

## Measles Epidemiological Summary, British Columbia 2019 year to date – March 7<sup>th</sup>

Measles is a highly contagious, acute viral illness preventable by measles vaccine. From 2013 through 2017, there were less than five confirmed cases of measles annually in British Columbia (BC). In 2018, nine cases of measles were reported; three of these cases were out of country residents visiting BC.

### Measles in BC in 2019

As of March 7<sup>th</sup>, seventeen confirmed cases of measles have been reported in 2019 amongst BC residents. None have been linked to the measles outbreak in Washington State, with the epicentre in Clark County, which began January 1, 2019.<sup>1</sup>

Two cases with rash onset in January and one case in February, respectively, were adults who acquired measles during travel to the Philippines, where a large measles outbreak is ongoing.<sup>2</sup> A separate case with no out-of-country travel occurred in February.<sup>3</sup> While this case had no clear epidemiologic links to earlier BC cases, the measles virus genotype is B3, as for the earlier cases imported from the Philippines.<sup>4</sup>

In a separate series of events beginning in late January, three school-age children who acquired measles infection while traveling in Vietnam returned to Vancouver. They developed symptoms immediately prior to travel or upon return, and resulted in transmission to 5 other students. An additional 5 cases have been identified among those exposed in medical settings or households. The measles virus genotype associated with this outbreak is D8.<sup>4</sup>

**Table 1:** Confirmed cases of measles by age group, British Columbia, 2019 to March 7

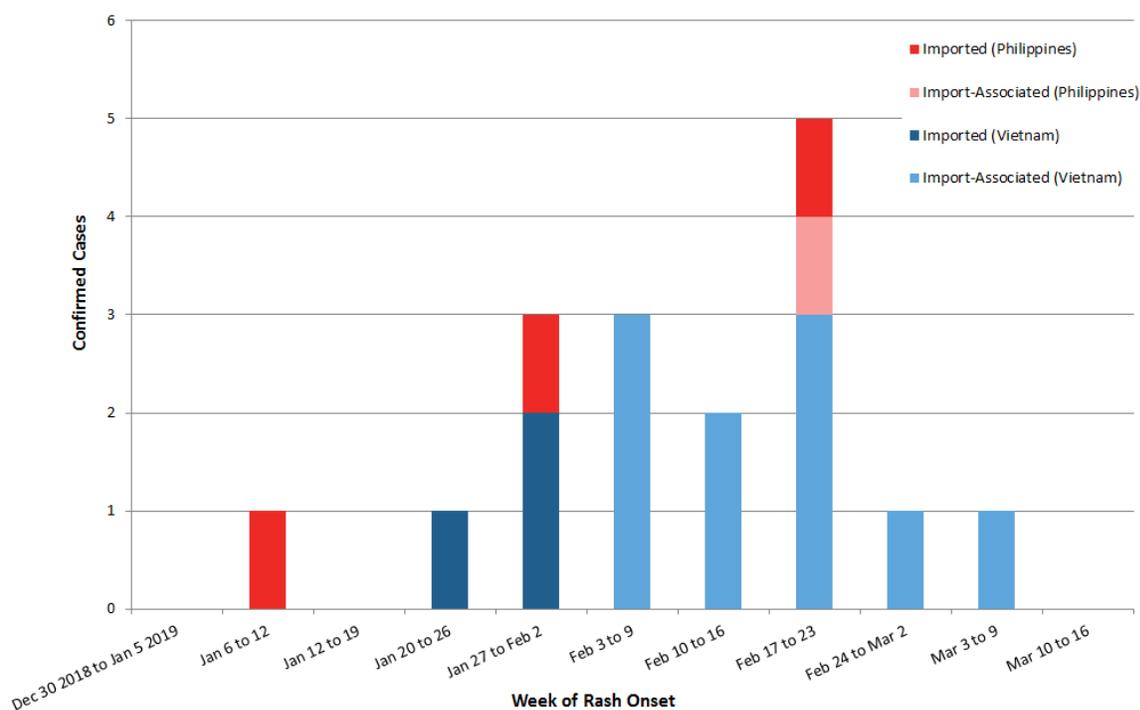
Age Group	Number of Confirmed Cases
<1 year	0
1 to 4 years	1
5 to 9 years	0
10 to 19 years	10
20 to 29 years	3
30 to 39 years	2
40 to 49 years	1
<b>Total</b>	<b>17</b>

<sup>1</sup> For information on the measles outbreak in Washington State:  
<https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/Measles/MeaslesOutbreak>

<sup>2</sup> For information on the measles outbreak in the Philippines:  
<https://travel.gc.ca/travelling/health-safety/travel-health-notices/195>

<sup>3</sup> For exposure information from Vancouver Coastal Health:  
<http://www.vch.ca/about-us/news/news-releases>

<sup>4</sup> Source: National Microbiology Laboratory, Public Health Agency of Canada



**Figure 1:** Confirmed cases of measles by epidemiological week, British Columbia, 2019 to March 7

Vaccination history of the measles cases is shown in Table 2. Undocumented doses are those for which a verbal history is provided without substantiating records. For information about measles vaccination recommendations in BC and interpretive information for Table 2, see Appendix.

**Table 2:** Confirmed measles cases by immunization status in British Columbia, 2019 to March 7

Immunization Status	Number of Confirmed Cases
0 doses	7
1 dose undocumented	1
2 doses undocumented	2
1 dose documented	1
2 doses documented	6
<b>Total</b>	<b>17</b>

In an event unrelated to the above outbreak, a Canadian traveler returning from the Philippines to the Northwest Territories transited through Vancouver International Airport, overnighing in Richmond from February 11<sup>th</sup> through 12<sup>th</sup>, resulting in public notification about potential exposures. This case is not counted as a BC case.

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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: 1<sup>st</sup> dose at 12 months of age, and 2<sup>nd</sup> 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 of the population 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](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%).

