Improving Canada's Measurement of Vaccine Hesitancy through the Childhood National Immunization Survey

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Background

- The Public Health Agency of Canada (PHAC) routinely monitors vaccination coverage in Canada through the **childhood National Immunization Coverage Survey** (cNICS).

- Since 1994, the cNICS has been conducted approximately every two years to estimate national uptake for all routine childhood immunizations.

cNICS Methods

- Target population
  - Children aged 2, 7, or 17 years as of March 1, 2013
  - Girls aged 12-14 years as of March 1, 2013 (for HPV)
  - Exclusion: on-reserve First Nations

- Sampling frame: Canadian Child Tax Benefit for Children (approx 96% of Canadian children)

- Sampling: Random sampling stratified by province/territory and age

- Targeted Vaccines: All childhood vaccines recommended by NACI for routine vaccination and publicly funded under P/T programs

- Methods: Phone interviews with parents/guardians; collected from records held by respondents
  - Parent recall accepted for vaccines less likely to be recorded (ex. Influenza (infants); Hep B, HPV (adolescents))

- Validation of the information collected with the health care/vaccination provider
  - 90% of parents consented over the phone to have the health care provider (HCP) contacted
  - Only 45% returned the form providing consent for HCP record review
  - At the end, information from health care providers was available for 30% of participants

cNICS KAB Data Collection

- The cNICS currently includes a section on Knowledge, Attitudes and Beliefs (KAB) related to vaccines (35 questions).

- cNICS survey results are used for….
  - …reporting on progress towards national vaccination goals
  - …providing coverage estimates to the Wold Health Organization (WHO) and Pan-American Health Organization (PAHO)
  - …monitoring parents' knowledge, attitude and beliefs (KAB) re vaccination

Decision made to improve our measurement of KAB….

Objective of Project

- To improve the KAB component of the cNICS questionnaire to better measure vaccine hesitancy and barriers to vaccine uptake

- To address….
  - …new reporting requirements for vaccine hesitancy under the WHO
  - …recommendations of the Canadian Vaccine Acceptance and Uptake Task Group to improve KAB measurement
  - …recommendations of the WHO/ Strategic Advisory Group of Experts (SAGE) Working Group on Vaccine Hesitancy

Step 1: Create an incredible Advisory Group….

Advisory Group

- Review of the questionnaire by Canadian and international experts

  - **Dr. Heidi Larson**, London School of Hygiene and Tropical Medicine *
  - **Dr. Eve Dubé**, Institut national de santé publique du Québec *
  - **Dr. Noni MacDonald**, Dalhousie University *
  - **Dr. Richard Carpiano**, University of British Columbia
  - **Dr. Saad Omer**, Emory University
  - **Dr. Glen Nowak**, University of Georgia

  * Members of the SAGE Working Group

Step 2. Review the evidence before drafting a new set of questions…

Review of Evidence

- Reviewed the report of the Vaccine Hesitancy Working Group convened by WHO's Strategic Advisory Group of Experts on Immunization (SAGE).
- Review of cNICs Survey Tool through the Health Belief Model
  - PB-V : Perceived Benefits of Vaccine
  - PR-V : Perceived Risks of Vaccine
  - PR-D: Perceived Risks of Disease,
  - Barriers, Cues to Action/Enabling Factors including influencers
- Incorporated select questions from the Core Vaccine Hesitancy Survey proposed by the SAGE WG
- Determined current survey KAB approach would benefit from:
  - Removal/modification of some existing questions
  - Additional questions to measure factors influencing vaccines acceptance after initial reluctance/hesitancy
  - Questions to measure other barriers to uptake

Step 3. Modify existing and develop new questions….

Modification and Development of Questions

- Decision made to remove existing questions related to:
  - Child up-to-date according to parent's knowledge
  - Importance of specific vaccines
  - Concerns about the safety of specific vaccines
  - Sources of information on vacciation

- Evolved from 35 to 42 KAB and uptake questions
  - Nine of these are the same, or modified from, our old set of questions

- New set of questions adopted that focus on:
  - Barriers to vaccination
  - Vaccine hesitancy
  - Trusted sources of information
  - Sources of information used

Step 4. Conduct qualitative pre-testing of the modified questionnaire…

Highlights from the Qualitative Pre-testing

- Pre-testing was done in partnership with Statistics Canada who implements the cNICs survey on behalf of PHAC

- A total of twenty-nine one-on-one interviews took place
  - Nine English interviews were conducted in Ottawa
  - Ten English interviews were conducted in Vancouver
  - Nine French interviews were conducted in Montréal

- Participants were administered the test questionnaire on a face-to-face basis, and the one-on-one interviews explored the four steps in the cognitive process of responding:
  - Understanding the question and response categories
  - Recalling/searching for the requested information,
  - Thinking about the answer and making a judgment about what to report
  - Reporting the answer

- Questions tested very well with only a few areas of change recommended where questions were felt to be redundant and where parents had difficulty answering….

Highlights from the Qualitative Pre-testing (2)

Overarching observations:

- It was very difficult to measure perceptions of risk of getting specific vaccine-preventable diseases, or the risk of getting severely ill from infection.
  - Parents had great difficultly answering Questions about risks from VPDs
    - From your perspective, unvaccinated children are at higher risk of getting which disease?
    - Which diseases are you most concerned about?

- With these questions, many parents said they would have needed their child's immunization card to answer. In other words, they thought that we were asking them to list diseases for which their child had been vaccinated and therefore at reduced risk.

Step 5. Finalize questions….

Where Did We Land: Sample of Questions Retained

42 questions were landed on following pre-testing:

- Have you ever decided not to have [child's name] vaccinated with a particular vaccine?
- What vaccine(s) or vaccines did you decide not to give to [child's name]?
- What is the main reason that you decided not to immunize your child against (X)?
- Have you ever been reluctant or hesitated to get a vaccination for [child's name]?
  - For which vaccines?
  - For which reason?
- Did you decide to have [child's name] vaccinated despite you initial reluctance?
  - What made you decide to have [child's name] vaccinated despite your initial reluctance?
- Have you ever decided to delay any vaccines for [child's name]?
  - Why did you delay some vaccines?

Step 6. Put into the field…..

Implementation

- Fall 2017: Survey in the field

- Fall 2018: Data available for analysis
  - Proportion of vaccine-hesitant parents
  - Comparisons of rates of vaccine hesitancy vs refusals
  - Associations between KAB and vaccine hesitancy/refusal
  - Socio-demographic differences between vaccine-hesitant and refusal
  - KAB differences between vaccine-hesitant and refuser parents

Thank You

Annex A. Evolution of cNICS, 2004-2013

Survey year		**2004**	**2006**	**2009**	**2011**	**2013**
Implemented by		Ipsos-Reid	Environics	Environics	Statistics Canada	Statistics Canada
Selection of participants		Household panel	Random digit dialing	Random digit dialing	Random sampling from frame	Random sampling from frame
Number of respondents	2 yr	431	360	547	407	5,476
	7 yr	441	346	484	339	3,754
	10-14 yr *	-	-	-	314	5,720
	17 yr	381	300	345	322	6,993
	Total	1,253	1,006	1,376	1,328	21,943
Data collection from healthcare providers		No	No	Small subset	Yes	Yes

* 12-14 yr in 2013