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Overview of the Canadian Community Health Survey linked to hospital utilization and mortality data: A research opportunity

Canadian Research Data Centre Conference Workshop

October 2, 2013

Waterloo, ON

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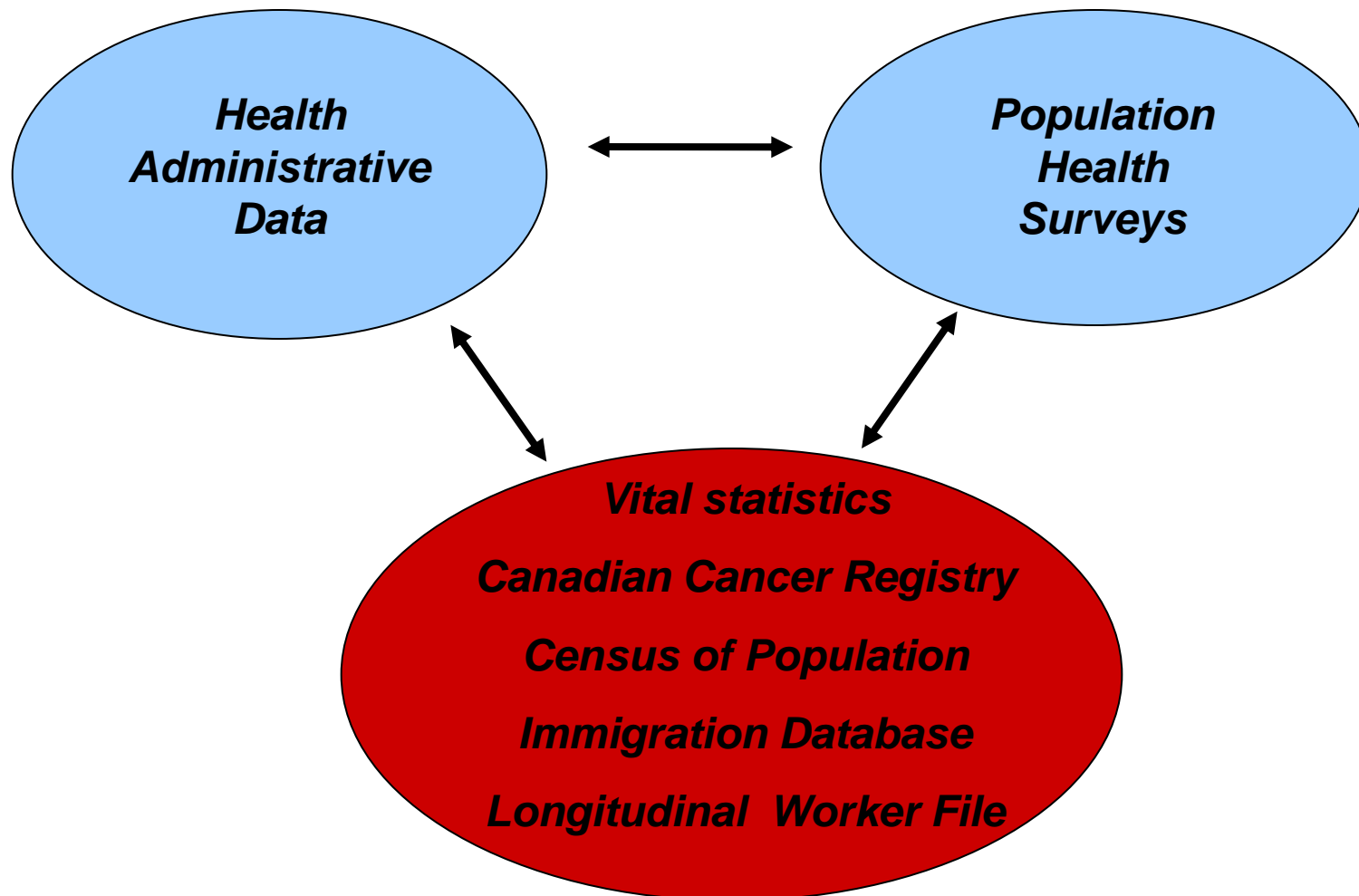
Outline

- Background
- Linkage description
- Content
- Research examples
- Main strengths & limitations
- Next steps

Background

- Enhance the capacity of health data to address complex questions with “value added” information - fill data gaps
 - Survey data – lots of socio-economic, risk factor information but no outcomes;
 - Administrative data – outcome information (hospitalization, mortality) but limited individual information
- Linked data allow for “population health” lens to the study of health care services and outcomes
 - Used to study a wider range of determinants of health care use and outcomes of care
- Population based studies on a representative sample of Canadians
 - Large sample sizes - study specific populations and “rare” events
- Opportunity for comparisons across provinces and territories

Data linkage at Statistics Canada



Files to be linked

- Canadian Community Health Survey (CCHS)
 - Cycles 1.1 (2000/01), 1.2 (2002), 2.1 (2003), 2.2(2004), 3.1 (2005), 4.1 (2007), 2008, 2009, 2010, 2011, 2012
- Discharge Abstract Database (DAD)
 - 1996/97 to 2015/16
- National Ambulatory Care Reporting System (NACRS)
 - 2002/03 to 2015/16
- Canadian Mortality Database (CMDB)
 - 2000 to 2015
- Historical Tax Summary File (HTSF)
 - 1990 to 2015

Canadian Community Health Survey (CCHS)

- Large, biennial, cross-sectional survey (~130,000)
- Covers the household population aged 12+ representing ~98%
- Excludes members of the regular Forces, institutionalized, Indian Reserves, and some remote areas
- Regular collection since 2000/01
- Content: Risk behaviours, health status, chronic conditions, socio-economic indicators

- Focus content since 2002
 - Topics include mental health, diet, aging
 - Sample size (~30,000)

Hospital Data

- **Discharge Abstract Database (DAD)**
 - Obtained from the Canadian Institute of Health Information (CIHI)
 - Census of discharges from acute care hospitals
 - Contains demographic, non-medical administrative and clinical information (diagnostics and interventions)
 - use of resources via the Resource Intensity Weights which used in combination with costs of hospital stays (per day) can be used to derive costs.
 - Able to count events but also create patient histories by linking hospitalizations at the person-level

- **National Ambulatory Care Reporting System (NACRS)**
 - Obtained from the Canadian Institute of Health Information (CIHI)
 - Provides hospitals and community-based organizations with a standard data collection and reporting tool to capture data for ambulatory care visits, including day surgery, outpatient clinics and emergency departments.



Mortality and place of residence

- Historical Tax Summary File (HTSF)
 - Tax filers
 - Annual place of residence (postal code on tax return)

- Canadian mortality database (CMDB)
 - Census of deaths in Canada
 - Underlying cause of death, date of death, age at death

CCHS cohorts

- Eligibility
 - Share file, permission to link
 - Aged 12 or older at time of survey
 - Some population exclusions (~2% of population)
 - Quebec excluded for DAD and NACRS linkages

- Linkage to DAD, NACRS
 - Deterministic and probabilistic
 - Date of birth, sex, postal code, province issuing health information number and health information number of patients

- Linkage to CMDB, HTSF
 - Probabilistic
 - Names, date of birth, sex and postal code



Research examples

1. To understand the association between behavioural risk factors and the use and costs of hospital services and related outcomes
2. To understand the interaction between socio-economic and behavioural risk factors and their effect on the use and cost of hospital services
3. To understand the extent to which differences in the prevalence of risk factors in Canada explains the variation in the use of hospital services
4. To examine the interaction between risk factors, ambient air pollution exposures, mortality, and the use of hospital services

Main strengths & limitations

- Strengths
 - Population based
 - Rich source of information on the cohort characteristics and outcomes
 - Large sample size
 - Able to examine several variables simultaneously
 - Multilevel analysis

- Limitations
 - Information collected at one point in time (changes in risk factors are not captured)
 - Some population exclusions (reserves, children)

Next steps

- Linkage is on going
- Data quality assessment
- Creation of cohort weights
- Documentation and disclosure guidelines

- Research Data Centre Access
 - Information on timelines forthcoming
 - Will require usual RDC project proposal guidelines <http://www.statcan.gc.ca/rdc-cdr/index-eng.htm>
 - *Subsequent Use of Linked Data* provision in the *Directive on Record Linkage* – allows use of linked data for research other than that specified in original linkage application



Funding

- Health Canada via the Clean Air Regulatory Agenda
- Institute for Clinical and Evaluative Studies at the Ottawa Hospital Research Institute
- Health Analysis Division, Statistics Canada
- McGill University



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