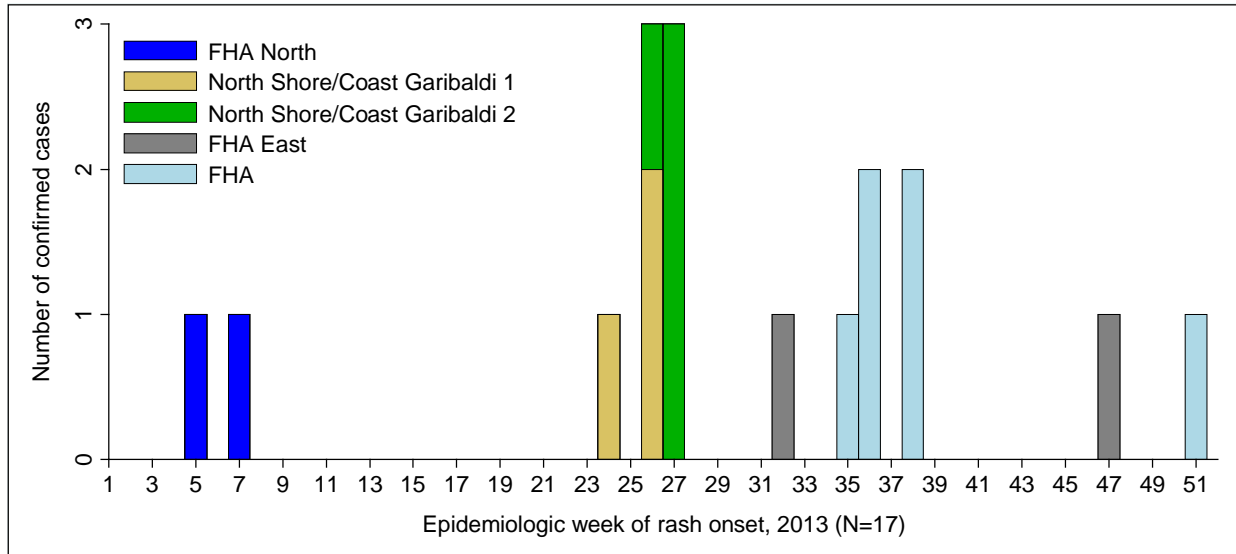


## Measles Epidemiological Summary, British Columbia 2013 Epidemiologic weeks 1 to 52

In British Columbia in 2013, 17 confirmed measles cases were reported (Figure 1). In the prior three years, 2 cases were reported in 2012, 10 in 2011, and 78 in 2010 with most in that year related to an outbreak associated with the winter Olympics. From 2003 through 2009, there were 0 to 4 cases reported annually.



**Figure 1:** Number of confirmed cases of measles by week of rash onset and geographic location, British Columbia 2013

### Summary

Five of the 17 measles cases in 2013 were hospitalized: two were unimmunized infants less than one year old, one was an unimmunized child, one was an unvaccinated adult, and one was an adult with an undocumented history of childhood vaccination.

Four distinct genotypes were identified and there were at least six separate importations: one from Thailand, one from the Philippines, two separate importations from the Netherlands, and two genotypes identified with an unknown source of importation as cases arose without a travel history or link to a travel associated case. The increased importations in 2013 reflect the elevated levels of measles activity in much of the world including Europe

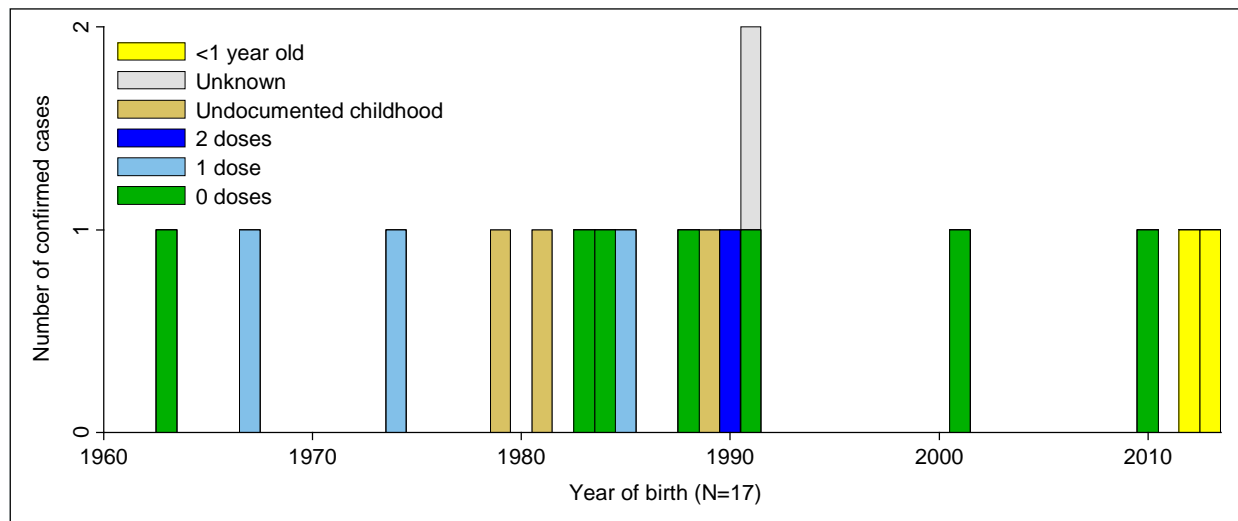
([http://www.who.int/immunization\\_monitoring/diseases/measles\\_monthlydata/en/index.html](http://www.who.int/immunization_monitoring/diseases/measles_monthlydata/en/index.html)).

Multiple importations were a feature of the 2010 measles outbreak in BC as well as the large Quebec measles outbreak in 2011 (De Serres, JID 2013; <http://www.ncbi.nlm.nih.gov/pubmed/23264672>).

Imported index cases were not identified in up to three of the clusters (North Shore/Coast Garibaldi cluster 2, FHA East week 32 case, FHA August/September cases) suggesting unrecognized earlier measles in these communities.

Two clusters in North Shore/ Coast Garibaldi are shown as distinct, because of lack of identifiable connections based on epidemiologic investigations. However, the genotype identified in both may have been the same based on the nucleoprotein (N) and hemagglutinin (H) genes identified although whole genome sequencing was not conducted to confirm homology.

Four cases in 2013 were among children: two infants less than one year old, a preschool age child who was unimmunized, and an unimmunized school age child. Thirteen cases were adults, including two born before 1970, the year of birth prior to which immunity from wild type infection can be assumed as recommended by the National Advisory Committee on Immunization.



**Figure 2:** Number of confirmed cases of measles by year of birth and immunization status, British Columbia 2013

**Chronological summary of 2013 measles importations/ clusters:**

**FHA North cases (January/February)**

A young adult male was infected in Thailand (genotype D8, MVi/Villupuram.IND/03.07) but had symptom onset after return to BC and was hospitalized for four days. The secondary case was a household contact and visited an emergency department but was not hospitalized. Both cases were in their 20s, and were unimmunized.

**North Shore/Coast Garibaldi clusters 1 and 2 (June/July)**

There were two measles clusters reported in June and July in Vancouver Coastal Health but no link between the clusters was identified. Cluster 1 had three cases. The index case (genotype D8, MVs/Frankfurt Main.DEU/17.11-variant) was consistent with infection acquired at Vancouver International Airport, having traveled through the airport on the same date as three children visiting from Ontario who subsequently developed measles compatible with an exposure common to the BC case; the same genotype was identified. Alternately the index case could have been infected during travel to New York City, where there was an ongoing measles outbreak. Two of the cluster 1 cases were 45 to 49 years old (born prior to 1970) and the third was 35-39 years old. Two cases gave a verbal history of one dose of measles-containing vaccine and one case was unvaccinated against measles.

Cluster 2 had four cases including three secondary. Measles virus was isolated from two and the genotype was D8 (MVs/Frankfurt Main.DEU/17.11-variant), the same as for cluster 1. All of the cluster 2 cases were aged 20-29; the index case was unvaccinated against measles, one case had a verbal history of childhood vaccinations, one case had a record of receipt of one dose of MMR vaccine, and one case had 2 documented doses.

#### **FHA East cases (August and November)**

One case aged 20-29 years was reported in FHA East in early August and was confirmed to be genotype D8 (MVs/Taunton.GBR/27.12-variant). This case was an unvaccinated member of a faith-based community that objects to vaccination. Public health investigation uncovered that two of the case's siblings had clinical illness compatible with measles in July; these are not included in the cases reported herein as the case definition for surveillance was not met. One had visited the Netherlands during a period compatible with acquisition.

One case aged 10-19 years was reported in FHA East in mid-November. This case was unvaccinated against measles, had a travel history consistent with acquisition in the Netherlands, and was also genotype D8 (MVs/Taunton.GBR/27.12-variant).

The Netherlands experienced a large outbreak of measles during 2013 with the same genotype identified (Knol MJ et al. Euro Surveill.

2013; <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20580>.

#### **FHA cases (August, September, and December)**

Five confirmed measles cases were reported from late August to mid-September, four among residents of FHA and one in a resident of VCH who was a contact of an FHA case. None had a history of travel. No exposures to febrile rash illness or measles were identified for the initial three cases with rash onset in weeks 35 and 36, and they were not linked to each other. Both cases in week 38 were epidemiologically linked to the same case in week 36. One case was reported in December, week 51, with travel consistent with acquisition in the Philippines.

Three cases were unvaccinated children: two were infants less than one year and one aged 1 to 4 years. Three were adults: one in their 20s with unknown vaccination status; two in their 30s with a verbal history of receipt of childhood vaccines. All six of these cases were genotype B3 (MVi/Harare.ZWE/38.09-variant) which has been associated with several measles importations to Canada from the Philippines, was circulating in the Eastern Mediterranean WHO region and was also detected in the UK.

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