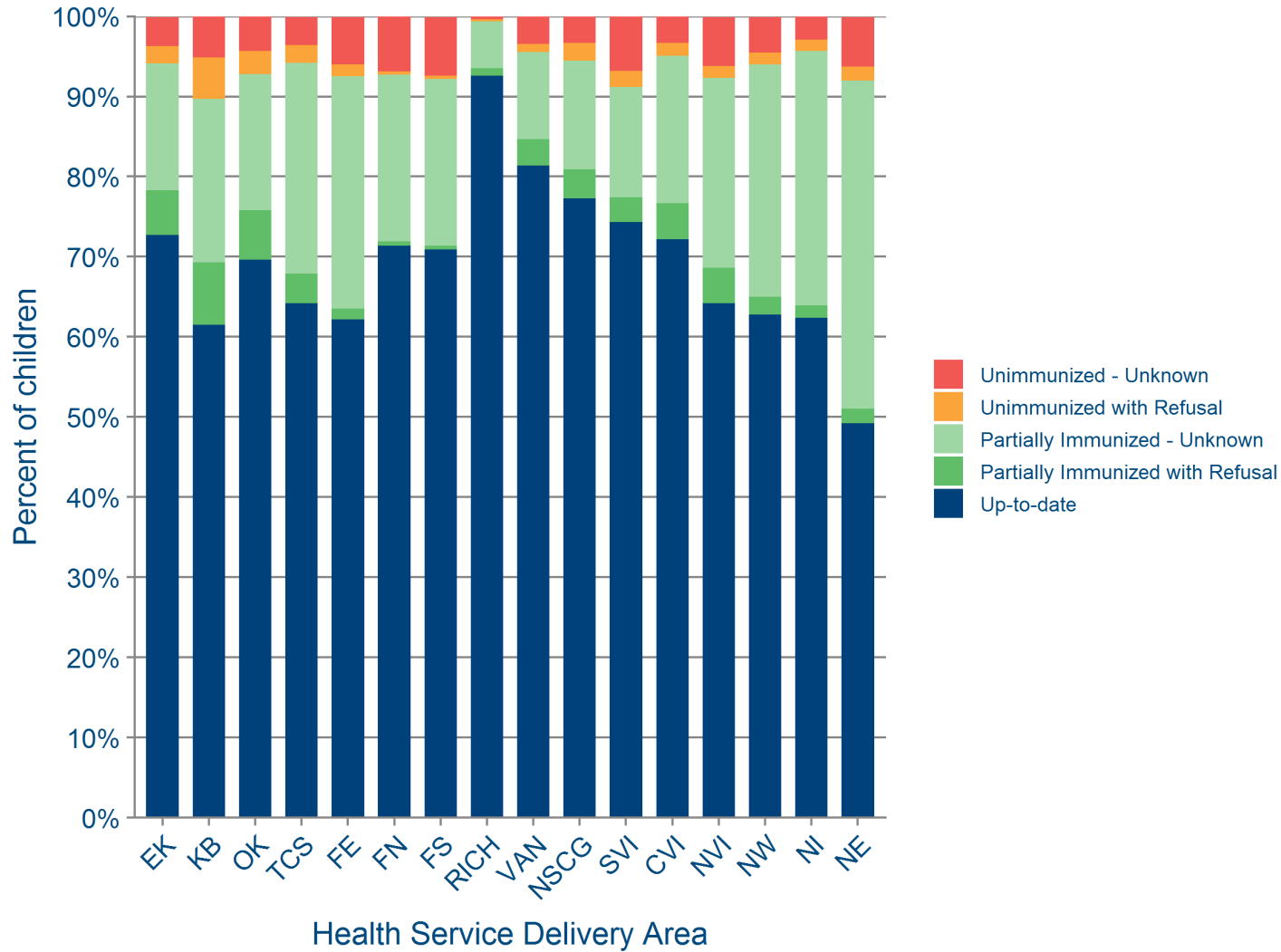


Figure 4. Reasons for non-immunization for Grade 9 students: Pertussis, 2022

Grade 9 students with up-to-date immunizations: Meningococcal Quadrivalent Conjugate vaccine

The grade 9 meningococcal quadrivalent conjugate program began in September 2016, with coverage assessed for the first time in 2017 for the 2016/2017 school year. For more information on the history of the meningococcal quadrivalent conjugate program see [History of Immunization in BC](#).

The provincial meningococcal quadrivalent conjugate coverage more than doubled from 27.8% in 2020/2021 to 73.2% in 2021/2022 (**Table 5**). While there was a modest increase in ISLH (1.1%) and a slight decrease for NH (-0.7%), the remaining three regions saw a more than 25% increase in coverage (**Table 5** and **Figure 5**). The largest difference was in FH, which went from 1.5% in 2021 to 74.7% in 2022. Rates and trends varied by HSDA, with 2022 meningococcal quadrivalent conjugate vaccine coverage rates ranging from 47.4% to 93.8%.

Provincially, only 2% of grade 9 students in the 2021/2022 school year were unimmunized with a documented refusal for meningococcal quadrivalent vaccine (**Table 6** and **Figure 6**). Notably, 25% of grade 9 students were unimmunized with an unknown reason.

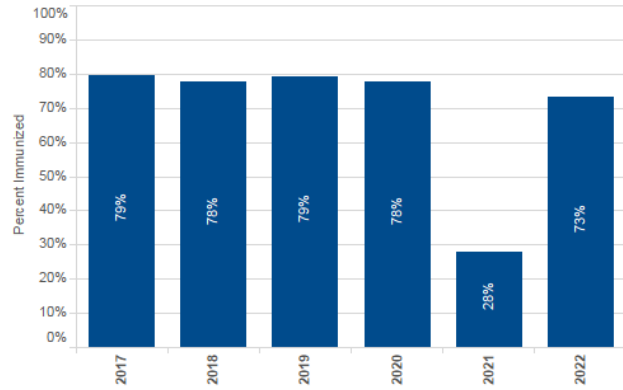
Table 5. Percent of Grade 9 students with up-to-date immunizations: Meningococcal Quadrivalent Conjugate vaccine

| HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA | YEAR | | | | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2017 | 2018* | 2019* | 2020* | 2021* | 2022* |
| INTERIOR * | 80.0% | 81.4% | 80.2% | 77.6% | 38.9% | 66.6% |
| East Kootenay | 86.0% | 78.9% | 81.2% | 82.4% | 76.8% | 70.0% |
| Kootenay Boundary | 70.4% | 69.8% | 74.5% | 63.9% | 63.4% | 57.3% |
| Okanagan | 79.0% | 84.7% | 80.1% | 76.9% | 34.7% | 70.1% |
| Thompson Cariboo Shuswap | 82.7% | 81.0% | 81.9% | 81.7% | 23.8% | 63.1% |
| FRASER * | 76.2% | 74.2% | 76.2% | 77.0% | 1.5% | 74.7% |
| Fraser East | 74.0% | 72.3% | 73.7% | 70.6% | 2.3% | 62.8% |
| Fraser North | 77.8% | 75.2% | 72.1% | 75.9% | 1.1% | 77.7% |
| Fraser South | 75.9% | 74.2% | 80.1% | 80.3% | 1.6% | 76.9% |
| VANCOUVER COASTAL | 87.8% | 86.8% | 87.6% | 83.6% | 29.0% | 82.8% |
| Richmond | 91.3% | 92.4% | 93.9% | 92.2% | 51.7% | 93.8% |
| Vancouver | 87.9% | 87.4% | 88.2% | 82.6% | 10.2% | 81.3% |
| North Shore / Coast Garibaldi | 85.3% | 82.5% | 83.2% | 80.8% | 47.4% | 79.0% |
| ISLAND * | 73.7% | 71.3% | 74.5% | 74.8% | 68.9% | 70.1% |
| South Vancouver Island | 75.5% | 70.4% | 73.7% | 75.4% | 73.3% | 73.5% |
| Central Vancouver Island | 71.5% | 71.8% | 75.5% | 76.1% | 65.5% | 70.4% |
| North Vancouver Island | 73.7% | 72.9% | 74.9% | 70.6% | 64.1% | 60.9% |
| NORTHERN | 83.9% | 80.4% | 82.2% | 70.9% | 59.3% | 58.6% |
| Northwest | 86.4% | 79.9% | 79.2% | 69.8% | 71.5% | 64.5% |
| Northern Interior | 84.9% | 83.8% | 83.7% | 72.5% | 68.3% | 62.1% |
| Northeast | 79.2% | 74.2% | 81.9% | 69.2% | 29.8% | 47.4% |
| BRITISH COLUMBIA * | 79.4% | 77.8% | 79.3% | 77.8% | 27.8% | 73.2% |

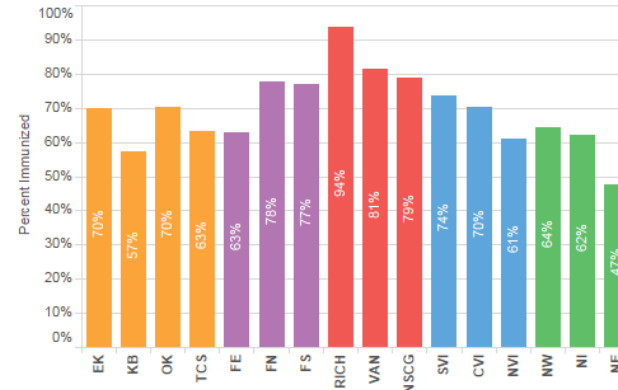
* From 2018 onward estimates for BC and some of the health authorities are not directly comparable to previous years. See [Notes](#).

Grade 9 Students Immunized Meningococcal Quadrivalent Conjugate Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2022



By Health Authority and Year

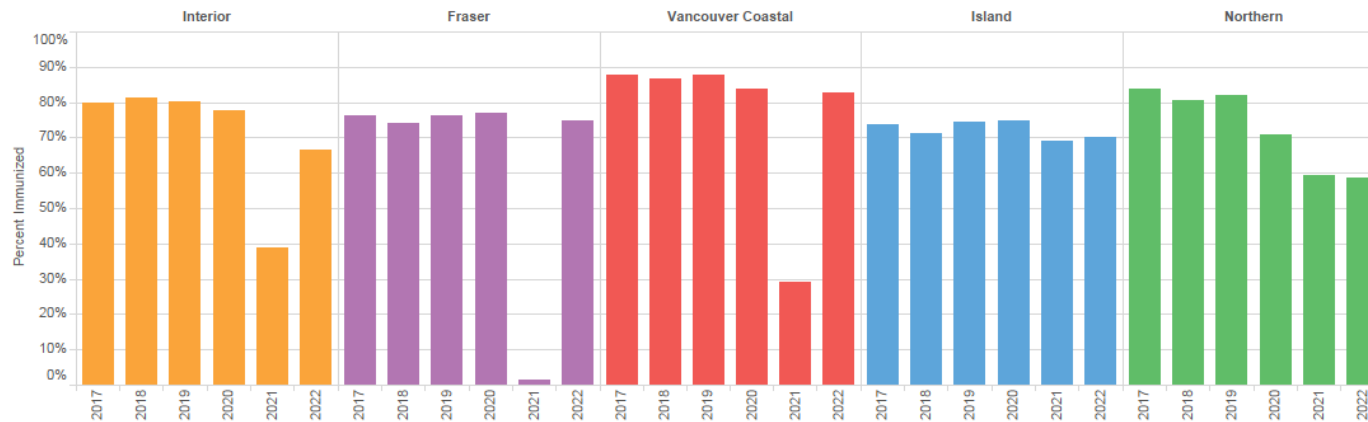


Figure 5. Percent of Grade 9 students with up-to-date immunizations: Meningococcal Quadrivalent Conjugate vaccine

Table 6. Reasons for non-immunization for Grade 9 students: Meningococcal Quadrivalent Conjugate vaccine, 2022

| Region | Population | Count | | Percent | |
|-------------------------------|---------------|--------------|----------------------|-------------|----------------------|
| | | Unimmunized | | Unimmunized | |
| | | Refusal | Unknown ^a | Refusal | Unknown ^a |
| British Columbia | 51,486 | 1,163 | 12,644 | 2% | 25% |
| Interior | 8,439 | 472 | 2,348 | 6% | 28% |
| East Kootenay | 941 | 52 | 230 | 6% | 24% |
| Kootenay Boundary | 847 | 53 | 309 | 6% | 36% |
| Okanagan | 4,000 | 268 | 929 | 7% | 23% |
| Thompson Cariboo Shuswap | 2,651 | 99 | 880 | 4% | 33% |
| Fraser ^b | 20,821 | 7 | 5,256 | 0% | 25% |
| Fraser East | 3,647 | 2 | 1,354 | 0% | 37% |
| Fraser North | 7,120 | 4 | 1,582 | 0% | 22% |
| Fraser South | 10,054 | 1 | 2,320 | 0% | 23% |
| Vancouver Coastal | 10,404 | 423 | 1,363 | 4% | 13% |
| Richmond | 1,882 | 21 | 96 | 1% | 5% |
| Vancouver | 5,324 | 229 | 768 | 4% | 14% |
| North Shore / Coast Garibaldi | 3,198 | 173 | 499 | 5% | 16% |
| Island | 8,286 | 258 | 2,217 | 3% | 27% |
| South Vancouver Island | 3,844 | 111 | 907 | 3% | 24% |
| Central Vancouver Island | 2,955 | 119 | 757 | 4% | 26% |
| North Vancouver Island | 1,487 | 28 | 553 | 2% | 37% |
| Northern ^b | 3,536 | 3 | 1,460 | 0% | 41% |
| Northwest | 858 | 0 | 305 | 0% | 36% |
| Northern Interior | 1,702 | 0 | 645 | 0% | 38% |
| Northeast | 976 | 3 | 510 | 0% | 52% |

Notes: a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH and NH. Therefore, the proportion of partially immunized and unimmunized students with unknown reasons for non-immunization is likely to be overestimated, see [Note #12](#).

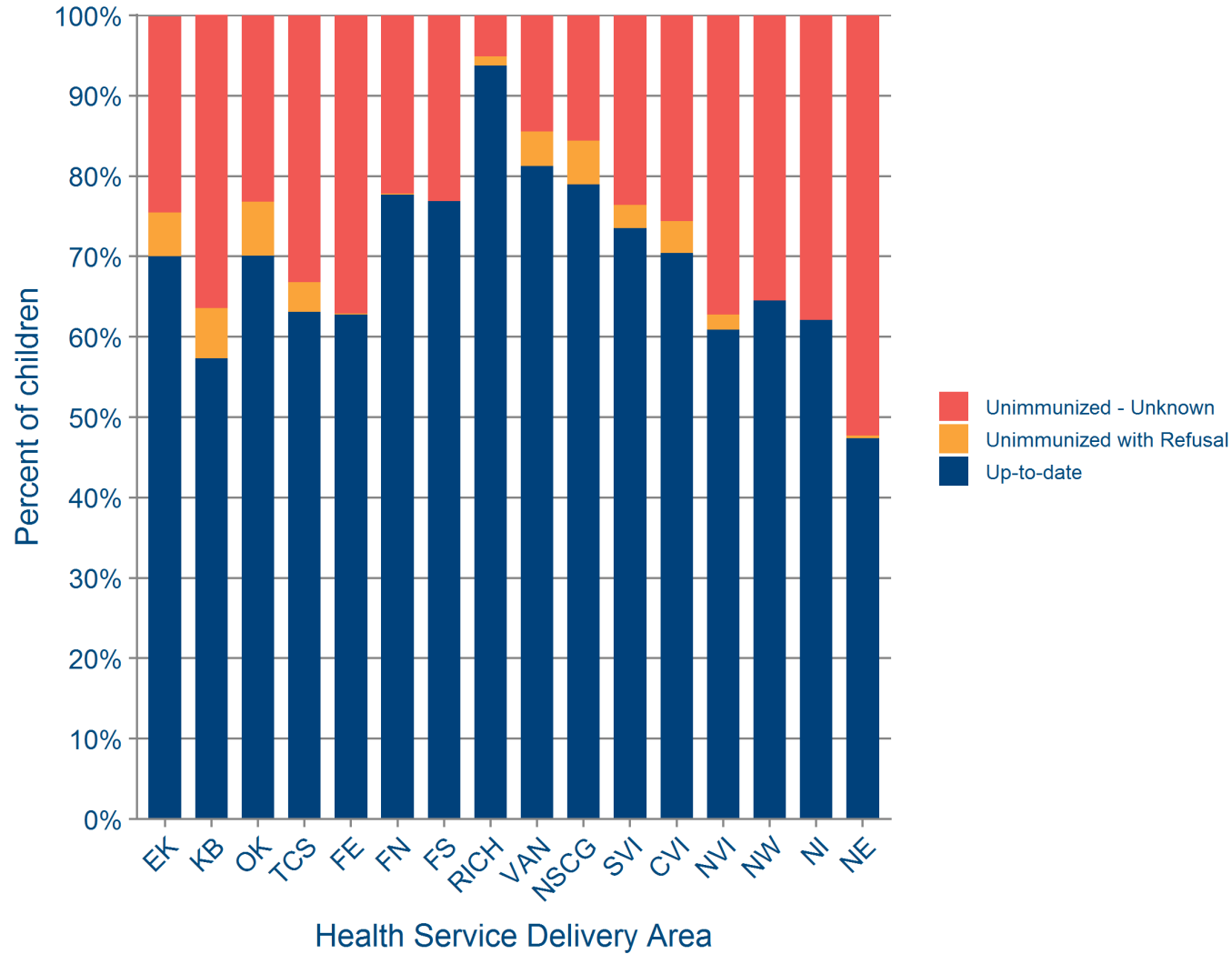


Figure 6. Reasons for non-immunization for Grade 9 students: Meningococcal Quadrivalent Conjugate vaccine, 2022

Grade 9 students with up-to-date immunizations: Human Papillomavirus (HPV)

The HPV adolescent immunization program has had several iterations. Females who were in grade 9 in 2008/2009-2010/2011 were offered 3 doses of HPV vaccine. Females who were in grade 9 in 2011/2012 and 2012/2013 were offered 3 doses of HPV vaccine in grade 6 in 2008/2009 and 2009/2010, respectively. Uptake rates in these groups are included in the grade 6 results for 2009 and 2010 and were not reassessed in grade 9, so coverage was not assessed for grade 9 females in the 2012 and 2013 reports. Females who were in grade 9 in 2013/2014 received 2 doses in grade 6 and their final (third) dose in grade 9. Completion of three doses was assessed at the end of the 2013/2014 school year. Since 2014, females receiving 2 doses at least 150 days apart, with the first dose given before 15 years old, are considered complete. HPV uptake as of the end of grade 9 was assessed in 2015, but not the following two years. Assessing uptake in grade 9 was re-implemented in 2018. Starting in the 2017/2018 school year, HPV vaccine was extended to include males in grade 6. This corresponds to the grade 9 cohort of the 2020/2021 school year. For more information on the history of the HPV program see [History of Immunization in BC](#).

In 2022, 73.1% of grade 9 females and 71.0% of grade 9 males in BC were up-to-date for HPV (**Table 7**). This reflects grade 6 immunization that occurred during the 2018/2019 school year (coverage was 66.1% for females and 63.5% for males) and catch-up immunization between the end of grade 6 and the end of grade 9. Rates varied by HSDA, ranging from 55% to 90.1% for females (**Table 7** and **Figure 7**) and 56.5% to 88.8% for males (**Table 7** and **Figure 8**). HPV series initiation was similar across most HSDAs (**Figure 9**). All HSDAs had between 5% and 13% of female and male students initiate, but not complete, with the highest proportion of initiated but not completed students in North Shore/Coast Garibaldi HSDA.

In the 2021/2022 school year, 3% and 9% of grade 9 students in BC were partially immunized and unimmunized with a documented refusal, respectively (**Tables 8 – 10** and **Figures 10 – 12**). By HSDA, between 1% and 21% of students were unimmunized with a documented refusal (**Table 8**). There were large proportions of partially immunized and unimmunized students with an unknown reason for non-immunization ($\geq 5\%$ for most HSDAs) recorded, particularly in NH and FH. However, students with unknown reasons for non-immunization are likely overestimated in these HAs due to partial completeness of supplementary data from immunization records. See [Notes](#) for further information.

Table 7. Percent of Grade 9 students with up-to-date immunizations: Human Papillomavirus (HPV)

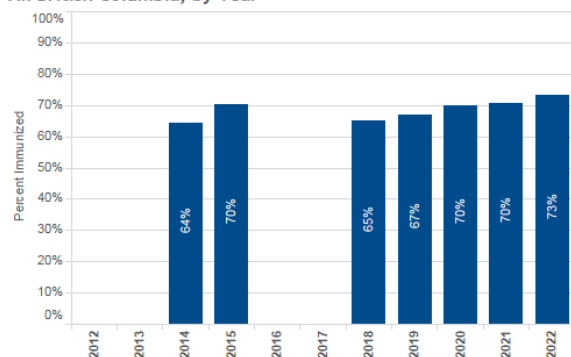
| HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA | YEAR | | | | | | | | | | | | |
|--|---------|---------|--------------|--------------|---------|---------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2012 | 2013 | 2014* | 2015* | 2016* | 2017* | 2018* | 2019* | 2020* | 2021* | | 2022* | |
| | Females | Females | Females | Females | Females | Females | Females | Females | Females | Females | Males | Females | Males |
| INTERIOR * | | | 59.0% | 70.0% | | | 62.4% | 63.4% | 66.7% | 67.9% | 64.9% | 69.8% | 68.1% |
| East Kootenay | | | 67.5% | 67.9% | | | 66.7% | 61.4% | 70.2% | 68.0% | 63.3% | 69.0% | 71.8% |
| Kootenay Boundary | | | 55.4% | 58.2% | | | 52.4% | 56.2% | 49.6% | 61.1% | 54.9% | 59.8% | 59.4% |
| Okanagan | | | 51.6% | 67.9% | | | 60.8% | 62.6% | 64.6% | 67.4% | 64.4% | 69.9% | 67.7% |
| Thompson Cariboo Shuswap | | | 70.0% | 77.2% | | | 67.4% | 67.7% | 74.7% | 71.0% | 69.4% | 72.8% | 70.3% |
| FRASER * | | | 60.7% | 64.2% | | | 61.4% | 63.1% | 71.4% | 70.8% | 66.7% | 73.5% | 71.1% |
| Fraser East | | | 51.1% | 63.0% | | | 57.4% | 59.5% | 67.0% | 65.1% | 59.7% | 68.2% | 65.2% |
| Fraser North | | | 57.8% | 60.9% | | | 57.5% | 60.4% | 69.5% | 71.5% | 67.6% | 74.3% | 71.7% |
| Fraser South | | | 66.3% | 68.0% | | | 65.8% | 66.4% | 74.4% | 72.4% | 68.8% | 74.9% | 72.8% |
| VANCOUVER COASTAL | | | 77.9% | 76.7% | | | 76.8% | 78.6% | 76.0% | 74.5% | 71.8% | 81.6% | 78.6% |
| Richmond | | | 89.6% | 77.9% | | | 76.9% | 86.2% | 85.1% | 83.4% | 78.8% | 90.1% | 88.8% |
| Vancouver | | | 79.1% | 80.1% | | | 79.9% | 80.2% | 75.1% | 74.2% | 71.0% | 83.3% | 79.7% |
| North Shore / Coast Garibaldi | | | 68.6% | 70.1% | | | 71.9% | 71.9% | 72.5% | 69.9% | 69.1% | 73.8% | 71.0% |
| ISLAND * | | | 60.2% | 74.1% | | | 62.7% | 64.9% | 65.3% | 69.8% | 68.7% | 69.6% | 68.1% |
| South Vancouver Island | | | 60.0% | 73.3% | | | 60.1% | 63.8% | 65.8% | 73.1% | 70.6% | 69.7% | 69.0% |
| Central Vancouver Island | | | 60.8% | 74.2% | | | 64.7% | 65.4% | 64.8% | 69.3% | 68.1% | 71.8% | 68.8% |
| North Vancouver Island | | | 59.6% | 76.0% | | | 66.5% | 67.1% | 65.0% | 62.5% | 64.7% | 64.5% | 64.5% |
| NORTHERN * | | | 64.0% | 72.1% | | | 65.8% | 67.3% | 63.1% | 64.2% | 58.9% | 62.4% | 62.4% |
| Northwest | | | 66.0% | 79.6% | | | 67.9% | 65.8% | 65.4% | 71.0% | 58.2% | 60.9% | 60.7% |
| Northern Interior | | | 63.0% | 70.5% | | | 66.7% | 73.3% | 69.6% | 67.4% | 62.6% | 67.6% | 66.7% |
| Northeast | | | 63.8% | 67.3% | | | 62.1% | 57.3% | 49.2% | 50.1% | 52.9% | 55.0% | 56.5% |
| BRITISH COLUMBIA * | | | 64.3% | 70.3% | | | 65.2% | 66.8% | 70.1% | 70.5% | 67.3% | 73.1% | 71.0% |

* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. Some schools are not included in the 2015 estimates. See [Notes](#).

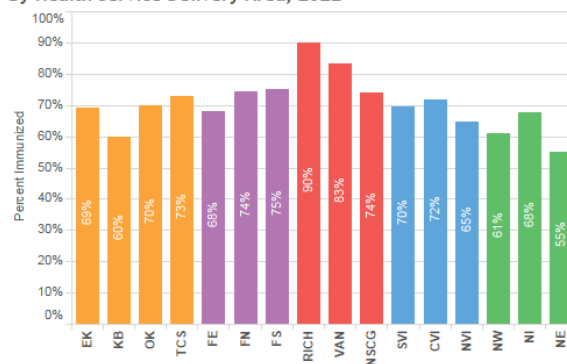
As grade 6 males became eligible for HPV immunization starting in the 2017/2018 school year, grade 9 males could only be assessed starting in 2021 (2020/2021 school year), when the 2017/2018 grade 6 male cohort reached grade 9.

Grade 9 Female Students Immunized Human Papillomavirus (HPV) Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2022



By Health Authority and Year

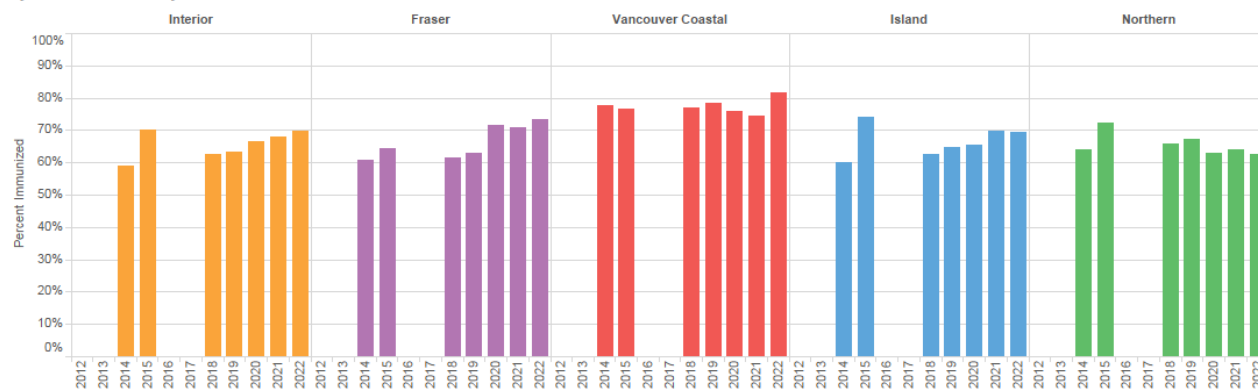


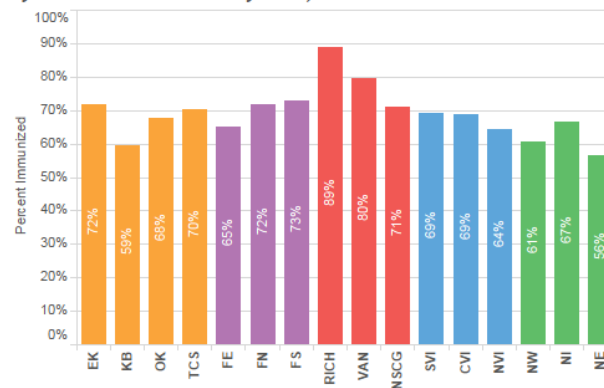
Figure 7. Percent of Grade 9 female students with up-to-date immunizations: Human Papillomavirus (HPV)

Grade 9 Female Students Immunized Human Papillomavirus (HPV) Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2022



By Health Authority and Year

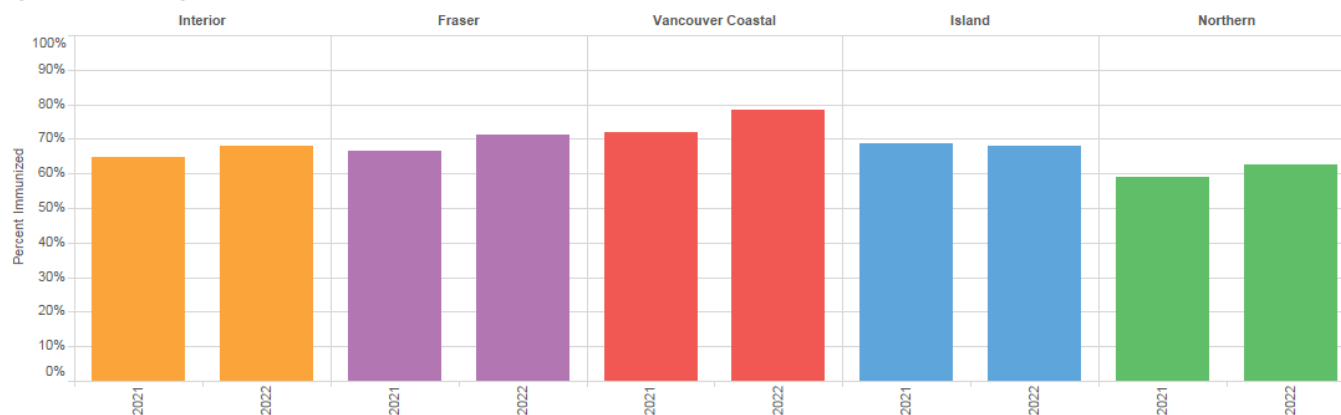
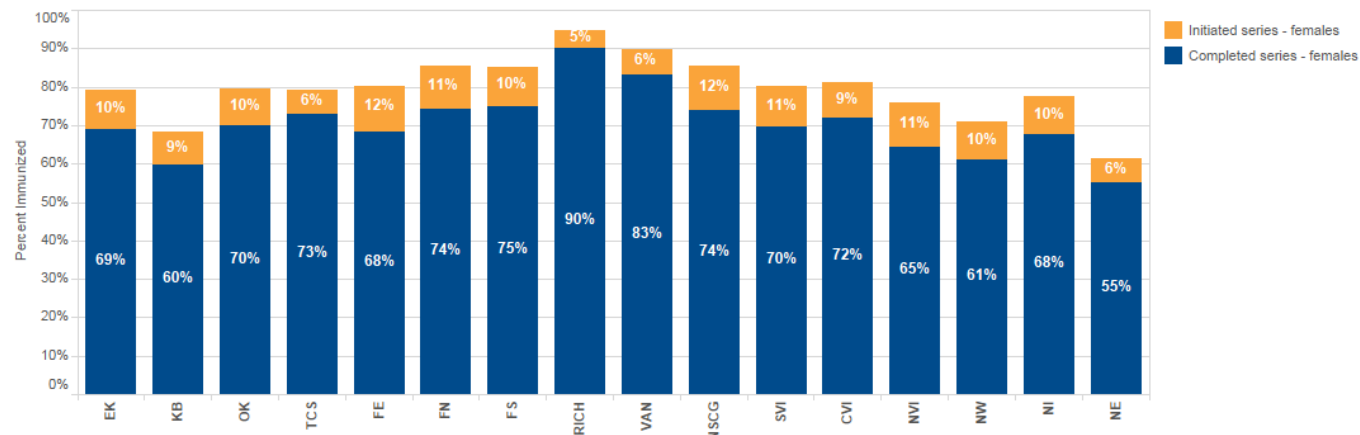


Figure 8. Percent of Grade 9 male students with up-to-date immunizations: Human Papillomavirus (HPV)

Grade 9 Students Immunized HPV Series Initiation and Series Completion by Gender, British Columbia, 2022

Females



Males

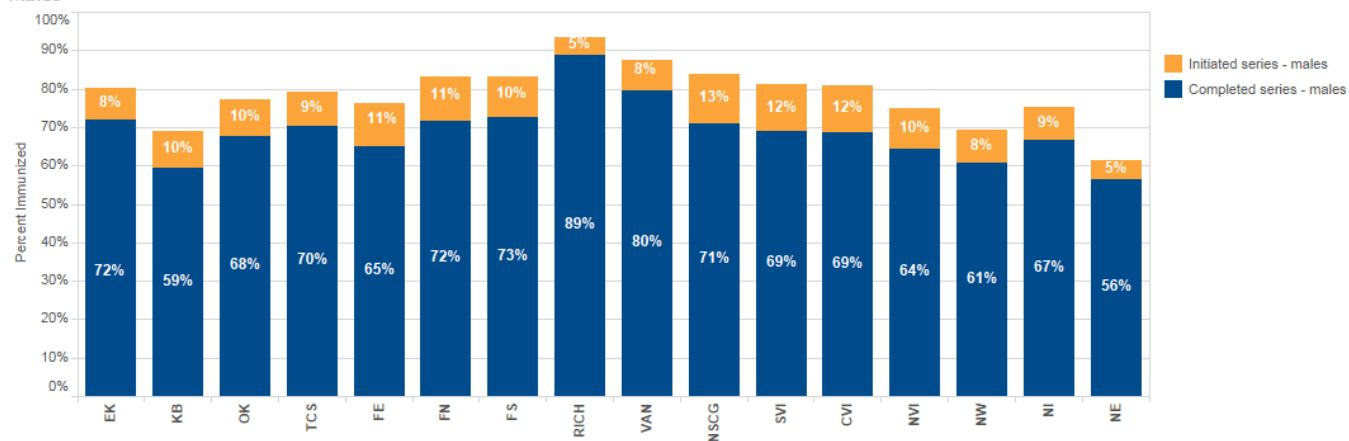


Figure 9. Percent of Grade 9 students who initiated, but did not complete, a Human Papillomavirus (HPV) vaccine series, by sex

Table 8. Reasons for non-immunization for Grade 9 students: HPV, 2022

| Region | Population | Count | | | | | |
|-----------------------------|---------------|---------------------|------------------|----------------------|--------------|------------------|----------------------|
| | | Partially Immunized | | | Unimmunized | | |
| | | Refusal | Contraindication | Unknown ^a | Refusal | Contraindication | Unknown ^a |
| British Columbia | 51,486 | 1,750 | 2 | 3,353 | 4,412 | 6 | 4,866 |
| Interior | 8,439 | 377 | 0 | 380 | 1,239 | 0 | 628 |
| East Kootenay | 941 | 47 | 0 | 40 | 127 | 0 | 63 |
| Kootenay Boundary | 847 | 46 | 0 | 31 | 176 | 0 | 89 |
| Okanagan | 4,000 | 199 | 0 | 189 | 599 | 0 | 263 |
| Thompson Cariboo Shuswap | 2,651 | 85 | 0 | 120 | 337 | 0 | 213 |
| Fraser^b | 20,821 | 743 | 0 | 1,531 | 1,320 | 0 | 2,181 |
| Fraser East | 3,647 | 164 | 0 | 259 | 359 | 0 | 434 |
| Fraser North | 7,120 | 278 | 0 | 535 | 387 | 0 | 728 |
| Fraser South | 10,054 | 301 | 0 | 737 | 574 | 0 | 1,019 |
| Vancouver Coastal | 10,404 | 235 | 0 | 624 | 610 | 0 | 607 |
| Richmond | 1,882 | 10 | 0 | 77 | 64 | 0 | 47 |
| Vancouver | 5,324 | 110 | 0 | 271 | 282 | 0 | 331 |
| North Shore/Coast Garibaldi | 3,198 | 115 | 0 | 276 | 264 | 0 | 229 |
| Island | 8,286 | 350 | 1 | 572 | 772 | 0 | 891 |
| South Vancouver Island | 3,844 | 184 | 0 | 258 | 321 | 0 | 417 |
| Central Vancouver Island | 2,955 | 123 | 0 | 196 | 297 | 0 | 262 |
| North Vancouver Island | 1,487 | 43 | 1 | 118 | 154 | 0 | 212 |
| Northern^b | 3,536 | 45 | 1 | 246 | 471 | 6 | 559 |
| Northwest | 858 | 9 | 0 | 70 | 116 | 2 | 139 |
| Northern Interior | 1,702 | 21 | 1 | 136 | 179 | 2 | 221 |
| Northeast | 976 | 15 | 0 | 40 | 176 | 2 | 199 |

Table continued on next page

| Region | Population | Percent | | | | | |
|-----------------------------|---------------|---------------------|------------------|----------------------|-------------|------------------|----------------------|
| | | Partially Immunized | | | Unimmunized | | |
| | | Refusal | Contraindication | Unknown ^a | Refusal | Contraindication | Unknown ^a |
| British Columbia | 51,486 | 3% | 0% | 7% | 9% | 0% | 9% |
| Interior | 8,439 | 4% | 0% | 4% | 15% | 0% | 7% |
| East Kootenay | 941 | 5% | 0% | 4% | 14% | 0% | 7% |
| Kootenay Boundary | 847 | 5% | 0% | 4% | 21% | 0% | 10% |
| Okanagan | 4,000 | 5% | 0% | 5% | 15% | 0% | 7% |
| Thompson Cariboo Shuswap | 2,651 | 3% | 0% | 4% | 13% | 0% | 8% |
| Fraser^b | 20,821 | 4% | 0% | 7% | 6% | 0% | 10% |
| Fraser East | 3,647 | 4% | 0% | 7% | 10% | 0% | 12% |
| Fraser North | 7,120 | 4% | 0% | 8% | 5% | 0% | 10% |
| Fraser South | 10,054 | 3% | 0% | 7% | 6% | 0% | 10% |
| Vancouver Coastal | 10,404 | 2% | 0% | 6% | 6% | 0% | 6% |
| Richmond | 1,882 | 1% | 0% | 4% | 3% | 0% | 2% |
| Vancouver | 5,324 | 2% | 0% | 5% | 5% | 0% | 6% |
| North Shore/Coast Garibaldi | 3,198 | 4% | 0% | 9% | 8% | 0% | 7% |
| Island | 8,286 | 4% | 0% | 7% | 9% | 0% | 11% |
| South Vancouver Island | 3,844 | 5% | 0% | 7% | 8% | 0% | 11% |
| Central Vancouver Island | 2,955 | 4% | 0% | 7% | 10% | 0% | 9% |
| North Vancouver Island | 1,487 | 3% | 0% | 8% | 10% | 0% | 14% |
| Northern^b | 3,536 | 1% | 0% | 7% | 13% | 0% | 16% |
| Northwest | 858 | 1% | 0% | 8% | 14% | 0% | 16% |
| Northern Interior | 1,702 | 1% | 0% | 8% | 10% | 0% | 13% |
| Northeast | 976 | 2% | 0% | 4% | 18% | 0% | 20% |

Notes: a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH and NH. Therefore, the proportion of partially immunized and unimmunized students with unknown reasons for non-immunization is likely to be overestimated, see [Note #12](#).

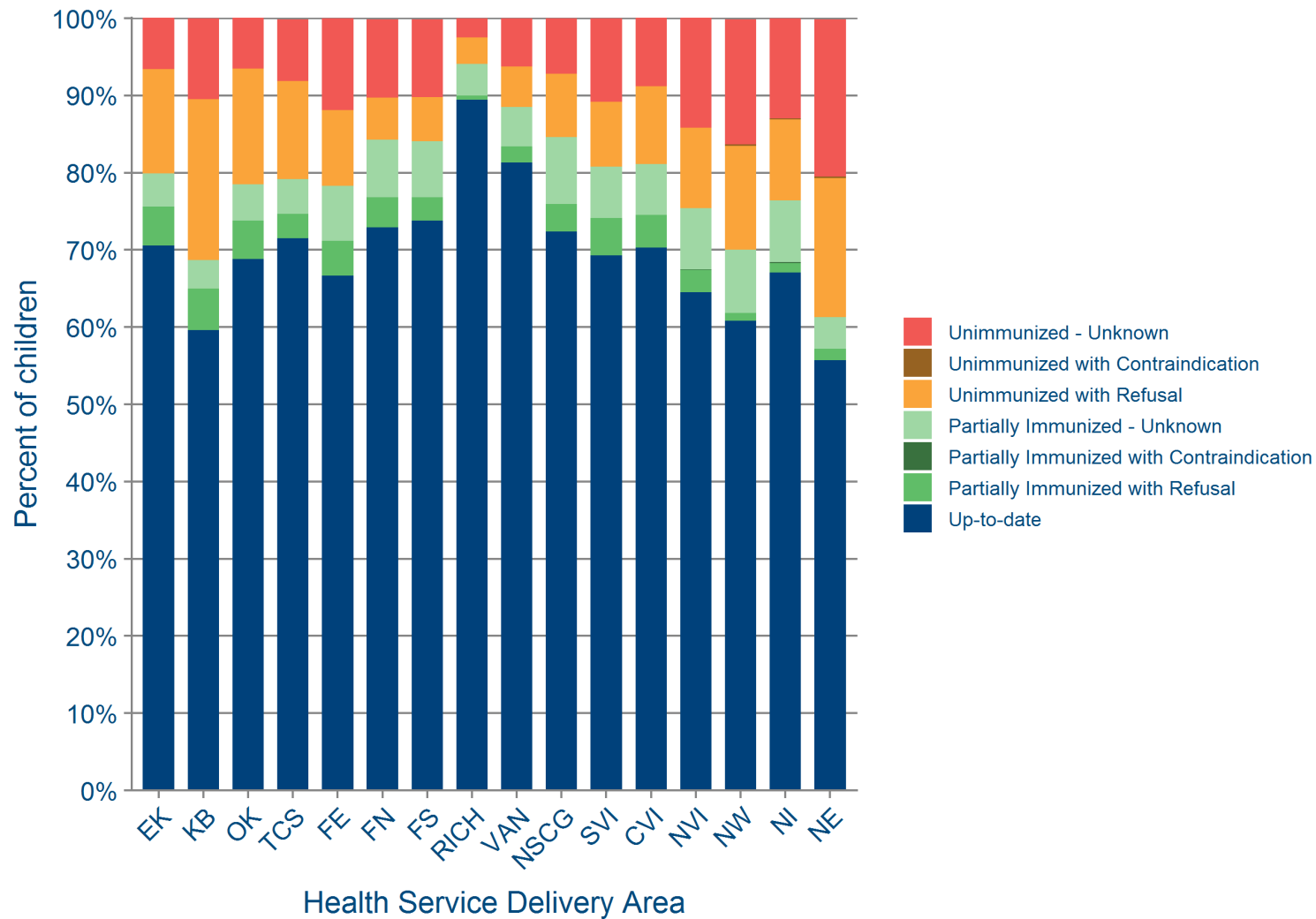


Figure 10. Reasons for non-immunization for Grade 9 students: HPV, 2022

Table 9. Reasons for non-immunization for Grade 9 students: HPV – females, 2022

| Region | Population | Count | | | | | |
|-----------------------------|---------------|---------------------|------------------|----------------------|--------------|------------------|----------------------|
| | | Partially Immunized | | | Unimmunized | | |
| | | Refusal | Contraindication | Unknown ^a | Refusal | Contraindication | Unknown ^a |
| British Columbia | 25,121 | 879 | 2 | 1,549 | 2,070 | 4 | 2,249 |
| Interior | 4,055 | 185 | 0 | 163 | 609 | 0 | 269 |
| East Kootenay | 426 | 26 | 0 | 18 | 53 | 0 | 35 |
| Kootenay Boundary | 396 | 20 | 0 | 14 | 88 | 0 | 37 |
| Okanagan | 1,944 | 103 | 0 | 85 | 296 | 0 | 101 |
| Thompson Cariboo Shuswap | 1,289 | 36 | 0 | 46 | 172 | 0 | 96 |
| Fraser^b | 10,171 | 372 | 0 | 743 | 578 | 0 | 1,000 |
| Fraser East | 1,796 | 83 | 0 | 132 | 152 | 0 | 204 |
| Fraser North | 3,431 | 142 | 0 | 247 | 176 | 0 | 318 |
| Fraser South | 4,944 | 147 | 0 | 364 | 250 | 0 | 478 |
| Vancouver Coastal | 5,027 | 111 | 0 | 277 | 277 | 0 | 258 |
| Richmond | 948 | 2 | 0 | 41 | 31 | 0 | 20 |
| Vancouver | 2,533 | 51 | 0 | 113 | 124 | 0 | 136 |
| North Shore/Coast Garibaldi | 1,546 | 58 | 0 | 123 | 122 | 0 | 102 |
| Island | 4,116 | 178 | 1 | 244 | 369 | 0 | 461 |
| South Vancouver Island | 1,944 | 92 | 0 | 114 | 161 | 0 | 222 |
| Central Vancouver Island | 1,459 | 59 | 0 | 77 | 139 | 0 | 136 |
| North Vancouver Island | 713 | 27 | 1 | 53 | 69 | 0 | 103 |
| Northern^b | 1,752 | 33 | 1 | 122 | 237 | 4 | 261 |
| Northwest | 443 | 7 | 0 | 37 | 59 | 1 | 69 |
| Northern Interior | 829 | 17 | 1 | 64 | 91 | 1 | 95 |
| Northeast | 480 | 9 | 0 | 21 | 87 | 2 | 97 |

Table continued on next page

| Region | Population | Percent | | | | | |
|-----------------------------|---------------|---------------------|------------------|----------------------|-------------|------------------|----------------------|
| | | Partially Immunized | | | Unimmunized | | |
| | | Refusal | Contraindication | Unknown ^a | Refusal | Contraindication | Unknown ^a |
| British Columbia | 25,121 | 4% | 0% | 6% | 8% | 0% | 9% |
| Interior | 4,055 | 5% | 0% | 4% | 15% | 0% | 7% |
| East Kootenay | 426 | 6% | 0% | 4% | 12% | 0% | 8% |
| Kootenay Boundary | 396 | 5% | 0% | 4% | 22% | 0% | 9% |
| Okanagan | 1,944 | 5% | 0% | 4% | 15% | 0% | 5% |
| Thompson Cariboo Shuswap | 1,289 | 3% | 0% | 4% | 13% | 0% | 7% |
| Fraser^b | 10,171 | 4% | 0% | 7% | 6% | 0% | 10% |
| Fraser East | 1,796 | 5% | 0% | 7% | 8% | 0% | 11% |
| Fraser North | 3,431 | 4% | 0% | 7% | 5% | 0% | 9% |
| Fraser South | 4,944 | 3% | 0% | 7% | 5% | 0% | 10% |
| Vancouver Coastal | 5,027 | 2% | 0% | 6% | 6% | 0% | 5% |
| Richmond | 948 | 0% | 0% | 4% | 3% | 0% | 2% |
| Vancouver | 2,533 | 2% | 0% | 4% | 5% | 0% | 5% |
| North Shore/Coast Garibaldi | 1,546 | 4% | 0% | 8% | 8% | 0% | 7% |
| Island | 4,116 | 4% | 0% | 6% | 9% | 0% | 11% |
| South Vancouver Island | 1,944 | 5% | 0% | 6% | 8% | 0% | 11% |
| Central Vancouver Island | 1,459 | 4% | 0% | 5% | 10% | 0% | 9% |
| North Vancouver Island | 713 | 4% | 0% | 7% | 10% | 0% | 14% |
| Northern^b | 1,752 | 2% | 0% | 7% | 14% | 0% | 15% |
| Northwest | 443 | 2% | 0% | 8% | 13% | 0% | 16% |
| Northern Interior | 829 | 2% | 0% | 8% | 11% | 0% | 12% |
| Northeast | 480 | 2% | 0% | 4% | 18% | 0% | 20% |

Notes: a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH and NH. Therefore, the proportion of partially immunized and unimmunized students with unknown reasons for non-immunization is likely to be overestimated, see [Note #12](#).

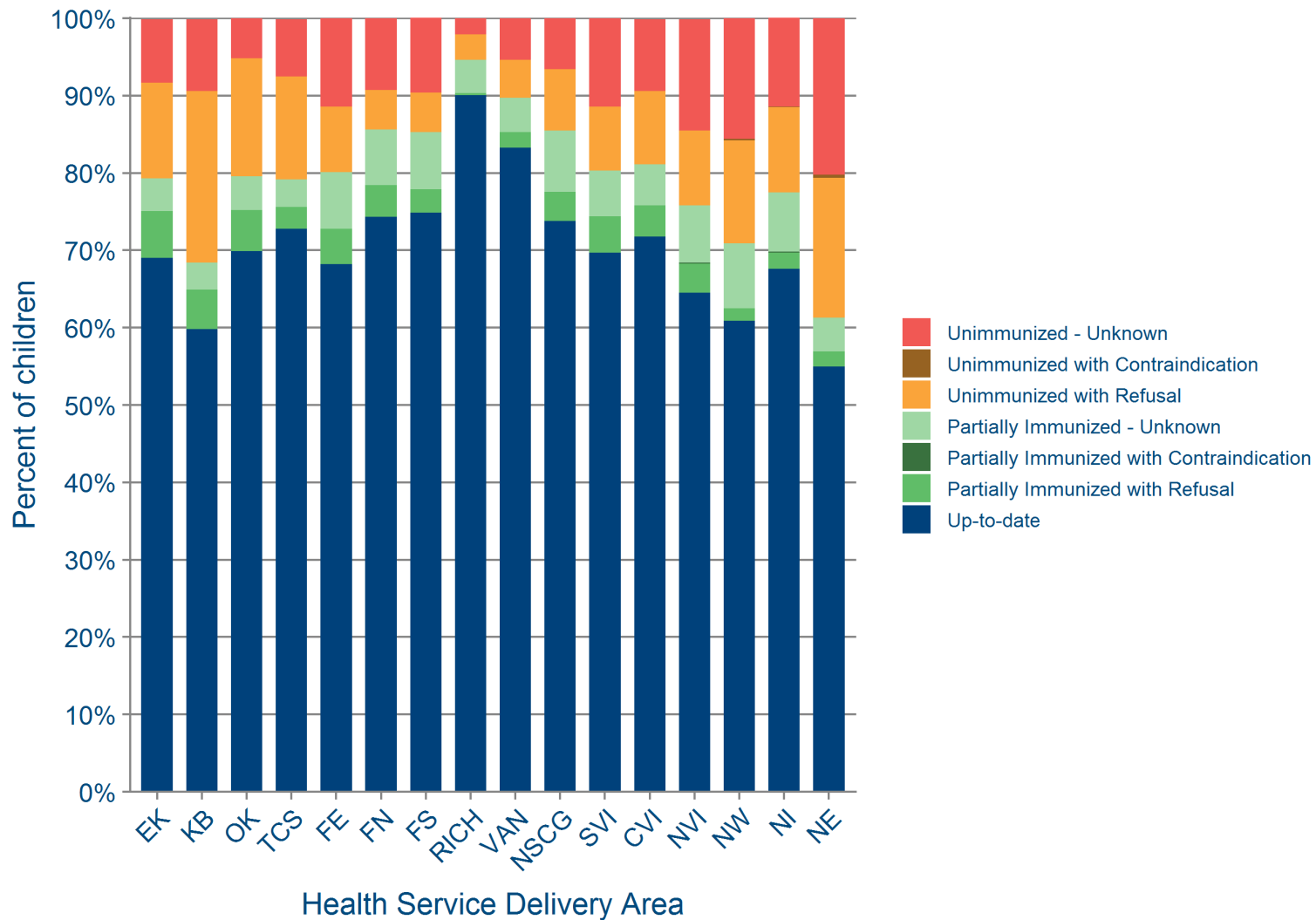


Figure 11. Reasons for non-immunization for Grade 9 students: HPV – females, 2022

Table 10. Reasons for non-immunization for Grade 9 students: HPV – males, 2022

| Region | Population | Count | | | | |
|-----------------------------|---------------|---------------------|----------------------|--------------|------------------|----------------------|
| | | Partially Immunized | | Unimmunized | | |
| | | Refusal | Unknown ^a | Refusal | Contraindication | Unknown ^a |
| British Columbia | 26,343 | 870 | 1,801 | 2,341 | 2 | 2,614 |
| Interior | 4,383 | 192 | 217 | 630 | 0 | 359 |
| East Kootenay | 514 | 21 | 22 | 74 | 0 | 28 |
| Kootenay Boundary | 451 | 26 | 17 | 88 | 0 | 52 |
| Okanagan | 2,056 | 96 | 104 | 303 | 0 | 162 |
| Thompson Cariboo Shuswap | 1,362 | 49 | 74 | 165 | 0 | 117 |
| Fraser^b | 10,649 | 371 | 788 | 742 | 0 | 1,180 |
| Fraser East | 1,851 | 81 | 127 | 207 | 0 | 230 |
| Fraser North | 3,688 | 136 | 288 | 211 | 0 | 409 |
| Fraser South | 5,110 | 154 | 373 | 324 | 0 | 541 |
| Vancouver Coastal | 5,360 | 123 | 345 | 332 | 0 | 348 |
| Richmond | 931 | 8 | 36 | 33 | 0 | 27 |
| Vancouver | 2,782 | 58 | 156 | 157 | 0 | 195 |
| North Shore/Coast Garibaldi | 1,647 | 57 | 153 | 142 | 0 | 126 |
| Island | 4,167 | 172 | 327 | 403 | 0 | 429 |
| South Vancouver Island | 1,898 | 92 | 143 | 160 | 0 | 194 |
| Central Vancouver Island | 1,495 | 64 | 119 | 158 | 0 | 126 |
| North Vancouver Island | 774 | 16 | 65 | 85 | 0 | 109 |
| Northern^b | 1,784 | 12 | 124 | 234 | 2 | 298 |
| Northwest | 415 | 2 | 33 | 57 | 1 | 70 |
| Northern Interior | 873 | 4 | 72 | 88 | 1 | 126 |
| Northeast | 496 | 6 | 19 | 89 | 0 | 102 |

Table continued on next page

| Region | Population | Percent | | | | |
|-----------------------------|---------------|---------------------|----------------------|-------------|------------------|----------------------|
| | | Partially Immunized | | Unimmunized | | |
| | | Refusal | Unknown ^a | Refusal | Contraindication | Unknown ^a |
| British Columbia | 26,343 | 3% | 7% | 9% | 0% | 10% |
| Interior | 4,383 | 4% | 5% | 14% | 0% | 8% |
| East Kootenay | 514 | 4% | 4% | 14% | 0% | 5% |
| Kootenay Boundary | 451 | 6% | 4% | 20% | 0% | 12% |
| Okanagan | 2,056 | 5% | 5% | 15% | 0% | 8% |
| Thompson Cariboo Shuswap | 1,362 | 4% | 5% | 12% | 0% | 9% |
| Fraser^b | 10,649 | 3% | 7% | 7% | 0% | 11% |
| Fraser East | 1,851 | 4% | 7% | 11% | 0% | 12% |
| Fraser North | 3,688 | 4% | 8% | 6% | 0% | 11% |
| Fraser South | 5,110 | 3% | 7% | 6% | 0% | 11% |
| Vancouver Coastal | 5,360 | 2% | 6% | 6% | 0% | 6% |
| Richmond | 931 | 1% | 4% | 4% | 0% | 3% |
| Vancouver | 2,782 | 2% | 6% | 6% | 0% | 7% |
| North Shore/Coast Garibaldi | 1,647 | 3% | 9% | 9% | 0% | 8% |
| Island | 4,167 | 4% | 8% | 10% | 0% | 10% |
| South Vancouver Island | 1,898 | 5% | 8% | 8% | 0% | 10% |
| Central Vancouver Island | 1,495 | 4% | 8% | 11% | 0% | 8% |
| North Vancouver Island | 774 | 2% | 8% | 11% | 0% | 14% |
| Northern^b | 1,784 | 1% | 7% | 13% | 0% | 17% |
| Northwest | 415 | 0% | 8% | 14% | 0% | 17% |
| Northern Interior | 873 | 0% | 8% | 10% | 0% | 14% |
| Northeast | 496 | 1% | 4% | 18% | 0% | 21% |

Notes: a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH and NH. Therefore, the proportion of partially immunized and unimmunized students with unknown reasons for non-immunization is likely to be overestimated, see [Note #12](#).

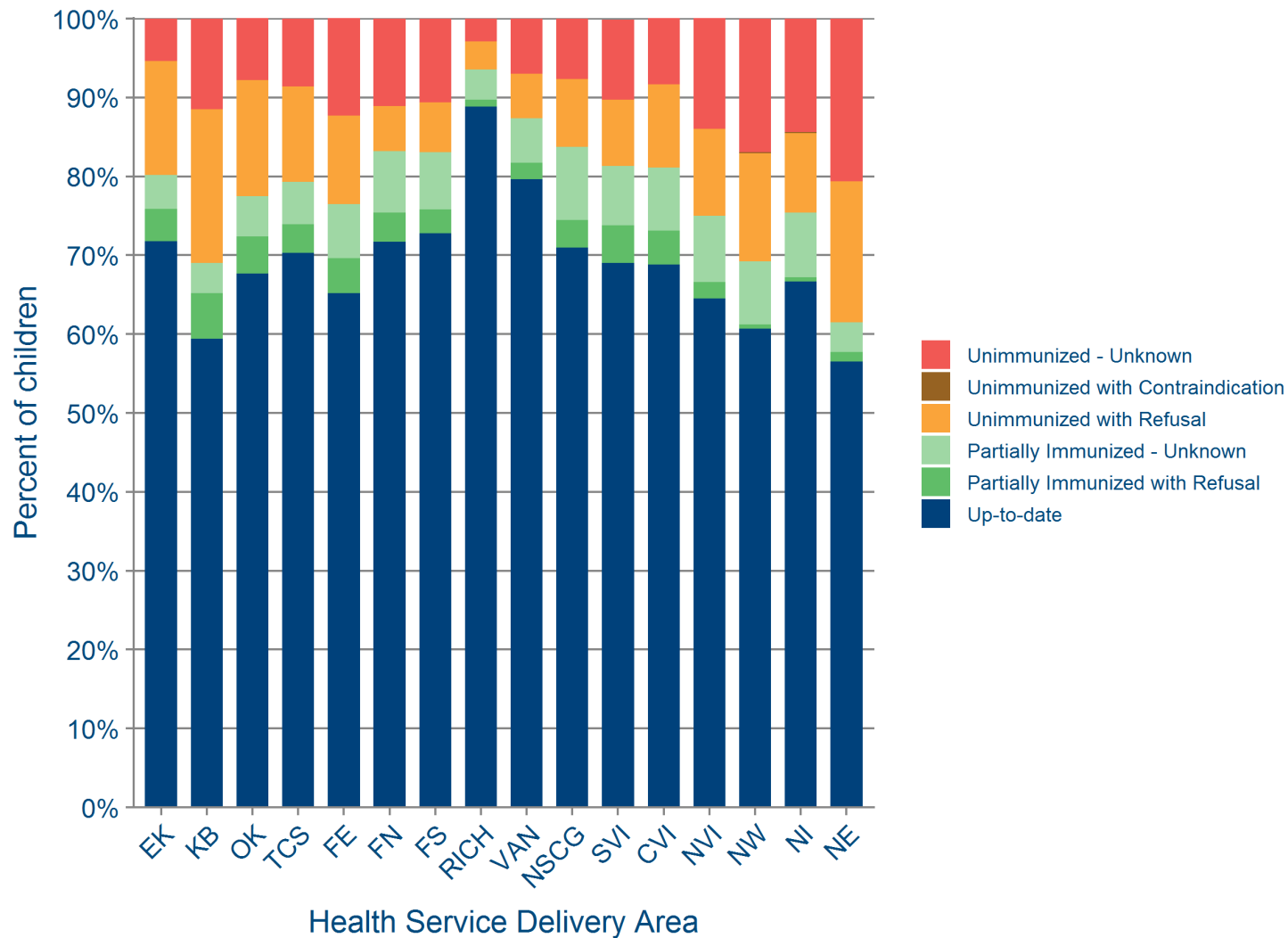


Figure 12. Reasons for non-immunization for Grade 9 students: HPV – males, 2022

2020/2021 Grade 9 students – Catch-up immunizations

Due to the effect of the COVID-19 pandemic response on routine immunization programs in the 2020/2021 school year, an additional analysis was included to assess progress in catching up students for the grade 9 milestone vaccines (tetanus/diphtheria, pertussis, meningococcal quadrivalent). In the 2021/2022 school year, school-based clinics were offered in all HAs including some providing catch-ups for grade 10 students to receive the grade 9 milestone vaccines. Ongoing catch-up will be offered for subsequent years, as required. The same data sources and up-to-date for age definitions as used for grade 9 students were applied to students completing grade 10 by June 30, 2022. Grade 10 coverage was compared with the 2020/2021 grade 9 coverage values and a pre-pandemic value averaged from three years of previous data (from 2017 to 2019). Please note that with population migration, the grade 10 cohort in the 2021/2022 school year is not expected to reflect the same students as the grade 9 cohort in the 2020/2021 school year, particularly as grade 10 is a common year for new students arriving to attend high school in BC. Thus, the comparisons described are of general trends in immunization catch-up.

All three coverage metrics that assess immunization programs delivered in grade 9 (tetanus/diphtheria, pertussis and meningococcal quadrivalent conjugate) had similar trends in catch-up of the 2020/2021 grade 9 cohort, who were in grade 10 in the 2021/2022 school year. All HAs apart from ISLH saw increased coverage between the 2020/2021 grade 9 cohort and the 2021/2022 grade 10 cohort. However, as previously shown in **Tables 1, 3, 5, and 7** above coverage rates in ISLH did not decline as sharply from 2020 to 2021, compared to the other HAs. Most areas had lower grade 10 coverage than the pre-pandemic grade 9 rates. For tetanus/diphtheria and pertussis, there were two HSDAs with grade 10 coverage above the pre-COVID-19 coverage average from 2017 – 2019 (Fraser North and Richmond, **Figure 13 and 14**). For meningococcal quadrivalent conjugate, there was one HSDA with higher than pre-pandemic coverage (Richmond, **Figure 15**). In instances where coverage did not return to pre-pandemic levels it may reflect some ongoing operational impacts of the COVID-19 response (e.g., increases in absenteeism among schoolchildren due to illness, lack of staffing resources in remote and rural areas, or competing priorities in public health departments) or changes in data sources between pre- and post-pandemic periods.

In East Kootenay, Kootenay Boundary, South Vancouver Island and North Vancouver Island HSDAs, the 2021/2022 grade 10 coverage appears lower than the previous year's grade 9 cohort. This reflects changes to the cohort of grade 10s, which can include additional students for whom immunization records have not been added into the PIR. An increase in students with no immunization records would increase the population denominator without adding to the corresponding numerator and result in an underestimation of immunization coverage.

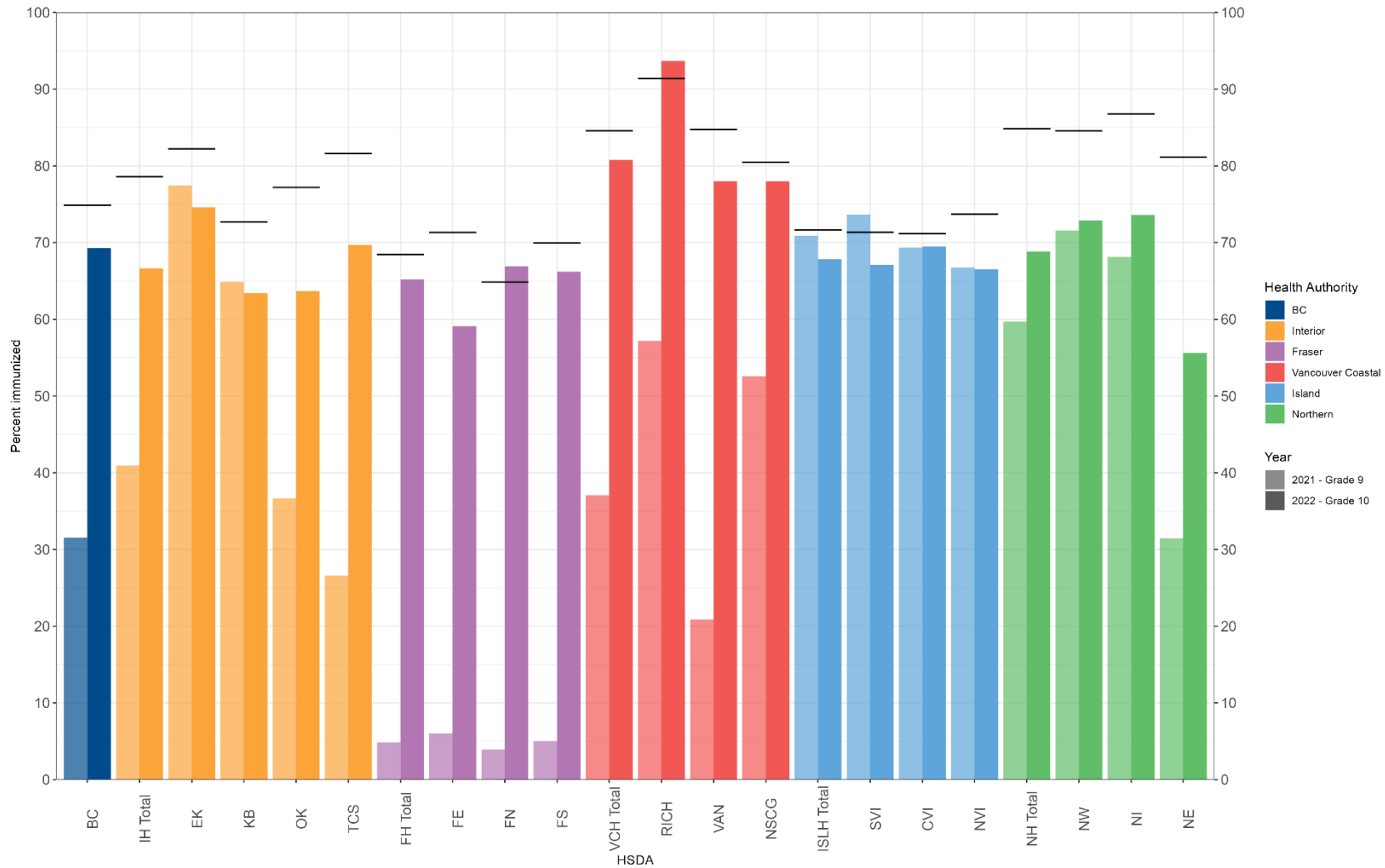


Figure 13. 2020/2021 Grade 9 cohort – Catch-up immunizations: Tetanus/Diphtheria

Horizontal lines indicate pre-pandemic coverage average for tetanus/diphtheria in grade 9 students from the school years ending in 2017 to 2019. Dual axes reflect the same coverage metric and are provided as a visual aid.

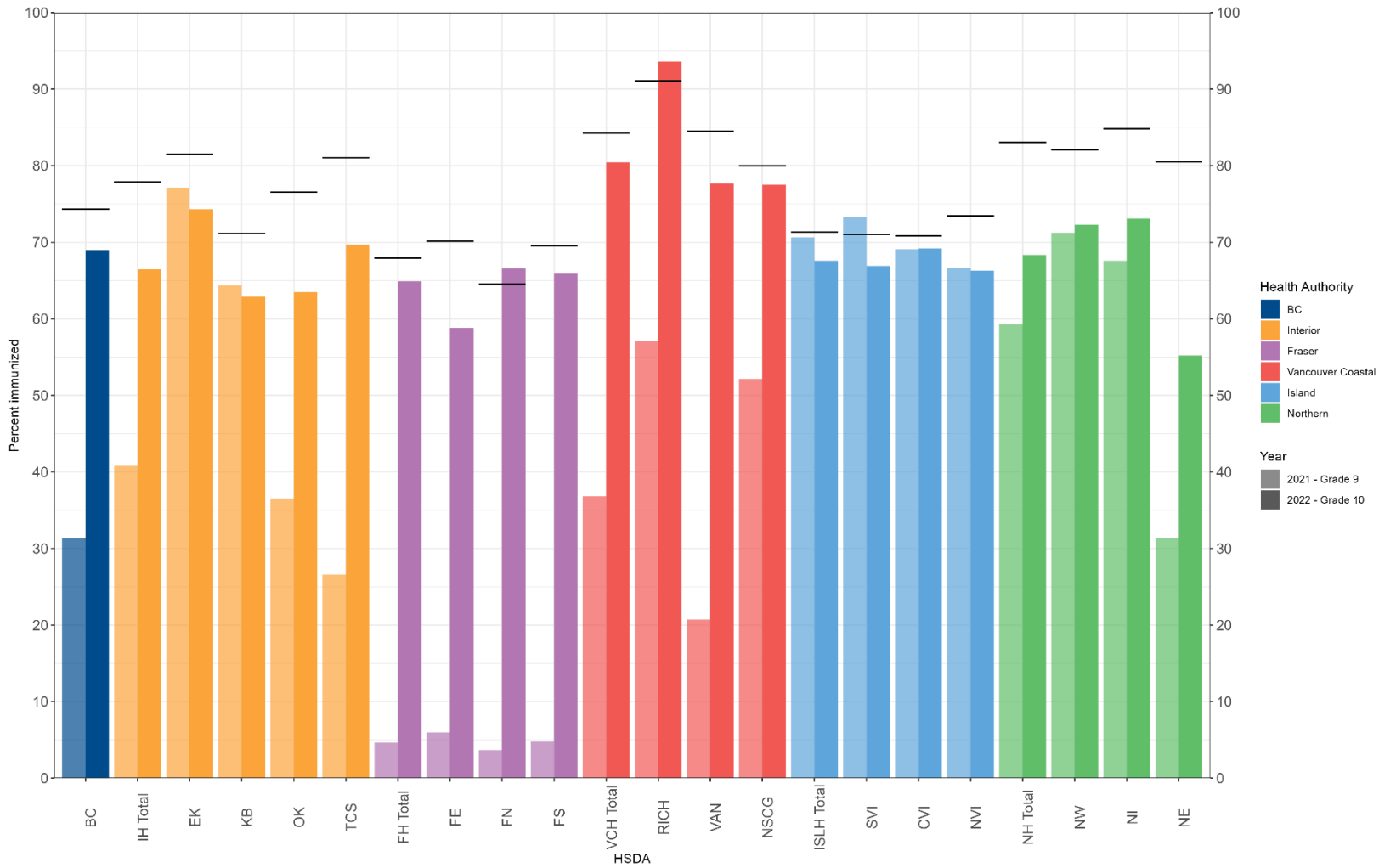


Figure 14. 2020/2021 Grade 9 cohort – Catch-up immunizations: Pertussis

Horizontal lines indicate pre-pandemic coverage average for pertussis in grade 9 students from the school years ending in 2017 to 2019. Dual axes reflect the same coverage metric and are provided as a visual aid.

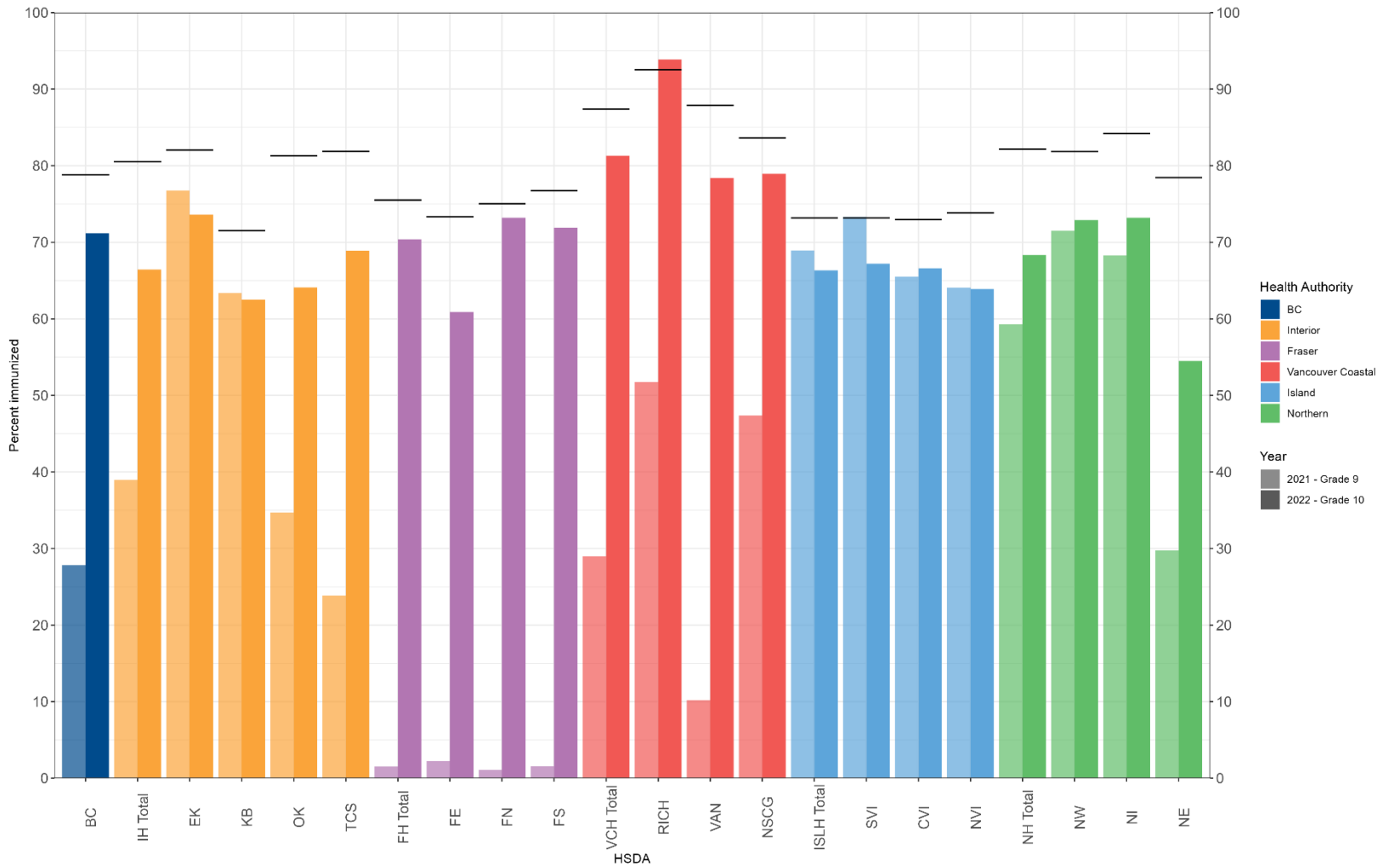


Figure 15. 2020/2021 Grade 9 cohort – Catch-up immunizations: Meningococcal Quadrivalent Conjugate vaccine

Horizontal lines indicate pre-pandemic coverage average for meningococcal quadrivalent conjugate in grade 9 students from the school years ending in 2017 to 2019. Dual axes reflect the same coverage metric and are provided as a visual aid.

Notes

1. Data Sources

Provincial immunization registry (PIR) data based on the grade cohort defined as students whose records indicated they attended school within the region's service area based on Ministry of Education (MoE) enrolment data as recorded in the online MyEdBC system and on student records obtained from schools not participating in MyEdBC. All doses are recorded in the 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 the PIR. Coverage reported for any given year reflects doses recorded as administered up to June 30 of that year (e.g., 2022 coverage is for students completing a grade by June 30, 2022).

Coverage presented in this report is based on data entry to PIR (including transmission from regional registry systems) to July 15, 2022.

2. Up-to-date for Age Definitions

| | |
|--|--|
| Tetanus / Diphtheria | The proportion of students enrolled in grade 9 as of June 30 who completed a primary series of tetanus/diphtheria-containing vaccine before ten years of age and received a tetanus/diphtheria booster dose on or after the tenth birthday and by June 30, or completed a primary series of tetanus/diphtheria-containing vaccine on or after the tenth birthday and by June 30. (See Note #7) |
| Pertussis | The proportion of students enrolled in grade 9 as of June 30 who completed a primary series of pertussis-containing vaccine before ten years of age and received an acellular pertussis booster dose on or after the tenth birthday and by June 30, or completed a primary series of acellular pertussis-containing vaccine on or after the tenth birthday and by June 30. (See Note #7) |
| Meningococcal Quadrivalent Conjugate Vaccine | The proportion of students enrolled in grade 9 as of June 30 who received at least one dose of meningococcal quadrivalent conjugate vaccine in grade 7 or later. |
| HPV (up-to-date/series completion) | The proportion of female and male students enrolled in grade 9 as of June 30 who were up-to-date for age for HPV based on age at commencement of series. |
| HPV (series initiation, but not completion) | The proportion of female or male students enrolled in grade 9 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. |

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 Doses](#)

For HPV, data are shown for series completion, and series initiation but not completion; these categories are mutually exclusive.

3. Changes in Data Sources

The data sources used for each of the HAs have changed over time as follows:

| Health Authority | Year | | | | | | | | | | |
|------------------|-----------------------------------|--------------|------|------|------|-----------|------------|------|-----------|------|------|
| | 2012 and Earlier | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| IH | Health Authority Summary Reports* | | | | | | Pan-Grade* | | | | |
| FH | Health Authority Summary Reports | | | | | | Pan-Grade | | | | |
| VCH | Health Authority Summary Reports | | | | | | | | | | |
| ISLH | Health Authority Summary Reports | Pan-Year/MoE | | | | Pan-Grade | | | | | |
| NH | Health Authority Summary Reports | | | | | | | | Pan-Grade | | |

Health Authority Summary Reports: HAs provided summary reports including the number of students in grade 9 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 PIR records were included for children with active records that indicated they were in grade 9 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 9 during the school year of interest with active records in PIR who were up-to-date for the specified agent. The denominator was the number of children in the birth cohort of interest attending grade 9 in schools within the health authority, based on estimates derived from BC MoE enrolment statistics.

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

- The numerator used to calculate percent uptake was the number of students enrolled in grade 9 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).
- Unless otherwise indicated, the denominator used to calculate percent uptake was the number of students enrolled in grade 9 as of June 30 of the specified year, according to class lists in PIR or PARIS (for VCH).
- Students were included in the numerator and denominator if they had a value of 'Grade 9', 'Home Schooled', or 'Secondary ungraded' in the Grade variable in PIR, and met the required birth date range. For the 2022 report, students born between January 1, 2006 and December 31, 2008 were included.
- Some regions have been unable to routinely ascertain completion of the primary series for tetanus/diphtheria and pertussis. In these regions, the numbers reported represent the proportions of students enrolled in grade 9 as of June 30 who received any tetanus/diphtheria- or pertussis-containing vaccine within the past five years and by June 30, regardless of whether the primary series was complete. The regions unable to completely ascertain primary series completion in tetanus/diphtheria and pertussis were:

| Years | Regions |
|-----------|--|
| 2012 | IH, FH, ISLH, and the rural coastal part of NSCG |
| 2013-2014 | IH, FH, ISLH |
| 2015 | FH, ISLH |
| 2016-2017 | FH |

- 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 ISLH in 2014-2017 are likely over-estimates resulting from the use of different data sources for numerators and denominators.

9. Due to a difference in methods used for enumerating the numerator and denominator, the ISLH 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 (Panorama) in July 2013, ISLH 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 9 enrolment; denominators were aggregate data from the BC MoE's data on enrolment in grade 9 to attempt to account for those who have moved out of ISLH. This change has led to inaccurate ascertainment of coverage rates, which may be higher or lower than true coverage rates depending on the antigen.
10. Due to the difference in methods used to calculate coverage in the Rutland branch in the Okanagan HSDA in 2017, the Okanagan and IH results, and corresponding provincial data for 2017 are not directly comparable to previous years.
11. Due to changes in data sources used to calculate coverage in IH, ISLH, and FH from 2018, and NH from 2020, the FH, ISLH, IH, and NH corresponding provincial data are not directly comparable to previous years. This affects catch-up analyses for NH in particular since pre-pandemic coverage rates were calculated using different data sources.
12. Due to ongoing development of the interfaces between the NH and FH health information systems and the PIR, supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) is not complete. Therefore, the proportion of partially immunized and unimmunized grade 9 students with unknown reasons for non-immunization is likely to be overestimated for these HAs. The proportion of children partially immunized or unimmunized due to refusals or contraindications is likely to be underestimated.
13. In the 2020/2021 school year, ongoing prioritization of the COVID-19 pandemic response affected some of the public health resources available for school-based immunization programs. This was most significant in FH, which did not complete any school-based clinics in the 2020/2021 school year. In the 2021/2022 school year, school-based clinics were offered in all HAs including some providing catch-ups for grade 10 students to receive the grade 9 milestone vaccines. Ongoing catch-up will be offered for subsequent years, as required. In instances when coverage did not return to pre-pandemic levels it may reflect some ongoing operational impacts of the COVID-19 response (e.g., increases in absenteeism among schoolchildren due to illness, lack of staffing resources in remote and rural areas, or competing priorities in public health departments) or changes in data sources between pre- and post-pandemic periods.
14. The COVID-19 pandemic was declared in March 2020. This pandemic initially resulted in a province-wide shut down, which impacted the provision of public health services including routine immunization services. As a result, some coverage rates were lower in 2020 than previous years, particularly for the doses scheduled to be received in the last few months of the 2019/2020 school year.
15. Due to migration, the grade 10 2021/2022 cohort included in the additional catch-up analysis for 2022 may not reflect the exact same students included in the 2020/2021 grade 9 coverage assessments in 2021. This is expected to affect some areas more than others, particularly those that have a larger influx of new students in grade 10 to attend high school.
16. Starting in 2018 for FH, IH and ISLH and 2020 for NH, school and grade information is attached to students' records in the PIR in two ways:
 - a. For schools using either the MyEdBC or the CIMS information systems and who have signed a letter of agreement, information is uploaded from a MoE extract into PIR using a tool called STIX. As of June 2022 and for the 2021/2022 school year, this process included 94% of students in schools registered with the BC MoE. HA staff reconcile the school information against the PIR record when discrepancies occur.
 - b. For schools using other information systems, HA staff may manually enter or upload the school and grade information. The process of adding enrolment details may not be completed for all HAs and grades. Most HAs prioritize milestone grades for enrolment data entry (kindergarten, Grade 6 and Grade 9) and a small number of schools may not make their class lists available.

Gaps are expected for FH, for which non-MyEdBC enrollment data is entered into FH PARIS but not PIR (approximately 3% of all FH students), and NH (approximately 6% of all NH students).

17. Coverage results by HA and HSDA are reported based on the location of the school.
18. The following school types are included in the PIR: Alternate, Distance, Distance Learning, Independent, Long Term Program, Self-Directed, Short Term Program, and Standard.
19. The Gender variable in the PIR contains the following values: Male, Female, Undifferentiated, Unknown. For the purpose of this report, only coverage for males and females were reported in the tables stratified by gender as the proportion of those in the Undifferentiated and Unknown categories comprise <0.01% of the total population. Those in the Undifferentiated and Unknown categories are included in the tables that report coverage values for the total population.
20. Due to HPV program changes in the 2014/15 school year, HPV coverage statistics could not be obtained for three schools in the Fraser East, eleven schools in the Fraser South, and three schools in the Okanagan HSDAs. These schools account for approximately 13%, 27%, and 36% of grade 9 girls in Fraser East, Fraser South, and Okanagan, respectively.
21. In 2015, one school in the Kootenay Boundary HSDA did not provide public health with grade 9 class lists. As the children attending this school could not be identified, they could not be included in the immunization coverage analysis. Based on information posted on the BC MoE's website, this school accounted for approximately 0.9% of grade 9 students in Kootenay Boundary.
22. In 2017, the first year of the meningococcal quadrivalent conjugate vaccine program for grade 9 students, some parents are believed to have refused the vaccine for their children, thinking it was the same as the meningococcal C conjugate vaccine their children received in grade 6.
23. While all grade 9 students attending BC schools are intended to be included in this report, records for some students may be incomplete. Examples may include those 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.
24. International students who attend school in BC are classified into two categories in the PIR based on their length of stay: 1) short stay (<6 months) and 2) long stay (≥6 months). HAs attempt to collect immunization records for all long stay students in the province, however the length of stay is unknown for the majority of international students in the registry. Thus, immunization records may be incomplete for international students and coverage is likely underestimated for this population.
25. 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.

Acknowledgements

We acknowledge all BC health authorities in the contribution of information for this report.

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Appendix

Table A1. Up-to-date and reasons for non-immunization definitions

| Measure | Definition |
|---|--|
| Partially Immunized with Contraindication | <p><i>For agents/antigens requiring more than one dose.</i></p> <p>Does not meet any of the previous definitions AND Received at least one valid dose of the agent/antigen of interest AND Type of Special Consideration = Contraindication AND Reason for Special Consideration is valid for the agent/antigen of interest AND Special Consideration Effective From Date <= June 30 AND Special Consideration Effective To Date > June 30 OR <blank></p> |
| Partially Immunized with Refusal | <p><i>For agents/antigens requiring more than one dose.</i></p> <p>Does not meet any of the previous definitions AND Received at least one valid dose of the agent/antigen of interest AND Type of Special Consideration = Exemption Reason for Special Consideration = Client Refusal OR Parental/Guardian Refusal Special Consideration Effective From Date <= June 30</p> |
| Partially Immunized - Unknown | <p><i>For agents/antigens requiring more than one dose.</i></p> <p>Does not meet any of the previous definitions AND Received at least one valid dose of the agent/antigen of interest</p> <p>Note: This category will include children with at least one valid dose of the agent/antigen of interest. These children may have any of the following: invalid doses recorded; invalid refusals, exemptions, or contraindications for the agent/antigen of interest; valid refusals, exemptions, or contraindications that do not apply to the agent/antigen of interest; or no recorded refusals, exemptions, or contraindications for any agent/antigen.</p> |
| Unimmunized with Contraindication | <p>Does not meet any of the previous definitions AND Has no recorded valid dose(s) of the agent/antigen of interest AND Type of Special Consideration = Contraindication AND Reason for Special Consideration is valid for the agent/antigen of interest AND Special Consideration Effective From Date <= June 30 AND Special Consideration Effective To Date > June 30 OR <blank></p> |
| Unimmunized with Refusal | <p>Does not meet any of the previous definitions AND Has no recorded valid dose(s) of the agent/antigen of interest AND Type of Special Consideration = Exemption Reason for Special Consideration = Client Refusal OR Parental/Guardian Refusal Special Consideration Effective From Date <= June 30</p> |

| Measure | Definition |
|-----------------------|--|
| Unimmunized - Unknown | <p data-bbox="410 275 1146 344">Does not meet any of the previous definitions AND Has no recorded valid dose(s) of the agent/antigen of interest</p> <p data-bbox="410 386 1354 571">Note: This category will include children with no recorded valid dose(s) of the agent/antigen of interest. These children may have any of the following: invalid doses recorded; invalid refusals, exemptions, or contraindications for the agent/antigen of interest; valid refusals, exemptions, or contraindications that do not apply to the agent/antigen of interest; or no recorded refusals, exemptions, or contraindications for any agent/antigen.</p> |

Table A2. Minimum Intervals Between Doses

| Antigen/Agent | Minimum Age or Minimum Time Interval Between Eligible Doses | | | |
|---|--|----------|-----------------------|-----------------------|
| | Dose 1 ^A | Dose 2 | Dose 3 | Dose 4 |
| Tetanus/Diphtheria and Pertussis | | | | |
| Series started at any age | 42 days | 28 days | 28 days | 24 weeks ^B |
| Dose 1 received after 1 year and dose 3 after 10 years of age | 1 year | 28 days | 24 weeks ^C | |
| Meningococcal Quadrivalent Conjugate | 11 years + 8 months | | | |
| HPV | | | | |
| 2 Dose schedule (for dose 1 received age 9 to 14 years) | 9 years | 150 days | | |
| 3 Dose schedule (for dose 1 received age 15+ years) | 9 years | 28 days | 12 weeks ^D | |

- A. Dose 1 refers to the earliest age a child can receive the initial dose.
- B. Most children immunized according to BC schedule would have received 6 doses. To be considered up-to-date, the last dose must be received on or after 10 years of age.
- C. To be considered up-to-date, dose 3 must be received on or after 10 years of age.
- D. Dose 3 must be given at least 24 weeks after dose 1.