

# CIC 2014 CCI

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OTTAWA

Canadian Immunization Conference  
Conférence canadienne sur l'immunisation

## Truth in Numbers?

# Validation of Immunization Registry Data for Coverage Assessment

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# Disclosure Statement



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

# Routine Immunization Schedule British Columbia (BC) 2007



Image courtesy of Marcus / FreeDigitalPhotos.net

| Vaccine  | Age (Months) |   |   |    |    |
|--|--------------|---|---|----|----|
|  | 2            | 4 | 6 | 12 | 18 |
| DTaP-IPV-Hib<br>diphtheria, tetanus, pertussis, polio,<br><i>Haemophilus influenzae</i> type b | ✓            | ✓ | ✓ |    | ✓  |
| Hepatitis B  | ✓            | ✓ | ✓ |    |    |
| Pneumococcal   | ✓            | ✓ |   | ✓  |    |
| Meningococcal-C  | ✓            |   |   | ✓  |    |
| MMR<br>measles, mumps, rubella   |              |   |   | ✓  | ✓  |
| Varicella  |              |   |   | ✓  |    |

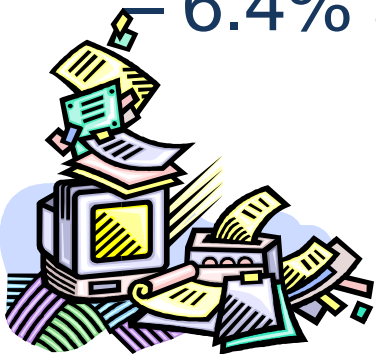
# Immunization Coverage

- National standard
  - Assess at 2, 7, 17 years of age
- Measure protection
- Measure performance
- BC Target: 95% received all vaccines by 2nd birthday



# iPHIS Immunization Registry

- Used in 14 of 16 BC Health Service Delivery Areas
- 64% of 2007 birth cohort was up-to-date by 2nd birthday
- 36% not up-to-date (UTD)
  - 6.4% appeared unimmunized



# Objective

- To validate the immunization status of children who are not UTD according to iPHIS data
- In order to determine whether they are
  - Truly not UTD, or
  - UTD with incomplete iPHIS records

# Methods

- Random sample of children
  - Born 2007 January 1 - 2008 June 30
  - Not up-to-date according to iPHIS
  - 14 of 16 BC Health Service Delivery Areas
  - Target sample size: 1,073
    - Stratified by immunization status category



# Methods

- Telephone interviews with parents
  - Demographics
  - Records of missing immunizations
  - Permission to contact immunizers (if still not UTD)
- Fax/mail Immunizers
  - Records of missing immunizations



# Response Rate

|                           | #                |
|---------------------------|------------------|
| Sample                    | 2,908            |
| Eligible                  | 1,882            |
| Completed survey          | 1,074 <b>57%</b> |
| Refused to participate    | 808              |
| Could not be contacted    | 934              |
| Ineligible                | 92               |
| Do not live in BC         | 37               |
| Outside age requirement   | 2                |
| Could not provide consent | 53               |

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**1.3%**

- 319 Unimmunized

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- 379 Partially immunized (but primary series not complete)

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- 376 UTD minus booster

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# Immunization Status By 2<sup>nd</sup> Birthday

## Status Following Survey

|                            | No Immunizations | Partially Immunized | UTD Minus Booster | UTD          | Total           |
|----------------------------|------------------|---------------------|-------------------|--------------|-----------------|
| <b>No Immunizations</b>    | 153<br>(48%)     | 24<br>(8%)          | 52<br>(16%)       | 90<br>(28%)  | 319<br>(100%)   |
| <b>Partially Immunized</b> | --               | 148<br>(39%)        | 143<br>(38%)      | 88<br>(23%)  | 379<br>(100%)   |
| <b>UTD Minus Booster</b>   | --               | --                  | 342<br>(91%)      | 34<br>(9%)   | 376<br>(100%)   |
| <b>Total</b>               | 153<br>(14%)     | 172<br>(16%)        | 537<br>(50%)      | 212<br>(20%) | 1,074<br>(100%) |

iPHIS Status

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iPHIS Status



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iPHIS Status

# Immunization Status After 2nd Birthday

- Additional 343 (32%) had been brought up-to-date after the 2nd birthday and before the survey



## Revised Coverage Estimate, 2007 Cohort

- **71.5% up-to-date by 2<sup>nd</sup> birthday** (95%CI=70.0-72.9%)
  - Compared to 64%
- **3.1% unimmunized** (95%CI=2.7-3.4%)
  - Compared to 6.4%
- This does not account for any changes in the denominator

# Limitations

- Representativeness of survey respondents
- Social desirability bias
- Not powered for regional analysis
- Do not know proportion who left province

# Conclusions

- Coverage estimates using iPHIS registry data are under-estimates
- 20% of children not UTD in the registry have other records indicating they are UTD
- Denominators may include children who have left the province
- We are still far from the 95% target

# Opportunities

- Accuracy can be improved by:
  - Expanding access to the registry
    - Non public-health immunizers
    - Parents for direct reporting
  - Linking to electronic records of other immunizers
  - Notification from BC Medical Services Plan to immunization registry when child has lost BC health coverage (resides elsewhere)

## Co-Authors

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- Monika Naus

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- BC Immunization Committee
- 2 Year Old Immunization Coverage Assessment Advisory Group