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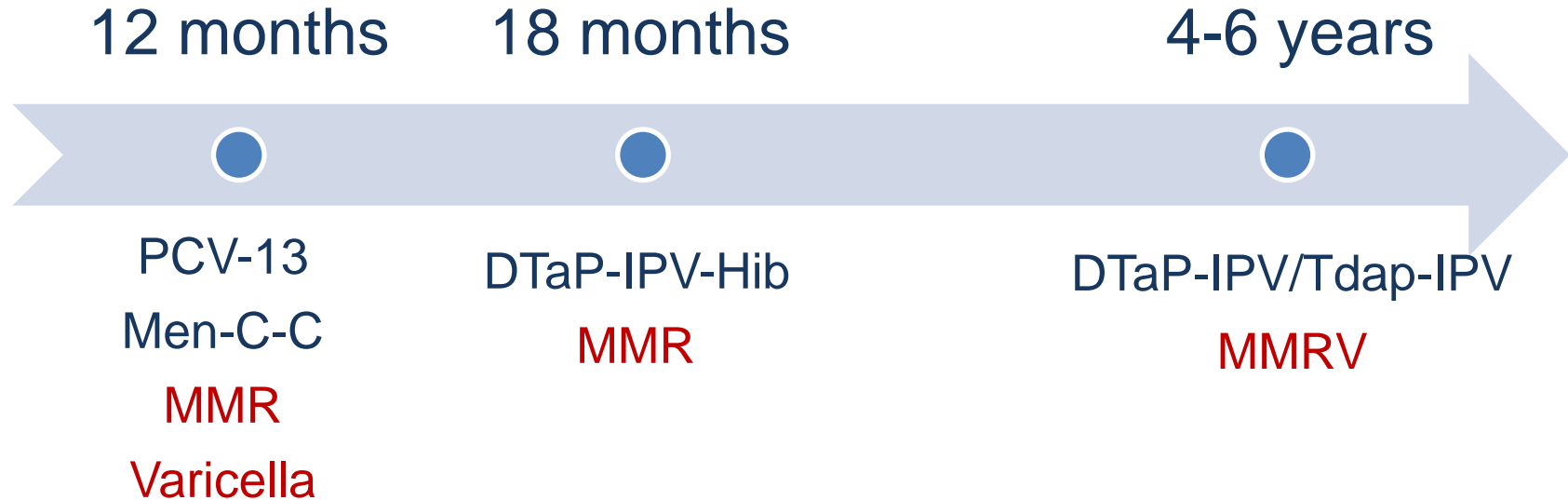
# Impact of Moving the Second Dose of MMR from 18-months to School Entry in British Columbia

Presented by: Samara David and Chelsea Treloar  
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# Disclosure Statement

We have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.

## BC Routine Immunization Schedule: 2012-2018



## Rationale for Program Change:

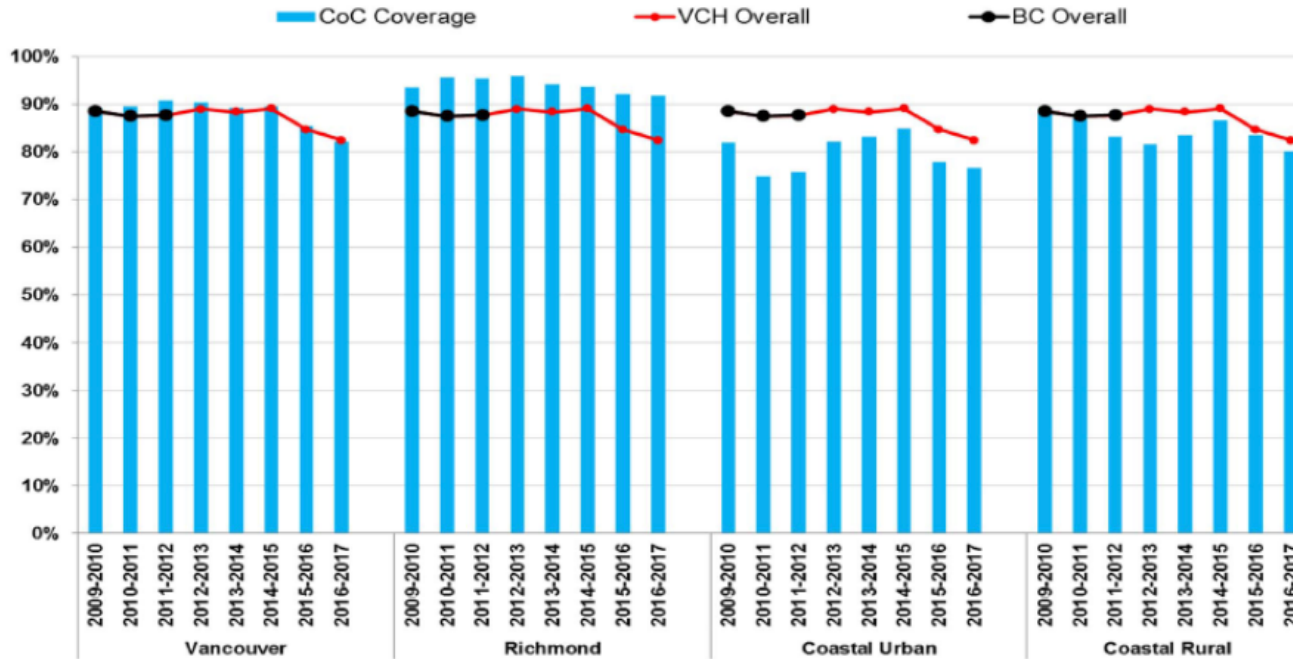
Add 2<sup>nd</sup> dose  
of Varicella

- Address potential for primary and secondary varicella vaccine failure

MMRV at  
school entry

- One fewer injection (at 18 months)
- Cost savings
- Potential for reducing risk of febrile seizures
- Prolong duration of varicella protection

## Measles Vaccine Coverage among Kindergarteners by CoCs Vancouver Coastal Health, 2009/2010 - 2016/2017 Academic Year



Data source: VCH Primary Access Regional Information System  
Prepared by: Public Health Surveillance Unit, Vancouver Coastal Health, November 2017

To assess the impact of the schedule change on:

1. Vaccine uptake
2. Population measles susceptibility
3. Adverse events following immunization



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# Vaccine Uptake

## Immunization registry data

- 3 of 5 regional health authorities in BC
- Uptake of 2 doses measles-containing vaccine

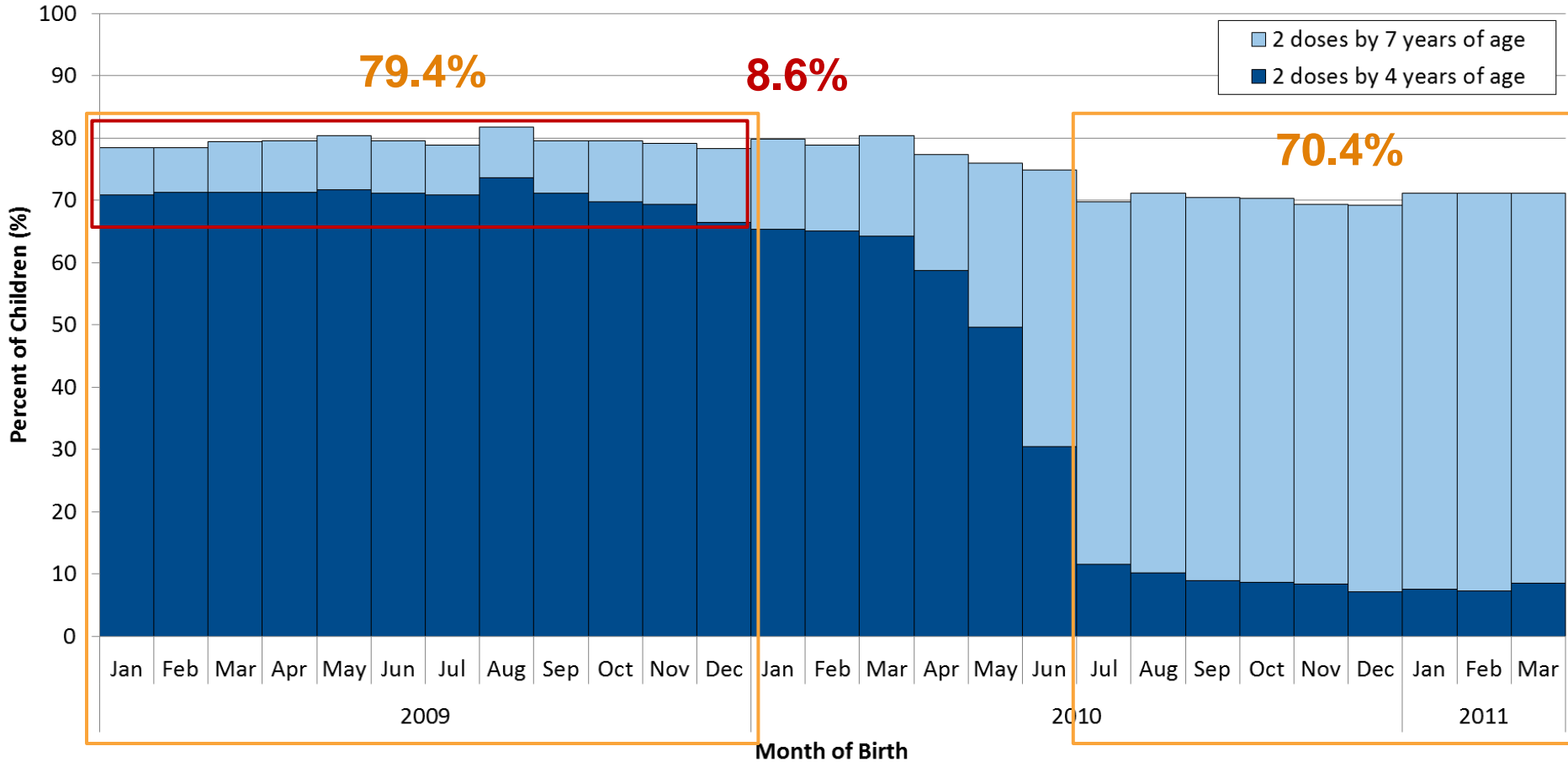
MMR at 18 months  
(born in 2009)

vs

MMRV at School Entry  
(born July 1, 2010-March 31, 2011)



# Percent of Children with Two doses of Measles-containing Vaccine by Age at Assessment and Month of Birth Fraser, Interior and Island Health Authorities, British Columbia





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# Measles Susceptibility

- **Immunization registry data**
  - 4 of 5 health authorities in BC
- **Children born in 2009 and 2010**
- **Estimated proportion protected & susceptible based on:**
  - Receipt of 0, 1 and 2 doses of measles-containing vaccine
  - 1-dose vaccine effectiveness of 90%
  - 2-dose vaccine effectiveness of 99%



2009 birth cohort:



2009 birth cohort:

- 79.5% received 2 doses



2009 birth cohort:

- 79.5% received 2 doses
  - 78.7% protected by 2 doses
  - 0.8% fully immunized but susceptible



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  - 0.6% partially immunized and susceptible





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  - 5.8% protected by 1 dose
  - 0.6% partially immunized and susceptible
- 84.5% protected
- 15.5% susceptible



2009 birth cohort:

- 79.5% received 2 doses
  - 78.7% protected by 2 doses
  - 0.8% fully immunized but susceptible
- 6.4% received 1 dose
  - 5.8% protected by 1 dose
  - 0.6% partially immunized and susceptible
- 84.5% protected
- 15.5% susceptible
- 14.1% completely unimmunized

# Results – Susceptibility



## 2009 birth cohort:

- 84.5% protected
  - 78.7% by 2 doses
  - 5.8% by 1 dose
- 15.5% susceptible
  - 1.4% with  $\geq 1$  dose

## 2010 birth cohort:

- 85.3% protected
  - 72.9% by 2 doses
  - 12.4% by 1 dose
- 14.7% susceptible
  - 2.1% with  $\geq 1$  dose

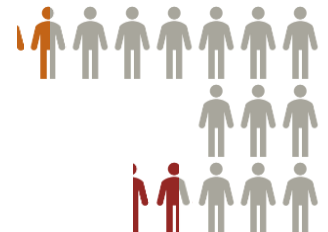
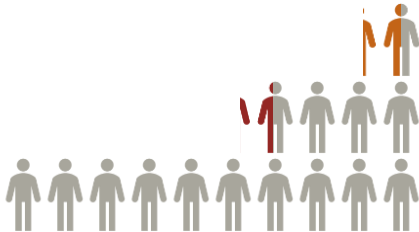


2009 birth cohort:

**14.1%**  
**unimmunized**

2010 birth cohort:

**12.6%**  
**unimmunized**



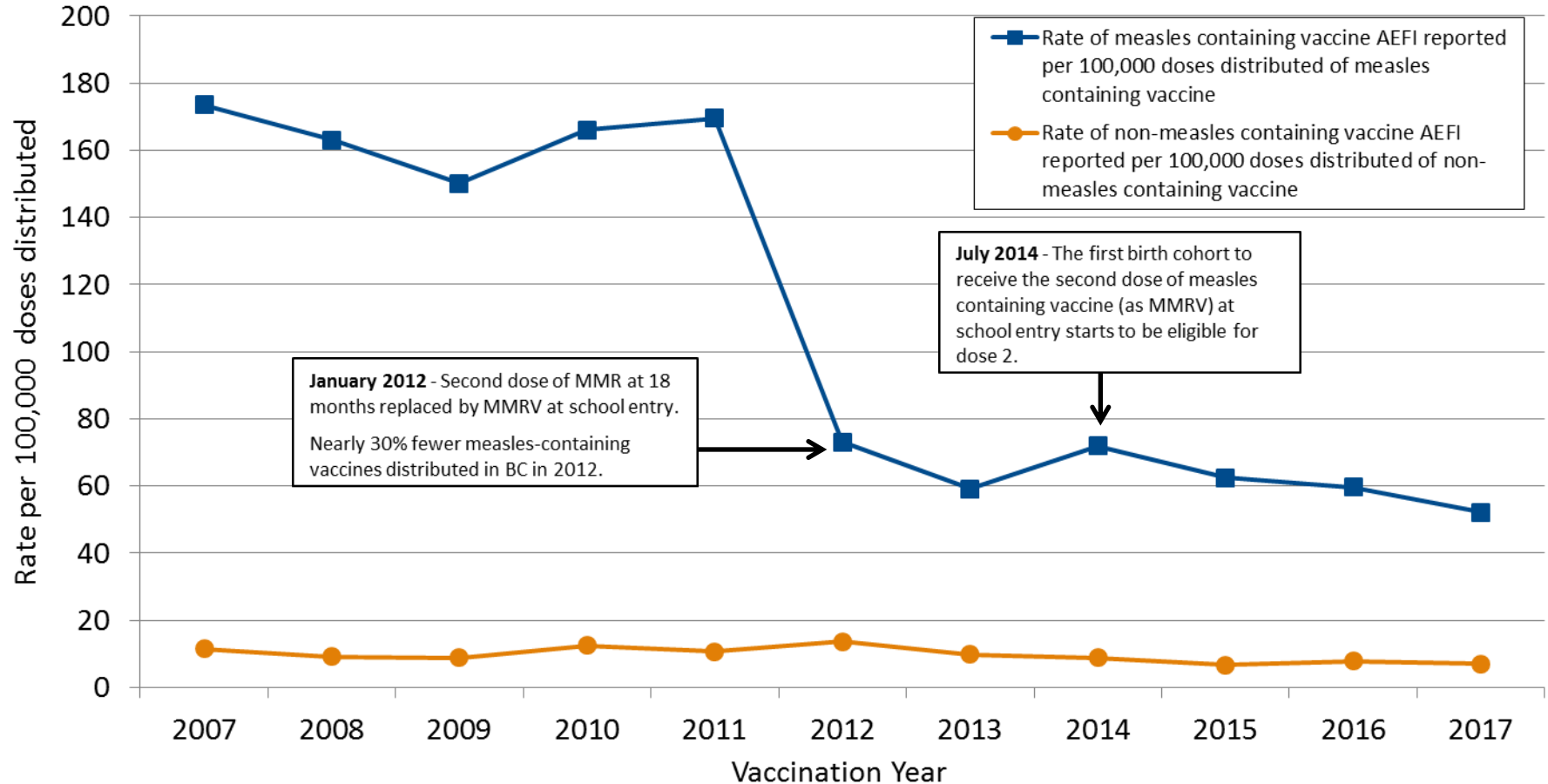


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# Adverse Events Following Immunization (AEFI)

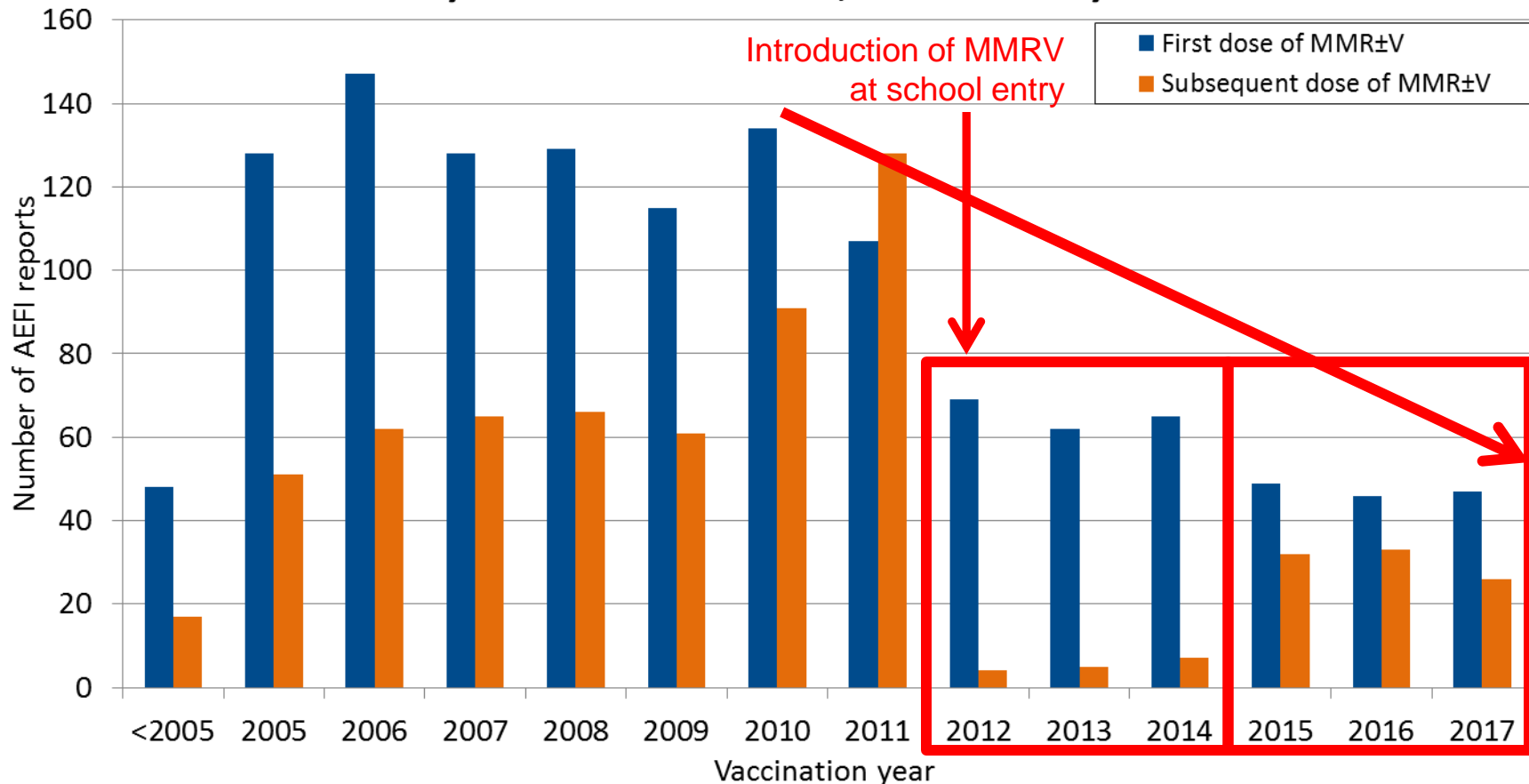
- **Voluntary AEFI reporting in BC**
- **Reportable event types and definitions have changed**
- **Rates calculated using doses distributed**

# AEFI reporting rate for children <10 years of age, by MMR±V presence/absence, BC 2007-2017



Excludes reports where the only event(s) reported were events inactivated or changed in 2009 and 2013. Reports with inactivated/changed events and other reportable events retained.

# AEFI reports following MMR±V reported 2005 to 2017, by vaccination year and dose number, children <10 years



Excludes reports where the only event(s) reported were events inactivated or changed in 2009 and 2013. Reports with inactivated/changed events and other reportable events retained.



9% decline in two dose measles uptake by 7<sup>th</sup> birthday

- May be due to one less opportunity for immunization

Unvaccinated children are the key contributor to population susceptibility

- Greatest impact by addressing high proportion of unvaccinated

AEFI reports following measles containing vaccine have declined

- Other factors contribute to the decline as well

## Co-authors

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- Monika Naus

## Acknowledgements

- BC Health Authorities and public health nurses