

Rotavirus coverage in Ontario: No easy task!

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Rotavirus vaccine availability and program history in Ontario

- Private availability of RV vaccines in Canada since 2006
- August 2011: launch of Ontario's RV program (Rotarix™)
 - Introduced with no physician billing code
- In Ontario, immunization coverage assessment and surveillance occurs at school-entry

1. To assess rotavirus vaccine coverage in the province of Ontario using EMR data as recorded by family physicians
2. To identify factors associated with series initiation and completion

- Electronic Medical Record Administrative data Linked Database
- A centralized repository of EMR data
 - >350 family physicians in Ontario use who Practice Solutions Suite® (most widely used EMR in Ontario)
 - Individual level data in EMRALD collected semi-annually and linked to health administrative data
 - Formally evaluated^{1,2} and used in previous immunization research³

1. Tu K, et al. Am J Manag Care 2014;20:e15-21.

2. Tu K, et al. BMC Med Inform Decis Mak 2015;15:67.

3. Schwartz K, et al. Hum Vaccin Immunother 2015;11(7):1840-7.

Methods: cohort creation

- Identified six birth cohorts within EMRALD to assess coverage
 - January 1, 2008 to December 31, 2010 (private purchase)
 - August 1, 2011 to July 31, 2014 (public program)
- Exclusion criteria
 - Fewer than 3 visits in first year of life recorded in EMRALD
 - EMR start date > 6 weeks after birth
 - Death during first year of life
 - Multiple ID numbers, missing data (sex, date of birth), or discrepant demographic data

Methods: coverage assessment

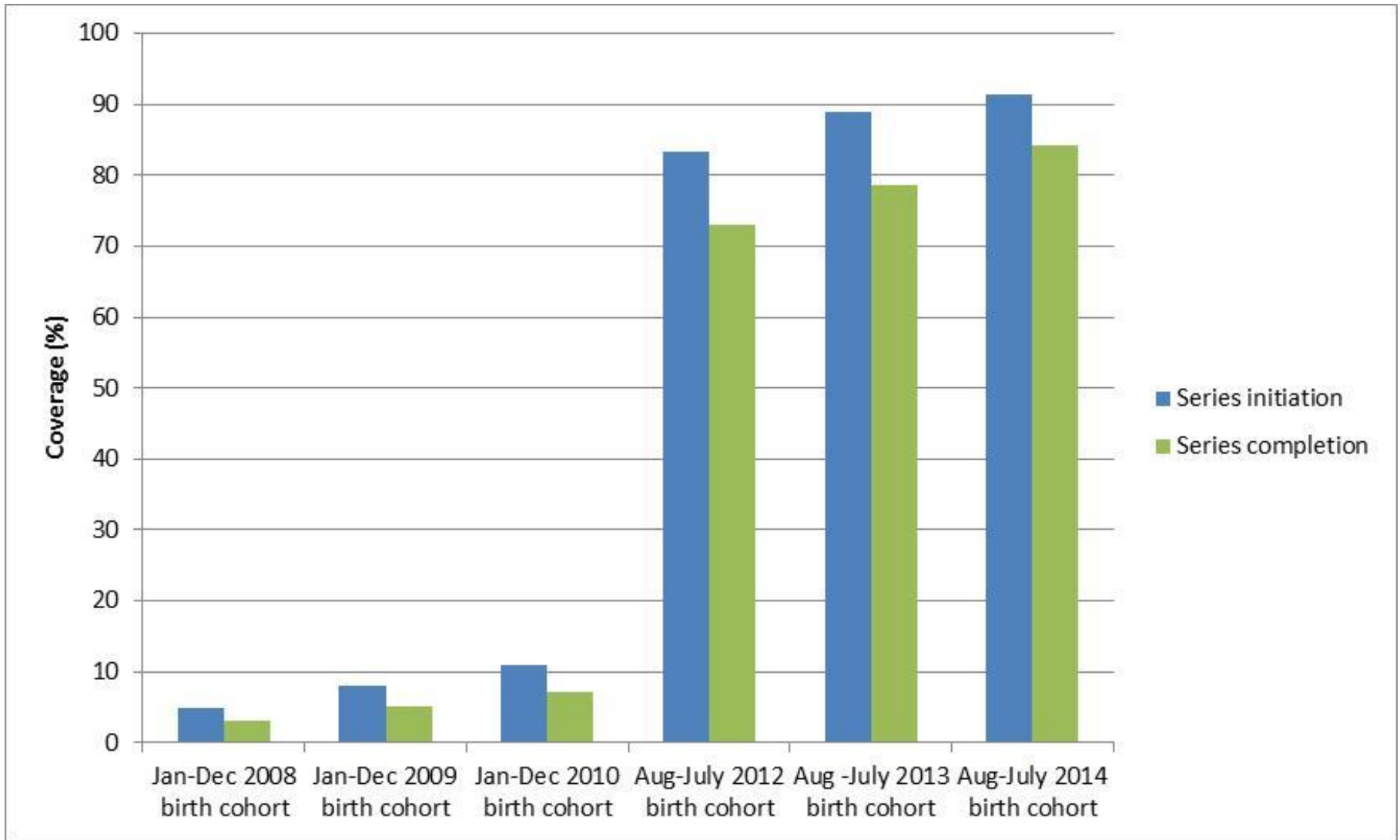
- Rotavirus immunization status
 - Free text searches in the continuous patient profile (CPP) and in treatments/prescriptions fields
 - Generic, trade names and spelling errors ('Rotarx')
- Coverage definition
 - Full series= Rotarix™ (2 doses); Rotateq® (3 doses); Mixed (3 doses)
 - Applied minimum ages/intervals in primary analysis

Methods: Multivariable regression

- To identify covariates associated with series initiation and series completion (among initiators) during public program:
 - Applied logistic regression with use of general estimating equations to account for clustering at physician level
 - Study involved linkage to 11 data holdings to derive child, maternal and physician covariates

RESULTS

Rotavirus vaccine coverage



Private purchase
N=5,039

Public program
N=7,486

Multivariable regression significant results: 1 dose (initiation)

Covariates

OR (95% CI)

- Maternal flu vaccine in year after delivery 1.58 (1.25-2.00)
- Family composition
 - 1 sibling 1.62 (1.28-2.06)
 - 2 siblings 1.33 (1.04-1.71)
- High ($\geq 50\%$) continuity of care 2.22 (1.63-3.01)
- Foreign-trained physician 2.29 (1.04-5.02)
- Patient roster size (per 100 unit increase) 0.92 (0.88-0.95)

After adjustment of all other covariates
within the model (not presented)

Multivariable regression significant results: completion

Covariates

OR (95% CI)

- Maternal age at first pregnancy (< 24 years) 0.70 (0.58-0.86)
- Primary care visits in 1st year of life
 - 7-11 visits 1.64 (1.32-2.02)
 - \geq 12 visits 1.46 (1.13-1.88)
- High (\geq 50%) continuity of care 1.63 (1.29-2.07)
- Physician in rural practice 2.05 (1.28-3.29)
- Foreign-trained physician 0.59 (0.39-0.89)
- Patient roster size (per 100 unit increase) 0.94 (0.92-0.97)

After adjustment of all other covariates
within the model (not presented)

Pertinent non-significant covariates (series initiation and completion)

- Income quintile
- Low birth weight (< 2500 g)
- Prematurity (< 37 weeks)
- Chronic medical conditions
- Recent maternal immigration (< 5 years)

After adjustment of all other covariates
within the model (not presented)

- EMRALD is a voluntary sample of Ontario family physicians
 - Physicians and patients may not be entirely representative

- Successful proof of concept
 - EMRALD can be used to support evaluations of vaccine coverage before school-entry
- Data linkage supports rich analyses of determinants of uptake and outcomes following immunization

QUESTIONS?

Back-up slides

Cohort creation and exclusions

