Chronic Disease Surveillance in Canada

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The Main Determinants of Health

## Chronic Disease Vs Infectious Disease Surveillance

Source: Health Canada (2003). *Chronic Disease Surveillance in Canada: A Background Paper*

<table>
<thead>
<tr>
<th>Issue</th>
<th>Chronic</th>
<th>Infectious</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporality</strong></td>
<td>Latency (decades)</td>
<td>Immediate (days)</td>
</tr>
<tr>
<td><strong>Disease course</strong></td>
<td>Long</td>
<td>Short</td>
</tr>
<tr>
<td><strong>Cause of disease</strong></td>
<td>Complex</td>
<td>An infectious agent</td>
</tr>
<tr>
<td><strong>Public health intervention</strong></td>
<td>Population level</td>
<td>Individual/population</td>
</tr>
<tr>
<td><strong>Data sources</strong></td>
<td>Routine databases</td>
<td>Clinical data</td>
</tr>
<tr>
<td><strong>Data collection</strong></td>
<td>Event-oriented</td>
<td>Person-oriented</td>
</tr>
<tr>
<td><strong>Legislation and regulations</strong></td>
<td>Only cancer is notifiable</td>
<td>List of notifiable diseases</td>
</tr>
<tr>
<td><strong>Co-morbidity</strong></td>
<td>Common (heart &amp; diab.)</td>
<td>Not common</td>
</tr>
</tbody>
</table>
## Development of national chronic disease surveillance in Canada

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1867</td>
<td>British North America Act: Census and statistics are the responsibility of the federal government</td>
</tr>
<tr>
<td>1871</td>
<td>The first national census in Canada</td>
</tr>
<tr>
<td>1918</td>
<td>Dominion Bureau of Statistics (now Statistics Canada)</td>
</tr>
<tr>
<td>1919</td>
<td>Department of Health (now Health Canada)</td>
</tr>
<tr>
<td>1969</td>
<td>National Cancer Incidence Reporting System (NCIRS) – event oriented</td>
</tr>
<tr>
<td>1972</td>
<td>Health Canada’s Laboratory Centre for Disease Control</td>
</tr>
<tr>
<td>1992</td>
<td>Canadian Cancer Registry (CCR) – patient oriented</td>
</tr>
<tr>
<td>1999</td>
<td>National Diabetes Surveillance System (NDSS)</td>
</tr>
<tr>
<td>2004</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>2009</td>
<td>Canadian Chronic Diseases Surveillance System (CCDSS)</td>
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</tbody>
</table>
What is Canadian Chronic Diseases Surveillance System (CCDSS)?

- A collaborative network of provincial and territorial (P/T) surveillance systems supported by PHAC
- Priorities are set by a public health network “Task Group on Surveillance of Chronic Disease and Injury
- It uses P/T health admin databases and was initially used to track diabetes - National Diabetes Surveillance System (NDSS) established in 1999
- Creates nationally comparable data: prevalence, incidence, mortality, complications, co-morbid conditions, health services utilization
CCDSS: Data sources

Data sources linked using a unique lifetime identifier
CCDSS is a partnership

Key Roles:

» PHAC
  - Coordination and technical support
  - Compile and report national data
  - Funding (MOUs with P/Ts, Grants and Contributions, operating budget)

» P/Ts
  - Identify and assign technical resources
  - Implement and maintain system
  - Create data for national reports
  - Create regional reports
CCDSS expansion: Status

• National Surveillance Ongoing
  » Diabetes (since 1999)
  » Hypertension (since 2010)
  » Mental Illnesses (Mood & Anxiety, Omnibus) (since 2010)
  » Chronic Respiratory (COPD, Asthma) (since 2011)

• National Pilot
  » Heart Diseases (IHD, MI)
  » Musculoskeletal (Arthritis, Osteoporosis)

• Feasibility
  » Neurological Conditions
  » Heart Failure
  » Stroke
  » Mental Illnesses (psychoses, substance use disorders)
  » Injury (Unintentional injuries, falls)

• Future Plans
  » Renal Disease
  » Bowel Disease
Data Processing


- Data analysis is conducted to serve the 6 uses of public health surveillance: (1) Early warning, (2) Impact assessment, (3) Policy development, (4) Policy evaluation, (5) Risk assessment, (6) Generation of hypothesis for research
- Surveillance information should be able to recognize trends
- Surveillance information should be used to inform programs and policy
Direct and indirect effects of risk and intervention indicators on health indicators

Our Work in Environmental Health Surveillance

- **Built environment:** In 2011, PHAC funded one-time BE content on the Canadian Community Health Survey (N=8316). Canadians in neighbourhoods with parks, walking trails, bike paths, playgrounds and public swimming pools engaged in significantly more physical activity than those who don’t.

- **Enhanced Cancer Surveillance System:** A set of case-control studies carried out with cancer registries in the mid 1990s. In general researchers had to have their own environmental data and link indirectly with subjects.

- **CCDSS:** conducts surveillance on asthma and COPD. However, does not monitor airborne pollution levels. Has potential for record linkage with other environmental databases.

- **Cancer in Young People in Canada (CYP-C) program:** has potential for environmental health studies using linkage to environmental data.
Built Environment: Characteristics that Influence Leisure Time Physical Activity in Urban Highly Dense Neighbourhoods

<table>
<thead>
<tr>
<th>Places to buy things that are within easy walking</th>
<th>Transit stops nearby</th>
<th>Side walks</th>
<th>Designated areas for bicycling</th>
<th>Several free or low cost recreation facilities</th>
<th>Crime rate that prevented walking at night</th>
<th>Visually interesting neighbourhood</th>
<th>Well maintained sidewalks</th>
<th>Traffic levels that made it unpleasant to walk</th>
<th>Traffic levels that made it unpleasant to ride a bike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbourhoods with</td>
<td>Neighbourhoods without</td>
<td></td>
<td></td>
<td></td>
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Information Dissemination

- **WHO**: Target audience are F/P/T governments, decision-makers, NGOs, public health professionals, researchers and general public
- **WHAT**: Information products include (1) Routine reports (Diabetes, CVD, Arthritis etc) (2) Special Reports (Health Adjusted Life Expectancy) (3) Fact Sheets (Sleep Apnea, Osteoporosis, Chronic Obstructive Pulmonary Disease, etc) (4) Highlight Reports (Diabetes, Hypertension, Asthma, COPE, Mental Illness) based on data gathered from the Canadian Chronic Disease Surveillance System (CCDSS), (5) Web Tools (Infobase, DataCubes) (6) Web Pages
- **HOW**: Disseminated via traditional publishing methods (print), electronically (PDF) and on the web (HTML). Promotion of our products is done through corporate Facebook and Twitter accounts, Rich Site Summary (RSS) Feeds, listservs, and internal departmental tools.

- **CHALLENGE**: There is a significant amount of chronic disease surveillance information but how can we organize and disseminate so that it can be utilized for maximum effectiveness?
Chronic Disease Surveillance Infobase Data Cubes

Source: Chronic Disease Infobase Data Cubes www.infobase.phac-aspc.gc.ca

- Data Cubes are web tools that quickly allow users to create tables and graphs using their web browser. These online interactive databases produce output displayed in a table format with a corresponding graph.
Collaborative Surveillance Networks

- Canadian Alliance for Regional Risk Factor Surveillance (CARRFS) (2008) – Local health units across Canada
Topics for Further Discussion

• How national chronic disease surveillance activities can inform environmental health surveillance development

• How environmental health surveillance can support chronic disease surveillance and visa versa

• What ways can environmental health surveillance fit into chronic disease surveillance