Immunization coverage at the 7th birthday in British Columbia

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Background

• Measles, mumps, rubella, diphtheria, tetanus, and pertussis are vaccine-preventable diseases that can cause serious complications. (1,2)
• Achieving high vaccination coverage (≥95%) is deemed necessary for prevention of sustained disease transmission, particularly for pertussis and measles. (3)
• British Columbia (BC) is signatory to national targets to achieve 95% 2 dose MMR (measles, mumps and rubella) and 5 dose DTaP (diphtheria, tetanus, and pertussis) vaccine coverage by the 7th birthday by 2025. (4)
• Annual provincial immunization coverage estimates show a gradual and consistent decline over the past decade in the percentage of children at the 7th birthday who are up to date for MMR and DTaP vaccine in BC. (5)
• Coverage rates in recent years for these antigens are approximately 20% below the national target of 95%. Reasons for these suboptimal rates are unclear, therefore further investigation is needed.
• Currently, provincial immunization coverage estimates only include doses given prior to the 7th birthday, however children may receive missing vaccines after the 7th birthday.

Objective

• To assess completion of ‘school entry’ doses beyond the current cut-off point (prior to 7th birthday) to quantify delayed dose receipt as a contributor to suboptimal immunization coverage rates.

Methods

• Measles-containing and tetanus-containing vaccine coverage estimates by the 7th birthday for 2022 and 2023 were calculated using data from the provincial immunization registry (PIR; Panorama) with and without inclusion of doses given on or after the 7th birthday.
• This includes children who turned 7 in 2021 (born in 2014) and 2022 (born in 2015), respectively.
• Doses given after the 7th birthday included those administered up until the date of data extraction (July 15, 2022 for those born in 2014, and July 31, 2023 for those born in 2015).
• Denominator: the number of children who turned 7 years old in the year preceding the report year with active records in the PIR (Panorama) and with immunization registry records indicating they were registered in a BC school as of June 30 of the school year.
• Numerator: the number of children from the denominator who were up-to-date for measles-containing or tetanus-containing vaccine.
• Exclusions: Vancouver Coastal Health (VCH) was excluded from analysis as coverage for this health authority is calculated from a regional registry.

Results

• Coverage calculated based only on doses given before the 7th birthday was 70.9% in 2023 and 76.4% in 2022 for measles-containing vaccines. After including doses given on or after the 7th birthday, coverage was 73.2% in 2023 and 78.5% in 2022, increases of 2.3% and 2.1%, respectively (Figure 1).
• For tetanus-containing vaccines, coverage calculated based on doses given before the 7th birthday was 70.4% in 2023 and 75.9% in 2022. After including doses given on or after the 7th birthday, coverage was 72.6% in 2023 and 77.9% in 2022, increases of 2.2% and 2.0%, respectively (Figure 2).
• Most children who turned 7 in 2021 and 2022 had received their most recent measles and tetanus-containing vaccine doses within the recommended age interval (48-72 months; Figures 3-6), with only a small proportion administered after the 7th birthday.

Conclusion

• Assessing doses given beyond the 7th birthday resulted in increases in coverage ranging from 2.0-2.3% for measles-containing and diphtheria/tetanus-containing vaccines, although most doses were given within the recommended age interval.
• Although this is an improvement, coverage estimates continue to remain below the 95% national target (4).
• Activities such as collecting missing immunization records and offering additional opportunities for catch-up are needed to further increase coverage.
• Additional research, such as surveys with parents of unimmunized children, may provide further insight as to reasons for the declines in measles and tetanus-containing vaccines in recent years.

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References