Health Care in Canada 2009

A Decade in Review

Canadian Institute for Health Information

Institut canadien d'information sur la santé

Who We Are

Established in 1994, CIHI is an independent, not-for-profit corporation that provides essential information on Canada's health system and the health of Canadians. Funded by federal, provincial and territorial governments, we are guided by a Board of Directors made up of health leaders across the country.

Our Vision

CIHI's vision is to help improve Canada's health system and the well-being of Canadians by being a leading source of unbiased, credible and comparable information that will enable health leaders to make better-informed decisions.

Production of this report is made possible by financial contributions from Health Canada and provincial and territorial governments. The views expressed herein do not necessarily represent the views of Health Canada or any provincial or territorial government.

Canadian Institute for Health Information
495 Richmond Road, Suite 600
Ottawa, Ontario K2A 4H6
Phone: 613-241-7860
Fax: 613-241-8120

www.cihi.ca

ISBN 978-1-55465-631-8 (PDF)

How to cite this document:

Canadian Institute for Health Information, *Health Care in Canada 2009: A Decade in Review* (Ottawa, Ont.: CIHI, 2009).

Cette publication est aussi disponible en français sous le titre *Les soins de santé au Canada 2009 : revue de la dernière décennie*.

ISBN 978-1-55465-633-2 (PDF)

Health Care in Canada 2009: A Decade in Review

Contents

About the Canadian Institute for Health Information

The Canadian Institute for Health Information (CIHI) collects and analyzes information on health and health care in Canada and makes it publicly available. Canada's federal, provincial and territorial governments created CIHI as a not-for-profit, independent organization dedicated to forging a common approach to Canadian health information. CIHI's goal: to provide timely, accurate and comparable information. CIHI's data and reports inform health policies, support the effective delivery of health services and raise awareness among Canadians of the factors that contribute to good health.

For more information, visit our website at www.cihi.ca.

As of September 2009, the following individuals are members of CIHI's Board of Directors:

Mr. Graham W. S. Scott, C.M., Q.C.
Chair of the Board, CIHI; President, Graham Scott Strategies Inc.

Ms. Anne McFarlane (ex officio)
Interim President and Chief Executive Officer, CIHI

Dr. Peter Barrett
Physician and Faculty, University of Saskatchewan Medical School

Dr. Luc Boileau
President and Director General, Institut national de santé publique du Québec

Dr. Karen Dodds
Assistant Deputy Minister, Health Canada

Dr. Chris Eagle
Executive Vice President, Quality and Service Improvement, Alberta Health Services

Mr. Kevin Empey
Chief Executive Officer, Lakeridge Health Corporation

Mr. Donald Ferguson
Deputy Minister, Department of Health, New Brunswick

Dr. Vivek Goel
President and Chief Executive Officer, Ontario Agency for Health Protection and Promotion

Ms. Alice Kennedy
Chief Operating Officer, Long Term Care, Eastern Health, Newfoundland and Labrador

Mr. Denis Lalumière
Assistant Deputy Minister, Strategic Planning, Evaluation and Quality, ministère de la Santé et des Services sociaux du Québec

Dr. Cordell Neudorf
Chair, Canadian Population Health Initiative Council; Chief Medical Health Officer, Saskatoon Health Region

Dr. Brian Postl
Vice Chair of the Board, CIHI; President and Chief Executive Officer, Winnipeg Regional Health Authority

Mr. Ron Sapsford
Deputy Minister, Ministry of Health and Long-Term Care, Ontario

Mr. Munir Sheikh
Chief Statistician of Canada, Statistics Canada

Mr. Howard Waldner
President and Chief Executive Officer, Vancouver Island Health Authority

Acknowledgements

The Canadian Institute for Health Information (CIHI) wishes to acknowledge and thank the many individuals and organizations whose work contributed to the development of this report.

Steven Lewis contributed substantially to the vision and intellectual development of the content for this report and was the principal writer.

Health Care in Canada 2009 represents the work of many CIHI and contract staff, who compiled and validated the data, and provided generous and ongoing support to the core team.

The core project team responsible for this report comprises:

Janine Arkinson, Analyst

Jean-Marie Berthelot, Vice President

Xi-Kuan Chen, Senior Analyst

Alice De Wolff, Qualitative Researcher

Alexey Dudevich, Analyst

Colleen Dwyer, Analyst

Lise Gagnon, Project Manager

Hui Jia, Analyst

Kira Leeb, Director

Steven Lewis, Principal Writer

Megan Mueller, Editor

Pauline O'Connor, Manager

Michelle Parker, Coordinator

Joan Porter, Program Lead

Health Care in Canada 2009 supports CIHI's mandate to provide essential data and analysis on Canada's health system and the health of Canadians, both key to sound decision-making.

About This Report

Health Care in Canada 2009 (HCIC 2009) is the 10th anniversary edition in a series of annual reports on the health care system and the health of Canadians. As the 10th edition, HCIC 2009 offers a decade-long perspective on how the health care system has changed since the production of the very first in this series of reports.

As with previous reports, this report draws on information and data held both within and external to CIHI. It provides a retrospective look at many health care priorities such as access, costs and quality of care, and the health care workforce and how these have changed since 1998–1999. Where possible, our retrospective look includes 10 years of data and trends. In some places, however, we have had to consider shorter trends due to data availability and comparability.

This report also provides a forward-looking perspective. Each chapter concludes with issues potentially on the horizon for the health care system in the years and decades to come.

CIHI welcomes comments about this report and would like to know how future reports can meet your information needs. We encourage you to email your comments to healthreports@cihi.ca.

Want to Know More?

Please visit the CIHI website (www.cihi.ca) for enhanced visuals, in-depth examples and more specific information about any area of interest or research involving health care in Canada.

Highlights and the full text of *Health Care in Canada 2009* are available free of charge in English and French on the CIHI website.

To order additional print copies of the report, please contact:

Order Desk

Canadian Institute for Health Information
495 Richmond Road, Suite 600
Ottawa, Ontario K2A 4H6
Phone: 613-241-7860
Fax: 613-241-8120

A charge will apply to cover printing, shipping and handling costs.

Report Highlights

Forces That Have Shaped Health Care in Canada

- At the end of the 1990s, governments were just beginning to reinvest in health care after an unprecedented period of mid-decade restraint.
- Access to care became a focal point. In 2003 and 2004, wait time reduction in five priority areas featured prominently in the first ministers' negotiated health accords, with a $5.5 billion dedicated federal government investment.
- Trends in technology development over the past 10 years included a move toward less invasive surgery, increased use of diagnostic imaging and the introduction and utilization of biological and tailored drug therapies.
- There were significant changes in the use of products and services. The number of cardiovascular drug prescriptions increased from 32 million in 1998 to 71 million in 2008; age-standardized hip and knee replacement rates increased 24% and 83%, respectively, between 1998–1999 and 2007–2008.

The Health of Canadians: Health Care and Health Policy Responses

- The life expectancy of Canadians continued to rise, from 78 years in 1996 to 81 years in 2006.
- Over the past decade risk factors such as obesity, diabetes and high blood pressure increased; the impact of these increases on the health of Canadians is likely to be felt in the coming years.
- Rates of heart attacks and death following heart attacks have declined in recent years. Heart and stroke care in Canada is more effective and timely than it was five years ago.
- A number of initiatives were launched to promote population health. For example, smoking in the workplace is now almost completely prohibited by federal and provincial law, and many municipalities have banned smoking in public places. A notable result of these initiatives is the continued reduction in smoking rates, especially among teenagers.

Follow the Money: What We Spent, Where It Went, What We Got

- In 2008, $172 billion was spent on health care—in real terms, nearly 60% more than a decade ago.
- Governments have invested in training more health care professionals. In 10 years the entering class of medical students increased by about 68%, and the entering class of nursing students by 51%.
- Drugs were the fastest growing expenditure in health care, having increased by about 136% since 1998.

Access to Care: A Complex Story

- The supply of family doctors increased from 95 to 98 per 100,000 population from 2001 to 2007 in Canada, whereas the proportion of people with a regular family doctor fell from 88% to 85% nationally. There remains wide variation in both the supply of doctors and the percentage of people with family doctors across jurisdictions in Canada.
- Many strategies to better measure and manage wait times have been put in place over the last decade. For jurisdictions where trends can be calculated, wait times have declined for hip and knee replacement and cataract surgery in recent years.
- Benchmark wait times were established for priority areas of heart surgery and cancer radiation among others. All seven provinces that report wait times information met the 182-day benchmark for 90% or more of coronary artery bypass graft (CABG) procedures in 2007–2008. In these same provinces, at least 80% of cancer patients received radiation treatment within the benchmark of 28 days.

Quality, Safety and Outcomes: A Decade of Development

- In 2004, the Canadian Adverse Events Study estimated that 70,000 preventable adverse events occur annually in hospitals, causing from 9,250 to 23,750 deaths.
- Quality and safety joined access and money as dominant topics in the discussion about health care over the past decade. In response, many jurisdictions established health quality and/or patient safety councils.
- Numerous initiatives were implemented to improve patient safety and quality of care. At the national level, the *Safer Healthcare Now!* campaign has produced some exceptional results. Participating hospitals in the campaign have achieved a 50% reduction in both ventilator-assisted pneumonia rates and central-line blood-stream infections, among other accomplishments.

Taking Health Information Further

- There has been progress in our ability to answer important health care questions with available data. For example, hospital standardized mortality ratios, a “big-dot” measure of quality of care, are publicly reported at the hospital level. But there is still a long way to go because there is little systematic data and information available about health outcomes following care.
- Over the last 10 years information has become much more decentralized and democratized through the technology explosion of digitization and the World Wide Web. This has served to level the previous imbalance of power and create the possibility of a more engaged partnership between providers and patients.

Introduction

CIHI is 15 years old. Its annual flagship publication, *Health Care in Canada* (HCIC), has been around for 10 of those 15 years. Anniversaries are special occasions, and those ending in zero usually get a commemorative upgrade. It's a time to celebrate, reflect, sum up and look to the future.

Health care spans a huge terrain, and there are endless possible ways to craft a report on health care in Canada that encapsulates the last decade. We needed to devise an approach compatible with the inevitable constraints, such as

- The obligation to be brief;
- The sparseness of data in some areas;
- The imperative to avoid repetition of work already done well by others; and
- The importance of distinguishing the seminal from the merely interesting and possible.

We put a high premium on telling a good story. While CIHI's core assets are *databases*, our core business is *information*. And information requires a narrative, or, in this case, a series of narratives. Together, the narratives in this report are designed to present a cohesive picture of health care in Canada over the past decade.

That is a tall order since there are endless stories in health care and HCIC is not an encyclopedia, a Royal Commission or a multi-volume journal of record. So, how do we, in a few dozen pages, create a report that accurately and objectively reflects the important events and trends in health care over a decade? What level of detail and analysis is required to illuminate the subject? What stories do we cover, and how do we justify the selection and inclusion of some over others?

In order to move forward, we had to first take a step back and devise a filtering process. In health care, what you see depends on where you stand; each perspective yields a partial and unique view of the health care landscape. Some people are interested in some views and not others; some want the panoramic whole. In this report, we sought to accommodate both approaches.

We began with two basic questions:

- What would readers need to know in order to acquire a thorough and balanced understanding of the last decade of health care?
- Which pictures do we need to assemble in order to generate the album of images?

From a long list of possibilities, the following areas emerged as paramount:

Policy Direction

What big-picture policies and priorities have shaped health care? How have governments defined their major aspirations? What broad directions have governments set, and how did governments organize and reorganize the system?

Innovation

What new health care capabilities have emerged? What can we do in 2009 that could not have been accomplished in 1999? Which interventions got simpler and which got more complex? What were the breakthroughs in diagnosis and treatment, and how did these advancements affect service delivery and outcomes?

The Health and Health Care Link

How did the health status of Canadians change over the decade? Which groups fared the best and which lagged behind? How did health care respond to old and emerging needs, and how successful was it in these areas? What new knowledge affected our understanding, and how did this knowledge influence health care delivery?

Money

How much did we spend, where did it go and what did it accomplish? Which slices of the spending pie grew the fastest? How did dollars translate into health human resources capacity, jobs, technology and units of service delivered? To what extent did spending patterns reflect the stated priorities of governments?

Access

How did the relationships among access, capacity and need evolve over the decade? How did wait times change for consultations, diagnosis and treatment? Which procedures do we do more frequently? Which do we do less frequently? Did increases in supply reduce wait times, expand the pool of patients deemed suitable for interventions, or both?

Quality and Safety

How did the quality of care change over the last decade? What drove the quality improvement (QI) movement and what QI capacity has emerged? What instruments have been designed to accelerate QI and what does the future hold in this area?

Health Information

What health information did we have at the beginning of the decade and what do we have at the end? How timely and useful is the information? More specifically, how are people in the system using information and how has their use of information changed?

The Future

What's on the horizon for the next decade in health care technology, quality and access? What will primary health care look like in the future?

Some of these questions cut across numerous topic areas, while others pertain to discrete and relatively contained areas of inquiry. Have we been successful in the selection of topics and the organization of material? If the parts gel into a concise and coherent history of health care in Canada over the last decade then our efforts will have been successful.

A note about the time frame: in an ideal world, we would be able to produce a report based on comprehensive data beginning in 1999 and ending in 2009. However, we are not there yet; this information is not always consistently available. So we have had to make do with what currently exists. In some cases, the data series available for analysis ends in 2008. More often, it ends in 2007. And in some cases, it ends earlier. Some data series begin in this century—meaning the retrospective scope is less than a decade—while some stories require going back more than a decade in order to generate true meaning. Standardizing the time frame would have meant settling for the lowest common denominator of available data and truncating important pieces of history. We decided that an elastic interpretation of "decade" would, in the end, serve readers better and allow for a more insightful examination.

Finally, we look to the future. Although health care history may be intrinsically captivating, we assume that readers are also interested in its significance for future developments. Most chapters end with a section outlining issues on the horizon. The intent of this section is not to predict the future, but instead to stimulate conversation and debate. We make no claim to have predicted the single or the most important issues that the system will face in the coming decade. A decade is a long time in health care, after all. There are only two predictions in which we are confident. One is that the landscape of 2019 will be recognizable in some aspects and wondrously different in others. Change is inevitable. The other—both an aspiration and a prediction—is that we will possess information that is immensely richer. With this report as a well-built keystone, spanning 10 years' time, future reports can build upon this foundation to further advance the knowledge and understanding of health care in this country.

Policy Development Highlights

Forces

2000

- First Ministers' Meeting Communiqué on Health

2001

- *Caring for Medicare: Sustaining a Quality System*, Saskatchewan Commission on Medicare, Kenneth Fyke, Commissioner
- Quebec's Health Review, The Clair Commission
- *A Framework for Reform: Report of the [Alberta] Premier's Advisory Council on Health*, Don Mazankowski, Chair

2002

- Commission on the Future of Health Care in Canada, Roy Romanow, Commissioner
- Standing Senate Committee on Social Affairs, Science and Technology Study on the State of the Health Care System in Canada, Michael Kirby, Chair

2003

- First Ministers' 2003 Accord on Health Care Renewal

2004

- First Ministers' 10-Year Plan to Strengthen Health Care

2005

- Chaoulli Decision by the Supreme Court of Canada
- *Blueprint on Aboriginal Health: A 10-Year Transformative Plan*

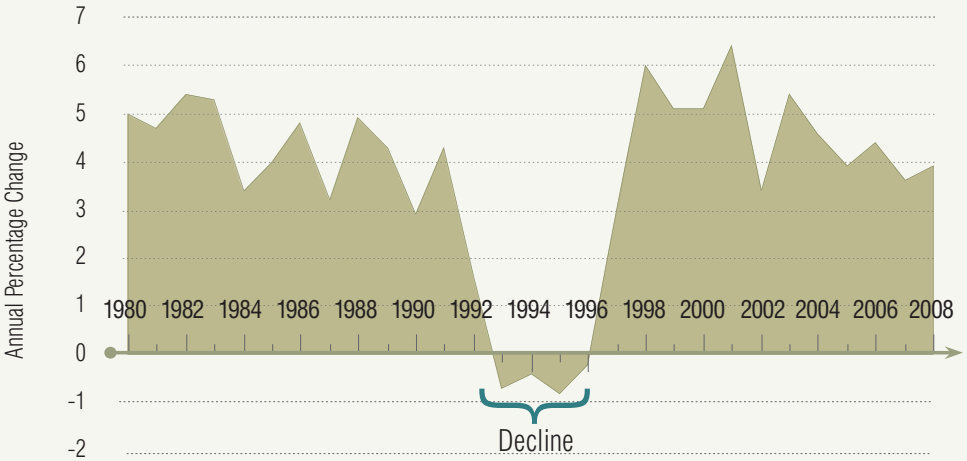
2006

- *Out of the Shadows at Last: Transforming Mental Health, Mental Illness and Addiction Services in Canada*, Standing Senate Committee on Social Affairs, Science and Technology, Michael Kirby, Chair

Chapter 1

Forces That Have Shaped Health Care in Canada

Figure 1. Annual Percent Growth in Public-Sector Health Spending, Canada, 1980 to 2008 (Constant Dollars)



Note
2007 and 2008 figures are based on forecasted data.

Source
Canadian Institute for Health Information, *National Health Expenditure Trends, 1975–2008* (Ottawa, Ont.: Canadian Institute for Health Information, 2008).

Death, taxes and health care change: these are life's certainties.

A decade is an epoch in contemporary health care. As science and technology limit the damage of old diseases, nature concocts new threats.

Governments wrestle with competing demands from providers and the public, and then set priorities accordingly. There are inevitable tensions between what is *possible* and what is *affordable*.

Put another way, health care changes for three main reasons: policy, need and innovation. Governments change funding, structure, the scope of programs and services, and regulation in response to changes in need as well as new prevention and treatment approaches. As some diseases retreat and others emerge, health care needs change. Science generates new strategies to prevent illness, new procedures, new diagnostic technologies and new treatments.

A decade ago seems like another century—and it was. A 10-year retrospective written in 1999 would have differed dramatically from this one. At the end of the 1990s, governments were just beginning to reinvest in health care after an unprecedented period of mid-decade restraint. In 1992, health care consumed 10% of the gross domestic product (GDP). By 1996, it had fallen to 8.9% and would not reach 10% again until 2002.[1] While governments scaled growth back significantly, growth in private-sector spending decelerated more slowly. As a result, over time its share of total spending increased from 25% in 1989 to 30% in 1999, and has remained at that level ever since.[1]

Government Policy and Investments

Health care is a huge and complex sector and sometimes appears to evolve on its own terms, as if largely immune to external forces. But, as Romanow noted, health systems are not on autopilot and, in largely public systems, policies and priorities matter. Governments shape health care by what they say—via election platforms, throne speeches, white papers—and by what they do. They make policy, set priorities and allocate resources, often in response to the interests and advice of the public, professional associations, health care organizations and the media. In the past decade, a number of government initiatives stand out as major influences on health care.

Ottawa Changes Course

The federal government began the 1990s with substantial deficits and a weakening economy. It embarked on a major effort to balance the books. One of the approaches was to reduce health care and social-service transfers to the provinces, which fell to $12.6 billion in 1997. By the end of the decade, the economy was booming, the balance sheet was sound, and Ottawa began to put money back on the table. Three major agreements—in 2000, 2003 and 2004—resulted in new federal commitments. In 1998–1999, the Canada Health and Social Transfer was $16 billion,[2] and included money for health, postsecondary education, social assistance and social services. By 2008–2009, the Canada Health Transfer designated specifically for health had reached $22.6 billion.[3]

Provinces Reinvest

Provincial and territorial governments' fiscal health turned for the better alongside Ottawa's by the end of the 1990s. At that time, most had balanced their budgets and some had begun to pay down their debt. This created room for new spending and, after the restraint of the mid-1990s, there was strong commitment to reinvestment. As a result, the last decade has seen the biggest sustained increases in health care spending since the dawn of medicare.

Quality and Safety Come to the Fore

Beginning in the 1990s, a growing body of international literature revealed major quality and safety issues with health care. The Fyke Commission's 2001 report in Saskatchewan was the first (and thus far the only) Canadian report to define problems in health care in terms of *quality* rather than *access* or *money*.[4] The 2004 Baker–Norton study found that between 9,250 and 23,750 people died as a result of errors in Canadian hospital care—at least one-third of which were avoidable.[5] A landmark American study (2003) revealed that patients receive only about 50% to 60% of the care that sound, evidence-based practice should deliver.[6] These findings confirmed that it takes more than money and highly trained personnel to create a safe, high-quality health system. To accelerate improvement, governments established the Canadian Patient Safety Institute (2003) and five provincial health quality councils, and funded numerous quality improvement projects.

Reducing Wait Times Becomes the Top Priority

Access to care has often been viewed as the Achilles' heel of the Canadian health care system. A decade ago, there was little systematic reporting of wait times, but anecdotal accounts of long wait times frequently turned up in the media and fuelled the concerns of providers and users of services. A report published in 1998 revealed the absence of solid wait times information and a desire for standardized approaches to wait times management and reporting.[7] The Western Canada Waiting List (WCWL) Project subsequently received a $2 million grant from the Health Transition Fund.[8] The WCWL was established to enhance understanding of wait times and to determine criteria to prioritize wait times based on needs and benefits.[9] The pioneering efforts of the WCWL—a consortium of 19 partners—have been built into wait time information systems in many provinces today. Wait times reduction in five priority areas also featured prominently in the 2003 and 2004 health accords, with $5.5 billion of dedicated investment.[10]

Prominent New National Agencies Emerge

1998: Canadian Blood Services was created to safeguard Canada's blood supply following the results of the Krever Inquiry.

2000: The Medical Research Council transformed into the Canadian Institutes of Health Research, with an expanded scientific mandate and a major budget increase.

2001: Ottawa established Canada Health Infoway to spearhead the implementation of a pan-Canadian e-health network.

2003: The Canadian Patient Safety Institute was established to accelerate improvements in health care.

2004: In response to the water contamination incidents in Walkerton and North Battleford, as well as the SARS (severe acute respiratory syndrome) outbreak in Ontario, the federal government established the Public Health Agency of Canada (PHAC) to strengthen capacity to prevent, identify and contain outbreaks of diseases.

2007: The 2006 Senate report, *Out of the Shadows at Last—Transforming Mental Health, Mental Illness and Addiction Services in Canada*, led to the creation of the Mental Health Commission.

Science and Technology

Health science and technology developments never cease, yet there is no reliable method to determine which are most important, or when their full impact will be felt. Among the trends in the past decade, examples include:

Less Invasive Surgery

From gallbladder removal to kidney donation, the laparoscope has reduced the number of open-wound procedures significantly. In cardiac care, surgeons are performing fewer coronary artery bypass grafts (CABGs) but more angioplasties.[11] Angioplasty and stents are less invasive, allow quicker recovery, use fewer hospital resources and produce better outcomes[11]—a win-win situation.

Two new surgery types are on the horizon: laparoendoscopic single-site surgery (LESS), which reduces the incision to a small cut in the navel, and natural orifice transluminal endoscopic surgery (NOTES), which gains access to the site through natural body cavities.[12] The benefits include shorter hospital stays and faster recovery. But technical advances do not always translate into more effective care. For example, recent literature suggests that arthroscopic knee procedures are of little benefit for patients with osteoarthritis.[13–15]

Diagnostic Imaging

The number of installed magnetic resonance imaging (MRI), computed tomography (CT) and positron emission tomography (PET) scanners (including PET/CT) increased by 49%, 29% and 121%, respectively, from 2003 to 2007.[16] PET, often combined with CT (PET/CT), is one of the newest and most rapidly expanding technologies. This combination scanner was first installed in Canada in 2002. As of January 2007, there were 18 PET/CT scanners in Canada.[16] Distribution and utilization of this technology remain uneven across the country.[17]

Once considered exotic and rarely used technologies, CT or MRI is often the test of first resort. In Ontario, the number of MRI machines increased sixfold, and CT scanners almost twofold, between 1993 and 2006.[16] In 2007, the Institute for Clinical Evaluative Sciences (ICES) in Ontario published the first major review of the impact and appropriateness of diagnostic imaging.[18] The report noted that some testing patterns yield either very little or uncertain clinical information. It also noted that high-income Ontarians have more MRI scans (but not CT) than groups likely to be in poorer health, raising the possibility that *need* is not necessarily driving some of the increase.

Tailored Therapies, Biologicals and Stem Cells

For some, the ultimate biomedical goal is now to find a way to develop drug therapies tailored to an individual's genetic makeup. These drugs would ultimately provide maximum response with minimal adverse side effects. A number of new drugs known as "biologicals" have been introduced to the Canadian market. These drugs utilize the current knowledge of genetics to predict which patients will respond to treatments. Many of these innovative therapies are for treating cancers. One such drug, Herceptin, is indicated for breast

The **Alberta Netcare** Portal

Alberta is ahead of other provinces in the implementation of electronic health records (EHRs), according to the Canadian Medical Association.[56]

Provincial EHR activities are consolidated under Alberta Netcare, a program run by Alberta Health and Wellness since 2004.[57] Core EHR components include remote access to drug dispensing records, electronic transmissions of laboratory and diagnostic imaging test results, demographic information on patients, known allergies or intolerances and immunizations.[58]

Physicians and authorized health professionals access information on patients and their treatment[58]—via EHRs—through an e-portal, although the patients themselves cannot access this information or use the e-portal.[59]

cancer patients who are over-expressing a protein known as HER2. This occurs in 20% to 30% of breast cancer patients.[19, 20]

Beyond advancements in the drug industry, advancements in stem cell research have also occurred. A decade ago scientists had to rely exclusively on embryonic stem cells for experiments and growth. Since then, there has been steady progress in exploiting the potential of adult stem cells.[21] This scientific advancement has broader implications as it sidesteps the ethical dilemma of using and destroying the discarded embryos from *in vitro* fertilization procedures.

E-health

Information technology (IT) and application are fundamental to quality improvement. A 2006 international study placed Canada last among seven countries surveyed in the use of health IT among primary care physicians.[22] This is changing, however. Infoway's new target is for every Canadian to have an electronic health record (EHR) by 2016.[23] There has been good progress on some fronts, notably in radiology, where picture archiving and communication systems (PACS) are in place in several provinces. These systems allow clinicians to examine patient images from anywhere in the province by logging on to the computer network.

So far, e-health has been a partnership among governments, health care facilities and physicians. However, they've now got competition: Microsoft Health Vault (to be offered through TELUS Health Space) and Google Health have developed secure online records that will allow users to exchange health information from partnering sites, to access and control their own data, and to link to information relevant to their own conditions.

How the Portal Works

Physicians provide much of the core information in the patient EHRs. Through its Physician Office System Program (POSP), the province has offset up to 70% of physicians' EHR start-up costs in order to encourage enrolment in the EHR system.[60] About 1,500 physicians enrolled in the program between October 2001 and March 2003, and another 1,800 between March 2003 and March 2006.[60]

Implementation and Use

By 2008, about 25,000 Alberta health care providers had access to patient information through the Alberta Netcare Portal.[56] Another 10,000 or so users in Calgary and Chinook are expected to gain access in 2009.[61]

As of 2009, the portal holds information on over 90% of current prescribed medication-dispensing activity in the province.[62] In all regions, blood bank results, as well as general, microbiology and pathology lab data, are available.[63] Physicians can also download approximately 90% of current diagnostic imaging reports.[64] Additional information continues to become available, including emergency room reports, event history and electrocardiograms.[63]

The Impact of Innovation on Spending

Innovation comes at a cost. Research and development costs for new drugs and sophisticated machinery can run to the hundreds of millions of dollars. Often, and particularly in health care, the introductory price of innovations is very high. Innovations that replace their predecessors allow for opportunities to reallocate funds without necessarily increasing the size of the pie. Others will add to, rather than replace, existing services, and these tend to increase total costs. Some—we hope the majority—will significantly improve outcomes and prolong life—major benefits that provide good value for money.

Below are some examples of changes in the use of products and services:

- Cardiovascular drug prescriptions increased from 32 million in 1998 to 71 million in 2008—up 118%. Prescriptions of statins, to control cholesterol, more than quadrupled from 6 million to 26 million. In 1998, there were 1 million prescriptions of angiotensin-2 receptor inhibitors (to treat high blood pressure and congestive heart failure) and 13 million prescriptions a decade later.[24]
- Celebrex and Vioxx are but two of the class of drugs known as COX-2 inhibitors, designed to relieve musculoskeletal pain. These drugs were not yet on the market in 1998. By 2003, there were 7.7 million prescriptions for this drug class.[25] Then came the Vioxx safety concerns that resulted in its withdrawal from the market in September of 2004.[26] By 2008, prescriptions for COX-2 inhibitors had dropped to 3.6 million.[24]

HIV/AIDS:
The Leap From Fatal to Chronic

Up to a decade or so ago, infection with HIV typically led to AIDS and, later, death.

There has been a decline in both the incidence of AIDS cases and the number of reported AIDS-related deaths in Canada. Quite remarkably, deaths due to AIDS have declined from over 1,000 a year in the early 1990s, to only 28 in 2007—this, despite the fact that the number of positive HIV tests has remained the same since 2002, at about 2,500 per year.[53]

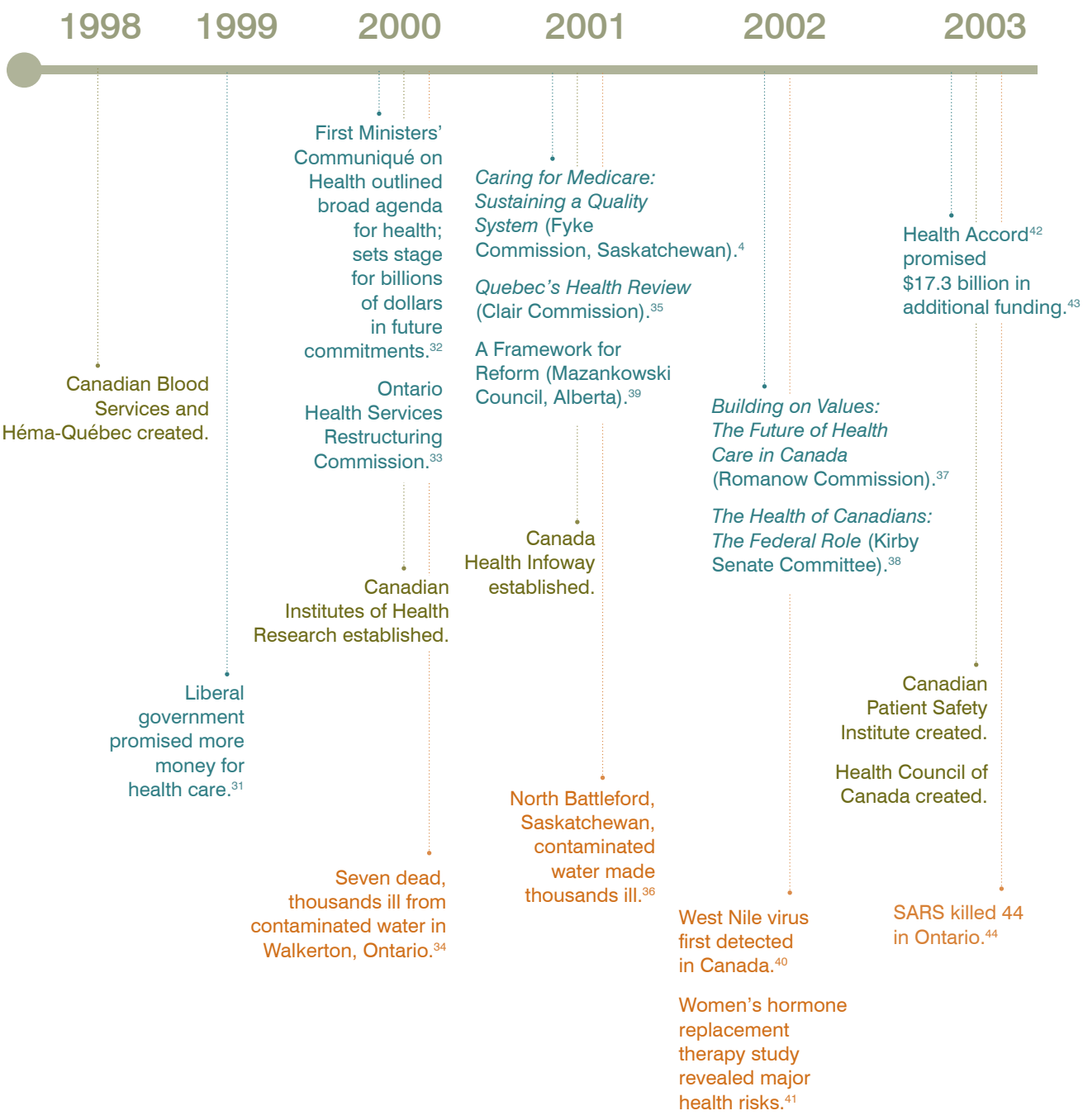
What is saving peoples' lives? In large part the answer is better drugs. Over the past 15 years, two distinct classes of antiretroviral (ARV) drugs were introduced to inhibit virus replication.[54] As well, a group of therapeutics known as protease inhibitors proved effective in preventing the formation of mature viruses.[54] The most recent innovation has been the combination of multiple ARVs into one pill, thereby reducing the patients' burden of having to take multiple pills.

Between 1998 and 2008, the number of prescriptions for HIV/AIDS filled in Canada more than doubled from 241,000 to 504,000.[24] In 2005, an estimated 58,000 Canadians were living with HIV/AIDS—a 16% increase in those living with the disease from 2002.[55]

- Hospital spending for cancer drugs quintupled nationally between 1998 and 2008, from $145 million to $725 million.[27] During the same period, spending by jurisdictions for cancer drugs also grew. For example, British Columbia's total spending on oral and intravenous oncology drugs, which includes both hospital and community spending, rose from $17 million[28] to $114 million.[29]
- Age-standardized hip and knee replacement rates rose by 24% and 83% respectively between 1998–1999 and 2007–2008.[11] Increases are especially pronounced among younger patients (age 45 to 64) and very old patients (85 and older).[30] Since the major indication for both procedures is intractable pain and loss of mobility, there is speculation that the increases are needs-driven (for knees in particular) and related to obesity.[30]

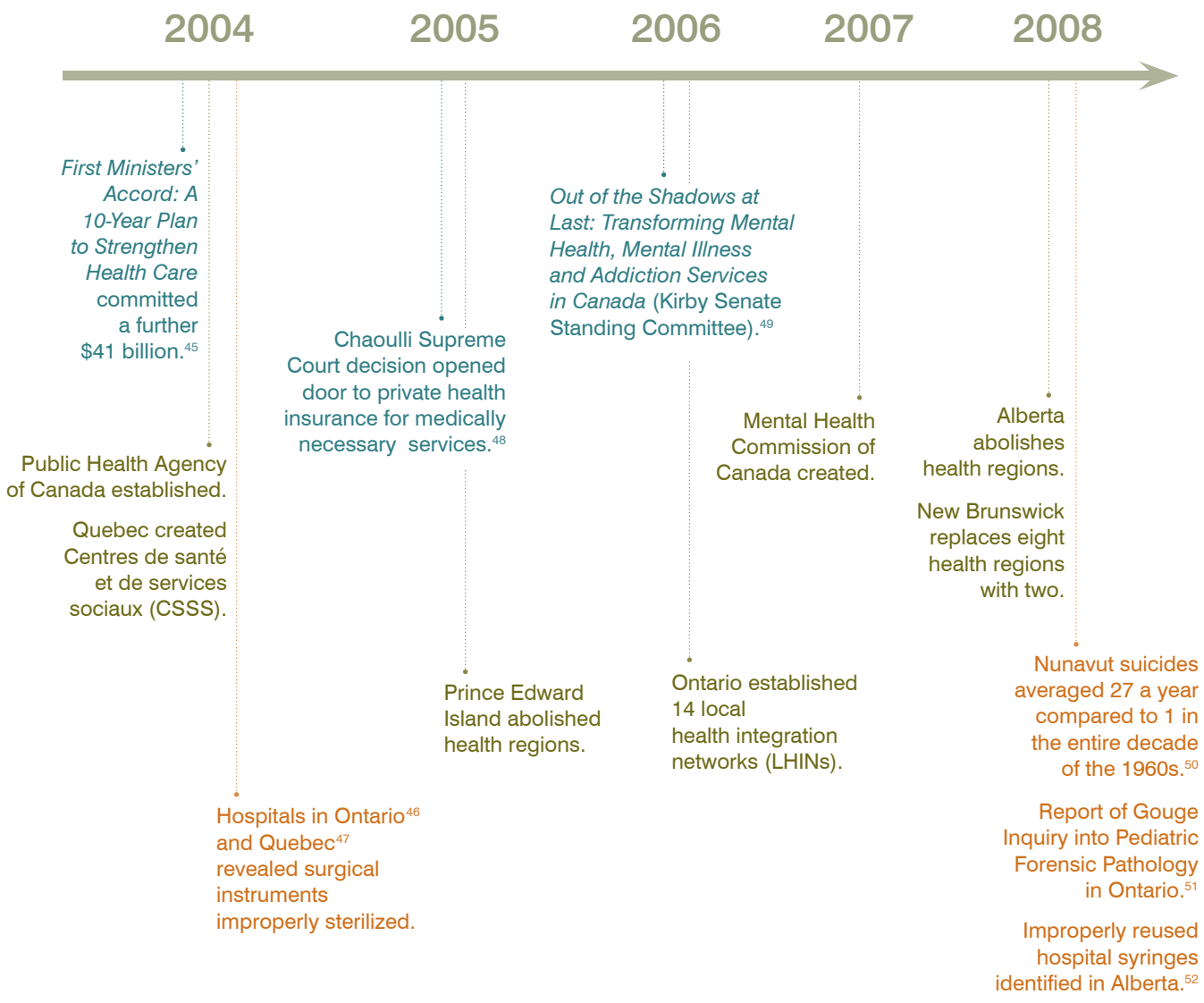
In summary, declarations, aspirations, innovations and tragedies are the forces that shape health care and also make headlines. Table 1 on pages 24 and 25 is a bird's-eye view of some key events that defined health and health care issues and captured the attention of the media and public over the last decade.

Table 1. Key Events That Defined Health and Health Care Issues in Canada, 1998 to 2008



Key

- Policy and Funding
- Arrivals and Departures
- Risks, Setbacks and System Error



References

1. Canadian Institute for Health Information, *National Health Expenditure Trends, 1975–2008* (Ottawa, Ont.: CIHI, 2008).
2. Government of Canada, *Annual Financial Report of the Government of Canada: Fiscal Year 1998–1999* (Ottawa, Ont.: Government of Canada, 1999), cited June 25, 2009, from <http://www.collectionscanada.gc.ca/archivesweb/20071126000058/http://www.fin.gc.ca/afr/1999/afr98-99e.pdf>.
3. Department of Finance, *Government of Canada Confirms Increased Support for Canada's Health System* (2008), cited June 25, 2009, from <http://www.fin.gc.ca/n08/08-003-eng.asp#CHT>.
4. K. Fyke, *Caring for Medicare: Sustaining a Quality System* (Regina, Sask.: Government of Saskatchewan, 2001), cited June 25, 2009, from <http://www.health.gov.sk.ca/medicare-commission-final-report>.
5. R. Baker et al., "The Canadian Adverse Events Study: The Incidence of Adverse Events Among Hospital Patients in Canada," *Canadian Medical Association Journal* 170, 11 (2004): pp. 1678–1686.
6. E. McGlynn et al., "The Quality of Health Care Delivered to Adults in the United States," *The New England Journal of Medicine* 348, 26 (2003): pp. 2635–2645.
7. P. McDonald et al., *Waiting Lists and Waiting Times for Health Care in Canada: More Management, More Money?* (Ottawa, Ont.: Health Canada, 1998), cited June 26, 2009, from <http://www.chspr.ubc.ca/files/publications/1998/hpru98-09D-A.pdf>.
8. Health Canada, *Health Transition Fund Project Descriptions* (2005), cited July 21, 2009, from <http://www2.itssti.hc-sc.gc.ca/hpb/hcpd/pchcd/projectc.nsf/e8009e409c3b461585256be2005c9e75/8ab3c08f8ade1a6385256816006d028f?OpenDocument&Highlight=0,Wait>.
9. Western Canada Waiting List Project, *From Chaos to Order: Making Sense of Waiting Lists in Canada Final Report* (Edmonton, Alta.: Western Canada Waiting List Project, 2001), cited June 26, 2009, from <http://www.wcwl.org/media/pdf/library/final_reports.2.pdf>.
10. Department of Finance, *Federal Transfers in Support of the 2000/2003/2004 First Ministers' Accords* (Ottawa, Ont.: Government of Canada, 2004), cited July 15, 2009, from <http://www.fin.gc.ca/fedprov/fmAcc-eng.asp>.
11. Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).
12. The Cleveland Clinic, *Cleveland Clinic Unveils "Top 10" Medical Innovations for 2009* (2008), cited June 25, 2009, from <http://my.clevelandclinic.org/media_relations/library/2008/cleveland_clinic_unveils_top_10_medical_innovations_for_2009.aspx>.
13. J. B. Moseley et al., "A Controlled Trial of Arthroscopic Surgery for Osteoarthritis of the Knee," *The New England Journal of Medicine* 347 (2002): pp. 181–188.
14. A. Kirkley et al., "A Randomized Trial of Arthroscopic Surgery for Osteoarthritis of the Knee," *The New England Journal of Medicine* 359, 11 (2008): pp. 1097–1107.
15. W. Laupattarakasem et al., "Arthroscopic Debridement for Knee Osteoarthritis," *Cochrane Database of Systematic Reviews* 1 (2008).
16. Canadian Institute for Health Information, *Medical Imaging in Canada, 2007* (Ottawa, Ont.: CIHI, 2008).
17. Canadian Agency for Drugs and Technologies in Health, *PET Scan Funding in Canada* (Ottawa, Ont.: CADTH, 2008), pp. 1–8, cited June 25, 2009, from <http://www.cadth.ca/media/pdf/hta_htupdate_issue-8.pdf>.
18. J. You et al., *Diagnostic Services in Ontario: Descriptive Analysis and Jurisdictional Review* (Toronto, Ont.: Institute for Clinical Evaluative Sciences, 2007), cited June 25, 2009, from <http://www.ices.on.ca/file/Diagnostic_Services_Ontario_Oct16.pdf>.
19. Cancer Care Manitoba, *Herceptin Information* (Cancer Care Manitoba, 2009), cited July 29, 2009, from <http://www.cancercare.mb.ca/home/patients_and_family/about_your_cancer/breast_cancer_health_information_support_and_resources/herceptin_information/>.
20. Cancer Care Ontario, *Drug Information: Trastuzumab* (Cancer Care Ontario, 2009), cited July 29, 2009, from <http://www.cancercare.on.ca/pdfdrugs/trastuzumab.pdf>.
21. P. Macchiarini et al., "Clinical Transplantation of a Tissue-Engineered Airway," *The Lancet* 372, 9655 (2008): pp. 2023–2030.

22. C. Schoen et al., "On the Front Lines of Care: Primary Care Doctors' Office Systems, Experiences, and Views in Seven Countries," *Health Affairs* 25, 6 (2006): pp. 555–571.

23. Canada Health Infoway, *Paving the Way to Collaborative Care* (Ottawa, Ont.: Infoway, 2008), cited June 25, 2009, from <http://www2.infoway-inforoute.ca/Documents/Infoway_Business_Plan_2008-2009_Eng.pdf>.

24. IMS Health Canada, *Estimated Volume of Prescriptions Dispensed in Canadian Retail Pharmacies, by Therapeutic Class and Subclass* (IMS HEALTH Canadian CompuScript, 2009).

25. IMS Health Canada, *Drug Treatment Insights: Anti-Arthritis COX-2 Inhibitors & Other Anti-Inflammatories—Painful Withdrawal of Arthritic Relief* (2006), cited June 23, 2009, from <http://www.imshealthcanada.com/vgn/images/portal/cit_40000873/5/43/79032761Insights05En061127.pdf>.

26. Health Canada, *Health Canada Informs Canadians of Vioxx Withdrawal by Merck & Co.* (Ottawa, Ont.: Health Canada, 2004), cited July 8, 2009, from <http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/_2004/2004_50-eng.php>.

27. IMS Health Canada, *Estimated Value of Purchases Made by Canadian Hospitals for Oncology Products* (IMS HEALTH Canadian Drug Stores & Hospitals Purchases Audit, 2009).

28. BC Cancer Agency, *2001 BC Cancer Agency—Annual Report* (Vancouver, B.C.: BC Cancer Agency, 2001), cited June 25, 2009, from <http://www.bccancer.bc.ca/NR/rdonlyres/E1D56E3C-D645-4947-8CD7-5690347A4033/1590/bcca_annual_report_2001.pdf>.

29. BC Cancer Agency, *BC Cancer Agency Fact Sheet* (2008), cited June 25, 2009, from <http://www.bccancer.bc.ca/NR/rdonlyres/E1D56E3C-D645-4947-8CD7-5690347A4033/29391/BCCAFactSheet1.pdf>.

30. Canadian Institute for Health Information, *Hip and Knee Replacements in Canada—Canadian Joint Replacement Registry (CJRR) 2008–2009 Annual Report* (Ottawa, Ont.: CIHI, 2009).

31. Government of Canada, *Strengthening Health Care for Canadians* (Ottawa, Ont.: Government of Canada, 1999), cited June 25, 2009, from <http://www.fin.gc.ca/budget99/heal/heal1-eng.asp>.

32. Government of Canada, *News Release: First Ministers' Meeting Commuiqué on Health* (2000), cited June 25, 2009, from <http://www.scics.gc.ca/cinfo00/800038004_e.html>.

33. Government of Ontario, *Ontario Health Services Restructuring Commission 2000. Looking Back, Looking Forward (1996–2000)* (Ottawa, Ont.: Ontario Health Services Restructuring Commission, 2000), cited June 25, 2009, from <http://www.health.gov.on.ca/hsrc/HSRC.pdf>.

34. D. O'Connor, *A Summary Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues* (Toronto, Ont.: Government of Ontario, 2002), cited June 26, 2009, from <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.

35. H. Chodos, *Quebec's Health Review (The Clair Commission)* (Ottawa, Ont.: Government of Canada, 2001), pp. 1–14, cited June 25, 2009, from <http://dsp-psd.pwgsc.gc.ca/Collection-R/LoPBdP/PRB-e/PRB0037-e.pdf>.

36. R. Laing, *Report of the Commission of Inquiry Into Matters Relating to the Safety of the Public Drinking Water in the City of North Battleford, Saskatchewan, 2002* (Sask.: Government of Saskatchewan, 2002), cited June 23, 2009, from <http://www.northbattlefordwaterinquiry.ca/final/toc.asp>.

37. R. J. Romanow, *Building on Values: The Future of Health Care in Canada* (Ottawa, Ont.: Commission on the Future of Health Care in Canada, Government of Canada, 2002), cited July 8, 2009, from <http://dsp-psd.pwgsc.gc.ca/Collection/CP32-85-2002E.pdf>.

38. The Standing Senate Committee on Social Affairs, Science and Technology, *The Health of Canadians: The Federal Role—Final Report on the State of the Health Care System in Canada* (Ottawa, Ont.: Government of Canada, 2002), cited June 26, 2009, from <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/soci-e/rep-e/repoct02vol6-e.pdf>.

39. Premier's Advisory Council on Health for Alberta, *Framework for Reform* (Edmonton, Alta.: Government of Alberta, 2002), cited June 26, 2009, from <http://www.health.alberta.ca/documents/Mazankowski-Report-2001.pdf>.

40. Health Canada and Public Health Agency of Canada, *West Nile Virus* (2005), cited June 25, 2009, from <http://www.hc-sc.gc.ca/hl-vs/alt_formats/pacrb-dgapcr/pdf/iyh-vsv/diseases-maladies/wnv-vno-eng.pdf>.

41. H. D. Nelson et al., "Postmenopausal Hormone Replacement Therapy," *The Journal of the American Medical Association* 288, 7 (2002): pp. 872–881.

42. Health Canada, *2003 First Ministers' Accord on Health Care Renewal* (Ottawa, Ont.: Government of Canada, 2003), cited June 26, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2003accord/index-eng.php#notes>.

43. Government of Canada: Department of Finance, *Budget 2003: Investing in Canada's Health Care System* (2003), cited June 25, 2009, from <http://www.fin.gc.ca/budget03/pdf/bkheae.pdf>.

44. The SARS Commission, *Spring of Fear* (Ottawa, Ont.: Government of Ontario, 2006), cited June 26, 2009, from <http://www.health.gov.on.ca/english/public/pub/ministry_reports/campbell06/online_rep/index.html>.

45. Health Canada, *New Federal Investments on Health Commitments on 10-Year Action Plan on Health* (2004), cited June 26, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2004-fmm-rpm/bg-fi_inv-eng.php>.

46. CBC News, "Another Ontario Hospital Admits Improper Sterilization," *CBC News*, 2004, cited June 23, 2009, from <http://www.cbc.ca/canada/story/2004/01/13/sterlization040113.html>.

47. M. Johne, "It's a Dirty Job but Everyone Has to Do It," *National Review of Medicine* 1, 13 (2004).

48. Supreme Court of Canada, *Chaoulli & Zeliotis V. Attorney General of Quebec and Attorney General of Canada* (Supreme Court of Canada, 2005), pp. 1–141, cited June 26, 2009, from <http://csc.lexum.umontreal.ca/en/2005/2005scc35/2005scc35.pdf>.

49. M. L. Kirby and W. J. Keon, *Out of the Shadows at Last: Transforming Mental Health, Mental Illness and Addiction Services in Canada* (Ottawa, Ont.: Government of Canada, 2006), pp. 1–9, cited June 25, 2009, from <http://www.parl.gc.ca/39/1/parlbus/commbus/senate/Com-e/SOCI-E/rep-e/pdf/rep02may06part1-e.pdf>.

50. The Working Group for a Suicide Prevention Strategy for Nunavut, *Using Knowledge and Experience as a Foundation for Action: A Discussion Paper on Suicide Prevention in Nunavut* (Nunavut: Government of Nunavut, Nunavut Tunngavike Inc., Embrace Life Council, 2009), cited June 23, 2009, from <http://www.tunngavik.com/documents/publications/2009-04%20SP%20WG%20ENG%20discussion%20paper.pdf>.

51. S. Goudge, *Inquiry Into Pediatric Forensic Pathology in Ontario* (Toronto, Ont.: Government of Ontario, 2008), cited June 23, 2009, from <http://www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html>.

52. Alberta Health Quality Council, *Review of the Infection Prevention and Control and CSR Sterilization Issues in East Central Health Region* (Calgary, Alta.: Alberta Health Quality Council, 2007), cited June 23, 2009, from <http://www.hqca.ca/assets/pdf/HQCA_Full_Report_July_25_2007.pdf>.

53. Public Health Agency of Canada, *HIV and AIDS in Canada: Surveillance Report to December 31, 2007* (Ottawa, Ont.: PHAC, 2008), cited July 3, 2009, from <http://www.phac-aspc.gc.ca/aids-sida/publication/survreport/pdf/survrep1207.pdf>.

54. Canadian AIDS Society, *Women & HIV/AIDS: Treatment Issues* (Ottawa, Ont.: Canadian AIDS Society, 2004), cited July 3, 2009, from <http://www.cdnaids.ca/web/backgrnd.nsf/pages/cas-gen-0015>.

55. Public Health Agency of Canada, *HIV/AIDS Epi Updates* (Ottawa, Ont.: PHAC, 2007), cited July 3, 2009, from <http://www.phac-aspc.gc.ca/aids-sida/publication/epi/pdf/epi2007_e.pdf>.

56. Canadian Medical Association, *Information Technology and Health Care in Canada: 2008 Status Report* (Ottawa, Ont.: Canadian Medical Association, 2008).

57. Deloitte Consulting, *Smart Systems for Health Agency: Operational Review Final Report* (Toronto, Ont.: Deloitte Consulting, 2006).

58. Alberta Government, *What Is the Alberta Netcare EHR?* (2009), cited July 7, 2009, from <http://www.albertanetcare.ca/9.htm>.

59. Telephone conversation with Susan Anderson, Alberta Health and Wellness, 2009.

60. D. Protti, S. Edworthy and I. Johansen, "Adoption of Information Technology in Primary Care Physician Offices in Alberta and Denmark, Part 1: Historical, Technical and Cultural Forces," *ElectronicHealthCare* 6, 1 (2007): pp. 95–102, cited July 7, 2009, from <http://www.longwoods.com/product.php?productid=18933>.

61. Alberta Government, *Health Action Plan: Status Report* (Alberta Government, 2008), cited July 7 2009, from <http://www.health.alberta.ca/documents/Health-Action-Plan-Dec-08.pdf>.

62. Alberta Government, *Drug Information* (2009), cited July 7, 2009, from <http://www.albertanetcare.ca/210.htm>.

63. Alberta Government, *Alberta Netcare Electronic Health Record Newsletter* (2009), cited July 7, 2009, from <http://www.albertanetcare.ca/Netcare_Newsletter_V4-2_final.pdf>.

64. Alberta Government, *Diagnostic Imaging* (2009), cited July 7, 2009, from <http://www.albertanetcare.ca/212.htm>.

A Shift in Thinking:
The Ministries' Adoption of Health Promotion

Health of Canadians

1999

Alberta

- Alberta Health changed its name to Alberta Health and Wellness.

2000

New Brunswick

- The Department of Health and Community Services changed its name to the Department of Health and Wellness.

2003

Manitoba

- The Executive Council of Manitoba included a new minister responsible for the Department of Healthy Living.

2005

Ontario

- The Ministry of Health Promotion was created.

Saskatchewan

- Healthy Living Services was established (dissolved in 2007).

2006

Nova Scotia

- The Department of Health Promotion and Protection was created.

New Brunswick

- The Wellness Department united with the Culture and Sport Secretariat to form the new Department of Wellness, Culture and Sport.

2008

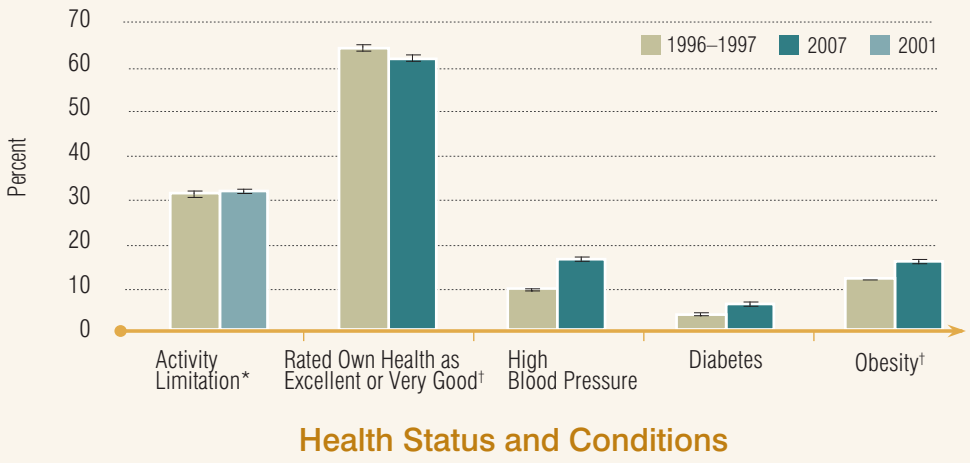
British Columbia

- The Ministry of Healthy Living and Sport was created.

Health of Canadians

Chapter 2
The Health of Canadians: Health Care and Health Policy Responses

Figure 2. Prevalence of Selected Health Status and Conditions, Population Age 12 and Older, Canada, 1996–1997 Compared to 2007



Notes

* Due to differences in questions and response categories between the two surveys, activity limitation data in the Canadian Community Health Survey is not comparable with data in the National Population Health Survey. This bar is from 2001 data.

† Age-standardized rates using 1991 Canadian census population 12 and older; obesity rates were for population 18 and older.

⊥ represents 95% confidence intervals.

Sources

National Population Health Survey (NPHS), 1996–1997, and Canadian Community Health Survey, 2001 and 2007, Statistics Canada.

Improving health is like a chess match.

Some advances are very successful—the virtual eradication of polio, declining smoking rates.

Others that appear strong—such as the declining rates of heart disease and death from heart attacks in adults—may be vulnerable to new threats in the form of increased rates of childhood obesity. While overall health indicators like life expectancy and infant mortality do not shift very much in a decade, the underlying trends can change more significantly.

This chapter examines changes in health status patterns over the past decade. It looks at how the health care system and health policy have mobilized to address problems and effect improvements. There are three main routes to health improvement:

- Addressing the non-medical determinants of health, such as income, housing, the environment and education;
- Promoting health and preventing illness; and
- Providing appropriate and timely high-quality health care.

It is widely recognized that health care by itself cannot make a nation healthier. Making a difference in the *entire* population, as opposed to individual cases, requires action on several fronts.

General Health Status

At the beginning of the last century, life expectancy was near 50 years.[1] By the beginning of this century, it approached 80 years.[2] The natural limit of human longevity (somewhere between 85 and 110 years) did not change during the 20th century. A huge decline in premature mortality is responsible for extending the average life by three decades.[3]

As the 20th century drew to a close, the question arose as to whether and when progress would slow down, stop or even reverse. Throughout history some people made it to 90 years of age and even 100, while most succumbed much earlier. Life expectancy cannot increase by two to three years per decade indefinitely . . . unless scientists literally discover the fountain of youth.

Still, life expectancy continued to rise, from 78 years in 1996 to 81 years in 2006.[2] But underneath the positive longevity data lie worrisome trends in risk factors. Lifestyles and behaviours are risk factors for many health problems. High-calorie, high-sugar and high-sodium diets can compromise health status, as can smoking and lack of exercise. Between 1996 and 2007, obesity, diabetes and high blood pressure were on the rise (Figure 2), suggesting that the long winning streak may be coming to an end.

On the upside, national smoking rates among Canadians age 15 and over continued to decline, from 24% nationally in 2000 to 19% in 2007. British Columbia's rate is down to 14%— just over half that of the highest provincial rate (Saskatchewan, which is at 24%). And there is good news among the young: only 15% of teens (15 to 19 years of age) smoked in 2007, which is down from 25% in 2000.[4]

It would take volumes to describe all of the changes in incidence and prevalence of health conditions and attempt to explain their origins. The story of heart health and stroke illustrates how trends in health and health care affect the population.

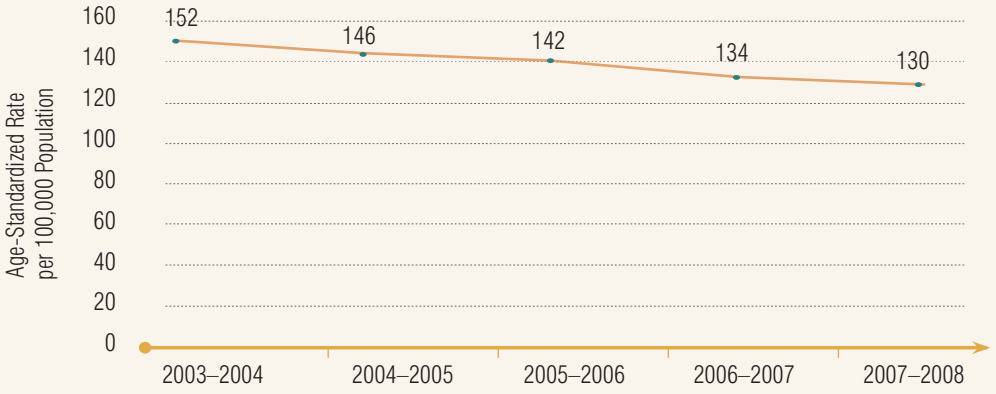
Good News About Heart and Stroke

Heart health is, for now, a good news story. Fewer Canadians are suffering from heart attacks, and heart attack death rates continue to decline—down 30% between 1998 and 2004 alone.[5, 6] Hospitalization rates for stroke and new heart attack events also declined between 2003–2004 and 2007–2008 (see figures 3 and 4).

The two main surgical interventions for heart disease are coronary artery bypass graft (CABG) and angioplasty (percutaneous coronary intervention or PCI), which is a less invasive procedure. PCI rates nearly doubled between 1998 and 2006, but have declined since. CABG rates have declined over the past five years (see Figure 4). Two phenomena are at work: a shift toward less invasive but still effective procedures, and fewer people with severe heart blockages due partly to advances in medical management of heart disease such as statins.

Heart and stroke care today is more effective and timely compared to five years ago. For example, the death rate from heart

Figure 3. Rates of Hospitalized Stroke Events, Canada



Notes
The rates include people age 20 and older. Rates for all years do not include Quebec due to the differences in data collection. Trend is statistically significant at $p<0.05$.

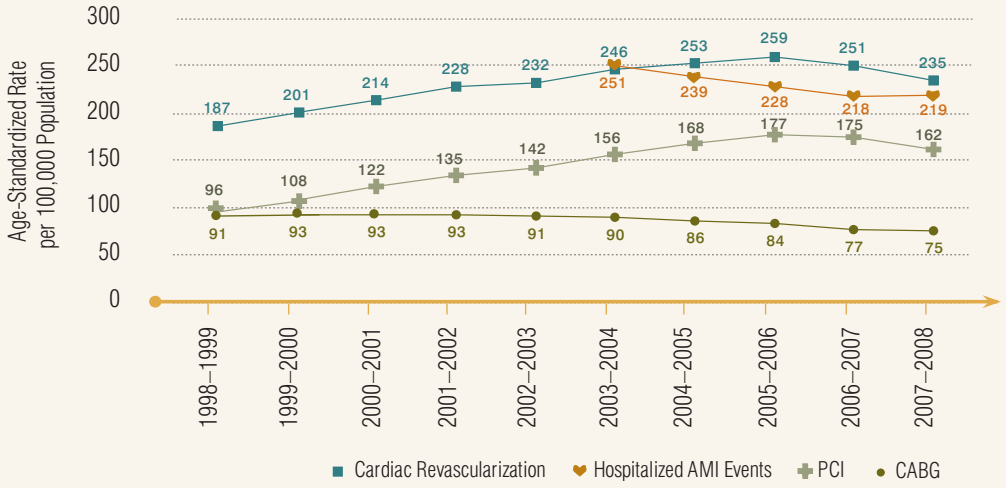
Source
Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009), p. 33.

attacks within 30 days of hospitalization has declined by 11%.[7] Fewer patients are admitted with heart attacks, but more of them have surgery—45% in 2007–2008, compared to 34% four years earlier. Also, the surgery takes place sooner—43% within one day of admission in 2007–2008, compared to 28% four years earlier. Readmission rates declined by 31% during the same period.[7] The use of aspirin, beta-blockers and statins has become more routine, which has also improved outcomes.

However, differences across the country suggest that there is still much to do in order to reduce the prevalence and impact of heart disease and stroke, for example:

- Newfoundland and Labrador residents are hospitalized twice as often due to heart attacks than residents of British Columbia (351 versus 169 per 100,000 in 2007–2008).[7]
- There is improvement across the board, but it is still better in more affluent neighbourhoods. For example, those in the bottom 20% of neighbourhoods by income are hospitalized more often for heart attacks than those in the top 20% (290 versus 175 per 100,000).[7]
- A recent Canadian study that charted the decline in mortality from heart disease and stroke noted that the risk factor profile of the population improved in one area—smoking—but worsened in others—obesity and diabetes.[8] A decline in risk factors accounts for about two-thirds of the reduced mortality rates, while better treatment accounts for the other third.[9, 10]
- Recent research has revealed a halt in the decline in heart death rates in younger age groups (for example, 35 to 54 years old) in countries such as the United States and the United Kingdom,[11, 12] suggesting that the effects of the risk factors moving in the wrong direction are beginning to be felt.[11]

Figure 4. Rates of Hospitalized AMI Events, CABG, PCI and Cardiac Revascularization, Canada



Notes
Rates include people age 20 and older. Rates for all years do not include Quebec due to the differences in data collection. Rate of hospitalized acute myocardial infarction (AMI) events for 2003–2004 does not include Manitoba due to the differences in AMI definition in ICD-9-CM and ICD-10-CA. This exclusion does not affect the trend. All trends are statistically significant at $p<0.05$.

Source
Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).

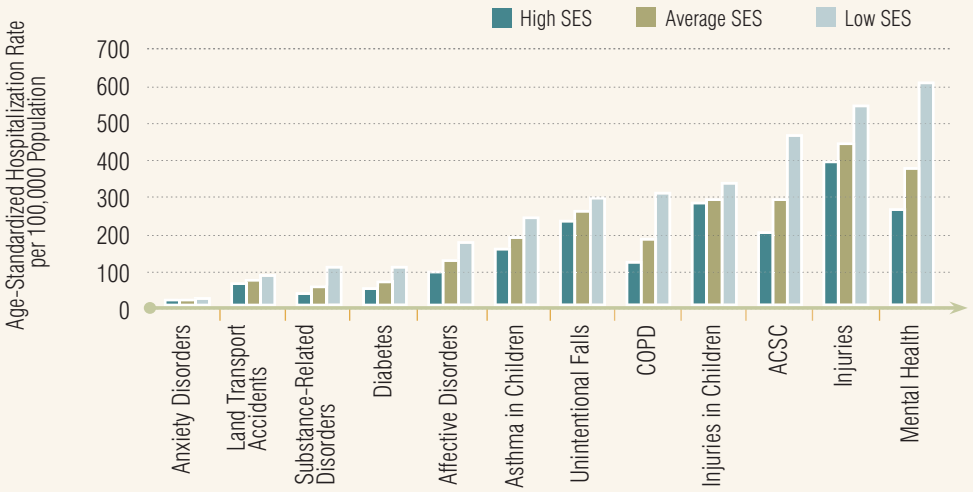
Variations in Health: Looking for Explanations

Four major demographic factors explain a large proportion of differences in health in Canada: gender, Aboriginal status, age and socio-economic status (SES). The impact of the first three has been identified often.[2, 13–16] In very general terms, women do better than men on most health indicators. Fewer women have cancer and fewer die from this disease.[15] Women are less likely to develop diabetes[14] and they live, on average, five years longer than men.[2] Men, on the other hand, have less asthma and arthritis and are less likely to have activity limitations when compared to women.[14] Aboriginal People have more disability and earlier deaths than non-Aboriginal people.[13, 16]

For SES, a landmark study in Saskatoon published in 2008 revealed substantial differences in the prevalence of various conditions and risk factors for declines in health status within urban areas. For some conditions, people living in the poorest inner-city areas were 10 times (and sometimes more) more likely to experience poor health or elevated risks than people in affluent neighbourhoods.[17] The fact that disparities exist was not a novel finding, but the *magnitude* of the difference in some areas was unexpected. This study illustrated the importance of drilling down to very local areas in order to identify major variations and high needs that may be invisible in analyses conducted only at the municipality or health-region level.

CIHI's Canadian Population Health Initiative (CPHI) has extended neighbourhood-level analysis to 15 census metropolitan areas across the country.[18] While the cities are not identical, on the whole, the report confirms the Saskatoon findings. People in low-income neighbourhoods were two to three times more likely to be hospitalized than people in affluent areas for mental health, diabetes, chronic obstructive pulmonary disease (COPD)

Figure 5. Pan-Canadian Age-Standardized Hospitalization Rates by Socio-Economic Status Group



Source
Canadian Institute for Health Information, *Reducing Gaps in Health: A Focus on Socio-Economic Status in Urban Canada* (Ottawa, Ont.: CIHI, 2008), p. 29.

and disorders related to substance abuse. They were twice as likely to be hospitalized for ambulatory care sensitive conditions (ACSCs) which, in a well-functioning health care system, could be addressed in the community, not in hospital (see Figure 5).[18]

It is noteworthy that the major demographic factors are not mutually exclusive: individuals may have both *protective* (for example, high-income) and *risk-elevating* (for example, elderly) characteristics, and there are SES variations within neighbourhoods as well as between them. Nonetheless, it is clear that disadvantage and advantage tend to cluster and health conditions and health care use vary accordingly.

The Policy Responses

It is one thing to report on health status and trends in health care use. However, the *goals* are to improve health, reduce dependency on health care and decrease health disparities within the population. A number of initiatives have been launched to promote population health. Additionally, findings related to disparities have informed the dialogue about which policies and programs might be effective in reducing their magnitude.

There have been some notable successes. Nationally, as of 2007, the percentage of seniors living below the Statistics Canada low-income cut-off (LICO) level was 4.8%, compared to 9.2% in all age groups.[19] In 1996, 18% of children were living in low-income families. This fell to 9.5% in 2007.[19] At a local level, successes are also evident. For example, financial and public health support for pregnant women resulted in fewer low-birth-weight babies in Newfoundland

Stop-Smoking Strategies in Ontario: **A Success Story**

Over the past decade, tobacco-control strategies have been implemented at the federal, provincial and municipal levels. For example, Ontario has pursued a multi-faceted strategy that has already produced some encouraging results.

Enacted May 31, 2006, the *Smoke-Free Ontario Act* prohibits smoking in enclosed workplaces and public places. This Act is part of a larger strategy, *Smoke-Free Ontario*, which seeks to help smokers quit, to protect non-smokers from exposure to second-hand smoke and to encourage young people not to smoke. In January 2009, the Ontario government took a step further by prohibiting smoking in motor vehicles with children under the age of 16 in the vehicle.[39]

In addition, many free programs and quit-smoking clinics are available across the province, and numerous campaigns have been launched in schools and communities with the specific goal of reducing tobacco use in youth.

The effort has paid off. Smoking prevalence in Ontario has shown a marked decline, especially in youth.[4] Ten years ago, one-quarter of Ontario's teenagers (age 15 to 19) were smokers. By 2007, the rate had nearly halved, to only 13%. Also, smokers are smoking fewer cigarettes, from 17 per day in 1999 to 15.5 in 2007.

and Labrador.[20] In the low-income Saint-Henri neighbourhood of Montréal, 22% of women targeted by a smoking cessation program had quit outright after six months, and non-quitters had reduced their daily consumption by seven cigarettes.[21]

In general, provincial and municipal governments moved aggressively during the decade on the anti-smoking front. Smoking in the workplace is almost completely prohibited by federal and provincial law, and many municipalities have banned smoking in all public places. These laws have played an important role in continuing to reduce smoking rates, as well as to reduce exposure to second-hand smoke for non-smokers.

As the Canadian population ages, more Canadians are developing chronic diseases such as diabetes, heart disease and cancer. A number of federal coalitions and resulting strategies were initiated during the past decade to prevent and manage certain chronic diseases—for example, the Canadian Diabetes Strategy and the Canadian Partnership Against Cancer.

At the provincial level, efforts have also been enhanced to prevent and manage chronic diseases. At least three jurisdictions (British Columbia, Saskatchewan and Newfoundland and Labrador) have well-developed chronic disease management strategies that use a collaborative care delivery model for providing and managing care for those with chronic illnesses. These models all feature a focus on (1) improving accessibility, (2) using standardized treatment protocols to improve quality and (3) implementing electronic health records. Patient education and disease management support are also key components of these collaboratives. Across Canada, initiatives are under way to promote healthy living and/or improve chronic disease management.[22–34]

Issues on the Horizon

As a nation, Canada is healthy by world standards, and Canadians live longer now than ever before. The most positive change in behaviour has been a reduction in smoking rates, especially among teenagers. This success has contributed to notable improvements in heart health, fewer admissions to hospital for heart attacks and lower rates of stroke. Offsetting these achievements are worrisome upward trends in obesity and diabetes— warning of a potential pause or even reversal in the century-long rise in health status. "Prevention, therefore, becomes vital."[9]

A major challenge is determining the most effective ways to reduce health disparities within and across populations. Reporting on the nature and magnitude of disparities reached new levels of sophistication and granularity during the past decade. Approaches to addressing the non-medical determinants of health have included income support for seniors and families with children. More focused efforts have targeted support for early childhood development and at-risk pregnant women.

Material disadvantage does not account for all ill health, and some high-income people are ill and some low-income people are healthy. Moreover, there is a gradient in health status that affects all socio-economic groups. But low SES explains a good deal of ill health and disadvantaged pockets of communities have poor health status. These realities have spurred international and Canadian efforts to propose policies that would accelerate the difficult work of reducing disparities. Many countries have produced reports on and adopted government-wide strategies for reducing health inequalities.[35–38]

Challenging questions for the coming decade include the following:

- Will there be population-wide behaviour changes to arrest the increases in obesity and diabetes that threaten to halt the upward trend in health status?
- Will the downward trajectory in smoking rates persist, yielding further gains in the battle to prevent lung cancer, emphysema, heart disease and stroke?

On the disparities front, there are short- and long-term issues. As mentioned in Chapter 1, the past decade was an economic renaissance for the country as a whole, with world-leading growth rates, largely eliminated government deficits and reduced debt. Health care spending doubled, but aside from initiatives such as the Child Tax Credit, there were no large-scale and sustained national initiatives to reduce disparities. With the dramatic economic downturn beginning in 2008, unemployment rates have risen, most governments face major deficits and stimulus programs are mainly targeted at industry and infrastructure projects. Lower-SES groups are most vulnerable in these circumstances, and economic and psychological stressors may increase health disparities.

1. S. Norris and T. Williams, *Healthy Aging: Adding Life to Years and Years to Life* (Ottawa, Ont.: Government of Canada, 2000), cited July 23, 2009, from <http://dsp-psd.pwgsc.gc.ca/Collection-R/LoPBdP/BP/prb0023-e.htm#LIFESPAN%20AND%20LIFE%20EXPECTANCY(txt)>.

2. Statistics Canada, *National Population Health Survey and Canadian Community Health Survey, CANSIM Table 102-0511* (Ottawa, Ont.: Statistics Canada, 2009), cited June 20, 2009, from <http://cansim2.statcan.gc.ca/cgi-win/cnsmcgi.exe?Lang=E&RootDir=CII/&Detail=1&ResultTemplate=CII/CII___&TblDetail=1&C2SUB=HEALTH&Array_Pick=1&ArrayId=102-0511>.

3. Organisation for Economic Co-operation and Development, *OECD Health Data 2009—Frequently Requested Data* (Paris, France: OECD, 2009), cited June 29, 2009, from <http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html>.

4. Health Canada, *Canadian Tobacco Use Monitoring Survey (CTUMS) 1999 to 2007* (Ottawa, Ont.: Health Canada, 2008), cited June 20, 2009, from <http://www.hc-sc.gc.ca/hc-ps/tobac-tabac/research-recherche/stat/index-eng.php>.

5. Statistics Canada, *Canadian Community Health Survey, CANSIM Table 102-0126* (Ottawa, Ont.: Statistics Canada, 2008), cited July 10, 2009, from <http://cansim2.statcan.gc.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&ARRAYID=1020126&C2DB=&VEC=&HILITE=MORTALITY&LANG=E&SrchVer=&ChunkSize=50&SDDSLOC=//www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey%26SDDS=*%26lang=en%26db=imdb%26adm=8%26dis=2&ROOTDIR=CII/&RESULTTEMPLATE=CII/CII_PICK&ARRAY_PICK=1&SDDSID=&SDDSDESC=>.

6. Statistics Canada, Canadian Community Health Survey, *CANSIM Table 102-0026* (Ottawa, Ont.: Statistics Canada, 2009), cited July 15, 2009, from <http://cansim2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=E&ArrayId=01020026&Array_Pick=1&Detail=1&ResultTemplate=CII/CII__&RootDir=CII/&TblDetail=1&C2SUB=HEALTH>.

7. Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).

8. J. Tu et al., "National Trends in Rates of Death and Hospital Admissions Related to Acute Myocardial Infarction, Heart Failure and Stroke, 1994–2004," *Canadian Medical Association Journal* 180, 13 (2009): p. E118–E125, cited July 13, 2009, from <http://ecmaj.com/cgi/reprint/180/13/E118>.

9. S. Capewell and M. O'Flaherty, "Trends in Cardiovascular Disease: Are We Winning the War?," *Canadian Medical Association Journal* 180, 13 (2009): pp. 1285–1286, cited July 13, 2009, from <http://ecmaj.com/cgi/reprint/180/13/1285>.

10. H. Tunstall-Pedoe et al., "Contribution of Trends in Survival and Coronary-Event Rates to Changes in Coronary Heart Disease Mortality: 10-Year Results From 37 WHO MONICA Project Populations. Monitoring Trends and Determinants in Cardiovascular Disease," *The Lancet* 353 (1999): pp. 1547–1557.

11. E. S. Ford and S. Capewell, "Coronary Heart Disease Mortality Among Young Adults in the U.S. From 1980 Through 2002: Concealed Levelling of Mortality Rates," *Journal of American College of Cardiology* 50 (2007): pp. 2128–2132, cited July 6, 2009, from <http://content.onlinejacc.org/cgi/reprint/50/22/2128.pdf>.

12. S. Allender et al., "Patterns of Coronary Heart Disease Mortality Over the 20th Century in England and Wales: Possible Plateaus in the Rate of Decline," *BMC Public Health* 8 (2008), cited July 23, 2009, from <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2386471>.

13. Statistics Canada, *2001 Census: Analysis Series. Aboriginal Peoples of Canada: A Demographic Profile* (Ottawa, Ont.: Statistics Canada, 2003), cited July 14, 2009, from <http://www12.statcan.ca/english/census01/Products/Analytic/companion/abor/pdf/96F0030XIE2001007.pdf>.

14. Statistics Canada, *Canadian Community Health Survey, CANSIM Table 105-0501* (Ottawa, Ont.: Statistics Canada, 2009), cited June 28, 2009, from <http://cansim2.statcan.gc.ca/cgi-win/CNSMCGI.EXE?Lang=E&ArrayId=01050501&Array_Pick=1&Detail=1&ResultTemplate=CII/CII___&RootDir=CII/&TblDetail=1&C2SUB=HEALTH>.

References

15. Canadian Cancer Society's Steering Committee, *Canadian Cancer Statistics 2009* (Toronto, Ont.: Canadian Cancer Society, 2009), cited May 29, 2009, from <http://www.cancer.ca/canada-wide/about%20cancer/cancer%20statistics/~/media/CCS/Canada%20wide/Files%20List/English%20files%20heading/pdf%20not%20in%20publications%20section/Stats%202009E%20Cdn%20Cancer.ashx>.

16. E. Ng, *Disability Among Canada's Aboriginal Peoples in 1991* (Ottawa, Ont.: Statistics Canada, 1996), cited July 5, 2009, from <http://www.statcan.gc.ca/studies-etudes/82-003/archive/1996/2823-eng.pdf>.

17. M. Lemestra and C. Neudorf, *Health Disparity in Saskatoon: Analysis to Intervention* (Saskatoon, Sask.: Saskatoon Health Region, 2008), cited July 1, 2009, from <http://www.saskatoonhealthregion.ca/your_health/documents/PHO/HealthDisparityRept-complete.pdf>.

18. Canadian Institute for Health Information, *Reducing Gaps in Health: A Focus on Socio-Economic Status in Urban Canada* (Ottawa, Ont.: CIHI, 2008).

19. Statistics Canada, "Income of Canadians," *The Daily* (Ottawa, Ont.), June 3, 2009, cited July 22, 2009, from <http://www.statcan.gc.ca/daily-quotidien/090603/dq090603a-eng.htm>.

20. P. Canning, M. Courage and L. Frizzell, *Mother Baby Nutrition Supplement Study: Summary Report* (St. John's, N.L.: Centre of Excellence for Children and Adolescents With Special Needs, Memorial University, 2007), cited July 13, 2009, from <http://www.coespecialneeds.ca/uploads/docs/mbnssummaryreport2.pdf>.

21. J. O'Loughlin et al., "The 'Yes, I Quit' Smoking Cessation Course: Does It Help Women in a Low Income Community Quit?," *Journal of Community Health* 22 (1997): pp. 451–468.

22. Canadian Diabetes Association, *Diabetes Report 2005: The Serious Face of Diabetes in Canada, Northwest Territories Background* (2005), cited June 23, 2009, from <http://www.diabetes.ca/files/diabetesreport2005/backgrounders/NWT%20background%20-%20FINAL.pdf>.

23. Central Health, *Central Health Strategic Plan: April 1, 2008 to March 31, 2011* (St. John's, N.L.: Central Health, 2008), cited July 7, 2009, from <http://www.assembly.nl.ca/business/tabled/centralhealth_strategic08-11.pdf>.

24. P.E.I. Department of Health, *Chronic Disease Prevention and Management* (2009), cited July 9, 2009, from <http://www.gov.pe.ca/health/index.php3?number=1020888&lang=E>.

25. A. Gogovor et al., "Contemporary Disease Management in Quebec," *Healthcare Quarterly* 11 (2008): pp. 30–37.

26. Government of Saskatchewan, *Aboriginal Health Transition Fund* (2009), cited July 9, 2009, from <http://www.health.gov.sk.ca/aboriginal-health-transition-fund>.

27. Health Canada, *Chronic Disease Prevention and Management* (Ottawa, Ont.: Health Canada, 2007), cited July 2, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/pubs/prim/2006-synth-chronic-chroniques/index-eng.php>.

28. Manitoba Health, *Chronic Disease Prevention Initiative (CDPI)—Project Charter, Final Draft Document* (2005), cited July 9, 2009, from <http://www.healthincommon.ca/wp-content/uploads/2008/04/CDPI-project-charter.pdf>.

29. New Brunswick Department of Health, *Chronic Disease Prevention and Management (CDPM)* (2009), cited July 9, 2009, from <http://www.gnb.ca/0053/phc/chronic_disease-e.asp>.

30. Ontario Ministry of Health and Long-Term Care and Ministry of Health Promotion, *Ontario Launches Diabetes Strategy: $741 Million Plan Will Make Patients Partners In Care* (2008) cited July 9, 2009, from <http://www.health.gov.on.ca/english/media/news_releases/archives/nr_08/jul/diabetes_strategy_nr_final_20080722%20_4_.pdf>.

31. C. Sparks and S. Duke, *Yukon Diabetes Strategy Renewal: A Strategic Response to Diabetes 2009–2012* (Yukon: 2009), cited from <http://www.yukondiabetes.ca/assets/files/A_Strategic_Response_to_Diabetes_-_Yukon_2009-2012_web.pdf>.

32. Unit for Population Health and Chronic Disease Prevention, *Nova Scotia Chronic Disease Prevention Strategy* (Halifax, N.S.: Dalhousie University, 2003), cited July 9, 2009, from <http://www.gov.ns.ca/hpp/publications/CDP_Strategy_Report_Final_October30.pdf>.

33. Health Council of Canada, *Why Health Care Renewal Matters: Lessons From Diabetes* (Toronto, Ont.: Health Council of Canada, 2007), cited May 6, 2009, from <http://www.healthcouncilcanada.ca/docs/rpts/2007/HCC_DiabetesRpt.pdf>.

34. Yukon Health & Social Services, *Chronic Disease Program* (2009), cited July 9, 2009, from <http://www.hss.gov.yk.ca/programs/insured_hearing/chronic_disease>.

35. Commission on Social Determinants of Health, *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health. Final Report of the Commission on Social Determinants of Health* (Geneva, Switzerland: WHO, 2008), cited July 7, 2009, from <http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf>.

36. I. Crombie et al., *Closing the Health Inequalities Gap: An International Perspective* (Copenhagen, Denmark: WHO Regional Office, 2005), cited July 7, 2009, from <http://www.euro.who.int/Document/E87934.pdf>.

37. Health Inequalities Unit, *Tackling Health Inequalities: 2007 Status Report on the Programme for Action* (London, U.K.: Department of Health, 2008), cited July 7, 2009, from <http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4008268?IdcService=GET_FILE&dID=10311&Rendition=Web>.

38. The Scottish Government, *Equally Well: Report of the Ministerial Task Force on Health Inequalities* (Edinburgh, Scotland: Government of Scotland, 2008), cited July 1, 2009, from <http://www.scotland.gov.uk/Resource/Doc/229649/0062206.pdf>.

39. Government of Ontario, *Smoke-Free Ontario* (2009), cited July 14, 2009, from <http://www.mhp.gov.on.ca/english/health/smoke_free/default.asp>.

Major **Health Funding** Investments

Money

1999

Annual Federal Budget

- $11.5 billion to the provinces and territories over five years, specifically for health care (largest single new investment this government has ever made)

2000

Agreements on Health Renewal and Early Childhood Development

- $23.4 billion in additional funding (includes $500 million to Canada Health Infoway; Canada Health and Social Transfer [CHST]; primary health care [PHC] reforms; diagnostic and treatment equipment; and early childhood development)

2003

First Ministers' Accord on Health Care Renewal

- $36.8 billion over five years to improve accessibility, quality and sustainability of the public health care system and enhance transparency and accountability in health care spending (includes CHST, health reform transfer, diagnostic and medical equipment, and federal health programs)

2004

First Ministers' 10-Year Plan to Strengthen Health Care

- $41.3 billion in increased cash transfers to the provinces and territories for health care over 10 years (includes Canada Health Transfer [CHT], wait times reduction transfer, and medical and diagnostic equipment)

2007

Annual Federal Budget

- $612 million to the provinces and territories to support meeting their commitments to implement patient wait times guarantees + $30 million over three years for patient wait times guarantee pilot projects
- $400 million to Canada Health Infoway

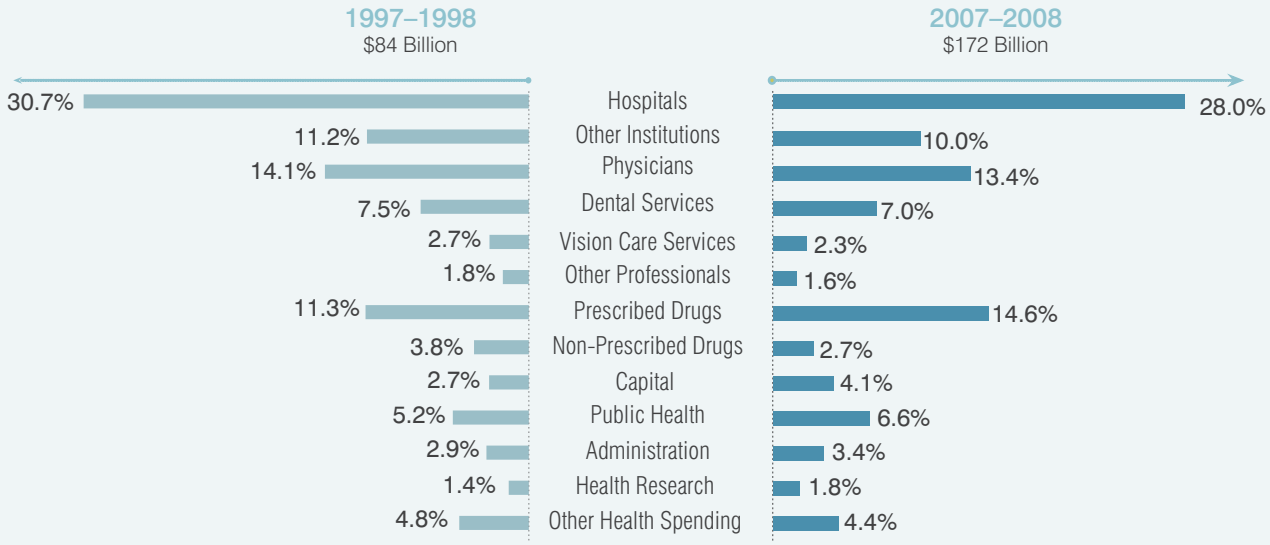
2009

Annual Federal Budget

- $500 million to Canada Health Infoway for electronic health records (EHRs)

Chapter 3
Follow the Money: What We Spent, Where It Went, What We Got

Breakdown of Health Expenditure by Use of Funds, 1997–1998 and 2007–2008

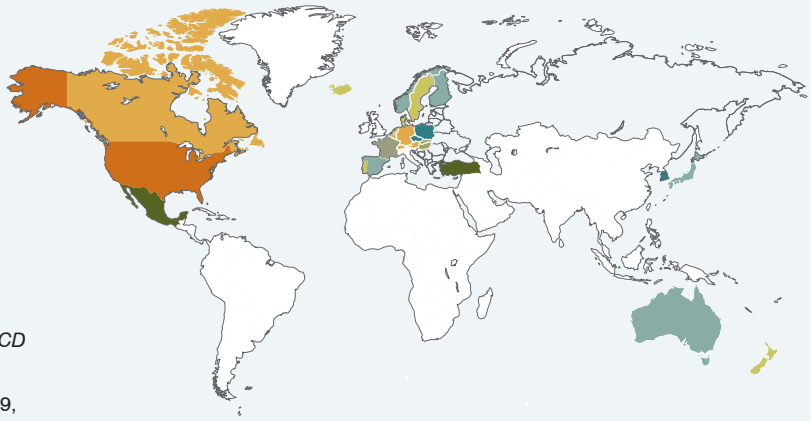


Health care is big business—over 10% of the GDP and about $172 billion a year in Canada.[1]

And it was never bigger business than in the past decade when spending rose faster than ever before. It was a far cry from the mid-1990s, when real, per capita spending declined over a four-year period as a result of government fiscal restraint.

In isolation, the numbers by themselves are not terribly meaningful, and it is easy to get overwhelmed by the sheer volume of financial data available. This chapter explores how money is used in health care, how patterns have changed over the past decade and—where possible—what we got for the money.

Figure 6. Total Health Expenditure as a Percent of GDP in 26 Selected OECD Countries, 2007



United States **16.0**
France **11.0**
Switzerland‡ **10.8**
Germany **10.4**
Belgium‡ **10.2**
Austria **10.1**
CANADA 10.1
Portugal* **9.9**
Denmark **9.8**
the Netherlands‡ **9.8**
Iceland **9.3**
New Zealand **9.2**
Sweden **9.1**
Norway **8.9**
Australia* **8.7**
Spain **8.5**
Finland **8.2**
Japan* **8.1**
Slovak Republic **7.7**
Hungary **7.4**
Luxembourg*‡ **7.3**
Czech Republic **6.8**
Korea **6.8**
Poland **6.4**
Mexico **5.9**
Turkey† **5.7**

Notes
* Data for 2006.
† Data for 2005.
‡ Estimate.

Source
Organisation for Economic Co-operation and Development. *OECD Health Data 2009—Frequently Requested Data*. Paris, France: OECD, 2009. Cited June 29, 2009, from <http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html>.

What We Spent

It is hard to make $172 billion comprehensible. This sum is, by any standards, an enormous amount of money. It amounts to:

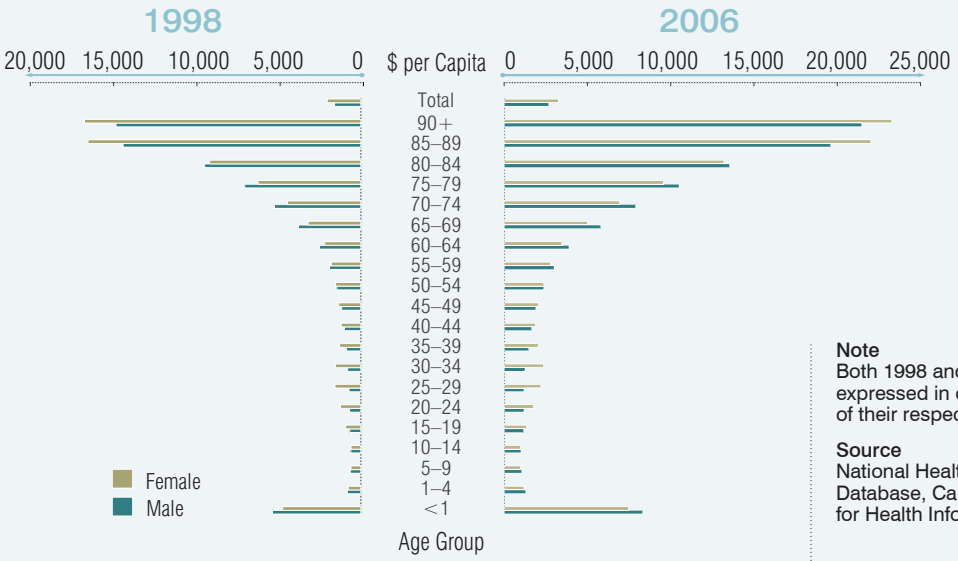
- $5,170 per person, annually.[1]
- Nearly half a billion dollars per day, every day.
- Nearly 60% more in real terms than a decade ago.

Among the 20 or so richest nations in the world, Canada's spending levels and growth patterns are not unusual. Depending on the year and the method of calculation, we are in the top 5 to 10 countries in terms of proportion of GDP spent on health care and per capita health spending. Most OECD[i] countries have spent heavily on health care during the past decade. We spend a lot less than the United States, and about the same as other developed countries in our economic league.

Where Canada did appear to lead the pack in the last decade was in the amount of energy focused on the discussion of cost and sustainability. And a major driver of this conversation is the nature of federalism. Health care in Canada is mainly a provincial or territorial responsibility. It now consumes over 40% of some provincial and territorial government budgets. Health care spending has risen faster than government revenues. Governments and other sources have produced projections that show health care consuming even higher percentages in the future.[2–4] Concerned about essentially becoming—in an extreme scenario—ministries of health with other responsibilities, provincial and territorial governments are now focusing more on efficiency, value for money and accountability.

i. The Organisation for Economic Co-operation and Development (OECD) is composed of 30 countries and is committed to the production of highly comparable statistics in the economic, health and social fields.

Figure 7. Total Health Expenditure per Capita, by Age and Sex, Canada, 1998 and 2006



Note
Both 1998 and 2006 data expressed in current dollars of their respective years.

Source
National Health Expenditure Database, Canadian Institute for Health Information.

Who Uses Health Care, and How Much

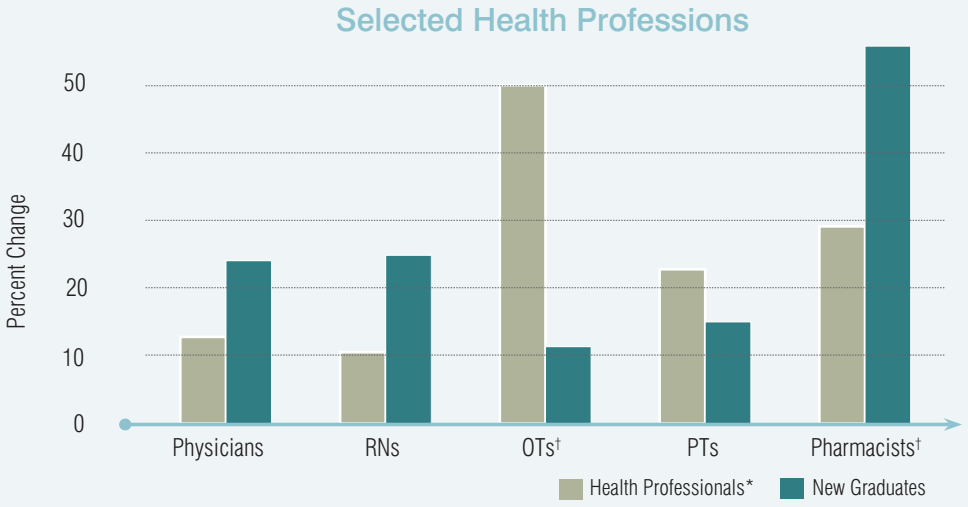
Almost all Canadians use some health care services in any given year. The average per capita figure of $5,170 is high, but it is not typical. Health care use is distributed very unevenly across the population. Citizens with serious conditions and high health care needs consume tens of thousands of dollars worth of services in relatively short periods of time. But most of the time, people need modest amounts of care, which does not cost anywhere near the average annual per capita amount.

As one would expect, spending concentrates among the elderly, and toward the end of life. Figure 7 shows per capita spending by age group, which rises steeply after age 70. This phenomenon has led to the erroneous but popular belief that the needs of an aging population will unavoidably drive spending increases and create unsustainable pressures on resources. This is an enduring myth that persists despite being frequently and articulately debunked in the literature.[5–7] The aging population, on its own, is responsible for no more than a 1% annual increase in health spending.[8] The rest comes from higher prices, higher volumes of some types of services and more intensive services for various conditions.

There are also spending bulges in two other age categories: children in the first year of life and child-bearing women. Since women live longer, there are more older women than older men, and therefore women account for greater proportions of health spending among older age groups.

What this does not tell us is whether spending is distributed according to need. The answer is a qualified yes. Less healthy people use more health care, and low income—associated with worse health status—is not a barrier to the use of tax-funded services. For example, there are 54% more per capita admissions to hospital for stroke from bottom-income quintile neighbourhoods than from those of the top quintile.[9] Lower-income

Figure 8. Percent Change in Number of Health Professionals and New Graduates for Selected Health Professions, 1997 to 2006



Notes

* The employment status of the health professionals varies in this graph. Physicians (excluding residents), occupational therapists (OTs), physiotherapists (PTs) and pharmacists are those listed as "active registered"; RNs are those listed as "employed active registered."

† Data for numbers of "health professionals" for both OTs and pharmacists is reported from 1997 to 2005 due to changes in data collection methodology from 2006 onward.

Source

Canadian Institute for Health Information, *Canada's Health Care Providers, 1997 to 2006, A Reference Guide* (Ottawa, Ont.: CIHI, 2008).

people visit family doctors more often than their wealthier counterparts.[10] In other words, health care use and costs are inversely proportional to income and health status. Simply put: the better off you are, the healthier you are—and the less health care you use.

But there is an important wrinkle in this data. There are big variations in health care use by region for specific procedures. Some Ontario regions do twice as many knee procedures per capita as others, and Quebec stands out for its low rates of hip and knee surgery compared to other provinces (see Chapter 4). But because public health care dollars are generally allocated by geographic area in Canada, it is highly unlikely that there are huge variations in overall per capita spending between cities in the same province. The highest-spending province spends 23% more per person on health care than the lowest spender. By contrast, there are major variations in total per capita spending in the U.S. Seniors in Miami use three times as much health care as seniors in Honolulu, just as seniors in McAllen, Texas, use twice as much as seniors in Minneapolis.[11] The U.S. studies found no differences in outcomes or patient satisfaction associated with these very different service use patterns.[12]

What We Bought

Health care spending buys things, often referred to as *inputs* (personnel, equipment, buildings), *outputs* (surgical procedures, office visits) and *outcomes* (health results). There are many ways to categorize inputs, but two predominate: personnel and drugs.

Personnel

There have been two dominant and related themes in health human resources over the past decade. One is the steady increase in the numbers of practitioners, with large increases in some occupations and more modest growth in others. The second is the ongoing debate about the nature, extent and consequences of personnel shortages, and how to address them.

Both the numbers of practising professionals and new graduates from education programs have risen significantly in recent years. Many more people are working in health care than a decade ago, with especially marked growth in chiropractic, dental hygiene, social work and occupational therapy. There were smaller increases in nursing—by far the largest group numerically—with some variations among categories. Between 2003 and 2007, the number of licensed practical nurses (LPNs) increased by 15.9%, and registered nurses (RNs) increased by 6.9%, with no increase in the number of registered psychiatric nurses (Western Canada only). We do not yet have comprehensive data on enrolment for the past three years, but in nursing and medicine in particular, educational enrolment is up considerably. There have also been off-shore (international) recruitment programs, especially in nursing.[13]

Note that the numbers represent active registrants according to professional associations; they are not full-time equivalents. Systematic data on casual, part-time and full-time employment status does not exist. But among active registrants, in the largest profession—nursing—employers have prioritized a shift to more full-time jobs. This suggests that the growth in health care spending has created a lot of new capacity over the 10-year period.

The numbers by themselves do not mean much; the real question is whether Canada will have *enough* health care providers. Data on the supply of health care workers in OECD countries suggests that there is no one "magic" number. For example, in 2007, Canada had about as many physicians per 1,000 population as the U.S. but less than many European countries. By contrast, Canada had more practising nurses per 1,000 population than many other countries—but fewer than the U.S. Regardless, since 1998, the focus on the impending "shortages" of doctors[14–16] and nurses[17, 18] in Canada has been intense.

In health care, the meaning of a perceived shortage is not straightforward. It could mean any or all of the following:

- There are more jobs than qualified people, resulting in persistent vacancy rates.
- Qualified people have, for various reasons, left the workforce.
- The need for service is growing faster than the capacity to address it.
- Overall capacity is sufficient, but is poorly distributed (for example, some areas are over-served while others are under-served).
- The division of labour is inefficient (for example, nurses doing work that could be done by a licensed practical nurse, or doctors doing work that could be done by a nurse practitioner).
- Work is not organized efficiently, resulting in wasted time and lower productivity (for example, no telephone consultations, difficulties in finding supplies on hospital wards).
- People are getting services that they do not need (for example, for many, an annual complete physical examination is not necessary), which effectively crowds out services they do need.

Making plans and projections without fully understanding which of these is at work may fail to solve the problem, or solve it inefficiently. Furthermore, both health needs and service delivery options are constantly changing. More sophisticated modelling shows how anticipated needs can change dramatically if the system becomes more efficient. A recent report indicated that a 1% annual increase in nursing productivity would eliminate half of the projected shortage of nurses by 2022.[19] By international standards, this is a modest goal: in the early stages of implementation, the United Kingdom's Releasing Time to Care[20] initiative has shown up to a 30% increase in time devoted to direct patient care. A number of Canadian jurisdictions have introduced the program. If this effort is similarly successful, the supply of *nursing* will increase significantly without any increase in the number of *nurses*.

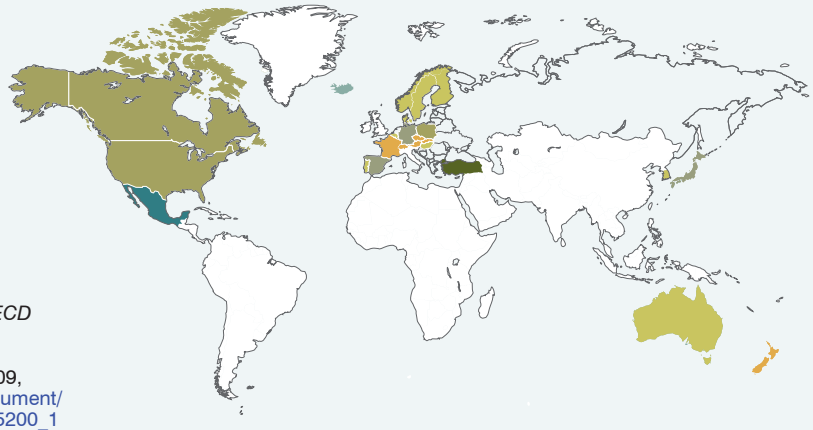
Analysts often cite two other potential causes of the perceived shortages: the looming retirement of large numbers of baby boomers and the desire for greater work–life balance in some professions, notably medicine. In the 2007 National Physician Survey, for example, over 6% of doctors stated that they intended to leave their practice, and 35% said they would reduce their hours of work in the next two years. (By contrast, 8% said that they would increase their hours of work.) However, fewer than 1% of doctors left work annually, and while 27% reduced their work hours, 21% *increased* their work hours.[21] Intention does not always lead to action, and uncertainty invariably clouds the future. Health human resource planning has always been notoriously difficult because the only constant in the environment is change.

The assumptions made and the data consulted affect decisions about educational program seats and off-shore recruitment practices, targets and regulations. Governments have significantly increased health science program enrolments. The entering class of medical students in 2008–2009 was 68.3% larger than the class of 1998–1999.[22] For nursing, the increase from 1997[23] to 2007[24] was 51.4%.

Regardless of its overall merits, increasing enrolment is not a short-term fix because it takes several years to produce new graduates. The full effects of today's decisions will play out in the coming years and decades. For example, physicians must complete residency programs and pass examinations to become full-fledged licensed practitioners. Enrolment increases and enhanced opportunities for international medical graduates (IMGs) have boosted the number of first-year residents by 58%, from 1,582 in 1999–2000 to 2,504 in 2008–2009.[25] The number will grow substantially in the next few years—the first-year medical class size reached 2,653 in 2008–2009[26] and it will increase further because some medical schools have already announced their intentions to add seats in the future.

Already the discourse has started to change. Early in 2009, Alberta Health Services stated that previous projections of large nursing shortages were wrong.[27] Any prolonged period of spending constraint will have an impact on the labour market, and it is not inconceivable that new graduates in some professions will experience difficulties finding full-time work, as they did in the 1990s.

Figure 9. Public Drug Expenditure as a Percentage of Total Drug Expenditures[§] in 24 Selected OECD Countries, 2007



Luxembourg† **83.5**
Germany **75.9**
Spain **72.7**
Japan* **71.7**
Slovak Republic **69.1**
France **69.4**
Switzerland‡ **67.6**
New Zealand **66.8**
Czech Republic **66.0**
Austria **65.3**
Hungary **58.5**
Sweden **58.1**
Belgium† **56.3**
Portugal* **55.9**
Denmark **55.8**
Finland **55.1**
Australia* **55.0**
Korea **54.6**
Norway **53.7**
Iceland **44.8**
CANADA 38.0
Poland **37.5**
United States **31.4**
Mexico **21.2**

Notes
* Data for 2006.
† Data for 2005.
‡ Estimate.
§ Includes prescription and non-prescription information.

Source
Organisation for Economic Co-operation and Development. *OECD Health Data 2009—Frequently Requested Data*. Paris, France: OECD, 2009. Cited June 29, 2009, from <http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html>.

Drugs

Overall, drugs are the fastest-growing expenditure item in health care, having increased by about 136% since 1998. Some factors that influence the growth in spending include the replacement of older, cheaper drugs with newer and more expensive drugs, as well as increased use of certain categories of drugs—notably, cardiovascular drugs.[28]

Canadian drug-spending patterns and policies are notable in several respects. First, the publicly financed proportion of drug expenditures is comparatively low. Canada ranked 21st of 24 OECD countries in 2007.[29] Second, drug coverage is uneven across populations. Some Canadians have relatively good public coverage—for example, seniors in some provinces but not others[30]—while others have good private coverage through employer-based benefit plans. But many have only catastrophic drug coverage with high deductibles. Third, drug spending varies by 55% between the lowest-cost province (British Columbia) and the highest (Quebec).[28]

A significant development in the past decade has been the adoption of a more coordinated approach to drug evaluation. All jurisdictions except Quebec participate in and support the Common Drug Review (CDR), under the auspices of the Canadian Agency for Drugs and Technologies in Health (CADTH). The process culminates in non-binding recommendations to list or exclude a drug from provincial formularies. The generally accepted principle is that no means no, and yes means maybe. Provinces follow the CDR recommendations over 90% of the time, resulting in greater consistency across the country.[31]

Services and Technology

Health care dollars bought changing arrays of services over the decade (see Chapter 2 for a fuller account of these changes). Among the notable changes with major financial implications are the following:

- **Drug Use.** As discussed, expenditures are increasing rapidly with newer drugs frequently replacing older ones. The question facing policy-makers, benefits plan administrators, physicians and patients is the extent to which the new drugs are more effective, and at what price.
- **Diagnostic Imaging Capacity.** In the last 10 years, this has grown. The rate has been steepest for MRI scanners—over 300%—on top of 71% for CT scanners.[32]
- **Hospital Stays.** The number of overnight hospitalizations continues a decade-long trend downward, but length of stay has ceased declining. A continuing factor in the decline is the shift from inpatient (down 16.5% for the decade) to outpatient surgery (up 30.6%).[33]

What We Achieved

About half of the increase in health care spending over the decade was due to a combination of population growth (14%), aging (11%) and inflation (27%).[7] So $85 billion in spending in 1998 would have had to grow to about $130 billion in 2008 just to provide the *same* services in the *same* way. We actually spent another $42 billion. As noted, this new money bought more personnel, technology, innovation and services. So, what were the results?

This is the hardest question to answer. Health status in Canada is good overall, but it is not good among low-income people and Aboriginal populations. Some health care is undoubtedly more effective—for instance, cardiovascular surgery—and people who would have died a decade or two ago now get added years of life. And some procedures, like hip and knee replacements, can reduce pain and suffering, thereby dramatically improving quality of life.

But attributing population health outcomes to health care spending is confounded by five important realities. First, non-medical factors—education, income, social support, food security, the environment, etc.—have a bigger lifetime effect on population health status than health care. Second, everyone dies eventually, and Canadians already live just about as long as any other people on earth. No amount of health care spending can overcome the limits of the human life span. Third, we cannot carry out an experiment that withholds health care from a large group of people and provides it to others, and observe the differences over time.

Measuring
Health Outcomes

Outcomes analysis is necessary to understand the end results of health care practices and interventions, and ultimately to understand the relationships among patient characteristics, health care and patient health status. To explore the feasibility of conducting health outcomes analysis, the Canadian Institute for Health Information and Statistics Canada have collaborated on two reports.

And fourth, internationally, the health status returns from increased per capita spending drop off severely beyond about $1,000 or $1,500.[34] Finally, many conditions are self-limiting—that is, we get better regardless of whether we seek health care—and some are impervious to health care (incurable).

Ultimately, this is about *value for money*, and the Health Council of Canada has made a serious attempt to clarify what is meant by this term and to assess the relationship between spending and outcomes.[7] Among their key findings are the following:

- Among highly industrialized countries, health outcomes are not related to the numbers of doctors[35] and nurses.[36] Italy has 67% more doctors per capita than Canada, yet Italians have a life expectancy that is only six months longer than ours.[29]
- Some health care is either harmful or useless. Thousands of seniors are prescribed drugs they should never take.[37] In Vancouver, a study showed that one-quarter of cataract surgery recipients had *worse* vision after the procedure.[38]
- Some people may need more service, while others may need less.

Overall, we do not have enough comprehensive information to link, with any precision, health care spending to health outcomes. In some cases, innovation makes health care cheaper: it costs less to perform angioplasty on a heart patient than a coronary artery bypass graft. In some cases innovation is more expensive, for example, the cost of using CT or MRI scans for an increasing range of symptoms. Governments often set access targets, but not quality or outcomes goals. It is not surprising that a $172 billion system is imperfect, but the fact that we have so little information to quantify how this spending actually affects health is a major gap.

Health Outcomes: Report One

The first outcomes report, *A Framework for Health Outcomes Analysis: Diabetes and Depression Case Studies*, released in July of 2008, sparked the development of the new Health Outcomes Conceptual Framework, which guides data development and analysis for health outcomes at a population level. With a specific focus on diabetes and depression, results demonstrated that existing data sources are very limited in their ability to provide information about health outcomes of care.

Health Outcomes: Report Two

The second report in the series, *Health Outcomes of Care: An Idea Whose Time Has Come*, to be released in 2009, focuses on options for outcomes-oriented data development and enhancement. Based on Canadian and international initiatives and case studies, the report proposes short- and long-term options for upgrading the availability of health care outcomes information in Canada.

Issues on the Horizon

Health expenditure data is abundant. We can readily describe how much money goes where in many different ways. Interpretation, however, is far more difficult and contentious because there is no standard approach to linking volumes and activity to clinical and population health outcomes. Nor is there a method for comparing observed to "ideal" efficiency, or otherwise assessing value for money. All we can say for sure is that the system got a good deal more costly during the past decade; Canadians consumed more health care and more expensive drugs; the numbers of doctors and nurses roughly kept pace with population growth, while numbers in other health care professions grew much more rapidly; and diagnostic imaging became commonplace.

The most intriguing developments occurred in health human resources. The latest data available, from 2006, shows a 25% to 30% increase in the number of new graduates compared to a decade earlier. These numbers will rise again shortly in medicine and nursing because enrolment increases are much higher, and the new graduates have yet to appear in the workforce. Overall, the supply of new graduates will be at an all-time high, further augmented by unprecedented numbers of overseas recruits.

How this affects the system will depend on a number of factors, including:

- **The state of the economy and the rate of increase in health care spending**. The next few years promise to be fiscally turbulent, and governments will be struggling with deficits and the need for restraint in the wake of the world-wide economic recession. If health care spending slows down—a likely scenario—then the ability to absorb all of the new personnel may be a challenge. This may

be a case of déjà vu: little more than a decade ago, health care organizations were laying off workers and new nursing graduates could not find permanent jobs.

- **Retirement rates in the current workforce**. Economic uncertainty, reduced pension valuations and diminished investment portfolios are likely to change the retirement plans for many health care workers in their fifties and sixties. If doctors, nurses and others defer their exits for even two or three years, then the impact on the system could be substantial. A markedly higher retention rate could augment the numbers of active personnel even more than the combined effect of increased numbers of new graduates and international migration. Salaried personnel typically achieve their highest incomes at the end of their careers. Their delayed departure could potentially create a higher cost bubble, and the opportunity to replace people at the top of the range with new entrants at the bottom could be deferred. A Manitoba study found that physicians over 50 years of age are higher fee-for-service billers than their younger counterparts.[39] If they continue to practise longer than anticipated, there will be major upward pressure on total spending because new medical licensees are entitled to billing numbers regardless of whether there is the expected number of retirees.
- **Developments in scope of practice and interprofessional collaborative practice**. There is a good deal of interest in new approaches to care that maximize the capacity of all occupations to apply all of their knowledge, skills and experience. Given the right incentives, family doctors might manage cases currently referred to specialists, just as community-based nurses might acquire more responsibility for chronic disease management from family doctors, and ward clerks and licensed practical nurses might perform duties now the province of RNs. Any significant changes on these fronts could substantially alter desired personnel ratios. Health science students educated in traditional silos and with today's expectations may confront a considerably altered world when they hit the workforce in a few years' time.

Perhaps the biggest issue for the coming decade is the speed with which quality improvement, accountability for performance and e-health are embraced as fundamental to system change. Everything from the way people work to the tools they use and the adoption of innovation is susceptible to change, if policies and practices now considered leading edge become the norm.

With some exceptions, particularly when new money is available, health care spending patterns usually change incrementally, and both increases and restraint tend to apply across the board. The growing focus on quality suggests the potential for transformation and perhaps will be a driving force to demand it. Faster and larger-scale changes are likely to alter patterns of health care spending, and broader economic forces may create a new sense of urgency as well as a greater appetite for new approaches to funding.

References

1. Canadian Institute for Health Information, *National Health Expenditure Trends, 1975–2008* (Ottawa, Ont.: CIHI, 2008).
2. Ontario Ministry of Finance, *Toward 2025: Assessing Ontario's Long-Term Outlook* (2005), cited June 30, 2009, from <www.fin.gov.on.ca/english/economy/ltr/2005/05_ltr.pdf>.
3. D. Mazankowski, *A Framework for Reform: Report of the Premier's Advisory Council on Health* (Edmonton, Alta.: Government of Alberta, 2001).
4. Commission for the Study of Health and Social Services, *Emerging Solutions: Report and Recommendations* (Québec, Que.: Government of Quebec, 2000).
5. Canadian Health Services Research Foundation, *Mythbusters—Myth: The Aging Population Will Overwhelm the Healthcare System* (Ottawa, Ont.: CHSRF, 2002), cited July 9, 2009, from <http://www.chsrf.ca./mythbusters/pdf/myth5_e.pdf>.
6. Minister of Public Works and Government Services Canada, *Canada's Aging Population* (Ottawa, Ont.: Government of Canada, 2002).
7. Health Council of Canada, *Value for Money: Making Canadian Health Care Stronger* (Toronto, Ont.: HCC, 2009), pp. 1–52, cited June 29, 2009, from <http://www.healthcouncilcanada.ca/docs/rpts/2009/HCC_VFMReport_WEB.pdf>.
8. G. G. Brimacombe, P. Antunes and J. McIntyre, *The Future Cost of Health Care in Canada, 2000 to 2020: Balancing Affordability and Sustainability* (Ottawa, Ont.: Conference Board of Canada, 2001).
9. Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).
10. L. L. Roos et al., "Physician Visits, Hospitalizations, and Socioeconomic Status: Ambulatory Care Sensitive Conditions in a Canadian Setting," *Health Services Research* 40, 4 (2005): pp. 1167–1185.
11. Dartmouth Institute for Health Policy and Clinical Practice, *Darthmouth Atlas of Health Care* (Lebanon, New Hampshire: Dartmouth Institute for Health Policy and Clinical Practice, 2009), cited June 29, 2009, from <http://www.dartmouthatlas.org/data/download.shtm>.
12. E. S. Fisher et al., "The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction With Care," *Annals of Internal Medicine* 138, 4 (2003): pp. 288–298.
13. Canadian Institute for Health Information, *Regulated Nurses: Trends, 2003 to 2007* (Ottawa, Ont: CIHI, 2008).
14. R. McKendry, *Physicians for Ontario: Too Many? Too Few? For 2000 and Beyond. Report of the Fact Finder on Physician Resources in Ontario (1999)*, (1999).
15. Canadian Medical Association, *The Facts About Canada's Doctor Shortage* (2008), cited June 29, 2009, from <http://www.moredoctors.ca/more_info/>.
16. M. Milke, *Canada's Doctor Shortage: Comparing Canada With the World* (Regina, Sask.: Frontier Centre for Public Policy, 2008), pp. 1–8, cited June 29, 2009 from <http://www.fcpp.org/pdf/FB61_DoctorF1.pdf>
17. Canadian Nurses Association, *Planning for the Future: Nursing Human Resource Projections* (Ottawa, Ont.: CNA, 2002), pp. 1–81, cited June 29, 2009, from <http://www.cna-nurses.ca/CNA/documents/pdf/publications/Planning_for_the_future_June_2002_e.pdf>.
18. D. Spurgeon, "Canada Faces Nurse Shortage," *British Medical Journal* 320 (2000): p. 1030.
19. G. Murphy et al., *Tested Solutions for Eliminating Canada's Nursing Shortage* (Ottawa, Ont.: Canadian Nurses Association, 2009), pp. 1–70, cited June 29, 2009, from <http://images.theglobeandmail.com/v5/content/pdf/RNShortageReportE0511.pdf>.
20. The Improvement Network—East Midlands, *NHS Midlands Releasing Time to Care October 2008* (2008), cited June 29, 2009, from <http://www.tin.nhs.uk/nhs-east-midlands-releasing-time-to-care/releasing-time-to-care---reports>.
21. College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada, *2007 National Physician Survey* (2007), cited June 29, 2009, from <http://www.nationalphysiciansurvey.ca/nps/2007_Survey/Results/ENG/National/pdf/Final%20Posted%20National%20Level%20Table%20Set/NPS.2007.National.Results.Binder.Final.pdf>.

References

22. Association of Faculties of Medicine of Canada, *First Year Enrolment in Canadian Faculties of Medicine by Sex, 1968/69–2008/09* (2009), cited June 30, 2009, from <http://www.afmc.ca/pdf/4-08-09FirstYearEnrol.pdf>.

23. Canadian Association of Schools of Nursing and Canadian Nurses Association, *The National Student and Faculty Survey of Canadian Schools of Nursing 2001–2002* (2004), cited July 9, 2009, from <http://www.cna-aiic.ca/CNA/documents/pdf/publications/Table5_2001_2002_e.pdf>.

24. Canadian Association of Schools of Nursing and Canadian Nurses Association, *Nursing Education in Canada Statistics 2006–2007* (2008), cited July 9, 2009, from <http://www.cna-aiic.ca/CNA/documents/pdf/publications/Education_Statistics_Report_2006_2007_e.pdf>.

25. Association of Faculties of Medicine of Canada, *Annual Census of Post-MD Trainees 2008–09* (Ottawa, Ont.: AFMC, 2009), pp. 1–145, cited June 29, 2009, from <http://www.caper.ca/docs/pdf_2008-09_CAPER_Census.pdf>.

26. Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics, 2008* (Ottawa, Ont.: AFMC, 2008), pp. 1–178, cited June 29, 2009, from <http://www.afmc.ca/pdf/cmes2008.pdf>.

27. J. Sinnema, "Nurse Shortage Turns Into Glut," *Edmonton Journal*, May 30, 2009, cited June 29, 2009, from <http://www.edmontonjournal.com/health/Nurse+shortage+turns+into+glut/1646878/story.html>.

28. S. Morgan et al., *The Canadian Rx Atlas, 2nd Edition* (Vancouver, B.C.: Centre for Health Services and Policy Research, University of British Columbia, 2008), cited July 9, 2009, from <http://www.chspr.ubc.ca/rxatlas/canada>.

29. Organisation for Economic Co-operation and Development, *OECD Health Data 2009—Frequently Requested Data* (Paris, France: OECD, 2009), cited June 29, 2009, from <http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html>.

30. V. Demers et al., "Comparison of Provincial Prescription Drug Plans and the Impact on Patients' Annual Drug Expenditures," *Canadian Medical Association Journal* 178 (2008): pp. 405–409.

31. Canadian Agency for Drugs and Technologies in Health, *The CADTH Common Drug Review: Myths Versus Facts* (Ottawa, Ont.: CADTH, 2009), cited August 10, 2009, from <http://www.cadth.ca/media/cdr/cdr-pdf/cdr_myths_facts_e.pdf>.

32. Canadian Institute for Health Information, *Medical Imaging in Canada*, *2007* (Ottawa, Ont.: CIHI, 2008).

33. Canadian Institute for Health Information, *Trends in Acute Inpatient Hospitalizations and Day Surgery Visits in Canada*, *1995–1996 to 2005–2006* (Ottawa, Ont.: CIHI, 2007).

34. D. A. Leon, G. Walt and L. Gilson, "International Perspectives on Health Inequalities and Policy," *British Medical Journal* 322 (2001): pp. 591–594.

35. The UC Atlas of Global Inequity, *Does Having More Doctors Extend Life Expectancy?* (Santa Cruz, California: University of California in Santa Cruz, 2009), cited June 29, 2009, from <http://ucatlas.ucsc.edu/professional.php>.

36. D. E. Watson and K. M. McGrail, "More Doctors or Better Care?," *Healthcare Policy* 5, 1 (2009): pp. 26–31.

37. M. Howard et al., "Prescribing of Potentially Inappropriate Medications to Elderly People," *Family Practice* 21, 3 (2004): pp. 244–247.

38. C. Wright, K. Chambers and Y. Robens-Paradise, "Evaluations of Indications for and Outcomes of Elective Surgery," *Canadian Medical Association Journal* 167, 5 (2002): pp. 461–466.

39. D. E. Watson et al., "Family Physician Workloads and Access to Care in Winnipeg: 1991 to 2001," *Canadian Medical Association Journal* 171, 4 (2004): pp. 339–342.

Access to Care:
Telephone Health Lines

Access
Capacity and Need

1990
Quebec
- Creation of Info-Santé CSCL, a 24/7 telephone service available to everyone in Quebec

1997
Manitoba
- Health Links-Info Santé created

New Brunswick
- Province-wide Tele-Care created

2009
Nova Scotia
- HealthLink 811 created

2008
British Columbia
- BC NurseLine renamed HealthLink BC—amalgamation of telephone services

Yukon
- Yukon HealthLine-811 created—connected to B.C.'s HealthLink

Quebec
- Info-Santé changed to Info-Santé 811—one general number for the entire province

2006
Newfoundland and Labrador
- HealthLine created

2001
Ontario
- Telehealth Ontario created

British Columbia
- BC NurseLine created

2004
Northwest Territories
- Tele-Care Health Line created

2003
Saskatchewan
- HealthLine created

Alberta
- HEALTHLink Alberta created

Chapter 4
Access to Care: A Complex Story

Access is a central issue to Canadian debates about health care and our views of the system.

On the surface, access seems uncomplicated and is often defined simply as "the right service in the right place at the right time." But, as this chapter shows, it is far from simple.

Wait times are the flash point for access concerns. They featured prominently in the health accords of 2003[1] and 2004.[2] Access was at the heart of the Chaoulli case (2005) in which the Supreme Court decided that excessively long waits invalidate the Quebec government's prohibition of private health insurance for medically necessary services. Since then governments have set wait times targets and guarantees, and many interest groups have kept the issue before the media and the general public. This chapter explores wait time trends over the past decade, with some analysis of how waiting relates to capacity and need.

Waiting is a legitimate concern in all health care systems, but it should be neither the last word on nor the only criterion by which access is evaluated. Here are other things to keep in mind:

Need: If patients are waiting for some type of service, the assumption is that the service is needed. But needs vary and they could refer to anything from a need for diagnostics to a need for treatment. Sometimes the need is not for treatment, but for reassurance—the consultation, MRI or CT scan that confirms or rules out a diagnosis. These are often questions of probability: if a physician is 98% sure that there is no tumour, is there an obligation to provide a CT scan to make it 100%?

Appropriateness: This speaks to the circumstances in which treatment is warranted. Some interventions once thought to be useful—for example, arthroscopic knee surgery—have been shown to be ineffective.[3] A great deal of back surgery has been proven unlikely to

Private Health Care in Canada

Private health care is a confusing concept. In one definition, "private" means non-governmental. In this case, most health care in Canada has always been privately delivered. The controversial interpretation of private, however, has two elements: the financing of medically necessary services (as defined by the *Canada Health Act*) outside the public system; and the delivery of medical services by investor-owned, for-profit clinics, where the investors do not work in the facilities (as distinct from physicians who own and work in their own practices).

There are some misconceptions about what Canadian and provincial law allows and prohibits. In a nutshell:

- Every province allows doctors to practise outside of the public system. In 2004, Ontario enacted legislation that prohibits new doctors from opting out but allowed those who had previously left the public system to continue to practise.[31]
- Five provinces (B.C., Alberta, Saskatchewan, New Brunswick and P.E.I.) allow doctors to practise both inside and outside of the system. The others do not. Three provinces (Manitoba, Ontario and Nova Scotia) do not allow opted-out physicians to charge their patients more than the public tariff for services.[32]
- Five provinces (B.C., Alberta, Manitoba, Ontario and P.E.I.) prohibit private insurance for services covered by the *Canada Health Act*. Quebec used to be in this category until the Supreme Court ruled that the prohibition was illegal.[32]
- Several provinces allow the public system to contract with private clinics to deliver publicly insured services.[32]

The Supreme Court Adds a New Wrinkle

On June 9, 2005, the Supreme Court of Canada struck down a law that banned the sale of private insurance for medically necessary services in Quebec. It did so on the grounds that the law violated the right to life and security of the person guaranteed by Section 1 of Quebec's *Charter of Human Rights and Freedoms*. The case was brought by Quebec doctor Jacques Chaoulli on behalf of his patient, George Zeliotis, a 73-year-old Montréaler who had waited one year for a hip replacement. After two Quebec courts rejected the claim, the Supreme Court, in a 4–3 decision, ruled in favour of the applicant. Additionally, three of the majority judges found that the law against private insurance also violated the *Canadian Charter of Rights and Freedoms*.[33]

As a result, the Quebec government now allows Quebec residents to purchase private insurance for a limited range of services—to date, hip and knee replacements and cataract surgery.[34] In addition, Quebec implemented wait time guarantees in these areas. However, no private insurance policies were sold in the two years following the decision.[35] This mirrors the historical experience in the four provinces where private insurance has never been prohibited.

Clinics Across the Country

The legal challenges are important, but they have not been central to the development of private health care clinics across the country. How much private health care exists in Canada? There is no comprehensive source of information, but the sector is growing, with the bulk of activity concentrated in the four largest provinces (Ontario, Quebec, B.C. and Alberta), for example

- Private diagnostic imaging clinics (Ontario: 6, Alberta: 3, B.C.: 5 and Quebec: 11); [36]
- Private surgical centres, offering mainly cataract, orthopedic and cosmetic surgery; and[36]
- Private medical clinics, offering premium primary care. [36]

So where are we now? The debate is primarily about whether the public system should allow, encourage or prohibit the creation of clinics that both serve publicly funded patients as part of medicare, and generate additional income by marketing enhanced services to patients who are willing to pay the costs themselves.[37]

Telehealth in Canada

Telehealth or Telemedicine?

There is no pan-Canadian definition of telehealth. In fact, the terms telehealth and telemedicine are often used interchangeably. Health Canada defines telehealth as the application of telecommunications and information technology to the delivery of health care and health-related services and information over large and small distances.[38]

With the exception of Ontario, all provinces, as well as pan-Canadian initiatives, use the term telehealth. Ontario uses the term telemedicine.

Goals and Benefits

Although telehealth can be used over any distance, its main value-added role is to improve access to health care for people in rural or remote locations. For these people, telehealth offers many benefits, including

- Less time away from home or work;
- Fewer travel-related expenses;
- Care in the patient's own community;
- Faster response times for tests and consultations; and
- Face-to-face consultations with a specialist.

benefit patients.[4] And cataract surgery on patients with minor visual difficulties may actually decrease quality of life.[5]

Consequence of Waiting: In some cases—for instance, the time it takes to get the results from cancer biopsies or to start treatment—the delays may have no adverse effects on prognosis, but they may cause considerable anxiety.[6] In other cases, waiting leaves people in considerable pain (often the case for hip and knee surgery), diminishes capacity (cataracts) or increases the risk of health decline or even death (cardiac surgery and hip-fracture repair). And in other cases, waiting is an inconvenience or a minor irritation, for example, a three-week wait to see a family doctor.

Geography: People in rural and remote Canada typically do not live near specialists and large institutions. The need to travel long distances to receive service is a practical (and sometimes financial) barrier to access. Referral networks may not be as well-developed between rural practitioners and urban specialists.[7] Telehealth and other communications technologies have been designed to address geographic issues related to access to care.

The patient experience of access is unique and dependent on individual circumstances—after all, no one needs access to all parts of a complex health system at the same time. If your family doctor can meet all of your needs, you are unaffected by the level of access to other health care professionals. If your knees are a problem, you may need access to specialists, diagnostic imaging, surgery and rehabilitation. Delays in the journey can cause anxiety, prolong suffering and, in some cases, affect outcomes following care. Long waits for nursing home beds can cause a great deal of family stress.

While access is multi-dimensional, the available data is primarily about wait times for specific types of care. We cannot fairly evaluate wait time trends unless we also track volumes of services. For example, if volumes increase significantly and wait times

Services

Services common to most telehealth programs across Canada include diabetes care, home care, mental health, obstetrics/gynecology, oncology, pediatrics, psychiatry, radiology, rehabilitation, rheumatology and wound care.

Coverage

Coverage also varies from province to province. In Yukon 14 communities are connected,[39] while 10 are connected in the Northwest Territories.[40] Ontario has the largest coverage, with 615 sites across the province.[41]

Growth Across the Country

Telehealth has spread across the country at varying rates. Canada's first province-wide telehealth network was launched in Nova Scotia in 1996.[42] Other provinces quickly followed suit: B.C. and New Brunswick in 1997;[43, 44] pilot projects were launched in the Northwest Territories in 1998[45] and Saskatchewan in 1999;[46] Nunavut began in 1999 and completed the network in 2004.

In a number of cases, telehealth was an extension of an existing initiative. Newfoundland and Labrador, for example, had a long history of telehealth through TETRA (Telehealth and Educational Technology Resource Agency) at Memorial University. Then, in 2004, a provincial telehealth strategy was developed.[47] Similarly, the Ontario Telemedicine Network was created in April 2006, merging three previously existing networks: CareConnect, NORTH Network and VideoCare.[41]

Pan-Canadian Approach: Canada Health Infoway

As of March 31, 2009, 47 telehealth projects had been funded by Canada Health Infoway, a not-for-profit organization funded by the federal government. Infoway works with provinces and territories to develop projects that best suit their needs.

stay the same, this might reasonably be regarded as an achievement. If wait times shorten and more people are referred for surgery, both volumes and wait times may subsequently increase. Increased volumes of surgery may not always improve outcomes. Appropriateness also matters. In the following section, we present information on how wait times have changed over the past decade and, where possible, how this relates to changes in volumes and outcomes.

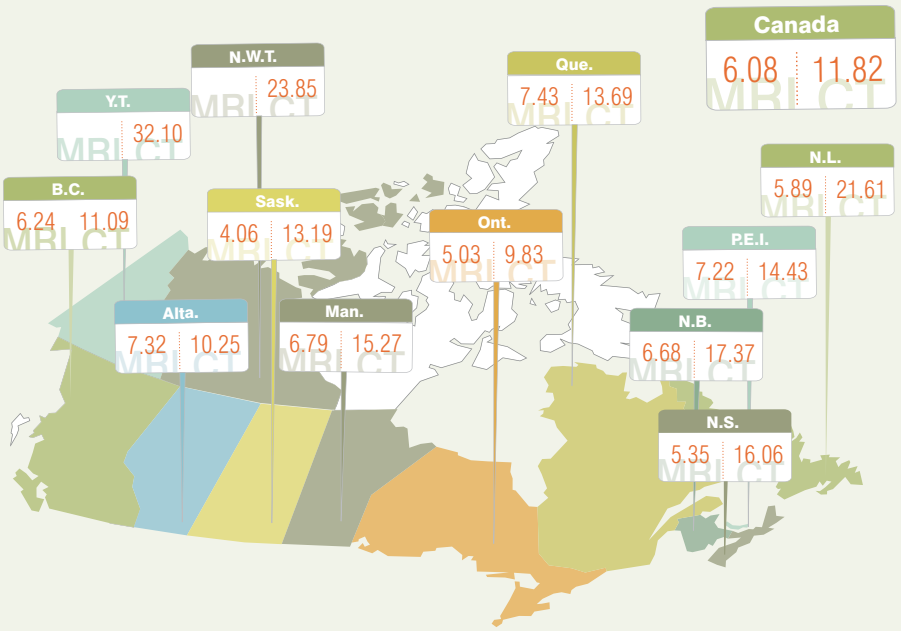
Primary Care

Family doctors are the gatekeepers to most public health care in Canada. About 8 in 10 Canadians (age 12 and older) see a family doctor at least once a year.[8] The supply of family doctors grew from 95 to 98 per 100,000 population from 2001 to 2007. Yet the percentage of people with a regular family doctor fell from 88% to 85% nationally, ranging from 74% in Quebec to 93% in Nova Scotia in 2007.[9] According to national surveys, many people in 2007 still experience significant access problems, for example

- One in six Canadians (age 15 and older) experience difficulty accessing routine or ongoing health care, and getting health information or advice.[10]
- One in four report difficulty getting immediate care for a minor health problem.[10]
- One in seven report waiting three months or longer to see a specialist for a new illness or condition.[10]

On the positive side, the vast majority (96%) of Canadian adults with selected common chronic conditions reported that they had access to a regular place of care, such as a family doctor or a walk-in clinic. More than three-quarters (76%) reported that the quality of the primary health care they received in the previous 12 months was either "excellent" or "very good." In addition, 92% of Canadians with a regular place of care would recommend their doctors to a friend or relative.[11]

Figure 10. MRI and CT Scanners per Million Population, by Jurisdiction and Canada, 2006–2007



Notes
There were no MRI scanners in the territories.

The number of scanners as of January 1, 2007.

The number includes only the scanners that were reported being used 50% of the time or more for clinical purposes.

Scanners used mainly for research and scanners whose purpose was not reported are therefore excluded.

Sources
National Survey of Selected Medical Imaging Equipment, Canadian Institute for Health Information; 2007 population estimates, Statistics Canada.

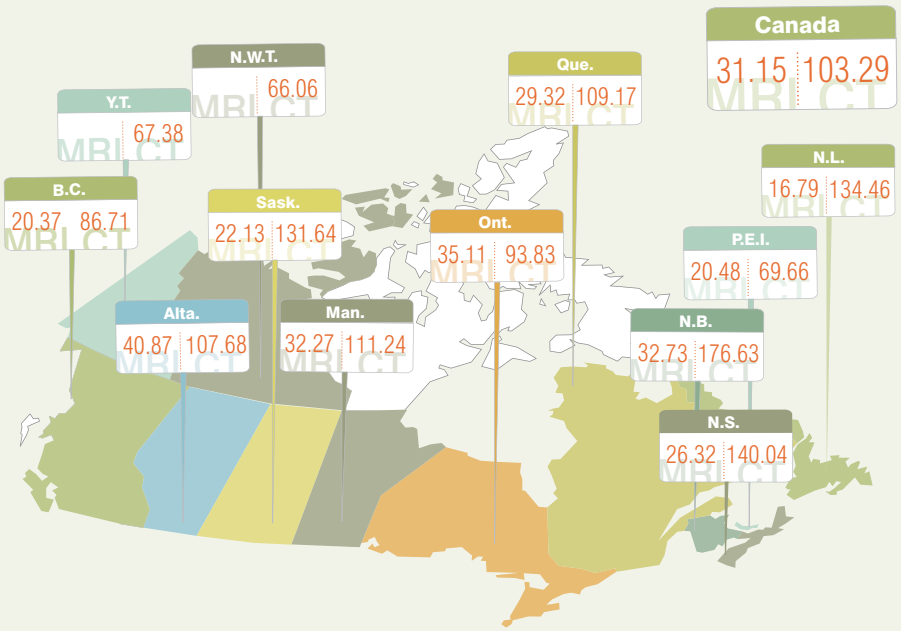
Specialty Care

There are greater variations in access to specialists than to family doctors. Specialists are heavily concentrated in urban areas and in larger provinces. Canada has comparatively long wait times for specialists: according to the 2008 Commonwealth Fund survey, 42% of Canadians with chronic conditions waited more than two months to see a specialist, compared to 33% in New Zealand and the United Kingdom, and 10% in the United States.[12] For all Canadians age 15 and older, the median wait time to see a specialist hovered around four weeks from 2001 to 2007.[13]

It is not possible to get an accurate account of how the number of specialists translates into service volumes and wait times. Service volumes are available only for fee-for-service specialists, and in some provinces, such as Nova Scotia, many specialists are funded by other methods. The data available, for example, shows that Nova Scotia has 113 specialists per 100,000 population compared to 86 in New Brunswick,[14] but New Brunswick specialists perform almost three times as many procedures.[15] The majority of Nova Scotia procedures are effectively "hidden" from the available data because they are performed by specialists who are not paid fee for service.

Figure 11. MRI and CT Exams per 1,000 Population

by Jurisdiction and Canada, 2006–2007



Notes
Numbers are for the fiscal year from April 1, 2006, to March 31, 2007.

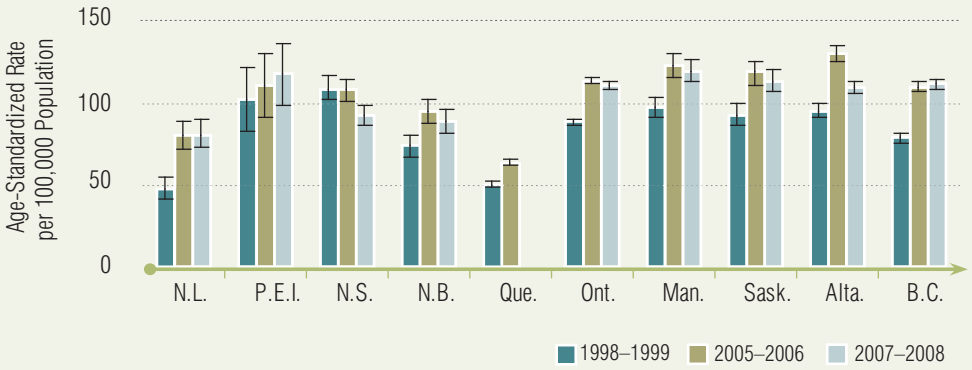
Sources
National Survey of Selected Medical Imaging Equipment, Canadian Institute for Health Information; 2007 population estimates, Statistics Canada.

Diagnostic Imaging

There has been major growth in the number of CT and MRI scanners and procedures over the past decade, both in Canada and internationally. Utilization varies markedly among countries. In 2006–2007, Canadians had only about 35% of the MRI and half the CT exams as Americans, but nearly double the rate of MRIs and more than triple the rate of CTs as Denmark.[16] However, Canadians underwent over a million more exams in 2006 than in 2003;[16] the median wait stayed the same at about two to three weeks.[10] We also know a bit about how this varies by jurisdiction in Canada.

- While both MRI and CT exam rates vary considerably by jurisdiction, they are unrelated to the number of machines per capita. Clearly, there is more and less intensive use of the technology depending on jurisdiction.[16]
- As noted in Chapter 1, diagnostic imaging utilization has risen rapidly in the past decade. About 55% of Canadians wait less than a month for a CT and MRI scan (the data is lumped in with angiography), and 11% wait more than three months.[10] There appears to be some relationship between utilization and waiting: New Brunswick and Alberta have high rates of scanning and somewhat longer waits.[16, 17]
- There is no systematic data on the impact of increased utilization on diagnostic accuracy, management or outcomes of care.

Figure 12. Hip Replacement Rates by Province, Canada



Notes
Rates include people age 20 and older. Quebec data for 2007–2008 was not available at the time of publication. Rates for the territories are not presented due to small numbers.

⌶ represents 95% confidence intervals.

Source
Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009), p. 65.

Surgery

Surgical wait times have been a hot-button issue for a decade or more. Concerns and action have focused on four areas: hip replacements, knee replacements, heart surgery and cataract surgery. While there is no standardized data on wait times over the 10-year period, we know more about the volume of procedures being done over the 10 years as well as some outcomes of care. What we know about volumes, wait times and outcomes follows.

Hip Replacements

- Rates rose over the decade, but have stabilized in recent years. The variation among provinces has narrowed, although Quebec remains a significant outlier on the low side (see sidebar).
- Wait times have declined in recent years, but in four provinces (Prince Edward Island, Nova Scotia, New Brunswick and Saskatchewan) fewer than 75% of patients undergo surgery within the 182-day benchmark.[18] Wait times vary considerably by province. In Ontario, where waits are shortest, half of hip replacement procedures were completed within 63 days in 2008. In Nova Scotia, where waits are longest, the median wait was 201 days. Waits for hip replacements have declined over the past three years in provinces where trend data is available (Ontario, Manitoba, Alberta and B.C.).[18]
- There are no systematically reported outcomes following hip replacements.

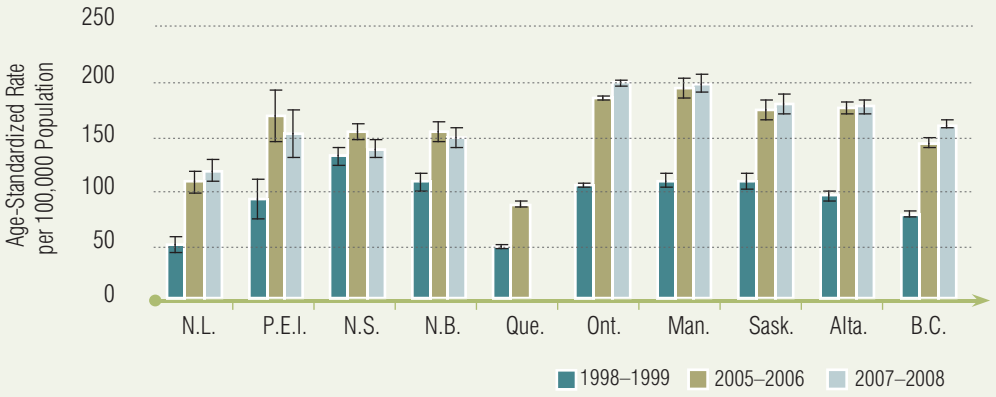
Why Does **Quebec** Perform so **Few** Hip and Knee Replacements?

In 2005–2006, the hip replacement rate in Quebec was 64 per 100,000 people—much lower than the national average. Quebec's knee replacement rate was 85 per 100,000 people—again, much lower than the national average and less than half that of Manitoba (190), Ontario (181), Alberta (173) and Saskatchewan (171). What might account for these differences?

- Healthier people. This may be a partial explanation. Quebec has among the lowest self-reported prevalence of arthritis, rheumatism and obesity when compared to other provinces.[48, 49]
- Fewer orthopedic surgeons performing these surgeries. Not so—Quebec has typical rates of orthopedic surgeons.[14]
- Long waits, suggesting unmet needs. Not so—the proportion of Quebec patients whose surgery is completed within the national benchmark is higher than that reported in many other provinces.[18]
- Less orthopedic surgery in general. Again, this is not the case. Quebec's overall rate is comparable to that of other provinces.[15]
- Less access to non–life threatening procedures. This may be a partial explanation. Quebec has the highest proportion of people reporting unmet health care needs.[50]
- Greater use of drugs to manage pain instead of surgery. Not so—Morgan et al.[51] reported that Quebecers spent *less* on pain medications per capita than residents of other provinces, especially in the older age groups.
- Differences in data collection. Data collection on hospital-based surgery is mandatory in Quebec, as it is in the rest of the country. Any small variation that may exist in data collection does not explain the differences in rates.

The reason why Quebec performs fewer hip and knee replacements remains somewhat of a mystery.

Figure 13. Knee Replacement Rates by Province, Canada



Notes
Rates include people age 20 and older. Quebec data for 2007–2008 was not available at the time of publication. Rates for the territories are not presented due to small numbers.

⊥ represents 95% confidence intervals.

Source
Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009), p. 63.

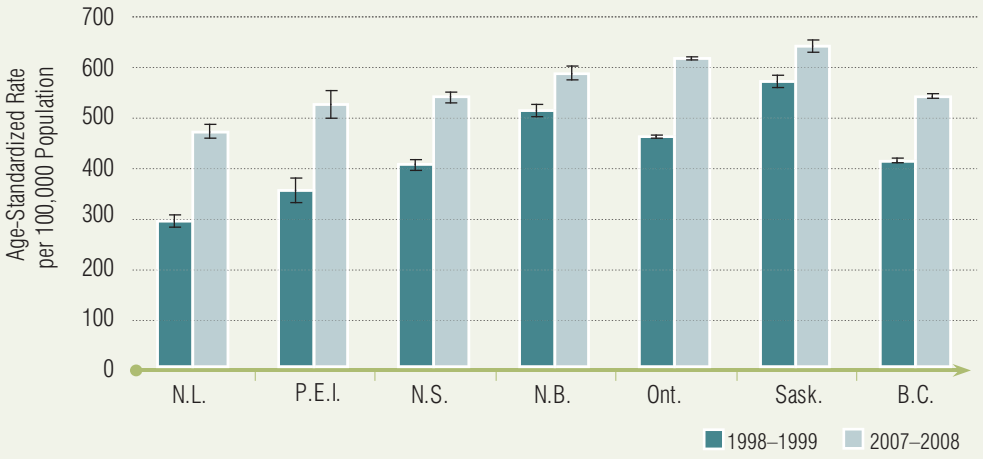
Knee Replacements

- Rates rose steeply over the decade but, as with hips, they stabilized in recent years and, in some provinces, they declined. Rates in Ontario and the west are higher than those in the east, and Quebec rates remain significantly lower than elsewhere (see sidebar).
- In all provinces able to report trends (Ontario and Western Canada), wait times are down over the last three years. Despite this fact, wait times still fall short of the benchmarks in many areas. Only three provinces (P.E.I., Quebec and Ontario) reported that over 75% of patients received their knee replacement surgery within the recommended 182 days.[18]
- There are no systematically reported outcomes following knee replacements.

Heart Surgery

- Coronary artery bypass graft (CABG) rates declined over the decade while angioplasty rose significantly before declining toward the end of the decade (see Chapter 2 for more details).[19]
- All seven provinces that report wait times information met the 182-day benchmark for 90% or more of CABG procedures, but this data combines a number of urgency categories.[18] (Work is under way to make reported wait times for this procedure more detailed and meaningful.) Wait times for angioplasty are not widely available, and pan-Canadian benchmarks have not been established.
- Heart health outcomes are improving. In-hospital mortality rates continue to decline (see Chapter 2).

Figure 14. Cataract Surgery Rates by Selected Province, Canada



Notes
Rates include people age 20 and older. Quebec, Manitoba and Alberta are not presented. Data reported to CIHI is incomplete to calculate comparable rates. Rates for the territories are not presented due to small numbers.

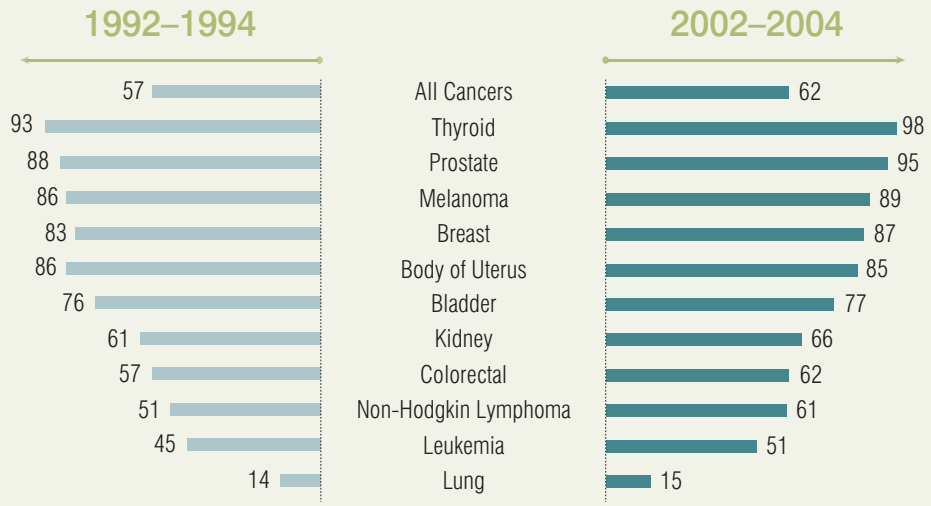
⊥ represents 95% confidence intervals.

Sources
Hospital Morbidity Database and Discharge Abstract Database, Canadian Institute for Health Information.

Cataract Surgery

- Cataract surgery has increased in all provinces over the past 10 years. Rates of growth have been most dramatic in provinces that reported lower rates in 1998–1999.
- Wait times for cataract procedures have dropped in three of the four provinces with trend data over the past three years. (The fourth province reported no change.) Five of the eight provinces for which data is available report that in 2008 about 75% or more cataract procedures were completed within the recommended benchmark of 112 days.[18]
- There is no systematic outcome data on cataract procedures. A 2002 Canadian study found wide variation in how well patients were able to see before cataract surgery, as well as the degree to which patients' eyesight was improved after surgery.[20] Not without controversy, the study found that one-quarter of patients had worse health-related quality of life *after* the operation than they did before.

Figure 15. Estimated Age-Standardized Five-Year Relative Survival Ratio (%) for Selected Cancers, Both Sexes Combined, Canada (Excluding Quebec), 2002–2004 Versus 1992–1994



Notes
Data from Quebec was excluded, in part, because the method for ascertaining the date of cancer diagnosis differs from the method used by other provinces or territories and because of issues in correctly ascertaining the vital status of cases. The data for bladder cancer excluded Ontario, which did not report in situ bladder cases. Body of uterus does not include "uterus not otherwise stated" and colorectal does not include "anus."

Source
Canadian Cancer Society's Steering Committee, *Canadian Cancer Statistics 2009* (Toronto, Ont.: Canadian Cancer Society, 2009), p. 61.

Cancer Radiation Therapy

- The recommended benchmark is within 28 days of when the patient is ready for treatment. At least 80% of radiation patients meet the target in all provinces. In several provinces, well over 90% are treated within the recommended time frame.[18]
- Cancer has among the most comprehensive long-term outcome data of any disease category. Five-year survival rates have improved marginally in the past decade for most types of cancer (see Figure 15).[21]

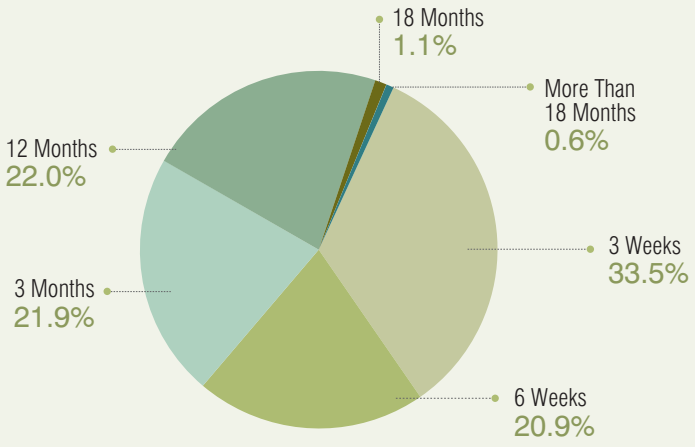
Access Improvement Efforts

The first comprehensive report that identified wait time issues and proposed solutions appeared in 1998.[22] Since then there has been a great deal of activity to quantify and address wait time issues. In particular, in the fall of 2004, the first ministers put timely access to quality care at the top of their collective agenda and committed $4.5 billion in the Wait Times Reduction Fund between 2004–2005 and 2009–2010 to reduce wait times.[23] Many strategies to better measure and manage wait times have been put in place over the last decade, including:

- The reduction of backlogs by funding additional procedures in five areas identified as priorities: cancer, heart, joint replacements, sight restoration and diagnostic imaging.
- The development of protocols for prioritizing queues. The Western Canada Waiting List (WCWL) project pioneered efforts in this area that have subsequently been built into wait time systems in many provinces (for example, the Saskatchewan Surgical Care Network and the Ontario Wait Times Strategy).
- The establishment of wait time measures to be used by all provinces except Quebec. These definitions form the foundation for comparable wait time measurement for health care professionals, as well as diagnostic and treatment procedures.
- Governments jointly commissioned research led by the Canadian Institutes for Health Research (CIHR) to develop wait time benchmarks: the amount of time that clinical evidence shows is appropriate for a particular procedure. Several other groups, including the Wait Time Alliance (comprising physician specialty societies) have continued to propose benchmarks for different clinical conditions and procedures.
- The collection and reporting of wait times using provincial wait time registries and websites accessible to the public. These sites create more transparency and allow both patients and health care providers to check for facilities where waits are shorter.
- The development of new centres of excellence for joint replacement (for example, Alberta Hip and Knee Joint Replacement Project) and cataract removal (for example, Kensington Clinic in Ontario). These centres are designed to improve coordination of patient care, ideally leading to shorter wait times.
- The introduction of queuing theory into wait times management. Queuing models assist in matching demand and capacity to improve flow and remove bottlenecks for patients.[24] For example, backups in the emergency room often result from the unavailability of beds on medical and surgical wards. Better modelling of needs and flows can effectively reduce backups.
- The introduction of advanced-access scheduling into clinical practices. This approach to scheduling presumes that the daily demand for visits is predictable given a large enough practice. By leaving about two-thirds of appointment slots open, practices can usually serve patients on the day the patients call. A number of clinics in Canada have adopted advanced-access scheduling with excellent results.[25–27]

Figure 16.

All Surgical Wait Times for New Brunswick
From January 1 to March 31, 2009



Source
New Brunswick Surgical Access Registry, New Brunswick Department of Health.

Issues on the Horizon

Canada has focused on wait time reduction for much of the past decade. In many areas, wait times have reduced as volumes of services have risen, suggesting that access has improved. Where delays can be harmful and even life-threatening, efforts to reduce wait times have been largely successful. While circumstances vary from province to province, in general, orthopedic patients experience the longest waits.

Variations in wait times continue to be a central issue. Overall, for most non-urgent procedures, half of all patients wait about four to five weeks.[10] But some wait much longer and some hardly wait at all. The distribution of waits for all surgery performed in New Brunswick is a case in point: in this province, more than half of all patients receive non-emergency surgery within six weeks, but close to a quarter wait a year or more.[29]

If the vast majority of people experienced the median wait time for all procedures, wait times would likely cease to be a major issue in Canada. The cases that draw attention tend to be the very long waits, which the public may interpret as typical rather than unusual. The United Kingdom's National Health Service (NHS) chose to address this issue by setting a firm target of 18 weeks maximum from the time of referral to the completion of any procedure and it has achieved its goal.[30] Doing this required standardized and system-wide approaches to wait list management.

As has been noted throughout this chapter, systematic outcome data following surgery is not available for many types of care, and it is possible to reduce wait times but not produce better health outcomes. From other sectors of care we know that both over-utilization and under-utilization of health services exist. Linking wait times management more explicitly to appropriateness and outcomes will, perhaps, be the next frontier.

Table 2. Percent of Patients Receiving Treatment Within Wait Time Benchmarks, April to December, 2008

Table 2 summarizes provincial wait time achievements as of 2008 in meeting the recommended benchmarks for the five priority areas established in 2004. It illustrates the efforts made to provide information about wait times by the provinces but also confirms that performance continues to vary among treatment categories and by province. The number of interventions outside of priority areas has continued to grow since 2004. This indicates that the system was able to accommodate an increasing number of wait time priority area procedures without reducing the number of surgical procedures performed for other reasons.[28]

	Cancer—Radiation Treatment	Coronary Artery Bypass Surgery	Hip Replacement	Knee Replacement	Cataract Surgery†
Wait Time Benchmarks	Treatment within 4 weeks (28 days) of being ready to treat	Surgery within 26 weeks*	Surgery within 26 weeks (182 days)	Surgery within 26 weeks (182 days)	Surgery within 16 weeks (112 days)
N.L.	85%	95%	79%–100%	67%–100%	29%–100%
P.E.I.	100%	NA	71%	75%	60%
N.S.	NA	NA	45%	46%	75%
N.B.	94%	95%	66%	55%	74%
Que.	79%–100%	NA	90%	86%	NA
Ont.	90%	100%	90%	85%	88%
Man.	99%	96%	80%	71%	77%
Sask.	81%	98%	56%	37%	84%
Alta.	NA	99%	77%	72%	71%
B.C.	95%	91%	78%	71%	78%

Notes

NA Benchmark data is not available.

* Pan-Canadian benchmark specifies surgery within 2 to 26 weeks, depending on how urgently care is required. There is no consensus on definitions for urgency levels, so the benchmark is applied across all priority levels.

† Pan-Canadian benchmark specifies surgery within 16 weeks for patients who are at high risk. There is no consensus on a definition for high risk, so the benchmark is applied across all priority levels.

There are no pan-Canadian benchmarks for angioplasty, MRI and CT scans.

Wait time was defined as the number of days that patients waited, between the date the surgeon made a decision to treat and the date the patient received a planned total surgery.

Population: Adults (age 18 and older); excludes emergency cases; for all priority levels.

Source

Canadian Institute for Health Information, *Wait Times Tables—A Comparison by Province, 2009* (Ottawa, Ont.: CIHI, 2009).

References

1. Health Canada, *2003 First Ministers' Accord on Health Care Renewal* (2006), cited July 20, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2003accord/index-eng.php>.
2. Health Canada, *A 10-Year Plan to Strengthen Health Care, First Ministers' Meeting on the Future of Health Care 2004* (2006), cited July 20, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2004-fmm-rpm/index-eng.php>.
3. W. Laupattarakasem et al., "Arthroscopic Debridement for Knee Osteoarthritis," *Cochrane Database of Systematic Reviews*, 1 (2008): p. CD005118.
4. W. C. Peul et al., "Surgery Versus Prolonged Conservative Treatment for Sciatica," *New England Journal of Medicine* 356, 22 (2007): pp. 2245–2256.
5. D. Morris, S. G. Fraser and C. Gray, "Cataract Surgery and Quality of Life Implications," *Clinical Interventions in Aging* 2, 1 (2007): pp. 105–108.
6. E. V. Lang, K. S. Berbaum and S. K. Lutgendorf, "Large-Core Breast Biopsy: Abnormal Salivary Cortisol Profiles Associated With Uncertainty of Diagnosis," *Radiology* 250, 3 (2009): pp. 631–637.
7. NOW Alliance, *2004 Rural Health Plan* (2004), cited July 27, 2009, from <http://www.nowalliance.ca/cont/rhap.pdf>.
8. Statistics Canada, *Canadian Community Health Survey 2005, CANSIM Table 105-0461* (2007), cited July 15, 2009, from <http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&LANG=E&C2DB=PRD&C2USER=&C2PASS=&C2APASS=&C2USEWRK=&SDDSLOC=//www.statcan.gc.ca/imdb-bmdi/*.htm&ROOTDIR=CII/&VEC=&RESULTTEMPLATE=CII/CII_ASUM&ARRAY_SUMM=1&SDDSID=&DRILLFILE=&ARRAYID=1050461>.
9. Statistics Canada, *Canadian Community Health Survey 2001–2007*, *CANSIM Table 105-3024* (2009), cited July 9, 2009, from <http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&LANG=E&C2DB=PRD&C2USER=&C2PASS=&C2APASS=&C2USEWRK=&SDDSLOC=//www.statcan.gc.ca/imdb-bmdi/*.htm&ROOTDIR=CII/&VEC=&RESULTTEMPLATE=CII/CII_ASUM&ARRAY_SUMM=1&SDDSID=&DRILLFILE=&ARRAYID=1053024>.
10. Government of Canada, *Healthy Canadians: A Federal Report on Comparable Health Indicators* (Ottawa, Ont.: Health Canada, 2009), cited July 9, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/alt_formats/hpb-dgps/pdf/pubs/system-regime/2008-fed-compindicat/index-eng.pdf>.
11. Canadian Institute for Health Information, *Experiences With Primary Health Care in Canada* (Ottawa, Ont.: CIHI, 2009).
12. C. Schoen and R. Osborn, *The Commonwealth Fund 2008 International Health Policy Survey in 8 Countries* (2008), cited July 9, 2009, from <http://www.commonwealthfund.org/usr_doc/Schoen_2008intlhltpolicysurveyeightcountries_chartpack.pdf?section=4039>.
13. Statistics Canada, *Canadian Community Health Survey 2001–2007, CANSIM Table 105-3001* (Ottawa, Ont.: Statistics Canada, 2009), cited July 9, 2009, from <http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&LANG=E&C2DB=PRD&C2USER=&C2PASS=&C2APASS=&C2USEWRK=&SDDSLOC=//www.statcan.gc.ca/imdb-bmdi/*.htm&ROOTDIR=CII/&VEC=&RESULTTEMPLATE=CII/CII_ASUM&ARRAY_SUMM=1&SDDSID=&DRILLFILE=&ARRAYID=1053001>.
14. Canadian Institute for Health Information, *Supply, Distribution and Migration of Canadian Physicians*, *2007* (Ottawa, Ont.: CIHI, 2008).
15. Canadian Institute for Health Information, *National Physician Database*, *2006–2007 Data Release* (Ottawa, Ont.: CIHI, 2009).
16. Canadian Institute for Health Information, *Medical Imaging in Canada 2007* (Ottawa, Ont.: CIHI, 2008).
17. Statistics Canada, *Canadian Community Health Survey 2001–2007, CANSIM Table 105-3004* (2009), cited July 9, 2009, from <http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&LANG=E&C2DB=PRD&C2USER=&C2PASS=&C2APASS=&C2USEWRK=&SDDSLOC=//www.statcan.gc.ca/imdb-bmdi/*.htm&ROOTDIR=CII/&VEC=&RESULTTEMPLATE=CII/CII_ASUM&ARRAY_SUMM=1&SDDSID=&DRILLFILE=&ARRAYID=1053004>.
18. Canadian Institute for Health Information, *Wait Times Tables—A Comparison by Province, 2009* (Ottawa, Ont.: CIHI, 2009).
19. Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).

20. C. J. Wright, G. K. Chambers and Y. Robens-Paradis, "Evaluation of Indications for and Outcomes of Elective Surgery," *Canadian Medical Association Journal* 167, 5 (2002): pp. 461–466.

21. Canadian Cancer Society, Statistics Canada and Public Health Agency of Canada, *Canadian Cancer Statistics 2009* (2009), cited July 10, 2009, from <http://www.cancer.ca/canada-wide/about%20cancer/cancer%20statistics/~/media/CCS/Canada%20wide/Files%20List/English%20files%20heading/pdf%20not%20in%20publications%20section/Stats%202009E%20Cdn%20Cancer.ashx>.

22. P. McDonald et al., *Waiting Lists and Waiting Times for Health Care in Canada: More Management!! More Money??* (1998), cited July 15, 2009, from <http://www.chspr.ubc.ca/files/publications/1998/hpru98-09D-A.pdf>.

23. Health Canada, *Wait Times in Canada* (2007), cited July 15, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/qual/acces/wait-attente/index-eng.php>.

24. R. W. Hall, *Patient Flow: The New Queuing Theory for Healthcare* (2006), cited July 14, 2009, from <http://www.lionhrtpub.com/orms/orms-6-06/patientflow.html>.

25. Health Quality Council, *Advanced Access to Primary Health Care* (2004), cited July 9, 2009, from <www.hqc.sk.ca/download.jsp?5rzTk6BVB6WLVXivCoM+KzBIzBf0QfLQkUwK4QBZaJv+RhPX6kyMyQ==.>.

26. M. Love, "Clinic Manages Time to Reduce Waits," *Medicine Post* 42, 17 (2006): p. 48.

27. V. Mitchell, "Same-Day Booking: Success in a Canadian Family Practice," *Canadian Family Physician* 54, 3 (2008): pp. 379–383.

28. Canadian Institute for Health Information, *Surgical Volume Trends, 2008—Within and Beyond Wait Time Priority Areas* (Ottawa, Ont.: CIHI, 2008).

29. New Brunswick Department of Health, *Surgical Wait Times* (2009), cited June 4, 2009, from <http://www1.gnb.ca/0217/SurgicalWaitTimes/Reports/04-e.aspx>.

30. National Health Services, *18 Weeks and Workforce Planning* (2009), cited July 20, 2009, from <http://www.healthcareworkforce.nhs.uk/18weeks.html>.

31. *Commitment to the Future of Medicine Act, 2004, S.O. 2004, Chapter 5* (2007), cited August 17, 2009, from <http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_04c05_e.htm>.

32. C. M. Flood and T. Archibald, "The Illegality of Private Health Care in Canada," *Canadian Medical Association Journal* 164, 6 (2001): pp. 825–830.

33. C. Flood and S. Lewis, "Courting Trouble: The Supreme Court's Embrace of Private Health Insurance," *Healthcare Policy* 1, 1 (2005): pp. 26–35.

34. R. Steinbrook, "Private Health Care in Canada," *New England Journal of Medicine* 354, 16 (2006): pp. 1661–1664.

35. CBC News, *No One Wants Quebec's Limited Private Health Insurance* (2009), cited July 3, 2009, from <http://www.cbc.ca/canada/montreal/story/2009/03/30/mtl-health-insurance-interest-0330.html>.

36. Health Forum Canada, *Find Private Clinics* (2009), cited July 14, 2009, from <http://www.findprivateclinics.ca/>.

37. P. Fayerman, "B.C. Health Minister Supports Private Care," *National Post* (2009), cited June 25, 2009, from <http://www.nationalpost.com/news/canada/story.html?id=1731220>.

38. Health Canada, *Evaluating Telehealth "Solutions": A Review of and Synthesis of the Telehealth Evaluation Literature* (2000), cited July 14, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/pubs/ehealth-esante/2000-tele-eval/index-eng.php>.

39. Yukon Health and Social Services, *Yukon Telehealth Network (YTN)* (2009), cited July 20, 2009, from <http://www.hss.gov.yk.ca/programs/nursing/ytn/>.

40. Northwest Territories Health and Social Services, *Telehealth Existing Sites* (2009), cited July 20, 2009, from <http://www.hlthss.gov.nt.ca/english/services/telehealth/existing_sites.htm>.

41. Ontario Telemedicine Network, *Who We Are* (2008), cited July 20, 2009, from <http://www.otn.ca/en/otn/who-we-are/>.

42. Government of Nova Scotia, *Nova Scotia Telehealth Network* (2008), cited July 20, 2009, from <http://www.gov.ns.ca/health/telehealth/>.

43. Atlantic Health Sciences Corporation, *Telehealth* (2007), cited July 20, 2009, from <http://www.ahsc.health.nb.ca/Programs/Telehealth/telehealth.shtml>.

44. BC Women's Hospital & Health Centre, *Telehealth* (2009), cited July 20, 2009, from <http://www.bcwomens.ca/Services/ClinicalFamilyServices/Telehealth/default.htm>.

45. Northwest Territories Health and Social Services, *Telehealth Background* (2009), cited July 20, 2009, from <http://www.hlthss.gov.nt.ca/english/services/telehealth/background.htm>.

46. Government of Saskatchewan, *Expanding Telehealth Network Improves Rural Health Care Access* (2009), cited July 20, 2009, from <http://www.gov.sk.ca/news?newsId=63f9ce1f-5551-44e1-893d-1693ca71ad51>.

47. Newfoundland and Labrador Centre for Health Information, *Telehealth—Supporting Access to Health Care Closer to Home* (2009), cited July 20, 2009, from <http://www.nlchi.nf.ca/health_telehealth_news.asp>.

48. Statistics Canada, *Canadian Community Health Survey 2005, CANSIM Table 105-0402* (2007), cited June 26, 2009, from <http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&LANG=E&C2DB=PRD&C2USER=&C2PASS=&C2APASS=&C2USEWRK=&SDDSLOC=//www.statcan.gc.ca/imdb-bmdi/*.htm&ROOTDIR=CII/&VEC=&RESULTTEMPLATE=CII/CII_ASUM&ARRAY_SUMM=1&SDDSID=&DRILLFILE=&ARRAYID=1050402>.

49. Statistics Canada, *Canadian Community Health Survey 2007, CANSIM Table 105-4009* (2008), cited June 26, 2009, from <http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm?regtkt=&C2Sub=&LANG=E&C2DB=PRD&C2USER=&C2PASS=&C2APASS=&C2USEWRK=&SDDSLOC=//www.statcan.gc.ca/imdb-bmdi/*.htm&ROOTDIR=CII/&VEC=&RESULTTEMPLATE=CII/CII_ASUM&ARRAY_SUMM=1&SDDSID=&DRILLFILE=&ARRAYID=1054009>.

50. Institut national de santé publique du Quebec, *Health Services* (2009), cited June 4, 2009, from <http://www.inspq.qc.ca/santescope/impressionAnalyse.asp?Lg=en&NoCons=6>.

51. S. Morgan et al., *The Canadian Rx Atlas* (2008), cited June 26, 2009, from <http://www.chspr.ubc.ca/files/publications/2008/CanRxAtlas/Canadian_Rx_Atlas_2nd_Edition.pdf>.

Institutions Supporting **Quality Improvement and Patient Safety**

Quality and Safety

2002

- Saskatchewan Health Quality Council
  www.hqc.sk.ca
- Health Quality Council of Alberta
  www.hqca.ca

2003

- Health Council of Canada
  www.healthcouncilcanada.ca
- Canadian Patient Safety Institute
  www.patientsafetyinstitute.ca

2004

- Manitoba Institute for Patient Safety
  www.mbips.ca

2005

- Quebec's Commissaire à la santé et au bien-être
  www.csbe.gouv.qc.ca
- Ontario Health Quality Council
  www.ohqc.ca

2008

- New Brunswick Health Council
  www.nbhc.ca
- B.C. Patient Safety and Quality Council
  www.bcpsqc.ca

Chapter 5
Quality, Safety and Outcomes: A Decade of Development

Access and money have long dominated the discussion about Canadian health care.

More recently, two related topics have come to the fore: quality and safety. Like many other health care stories, the quality and safety tale begins with bad news and unfolds with more positive developments. Quality and safety issues transcend domestic boundaries; Canada has learned a great deal from international experiences.

Quality and Safety Issues in Health Care

Of the many studies revealing quality and safety defects around the world, three have had special significance for Canada, and one is home-grown. The U.S. Institute of Medicine report, *To Err Is Human*, estimated that 44,000 to 98,000 Americans died in hospitals each year because of preventable error.[1] The Canadian Adverse Events Study estimated that 70,000 preventable adverse events occur annually in hospitals, causing from 9,250 to 23,750 deaths.[2] A U.S. RAND Corporation study revealed that people receive only 50% to 60% of recommended preventive, chronic and acute care.[3]

Collectively, this research confirms that quality and safety problems are not rare events attributable only to bad luck, fate, maverick practitioner behaviour or accidents. They are endemic to the whole system, and commonly involve overuse, underuse or inappropriate use of drugs; misdiagnoses; and infections, falls and other mishaps in health care institutions.

These general findings—and again, they are world-wide phenomena—are the context for some of the more notable and newsworthy misadventures in Canadian health care over the past decade. Table 3 lists prominent cases where the system failed, and some of the known consequences and causes.

The upside of the story is that these high-profile cases revealed larger underlying problems that led to efforts to address problems and create systemic change. The investigations into the causes of these tragedies generated policy, structural and organizational efforts to improve performance and prevent future tragedies. And most importantly, quality improvement is now a major part of the health care agenda across the country. For example, in order to reduce the occurrence of hospital-acquired infection, the *Stop! Clean Your Hands* campaign was launched in 2007 by the Canadian Patient Safety Institute, the Community and Hospital Infection Control Association, Accreditation Canada (formerly the Canadian Council on Health Services Accreditation) and the Public Health Agency of Canada.[4] More recently, in order to monitor rates of hospital-acquired infections, mandatory reporting has been established in some jurisdictions.[5]

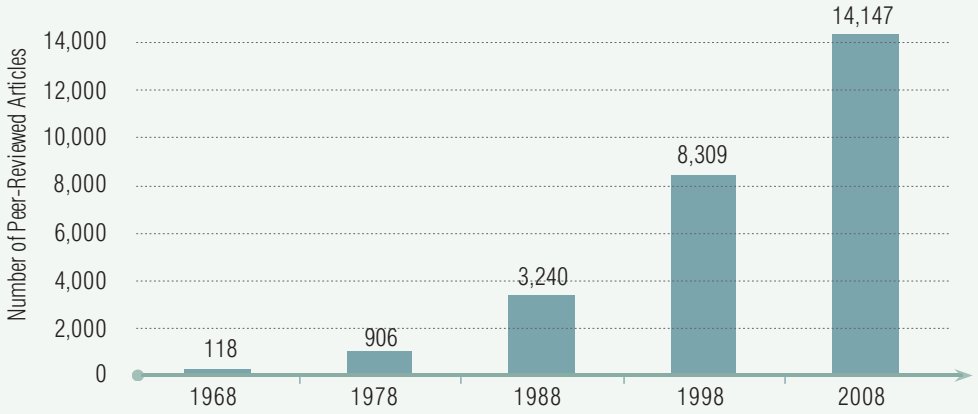
Some common themes run through these and other events. In most cases, the problems persist over time; early detection has failed. This does not mean that the health care system never prevents a problem—it surely does, every day, even though there is virtually no data on near-misses or quality problems nipped in the bud. But the formal inquiries frequently cite inadequate mechanisms to detect substandard quality or elevated risks.[5, 24] Also, it often takes considerable time to communicate the newly discovered problems to those at risk. There is a tendency not to disclose until the facts are definitively known—a cultural feature that is in opposition to quality improvement experts' call for timely disclosure.[26] Furthermore, individuals and units often fail because the system is not organized to prevent them from failing. Time and again reports identify lack of oversight, confusions of authority and lack of accountability as core factors in repeated failure.[4, 16]

Table 3. Some Major Canadian Quality and Safety Events

Event, Location and Year	What Happened	Consequences	Causes
Surgery-Related Deaths Pediatric cardiac surgery, Manitoba, 1994[4]	Surgeon performed high-risk surgery on infants.[4]	12 deaths—5 or more were preventable.[4]	Flaws including overly ambitious program, lack of oversight, failure to listen to nurses and underdeveloped culture of disclosure.[4]
***Clostridium difficile* Infections** Ontario, 2006 to 2008[5] Quebec, 2002 to 2009[6]	Numerous outbreaks of hospital-acquired *C. difficile* infections, with severe symptoms in the elderly.	91 deaths in Burlington, Ontario hospital between 2006 and 2008; at least 460 deaths in 22 Ontario hospitals in 2007 and 2008.[5] Infection rates in Quebec increased from 36 per 100,000 in 1991 to 156 per 100,000 local population in 2003. The proportion of patients who died within 30 days of diagnosis increased from 4.7% in 1991 to 13.8% in 2003.[6]	General problems with infection control procedures, hygiene, cleaning, antibiotic control and infection tracking in Burlington, Ontario hospital.[5]
Adverse Drug Events Vioxx, Celebrex and other COX-2 inhibitors, 2004	Research on Vioxx found elevated risk of heart attack and stroke in people taking the drugs.[7]	Merck & Co. withdrew Vioxx from the market in September 2004.[8] Canadian use of COX-2 inhibitors dropped by half: in 2003, there were 7.7 million prescriptions for COX-2s; in 2005–2006 there were 3.4 million.[9] This increased slightly to 3.6 million in 2008.[10]	Lawsuits allege that drug companies suppressed evidence of elevated health risks. In the U.S., Merck & Co. paid $4.85 billion to settle 27,000 suits with 47,000 sets of plaintiffs in 2007.[11] Canadian lawsuits are still in the courts.[12]
Hospital Instrument Sterilization Failures Alberta, 2007[13] Ontario, 2004 Newfoundland and Labrador, 2003–2004 Quebec, 2004	Failure to follow standard sterilization protocols may have put patients undergoing procedures at risk of infections, such as hepatitis and HIV.	In Alberta, the hospital was closed to new admissions. Approximately 3,000 people were contacted and tested for infection of hepatitis B and C, and HIV.[13] In Ontario, 1,600 patients were asked to get HIV and hepatitis tests.[14] In Newfoundland and Labrador, 300 patients were asked to get hepatitis and HIV tests, and in Montréal, Quebec, 300 hip surgery patients were re-contacted for infection testing.[15]	In Alberta, attributed to ambiguity in authority, accountability and responsibility between region and hospital.[13]

Event, Location and Year	What Happened	Consequences	Causes
Forensic Pediatric Pathology Errors Ontario, 1991 to 2001[16]	Between 1991 and 2001, pathologist Dr. Charles Smith found 45 cases to be homicides or criminally suspicious.[16]	Inquiry disagreed with facts presented in 9 of these cases and took issue with 20.[16] Criminal convictions in 13 cases have been re-opened.[17]	Lack of oversight in the program.[16]
Breast Cancer Test Errors Newfoundland and Labrador, 1997 to 2005[18]	In Newfoundland and Labrador, between 1,200 and 1,500 women received faulty tests.[18]	High anxiety and potential harm for those with false negative results.	Lack of accountability, oversight and quality control at all levels.[18]
Quebec, 2009	In Quebec, 2,730 breast cancer samples had to be re-tested, after a study found error rates of 15% to 30% in the detection of hormone markers that were used to determine treatment.[19, 20]		No formal inquiry has been conducted in Quebec. Lack of quality control measures cited.[20]
Pathology Diagnoses Errors New Brunswick, 1995 to 2007[21]	Forty incomplete and seven false negative prostate and breast cancer biopsies were identified out of 227 reviewed from 2004–2005.[21]	High anxiety and potential harm for those with false negative results.	Absence of clear lines of authority, inadequate quality assurance and accountability mechanisms in place.[21]
Radiology Errors Saskatchewan, 2004 to 2009[22]	Review revealed major discrepancies in interpretation of images and significant potential for harm. Seventy thousand images from five-year period had to be reinterpreted.[22]	High anxiety and potential harm for those with false negative results.	Case still under review. No report issued.
Dialysis IV Errors Alberta, 2004[23]	Potassium chloride, instead of sodium chloride, was administered to two dialysis patients.[23]	Both patients died.[23]	Packaging for solutions was nearly identical and stored adjacently.[23]
Contaminated Water Systems Ontario, 2000[24]	*Escherichia coli (E. coli)* contamination in Walkerton, Ontario[24] and *Cryptosporidium* contamination in North Battleford, Saskatchewan.[25]	7 confirmed deaths and 2,300 ill in Walkerton, Ontario.[24] 6,850 ill in North Battleford, Saskatchewan.[25]	In Walkerton, Ontario, attributed to lack of regulatory oversight, reduced public health funding and absence of failure detection.[24]
Saskatchewan, 2001[25]			

Figure 17. Number of Randomized Controlled Trials (RCTs) With Key Term "Healthcare Quality," Selected Years



Source
Compiled by CIHI, using PubMed with "healthcare quality" as a key search term with limitations to year and human randomized controlled trials.

The Quality and Safety Journey

Efforts to improve quality and safety are as old as health care. The body of indexed literature on quality has grown immensely over the past 40 years (see Figure 17). The scale is unprecedented and interest extends to every corner of health care.

What is new is the recognition that these are systemic issues rather than indicators of individual performance, and that it takes much more than individual motivation and behaviour change to fix the system. Leadership, combined with appropriate incentives, create the pathway to improvement.

In the three decades following the implementation of medicare, most high-level task force or commission reports dealt with organization, access and the medical and non-medical determinants of health. During this time, health services researchers began to use data to show variations in health care use and outcomes. Organizations such as the Institute for Clinical Evaluative Sciences (ICES) in Ontario, the UBC Centre for Health Services and Policy Research (CHSPR) and the Manitoba Centre for Health Policy (MCHP) at the University of Manitoba, produced comparative analyses and atlases that revealed major and often unexplainable differences in hospitalization rates and the use of other types of services.[27–30] Known as small-area variation studies, their findings raised important questions about quality: Which rate is right? Is there over- or under-use of services? What service patterns account for the best outcomes?

The first major Canadian inquiry to make quality the focal point for system reform was the Fyke Commission in Saskatchewan.[31] Fyke recommended the establishment of a health quality council to spearhead quality improvement in the province; it was established in 2002. Headquartered in Saskatoon, it is the biggest and best-funded quality organization in the country, with

Components of Success: Toward "Quality by Design"

Various ingredients are needed for system improvements in quality of care. Below are two international examples of organizations that undertook substantial effort to improve the quality of care for their patients.

Component	Veterans Health Administration, New England, U.S.[43, 44]	Jonkoping County Council, Smaland, Sweden[44]
Culture	Managerial style characterized by positive, informal and collaborative attitude. A shift in perspective from victim-oriented to positive mentality.	Developed a "Toyota in healthcare." A culture of "doing it all at the same time."[44]
Leadership	Long tenure and stability of leadership during reform benefitted the organization. Kenneth Kizer was a key agent of change.	Sven-Olof Karlsson committed to creating a system capable of improvement in Jonkoping. He has been a leader for 18 years.
Strategy	Working to achieve systematization and standardization.	"[We] involve employees in lots of quality improvement projects and help them learn how to make change and let them define how to create results using learning and innovation." (Sven-Olof Karlsson)[44]
Information	Implementation of electronic health records facilitated success in (i) indicator management systems and (ii) coordinated patient care management.	Jonkoping was among the earliest to employ the data from clinical registries for quality improvement. Now, the organization strives to implement electronic health records.
Staff Development/ Skills Training	VHA employees have access to various training programs and leadership opportunities.	The city council established the Qulturum learning centre as an educational site for front-line staff.
Performance Improvement	Based on 348 quality indicators, which targeted 26 conditions, patients from the VHA scored significantly higher for overall quality, chronic disease care and preventive care, when compared to a national sample.	In a comparison of 20 counties in Sweden, Jonkoping achieved the best overall ranking across 11 indicators related to efficiency, timeliness, safety, patient-centredness, equity and effectiveness.

annual expenditures of about $6 million.[i] In 2008–2009, the Health Quality Council received an additional $5 million to support its Accelerating Excellence program, designed to scale up quality improvement initiatives to a more systemic level.[32]

The Romanow Commission recommended the establishment of the Health Council of Canada with a mandate to establish a quality and outcomes framework, to measure and report on performance and to compare Canada with other OECD countries.[33] The federal–provincial health accords of 2003[34] and 2004[35] included a commitment to report on a number of safety, satisfaction and outcomes indicators.

Following Saskatchewan's lead, a number of organizations have been created to pursue the quality and safety agenda, including

- The Health Quality Council of Alberta
- The Canadian Patient Safety Institute
- The Manitoba Institute for Patient Safety
- Quebec's Commissaire à la santé et au bien-être
- The Ontario Health Quality Council
- The New Brunswick Health Council
- The BC Patient Safety & Quality Council

These organizations all have distinct mandates. Some primarily report publicly on quality, while others—again, the scale of activity in Saskatchewan is notable in this regard—have a hands-on mandate to bring about improvements on the front lines of care.

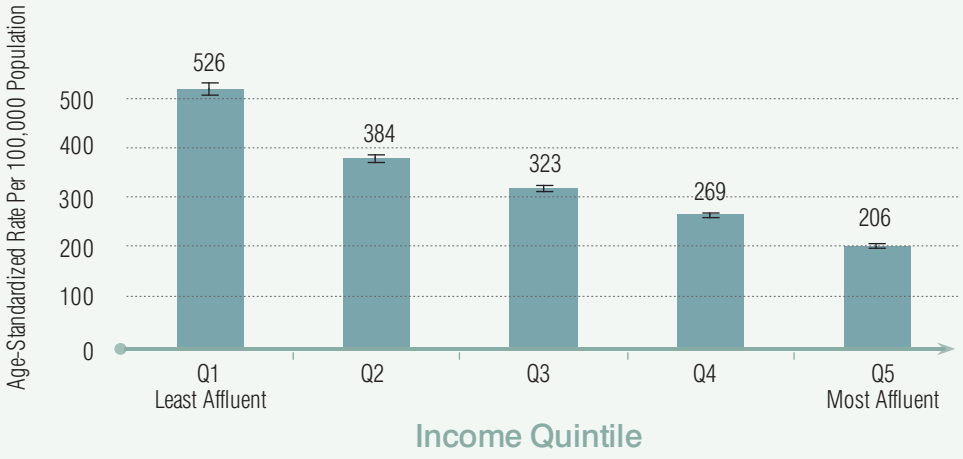
i. Saskatchewan's funding level is higher than any counterpart organization in absolute terms; in per capita terms the gap is even wider.

The Health Council of Canada was formed in 2003. Formally mandated to report on progress toward the goals laid out in the first ministers' accords of 2003 and 2004, the council has produced reports on a variety of topics. Its 2006 annual report, entitled *Health Care Renewal in Canada: Clearing the Road to Quality*,[36] highlighted the quality focus that is also reflected in its reports on primary care and home care[37] and value for money.[38]

In 2005, the Canadian Patient Safety Institute (CPSI), together with partners across the country, launched its flagship *Safer Healthcare Now!* campaign. Nearly 1,100 teams in more than 300 health care organizations have enrolled.[39] The effort began in the U.S. in response to a perceived lack of progress in patient safety in the aftermath of the *To Err Is Human* report.[1] Leaders recognized that it takes more than highly publicized reports and declarations of good intentions to make real progress. One of the mantras of the quality movement is "Some is not a number, soon is not a time." Clear, quantified targets are essential.

Practice collaboratives bring together health care providers and managers to learn about, plan, implement and measure changes designed to bring patient care closer to the standard set by expert guidelines. The first Canadian collaborative was launched in B.C. in 2003.[40] Since then, over 30 others have been created throughout Canada. Topics for these collaboratives include diabetes, emergency room triaging, practice scheduling, office practice redesign and maternity care.

Figure 18. Ambulatory Care Sensitive Condition Hospitalization Rates by Neighbourhood Income Quintile, Canada, 2007–2008



Notes
Rates include people younger than 75 years of age.

Rates do not include Quebec; data for 2007–2008 was not available at the time of publication.

Population by income quintile for 2007–2008 was projected using 2001 and 2006 Canadian census data.

⌶ represents 95% confidence intervals.

Source
Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).

What Is All of This Activity Achieving?

The past decade has seen an explosion of interest and activity in quality and safety. We do not yet have system-wide, comprehensive, real-time quality and outcomes data that report on the fruits of these labours. There are some encouraging signs, but the ultimate goal—to turn incremental and successful small-scale initiatives into permanent, system-wide improvements—remains unrealized.

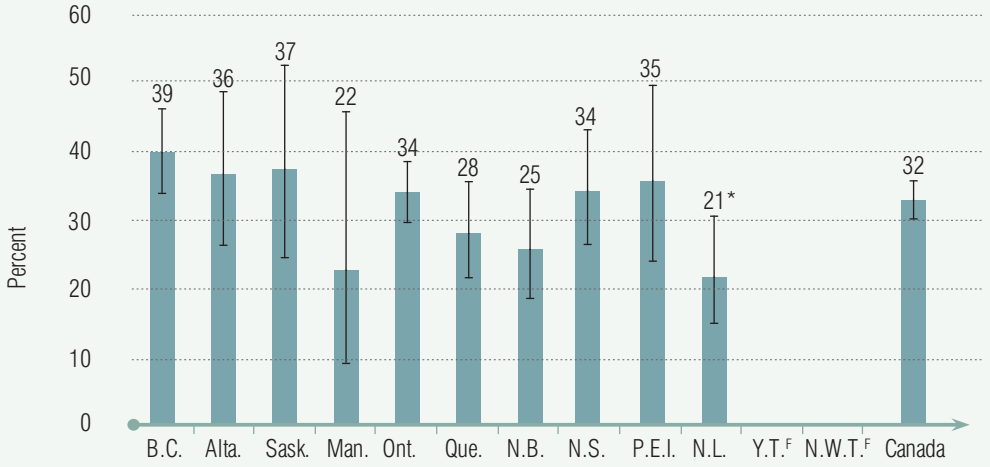
The *Safer Healthcare Now!* campaign has produced some sterling results. Hundreds of teams across the country are participating in various initiatives. The improvements reported by 2008 (compared to the 2005 baseline) include[39]

- The in-hospital death rate for AMI patients fell from 13% to 4%.[ii]
- Central line blood stream infections fell by half.
- Ventilator-assisted pneumonia rates dropped by half.
- Surgical site infections fell by one-third.
- Intentional medication discrepancies (that is, where documentation was accurate) fell by two-thirds, while unintentional discrepancies (medication errors) decreased by 50%.

An important measure of system quality is the hospitalization rate for what are known as ambulatory care sensitive conditions (ACSCs). These are conditions such as angina, asthma, diabetes and hypertension, which good community care should be able to manage. In this case, the trend is in the right direction, declining from 459 hospitalizations per 100,000 population in 2001–2002 to 326 in 2007–2008. However, people living in lower socio-economic neighbourhoods were much more likely to be hospitalized for ACSCs, compared to those residing in more affluent areas (Figure 18).[41]

ii. These rates are from hospital sites participating in the *Safer Healthcare Now!* campaign only and hence do not compare to national 30-day in-hospital mortality rates reported elsewhere.

Figure 19. Population Who Received All Recommended Care Components for Diabetes Care, 2007



Notes
Based on Canadian household population (excluding Nunavut) age 18 or older. Population includes Canadians diagnosed with non-gestational diabetes that received 1 or more A1C tests in the previous year, had their feet checked in the previous year, and had a urine test in the previous year and an eye exam in the previous two years. Age-standardized to the 2007 population with diabetes.

Non-respondents excluded.

F: coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability) or sample size too small.

Canada reference category.

* Statistically significant difference from reference category.

⊥ represents 95% confidence intervals.

Source
Canadian Community Health Survey, 2007 (CCHS cycle 4.1 diabetes file), Statistics Canada.

Much, however, remains to be done. For example, as the number of people with diabetes increases, the quality of care remains well below the level recommended by practice guidelines (see Figure 19).[42] Stroke patients attended by a neurologist or neurosurgeon were 40% less likely to die in hospital than others, yet only one-quarter of stroke patients are under a specialist's care.[41] While pan-Canadian in-hospital heart attack death rates fell by 11% between 2003–2004 and 2007–2008,[41] there is some evidence to suggest that clinical improvement efforts could continue lowering these rates.[39]

Issues on the Horizon

Quality and safety—two interconnected issues—emerged as a growing movement in the past decade. There are provincial and national organizations with mandates to improve both, and literally thousands of projects, of varying scales, that engage health care workers in all settings. We are much farther ahead than a decade ago, but there is a very long way to go before quality is uniformly high, and avoidable errors are eliminated. And new evidence of system error continues to emerge.

The literature and experiences[43] around the world point to a variety of factors that appear to be essential in improving quality. Among the most important are the following:

- **Converting health information into an electronic format (e-health) and a culture of evidence-informed decision-making.** The analysis of accurate, standardized, comprehensive data is a core element of continuous improvement that supports decision-making at the clinical, managerial and policy levels. Using data well requires policies that both protect privacy and facilitate the collection and analysis of data.
- **A shared culture of teamwork, disclosure of near-misses and errors, and process improvement.** Breakthroughs require abandoning traditional modes of practice based on individual autonomy and very loose accountability. In quality-oriented cultures, mistakes are seen as learning opportunities, not evidence for punishment.
- **The development of performance indicators and accountability criteria built around quality and safety.** Standardization is a hallmark of quality in all industries, but health care is fraught with variations that, even when identified, still persist. A commitment to measuring performance and developing strategies to narrow unjustifiable variations has been central to many quality improvement successes.
- **Continued investment in safety and quality improvement.** Dedicated organizations can lead and be catalysts for improvement, but system-wide success depends on the extent to which health care organizations build these activities into their core budgets.

References

1. L. Kohn, J. Corrigan and E. Donaldson, *To Err Is Human: Building a Safer Health System* (Washington, D.C.: National Academy Press, 2000).
2. R. Baker et al., "The Canadian Adverse Events Study: The Incidence of Adverse Events Among Hospital Patients in Canada," *Canadian Medical Association Journal* 170, 11 (2004): pp. 1678–1686.
3. E. McGlynn et al., "The Quality of Health Care Delivered to Adults in the United States," *The New England Journal of Medicine* 348, 26 (2003): pp. 2635–2645.
4. C. M. Sinclair, *Report of the Manitoba Pediatric Cardiac Surgery Inquest: An Inquiry Into Twelve Deaths at the Winnipeg Health Sciences Centre in 1994* (Manitoba: Provincial Court of Manitoba, 2000), pp. 1–28, cited June 23, 2009, from <http://www.pediatriccardiacinquest.mb.ca/pdf/pcir_intro.pdf>.
5. N. Powell and J. Walters, "Infection-Control Gaps at Hospital Highlight Report," *The Toronto Star*, September 26, 2008, cited June 23, 2009, from <http://www.thestar.com/News/Ontario/article/506628>.
6. J. Pépin et al., "Clostridium Difficile-Associated Diarrhea in a Region of Quebec From 1991 to 2003: A Changing Pattern of Disease Severity," *Canadian Medical Association Journal* 171, 5 (2004): pp. 466–472.
7. R. S. Bresalier et al., "Cardiovascular Events Associated With Rofecoxib in a Colorectal Adenoma Chemoprevention Trial," *New England Journal of Medicine* 352, 11 (2005): pp. 1092–1102.
8. Health Canada, *Health Canada Informs Canadians of Vioxx Withdrawal by Merck & Co.* (Ottawa, Ont.: Health Canada, 2004), cited July 8, 2009, from <http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/_2004/2004_50-eng.php>.
9. IMS Health Canada, *Drug Treatment Insights: Anti-Arthritics COX-2 Inhibitors & Other Anti-Inflammatories—Painful Withdrawal of Arthritic Relief* (2006), cited June 23, 2009, from <http://www.imshealthcanada.com/vgn/images/portal/cit_40000873/5/43/79032761Insights05En061127.pdf>.
10. IMS Health Canada, *Estimated Volume of Prescriptions Dispensed in Canadian Pharmacies, by Therapeutic Class and Subclass* (IMS HEALTH Canadian CompuScript, 2009).
11. A. Berenson, "Merck Agrees to Pay $4.85 Billion in Vioxx Claims," *New York Times*, November 9, 2007, cited June 23, 2009, from <http://www.nytimes.com/2007/11/09/business/09cnd-merck.html>.
12. CBC News, "Saskatchewan Court Rules Vioxx Suit Can't Go Ahead as Class Action," *CBC News*, March 31, 2009, cited June 23, 2009, from <http://www.cbc.ca/canada/saskatchewan/story/2009/03/31/vioxx-suit.html>.
13. Alberta Health Quality Council, *Review of the Infection Prevention and Control and CSR Sterilization Issues in East Central Health Region* (Calgary, Alta.: Alberta Health Quality Council, 2007), cited June 23, 2009, from <http://www.hqca.ca/assets/pdf/HQCA_Full_Report_July_25_2007.pdf>.
14. CBC News, "Another Ontario Hospital Admits Improper Sterilization," *CBC News*, January 13, 2004, cited June 23, 2009, from <http://www.cbc.ca/canada/story/2004/01/13/sterlization040113.html>.
15. M. Johne, "It's a Dirty Job but Everyone Has to Do It," *National Review of Medicine* 1, 13 (2004).
16. S. Goudge, *Inquiry Into Pediatric Forensic Pathology in Ontario* (Toronto, Ont.: Government of Ontario, 2008), cited June 23, 2009, from <http://www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html>.
17. J. Tibbetts, "Court Reopens Mother's 1995 Conviction," *National Post,* May 1, 2009, cited June 23, 2009, from <http://www.nationalpost.com/related/topics/story.html?id=1551295>.
18. M. Cameron, *Commission of Inquiry on Hormone Receptor Testing* (Newfoundland and Labrador: Government of Newfoundland and Labrador, 2009), cited June 23, 2009, from <http://www.releases.gov.nl.ca/releases/2009/health/CameronInquiry.pdf>.
19. CBC News, "Quebec to Retest 600 More Breast Cancer Samples," *CBC News,* July 9, 2009, cited July 29, 2009, from <http://www.cbc.ca/canada/montreal/story/2009/07/09/montreal-breast-cancer-errors-quebec-tests.html>.

20. C. Fiedelman, "Cancer-Test Hotline Urged," *The Montreal Gazette*, May 29, 2009, cited July 29, 2009, from <http://www.montrealgazette.com/health/Cancer+test+hotline+urged/1641253/story.html>.

21. P. Creaghan, *Commission of Inquiry Into Pathology Services at the Miramichi Regional Health Authority: Commissioner's Report* (Fredericton, N.B.: Miramichi Regional Health Authority, 2008), cited June 23, 2009, from <http://www.miramichicommission.ca/en/report.php>.

22. A. Kyle, "Sask. Radiologist Suspended As Work Is Reviewed," *Regina Leader-Post*, May 20, 2009, cited June 23, 2009, from <http://www.canada.com/Health/Sask+radiologist+suspended+work+reviewed/1613290/story.html>.

23. R. Robson, B. Salsman and J. McMenemy, *External Patient Safety Review: Calgary Health Region* (Calgary, Alta.: Calgary Health Region, 2004), cited June 23, 2009, from <http://www.calgaryhealthregion.ca/qshi/patientsafety/reports/robson_report.pdf>.

24. D. O'Connor, *A Summary Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues* (Toronto, Ont.: Government of Ontario, 2002), cited June 26, 2009, from <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.

25. R. Laing, *Report of the Commission of Inquiry Into Matters Relating to the Safety of the Public Drinking Water in the City of North Battleford, Saskatchewan, 2002* (Saskatchewan: Government of Saskatchewan, 2002), cited June 23, 2009, from <http://www.northbattlefordwaterinquiry.ca/final/toc.asp>.

26. A. W. Wu et al., "To Tell the Truth: Ethical and Practical Issues in Disclosing Medical Mistakes to Patients," *Journal of General Internal Medicine* 12, 12 (1997): pp. 770–775.

27. R. Hall and J. Tu, "Hospitalization Rates and Length of Stay for Cardiovascular Conditions in Canada, 1994 to 1999," *The Canadian Journal of Cardiology* 19, 10 (2003): pp. 1–9.

28. K. McGrail, P. Schaub and C. Black, *BC Health Atlas, 2nd Edition* (Vancouver, B.C.: Centre for Health Services and Policy Research, University of British Columbia, 2004), cited July 9, 2009, from <http://www.chspr.ubc.ca/files/publications/2004/chspr04-12.pdf>.

29. S. Morgan et al., *The Canadian Rx Atlas, 2nd Edition* (Vancouver, B.C.: Centre for Health Services and Policy Research, University of British Columbia, 2008), cited July 9, 2009, from <http://www.chspr.ubc.ca/rxatlas/canada>.

30. P. Martens and R. Fransoo, *What Works? A First Look at Evaluating Manitoba's Regional Health Programs and Policies at the Population Level* (Winnipeg, Man.: Manitoba Centre for Health Policy, 2008), cited July 31, 2009, from <http://mchp-appserv.cpe.umanitoba.ca/reference/fullwwreport.pdf>.

31. K. Fyke, *Caring for Medicare: Sustaining a Quality System* (Regina, Sask.: Saskatchewan Commission on Medicare, Government of Saskatchewan, 2001), pp. 1–162, cited June 25, 2009, from <http://www.health.gov.sk.ca/medicare-commission-final-report>.

32. Government of Saskatchewan, *Government Invests $5 Million in Quality Improvements to Health Systems* (Saskatoon, Sask.: Government of Saskatchewan, 2008), cited July 8, 2009, from <http://www.gov.sk.ca/news?newsId=3d553835-6a9f-471f-bde3-70efe2104061>.

33. R. J. Romanow, *Building on Values: The Future of Health Care in Canada* (Ottawa, Ont.: Commission on the Future of Health Care in Canada, Government of Canada, 2002), cited July 8, 2009, from <http://dsp-psd.pwgsc.gc.ca/Collection/CP32-85-2002E.pdf>.

34. Health Canada, *2003 First Ministers' Accord on Health Care Renewal* (Ottawa, Ont.: Government of Canada, 2003), cited June 26, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2003accord/index-eng.php#notes>.

35. Health Canada, *A 10-Year Plan to Strengthen Health Care* (Ottawa, Ont.: Health Canada, 2004), cited July 9, 2009, from <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2004-fmm-rpm/index-eng.php>.

36. Health Council of Canada, *Health Care Renewal in Canada: Clearing the Road to Quality* (Toronto, Ont.: Health Council of Canada, 2006), cited June 23, 2009, from <http://www.healthcouncilcanada.ca/en/index.php?option=com_content&task=view&id=107&Itemid=107>.

37. Health Council of Canada, *Fixing the Foundation: An Update on Primary Health Care and Home Care Renewal in Canada* (Toronto, Ont.: Health Council of Canada, 2008), cited July 9, 2009, from <http://www.healthcouncilcanada.ca/docs/rpts/2008/phc/HCC_PHC_Main_web_E.pdf>.

38. Health Council of Canada, *Value for Money: Making Canadian Health Care Stronger* (Toronto, Ont.: Health Council of Canada, 2009), cited June 23, 2009, from <http://www.healthcouncilcanada.ca/docs/rpts/2009/HCC_VFMReport_WEB.pdf>.

39. Canadian Patient Safety Institute, *Safer Healthcare Now! Accomplishment 2008* (Edmonton, Alta.: Canadian Patient Safety Institute, 2009), cited July 8, 2009, from <http://www.saferhealthcarenow.ca/EN/about/Overview/Documents/2009%20SHN%20Accomplishment%20Report.pdf>.

40. British Columbia Ministry of Health, *Building the Vision in British Columbia: BC Chronic Disease Management Update* (2003), cited July 9, 2009, from <http://www.health.gov.bc.ca/cdm/research/updateaug03.pdf>.

41. Canadian Institute for Health Information, *Health Indicators 2009* (Ottawa, Ont.: CIHI, 2009).

42. Canadian Institute for Health Information, "Diabetes Care Gaps and Disparities in Canada" (Ottawa, Ont.: CIHI, forthcoming).

43. S. M. Asch et al., "Comparison of Quality of Care for Patients in the Veterans Health Administration and Patients in a National Sample," *Annals of Internal Medicine* 141, 12 (2004): pp. 938–945.

44. G. R. Baker et al., *High Performing Healthcare Systems: Delivering Quality by Design* (Toronto, Ont.: Longwoods Publishing Corporation, 2008).

CIHI Databases—Then and Now

Information

1999

National Health Expenditure Database (NHEX)
1975 to 1996
Forecasts for 1997 and 1998

Annual Hospital Survey (AHS)
1995–1996 to 1996–1997
1932 to 1994–1995 (available from Statistics Canada)

Hospital Morbidity Database (HMDB)
1994–1995 to 1996–1997
1960 to 1993–1994 (available from Statistics Canada)

Discharge Abstract Database (DAD)—acute inpatient and day surgery
1979–1980 to 1997–1998

Therapeutic Abortions Database (TADB)
CIHI began data collection in 1996
1969 to 1995 (available from Statistics Canada)

Canadian Organ Replacement Register (CORR)
1981 to 1996 (renal-specific data)
1992 to 1996 (extra-renal data)

National Trauma Registry (NTR)
1994–1995 to 1995–1996 (Minimal Data Set)

Ontario Trauma Registry (OTR)
1994–1995 to 1996–1997 (Minimal Data Set)
1991–1992 to 1996–1997 (Comprehensive Data Set)
1986–1987 to 1995–1996 (Death Data Set)

Ontario Chronic Care Patient System
Data collection began July 1, 1996

Hospital Mental Health Database (HMHDB)
1994–1995 to 1996–1997
1930 to 1993–1994 (available from Statistics Canada)

OECD Health Database (Canadian Segment)
CIHI and Statistics Canada maintain the Canadian segment
1960 to 1997

2009

National Health Expenditure Database (NHEX)
1975 to 2006
Forecasts for 2007 and 2008

Canadian Management Information Standards (MIS) Database (CMDB)
Note: Database name change
1995–1996 to 2006–2007

Hospital Morbidity Database (HMDB)
1994–1995 to 2007–2008 (excluding Quebec; Quebec to be included as of fall 2009)

Discharge Abstract Database (DAD)—acute inpatient and day surgery
1979–1980 to 2007–2008

National Ambulatory Care Reporting System (NACRS)
2001–2002 to 2007–2008

Therapeutic Abortions Database (TADB)—1996 to 2006

Canadian Organ Replacement Register (CORR)
1981 to 2006 (renal-specific data)
1992 to 2006 (extra-renal data)

National Trauma Registry (NTR)
1994–1995 to 2005–2006 (Minimal Data Set)
1996–1997 to 2005–2006 (Comprehensive Data Set)

Ontario Trauma Registry (OTR)
1994–1995 to 2005–2006 (Minimal Data Set)
1991–1992 to 2006–2007 (Comprehensive Data Set)
1986–1987 to 2004–2005 (Death Data Set)

Canadian Joint Replacement Registry (CJRR)
2003–2004 to 2005–2006

Continuing Care Reporting System (CCRS)
1996–1997 to December 31, 2008

Home Care Reporting System (HCRS)
2006–2007 to December 31, 2008

National Rehabilitation Reporting System (NRS)
April 1, 2001, to December 31, 2008

Hospital Mental Health Database (HMHDB)—1994–1995 to 2005–2006

Ontario Mental Health Reporting System (OMHRS)
October 1, 2005, to December 31, 2008

National Prescription Drug Utilization Information System Database (NPDUIS Database)
January 1, 2000, to March 31, 2008

National System for Incident Reporting (NSIR)
Pilot completed February 2009
Rollout planned for spring 2010

OECD Health Database (Canadian Segment)
CIHI and Statistics Canada maintain the Canadian segment
1960 to 2007

Medical Imaging Technologies (MIT)
CIHI took over the National Survey of Selected Medical Imaging Equipment in 2003
2003 to 2007

Key

- Database name change
- Database added

1999

Health Personnel Database (HPDB)
1988 to 1996

National Physician Database (NPDB)
1989–1990 to 1995–1996

Southam Medical Database (SMDB)
1968 to 1997

Registered Nurses Database (RNDB)
1980 to 1998

2009

Health Personnel Database (HPDB)
1988 to 2007—member data where possible
1988 to 2006—graduate data where possible

National Physician Database (NPDB)
1989–1990 to 2006–2007

Scott's Medical Database (SMDB)—1968 to 2007
Note: Database name change

Nurses Database (NDB)
Note: Database name change
Registered Nurse (RN) Data—1980 to 2007
Nurse Practitioner (NP) Data—2003 to 2007
Licensed Practical Nurse (LPN) Data—2002 to 2007
Registered Psychiatric Nurse (RPN) Data—2002 to 2007

Occupational Therapist Database (OTDB)—2006 to 2007

Pharmacist Database (PDB)—2006 to 2007

Physiotherapist Database (PTDB)—2007

Medical Laboratory Technologist Database (MLTDB)
No data

Medical Radiation Technologist Database (MRTDB)
No data

Chapter 6
Taking Health Information Further

As this report shows, the ability to chronicle health care trends and to describe system characteristics and performance depends on the quality, comprehensiveness and timeliness of health information.

The evolution of health information is a story in itself. It is, of course, central to CIHI; good data is the lifeblood of what we are and what we do. But health information is fundamental to how the system works—its quality, efficiency and fairness. Information drives improvement, reveals gaps and makes accountability possible.

Where are we on the health information journey and where do we need to go? Ultimately, this is a practical question: What does the system need to meet its substantive goals? Of course, "the system" comprises a cast of thousands who use information for various purposes. There is no limit to the number of questions one can ask about health care at all levels, from an individual practice to a large facility to a health region, province or the whole country. Everyone's "top 10" list of critically important questions would be different.

One way to begin to understand this journey is to examine what sorts of questions we can now answer, with available data, and what data we would need to answer questions in the future. Table 4 is a progress report; it shows our current ability, using systematic, comprehensive information, to answer a variety of questions likely to be of interest to people working in various capacities. The list is hardly definitive, uniquely important or reflective of all needs. It is, however, intended to reflect the interests of a reasonably wide variety of clinical, managerial and policy-level decision-makers.

As the table shows, there has been progress, but there is a long way to go. Perhaps the biggest gap is in outcomes data.

Lessons From **Google**

In the days leading up to an announcement in the mainstream media of a potential flu pandemic headed our way, the popular search engine Google noted a spike in the number of flu-related searches originating in Mexico, and in particular Mexico City.[10]

As part of its flu watch campaign in the U.S., Google had identified a link between the number of online queries about the flu and actual flu cases. However, it would be almost a week before Mexico's health officials issued an alert.[10] Whether a week's lead time would have made a difference in the global spread of the flu virus is debatable. The larger story is that commercial interests pre-empted the surveillance professionals in tracking infectious disease.

The evolution of the internet as a tool for real-time epidemiologic surveillance based on user behaviour is not quite upon us. But there can be no doubt that a seismic shift has occurred. In the old and slower approach of public health surveillance, a physician would communicate a reportable illness to a government entity. This system, at least in Canada, requires the cooperation and participation of 13 health systems—one for each province and territory. By contrast, Google operates in near-instant, borderless cyberspace. No single government is likely to have the breadth or resources to create, maintain and improve systems in the way that Google does. Google, or similar search engines, may actually be our public health watchdogs in the future.

The information world has changed at incredible speed. Massive libraries are being digitized. Cell phones have become powerful, multi-faceted communications and entertainment devices. It is impossible to predict accurately which new applications and communications avenues will become permanent features. But if knowledge is power, it is already clear that power has shifted from the closely held confines of experts to a vast army of search-savvy consumers. Information has become much more decentralized and democratized. Blogs, social networks and multi-channel information streams have turned yesterday's world upside down. Once-mighty daily newspapers have folded their print editions in Seattle and Denver. Dubious information mixes freely with peer-reviewed excellence on the World Wide Web.

Health care is prime territory for these trends. International examples of innovations, unavailable a decade ago, include the following advances:

- **Software giants stake their claims to electronic health records (EHRs)**. Canadians can now create their own record with Google; Microsoft's product, HealthVault, has partnered with TELUS.[1] These are much more than just passive repositories of personal health information; they can link to provider databases, selected web-based information portals and retail health care sites. Google's platform has partnered with the Cleveland Clinic,[2] which offers a menu of consultations and other services on a fee-for-service basis.
- **The desire for closer-to-real-time aggregate information on system performance**. The U.K.'s National Health Service produces comprehensive wait times information that is barely one month old.[3]

Table 4. Progress Report on 10 Key Questions

Question	Rationale	Data Required	Available in 1998?	Available in 2008?
What are the highest and lowest costs per case hospitals in the country?	Measure of efficiency.	Case-mix adjusted and weighted costs.	No	Qualified yes. Cost per weighted case published at a regional level. While this information exists at a hospital level, work is ongoing to improve data quality.
What are the wait times for major diagnostic and interventional procedures by province or region?	Measure of access.	Standardized wait time calculations.	No	Yes. Waits according to standardized definitions, reported at 50th/90th percentile and percent meeting benchmark available for major procedures by province. Some measures available by region (e.g. hip fracture repair).
What is the hospital standardized mortality rate for major Canadian hospitals?	"Big dot" measure of quality.	Standardized data adjusted for severity.	No	Yes. Publicly available by hospital.
What percentage of cataract surgery recipients has significantly improved vision after the procedures?	Measure of appropriateness and outcomes following care.	Pre- and post-surgery visual acuity measurements.	No	No
What proportion of CT, MRI and PET scans reveals new clinical information, change management and change outcomes?	Measure of appropriateness and impact of expensive diagnostic technologies with rapidly rising utilization rates.	Data on clinical diagnosis with and without scans, and changes in management and outcome attributable to the scans.	No	No

Question	Rationale	Data Required	Available in 1998?	Available in 2008?
What percentage of patients receives a contraindicated drug?	Measure of appropriateness and safety.	Comprehensive patient-level data linking diagnoses to prescribed drugs and contraindications.	No	Partially available for some populations (e.g. number of seniors prescribed drugs listed on the Beers list of potentially inappropriate drugs).
What percentage of patients, with various cancer diagnoses, survives 1, 3, 5 and 10 years?	Measure of effectiveness of treatment.	Comprehensive patient-level diagnostic and survival data.	No	Yes, for major cancers (e.g. lung, breast, prostate and colorectal).
How does obesity affect health care utilization and health outcomes over time?	Measure of impact of rapidly growing risk factor.	Longitudinal data with measures of individual height and weight over time.	No	Partially available for some health service utilization through linked health surveys and administrative data.
What percentage of diabetic patients gets all of the recommended care necessary to adequately manage the disease?	Measure of quality of care.	Comprehensive primary care data for patients with diabetes.	No	No, although self-reported data is available in some provinces for some years through Statistics Canada's Canadian Community Health Survey and for all provinces for 2008 only from Statistics Canada's Canadian Survey of Experiences With Primary Health Care (CSE-PHC).
How much does an additional quality-adjusted life year cost per major category of surgery (e.g. CABG, angioplasty, lumpectomy and kidney transplant)?	Indication of comparative return on various investments in health care.	Case costing over time and outcomes over time, often by sub-populations.	No	No

- **User-friendly, participatory health records**. At the Group Health Cooperative based in Seattle, patient needs and preferences drove the design of the electronic health record. In addition, Danish people have access to their own health records online and can view a list of providers who have looked at these records.[4]

- **Analyses that not only describe, but reveal cause and effect**. A foundation of improved quality and safety is the continuous flow of information to practitioners and managers that charts performance and pinpoints the impact of often-subtle changes in practice. Improving cystic fibrosis care in the United States and elsewhere has involved the development of data-driven microsystems that involve collaboration between practitioners, managers, patients and families. Patient benefits include gains in lung function and body mass index, as well as evidence-based prescribing.[5]

- **Information that helps health care users make choices about where to receive care and from whom**. In the U.K., the public can find hospital- and surgeon-specific cardiac surgery 30-day survival rates[6] and a wide range of comparative performance indicators on hospitals, mental health organizations, ambulances, etc.[7]

Issues on the Horizon

Those who create policy for, design, fund and implement health information systems will have to navigate this fluid world and adapt to changing expectations. The look and feel of Canada's health information future will largely depend on how the system evolves in response to a number of key issues:

- **The architecture of the office-based medical record**. Will it be the electronic version of the paper-based past, or a fundamentally new concept? Will patients have web-based access to their records and control over who sees them? Will records be structured to facilitate team-based care or will care remain physician-centred? Will designers and providers view the Microsoft, Google and other developments as partners or threats?

- **The use of electronically generated data for multiple purposes**. Will governments and health authorities be able to harvest data from the office-based record to support more robust analyses of quality, efficiency and outcomes? Will there be data repositories accessible to clinicians and others seeking to improve practice? Will the public have access to detailed performance information and comparisons?

- **The prospect of integrating data from the public and private sectors**. Some provincial governments receive utilization data irrespective of who pays for the service (for example, total population prescription drug databases exist in Saskatchewan and British Columbia). For most privately paid care—diagnostic imaging, physiotherapy, home support services, etc.—the data remains isolated from the rest of the patient's record.
- **The capacity to link information from clinical encounters to other, non-medical determinants of health data**. Our health is influenced by income, education, occupation, environmental exposures and a whole host of other factors. This information is increasingly essential to understanding individuals' health needs and formulating plans to help them maintain and improve health. It is also central to better understanding health disparities among vulnerable population groups and addressing fundamental causes in tandem.
- **Balancing public benefit and individual autonomy**. There is universal commitment to protecting the privacy of health information. But there is still some debate about whether anonymized health data—that is, data stripped of personal details such as name and address that could identify an individual—should be widely used without explicit consent.[8] Likewise, there is the issue of whether health care providers are entitled to prevent public agencies from gathering and analyzing data from office records. These are important matters; put simply, the value of health information depends entirely on its use.

There are endless technical and policy details to iron out. But the technical barriers are disappearing daily; never before have machines been so powerful and inexpensive. The fundamental issues are cultural. Is there an appetite for more and better information? Will information be used to unite the public, providers and health system managers in efforts to improve, or will it be viewed as intrusive and threatening? Will health care organizations embrace openness and transparency as key elements of accountability and improvement? Will the key players in the system be comfortable in an era where the public and patients have a much clearer and deeper knowledge of the system's strengths and weaknesses?

There are no simple answers to these questions, but there is little mystery as to where society is heading. For decades, there have been calls for greater public and patient involvement in decision-making.[9] A major barrier has been the imbalance of information between providers and recipients of care. Information is the great leveller; it creates the possibility of a more engaged partnership. In an important sense, the health information culture and the transition to a patient-centred, high-quality health care system are inextricably linked. And that, in the end, may be the most valuable and constructive lesson from the last decade.

References

1. TELUS Corporation, *TELUS Licenses Microsoft HealthVault to Launch TELUS Health Space, Canada's First Consumer e-Health Platform* (May 6, 2009), cited July 16, 2009, from <http://www.newswire.ca/en/releases/archive/May2009/06/c8821.html>.

2. M. Merrill, *Cleveland Clinic to Become Site of First Google Health PHR Pilot* (2008), cited July 17, 2009, from <http://www.healthcareitnews.com/news/cleveland-clinic-become-site-first-google-health-phr-pilot>.

3. Department of Health, *Hospital Waiting Times and List Statistics* (2009), cited July 17, 2009, from <http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Performancedataandstatistics/HospitalWaitingTimesandListStatistics/index.htm>.

4. E. Harrell, *In Denmark's Electronic Health Records Program, a Lesson for the U.S.* (2009), cited July 17, 2009, from <http://www.time.com/time/health/article/0,8599,1891209,00.html>.

5. L. J. Britton, S. Thrasher and H. Gutierrez, "Creating a Culture of Improvement: Experience of a Pediatric Cystic Fibrosis Center," *Journal of Nursing Care Quality* 23, 2 (2008): pp. 115–120.

6. Care Quality Commission, *Heart Surgery in the United Kingdom. Information for Patients* (2009), cited July 17, 2009, from <http://heartsurgery.cqc.org.uk/information-for-patients.aspx>.

7. Care Quality Commission, *Compare Healthcare Organizations* (2009), cited July 17, 2009, from <http://2008ratings.cqc.org.uk/findcareservices/informationabouthealthcareservices/overallperformance/compareorganisations.cfm>.

8. C. Black et al., *Data, Data Everywhere . . .: Improving Access to Population Health and Health Services Research Data in Canada* (2005), cited July 17, 2009, from <http://www.cihr-irsc.gc.ca/e/28082.html>.

9. L. Segal, "The Importance of Patient Empowerment in Health System Reform," *Health Policy* 44, 1 (2009): pp. 31–44.

10. O. El Akkad, "Google Searches Were First Indication of Outbreak," *The Globe and Mail*, Toronto, Ont., May 1, 2009.

Conclusion: Looking Ahead

If there is a unifying theme to the past decade in Canadian health care, it is *abundance*. Spending rose substantially, compared to the previous decade's restraint. Many new agencies were created. On the pharmaceutical front, the use of statins skyrocketed and spending in this area rose faster than in any other sector. The number of procedures rose and, with some exceptions, wait times moderated. High-end diagnostic imaging capacity expanded. There were more people working in health care than a decade earlier. Medical school enrolment reached an all-time high and nursing school enrolment achieved levels not seen for three decades.

What has this report been able to say about all of this activity? By and large, we are able to count up dollars and units of activity, although we are losing some precision in areas such as the services performed by physicians who are not paid fee-for-service. We can describe changes in the distribution of services and dollars. There is more health status survey data and, consequently, more information on how socio-economic status, health status and health care use relate. There is an increasing amount of standardized information that compares regions and provinces—although here, too, there are ebbs and flows in reporting on indicators, and the regional map rarely stays the same across the country for very long.

The ultimate goal is to show the connections among health status, health care needs, health care services and outcomes. We can say a good deal more about these links than we could a decade ago, but the picture remains incomplete. While we can report on 30-day and, in some cases, one-year survival rates for heart surgery patients, we cannot tell whether these patients are alive now or how healthy they are five years following the surgery. Similarly, we do not have systematic data on the quality of life of hip or knee replacement patients following surgery. We know little about the comparative costs of interventions in different parts of the country. And the effectiveness of primary care remains largely a black box.

As new questions emerge, we need new data to answer them. The next decade will be a critical period in health information capacity

development. The electronic health record is a potential treasure trove to support analyses at various levels, but only if these uses are built into its architecture and the rules governing access to data. Understanding *where* and *why* health care is effective or not requires linking comprehensive data from various sources. Again, progress will depend on policies and practices that promote analysis while protecting privacy.

As a Canada-wide entity, CIHI has a special interest in comprehensive data. Whole-population data clearly yields the best information. But it is not always feasible to create and maintain Canada-wide databases, nor is it always necessary. Much of this report is based on partial data, often supplemented by findings from the scientific literature. Our purpose is not to create data warehouses; it is to help Canadians better understand the system and improve it. Encyclopedic completeness should not be the enemy of the suggestive and relevant partial tale. Often these exploratory analyses and findings spur an interest in creating better data. One might expect an increasingly data-intensive, quality-oriented health care environment to generate "steeper and deeper" local information for which comprehensive Canada-wide data is desirable, but not essential.

Predicting either the health care or the health information future 10 years from now is, indeed, a risky enterprise, but some trends seem clear:

- The health information infrastructure will be far better developed.
- By 2019, every Canadian citizen should have an EHR, and there will be far less paper.
- There will be more real-time analyses and templates that make information easily available in various formats.
- The public will have an ever-expanding library of online information to tap into.
- Governments will be expected to report more fully on outcomes and value for money.

What is less certain is the extent to which both health care and health information will be a true partnership between the public and the system. If the emerging focus on patient-centredness gathers momentum, public expectations and preferences will influence policy and practice to an unprecedented extent. In that event, one can envision interactive EHRs, intense measurement and reporting on the patient experience, and portals that allow the public to view, and even analyze, previously inaccessible data. Vigorously pursued, these developments would stand the system on its head. And in doing so, they would lay the foundations for *Health Care in Canada 2019*—no doubt, vastly different from this 10th edition.

Index

Note

The lower-case letter "f" preceding a page number indicates that the information is in a figure, table or sidebar.

C

D

E

F

G

H

M

N

O

P

Q

www.cihi.ca *Taking health information further*
www.icis.ca *À l'avant-garde de l'information sur la santé*