The Health Indicators Project: The Next 5 Years

Report from the Second Consensus Conference on Population Health Indicators

Canadian Institute for Health Information
Institut canadien d'information sur la santé

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Cette publication est disponible en français sous le titre :
Le Projet des indicateurs de la santé : les cinq prochaines années —
Rapport de la deuxième Conférence consensuelle sur les indicateurs de la santé de la population

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Table of Contents

Executive Summary 1
Introduction 2
    The Health Indicators Project 2
    The Consultation Process 4
    The Second Consensus Conference on Population Health Indicators 5
Consensus Conference Outcomes 6
    To Keep or To Drop 6
    Equity 9
    Health Indicators: Future Development 9
Health Indicators In Action: Where We Are Today 11
Moving Ahead: One Year Later and Beyond 12
Appendix—Participants 13

Executive Summary

In March 2004, Statistics Canada and the Canadian Institute for Health Information convened the Second Consensus Conference on Population Health Indicators. Building on results from a similar process held in 1999, participants reviewed a core set of health indicators agreed to at the earlier conference and proposed additional indicators with a view to providing the public, health care providers, and health authorities with reliable and comparable data on the health of Canadians, the health care system and the determinants of health at the regional level.

The objective of this consensus process was to guide the development and ongoing dissemination of health indicators including:

- Validation of the core set of health indicators decided on at the first consensus conference;
- Discussion of methods for incorporating the concept of equity; and
- Identification and prioritization of future indicator development.

Conference participants confirmed the core set of health indicators with two exceptions. The indicators *Owner Occupied Dwellings* and *Vaginal Birth after Caesarean* were dropped as these were considered to be either difficult to interpret, redundant and/or unduly influenced by changing standards of practice.

There was unanimous support to include equity measures across all dimensions of the population health indicator framework as a means to improve understanding of health related disparities. Among the various equity measures that were suggested, income was felt to be the most important, but others, including age, gender, education, ethnicity, and rural/urban residency, were also supported.

Finally, the need to develop indicators in several priority areas, including: home care, food and waterborne diseases, patient safety, emergency department care, healthy lifestyles, and air and water quality was indicated. Future indicator development will depend upon the availability, quality and comparability of data, the identification of appropriate methodological approaches, and ongoing work by other groups and individual jurisdictions.

Since the consensus conference, both CIHI and Statistics Canada have released new indicators in several of the priority areas identified by participants including patient safety and the environmental determinants of health. The groundwork is also being laid for the development of additional prioritized indicators using both existing and emerging data sources.

Introduction

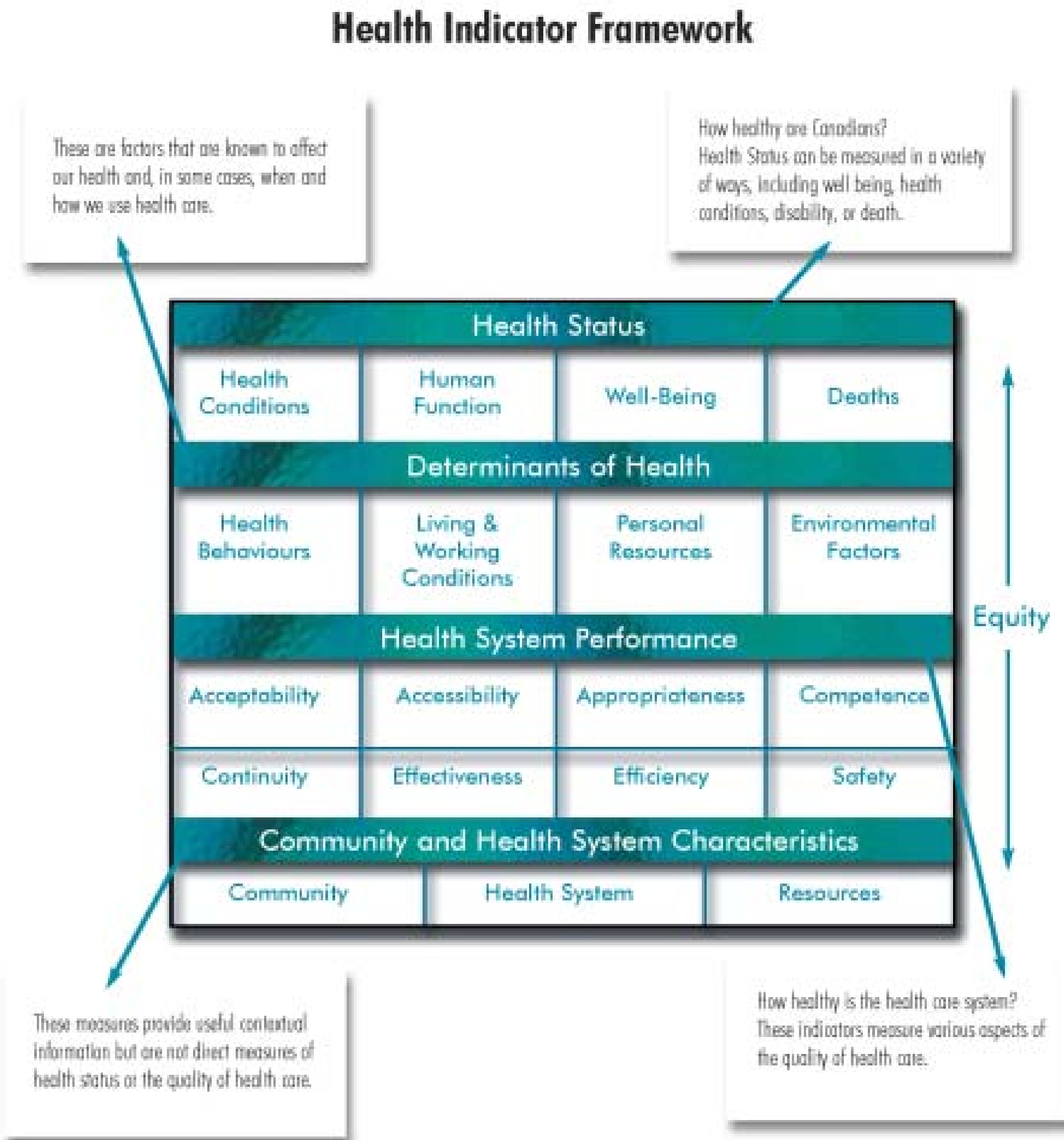
Interest in sound health information and health indicators, has never been higher. Health indicators can be used to inform health policy, manage the health care system, enhance our understanding of the broader determinants of health, as well as to identify gaps in the health status and outcomes for specific populations. While there are an infinite number of indicators that could be calculated, which ones are the most important to measure and track and what types of indicators best reflect the needs of those who use them? These and other questions were discussed at the 2004 Second Consensus Conference on Population Health Indicators. The results of this conference, and what has happened since then, are summarized in this report.

The Health Indicators Project

In 1999, the Canadian Institute for Health Information (CIHI) and Statistics Canada launched a collaborative project on health indicators. The goal of the project was to identify indicators that could be used to report on the health of Canadians and the health system, and then to compile and make this information widely available. Ultimately, these indicators are intended to support regional health authorities in their role of monitoring, improving, and maintaining the health of the population and the functioning of the health system.

As a first step and in order to gain a better understanding of the types of indicators to develop and report, CIHI convened the First Consensus Conference on Population Health Indicators on May 4, 1999, in cooperation with the Federal/Provincial/Territorial Advisory Committees on Population Health and Health Services, Health Canada, and Statistics Canada. Conference participants agreed on a conceptual model for this project, the Health Indicator Framework (Figure 1), and provided advice for the selection of an initial core set of indicators that could be compiled from existing data sources.

Figure 1. The Health Indicator Framework



The core set of indicators was selected according to the following criteria:

- Relevant to established health goals;
- Based on agreed upon benchmarks/guidelines;
- Collected using standard methods/definitions and reliable sources; and
- Feasible at the health region level.

In addition, a list of indicators that at the time did not satisfy the conditions for inclusion but could be considered for future development was prepared.

Since this first conference, CIHI and Statistics Canada have identified data sources and developed methods to produce indicators from both the core and future lists. At the same time, regular consultations with the health regions, ministries, researchers and others have resulted in ongoing development of the initial set of health indicators. For example, series of indicators pertaining to key non-medical determinants of health and overall measures of health status, such as cancer incidence, were added. Additional health indicators were extracted from the Canadian Community Health Survey, including self-reported health status, body mass index, and use of preventive measures (e.g. flu shots, mammography, and pap smears). In-depth measures have also been developed to provide a more comprehensive picture of health care issues (e.g. surviving a heart attack, surviving a stroke, and unplanned returns to hospitals).

To improve access to the indicator data, as well as to extend the project reach to the widest possible audience, the *Health Indicators e-publication* was created. This internet publication, accessible from both CIHI and Statistics Canada websites, holds the entirety of regional indicator data produced by the indicator project and is updated bi-annually.

Since the first consensus conference there have also been developments related to the Health Indicator Framework. The Health Indicator Framework has been revised to incorporate "Equity" as a cross-cutting dimension. The World Health Organization identified equity as a primary health goal in the Health For All strategy (WHO, 1998). Measures of equity can identify disparities in health status, provision of health services, clinical outcomes, health behaviours and other non-medical determinants of health, across different groups of a population. Finally, the International Organization for Standardization (ISO) adopted the Health Indicator Framework as an international standard in 2003.

The Consultation Process

Five years on, Statistics Canada and CIHI agreed that it was necessary to broadly revisit the priorities and directions for the health indicator project with representatives from the health regions, provinces, and territories.

Building on results from the first consensus conference and subsequent regional meetings, the consultation process was designed to inform the selection of a reliable set of comparable health indicators that would reflect the health of Canadians, the health care system, and the determinants of health at the health region level. Specifically, the consultation process objectives were to validate the indicators currently being produced and assign priorities for the development of future indicators.

These objectives were achieved in three phases:

Phase I: Identification of information gaps: In the summer of 2003, representatives from health regions were surveyed about the most pressing issues in their jurisdictions and asked for feedback on the types of indicators that could be developed to monitor these concerns.

Phase II: Validation of the core set of indicators and identification of potential new indicators: Based on the results of the Phase I survey, a questionnaire was sent to stakeholders seeking advice on the indicator set available at that time and the prioritization of potential new indicators. The results of this survey were used as a basis for discussions at the consensus conference.

Phase III: The Second Consensus Conference on Population Health Indicators. Using the information obtained from Phases I and II, an agenda for a second consensus conference was drawn up with an emphasis on achieving agreement in areas where divergent views emerged from the Phase II questionnaire. Additionally, since the equity dimension was added to the framework after the 1999 consensus conference, time was set aside to explore this concept and how it could be measured.

The Second Consensus Conference on Population Health Indicators

On March 25 and 26, 2004, over 75 representatives of health regions, provinces and territories, and other stakeholder groups gathered in Ottawa for the Second Consensus Conference on Population Health Indicators (Please refer to the Appendix for a list of participants). In addition to a facilitated discussion stemming from the survey results, the agenda included a plenary session to debate the application of the equity dimension to indicator reporting.

The conference objectives were to:

- Confirm the core set of health indicators decided on at the first consensus conference;
- Introduce the equity dimension of the Health Indicator Framework and begin a dialogue on the ways in which this could be measured; and
- Identify and assign priorities for the development of future indicators.

At the request of meeting participants, a fourth objective was added:

- To share information and knowledge about the use and application of health indicators, particularly at the health region level.

Consensus Conference Outcomes

To Keep or To Drop

Based on the results of the Phase II survey, respondents indicated broad support for the majority of indicators currently reported by CIHI and Statistics Canada at the health region level. Indicators that received less than 75% support in the survey were brought forward for review. These included:

- Self-esteem
- Functional Health
- Hysterectomy
- Decision Latitude at Work
- Owner-Occupied Dwellings
- Crime Rate
- Vaginal Birth after Caesarean (VBAC)
- Inflow-Outflow Ratios
- Coronary Artery Bypass Graft (CABG)
- Potential Years of Life Lost (PYLL)

Among the ten indicators, it was agreed that *Owner Occupied Dwellings* and *Vaginal Birth after Caesarean* be dropped. These indicators were deemed to be difficult to interpret, redundant and/or unduly influenced by changing standards of practice. Indicators reaffirmed at the conference are shown in Table 1.

Table 1. Confirmed Health Indicators

Health Status			
Well-Being	**Health Conditions**	**Human Function**	**Deaths**
• Self-rated health • Self-esteem	• Body mass index (BMI) • Chronic conditions: – arthritis/rheumatism – diabetes – asthma – high blood pressure – chronic pain (affect on activities, severity) – depression • Low birth weight • Cancer incidence • Injury hospitalization • Injuries • Food and waterborne diseases	• Disabilities/limitation • Functional health • Two-week disability days • Activity limitation • Disability-free life expectancy	• Infant mortality • Perinatal mortality • Life expectancy • Mortality by selected causes • Total mortality • Circulatory disease deaths • Cancer deaths • Respiratory disease deaths • Suicide • Unintentional injury deaths • AIDS deaths • Potential years of life lost (PYLL) by selected causes: – Total – Cancer – Circulatory – Respiratory – Unintentional injuries – Suicide – AIDS
Non-Medical Determinants of Health			
Health Behaviours	**Living and Working Conditions**	**Personal Resources**	**Environmental Factors**
• Smoking status • Smoking initiation • Frequency of heavy drinking • Leisure-time physical activity • Dietary practices • Breastfeeding	• High school graduates • Post-secondary graduates • Unemployment rate • Youth unemployment • Long-term unemployment rate • Low income rate • Children in low income families • Average personal income • Median share of income • Government transfer income • Housing affordability • Decision latitude at work	• Social support • Life stress	• Exposure to second-hand smoke

Table 1. Confirmed Health Indicators (cont'd)

Health System Performance			
Acceptability	**Accessibility**	**Appropriateness**	**Competence**
	• Influenza immunization, 65 years and over • Screening mammography, women aged 50–69 years • Pap smear, women aged 18–69 years	• Caesarean section	
Continuity	**Effectiveness**	**Efficiency**	**Safety**
	• Pertussis • Measles • Tuberculosis • HIV • Chlamydia • Pneumonia and influenza hospitalization • Deaths due to medically-treatable diseases: – Bacterial infections – Cervical cancer – Hypertensive disease – Pneumonia • Ambulatory care sensitive conditions • 30-day AMI in-hospital mortality • 30-day stroke in-hospital mortality • Re-admission: – AMI – Asthma – Prostatectomy – Hysterectomy – Pneumonia	• May not require hospitalization • Expected compared to actual stay	• Hip fracture hospitalization • In-hospital hip fracture

Community and Health System Characteristics		
Community	**Health System**	**Resources**
• Population • Population density • Dependency ratio • Urban population • Aboriginal population • Immigrant population • 1- and 5-year mobility • Population within strong Census Metropolitan Area and Census Agglomeration Influenced Zones (MIZ) • Lone-parent families • Visible minorities • Teen pregnancy	• Inflow/outflow ratio and utilization rates: – Coronary artery bypass graft (CABG) – Hip replacement – Knee replacement – Hysterectomy • Contact with alternative health care providers • Contact with health professionals • Contact with health professionals about mental health • Contact with dental professionals	• Health professionals (physicians, etc)

Indicator definitions are available in the *Health Indicators e-Publication* at http://www.statcan.ca/english/freepub/82-221-XIE/free.htm or http://secure.cihi.ca/indicators/2005/en/hlthind05_e.shtml

Equity

Since the first consensus conference, equity, a cross-cutting dimension that applies to all of the original dimensions included in the Health Indicator Framework, was added to the framework. This was in response to suggestions from jurisdictions and the increasing focus on equity both in Canada and internationally. The purpose of the discussion was to identify priorities for operationalizing this dimension.

Initially, participants were asked to select areas where equity indicators were most needed, and which of the potential factors (e.g. socioeconomic status, age, geography) should be used to measure equity. It was noted that any analysis of the distribution of health and health care must consider equity along a variety of dimensions, and that some indicators were already being produced by gender or age group. Among the available socio-economic measures, income was felt to be the most important, but others, including age, gender, education, ethnicity, and rural/urban residency, were also supported. Conference participants expressed unanimous support for applying equity measures across all dimensions of the framework.

Health Indicators: Future Development

While two indicators were dropped, the desire for more indicators, not less, was clear from this session. Based on a priority setting exercise, conference participants identified the following indicator theme areas as of particular importance:

- Home care
- Patient safety
- Emergency department care
- Life-style and health-related behaviours
- Community/social environment
- Air/water quality
- Food and waterborne disease

A complete list of indicators identified for future development is shown in Table 2. Prioritizing those for reporting will depend on a number of factors including available resources, quality and comparability of data, the identification of appropriate methodological approaches, other jurisdictional initiatives, substitution discussions (e.g. work stress versus decision latitude), and where information is currently in short supply (e.g. continuity, environment). It was agreed that next steps would include determining the feasibility of development and consideration of how those identified complement the current list of indicators.

Table 2. Potential New Indicators

<table>
<tr><th colspan="4">Health Status</th></tr>
<tr><th>Well-Being</th><th>Health Conditions</th><th>Human Function</th><th>Deaths</th></tr>
<tr><td>• Oral health
• Premature births</td><td>• Suicide attempts
• Allergies
• Abuse</td><td></td><td></td></tr>
<tr><th colspan="4">Non-Medical Determinants of Health</th></tr>
<tr><th>Health Behaviours</th><th>Living and Working Conditions</th><th>Personal Resources</th><th>Environmental Factors</th></tr>
<tr><td>• High risk for STDs
• Problem gambling
• Drug abuse
• Underage drinking
• Eating habits (beyond fruit and vegetables)
• Lifestyle changes to improve health
• Injury prevention
• Sun safety
• Sedentary activity</td><td>• Proportion of population receiving social assistance
• Literacy levels
• Food insecurity</td><td>• Care-giver burden
• Community belonging
• Work stress
• Quality of work life
• Stress coping mechanisms
• Social cohesion/networks
• Family connectedness and child supports</td><td>• Outdoor air quality
• Smog advisory days
• Drinking water quality</td></tr>
<tr><th colspan="4">Health System Performance</th></tr>
<tr><th>Acceptability</th><th>Accessibility</th><th>Appropriateness</th><th>Competence</th></tr>
<tr><td>Patient satisfaction with:
• any health care services received
• most recent hospital care received
• most recent family doctor or other physician care received
• community-based health care received
• telephone health line services</td><td>• Home care utilization
• Home care unmet needs
• Unmet health care needs
• Waiting times
• Colorectal cancer screening
• % population who have a regular family doctor
• % family physicians accepting new patients</td><td>• Number and % of palliative care patients dying in an acute care institution
• Prevalence of inappropriate drug interactions</td><td></td></tr>
<tr><th>Continuity</th><th>Effectiveness</th><th>Efficiency</th><th>Safety</th></tr>
<tr><td></td><td>• 180-day stroke survival
• 365-day AMI survival</td><td></td><td>• In-hospital hip fracture
• Nosocomial infection rate
• Post-operative infections
• Birth trauma
• Obstetric trauma
• Medication/drug-related problem
• Readmissions/admissions</td></tr>
</table>

<table>
<tr><th colspan="3">Community and Health System Characteristics</th></tr>
<tr><th>Community</th><th>Health System</th><th>Resources</th></tr>
<tr><td></td><td>• Emergency department visits</td><td>• Number of beds
• Long Term Care utilization
• I.T. infrastructure resources
• Therapists (physiotherapy, speech, occupational)
• Technicians
• Public health human resources (e.g. nurses)
• Prescription drug spending</td></tr>
</table>

Health Indicators In Action: Where We Are Today

Since Statistics Canada and CIHI released the first set of regional, provincial and territorial health indicators in 2000, the indicators have been used for a variety of purposes. At the consensus conference, participants described how health indicators have been applied in their jurisdictions and the diverse audiences, such as analysts, health system managers, senior government officials, boards and the public that have been involved.

- **Informing the Public and the Health Sector**
  Conference participants provided many examples of how health indicators are currently being disseminated. These include health status and health system reports at the local/regional/provincial/territorial/national levels. Indicators are frequently highlighted in an assortment of print and electronic publications, such as annual reports; regional, provincial or international comparative reports; community profiles; and benchmarking or focused reports examining specific issues or health conditions. In addition, it was reported that indicators are commonly used for Ministerial and board briefings, as well as for presentation to audiences outside the health sector. Conference participants reported that media releases and other communications tools targeted to the general public often feature health indicators. Some participants cited the use of indicators for drawing attention to important issues in focus groups or other public forums.

- **Performance Management, Monitoring, and Quality Improvement**
  Feedback from jurisdictions indicated that, more than ever before, health indicators play a key role in performance management and monitoring, at both the health region and provincial/territorial levels. Participants reported using indicators for the development of scorecards or other Continuous Quality Improvement (CQI) tools; for review by quality improvement committees; as part of performance agreements, local health monitoring or accreditation; or to provide baselines to inform program or policy evaluation. Many jurisdictions and researchers noted that health indicator data serve to identify priorities for more in-depth analysis. Jurisdictions have also examined the indicators by peer groups developed by Statistics Canada to determine, for example, if peer regions have similar health outcomes.

- **Policy and Planning**
  As was revealed at the consensus conference, indicators now play a significant role in setting priorities, strategic planning and resource allocation. Health indicators are included in operational reviews and are used to identify important issues for future consideration and planning. Participants reported that indicators play a vital role in achieving accountability in the health system for regions, provinces and territories.

Some jurisdictions are able to augment indicators from the Health Indicators Project with others that are available in their own regions, provinces or territories. These other sources include hospital administrative/clinical data systems, surveys, or information from specific programs. The Health Indicator Framework has also been used as the basis for reporting and indicator selection.

Moving Ahead: One Year Later and Beyond

Since the consensus conference, data from the second cycle of the Canadian Community Health Survey (CCHS) have been released including a new indicator on breastfeeding practices. The CCHS provides a valuable source for potential new indicators corresponding to priority areas such as mental health and social well-being.

Statistics Canada has also explored the equity dimension through the calculation of health-adjusted life expectancy (HALE) by province and income tercile and work is underway to produce this by health region as well. Other initiatives include examining the feasibility of adding air quality measures to the environmental sub-dimension of the framework.

In addition, CIHI introduced a new indicator related to quality of care in acute care institutions, namely hip fractures that occur in hospital, and is testing a broad range of other patient safety indicators and non-acute care indicators. Some indicators, such as the rate of Caesarean sections have been examined by household income level.

Other initiatives will also contribute to the information included in the Health Indicators Project in the future. For example, work is underway at CIHI on the development of a Home Care Reporting System (HCRS), which will function as a repository for clinical, administrative and resource data. The National Prescription Drug Utilization Information System (NPDUIS), also currently under development, is envisaged as a pan-Canadian information system housing information related to Drug Benefit Formularies, drug claims, drug plans and population statistics. In addition, CIHI is collaborating with a variety of stakeholders to better understand wait times for selected procedures. Conference participants also discussed the development of community-level indicators, an endeavor which will benefit from work commissioned by the Canadian Population Health Initiative to highlight perspectives on the development of a healthy community index.

The Health Indicators Project has also modified reporting to keep up-to-date with the most recent changes in health region boundaries, notably those of Alberta, Newfoundland and Labrador, and Ontario. In the latter two provinces, Regional Integrated Health Authorities and Local Health Integration Networks, respectively, were introduced in April 2005.

The Health Indicators Project continues to evolve. New indicators will be developed as data become available and as other priorities emerge. Workshops continue to be held across the country to assist jurisdictions with the use, interpretation and analysis of existing indicator data. We look forward to the next five years.

Appendix—Participants

Name		Region/Organization
Ardal	Sten	Central East Health Information Partnership
Bains	Nam	Health Information Partnership—Eastern Ontario Region
Barclay	Kevin	Champlain District Health Council
Beaumont	Martin	Canadian Council on Health Services Accreditation
Boak	Marg	Capital District Health Authority (DHA#9)
Bourdages	Josee	Ministère de la Santé et des Services sociaux, Québec
Boyne	John	New Brunswick Health and Wellness
Brossard	Bonnie	Health Quality Council Saskatchewan
Campbell	Maggie	Parkland Regional Health Authority
Catlin	Gary	Statistics Canada
Chard	Loretta	Newfoundland and Labrador Dept. of Health and Community Services
Choinière	Robert	Institut national de santé publique du Québec
Clarke	Beverley	Health and Community Services—St. John's Region
Crockett	Susan	Nor-Man Regional Health Authority
Dale	Vincent	Statistics Canada
Daveluy	Carole	Institut de la statistique du Québec
Diener	Tania	Regina Qu'Appelle Regional Health Authority (RHA #4)
Dovell	Ron	Interior Health Authority
Doze	Sandra	David Thompson Regional Health Authority (RHA #4)
Émond	Aline	Régie régionale de la santé et des services sociaux de l'Estrie, Sherbrooke
Ferland	Marc	Direction Regionale de sante publique de la capitale regionale
Fey	Doreen	Interlake Regional Health Authority
Findlater	Ross	Saskatchewan Health
Finlayson	Mary Anne	Nova Scotia Department of Health
Finlayson	Greg	Manitoba Centre for Health Policy
Flemons	W. Ward	Calgary Health Region (RHA #3)
Gates	Kayla	Newfoundland and Labrador Centre for Health Information
Gillam	Susan	Western Regional Health and Community Services Board
Gold	Michelle	Hamilton District Health Council
Greenberg	Anna	Cancer Care Ontario
Hamel	Marc	Statistics Canada
Heidemann	Elma	Canadian Council on Health Services Accreditation
Heng	Denis	Centre for Rural Northern Health Research
Ingram	Suzan	Statistics Canada
Kirtzinger	Brenda	Prairie North Regional Health Authority (RHA #10)
Kouri	Denise	Canadian Centre for Analysis of Regionalization and Health
Labbé	Johanne	Service de la surveillance de l'état de santé, Direction générale de la santé publique
LaBine	Steve	Prince Albert Parkland Regional Health Authority #9
LeBrun	Scott	Health Canada, Ottawa
Lee	Karen	Capital Health Authority (RHA #6)
MacDonald	Madonna	Guysborough Antigonish-Strait Health Authority (DHA #7)
MacDonald	Don	Newfoundland and Labrador Centre for Health Information
MacDonald	Jane	Canadian Nurses Association
Malone	Lorna	Canadian Population Health Initiative

Name		**Region/Organization**
Manuel	Doug	Institute for Clinical Evaluative Sciences
Mao	Yang	Health Canada
McMullan	Colin	Central West Health Planning Information Network
Meyer	Cathy	Chinook Regional Health (RHA #1)
Millar	John	Provincial Health Services Authority
Moffatt	Michael	Winnipeg Regional Health Authority
Nagpal	Seema	Canadian Medical Association
Nalezyry	Lee-Ann	Northwestern Ontario District Health Council
Ness	Kathleen	Capital Health Authority (RHA #6)
Paddock	Kathie	Canadian Healthcare Association
Palaniappan	Uma	Canadian Population Health Initiative
Pearson	Dave	Muskoka Nipissing Parry Sound and Timiskaming District Health Council
Phillips	Robin	Prince Edward Island Health and Social Services
Pilkey	Dennis	Nova Scotia Department of Finance
Pong	Raymond	Centre for Rural Northern Health Research
Porter	Joan	Canadian Institute for Health Information
Pulcins	Indra	Canadian Institute for Health Information
Sauvageau	Yves	Direction de santé publique de la Montérégie
Schopflocher	Donald	Alberta Health and Wellness
Séguin	Michel	Statistics Canada
Shahab	Saqib	Sunrise Health Region (RHA #5)
Spidel	Mark	Kings Health Region
Stockdale	Donna	Mamawetan Churchill River Regional Health Authority
Stranc	Leonie	Manitoba Health
Svendsen	Kristine	Regional Health Authority—Central Manitoba Inc.
Thomson	Alan	British Columbia Ministry of Health
Vail	Stephen	Canadian Medical Association
Wannell	Brenda	Statistics Canada
Wardle	Gavin	Ontario Ministry of Health and Long-Term Care
Webster	Greg	Canadian Institute for Health Information
Wen	Eugene	Canadian Institute for Health Information
White	Beverley	Health and Community Services—Central Region
Wilson	Elinor	Canadian Public Health Association
Wolfe	Heather	Colchester East Hants District Health Authority (DHA #4)
Wolfson	Michael	Statistics Canada
Zelmer	Jennifer	Canadian Institute for Health Information

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