

Measles Epidemiological Summary, British Columbia 2018

Measles is a highly contagious, acute viral illness preventable by measles vaccine. With adoption of the measles elimination goal for the Pan American Health Organization region, British Columbia (BC) introduced a the second dose of measles vaccine into the routine childhood immunization program in 1996, in conjunction with a measles vaccine campaign for elementary through post-secondary students conducted in the same year. Canada has been free of endemic measles (defined as an identifiable chain of transmission lasting over 12 months) since 1998 and measles was declared eliminated in the Americas in 2002. However, measles cases and outbreaks continue to occur in Canada due to periodic importation.

Measles in BC in 2018

In 2018, there were nine reported cases of measles in British Columbia. Three of these cases were visitors to Canada. Of the six cases of measles among BC residents, three acquired infection during out of country travel (imported), and three acquired their infection within BC (import-associated). All cases occurred in June through November. See Figure 1 for the distribution of 2018 cases by epidemiological week of rash onset.

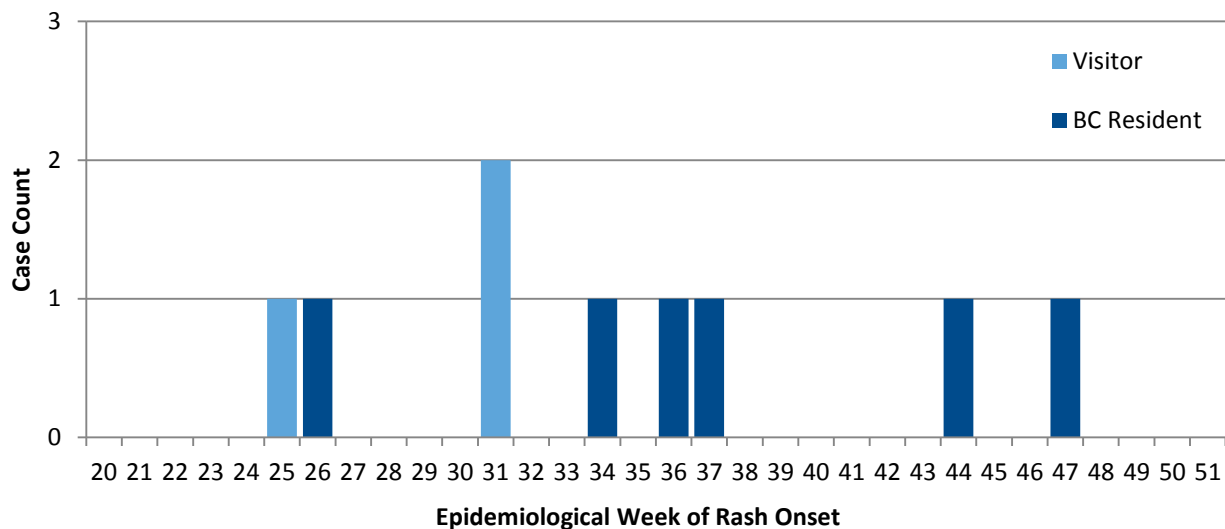


Figure 1: Number of confirmed cases of measles by epidemiological week, British Columbia, 2018

Chronological Summary of Cases in 2018

The first case occurred in June and was an out of country visitor with genotype B3. A second case in June occurred in a BC resident who had known travel to India, and had a D8 genotype, reference strain MVs/British Columbia/25.18. No subsequent transmission events occurred from either case.

In August two cases of measles were identified in out of country visitors. The first of these cases boarded a cruise ship from the Canada Place terminal, with resultant transmission to a BC resident at

the terminal. This secondary case transmitted measles to a household contact, which was confirmed in September. Genotype D8, reference strain MVs/Osaka.JPN/29.15/, was identified in all three cases.

The second August measles case in an out of country visitor lead to no further transmissions. Genotype D8, reference strain MVi/Hulu Langat.MYS/26.11/ was identified.

A September case of measles in a BC resident without any recognized source and no history of travel outside BC was confirmed as genotype D8, reference strain MVs/Gir Somnath.IND/42.16/, a strain known to be circulating in Ukraine and different from the other D8 strains identified earlier in the year.

In November, measles was confirmed in a BC resident whose history was compatible with acquisition in the Philippines. This case resulted in transmission to a single secondary case exposed in a congregate setting. Genotype B3, reference strain MVs/British Columbia.CAN/44.18 was identified in both cases.

Age group, sex, regional health authority of residence, and vaccination history of the 6 cases among BC residents are shown in Table 1. Five cases reported visiting an emergency department, and two cases were hospitalized, with full recovery.

Table 1: Characteristics of confirmed measles cases among residents of British Columbia (N=6), 2018

Characteristic	Measles cases	
	n	(%)
Age group (years)		
<10	0	-
10-19	3	(50)
20-29	3	(50)
30 +	0	-
Sex		
Male	1	(17)
Female	5	(83)
Regional Health Authority		
Fraser Health	4	(67)
Interior Health	0	-
Northern Health	0	-
Vancouver Coastal	2	(33)
Vancouver Island Health	0	-
Vaccination history*		
0 doses	0	-
1 dose documented	1	(16.67)
2 doses documented	3	(50)
Undocumented childhood vaccines	1	(16.67)
Unknown	1	(16.67)

*Percentages may not add up to 100% due to rounding. For information about measles vaccination recommendations in BC and interpretive information, see Appendix.

Acknowledgements

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APPENDIX.

Two doses of the measles, mumps and rubella (MMR) vaccine are recommended for individuals born after 1970 and healthcare workers born after 1957 to provide protection against measles. The routine childhood schedule for BC children is: 1st dose at 12 months of age, and 2nd dose at school entry (4-6 years of age). Adults born prior to 1970 are assumed to have been previously infected with measles and are generally considered immune. More details are available in the MMR pages of [Part 4, Biological Products, Chapter 2, Immunization, Communicable Disease Manual](#).

To help understand why a high proportion of cases will occur among vaccinated individuals when a vaccine is highly effective and most people are vaccinated, see pages 1056-7 on Screening, and Figure 1 on page 1057, in the following source: Orenstein WA, Bernier RH, Dondero TJ et al. Field Evaluation of Vaccine Efficacy. Bulletin of the World Health Organization. Available at:

<https://apps.who.int/iris/bitstream/handle/10665/265195/PMC2536484.pdf?sequence=1&isAllowed=y>

A lay explanation of this 'vaccine paradox' is available on the World Health Organization web page titled "The majority of people who get disease have been vaccinated" as one of the Six Common Misconceptions About Immunization, available at the following link:

https://www.who.int/vaccine_safety/initiative/detection/immunization_misconceptions/en/index2.html

Alternately, you may prefer the following illustrative example:

A class has 100 students, and 95 are vaccinated with measles vaccine. The 5 unvaccinated students are susceptible (not immune) to measles. Because the vaccine is 95% effective, 90 of the vaccinated students are immune to measles, but 5 vaccinated students remain susceptible (not immune).

If the students are all exposed to measles by a highly infectious case, we could expect all 10 susceptible individuals to become infected. Of these ten students with measles, 5 (50%) are among previously vaccinated, and 5 (50%) are among unvaccinated. Amongst unvaccinated students 5 out of 5 became infected (100%), but among vaccinated students, only 5 out of 95 became infected (5.3%).

