



Health Care in Canada 2010

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Canadian Institute
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Our Vision

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.

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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.

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About This Report

Health Care in Canada is CIHI's annual flagship report on the health care system and the health of Canadians. Since 2000, it has been a resource that tables fundamental issues facing the health care system. Addressing questions surrounding patient safety, wait times, health care spending and analyses on how the system has adapted over time to meet changing needs has made *Health Care in Canada* a key source for the public and policy-makers alike.

This year's report provides perspective on changes in the health care system and on current thinking surrounding health care and outcomes of care. As with its predecessors, *Health Care in Canada 2010* draws on both internal and external information and data and introduces international comparisons where appropriate.

Health Care in Canada 2010 is divided into three sections:

Part A: The Year in Review chronicles some of the substantive, emerging issues that had an impact on the health care system over the past 12 to 18 months. Among them were the H1N1 pandemic, the medical isotope supply disruptions and provincial changes in health care funding models.

Part B: Aligning Care With Evidence focuses on the thematic topic for this report: appropriateness of care. The first chapter in this section highlights examples illustrating where there is room for improvement and discusses the impact on the health system. It also profiles cases where variations in care across Canada point to underlying questions of appropriateness. Again, impacts on the system and ways to work toward best practices are explored. The next set of examples focuses on the aspects of right care and right place for appropriate care by highlighting examples where the right care is known but is not happening and where care is not provided in the most appropriate setting. Finally, good news stories—where focused attention and investments in the system have led to positive changes and sustained improvements—are explored. These provide examples of the way forward to make the system better and to make real differences in the lives of patients.

Part C: Health Care System Resources contains updated information on health human resources and health expenditures. Money and people ultimately run the health care system. They are inputs to the system and represent system resources. How they are allocated matters, and keeping track of their availability over time is an important aspect of monitoring the health of the health care system.

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Report Highlights

PART A: The Year in Review

Chapter 1—Emerging Issues in 2010

H1N1

- Where SARS (2004) did not reach pandemic proportions, H1N1 did. In 2009, Canada had the opportunity to implement lessons learned from the SARS outbreak. By many accounts it did so effectively and with little disruption overall.
- Almost half (41%) of the Canadian population was vaccinated against H1N1 in 2009.
- All told, 428 Canadians were reported to have died from H1N1 between April 2009 and April 2010. In dollar amounts, Canada spent an estimated \$400 million on vaccines. By November 2009, estimates of the cost of Canada's response reached \$1.5 billion.

Medical Isotopes

- Up until the closure of the Chalk River reactor in 2009, 40% of the world's supply of radioactive medical isotopes was produced by this facility.
- Medical isotopes are used to diagnose and treat a variety of illnesses, such as cancer. They cannot be stockpiled or stored, so the disruption in the production of these isotopes required changes in care processes.
- In June 2010, CIHI released the results of a special survey examining the impact of the supply disruption on the Canadian health care system. The results suggested that supply disruptions were experienced by health care providers. But, for the most part, providers were able to implement mitigating strategies, such as rescheduling and establishing new ways to prioritize patients.

New Funding Structures

- With new and growing financial pressures on the health care system, new funding structures are evolving across Canada. Many of these funding models are either activity based—designed to fund volumes of care delivered—or incentive based—designed to ensure that health care guidelines, among other things, are followed in the patient care process.
- Provinces are taking somewhat different approaches to introducing new funding strategies.

PART B: Aligning Care With Evidence

Chapter 2—Provided Care Leaves Room for Improvement

Arthroscopic Knee Surgery for Osteoarthritis

- Despite mounting evidence from randomized controlled trials that this type of surgery is of little benefit, more than 3,600 therapeutic knee arthroscopies were carried out in hospitals across Canada in 2008–2009.
- Although the trend in the number of knee arthroscopies is on the decline, there are still substantial variations in the rates of these surgical procedures across the country.

Vertebroplasty

- In Canada, about 1,050 vertebroplasties were performed in 2008–2009; a significant number of these were for patients suffering from osteoporotic vertebral fractures.
- Recent evidence suggests that these patients are not any better off than those who undergo placebo procedures.
- The number of vertebroplasties performed in Canada is on the rise, from approximately 600 in 2006–2007, to about 1,050 in 2008–2009.

Caesarean Section

- Overall Caesarean section (C-section) delivery rates have increased steadily in Canada since 1995–1996. Primary (that is, first) C-section rates rose dramatically between 1995–1996 and 2004–2005, and have since stabilized at approximately 19% of deliveries. Repeat C-section rates also rose over this time period, and by 2006–2007 the rate of repeat C-sections stabilized at approximately 82%.
- In 2008–2009, the variation in primary C-section rates was almost double across the provinces and was triple across the territories. Rates ranged from a high of 23% of deliveries in Newfoundland and Labrador to a low of 5% in Nunavut. Manitoba had the lowest rate among the provinces at 14%. Many factors are associated with variation in C-section rates, at both a patient and a system level.
- Greater understanding of rate variations and better alignment of care with current recommendations could lead to more appropriate care. If all provinces achieved the primary C-section rate of Manitoba, an estimated 30% (or 16,200) fewer C-sections would be performed annually—with a cost savings of more than \$36 million.

Hysterectomy

- Despite the significant decline in the overall hysterectomy rate in Canada between 2000–2001 and 2006–2007, there remains considerable variation across the country. In 2008–2009, age-standardized hysterectomy rates varied almost threefold across the provinces and territories, ranging from a high of 512 per 100,000 women (age 20 or older) in Prince Edward Island to a low of 185 per 100,000 in Nunavut. British Columbia had the lowest rate among the provinces, at 311 per 100,000 women. Variations in hysterectomy rates may point to differences within and between jurisdictions in care provider culture, practice and approaches to this surgery.
- If all provinces achieved British Columbia's hysterectomy rate, the difference would be an estimated 11% (3,700) fewer hysterectomies performed annually—with a cost savings of more than \$19 million.

Chapter 3—Provided Care Is Not Always Appropriate Care

Preventive Care for Diabetes in Canada

- More than two million Canadians have diabetes.
- Although Canada is doing comparatively well on avoidable hospital admissions for ambulatory care sensitive conditions such as asthma and congestive heart failure, the country is not doing as well on avoidable hospital admissions for diabetes.
- Evidence-based guidelines recommend that diabetic patients regularly receive a variety of tests and exams to help protect their health. However, only 32% of diabetics reported receiving all four recommended tests and exams in 2007.
- Many jurisdictions across Canada are working toward a model of community team-based care for chronic diseases such as diabetes. So far, some provinces have instituted incentive billings for providing high-quality chronic disease management.

The Challenge of Alternate Level of Care

- Alternate level of care (ALC) in acute care refers to patients who occupy hospital beds but no longer need acute care services. In 2008–2009, there were more than 92,000 hospitalizations and more than 2.4 million hospital days involving ALC stays in Canada. This represented 5% of all hospitalizations and 13% of all hospital days.
- Most ALC patients are classified as ALC at the end of their hospital stay. However, in 2008–2009, 8% of ALC patients were admitted to acute care as ALC. These patients accounted for almost 11% of all ALC days. The most common reasons for patients to be designated ALC upon admission were palliative care (34%), waiting for admission to another adequate facility (27%) and physical therapy (11%).
- In 2008–2009, 62% of ALC patients had stays of more than one week, and 24% stayed more than a month in ALC. Five percent of ALC patients stayed more than 100 days.

Chapter 4—Substantial Improvement in Care: The Way Forward

Cardiac Care

- Coronary artery disease hospitalizations and in-hospital deaths from heart attack, as well as heart attack readmissions, continue to decline in Canada.
- Over the four-year period examined the rate of hospitalized heart attacks declined in Canada. In 2004–2005, the age-adjusted rate was 239 per 100,000 population age 20 and older. In 2008–2009, the rate dropped to 217 per 100,000. Hospitalizations for angina—a less-severe form of coronary artery disease—followed suit.
- Thirty-day in-hospital heart attack mortality rates in Canada dropped significantly, from 10% in 2003–2004 to 9% in 2007–2008. Annual unplanned heart attack readmission rates also made a significant drop, from 7% to 5%.
- The savings to the system for treating heart attacks would be on the order of a 22% reduction—about 15,480 cases and a savings of approximately \$125 million in hospitalization costs if all provinces had the same number of heart attack episodes as British Columbia.

Hospital Standardized Mortality Ratio

- Overall, 40% of publicly reportable facilities significantly decreased their hospital standardized mortality ratios (HSMRs) when 2009–2010 results are compared to 2004–2005. For this measure, a decrease indicates an improvement in performance.
- The HSMR results contribute to performance improvement discussions in facilities, regional health authorities and ministries and departments of health. In many jurisdictions, the HSMR is one of several measures that are currently part of annual public reporting.

PART C: Health Care System Resources

Chapter 5—An Update on Health Professionals

- Canada experienced a growth rate of 16% in the number of active registered physicians in the past nine years, from 58,546 in 2001, to 68,101 in 2009.
- In 2009, the provincial supply of active physicians per 100,000 population ranged from 164 in Saskatchewan to 231 in Nova Scotia. Territorial supply of physicians per 100,000 population ranged from 37 in Nunavut to 218 in the Yukon. The nationwide rate was 201. These represent increases over the past decade.
- Similarly, from 2001 to 2009, the number of registered nurses across Canada grew by 15%. In 2009, there were 266,341 registered nurses in Canada and a combined total of 348,499 regulated nurses in the nursing workforce as a whole.
- Provincial rates of registered nurses per 100,000 population ranged from 694 in British Columbia to 1,145 in Newfoundland and Labrador.
- From 2004 to 2008, there was also growth in the supply of pharmacists, physiotherapists, occupational therapists and audiologists. The most rapid growth was seen among nurse practitioners, increasing by 90% from 2004 to 2008.
- Expanding scopes of practice for some professions may lead to efficiency gains in the deployment of health human resources.

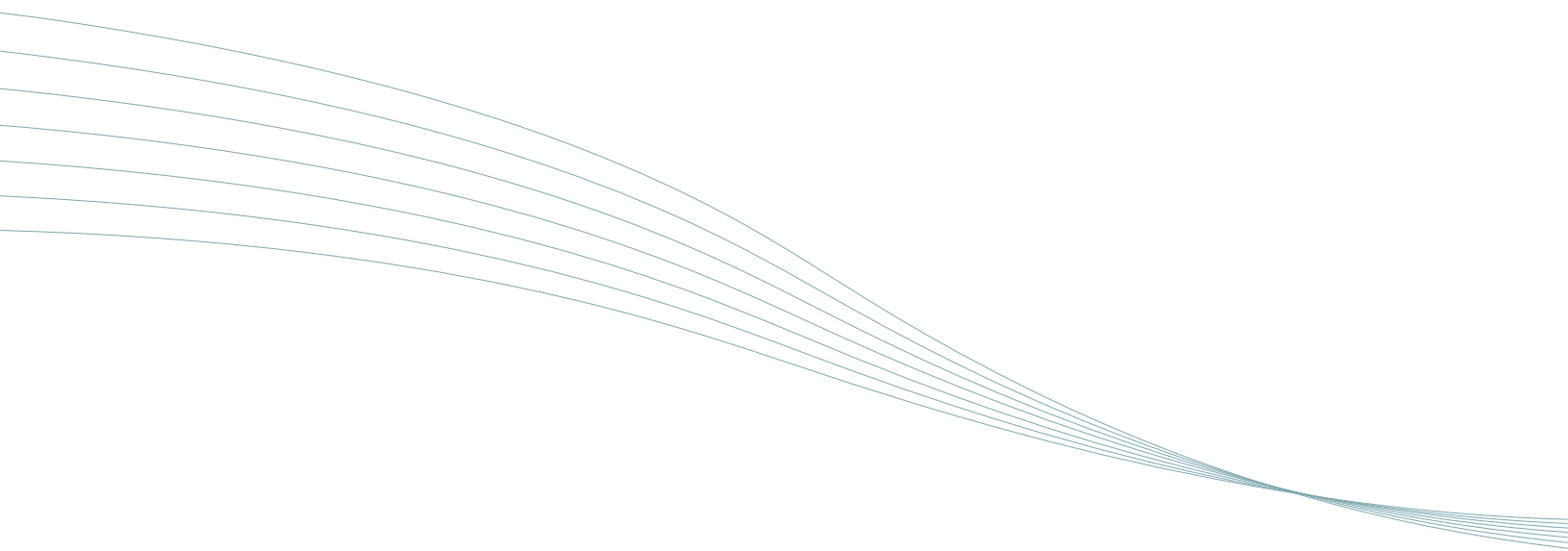
Chapter 6—An Update on Health Expenditures

- Canada's health care spending reached an estimated \$191.6 billion in 2010.
- Spending on health care is substantial in Canada, but it is not uniform across the provinces and territories. At a pan-Canadian level, per capita spending was \$5,614 in 2010, while provincial per capita spending was estimated to range from a low of \$5,096 in Quebec to a high of \$6,266 in Alberta. In the territories, per capita spending was estimated to range from \$7,977 in the Yukon to \$12,356 in Nunavut.

Issues on the Horizon

With health care systems—both across Canada and internationally—increasingly focused on providing quality care, how health care is provided in the not-too-distant future may be affected by issues such as

- Better alignment of care with evidence, including recognition of the need to standardize clinical practice guidelines and an increasing focus on regional variations in care;
- The areas in which government policies and investments are focused, and how changes in these areas will shape the health system and the care delivered; and
- In 2014, the 10-year Plan to Improve Health Care will have expired and a new health accord will be negotiated. The provisions of a new accord may have significant impact on the future direction of health care in Canada.





Introduction

Introduction

If “access” and “wait times” were the buzz words of the first decade of the 21st century, “value for money,” “appropriateness” and “quality of care” may be the ones for the second. From 2000 to 2009, some of the most burning questions were about how dollars spent in the health system could translate into improved access and reduced wait times for Canadians. In 2010, the questions are about how evidence is informing patient care and how this translates into improved quality and appropriate care delivery. In this, CIHI’s 11th edition of *Health Care in Canada*, we touch on key emerging issues from the past year, provide an update on health system resources and expenditures and begin a story about the provision of appropriate care.

The story about appropriateness of care in *Health Care in Canada 2010* is limited to concrete examples where appropriateness can be questioned. The reality remains that administrative data collected from the millions of interactions people have with the health care system annually says little about the quality and appropriateness of care. Although there is a proliferation of clinical practice guidelines and a constantly evolving pool of evidence from clinical trials and other health research, today’s data is not enough on which to base conclusions about the quality of health care delivered or about evidence-based care. But the existing measures, study results and wide rate variations observed across jurisdictions and population groups together suggest not all of the care provided is likely appropriate.

This, as with most things in the health system, is changing. And the pace of change may be accelerating. Countries, including Canada, forecast health care spending that continues to grow at an uncomfortable pace. Around the globe, policies are being put in place to ease spending pressures and improve health system performance by finding efficiencies, improving coordination in care delivery and improving the quality of care. In Canada a number of policy initiatives support finding efficiencies and providing a seamless system and care continuum to better serve people in the community and in their homes. In several provinces, the focus on quality care provision and evidence-based care continues to gain momentum. The good news is that in the past decade health system measures have been developed and applied to ensure that people are safe and not harmed by the care they receive.

The not-so-good news is that questions remain about whether or not people are receiving care that is appropriate and based on the best available scientific information. Few will dispute where the system needs to get to. Many know the challenges.

To begin the journey of understanding, measuring and managing appropriateness, the narratives in this report provide examples of both challenges and successes pointing the way forward. Their presentation should foster deliberation and generate discussion about a comprehensive approach to measuring appropriateness and aligning care and evidence.

For this report, narratives that many are familiar with were selected. Aligning care with evidence from randomized controlled trials (RCTs) should inform practice, but the examples profiled here suggest that is not always the case. Substantive rate variations in service levels should trigger questions of appropriateness where RCT evidence does not exist. The use of evidence-based practice guidelines should translate to providing more, less or, more likely, different care and could even initiate discussion about the setting in which care is provided.

Randomized controlled trials in health care intervention research provide the strongest level of evidence. Two examples of surgical procedures that have been evaluated in RCTs are knee arthroscopy for patients with osteoarthritis and vertebroplasty to treat osteoporotic vertebral fractures. For both procedures there is strong evidence from more than one RCT of no benefit for certain patient populations. Yet both procedures are still being carried out.

Substantive rate variations suggest a lack of uniform treatment. They indicate that, all other things being equal, people in one jurisdiction or patient population are getting different care than in another. Two well-known examples of substantial rate variation—Caesarean section delivery and hysterectomy—are discussed. For both procedures, rates of service vary substantially both within and across jurisdictions. Like most health care services, agreed-upon benchmarks or optimal levels for these services do not exist. However, substantive rate variations signal a lack of consistency in patient treatment and suggest room for improved care.¹

Evidence-based guidelines combine research evidence, critically appraise its quality and make recommendations for clinical practice.² They can vary in the strength of the evidence that is available and brought to bear on a particular issue, in their development processes and sometimes in their utility (when there is little research evidence, for example). Not surprising then, uptake can be inconsistent. Examples are explored from primary health care where available information suggests that care is both consistent with the guidelines (in the management of asthma and coronary heart failure) and where it could be better aligned with evidence and guidelines (in the management of diabetes).

Staying in hospital longer than deemed medically necessary is one example where patients and providers question the efficiency of care provision and the appropriateness of the **care setting**. Alternate level of care (ALC) stays, as they have been labelled, are the result of complicated issues for which solutions are not universal. However, it stands to reason that those who do not require the level of care provided in an acute setting should be discharged to a more appropriate one (including home, if indicated). This will help ensure that hospital beds are available for those in need of hospital care and that patients are in the care setting that best fits their needs. Updated information about the magnitude of ALC stays in Canadian hospitals is provided where comparable data exists to inform the discussion.

Many of the narratives in this report point to waste and inefficiencies in the health care system. However, the news is not all bad. Certainly, there are areas within the system where high-quality care exists and measurable improvements are visible. To that end, included in this report is new information about cardiac care and about hospital standardized mortality ratios. This information demonstrates the impact of aligning care with evidence. It also demonstrates the impact of **efforts to measure and monitor** how health care is provided.

In the end, this report attempts to feed a multitude of appetites. The beginning of a story about appropriateness of care is, by necessity, woven within the context of an evolving health care system with yearly pressures to respond and react, as well as complex and historical decisions about expenditures and health human resources. Undoubtedly, not all of these appetites will be satiated. But hopefully, many will have been whetted for more and better information.

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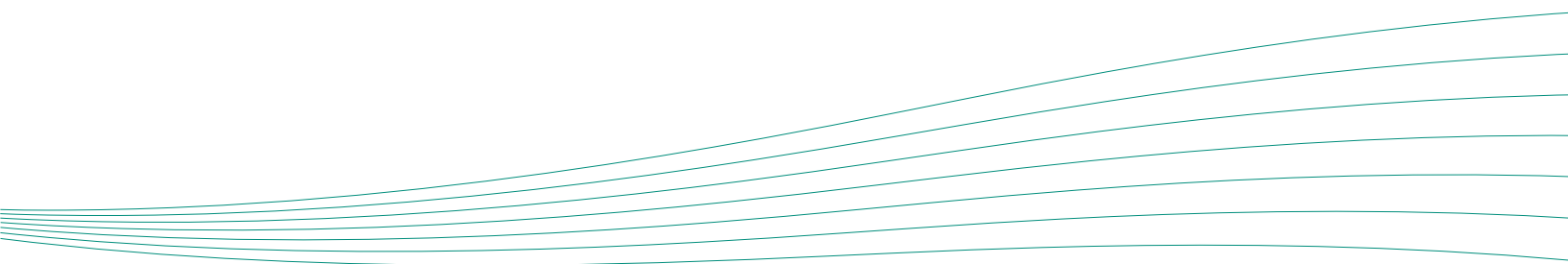


PART A

The Year in Review



Chapter 1
Emerging Issues in 2010



Introduction

Since the release of *Health Care in Canada 2009* in October 2009, news stories about health care have generated headlines across Canada. Among them were the H1N1 pandemic, the impact of medical isotope supply disruptions and provincial changes in health care funding models. The first two issues necessitated immediate systemic reaction. And the system responded. Funding changes will also provoke systemic responses, but these will be provincial and territorial in nature. This chapter chronicles some of these stories and their impact on Canada's health care system in 2009–2010.

The H1N1 Pandemic

In June 2009, the World Health Organization (WHO) declared the H1N1 influenza a pandemic.¹ Canada underwent a dress rehearsal of pandemic planning in 2003 during the SARS outbreak, although SARS never reached pandemic proportions. It nevertheless provided the impetus for strategic and focused Canadian pandemic planning. This included the establishment of the Public Health Agency of Canada and the *Canadian Pandemic Influenza Plan*.

H1N1 was first identified in Mexico. Its rapid spread around the world made health officials in every country take notice. By the time the WHO declared it a pandemic, 74 countries and territories had lab-confirmed infections.¹ By June 2010, more than 214 countries and overseas territories had lab-confirmed cases and 18,172 deaths were attributed to the illness.² The pandemic was officially declared over in August 2010.³

For most people who became ill, H1N1 symptoms lasted one week. While the majority recovered without medical treatment, there were several quantifiable differences from seasonal influenza infections. For those hospitalized, H1N1 patients required more intensive hospital care when compared to typical flu patients.⁷ There was also evidence suggesting pregnant women were at greater risk of becoming infected with H1N1 than seasonal influenza, and healthy youth, not usually severely affected by flu, succumbed to the illness.⁸ As well, the WHO reported that “people age 65 and older are the least likely to be infected with the pandemic flu”—another departure from the normal flu. The WHO also added that those age 65 and older who did get sick were at high risk for developing serious complications.⁹ All told, 428 Canadians were reported to have died from H1N1 between April 2009 and April 2010.¹⁰

Influenza Pandemics: A Historical Perspective

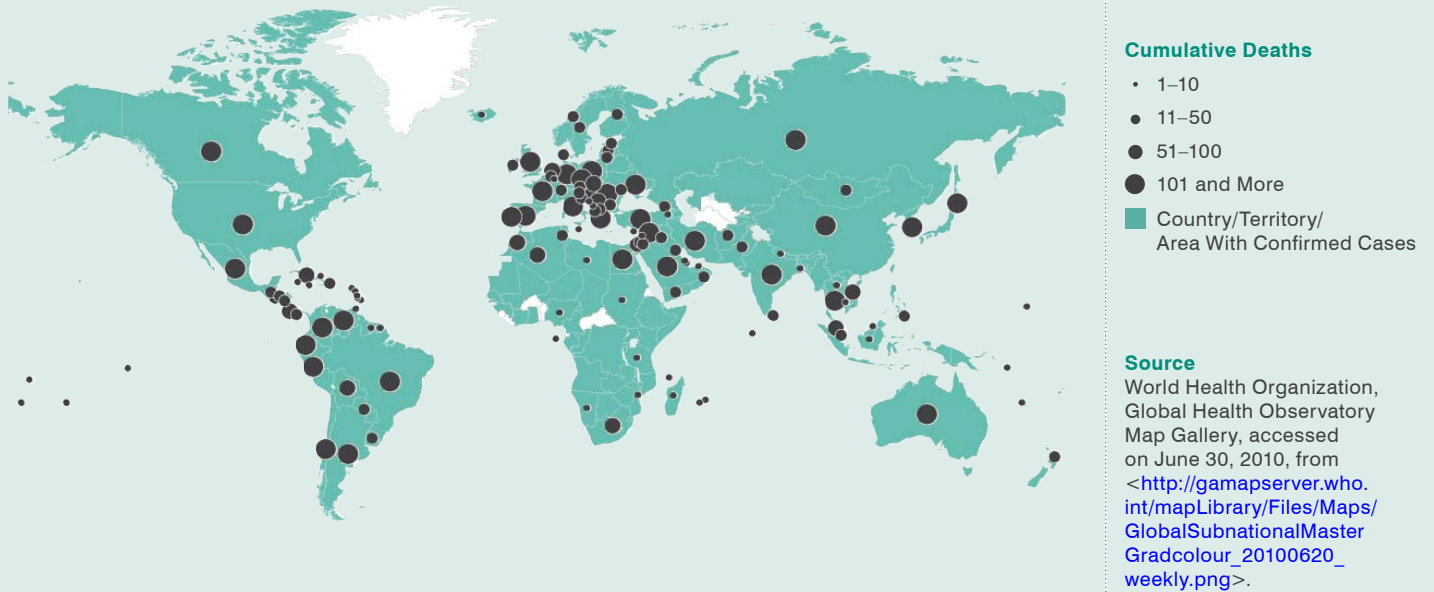
During the last century, three influenza pandemics have occurred. Due to the high number of deaths caused by the Spanish Flu, it is the catastrophe against which all modern pandemics are measured. Estimates say up to 40% of the population worldwide became ill with this flu and more than 20 million people died.⁴ Between 1918 and 1919, 50,000 Canadians⁵ and half a million Americans died from the Spanish Flu.⁴ Almost 40 years later, the Asian influenza pandemic was identified, and vaccine production began within three months. This pandemic resulted in four million deaths globally;⁴ 2,000 Canadians⁶ and 69,800 Americans died.⁴ Only 10 years later, in early 1968, the Hong Kong influenza pandemic was detected. By January 1969, the virus had peaked. The Hong Kong influenza is estimated to have claimed four million lives worldwide.⁴

Canada's health system responded swiftly to H1N1. The federal government ordered more than 50 million doses of vaccine to cover anticipated demand.¹¹ Early in the outbreak, it was thought that each person would require two doses to be fully protected. Public health campaigns urged all Canadians to get vaccinated, and across the country priority groups were identified for immediate inoculation, with all other non-priority Canadians to follow. Nursing students, contract nurses and retired nurses were asked to work, and public health workers were retrained and redeployed to administer the vaccine. Other public health programs were postponed or suspended; in some jurisdictions, surgical procedures were also postponed.¹² Despite this, only 41% of Canadians age 12 and older were actually vaccinated.¹³ Faced with surplus vaccines, Canada shipped five million to Mexico¹⁴ and sent an additional five million to the WHO.¹⁵

In dollar amounts Canada spent an estimated \$400 million on vaccines alone.¹⁷ By November 2009, estimates of the cost of Canada's response reached \$1.5 billion.¹⁸ Regardless of the expense, most Canadians believed that all levels of government did at least a fair job of preparing for and dealing with H1N1, despite overreactions from the media.¹⁹ Some provinces have conducted their own cost-benefit analysis and have concluded that while it may have been a costly campaign it was also cost-effective given the number of infections, hospitalizations and workplace disruptions it prevented.²⁰

Figure 1

H1N1 Pandemic 2009—Countries, Territories and Areas With Lab-Confirmed Cases and Number of Deaths as Reported to the WHO



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.
Data source: World Health Organization Map Production: Public Health Information and Geographic Information Systems (GIS) World Health Organization.
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Disruption in the Supply of Medical Isotopes

Medical isotopes play a vital role every day in diagnosing life-threatening illnesses, such as cancer and heart disease. While their use has become mainstream in nuclear medicine, they cannot be stored or stockpiled. In Canada, about one million procedures using medical isotopes are performed annually, and 25 million are performed globally.²¹ It is estimated that one in three patients entering a hospital will undergo a procedure involving nuclear medicine.²²

Prior to being shut down in the spring of 2008, the nuclear reactor in Chalk River, Ontario (near Ottawa), produced 40% of the global radioactive medical isotope supply.²³ In June 2009, the federal government provided \$6 million for research into alternative, non-nuclear isotopes to replace Tc-99m—a particular type of medical isotope—and established an expert panel to consider proposals for new sources.²⁴ Six months later, the panel submitted its report to the Natural Resources Minister. It concluded that there were no quick fixes and suggested the following:

- 1) More players should be introduced to the isotope distribution chain, now dominated by Ottawa-based MDS Nordion;
- 2) The federal government should work with other countries to better coordinate worldwide production and distribution of isotopes;

The Impact of the H1N1 Pandemic on Canadian Hospitals

Given the importance of planning for and responding to pandemics, and given that many parts of Canada's health system were involved in responding to the H1N1 pandemic specifically—public health, labs, pharmacies and primary health care providers—what impact did the pandemic have on Canadian hospitals? What can be said about the H1N1 hospitalized patient profile and their use of hospital services? To help answer these questions, CIHI is investigating the utilization of hospital and emergency department services by patients with a diagnosis of either H1N1 or influenza during the pandemic period (April to December 2009). Preliminary findings indicate the following:¹⁶

- During the peak of the second wave in November, H1N1/influenza was one of the leading causes of hospitalization and represented less than 5% of all acute discharges.

continued on next page

3) Canada should shift to making isotopes with low-enriched uranium targets; and

4) Canada should build a new multi-purpose reactor.²⁵

The final recommendation was ruled out in March 2010 due to high costs and long lead times for production.²⁶ Instead, the federal budget provided \$48 million to encourage the exploration of new avenues for the production and use of medical isotopes.²⁷

In June 2010, CIHI released the results of a special survey examining the impact of the supply disruption on the Canadian health care system. Highlights from the survey include the following:²⁸

- The number of nuclear medicine exams carried out on Canadian patients for cardiac, bone and lung diagnostic tests decreased by 22% in October 2009, compared to October 2008; this translated to 12,000 fewer exams in October 2009 alone.
- Nuclear medicine departments implemented mitigating strategies, such as rescheduling patient exams and setting up new ways to prioritize patients.
- Two-thirds of the participating nuclear medicine sites reported an increase in the cost of isotopes. Accordingly, they were managing the increased costs but were exceeding their budgets.

- Between April and December 2009, Ontario emergency department visits for flu-like symptoms were up by approximately 140,000 visits compared to historical averages.
- Young children between age 0 and 4 were hospitalized the most compared to any other age group. As well, hospitalized H1N1/influenza patients were more likely to be pregnant or have respiratory comorbidities (such as asthma and chronic lung diseases) than in a typical flu year.
- H1N1/influenza patients were more likely to need intensive care units and ventilation than typical flu patients; however, the extent of this difference was smaller than that estimated by earlier studies.

New Funding Structures: A Focus on Quality and Appropriateness of Care

Government leaders are all facing budget deficits and a belt-tightening economy. In response, some are revising their approach to funding all or aspects of the health care system. Many of these approaches are linked to both quality and appropriateness of care. Terms heard across the country to describe new funding models include “patient focused,” “activity based,” “service based” and “pay for performance.” While newer in Canada, countries such as the United States, Australia, the United Kingdom²⁹ and several other European countries³⁰ have also been experimenting with such funding structures.

Selected Funding Initiatives

Ontario has begun developing a new funding model for local health integration networks (LHINs) called the health-based allocation model (HBAM). According to the Ontario Ministry of Health and Long-Term Care,³⁴ HBAM determines each LHIN’s share of funding based on direct measures of health status; population-based factors such as age, gender, socio-economic status, rural geography and patient flows; and provider characteristics relative to their LHIN boundaries. HBAM’s goals include 1) promoting equitable access to services across Ontario; 2) ensuring that money follows the patient; and 3) promoting innovation through incentives for efficient and innovative service delivery.

Incentives and Activities— Can They Form the Basis for Health Care Funding?

Recently, in several jurisdictions, the idea that changing the way we fund health care can improve not only the quality of care received but also the value for money spent has been raised. Several models are being considered and tried, and there is continued debate as to which of these may best ensure high-quality, accessible and cost-effective care for Canadians. Many terms are used to describe these models, but at the core they can be broken down into two main types: incentive based and activity based.

continued on next page

Ontario also recently passed its *Excellent Care for All Act, 2010*.³⁵ The act introduces pay-for-performance measures for hospitals by linking a portion of CEO salaries to the achievement of performance targets. It also establishes hospital-based quality committees that report to hospital boards on quality-related issues, among other things. The ultimate goals are to provide high-quality, appropriate patient care; reduce in-hospital infection rates; cut emergency wait times; and speed up access to procedures like hip replacements.

Finally, Ontario recently implemented reforms to reduce the cost of generic drugs for the province. The reform took effect July 1, 2010,³⁶ and appears to have had a ripple effect across the country. British Columbia followed suit shortly after, announcing its own plans to undertake generic drug reform.³⁷ Quebec also has requirements currently in place with manufacturers to ensure low pricing for generic drugs.³⁸ More recently, stories have surfaced about provinces and territories pooling their purchasing power to reduce drug costs across the country.^{39, 40}

British Columbia is focused on reforming its hospital sector through changes in funding. Its first-year objectives include expanding emergency department patient-focused funding, reducing wait times for selected common surgical procedures and decreasing the number of overnight stays.⁴¹ Its new Health Services Purchasing Organization, incorporated in January 2010, will distribute \$250 million among the province's largest hospitals on the basis of patient-focused services,⁴¹ effectively giving available health care dollars to the hospitals offering the lowest price for surgery.⁴²

Incentive-Based Funding: Alternatively known as pay-for-performance and service-based funding, this is the notion of using payments to achieve results in the quality of patient care by requiring providers or institutions to reach specific care goals to receive financial rewards.³¹ Pay for performance provides incentives for how well service is delivered, while service-based funding provides incentives for the volume of specific baskets of care delivered.³¹

Activity-Based Funding: In contrast to the current block funding model that provides hospitals with their budgets as a lump sum at the beginning of a fiscal year, activity-based, patient-focused or patient-based funding is a model that provides funding based on the volume and/or complexity of the patients who are seen and treated.^{32, 33}

Alberta Health Services (AHS) recently introduced activity-based funding. It is one of the five pillars of the AHS's new Seniors Care Plan, which is part of the province's 2010–2011 budget. In 2006, Alberta began using the Resident Assessment Instrument (RAI) to support and monitor quality in long-term care. The RAI case mix system (called Resource Utilization Groups) will support the funding.⁴³ Alberta is also using RAI instruments in long-term home care programs and plans to expand their use to supportive living settings.⁴³

Activity-based funding is also used in **Quebec**. This province's wait time guarantee of six months for hip and knee replacement surgery is supported by the federally funded Patient Wait Time Guarantee Trust (2007). The trust was established to help jurisdictions introduce guarantees to achieve wait time benchmarks for five priority areas. In Quebec, if hip and knee replacement operations cannot be performed at a government-funded hospital within six months, the province will pay for surgery at an affiliated private clinic in the province.⁴⁶ In 2010, Quebec, as well as British Columbia and Ontario, completed 75% of hip and knee replacements within benchmark time frames.⁴⁷

With the *2004 Health Accord* set to expire in 2014, the federal government, along with the provincial and territorial governments, will need to renegotiate the terms of the Canada Health Transfer. The 2004 accord established a number of key accomplishments to improve the health care system. Arguably the most substantive change was in wait time reductions for the five areas identified as priorities. Whether funding flowing from the federal government to the jurisdictions after 2014 will be conditional in any way remains to be seen. But likely many voices will be heard and positions solidified over the next three years.

About the interRAI Resident Assessment Instrument—Home Care

The interRAI Resident Assessment Instrument—Home Care (RAI–HC)[®] is a standardized, comprehensive and reliable assessment instrument designed to evaluate the needs, preferences and strength of people—generally frail elderly or disabled individuals—receiving care and services in their homes or community-based settings. Developed by a not-for-profit network of researchers in more than 30 countries, the RAI–HC is currently used in eight jurisdictions in Canada and many countries around the world.^{44, 45}

In Summary

One sign of a healthy system is its ability to respond quickly and effectively when needed. By many accounts Canada’s health care system responded in exactly this manner to both the H1N1 pandemic and the medical isotopes supply disruption. In both cases, processes of care were altered and resources were redeployed, but the health care system was not systematically disrupted. For many Canadians, these events marked inconveniences and postponements but not complete reductions in access to care.

Health care systems need the flexibility to respond to emerging issues. But they also need to provide resources for ongoing care in the near and distant futures. New funding models and payment systems within many jurisdictions are being tabled and discussed. These discussions are reflections of governments looking for new ways to strike a balance between the demand for care and other competing priorities while at the same time controlling costs. Governments are looking for value for every dollar spent; inefficiencies can no longer be afforded. These changes are longer term and will be further refined over time.

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PART B

Aligning Care With Evidence



Chapter 2
Provided Care Leaves Room for Improvement

Introduction

When presented with three options to control health care spending, almost two out of three Canadians preferred improving system efficiencies to spending more tax or out-of-pocket dollars.¹ One way to do this is to ensure the care provided is appropriate.

The following discussion is about aligning the care provided with evidence of its appropriateness. Four surgical procedures are highlighted as examples. For two—therapeutic knee arthroscopies for osteoarthritis and vertebroplasty for osteoporotic vertebral fracture—research evidence from randomized controlled trials has called into question the effectiveness of the interventions, yet the procedures continue to be carried out across Canada.

Although randomized controlled trials provide the strongest level of evidence in testing whether or not an intervention is beneficial, they are not always feasible or ethical to undertake. Other levels of evidence, with acknowledgement of the limitations of the findings, are often brought to bear on the question of appropriateness of care. Findings of significant differences in rates of an intervention across a population have led to debate and investigation of what contributes to the variation. Such findings have also raised questions of the appropriateness of the care in some circumstances. The other two surgical procedures discussed here are examples of this, as rates of Caesarean sections and hysterectomies vary significantly across Canada.

Arthroscopic Knee Surgery for Osteoarthritis

Knee arthroscopy is a minimally invasive surgery used for diagnosing and/or treating a variety of knee problems. Increasing evidence suggests that, when used to treat osteoarthritis, this procedure fails to provide additional benefit to improve outcomes or reduce discomfort compared to physical and medical therapy.^{2,3} Furthermore, there is some indication that arthroscopic knee surgery is only a temporary measure, with a substantial number of patients going on to receive a knee replacement within one year of their arthroscopic surgery.⁴

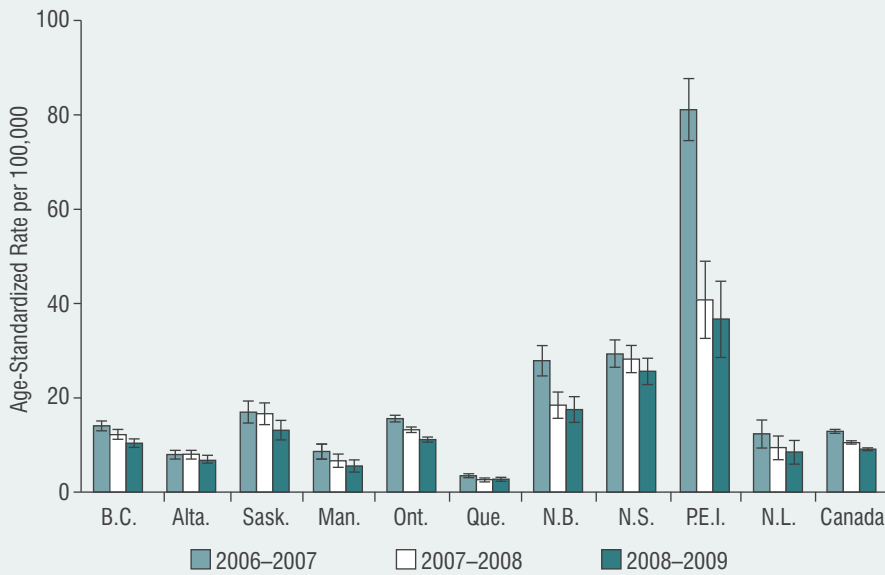
Despite this mounting evidence, more than 3,600ⁱ therapeutic knee arthroscopies were carried out in hospitals across Canada in 2008–2009. By province, age-standardized rates ranged from a low of 2.8 per 100,000 in Quebec to a high of 36.7 per 100,000 in Prince Edward Island.ⁱⁱ

Between 2006–2007 and 2008–2009 in Canada, knee arthroscopy rates declined overall. Part of the decline might illustrate some explicit changes in practice for treating osteoarthritis of the knee, including better aligning care with the evidence that the procedure does not improve outcomes for osteoarthritis patients. Although the trend in the number of knee arthroscopies is on the decline, the more than 3,600 procedures done in Canada in 2008–2009 suggests there is still room for improvement.

-
- i. Only therapeutic arthroscopies for osteoarthritis are included. Other exclusions relating to comorbidities and certain conditions were also applied. Arthroscopies performed outside of hospitals are not included.
 - ii. Analyses are based on where the facility was located. Few patients travelled out of their home province to receive the procedure.

Figure 2

Age-Standardized Rates of Therapeutic Knee Arthroscopies by Province, Canada, 2006–2007 to 2008–2009



Notes

Numbers for the territories are suppressed due to small counts but are included in the Canada rates. Based on where surgery was performed, not place of residence of patients.

Sources

Discharge Abstract Database and National Ambulatory Care Reporting System, 2006–2007 to 2008–2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2006–2007 to 2008–2009, ministère de la Santé et des Services sociaux; Alberta Ambulatory Care Database, 2006–2007 to 2008–2009, Alberta Health and Wellness.

Vertebroplasty

Vertebroplasty is another example of a surgical procedure with recent evidence suggesting it may be ineffective in some cases. Vertebroplasty is a spinal surgery performed percutaneously—that is, through a small hole in the skin. In this procedure bone cement or synthetic material is infused into a fractured vertebra. Results of recent randomized controlled trials demonstrated that patients who undergo vertebroplasty to treat osteoporotic vertebral fractures are not any better off than those who undergo a placebo procedure where they are anesthetized but no intervention is performed.^{5, 6}

In Canada, about 1,050 vertebroplasties were performed in 2008–2009.ⁱⁱⁱ Unlike knee arthroscopy, the volume of vertebroplasty procedures has increased over the last three years, from approximately 600 in 2006–2007, to 1,050 in 2008–2009. The increase was evident across most provinces where the procedure was carried out.

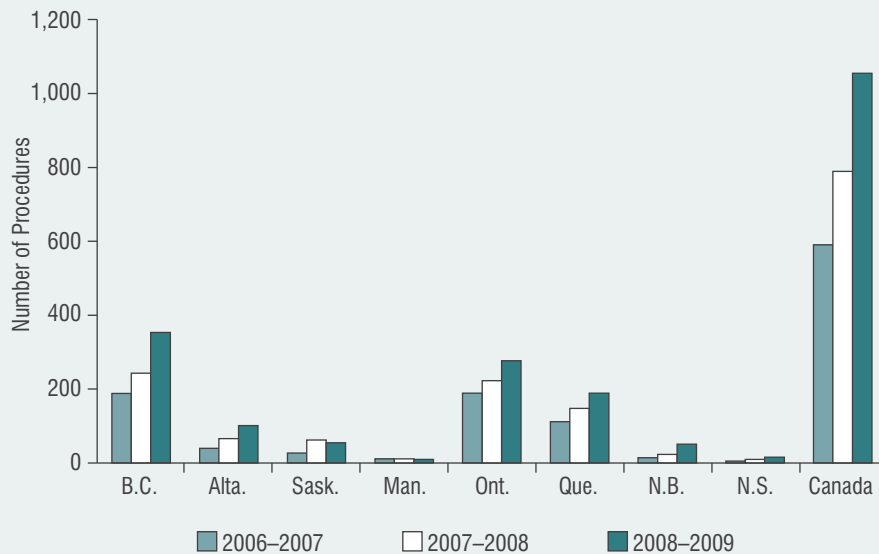
Given that osteoporosis is more prevalent among women than men and among seniors than younger adults,⁷ it is not surprising that more women than men (65% versus 35%) underwent this surgery in 2008–2009, and that approximately 71% of percutaneous vertebroplasties were for people age 65 and older.

Unlike knee arthroscopy, in which 95% of the procedures were done in ambulatory settings, in 2008–2009, close to 59% of vertebroplasties were carried out in acute care settings.

^{iii.} Data coverage issues may exist; thus the actual number of procedures may be significantly higher than reported here.

Figure 3

Number of Percutaneous Vertebroplasty Procedures by Province, Canada, 2006–2007 to 2008–2009



Notes

Numbers for Newfoundland and Labrador were suppressed but are included in the Canada totals; no procedures were reported for P.E.I. and the territories. Based on where surgery was performed, not place of residence of patients.

Sources

Discharge Abstract Database and National Ambulatory Care Reporting System, 2006–2007 to 2008–2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2006–2007 to 2008–2009, ministère de la Santé et des Services sociaux; Alberta Ambulatory Care Database, 2006–2007 to 2008–2009, Alberta Health and Wellness.

Impact on the System

The absolute numbers of arthroscopic knee surgery and vertebroplasty procedures performed in Canada are relatively small; approximately 3,600 and 1,050, respectively, in 2008–2009. This is especially true in comparison to surgical procedures such as knee replacement, with more than 47,500 performed in Canada in 2008–2009. Yet even these small numbers of interventions use system resources and significantly impact patients. According to an Ontario report, the cost of a knee arthroscopy performed as an outpatient surgical procedure was \$1,150 in 2005.⁸ Using this figure as the base of estimation, the total cost of knee arthroscopies across Canada in 2008–2009 would be more than \$4.0 million (unadjusted for inflation or procedural improvements). Estimates of the total cost for professional medical fees for vertebroplasty in Ontario for 2008–2009 were on the order of \$211,000.⁹

The actual total cost would be even higher if hospital costs were factored in and costs for these procedures were available across the country. As well, cost is only part of the equation. Cost does not, for example, reflect the impact on patients' lives. It also does not reflect the missed opportunity when valuable health system resources—such as surgeons, anesthesiologists, nurses, equipment, operating rooms and hospital beds—are not available to provide other, appropriate, care.

Taken together, when the impact on patients and inefficient resource use are considered in light of evidence of little benefit, these examples point to opportunities for improved care. The absolute counts for these procedures may be relatively small, but the impact on the system of better aligning care with the evidence could be significant.

When Care Varies: C-Sections and Hysterectomies

Without compelling evidence, choices about the provision of health care are rarely black and white. When evidence is available, as in the earlier examples, decisions become clearer. But there are many other examples when the indications are not as clear. In those cases, care decisions, which in turn affect surgical volumes, are influenced by system factors (such as access, availability or resources) and patient factors (such as age, sex or genetic risk).

The first 20 years of health services research in Canada has clearly demonstrated that when rates of health care services are studied, variations exist. It is well documented that where people live, their age and their sex, among other factors, influence the likelihood of having interventions such as hip replacements, knee replacements and cardiac procedures.¹⁰

Generally, variation in rates of services are reported by differences in patient characteristics (such as age, sex and income), risk factors (such as lifestyle and genetics) or geography (in Canada by provinces and territories or regional health authorities). Interactions between these are also reported. Sometimes rate variation reflects differences in access to services or how services are organized. Sometimes variation flags differences in practice patterns. Statistical analyses can control for a number of these factors, such as the differences in the rate of services provided based on the age of the population or the fact that women experience some health issues differently than men do. But once these factors are taken into consideration and sizeable rate variation persists, there are opportunities to dig deeper and ask why.¹¹ Two examples where rate variations are sizeable across the country are Caesarean sections and hysterectomies. The discussion below explores some of the reasons why.

Caesarean Section

Canada, like other countries, has been tracking rates of Caesarean section (C-section) deliveries for many years. In general the rates have been increasing over time around the globe¹² and have increased dramatically in Canada over the past two decades.^{13, 14}

C-sections are life-saving in some situations. They are carried out for many reasons, including, most commonly, to avoid injury to mother and baby in the event of difficult or non-progressing labour, breech or abnormal fetal position or size, or non-reassuring fetal heart rate.¹⁵ Repeat C-sections are also commonly performed for women with a previous C-section to prevent tearing the original uterine incision during labour.¹⁶ However, compared with vaginal delivery, women undergoing C-section delivery are at greater risk of severe morbidity and may face a host of obstetric complications (including hysterectomy).¹⁷ They also face a greater risk of postpartum readmission to hospital¹⁸ and increased risk for complications in subsequent deliveries.¹⁹

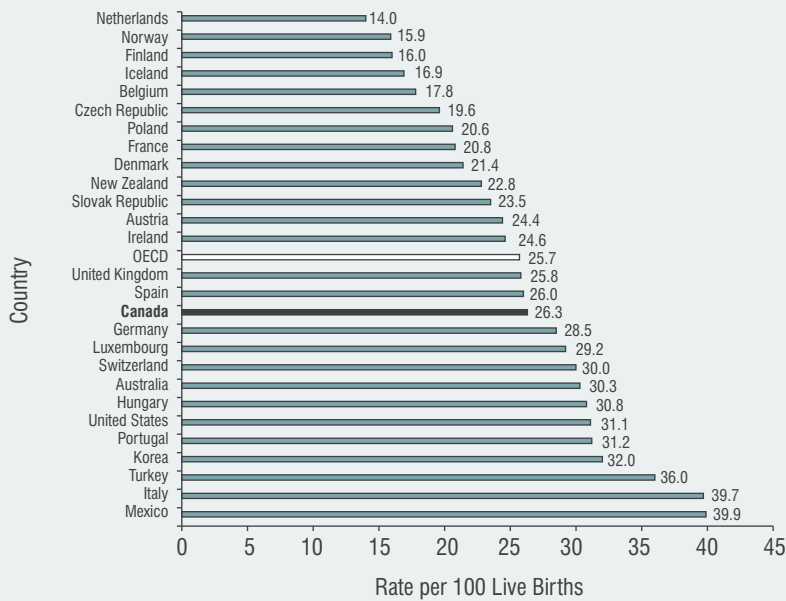
International Variation in C-Section Rates

Canada's overall C-section rate of 26.3 per 100 live births in 2007 slightly exceeded the Organisation for Economic Co-operation and Development (OECD) average of 25.7 per 100 live births, placing Canada 17 out of 27 OECD countries in 2007.¹² C-section rates rose in all OECD countries in recent decades.¹² Some research has linked C-section delivery with increased maternal and infant morbidity,²⁴ as well as increased risk of complications in subsequent deliveries.¹⁹

In 2008, the Society of Obstetricians and Gynaecologists of Canada and related Canadian professional organizations released recommendations^{20, 21} and a joint policy statement²² advocating for normal childbirth (that is without interventions such as C-sections for singleton deliveries). They also recommended that women who have C-section births attempt a trial of vaginal birth after C-section in subsequent deliveries, rather than planning for another C-section.²³

According to these recommendations and other guidelines from American¹⁶ and British²⁵ medical organizations, C-sections are appropriate only in cases where vaginal delivery poses medical risk to either the mother or the baby. Because standardized C-section indications are yet to be determined^{26, 27} and consensus has yet to be reached on Canadian and international benchmark rates, the necessary lack of specificity in these guidelines may contribute to the continued use of C-sections for discretionary indications and non-medical reasons.²⁶ Nevertheless, when compared internationally, Canada's C-section rate remains high¹² and exceeds existing recommendations.²⁸⁻³⁰

Figure 4 Caesarean Sections per 100 Live Births, 2007
(or Latest Year Available)



Source
Organisation for Economic
Co-operation and Development,
OECD Health Data 2009
(Paris, France: OECD, 2009).

Variations in Primary C-Section Rates

Overall C-section delivery rates have increased steadily in Canada since 1995–1996.^{13, 14} **Primary** (first) C-section rates rose between 1995–1996 and 2004–2005,¹⁴ and have since stabilized at approximately 19% of deliveries. **Repeat** C-section rates also rose over this time period,¹⁴ and by 2006–2007, the rate of repeat C-sections stabilized at approximately 82%. This means 8 out of every 10 women who had a C-section in 2008–2009 also had previously delivered by C-section.

Overall C-section rates (primary plus repeat) and their regional variations have been reported in detail elsewhere.¹³ To understand what is driving some of the variations in the overall C-section rates, new information focusing on **primary** C-section rates and risk factors is presented here.

It has been suggested that some C-sections are performed for non-medical reasons.²⁶ Variations in rates of primary C-sections across jurisdictions offer an opportunity to examine this.¹¹ In 2008–2009, the variation in primary C-section rates was almost double across the provinces and was triple across the territories. Rates ranged from a high of 23% of deliveries in Newfoundland and Labrador to a low of 5% in Nunavut. Manitoba had the lowest rate among the provinces at 14%.

Appropriate C-Section Rates: Still a Question

In 1985, the World Health Organization (WHO) recommended that fewer C-sections be performed and that national C-section rates meet a minimum of 5% but not exceed a benchmark of 10% to 15%.²⁸ Subsequently, some have argued that the recommendations are outdated, inconsistent and unsafe, as the evidence base for best practices related to C-section births continues to develop.^{31, 32} The WHO has since conceded the lack of evidence supporting its benchmark, stating that “there is no empirical evidence for an optimum range of percentages, despite a growing body of research that shows a negative effect of high [C-section] rates.”³³ Instead, the WHO now recommends that nations “continue to use a range of 5-15% or set their own standards.”³³ Despite this, the United States Department of Health and Human Services still recommends a target C-section rate of 15% for first-time mothers undergoing low-risk delivery (singleton, full-term, normal presentation) under its Healthy People 2010 guidelines.³⁰

Many factors are associated with variation in C-section rates, at both patient and system levels. Patient factors include

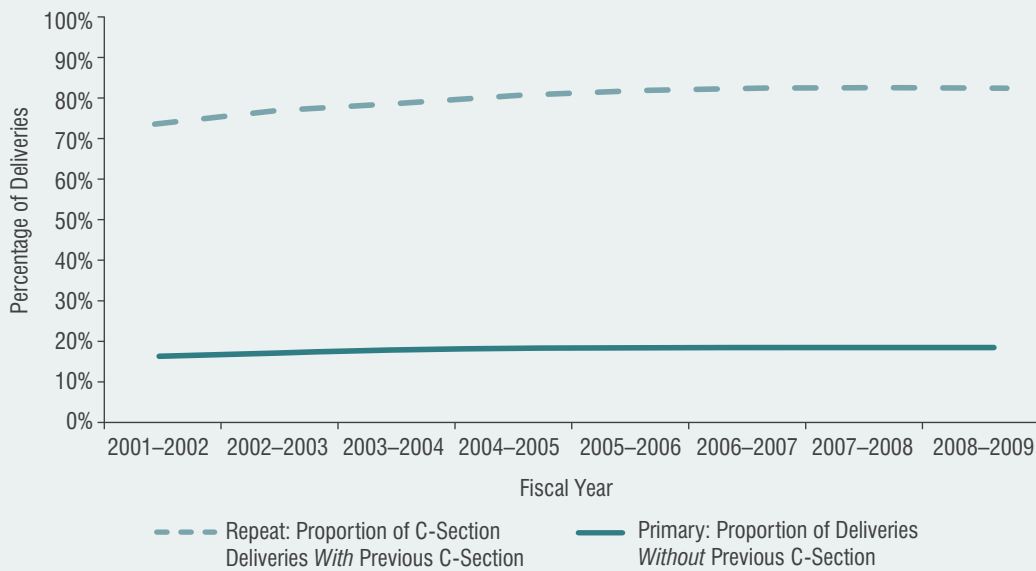
- Maternal age;
- Existing conditions like diabetes (gestational or otherwise), obesity and hypertension;
- Patient choice;
- Previous C-section;
- Baby’s position and size; and
- Multiple births.^{34, 35}

These and other maternal and obstetric conditions are consistently shown to increase the likelihood of a C-section delivery.^{15, 36–39}

System factors include

- Physician practice patterns;
- Availability of specialists and access to care; and
- The risk tolerance in the health systems delivering the care.^{40–42}

Figure 5 Trends in Rates of Primary and Repeat Caesarean Sections, Canada, 2001–2002 to 2008–2009



Notes

Primary C-section rates were calculated for deliveries without a previous C-section. Repeat C-section rates were calculated for deliveries with a previous C-section only. All rates exclude non-residents of Canada.

Sources

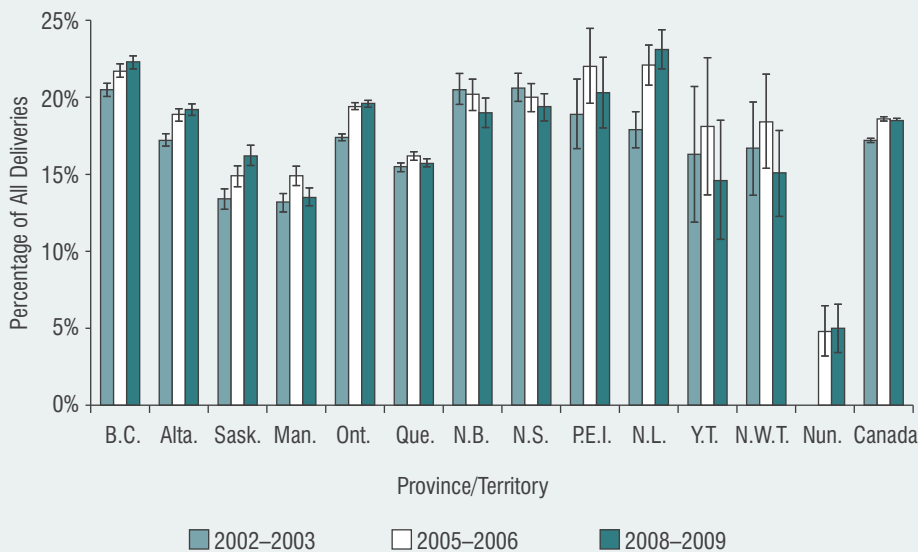
Hospital Morbidity Database, 2001–2002 to 2005–2006 and Discharge Abstract Database, 2006–2007 to 2008–2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2006–2007 to 2008–2009, ministère de la Santé et des Services sociaux.

Across Canada in 2008–2009, approximately 63% of all women with singleton pregnancies who had not had a previous C-section had at least one risk factor^{iv} for C-section. The risk factors include several maternal and obstetric conditions and complications.^{15, 37–39} Of those at risk for C-section, more than one-quarter (27%) went on to have a primary C-section delivery. This compares to 2% of deliveries without risk factors. Primary C-section rates for at-risk deliveries ranged from 10% in Nunavut to 35% in Newfoundland and Labrador. That C-section rates varied considerably even among at-risk deliveries points to differences in care provider culture and practice within and between jurisdictions.

iv. At-risk deliveries were those having one or more of the following risk factors for C-section delivery: maternal conditions—heart, liver or renal disease, pre-existing hypertension or diabetes, obesity, asthma, thrombophilia, systemic lupus, hepatitis B or HIV; obstetric conditions or complications—gestational hypertension, severe hypertension (eclampsia or severe pre-eclampsia), gestational diabetes, placental previa, abruption or other placental infection, infant gestational age less than 37 weeks or more than 41 weeks, breech or other malposition, cephalopelvic or other disproportion, cord prolapse or other cord disorder, premature membrane rupture, oligohydramnios, fetal distress, asphyxia or non-progressive labour.

Figure 6

Primary Caesarean Section Rates, by Province and Territory, Canada, 2002–2003, 2005–2006 and 2008–2009



Notes

Nunavut did not submit to the DAD in 2002–2003.

Primary C-section rates exclude abortions and non-residents of Canada and are calculated for deliveries without a previous C-section. Analyses are based on patients' residences and not on the facility where they were treated.

Sources

Discharge Abstract Database, 2002–2003, 2005–2006, 2008–2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2008–2009, ministère de la Santé et des Services sociaux.

Impact on the System

Overall, 1 of every 10 dollars spent on inpatient care in Canada is spent on childbirth and newborn care.⁴³ Compared to vaginal births, C-section deliveries cost hospitals as much as two times more in obstetric care for both mothers and babies.⁴³ At \$4,930 in average hospital inpatient costs per delivery for typical patients,^v national estimates suggest that primary C-sections cost approximately \$2,265 more than typical vaginal deliveries with no other interventions.

In 2008–2009, the total costs for primary C-section hospitalizations were estimated to be \$292 million.^{vi} If primary C-section rates in Canada reached the original range suggested by the WHO in 1985 (5% to 15%), and vaginal deliveries with no other interventions were performed instead, the cost savings would be in the order of^{vi}

\$97 million

if primary C-section rates were 5% in Canada



\$61 million

if primary C-section rates were 10% in Canada



\$25 million

if primary C-section rates were 15% in Canada



v. Typical patients are those who have undergone a normal and expected course of treatment. They exclude cases involving transfers between acute care facilities, deaths, sign-outs and long-stay cases. Typical cases made up 94% of all C-section deliveries in 2008–2009.

vi. The estimate is based on the average cost for typical cases and excludes the territories. Cost estimates are calculated using Cost per Weighted Case, which excludes physician compensation.

Providers are currently operating without an agreed-upon benchmark for C-section rates. But this does not preclude considering the potential impact reducing rate variations across the country may have. Of all the provinces, Manitoba has the lowest, and therefore theoretically achievable, primary C-section rate. If all provinces achieved Manitoba's primary C-section rate (14% of all deliveries in 2008–2009), and vaginal deliveries with no other interventions were performed where C-sections were not, the overall annual cost difference and reduction in the number of C-sections performed would be more than \$36 million and about 16,200 C-sections in Canada.

Hysterectomy

Hysterectomy is the complete or partial removal of the uterus⁴⁴ or the removal of the uterus, fallopian tubes and, sometimes, the ovaries.⁴⁵ While hysterectomy rates have steadily declined since the early 1980s for both cancerous and non-cancerous gynecological conditions, this procedure remains the second-most common surgery performed on Canadian women, second only to C-section delivery.⁴⁴ In 2008–2009, an average of 338 hysterectomies were performed for every 100,000 Canadian women age 20 or older.⁴⁴ Similar and even higher hysterectomy rates have also been reported internationally.^{46, 47}

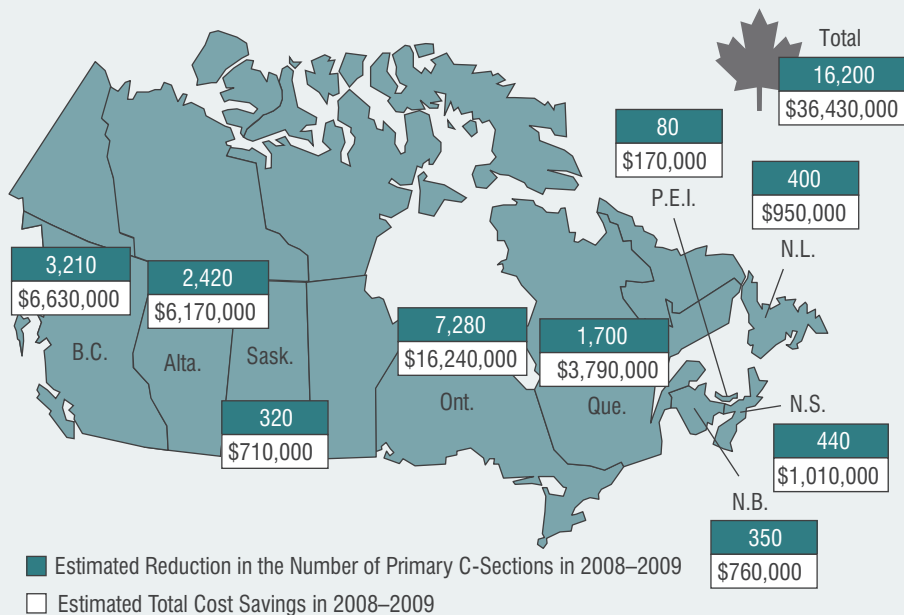
Evidence-based clinical practice guidelines⁴⁵ and recommendations⁴⁸ for hysterectomy are available in Canada. Despite these, large disparities in hysterectomy rates exist. In 2008–2009, age-standardized hysterectomy rates varied threefold across the provinces and territories, ranging from a high of 512 per 100,000 women age 20 or older in Prince Edward Island to a low of 185 per 100,000 in Nunavut.⁴⁴ British Columbia had the lowest rate among the provinces, at 311 per 100,000. Variations in hysterectomy rates may point to differences within and between jurisdictions in care provider culture, practice and approaches to this surgery.^{44, 49}

In addition to significant provincial variation, age-standardized hysterectomy rates were significantly higher (46%) for women living in rural areas (464 per 100,000) than for women living in urban areas (318 per 100,000).⁴⁴ This disparity may be due to women living in urban areas having greater access to other outpatient treatment options.^{44, 50}

Where clinical practice does not appear to align with evidence-based guidelines, questions of appropriateness come into play.¹¹ The analysis above found significant jurisdictional variation in hysterectomy rates after differences in the patient population were taken into account. While some of the remaining rate variation was explained by where women live, urban and rural residence did not explain all variation. Current guidelines do not provide a benchmark for hysterectomy rates to be evaluated against; however, the rate variation itself may suggest overuse in some jurisdictions and underuse in others.

Figure 7

Reductions in C-Sections and Estimated Cost Savings if All Provinces Achieved Manitoba's C-Section Rate of 14% of All Deliveries in 2008–2009



Notes

Cost estimates are based on typical deliveries and Cost per Weighted Case, which excludes physician compensation. They represent savings where vaginal deliveries with no other interventions were performed instead of C-sections. The estimate for Quebec is calculated using the national average Resource Intensity Weight and the national Cost per Weighted Case. Estimates for the territories are excluded due to small numbers. The estimate for Canada excludes the territories. Analyses are based on patients' residences and not on the facility where they were treated.

Sources

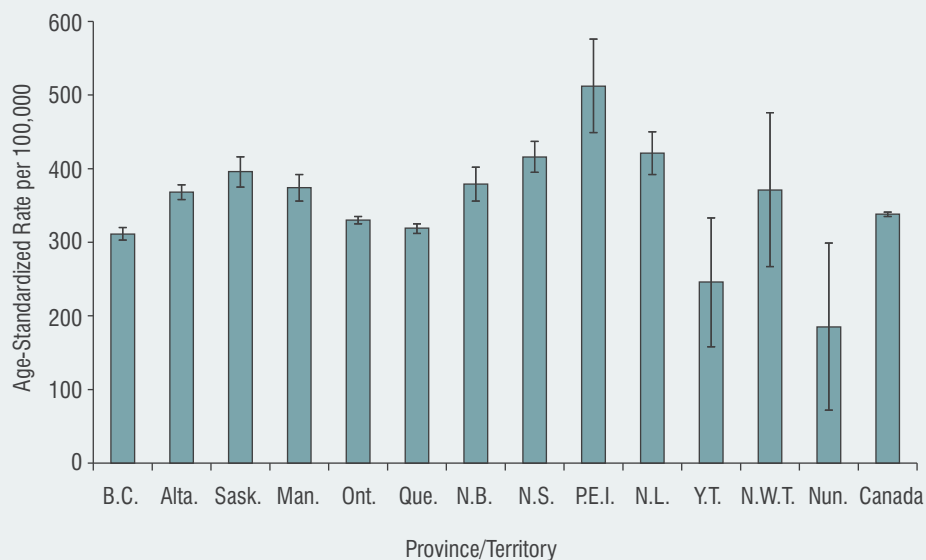
Canadian MIS Database and Discharge Abstract Database, 2008–2009, 2010 CMG+ Grouping Methodology, Canadian Institute for Health Information.

While not setting benchmarks, the current guidelines do provide recommendations of how to best treat gynecological conditions, with hysterectomy being one of the options for some conditions. Hysterectomies can be performed vaginally, laparoscopically or abdominally.⁴⁸ Current guidelines recommend vaginal hysterectomy for non-cancerous gynecological conditions, with laparoscopic hysterectomy as the alternative when vaginal hysterectomy is not possible.^{45, 48} Abdominal hysterectomy is recommended only when the uterus cannot be removed by either of the other methods,⁴⁸ as it is generally more invasive and results in more recovery time and longer hospital stays.⁵¹ Despite the risks, resource implications associated with longer lengths of stay and guideline recommendations, abdominal hysterectomy remains the predominate approach used for both cancerous and non-cancerous gynecological conditions.^{13, 52}

In 2008–2009, the majority (54%) of hysterectomies performed for non-cancerous gynecological conditions were abdominal, compared to 32% and 13% performed using vaginal and laparoscopic approaches, respectively. This pattern persisted across all jurisdictions except the Northwest Territories. Some research has been carried out to try to understand why, in light of the recommendations favouring vaginal hysterectomy, most are still carried out abdominally. Researchers have suggested that the predominant and continued use of abdominal hysterectomies may be more influenced by surgeon training, experience and familiarity with the procedure than by patient characteristics or established and evolving clinical practice guidelines.^{13, 53}

Figure 8

Age-Standardized Hysterectomy Rates by Province and Territory, Canada, 2008–2009



Note

Hysterectomy rates include both complete and partial hysterectomies. Analyses are based on patients' residences and not on the facility where they were treated.

Sources

Discharge Abstract Database and National Ambulatory Care Reporting System, 2008–2009, Canadian Institute for Health Information; Alberta Ambulatory Care Database, 2008–2009, Alberta Health and Wellness; Fichier des hospitalisations MED-ÉCHO, 2008–2009, ministère de la Santé et des Services sociaux.

Impact on the System

Researchers have maintained that some hysterectomies are inappropriate⁵⁴ and, in some cases, that too many hysterectomies are carried out overall. This is particularly true for hysterectomy as a first line of treatment where the indication is considered discretionary (that is, for treating conditions that are neither pre-cancerous nor cancerous).⁵⁵ Strategies to reduce hysterectomy rates have been suggested. Based on physician interviews and expert panel discussions, these include

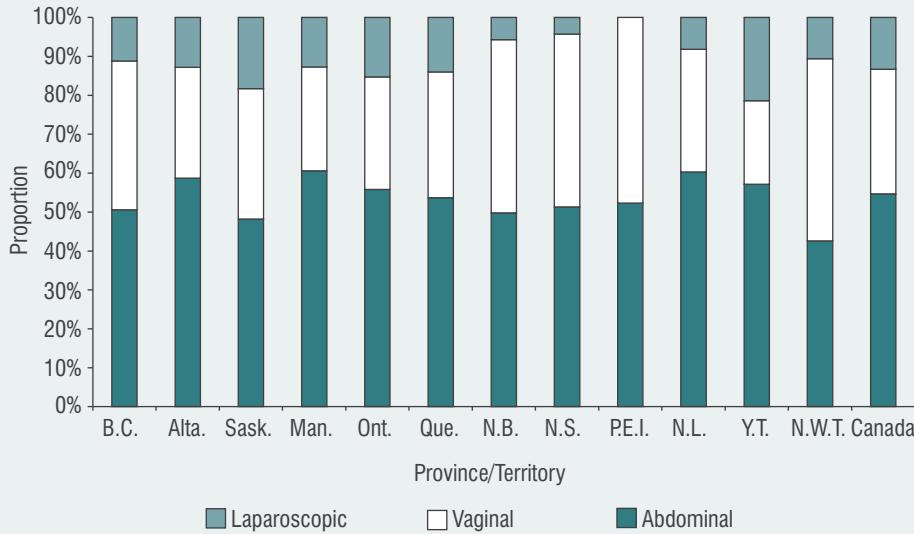
- Increased medical management of the patient before considering surgery;
- Additional professional education about new techniques (laparoscopy) and surgical alternatives to hysterectomy (endometrial ablation);
- Improved patient education about treatment options and access to current medical and surgical therapy; and
- Implementing regular quality assurance checks, such as internal and external chart review, with feedback on appropriateness of practice.⁵⁵

In 2008–2009, the total costs for hospitalizations for hysterectomy were estimated to be \$192 million.^{vii} Understanding what rate reduction is possible and quantifying the impact is challenging. One approach is to look at what has already been achieved in one jurisdiction and consider the difference—in cost and in number of procedures—if all jurisdictions achieved the same rate.

vii. The estimate is based on the average cost for typical inpatient and outpatient hysterectomy cases and excludes the territories. Typical cases made up 96% of all hysterectomy cases in 2008–2009.

Figure 9

Proportion of Hysterectomies for Non-Cancerous Conditions by Surgical Approach, by Province and Territory, Canada, 2008–2009



Notes

Nunavut was excluded due to small cell counts. Hysterectomy rates include both total and partial hysterectomies. Analyses are based on patients' residences and not on the facility where they were treated.

Sources

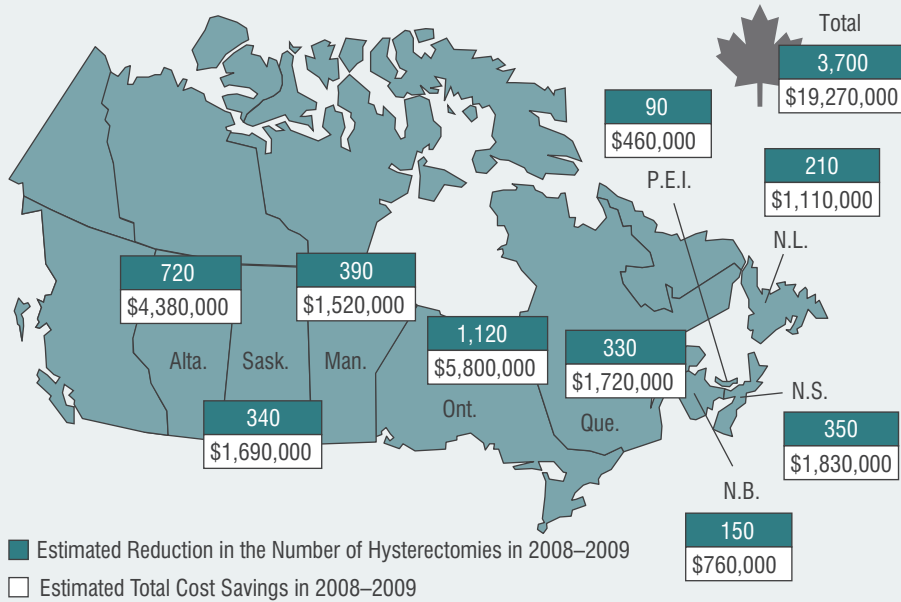
Discharge Abstract Database and National Ambulatory Care Reporting System, Canadian Institute for Health Information; Alberta Ambulatory Care Database, Alberta Health and Wellness; Fichier des hospitalisations MED-ÉCHO, ministère de la Santé et des Services sociaux.

Despite the significant decline in the overall hysterectomy rate in Canada between 2000–2001 and 2006–2007 (22%),¹³ there remains considerable variation across the country. British Columbia had the lowest hysterectomy rate among all the provinces. Using British Columbia's rate as an example and applying it to other provinces, the potential differences can be estimated. That is, if all Canadian women in 2008–2009 had the same rate of hysterectomy as those living in British Columbia (at a rate of 311 per 100,000 population), there would have been an 11% reduction—about 3,700 cases—in the number of hysterectomies performed nationwide. This would translate into an estimated savings of more than \$19 million in hospitalization costs for hysterectomies across Canada.

This analysis highlights hysterectomy as an area where greater understanding of the jurisdictional variations could lead to care more closely aligned with the evidence. It is important to note that aligning the use of hysterectomy procedures more closely with the clinical practice guidelines may not ultimately save money in procedural costs. Guidelines recommend performing more vaginal or laparoscopic hysterectomies and fewer abdominal hysterectomies.^{45, 48} Laparoscopic surgical procedures are longer operations than abdominal procedures, but they cost about the same.^{48, 51} As well, the comparative costs of vaginal and abdominal surgical procedures are not reported. If, as some researchers have recommended, some hysterectomies are replaced with other care,⁵⁴ the differences above would not represent absolute savings. The alternatives, such as drug therapy or endometrial ablation to manage abnormal uterine bleeding or myomectomy to remove uterine fibroids, each have associated costs. Likely some savings would be achieved in shorter hospital stays and reduced overall patient morbidity.⁴⁸ These are good reasons to work toward ensuring best practices are at the centre of care decisions for all women who are at risk for hysterectomy in Canada.

Figure 10

Reductions in Hysterectomies and Estimated Cost Savings if All Provinces Achieved British Columbia's Age-Standardized Hysterectomy Rate of 311 per 100,000 Population in 2008–2009



Notes

Cost estimates are based on typical inpatient/outpatient cases and Cost per Weighted Case, which excludes physician compensation. The estimate for Quebec is calculated using the national average Resource Intensity Weight and the national Cost per Weighted Case. Estimates for the territories are excluded due to small numbers. The estimate for Canada excludes the territories. Analyses are based on patients' residences and not on the facility where they were treated.

Sources

Canadian MIS Database, Discharge Abstract Database and National Ambulatory Care Reporting System, 2008–2009, 2010 CMG+ and CACS Grouping Methodology, Canadian Institute for Health Information.

In Summary

This chapter explored how specific examples of surgical care aligned with different types of evidence about the appropriateness of their use. In the first two examples—therapeutic knee arthroscopies for osteoarthritis and vertebroplasty for vertebral fracture—despite the results of research studies suggesting these procedures have limited clinical effectiveness, hospitalization data from across Canada showed that they continue to be performed. Next, in the absence of agreed-upon benchmarks for rates of the two most common surgical procedures for women, achieved rates in one jurisdiction were used to estimate potential overall savings for others. Discussion of these rate variations also suggested that underlying differences in how care is provided may affect patient outcomes and system efficiencies.

Knowing the costs and the impact on patients, efficient health care systems continue to look for opportunities to reduce the number of ineffective interventions, for example, by shifting to more effective but similar procedures when the evidence suggests this is appropriate. These types of shifts likely result not only in cost savings, but also—and perhaps more importantly—in more appropriate care for patients.

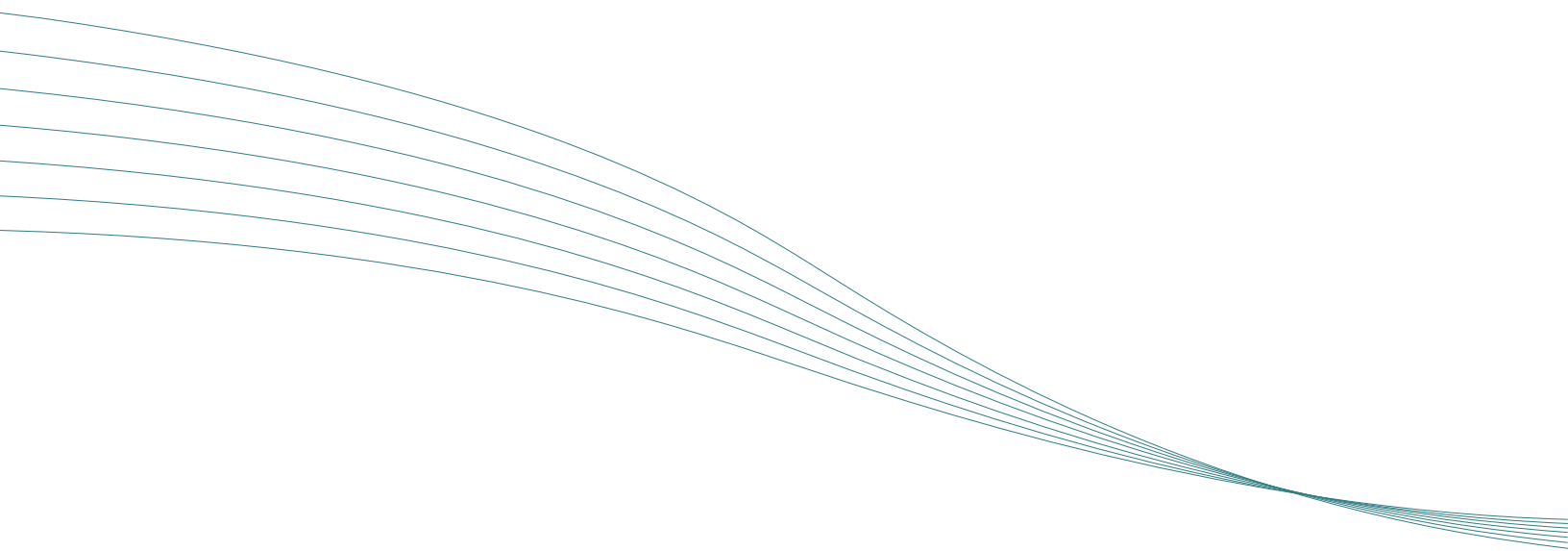
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Chapter 3
Provided Care Is Not Always Appropriate Care

Introduction

By definition, appropriate care is about providing the right care, to the right person, in the right setting, at the right time. Sometimes, as highlighted in the last chapter, providing appropriate care will mean doing less. At other times, as highlighted in this chapter, it means doing more or doing the same but in a different care setting.

The following discussion looks at three examples—avoidable hospital admissions, preventive care and monitoring for those with diabetes and unnecessary acute care hospital stays. For all three, the right care is known, but for a variety of reasons patients are not getting the best care possible.

Avoidable Hospital Admissions

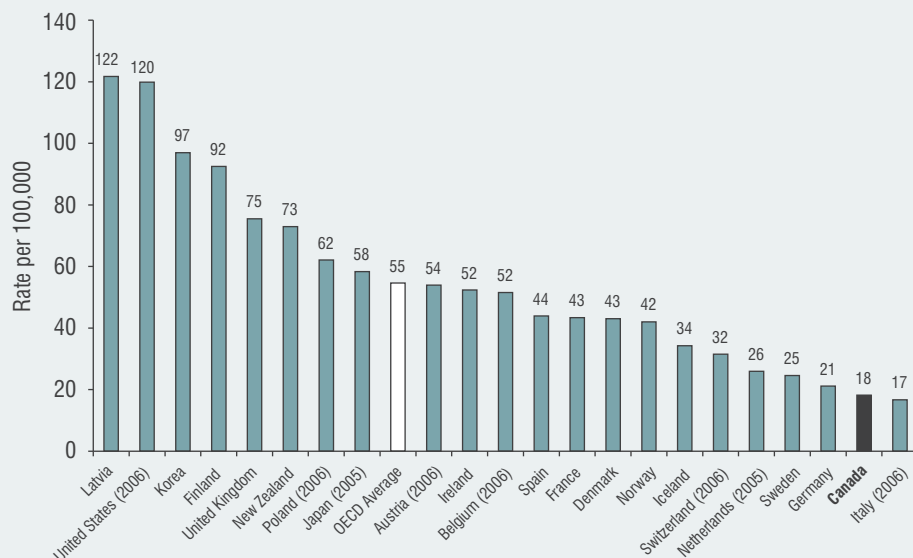
As defined by the World Health Organization, chronic diseases are of long duration and slow progression.¹ Many people cope every day with lifelong conditions such as asthma, diabetes, epilepsy and heart disease. Complications associated with these chronic conditions can potentially be prevented by managing symptoms through regular monitoring, drug therapies, healthy lifestyles and regular visits with primary care providers. These conditions are sometimes labelled ambulatory care sensitive conditions (ACSCs) because many hospitalizations and complications can be avoided or delayed through appropriate delivery of primary care in the community and specialty clinics.

One common measure of health system performance is the rate of hospitalizations for specific ACSCs. CIHI developed an ACSC indicator and has reported on it for many years. The composite CIHI measure includes several chronic conditions: angina, asthma, chronic obstructive pulmonary disease, diabetes, epilepsy, heart failure and pulmonary edema, and hypertension. Since 2001–2002, health system performance based on this measure has been improving. In fact, the hospitalization rate for ACSCs in Canada decreased by 30%, from 459 per 100,000 population to 320 per 100,000, between 2001–2002 and 2008–2009.²

Canada is not the only country to use hospitalizations for ACSCs as a measure of health system performance. The Organisation for Economic Co-operation and Development (OECD) publishes international comparisons on avoidable hospital admissions for condition-specific ACSCs, including asthma, congestive heart failure and diabetes.

Figure 11

Asthma Hospital Admission Rates, Age 15 and Older, 2007



Notes

Data does not fully exclude day cases. Data includes transfers from other hospitals and/or other units within the same hospitals, which marginally elevates the rates.

Canadian data does not include Quebec.

The total rates were age–sex standardized to the 2005 population.

Source

OECD Health Care Quality Indicators Database, 2009, Organisation for Economic Co-operation and Development.

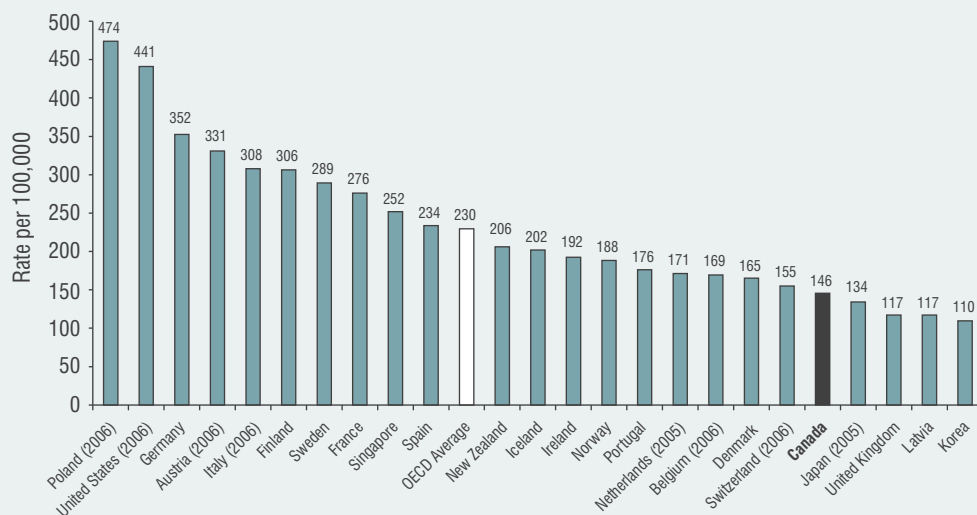
Compared to other countries, Canadaⁱ has one of the lowest rates of asthma admissions (18 per 100,000 population), well below the OECD average (55 per 100,000 population) and second only to Italy (17 per 100,000). Canada also is doing comparatively well with rates of hospitalization for congestive heart failure (146 per 100,000 population), again below the OECD average (230 per 100,000 population) and just behind Korea, the U.K. and Japan (with 110, 117 and 134 per 100,000, respectively).

Canada has done well compared to other OECD countries for some avoidable hospitalization measures. This suggests that primary care providers are appropriately managing a variety of chronic ACSCs within the community and that hospital admissions are being avoided.

Canada does not fare equally well for all chronic conditions. Hospitalizations per 100,000 for diabetes in Canada, for example, are above the OECD average (23 versus 21 per 100,000, respectively). The good news is that appropriate care for Canadians with diabetes is clearly articulated in clinical practice guidelines. The not-so-good news is that a notable gap exists between expert, evidence-based recommendations for diabetes prevention and care and the care Canadians living with diabetes report receiving.

i. OECD results for Canada do not include Quebec.

Figure 12 Heart Failure Hospital Admission Rates, Age 15 and Older, 2007



Notes

Data does not fully exclude day cases. Data includes transfers from other hospitals and/or other units within the same hospitals, which marginally elevates the rates. Canadian data does not include Quebec.

The total rates were age–sex standardized to the 2005 population.

Source

OECD Health Care Quality Indicators Database, 2009, Organisation for Economic Co-operation and Development.

Preventive Care for Diabetes in Canada

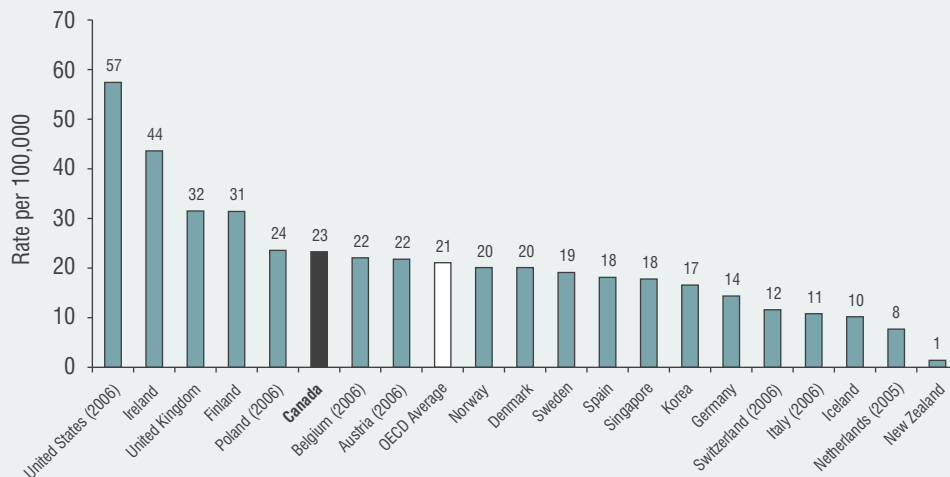
Diabetes is a serious, chronic condition that affects the body’s ability to produce or effectively use insulin.^{3,4} More than two million Canadians have diabetes, with thousands of new cases diagnosed each year.⁴ If not managed, diabetes can lead to disabling and life-threatening complications.^{3,5,6} For example, diabetes is the single largest cause of blindness in Canada and is a leading cause of kidney failure, lower limb amputations and cardiovascular complications such as heart disease.⁷

When compared to people who do not have diabetes, adults with diabetes are more likely to be admitted to hospital for serious, sometimes life-threatening, complications and conditions:

- Four times more likely for heart failure;
- Six times more likely for chronic kidney disease;
- Three times more likely for stroke; and
- Nineteen times more likely for lower limb amputations.⁴

Once hospitalized, adults with diabetes also tend to have longer lengths of stay.⁴

Figure 13 Diabetes Hospital Admission Rates, Age 15 and Older, 2007



Notes

Data does not fully exclude day cases. Data includes transfers from other hospitals and/or other units within the same hospitals, which marginally elevates the rates. Canadian data does not include Quebec.

The total rates were age–sex standardized to the 2005 population.

Source

OECD Health Care Quality Indicators Database, 2009, Organisation for Economic Co-operation and Development.

Recommended Care for Diabetes

Originally published in 1998, the Canadian evidence-based clinical practice guidelines for the management of diabetes recommend a variety of tests and exams to help protect the health of people with diabetes. Recommendations for preventive measures were introduced in the 2003 guideline update. They were updated again in 2008. In addition to generally guiding diabetes prevention and care, the 2008 guidelines recommend annual and biannual testing, including

- Annual (if not more frequent) hemoglobin A1c (HbA1c) tests to monitor control of blood glucose;
- Annual urine tests to monitor protein levels;
- A dilated eye exam every two years to monitor changes in the retinas' blood vessels; and
- An annual foot exam for sores or irritation by a health care professional.⁹

Despite the availability of these guidelines, only 32% of adult diabetics who responded to the Canadian Community Health Survey in 2007 reported receiving all four tests from a health care professional.¹⁰ A higher percentage reported receiving at least one. Four out of five (81%) reported receiving at least one hemoglobin test. Three-quarters (74%) reported receiving a urine protein test. Two-thirds (66%) reported having a dilated eye exam in the previous two years, and half (51%) reported having had their feet checked.

Type I and Type II Diabetes

There are two main types of diabetes. In **type I diabetes**, the pancreas is unable to produce insulin—a hormone used to regulate glucose (sugar) levels in the blood and body's cells. Sometimes called juvenile diabetes, type I is typically diagnosed among children and adolescents and accounts for approximately 10% of people with diabetes. In **type II diabetes**, the pancreas produces an insufficient amount of insulin or the body is unable to effectively use the insulin it produces. Sometimes called adult-onset diabetes, it usually occurs in adults age 40 and older and represents about 90% of people with diabetes.^{3, 8}

Type II diabetes can be prevented in some cases by making lifestyle changes, including engaging in regular physical activity, eating a well-balanced diet and maintaining a healthy body weight.⁸ Treatment for both types of diabetes may include drug therapy, insulin injections and lifestyle management.³

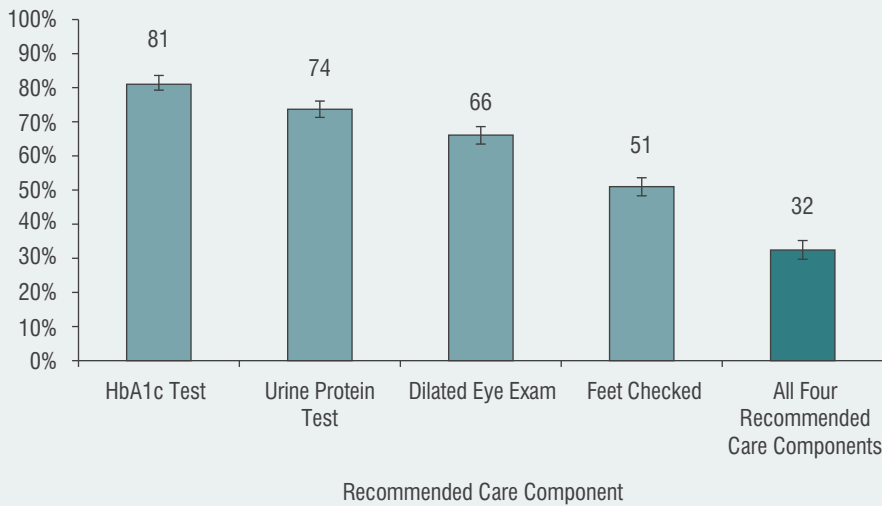
Some diabetic patients were more likely than others to receive all four of the tests. Those who used insulin—mostly type I diabetics—were more likely to receive all the recommended tests than those who did not use insulin (50% versus 28%).¹⁰ Income level was also a factor. More patients with comparatively higher household incomes reported they received all the recommended tests than those with lower incomes. Forty-two percent of those earning \$60,000 or more annually reported receiving all of the recommended tests in the last year, compared to 32% of those earning \$20,000 to \$59,999.¹⁰ Of those earning less than \$20,000, only 21% received all the recommended tests in the previous year.

Impact on the System

Health care expenditures for diabetes—including hospitalizations, emergency room visits, costs of visits to health care professionals and costs of diabetes supplies and medication—are increasing.⁶ This is due to increases in the prevalence and incidence of diabetes as well as associated risk factors. It is also because of complications diabetics experience once diagnosed.^{6, 20}

Figure 14

Percentage of Adults 18 and Older With Diabetes Who Received Recommended Care Components, Canada, 2007



Notes

Unknown responses (missing responses, refused to answer or "don't know") were excluded from the analysis. Unknown responses account for less than 5% of responses for each question individually and for about 10% for all recommended care components combined. Age-standardized to the 2007 Canadian population 18 and older with non-gestational diabetes. Excludes gestational diabetes.

Source

Canadian Community Health Survey, 2007, Statistics Canada.

Preventing the onset of diabetes, effectively managing the disease once diagnosed and following recommended care guidelines all contribute to reducing the burden of disease on patients, the health care system and communities.⁹ In a recent study, a 2% annual reduction in new diabetes cases in Canada translated to a 0.5% annual reduction in specialist and doctor visits. In turn, costs of diabetes were estimated to fall by \$1.3 billion annually.⁶ Other researchers have estimated the cost of newly diagnosed diabetes patients and the cost implications of related complications.²⁰ An Ontario study found the average cost per new diabetes patient per year was \$5,104. This compares to \$2,174 per patient per year for the average annual total health care cost for non-diabetic patients in Ontario.²⁰ When costs of complications are compared between new diabetes patients and those without diabetes who experienced the same complications, the additional costs associated with diabetes were \$5,133 for amputations, \$4,117 for nephropathy and \$3,965 for stroke.²⁰

Preventing the onset of diabetes and other chronic conditions is the most effective way to reduce the burden of disease on patients and the health care system. Not all diabetes can be prevented. However, there is good evidence that following the recommended care guidelines would facilitate diabetes management and help reduce associated complications and hospitalizations.

Preventive Care for Diabetes: How Does Canada Compare?

In 2007, the U.S. Centers for Disease Control and Prevention reported that 69% of American diabetics age 18 and older had an annual foot examination and 66% of them had an annual dilated eye exam.^{11, 12} In comparison, 51% of adult diabetics in Canada had their feet checked annually and 66% had a dilated eye exam every two years. While 8 out of 10 Canadian diabetics received one or more hemoglobin tests in the past year, 7 out of 10 of their American counterparts received two or more hemoglobin tests in the same time period.

In the U.K., as of September 2009, more than 96% of adult diabetics age 18 and older were offered eye examinations in the previous year.¹³ In 2008–2009, more than 95% of them had a documented hemoglobin test, a blood pressure test and/or a total cholesterol test.¹³

Despite the presence of clinical practice guidelines that should facilitate the integration of the most current evidence into clinical practice, variation in practice still exists.^{21–23} Several studies have explored the barriers to implementing clinical practice guidelines.^{21, 24} Examples of barriers specific to care providers include

- Degree of clinical skill;²⁵
- Educational barriers;²⁶
- Inadequate reimbursement;²⁷
- Time constraints;²² and
- Disagreement with aspects of the clinical practice guidelines.²⁸

There are also barriers that go beyond individual providers, including patient needs,²⁵ a system considered limited in supporting chronic disease management²⁹ and potential poor adherence by patients to diabetes treatment.^{30, 31}

The current guidelines for diabetes prevention and management recommend a multidisciplinary team approach to effective diabetes care.⁹ This would include primary care physicians, nurses, pharmacists and diabetes educators, among others, who work with the diabetic individual to achieve optimal care. Today, most diabetics still rely solely on their family physician to manage their diabetes care.^{21, 32}

When evidence-based recommendations and the care provided are not aligned, patients and the system are both affected. In Canada there is room to improve care for diabetes patients. Working to remove the barriers to providing high-quality care as per the guidelines is the next step.

Incentive Billing for Diabetes Care Across Canada

Provinces and territories across Canada are working toward a model of community team-based care for chronic diseases such as diabetes. Many have introduced incentive billing for primary care practitioners to support the provision of high-quality chronic disease management.

There are several examples specific to diabetes care, including the following:

- In 2003, **British Columbia** introduced the Full Service Family Practice Condition Payment, which is aimed at supporting high-quality management of congestive heart failure, diabetes and hypertension. Eligible physicians receive an annual payment of \$125 for each patient with diabetes and/or congestive heart failure whose clinical management is consistent with recommendations in the B.C. Clinical Practice Guidelines.¹⁴

continued on next page

The Challenge of Alternate Level of Care

In 2007, Pam, a 78-year-old woman who lived alone, became ill with the flu. She was an independent woman and was usually the one spearheading community initiatives to provide home care for others. But this time, despite trying hard to manage her symptoms, she became severely ill. By the time her neighbours checked in on her, she was so dehydrated she was delusional. After several days in hospital, Pam regained her strength and her mental clarity. She no longer needed the intense care provided by her local acute care hospital. However, Pam had not completely recovered. She was still weak and needed help to wash and cook meals. But she lived alone and none of her family members lived close enough to help. So Pam had to stay in hospital an extra five days, occupying an acute care bed, before arrangements could be made to get her the care she needed at home.

The above story is fictitious, but many Canadians have similar experiences every day. In defining appropriate care, researchers have described it as a partnership between patients and providers, wherein the right care is provided in “the right place, at the right time, to the right person, in the most efficacious way possible.”³³ As discussed in the previous section, for Canadians living with diabetes, the right care is not always being provided at the right time. Pam’s story illustrates that at other times the place is not right. Sometimes people need non-acute care, outside of hospitals, but are unable to access it when needed. When this happens, patients remain in hospital for longer than may be medically necessary. Hospitals call these stays alternate level of care (ALC) stays.

- In 2006, **Ontario** introduced the Diabetes Management Incentive, which is a \$60 per patient annual payment available to eligible physicians for coordinating, providing and documenting all required elements of care for enrolled diabetic patients.¹⁵ According to the Ontario Medical Association, \$11.7 million in incentives was paid to about 3,900 physicians who followed diabetes management protocols.¹⁶ Ontario is currently building a diabetes patient registry that will result in faster diagnoses and treatment and improved management for Ontarians living with diabetes.¹⁷
- **Manitoba's** Quality Based Incentive Funding provides funding to clinics for meeting quality targets on selected clinical process indicators. One indicator related to management of diabetes is the percentage of diabetic patients who have had an HbA1c test in the last 12 months.¹⁸

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In 2006, CIHI published a first attempt to quantify bed days in Canadian hospitals that were designated ALC. At that time, comparable data was not readily available for all jurisdictions. In 2010, these patients can be better described. Further, the impact of patients remaining in hospital when not medically necessary can be better determined.

Impact on the System

In 2008–2009, there were more than 92,000 hospitalizations and more than 2.4 million hospital days involving ALC stays in Canada. This represents 5% of all hospitalizations and 13% of all hospital days. In addition, a significant number of these cases involved long stays. In 2008–2009, 62% of ALC patients had stays of more than a week, and 24% stayed more than a month in ALC. Five percent of ALC patients stayed more than 100 days. On any given day, ALC patients occupy the equivalent of approximately 7,550 beds in acute care hospitals across Canada.

ALC days in acute care facilities often have a domino effect on the health care system. Because beds being used for ALC patients are not available for patients needing to be admitted from emergency departments, this may result in prolonged wait times for in-hospital admissions.³⁴ There is growing concern that over time there are more ALC stays, and these are increasingly affecting the ability of hospitals to provide services to those requiring hospital-based care.^{35–37}

- Starting in April 2010, eligible family physicians in **New Brunswick** are paid a base incentive (about \$84 per patient) annually for providing guideline-based care to diabetic patients. The provincial chronic disease management incentive program has funding of \$1.5 million and \$2.0 million for 2010–2011 and 2011–2012, respectively, and will initially target diabetes.
- In 2005, the **Saskatchewan** Health Quality Council launched the first Chronic Disease Management Collaborative, which aims to improve access to family physicians and care and health of people living with diabetes and/or coronary artery disease. Participation of physicians is encouraged, as eligible physicians can receive a payment of \$60 or more (if patients have multiple chronic conditions) per patient visit each quarter.¹⁹

Similar financial assistance programs exist, are being established or are under consideration in other jurisdictions such as **Nova Scotia**, the **Yukon** and **Alberta**. To date, however, there is no indication that **Quebec**, **Newfoundland and Labrador** and **P.E.I.** are pursuing such models.

For those provinces where data was comparable, in 2008–2009, Saskatchewan and Quebec had the lowest ALC rates (2%). Ontario and Newfoundland and Labrador had the highest, with almost 7% of hospitalizations in those provinces involving ALC stays. Differences in ALC rates across the provinces may be partially due to ongoing differences in how ALC days are defined and captured. They may also reflect differences in funding, the availability of long-term care beds and community care in different jurisdictions, or differences in targeted strategies to minimize unnecessary hospital stays.³⁸

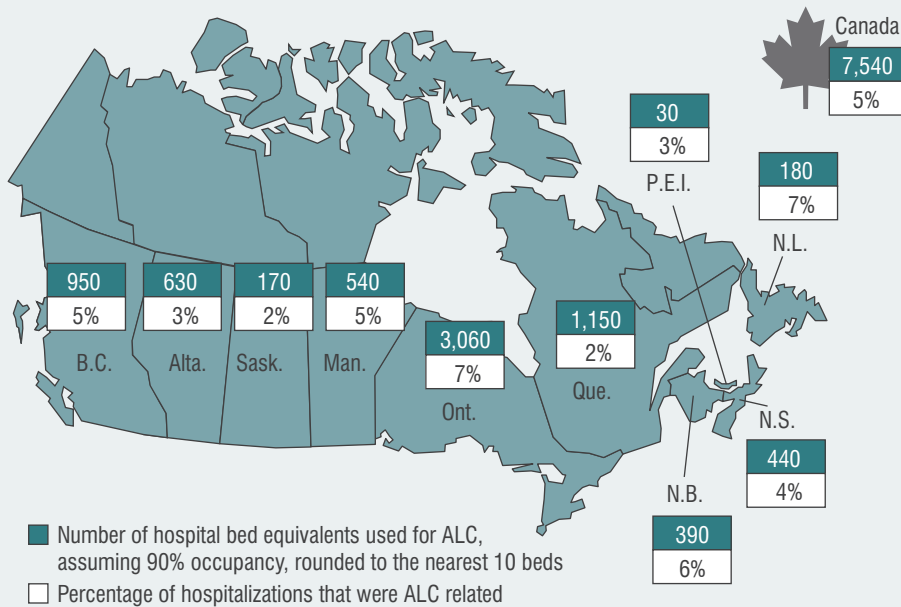
ALC Patients Awaiting Discharge

In 2008–2009, the main discharge destination of ALC patients was a long-term care facility (46%). More than one in four (26%) ALC patients were discharged home and 12% died in hospital. The majority of ALC patientsⁱⁱ who died in hospital were waiting for either palliative care (46%) or admission to another facility (43%).

The above speaks to ALC patients' destinations after leaving the hospital. But why was some portion of their total stay designated ALC to begin with? The most common reason patients were designated ALC was waiting for admission to another facility. This was the case for 64% of ALC patients. Of the 64% who were waiting for placement, 16% were ultimately discharged home. Others were initially designated ALC because they were waiting for convalescence care (11%) or palliative care (9%) or because needed medical services—such as chemotherapy—could not be provided in their homes (5%).^{38–40}

ii. This and the remaining ALC analyses exclude Quebec due to differences in data reporting.

Figure 15 Scope of Alternate Level of Care by Province, Canada, 2008–2009



Notes

ALC may be defined and recorded differently in different provinces. Excludes abstracts from obstetric and pediatric patients. Canada data excludes the territories.

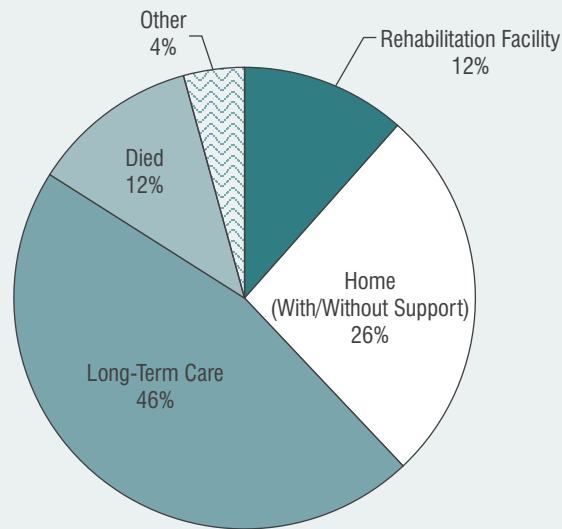
Source

Discharge Abstract Database and Hospital Morbidity Database, 2008–2009, Canadian Institute for Health Information.

Most patients are classified as ALC at the end of their hospital stay. However, in 2008–2009, 8% of ALC patients were admitted to acute care as ALC. These patients accounted for almost 11% of all ALC days. The most common reasons for patients to be designated ALC upon admission were waiting for palliative care (34%), admission to another adequate facility (27%) or physical therapy (11%).

ALC stays are not limited to acute care settings. According to a recent report on ALC stays in Ontario’s Greater Toronto Area, ALC patients are occupying up to 4% of rehabilitation beds and close to 15% of complex continuing care beds used for a specific type of rehabilitation, called low-tolerance long-duration.⁴¹

Figure 16 Discharge Destinations for ALC Patients, Canada, 2008–2009



Note

Excludes abstracts from obstetric and pediatric patients.

Sources

Discharge Abstract Database and Hospital Morbidity Database, 2008–2009, Canadian Institute for Health Information.

Recognizing the significant impact of ALC on delivery and quality of patient care, some jurisdictions have taken action to try to address the issue of ACL stays. For example, the Ontario Ministry of Health and Long-Term Care established several strategies over the years to reduce pressure related to prolonged waits. Initiatives such as the Wait Times Strategy, Emergency Room Strategy, Critical Care Strategy and Aging at Home Strategy among others were introduced. While each addresses different components of the continuum of care individually, combined these initiatives target improved access to care, the efficiency of delivering care and the appropriate setting for care.

The challenge of ALC stays is about addressing questions of availability of services, access and equity, and patient and family preferences. It is also about maximizing care settings. Replacing ALC patients with those requiring higher levels of care in hospital, for example, will likely increase, not decrease, costs. However, it will also ensure that patients not in need of acute care are receiving the care they do need and that those needing acute care have beds available.

Ontario's Strategies to Combat ALC Problems

On August 31, 2010, the Ontario Ministry of Health and Long-Term Care announced \$330.6 million in funding to expand the Aging at Home Strategy. Initially launched in August 2007, the Aging at Home Strategy is a four-year, \$1.1 billion program aimed at providing support to seniors to continue living independently in their homes. The strategy is also designed to reduce number of ALC patients by

- Increasing community beds to help patient transitions;
- Ensuring high-quality care delivered both inside and outside the hospital to avoid unnecessary readmissions;
- Enhancing home care; and
- Providing nursing outreach teams for high-risk seniors living in long-term care homes and in the community.⁴²

In Summary

This chapter asked questions about appropriateness of care by examining instances where the right care and right place were called into question. In comparison to other developed countries, Canadians are hospitalized less often for some ambulatory care sensitive conditions, including heart failure and asthma. Not so, however, for diabetes. Canadian diabetics are hospitalized more often than those living in other countries. The data in this chapter points to significant gaps between recommended care and the care Canadians living with diabetes report getting. The data on ALC stays is also about providing appropriate levels of care but focuses on how care is organized rather than the number of tests being done. In both cases, the evidence shows there is room for improvement, as some care is not optimized and some patients are not getting what they need where they need it.

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Chapter 4
Substantial Improvement in Care:
The Way Forward

Introduction

When Canadians are asked how satisfied they are with the care they receive, an overwhelming majority inevitably say “very.”¹⁻³ Despite this, Part 2 of *Health Care in Canada 2010* highlighted areas where clear opportunities exist to improve the care provided by better aligning it with the evidence. Reduce the number of ineffective surgical procedures. Ask questions about appropriateness of care when rates of procedures vary two- and threefold across the country. Ensure patients get the services recommended by care guidelines to improve their outcomes and reduce demands on the health care system. When hospital care is not required, investigate how care can be better organized to minimize unnecessary hospital stays.

It is difficult to fully quantify savings related to these measures or to know directly whether they will reduce overall health care costs. It is harder to argue that patient outcomes would not be improved. The way forward is about improving care in the future. More specifically, it is about learning from examples where focus, attention and data have all contributed to improving care, improving patient outcomes and, in turn, reducing demands on the health care system. The examples highlighted in this section relate to cardiac care in Canada and updated results from CIHI’s hospital standardized mortality ratio (HSMR).

Heart Disease and Heart Health in Canada

The most common form of heart disease is coronary artery disease.⁴ Coronary artery disease occurs when blood flow to the heart tissue is interrupted by blockage in the coronary arteries. This blockage in the heart’s arteries either fully or partially deprives it of oxygen. This in turn can cause chest pain—called angina—or, in more severe cases, acute myocardial infarction (AMI), also called heart attack.⁴

Outcomes for patients with coronary artery disease are improving. Targeted efforts by researchers and health care providers—networks such as the Cardiac Care Network, the Heart and Stroke Foundation and others—have all contributed to improving our understanding of the factors that influence cardiac health. This knowledge leads to efficiencies in how cardiac care is delivered, such as centralizing treatment, refining surgical procedures and moving to less invasive procedures or drug therapies when warranted and indicated. Over the past 40 years, mortality rates for coronary artery disease have decreased, and the disease has dropped from the leading cause of death to the second leading cause in Canada, behind deaths due to all types of cancers.^{5,6} Coronary artery disease hospitalizations and in-hospital deaths from heart attack, as well as heart attack readmissions, continue to decline in Canada, despite recent evidence of rising rates of risk factors such as obesity, diabetes and high blood pressure.^{6,7}

The Early Impacts of Smoking Bans

Many of the risk factors for heart disease such as obesity, diabetes and hypertension continue to increase. The good news is that rates of cigarette smoking are decreasing while physical activity and consumption of fruits and vegetables are increasing.^{6,7} Campaigns urging smokers to quit and laws restricting where people can smoke represent true success in dealing with a key risk factor for cardiovascular diseases.

Within the last decade, all provinces and territories in Canada have enacted legislation banning smoking in public spaces, with some variation in what constitutes a public space.⁸ For example, ventilated smoking rooms are permitted in some jurisdictions. In others, smoking is not allowed even in private vehicles when children are present.⁸ Overall, these laws, along with their substantial fines and other consequences, have severely restricted smokers' options.

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Hospitalizations for Cardiac Care

Over the four-year period examined, hospitalizations for new heart attacks declined in Canada. In 2004–2005, the age-adjusted rate was 239 per 100,000 population age 20 and older. In 2008–2009, the rate dropped to 217 per 100,000. However, not all jurisdictions saw similar declines. While the rate declined in Ontario and Alberta, for example, it remained on the rise in Newfoundland and Labrador.

Hospitalizations for angina—a less severe form of coronary artery disease—have followed suit. That is, rates have declined in almost all jurisdictions over the same four-year period, meaning fewer Canadians were hospitalized with angina. This could be due to increased prevention and outpatient treatment in the community, among other factors. In absolute terms, declines in angina hospitalizations are greater than the declines in AMI hospitalizations. But as with heart attacks, regional variations persist.

In addition to the direct health benefits of reduced smoking, banning smoking in public places appears to have contributed to declining rates of hospitalization for cardiovascular diseases. Reductions in emergency department visits, hospital admissions and even deaths from AMI after public smoking was banned have been noted. For example, a recent study following Toronto, Ontario's, 2001 ban on smoking in public spaces found a 17% decrease in AMI hospitalization rates and a 39% decrease in hospital admissions due to cardiovascular conditions.⁹ These decreases were significant when compared to those found in other cities without smoking bans or restrictions. Meta-studies that combined findings from different studies around the globe also recorded reductions of 17% to 19% in AMI hospital admissions associated with smoking restriction laws.^{10, 11}

The impacts on heart health go beyond personal choices to smoke. Evidence suggests that second-hand smoking also increases the risk of AMI, as well as other cardiovascular conditions.^{12, 13} Despite obvious successes, smoking remains an important risk factor for cardiovascular disease.¹⁴ Sustained efforts to reduce smoking are no doubt needed to maintain these successes into the future.¹⁵

Outcomes of Care for Heart Attack

CIHI data can be used to measure two outcomes of care for AMI patients: 30-day in-hospital mortality and unplanned readmissions.ⁱ The importance of mortality as an outcome measure is perhaps more immediately obvious. Unplanned readmissions for AMI patients speak to the management of cases prior to discharge and the follow-up care received afterward.^{18, 19} Readmissions are not only preventable in some cases, they are also costly in their impact on the system and on patients.¹⁹

Thirty-day AMI in-hospital mortality rates in Canada dropped, from 10% to 9% from 2003–2004 to 2007–2008. Annual unplanned AMI readmission rates also made a drop, from 7% to 5%. As seen with hospitalizations, there remains room for improvement in both mortality and readmission outcome measures when comparing the different jurisdictions.

Prince Edward Island, for example, had 30-day AMI in-hospital mortality rates of 9.8%, compared to 7.3% in Alberta. Heart attack readmission rates are highest in the eastern provinces, at 6% in both Prince Edward Island and Newfoundland and Labrador, and lowest in Alberta at 4% (results pooled for 2006–2007 to 2008–2009).²⁰

The decrease in heart attack mortality rates is not unique to Canada. The U.S., Sweden, the U.K. and Australia have all reported similar trends in the past six years.²¹

i. Readmission to any acute care facility.

Distinguishing Types of Heart Attack

Being able to distinguish specific types of heart attacks is vital to subsequent treatment decisions and patient outcomes.¹⁶ Electrocardiography is the diagnostic test used to classify heart attacks as either ST-segment elevated myocardial infarction (STEMI) or non-ST-segment elevated myocardial infarction (NSTEMI).¹⁶ STEMI cases are more serious, involve full blockage of the coronary artery and require immediate invasive intervention, including PCI or fibrinolytic therapy. In NSTEMI cases, the blockage is only partial and intervention need not be as invasive.^{15, 17}

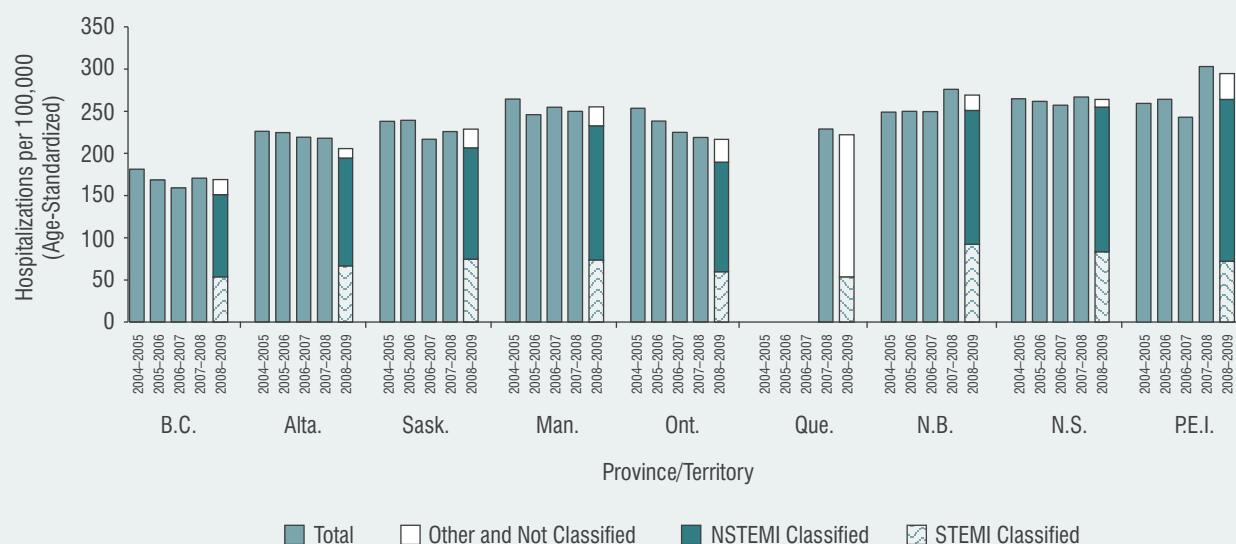
Distinguishing STEMI from NSTEMI cases is one of the steps in assessing the seriousness of AMI. Other diagnostic tests are important in distinguishing AMI from angina.¹⁷

Targeting Appropriate Care to Specific Types of Heart Attack

Overall declines in hospitalizations and in-hospital deaths are the result of many contributing factors. Reduced smoking and improved medical interventions are perhaps the most influential. Drug therapies such as statins, aspirin, angiotensin converting enzyme inhibitors (ACE inhibitors) and beta blockers are being used more intensively to treat risk factors, such as hypertension and hypercholesterolemia.²² The increasing use of diagnostic and revascularization procedures, such as catheterization for diagnosis and percutaneous coronary intervention (PCI) when heart attack is diagnosed, have also contributed to overall declines.²³

As the more serious type of heart attack and according to practice guidelines, STEMI cases require immediate intervention. This could include fibrinolytic therapy and/or revascularization procedures such as PCI or CABG.²⁴ For the less serious NSTEMI cases, guidelines indicate treatment should rely on further risk assessments based on the progression of signs and symptoms.^{16, 17, 25}

Figure 17 AMI Hospitalization Rates, by Province and Territory, Canada, 2004–2005 to 2008–2009



Prior to 2007–2008, it could not reliably be determined from CIHI data which heart attacks in Canada were STEMI and which were NSTEMI. In 2007–2008, changes to the Canadian Coding Standards were made so that these distinctions could be tracked. In 2008–2009, the changes were refined, and now due to improved data capture the ways different types of heart attacks are treated can be investigated.

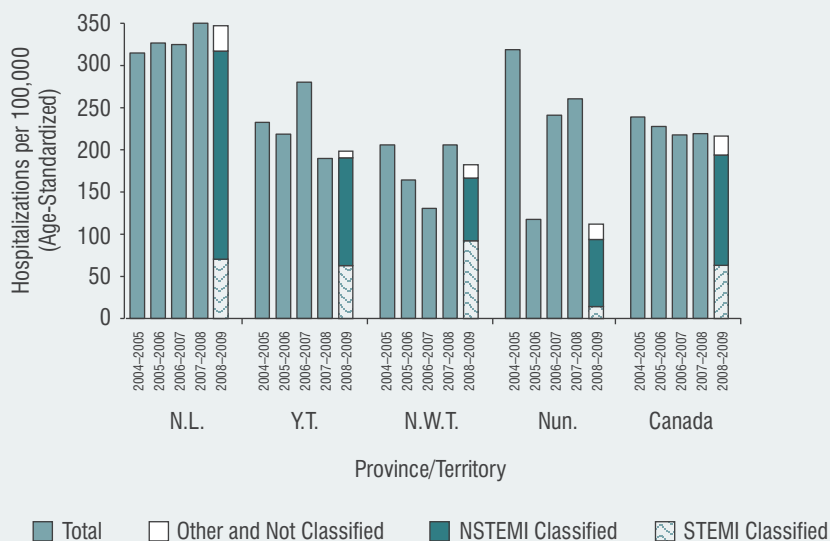
In 2008–2009, approximately one-third of heart attacks in Canada were classified as STEMI. Newfoundland and Labrador had the lowest proportion of STEMI-classified heart attacks (22%) while Saskatchewan had the highest (36%). Patients with heart attacks classified as STEMI had a 68% chance of receiving a revascularization procedure within 30 days, compared to 39% among NSTEMI-classified patients in 2008–2009.

In addition, STEMI-classified patients were about five times more likely than NSTEMI-classified patients to receive a revascularization procedure within 48 hours of being hospitalized. Approximately 46% of STEMI-classified patients, compared to only about 9% of NSTEMI-classified patients, received any revascularization procedure (PCI or CABG) within 48 hours of being hospitalized with a new heart attack in 2008–2009.

Looking at PCI only, STEMI-classified patients were six times more likely to receive PCI within 48 hours than NSTEMI-classified patients in 2008–2009. Researchers who analyzed similar data for Quebec from 1996–1997 to 2006–2007 found rates of PCI in the first 48 hours increased throughout the study period, notwithstanding the finding that PCI rates overall plateaued in 2005–2006.²⁶ This could be due to changes in medical decisions to carry out early PCIs or improvements in wait times.²⁶

Figure 17

AMI Hospitalization Rates, by Province and Territory, Canada, 2004–2005 to 2008–2009 (cont'd)



Notes

Includes all adults age 20 and older. Quebec data before 2007 was not included due to differences in data reporting. Total Canadian estimates do not include Quebec. A coding directive in Quebec that mandates the coding of STEMI-classified cases but allows for optional coding of NSTEMI-classified cases negates full comparison of Quebec to other provinces and territories.

Sources

Discharge Abstract Database, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, ministère de la Santé et des Services sociaux.

This suggests that care for these patients is beginning to align with the evidence, as the care guidelines for treatment of AMI recommend immediate treatment (such as PCI) for STEMI patients.¹⁷

This data reveals new information about heart attack care in Canada by showing differences in treatment with revascularization for STEMI-classified and NSTEMI-classified heart attacks:

- STEMI-classified patients were overall more likely to undergo any type of revascularization within 30 days than those with less severe heart attacks.
- A higher proportion of STEMI-classified patients were treated with PCI versus CABG, compared to those with less severe heart attacks.

The pattern of results also shows some similarities:

- When revascularization was required, PCI was consistently used over CABG to treat both STEMI-classified and NSTEMI-classified cases.
- Among both STEMI-classified and NSTEMI-classified cases, there were differences across jurisdictions in the proportion who underwent either type of revascularization within 30 days.
- Among both STEMI-classified and NSTEMI-classified cases, the differences across jurisdictions in the use of PCI appeared to be greater than the differences across jurisdictions in the use of CABG.

CIHI–CCN Cardiac Care Quality Indicators Pilot Project

CIHI and the Cardiac Care Network of Ontario (CCN) have developed a set of cardiac care quality indicators in consultation with a national cardiac expert panel. The purpose of these comparative performance indicators support cardiac care centres with routine monitoring of their quality of care and foster an environment of quality improvement. Using data from CIHI's Discharge Abstract Database and National Ambulatory Care Reporting System, 14 indicators provide new information to hospitals on outcomes related to select cardiac interventions, including

- Diagnostic cardiac catheterization;
- Percutaneous coronary intervention;
- Isolated coronary artery bypass graft (CABG) surgery;
- Isolated valve surgery; and
- Combined CABG and valve surgery.

Additionally, the indicators provide hospitals with information on outcomes occurring outside of their walls—such as transfers or readmissions to other facilities—for a more complete picture of patient care. Cardiac centres from Ontario and British Columbia participated in this pilot project. For more detailed information, contact us at cardiacquality@cihi.ca.

Indicators of patient outcomes following treatment for STEMI versus NSTEMI heart attacks have yet to be developed. Nevertheless, more is now known about the care and treatment of patients with heart attacks in Canada than only a few years ago. This is good news and a first step on the way forward to learning more about care for STEMI and NSTEMI patients specifically.

Impact on the System

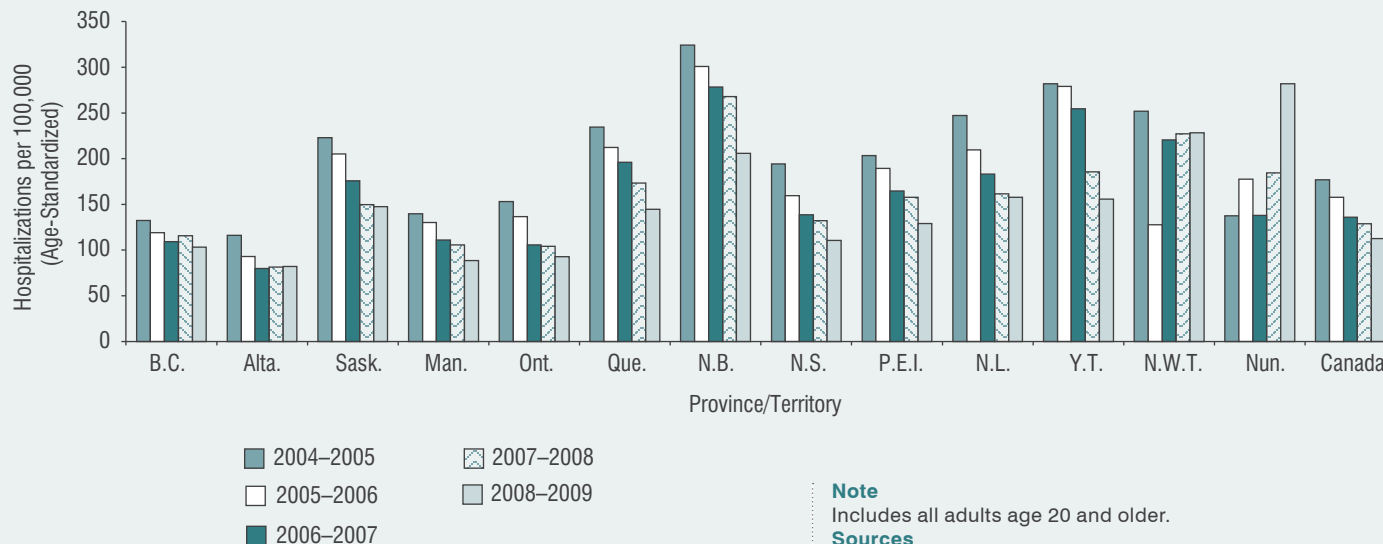
Cardiac care is costly in Canada. Overall hospitalization costs for each heart attack treated nationallyⁱⁱ are approximately \$9,400.ⁱⁱⁱ And the cost of cardiac care is rising. Researchers have suggested that two of the main cost drivers are the increase in the use of both invasive and non-invasive technologies and the proliferation of other cardiac treatments, such as drug-eluting stents.²⁷

The cost of drug therapies is also rising. Between 1996 and 2006, the cost of drug therapies to treat cardiovascular diseases increased by 200% in Canada. Statins, ACE inhibitors and calcium agonists account for most of the expenditure on cardiovascular medications.²⁸ Western provinces and the territories spent less per capita on medications for cardiovascular diseases during this period than did the rest of Canada.²⁸ This may not be surprising given the lower risk of cardiovascular diseases and lower rates of heart attack hospitalizations, in British Columbia in particular. In addition, British Columbians are more likely to be prescribed lower-cost therapeutic alternatives than Canadians in other jurisdictions.²⁹ It also begs the question of what could be achieved if all provinces and territories were to lower their heart attack hospitalization rates to that of British Columbia's. Following, a high-level calculation serves to estimate what that might look like for each jurisdiction.

ii. The estimate does not include Quebec and is based on all heart attack hospitalizations.

iii. All cost data presented in this section is calculated using Cost per Weighted Case, which excludes physician compensation.

Figure 18 Angina Hospitalization Rates, by Province and Territory, Canada, 2004–2005 to 2008–2009



Note
Includes all adults age 20 and older.

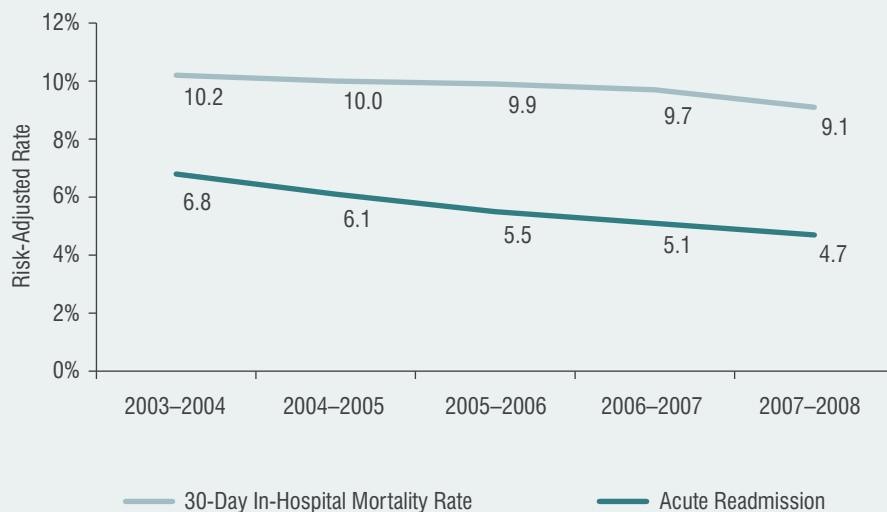
Sources
Discharge Abstract Database, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, ministère de la Santé et des Services sociaux.

British Columbia has the lowest rates of coronary artery disease in the country. People in B.C. also have the healthiest lifestyles. British Columbians smoke less, are more physically active, eat more fruits and vegetables (second only to Quebecers) and have lower obesity rates than people in other provinces and territories.^{7, 30} Their healthy lifestyles contribute to their overall low rates of heart attack hospitalizations. Forty-two percent of the regional variation in coronary artery disease mortality in Canada has been attributed to differences in healthy lifestyle factors.³¹

Reducing heart attack hospitalization rates in other provinces to the level achieved in British Columbia would likely include both health promotion and disease prevention efforts. If achieved, however, the savings to the system for treating heart attacks would be on the order of a 22% reduction—about 15,480 cases—and a savings of approximately \$125 million in hospitalization costs. Savings and reduced hospitalizations would vary depending on the existing rates per jurisdiction.

Such hospitalization reductions would not represent an absolute reduction in costs to the system. Likely some of these savings would be replaced, appropriately so, with other care, which has its own associated costs.

Figure 19 Annual 30-Day AMI In-Hospital Mortality and Unplanned AMI Readmission Rates, Canada, 2003–2004 to 2007–2008



Notes

Readmission: Rates do not include Quebec due to differences in data collection. The rate for 2003–2004 does not include Manitoba due to differences in data collection. To obtain annual results the rates were risk-adjusted using data from 2003–2004 to 2007–2008. The trend is statistically significant ($p < 0.05$). Readmissions are unplanned readmissions for reasons related to the initial AMI episode. Mortality: Rates do not include Quebec due to differences in data collection. To obtain annual results the rates were risk-adjusted using data from 2003–2004 to 2007–2008. The trend is statistically significant ($p < 0.05$).

Sources

Hospital Morbidity Database, Discharge Abstract Database and National Ambulatory Care Reporting System, Canadian Institute for Health Information; Alberta Ambulatory Care Database, Alberta Health and Wellness.

Measuring Quality of Care: The Hospital Standardized Mortality Ratio

The cardiac care example is one illustration of the gains made when multifaceted efforts are put in place targeting improvements in a specific patient outcome. A second example of when focus, attention and data have all contributed to improving care, patient outcomes and, in turn, reducing demands on the health care system is the hospital standardized mortality ratio (HSMR). Improvements over time, inclusion in formal reporting structures and success stories detailing specific changes made in facilities all demonstrate that providing such results can inform continuous improvement efforts in facilities, health regions and ministries of health.

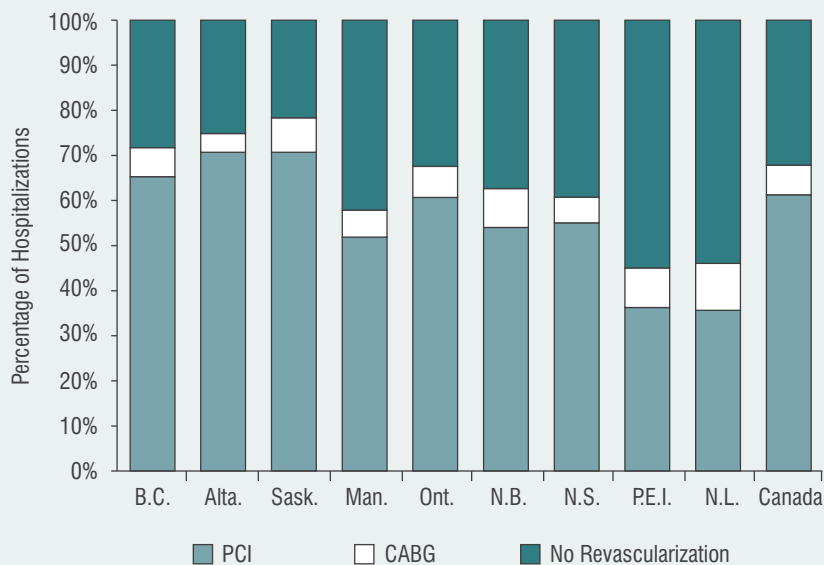
Improving Health System Performance

Researchers have linked health system performance measurement and reporting to resulting improvements in the system. Berwick et al.³² identified two distinct pathways through which quality measurement can lead to improvement in health care settings. The first is called **selection** and the second is called **change**.

Selection improves performance by influencing choices that in turn shift where and by whom care is delivered.³² For example, information on volumes of care for specific interventions can be collected and reported on at the level of facilities or of individual providers. This allows primary care physicians—or individual patients—to select specific facilities or providers with, for example, higher volumes. For interventions where higher volumes are associated with better outcomes, this can result in better outcomes for patients.

Figure 20

Management of STEMI-Classified Hospitalizations by Type of Revascularization Procedure, by Province, Canada, 2008–2009



Notes

Includes all adults age 20 and older, excluding Quebec due to differences in data reporting. Procedures were identified within 30 days after the AMI episode, including those carried out in day surgery institutions. Rates for the territories are not presented due to small numbers. The total Canada estimates include numbers from the territories. The analysis includes those who died; this might have slightly underestimated the real percentages of those who received revascularization. The percentages of those who received revascularization for New Brunswick are slightly underestimated due to the exclusion of patients from New Brunswick who had their procedures done in Quebec.

Sources

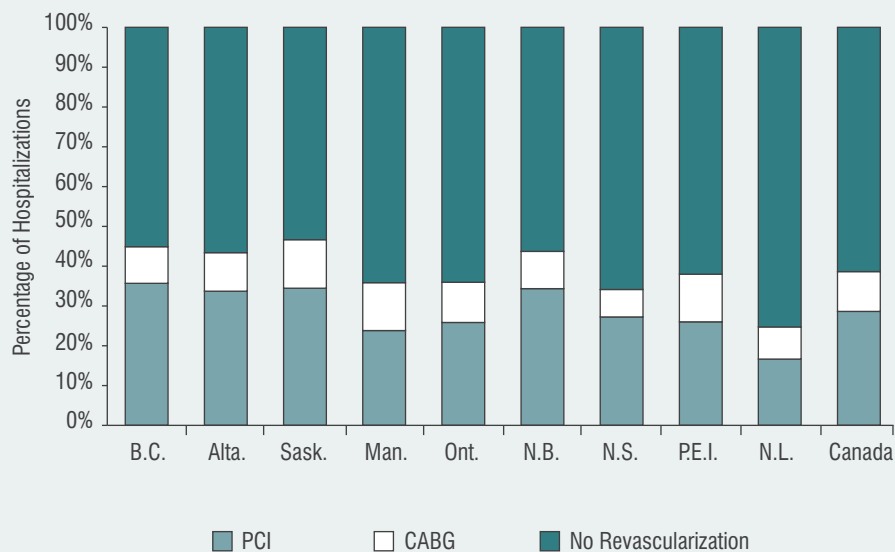
Discharge Abstract Database and National Ambulatory Care Reporting System, Canadian Institute for Health Information; Alberta Ambulatory Care Database, Alberta Health and Wellness.

In contrast, the **change** pathway improves performance by shifting or modifying what or how care is provided.³² For example, after measuring and reporting on nosocomial infections, those sites with poorer performance may investigate to determine why they are doing relatively poorly. If the investigation reveals a hand-hygiene issue, a new hand-washing campaign may be introduced as a targeted response to change practice and reduce the future spread of in-hospital infection.

Often measurement facilitates performance improvements through both pathways at once. CIHI's HSMR is a measure of quality of care that is available not only to the general public, but is also reportable to and by ministries of health and health regions across Canada. As such, it is tempting to view the HSMR as an example of a measure that can lead to quality improvements through selection. Given the HSMR is only one of a number of quality measures, and that it speaks to only a specific aspect of hospital performance, many suggest it is more appropriate to examine the HSMR's impact as a tool of change.

The HSMR is most useful to individual hospitals to track trends over time in their own performance. While the HSMR takes into consideration many of the factors associated with the risk of dying, it is not designed for comparisons between hospitals as it cannot adjust for every factor that may impact mortality.

Figure 21 Management of NSTEMI-Classified Hospitalizations by Type of Revascularization Procedure, by Province, Canada, 2008–2009



Notes

Includes all adults age 20 and older, excluding Quebec due to differences in data reporting. Procedures were identified within 30 days after the AMI episode, including those carried out in day surgery institutions. Rates for the territories are not presented due to small numbers. The total Canada estimates include numbers from the territories. The analysis includes those who died; this might have slightly underestimated the real percentages of those who received revascularization. The percentages of those who received revascularization for New Brunswick are slightly underestimated due to the exclusion of patients from New Brunswick who had their procedures done in Quebec.

Sources

Discharge Abstract Database and National Ambulatory Care Reporting System, Canadian Institute for Health Information; Alberta Ambulatory Care Database, Alberta Health and Wellness.

Improvements in HSMR Over Time

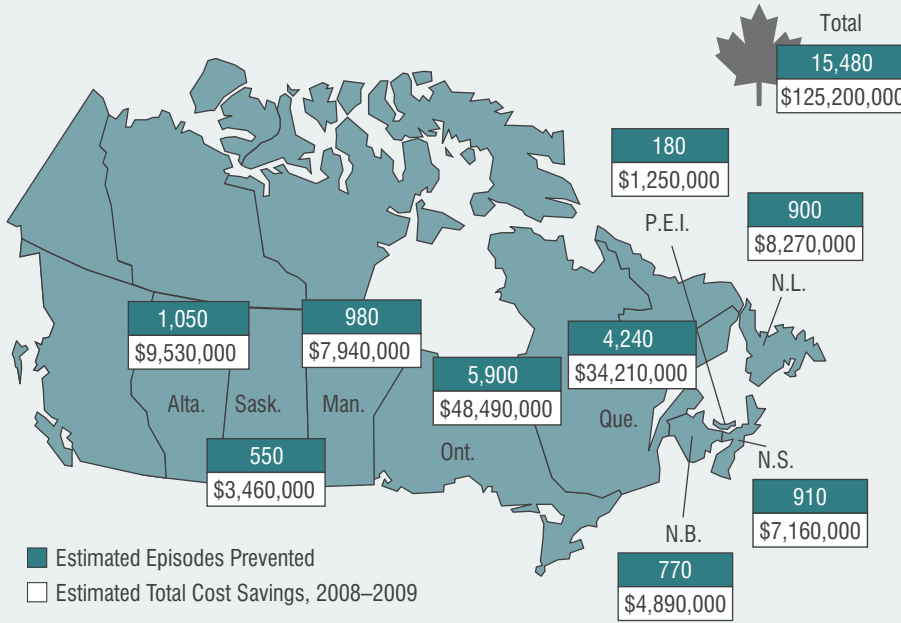
It takes time and sustained effort for system changes to be implemented and to have an effect on hospital mortality. The value of providing HSMR data over time is that it allows organizations to monitor and compare trends. In this way, they can measure the impact on the rate of targeted improvement efforts, including changes to practices, processes and delivery of care.

CIHI has calculated HSMR results using data from 2004–2005 forward. Over time, an increasing proportion of facilities’ HSMRs has significantly decreased compared to the previous year. For the HSMR, a decrease in the measure indicates an improvement in performance. Overall, 40% of publicly reportable facilities significantly decreased their HSMRs when 2009–2010 results are compared with those of 2004–2005.

The HSMR results contribute to performance improvement discussions in facilities, regional health authorities and ministries and departments of health in several ways. In many organizations, quality measures are increasingly top items on board meeting agendas. The HSMR results are regularly included. By design the HSMR is to be used in conjunction with other macro- and micro-level process and outcome measures to help provide a complete perspective on hospital performance. As well, in many provinces the HSMR is one of several measures that are currently part of annual public reporting.

Figure 22

Estimated Reduction in Heart Attack Hospitalization and Cost Savings if All Jurisdictions Had British Columbia's Rate, 2008–2009



Notes

Includes all adults age 20 and older. Estimates for the territories are excluded due to small numbers. The estimate for Canada excludes the territories. Estimates are based on the average cost for hospitalizations for AMI patients who did not receive revascularization procedures. The real savings could be significantly higher if the costs for these procedures were factored into the estimates. All cost data presented in this section is calculated using Cost per Weighted Case, which excludes physician compensation. The estimated cost savings for Quebec were calculated using the national average Resource Intensity Weight and the national Cost per Weighted Case.

Sources

Canadian MIS Database and Discharge Abstract Database, 2008–2009, 2010 CMG+ Grouping Methodology, Canadian Institute for Health Information.

What Do Lower HSMR Results Mean for Patient Care?

Since CIHI started to calculate and publish HSMR results, there have been significant and sustained reductions in HSMRs in many jurisdictions and for many facilities. Also, facilities have moved beyond solely monitoring their HSMR results. Organizations across Canada regularly examine their HSMR data with the goal of linking findings to targeted quality improvement initiatives and continued reductions in in-hospital mortality.

The success stories presented below illustrate how organizations can achieve sustained performance improvement, guided by measurement, through changes to their actual work processes and underscore how the HSMR informs actions that in turn improve outcomes of care for Canadian patients.

HSMR Defined

The HSMR is the ratio of **actual** (observed) deaths to **expected** deaths. It focuses on the diagnosis groups that account for the majority of in-hospital deaths. Using a logistic regression model, it is adjusted for several factors that affect in-hospital mortality, including age, sex, length of stay, admission category, diagnosis group, comorbidity and transfer from another acute care institution. An HSMR equal to 100 suggests that there is no difference between a local mortality rate and the average national experience, given the types of patients cared for. An HSMR greater or less than 100 suggests that a local mortality rate is higher or lower than the national experience, respectively.

CIHI developed and validated the HSMR measure for use in Canada and has publicly released results annually (for larger institutions and health regions outside of Quebec) since 2007. The HSMR can be used by hospitals to track progress in reducing mortality related to quality of care improvements. It does not provide a specific measure of preventable deaths.

Trillium Health Centre Uses HSMR eReports to Drill Deeper

For the past decade, patient safety and quality of care have been a priority at Trillium Health Centre in Mississauga.

An early adopter of the HSMR, the centre monitors its score monthly and has seen a substantial improvement in it over the last year. Gary Spencer, Director of Decision Support, says it is a matter of a number of interventions and initiatives coming together.

Driven by the philosophy of providing care to the right patient, at the right time, in the right place, by the right people, with the right information, Trillium has introduced rapid response teams, Safer Healthcare Now! practices and frameworks that enhance teamwork and communication. These in turn expedite care and ensure a smooth transfer of accountability between team members. To date, Trillium has adopted more than 400 order sets for various diagnoses, ensuring every patient gets the same evidence-based care for the same condition, while optimizing patient outcomes and lengths of stay. The centre also created a strategy of care for high-risk populations and worked on sepsis recognition and protocols, as this is a leading contributor to mortality.

CIHI's HSMR Reporting: Want to Know More?

CIHI releases HSMR results through three distinct products: the HSMR eReporting Service, the electronic hospital-specific cumulative eHSMR report and the HSMR public release.

- The HSMR eReporting Service is a secure, web-based tool that provides clients with detailed, confidential HSMR reports. Registered organizations can review results that span fiscal years and patient groups and encompass regions or individual facilities. The tool is designed to provide current data and drill-down capability to assist with interpreting HSMR results and trends. For more information or to register, contact us at hsmrreporting@cihi.ca.

continued on next page

Most recently, the centre embraced CIHI's new, customizable HSMR eReporting tool. It offers enhanced reporting around the HSMR and identifies, by diagnosis group, where observed deaths have been greater than expected deaths. Trillium is using the e-tool to drill down further into its HSMR cases and identify patient populations that can be targeted for improved care processes, such as creating and/or revising order sets for those patient populations. In this way, the e-tool is used to identify specific patient populations for targeted improvement efforts.

Spencer says their efforts can now be taken to the next level, as the reports allow specific program areas to pull patient records that might have contributed to the higher rate. They can then conduct a chart review to determine if there are quality-of-care issues to be addressed.

"You can really focus your attention on what's going to have the greatest impact in terms of improving your HSMR," Spencer says. "If anything, you can fault us as an organization for trying to do too much. We've learned we have to focus our attention and resources, and these eReports have allowed us to do that."

- One in the suite of electronic Hospital Specific Reports, the cumulative eHSMR report provides monthly and year-to-date HSMR results within five business days of data submission to CIHI. These facility-specific PDF reports allow timely and actionable monitoring and are available to acute care facilities that submit data to the Discharge Abstract Database. For more information or to register, contact us at dad@cihi.ca.
- The HSMR public release provides annual HSMR results for all facilities, hospital corporations and health regions with at least 2,500 HSMR qualifying cases. The results for 2004–2005 to 2009–2010 are now available free of charge to both health system stakeholders and the general public at www.cihi.ca. For more information, contact us at hsmr@cihi.ca.

As part of the process, opportunities for improvement in documentation that may impact patient care were also identified. In addressing the documentation issues, Dr. Amir Ginzburg, a general internist and hospitalist, says their focus is on improving communication to ensure patients receive the most appropriate care. “We’re still gleaning from chart reviews what system changes we can put in place,” Ginzburg says. “But eReports give us another tool to look at ourselves critically.”

Figure 23

Quantifying the Improvements in HSMR Results Over Time

The timeline below illustrates the number and percentage of hospitals whose HSMRs significantly decreased over the years compared (total N = 75).



Note
Results are presented for reportable hospitals only.

Source
Discharge Abstract Database, Canadian Institute for Health Information.

New Brunswick Health Council Uses HSMR as a Performance Indicator

When the New Brunswick Health Council was formed in 2008, there was only one quality of care indicator related to patient safety that members felt comfortable using in its provincial performance index—the HSMR. The council chose CIHI’s measure as a starting point for measuring and monitoring patient safety because it was standardized.

“Being a death rate, you want it to be accurate,” says Michelina Mancuso, the council’s executive director of performance measurement. “Because of the rigor in the HSMR methodology, we felt it was reliable and valid enough to show up on our index.” Since that time, the council and its health system partners have selected and worked on 10 additional safety indicators for the next report card.

Earlier this year, the council started a special project that included a patient survey of acute care experiences. This marked the first time safety information had come from patients. The questions included the following: Was your arm band checked before receiving medication? Did staff wash their hands? Did you experience harm? Do you think this hospital takes your safety seriously?

“People are talking about these things, but are they really being done? This was a way to check on them,” says Mancuso. “We wanted to look at the relationship between the HSMR scores for each of the hospitals and the results we’re seeing from the patient safety questions and rates of errors or harm.”

Figure 24

HSMR in Quality of Care Public Reporting Across Canada



British Columbia

Health authorities routinely monitor HSMR results and trends.

Alberta

In September 2010, Alberta Health and Wellness introduced a Patient Safety Framework to support the continuous and measurable improvement of patient safety in Alberta. The HSMR is among the measures which are being considered for possible use in the safety domain of this framework in the future.

Saskatchewan

The Ministry Plan, Ministry of Health for 2010–2011 includes annual public reporting for selected performance measures; an aggregated HSMR for all Saskatchewan hospitals is among the measures that are monitored and reported.

Manitoba

Regional health authorities routinely monitor HSMR results and trends.

The council found that the error rate and the harm patients reported were not necessarily linked to the hospital's HSMR. Next it plans to investigate further by looking at patients' perceptions of whether the hospital takes their safety seriously and to see if there is a relationship with the HSMR. The initial survey results will serve as a baseline for monitoring dimensions of quality. They will also become a part of the council's care experience indicator and possibly its performance index to show hospitals where they are under- or over-performing and, ultimately, where to focus their attention.

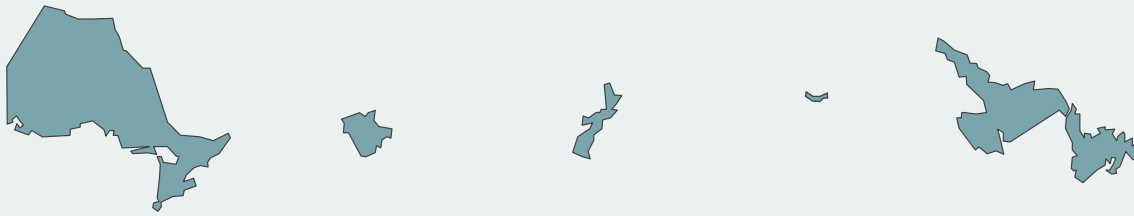
"It's a flag to go into things a little deeper," Mancuso says. "We're giving them information to help improve those particular components that may enhance the quality of care, which could ultimately influence their HSMR."

The survey is the latest initiative in the province's system-wide use of the HSMR. Hospitals and the Department of Health have used the indicator for years to identify opportunities to improve care.

"With this survey, we're using the HSMR quite uniquely," Mancuso says. "It was a catalyst to getting our discussions started and work done around the quality of care."

Figure 24

HSMR in Quality of Care Public Reporting Across Canada (cont'd)



Ontario

As of September 2008, the Ministry of Health and Long-Term Care introduced full public reporting of selected patient safety indicators, including the HSMR. The HSMR is reported annually on December 30.

New Brunswick

The New Brunswick Health Council's Health System Report Card, published annually, includes the HSMR as one of the indicators in the Safety Dimension.

Nova Scotia

Regional health authorities routinely monitor HSMR results and trends.

Prince Edward Island

To support the strategic direction of Health P.E.I., the HSMR is routinely monitored as one of the quality indicators to ensure appropriate safety standards are met.

Newfoundland and Labrador

Regional health authorities routinely monitor HSMR results and trends.

Note

The HSMR is not calculated for Quebec and is not publicly reported for the Yukon, the Northwest Territories or Nunavut.

Source

Compiled by CIHI.

In Summary

The gains made in cardiac care in Canada are not new. Focused efforts by researchers and health care providers have all contributed to improved understanding of what affects cardiac health. Activities such as centralizing treatment, refining surgical procedures, moving to less-invasive or drug therapies and targeting health promotion activities are all informed by this. Improving data collection and ensuring data quality for monitoring and measuring also contributed to understanding how to treat cardiac patients most appropriately. And there is still room for improvement.

The HSMR is a high-level indicator that provinces, health regions and hospitals use as one measure of the quality of care they are providing. The sustained improvement in performance using this measure over the years, how the jurisdictions are using the results for public reporting and specific case studies of on-the-ground change show how the HSMR continues to be used to measure, monitor and improve care.

Improvements in both cardiac care and hospital processes and policies in reaction to HSMR results are examples of what is possible when targeted efforts to improve the health of Canadians meet head on with targeted efforts to improve quality of care. There remains a way to go. But these examples provide a way forward in considering ongoing efforts to better align care with the evidence and to make improvements in the health care system overall.

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PART C

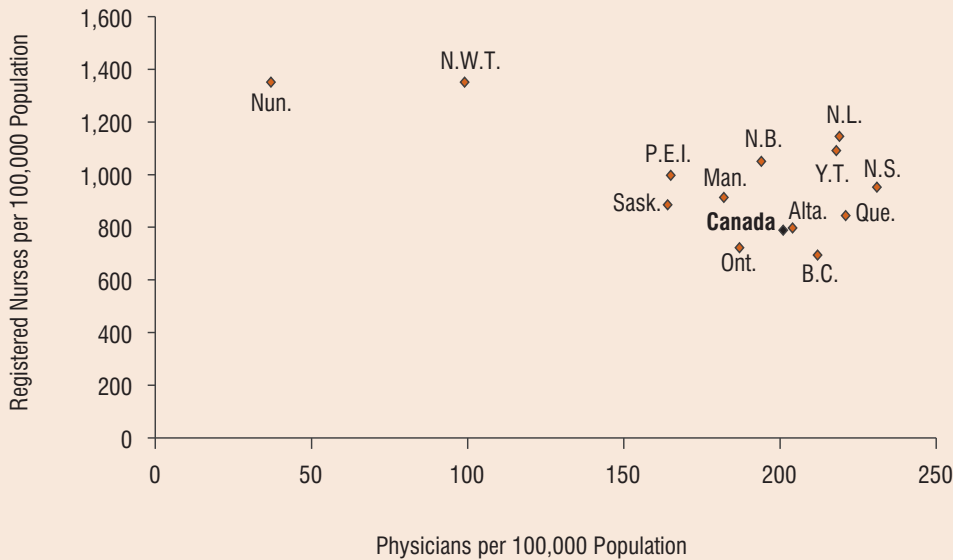
Health Care System Resources



Chapter 5
An Update on Health Professionals

Figure 25

Physicians and Registered Nurses per 100,000 Population, by Province and Territory, Canada, 2009



Introduction

The supply and distribution of health professionals continue to be discussed nationally and internationally. In 2006, the World Health Organization estimated there was a shortage of more than 4.3 million health personnel worldwide.¹ The issues at the heart of this discussion are the number of health professionals and their distribution. Projections of the availability of health care professionals have been particularly salient for physicians and nurses,¹ leading some to officially declare a Canada-wide physician shortage.² However, where evidence of growth in the number of health professionals meets continued declarations of shortages, there are obviously opposing opinions.

Understanding these opposing opinions is challenging because there is no agreement about the optimal number of health care professionals and how and where they can and should be best utilized to deliver the most appropriate care. At the centre of the discussion, then, is the need to ensure that Canada has a sufficient supply of health care professionals to deliver high-quality care.

Canada's Health Professionals at a Glance

Canada experienced a growth rate of 16% in the number of active registered physicians in the past nine years, growing from 58,546 in 2001, to 68,101 in 2009.³ In 2009, the provincial supply of active physicians per 100,000 population ranged from 164 in Saskatchewan to 231 in Nova Scotia. Territorial supply of physicians per 100,000 population ranged from 37 in Nunavut to 218 in the Yukon. The nationwide rate was 201. Each of these numbers represents increases over the past decade.

Notes**Physician Data**

Includes active physicians in clinical and non-clinical practice (for example, research and academia) who have an MD, are registered with a jurisdictional medical college and have a valid mailing address (mail sent to the physician by Scott's Directories is not returned).

Excludes residents, physicians in the military as well as semi-retired and retired physicians.

Excludes non-licensed physicians who requested that their information not be published as of December 31 of the reference year.

Data as of December 31 of the reference year.

The physician-per-population ratio is calculated annually using the most recent Statistics Canada population estimates.

Registered Nurse Data

See Chapter 5 (Methodological Notes) in *Regulated Nurses: Canadian Trends, 2005 to 2009* for more information regarding collection and comparability of data.

Registered nurses include nurse practitioners.

Registered nurses employed in a jurisdiction different from their jurisdiction of registration are excluded to avoid duplication. However, Northern territories data may include inter-jurisdictional duplicates. Additionally, registered nurses living abroad are not included in workforce counts.

The registered nursing workforce includes registered nurses who indicated an Employment Status of *full time, part time, casual or employed—status unknown*. Not stated (non-response) for Employment Status (percentage of supply) 2009: n = 5,066 (1.8%).

Sources**Physician Data**

Scott's Medical Database, 2009, Canadian Institute for Health Information; Statistics Canada, *Quarterly Demographic Estimates* 23, 4 (March 2010), catalogue no. 91-002-X.

Registered Nurse Data

Nursing Database, 2009, Canadian Institute for Health Information; Statistics Canada, *Canadian Demographic Estimates* (July 2009), catalogue no. 91C0029, 2008/2009.

Data on the nursing workforce shows a similar trend. From 2001 to 2009, the number of registered nurses across Canada grew by 15%.⁴ In 2009, there were 266,341 registered nurses in Canada and a combined total of 348,499 regulated nurses in the nursing workforce as a whole (including licensed practical nurses and registered psychiatric nurses).⁴ The number of registered nurses per 100,000 population ranged from 694 in British Columbia to 1,145 in Newfoundland and Labrador and averaged 1,091 in the Yukon and 1,351 in Nunavut and the Northwest Territories. Nationally, there were 789 registered nurses per 100,000 population. Again, the rates consistently increased over the past several years.⁴

In the past decade, the number of seats in Canadian universities for physicians and registered nurses has increased substantially to serve the needs of Canada's growing population. The number of physician graduates in Canada increased from 1,594 in 1999 to an estimated 2,344 in 2009—an increase of nearly 50%.⁵ The number of nurses graduating from Canadian colleges and universities has also increased. The number of graduates from entry-to-practice programsⁱ nearly doubled, from 4,833 in 1999 to 9,662 in 2009.⁶

A recent report from the Organisation for Economic Co-operation and Development (OECD) suggested that one of the factors contributing to what it sees as a global shortage of health care professionals is international migration.¹ In Canada in 2009, approximately 24% of physicians³ and 8% of registered nurses⁴ were graduates of international schools. Some researchers have criticized this, asserting there is a greater need for these health professionals in their mother countries.^{1,7}

i. Entry-to-practice programs (ETPs) entitle the successful graduate to apply for initial licensure/registration as a registered nurse. As of January 2009, there were 135 schools in Canada offering ETPs.

International Policies Restricting Migration of Foreign Health Workers

The migration and recruitment of foreign health workers can help alleviate health personnel shortages and reduce the cost of acquiring trained practitioners in the receiving country.⁷ However, there is growing global concern that this practice is exacerbating shortages in some developing countries,¹ as the majority of health workers migrating to OECD countries originate from comparatively less-affluent countries—those nations experiencing health personnel shortages themselves.^{1, 8}

To address these concerns, in May 2010, the *WHO Global Code of Practice on the International Recruitment of Health Personnel*⁹ was adopted unanimously by all member states. The code is voluntary in nature but global in scope. It serves as an ethical framework for guiding member states in their recruitment practices and the treatment of internationally educated health care workers. Specifically, the code encourages destination countries to collaborate with source countries to sustain and promote health human resource development and training where appropriate. It discourages the active recruitment of health personnel from developing countries facing critical health care shortages. The code also supports “circular migration” of health personnel so that both source and destination countries mutually benefit from the skills and knowledge attained.¹⁰

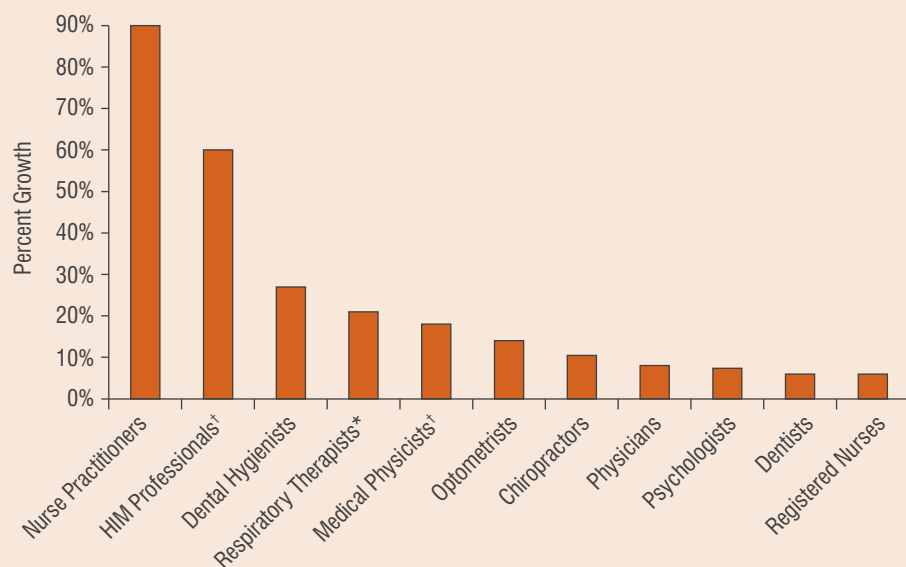
Within Canada, there is also concern about shortages resulting from an aging workforce, with some provinces increasing their medical school enrolments to compensate for those retiring.¹¹ From 2004 to 2009, the average age of physicians increased by 1.2 years.³ In 2009, the proportion of the physician workforce younger than age 40 was equal to the proportion older than age 60—23% and 22%, respectively.³ Older workers (age 40 to 60) also dominated the nursing professions, accounting for 57% of the registered nurse workforce in 2009.⁴

Achieving a balance in supply, mix and distribution of health care providers to meet current and future needs is complex.¹¹ Past trends and future directions of this supply—whether perceived as a shortage or a potential surplus—continue to be of interest.^{12–15} For example, some researchers suggest that the potential impact of increased medical school enrolments over the past decade may place increased pressure on future medicare budgets¹³ and that careful monitoring, coordination and collaboration are needed to optimize and plan future workforce supply targets.¹⁵ How best to estimate future requirements and efficiently provide them remains uncertain. Pressures such as funding,¹⁶ workforce demographics, changing patterns in labour supply, the adoption of new technologies, the effects of policy decisions and changes in health care delivery¹² and practice environment¹⁴ are important factors in these decisions.

While the majority of Canada’s health professionals are physicians and nurses, there are many other health professionals providing important care to Canadians. Growth similar to that for physicians and nurses was found in several other health professions over the past five years. From 2004 to 2008, there was substantial growth in the supply of pharmacists, physiotherapists, occupational therapists and audiologists. The most rapid growth was seen among nurse practitioners, increasing by 90% from 2004 to 2008. This increase is likely due to recent developments in legislation supporting the evolving and autonomous nature of the nurse practitioner role.¹⁷

Figure 26

Growth in Selected Health Professions, Canada, 2004 to 2008



Notes

* Profession is not regulated in all provinces. The Canada total for each profession includes some provincial data in which registration with a regulatory authority may not be a condition of practice.

† Data was submitted to CIHI from an organization in which membership is voluntary.

HIM: health information management.

Source

Canadian Institute for Health Information, *Canada's Health Care Providers—2008 Provincial Profiles: A Look at 24 Health Occupations* (Ottawa, Ont.: CIHI, 2010).

International Comparisons

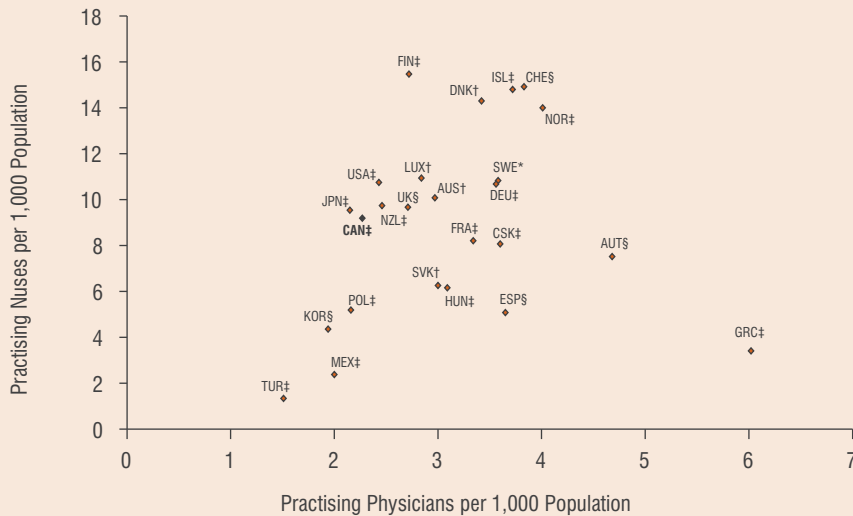
According to the most recent data available from the OECD, Canada's supply of health professionals for its population ranks near the middle when compared to other countries. For example, in 2008 Canada had 2.3 practising physiciansⁱⁱ per 1,000 population and 9.2 practising nurses; this was similar to Japan (2.2 physicians per 1,000 and 9.5 nurses) and New Zealand (2.5 practising physicians and 9.7 nurses) but different from both Finland (2.7 physicians and 15.5 nurses) and Turkey (1.51 physicians and 1.34 nursesⁱⁱⁱ). The variation observed in nurse-to-physician ratios may reflect varying models of health care between these countries.

Canada also differs significantly from several of its international comparators in supply growth trends. Since 1990, 24 OECD countries increased their physician-to-patient ratios by at least 10%.¹⁸ In contrast, Canada's ratio increased by 5%.¹⁸ Because the supply of health professionals is somewhat unrelated to the health of populations,¹⁹ it is difficult to determine the impact of supply differences on health. However, these differences may lend insight into why Canadians continue to report difficulties in accessing health care when compared to other countries.²⁰

ii. Data represents professionally active physicians.
iii. Data represents professionally active nurses.

Figure 27

Practising Physicians and Nurses per 1,000 Population, 25 Selected OECD Countries



Notes

* Data for 2006.

† Data for 2007.

‡ Data for 2008.

§ Data for 2009.

All physician data is for “practising” status, with the exception of Canada, Finland, Germany, Greece, Italy and Switzerland, which have “professionally active” status.

All nurse data is for “practising” status, with the exception of France, Portugal, the Slovak Republic, Turkey and the United States, which have “professionally active” status.

Source

Organisation for Economic Co-operation and Development, *OECD Health Data 2009—Frequently Requested Data*, accessed June 30, 2010, from http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html.

Changing Scope of Practice

As stated at the outset of this chapter, there remain questions not only about the optimal number of health care professionals but also about how and where they can be best utilized to deliver the most appropriate care. In addition to continuing to train an increasing number of physicians and nurses, expanding scopes of practice may also lead to efficiency gains in the deployment of health human resources.

For example, over the past 15 years in Canada, midwives have become autonomous health professionals, providing primary maternity and newborn care during pregnancy, labour and delivery, and the postpartum period.²¹ In other industrialized nations, midwifery care is an integral part of maternity services, playing a key role in lowering intervention rates and strengthening maternity care.²² Its growth in Canada could deliver similar benefits. However, the profession is still not regulated in all jurisdictions.²¹

Another example is the evolving scope of practice for pharmacists in Canada.²³ In several jurisdictions across the country, pharmacists are now able to adapt prescriptions to optimize therapeutic outcomes and to prescribe in emergency situations. This change in scope of practice is primarily designed to help alleviate the burden on physicians of prescription renewal and modification. To date, provinces such as British Columbia, Alberta, Saskatchewan, New Brunswick and Nova Scotia have all implemented changes in legislation to broaden pharmacists’ scope of practice, and Ontario has legislation pending.^{23, 24} Although not precedent-setting internationally—pharmacists were given similar authority in the United States more than three decades ago²⁵—this type of legislation represents a significant step forward.

Canada's Nurse Practitioners

First regulated in Alberta in 1996, nurse practitioners are now gaining ground within Canada. With a growth rate of more than 90% from 2004 to 2008, there were 5.0 nurse practitioners per 100,000 population in Canada in 2008, compared with only 2.7 in 2004. Nurse practitioners are advanced practice registered nurses, with additional education in health assessment, diagnosis and management of illness and injuries. Their scope of practice includes ordering tests and prescribing drugs.²⁶ The Canadian Nurses Association asserts that nurse practitioners are making a real difference in some of the issues currently facing the health care system, including contributing to improvements in access to care, coordination and delivery of services, and health outcomes.²⁶

Despite this, the nurse practitioner role is not uniformly accepted. In 2010, the Canadian Medical Association released a report calling for transformational change to Canada's health care system.²⁷ There was no mention of what role nurse practitioners would play in the report.

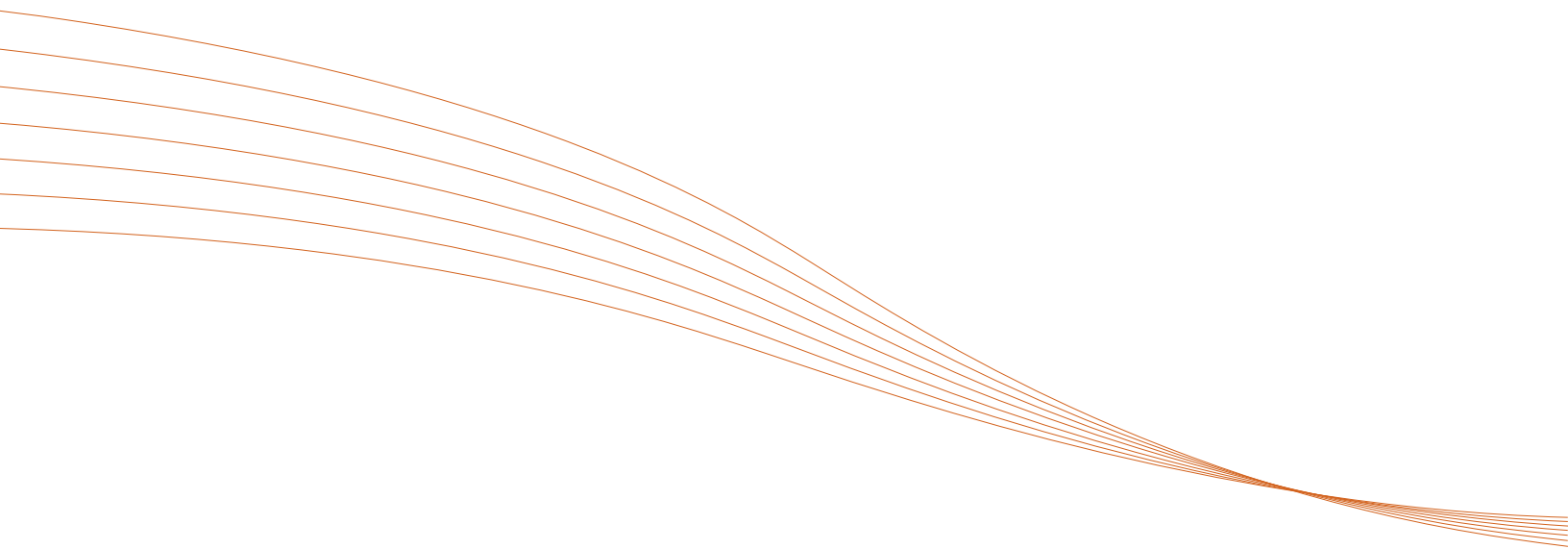
In Summary

When the current health human resources are managed effectively, room can be made for new investments that will inevitably come. To ensure this, some believe the health care workforce needs to be better employed and better deployed.^{28, 29} There have been continuing increases in the numbers of physicians and nurses in Canada, which may offset some of the impact of the aging workforce. Numbers of other health professionals continue to increase as well. In addition, evolving scopes of practice may emerge as a key component in using the resources available most efficiently.

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Chapter 6
An Update on Health Expenditures

Introduction

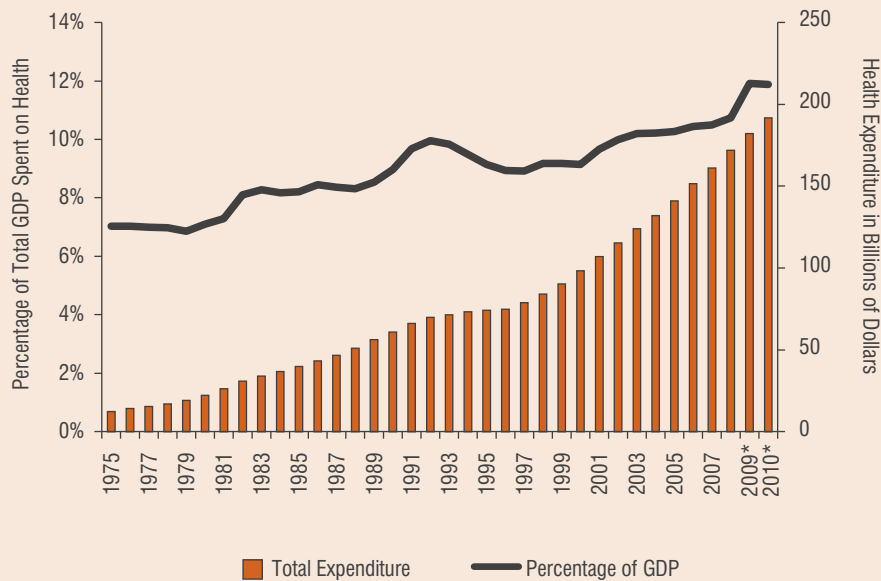
Health care spending in Canada is considerable, as it is in many countries. Yet there remains no consensus on the right amount of money to spend or the right distribution of resources within the system. As well, the complex question of fiscal sustainability arises frequently. In 2002, Roy Romanow declared, “Medicare is as sustainable as Canadians want it to be.”¹ It is a system funded by tax dollars; as long as Canadians are willing to pay, the system will be there.^{2, 3} And Canadians seem not only willing to pay, but also to pay at increasing rates.

With an annual increase of anywhere from 1% to 18% over the past 35 years, Canada’s health care spending will have reached an estimated \$191.6 billion in 2010 (see Figure 28). Spending as a percentage of gross domestic product (GDP) increased from 10.0% in 2002 to a forecasted 11.7% in 2010. Although health spending in 2010 continued to increase, the estimated increase in health care spending from 2009 to 2010 was the smallest observed since 1997. The proportion of the provincial/territorial budgets spent on health care has remained stable since 2004.

Both the public and private sectors finance Canada’s health care system. Public-sector funding includes payments by governments at the federal, provincial/territorial and municipal levels and by workers’ compensation boards and other social security systems. Private-sector funding consists primarily of health expenditures by households and private insurance firms.⁴ Of the \$191.6 billion spent in 2010 on health care, approximately 65.3% was expected to come from provincial/territorial governments, 3.5% from the federal government, 0.5% from municipal governments and 1.3% from social security funds.⁴ Overall, 70% of health funding is from the public sector and 30% is from the private sector.⁴ This 70/30 split has been the reality of health care spending in Canada since 1997⁴ and compares with the public/private split in health care spending among several countries in the Organisation for Economic Co-operation and Development (OECD) (Figure 29).

Figure 28

Total Health Expenditure, Canada, in Current Dollars, 1975 to 2010



Note

* Forecast.

Source

Canadian Institute for Health Information, *National Health Expenditure Trends, 1975 to 2010* (Ottawa, Ont.: CIHI, 2010).

Comparisons Within Canada and Abroad

Internationally, Canada's per capita spending is among the highest when compared with other OECD countries. In 2008, Canada ranked fourth out of 24 OECD countries with comparable data.⁵ Canada also ranked ninth out of 33 OECD countries for life expectancy.⁵ Health care spending and life expectancy are often plotted against each other, while acknowledging the limitation that the two are only partially linked. For the most part, health care spending is not highly correlated with life expectancy past a threshold of about US\$3,000 to US\$3,500 per capita.^{i, 5} With Canada's current per capita spending at US\$4,079 in 2008, it could be argued that gains thereafter would be minimal.

Spending on health care is substantial in Canada, but it is not uniform across the provinces and territories. At a pan-Canadian level, per capita spending in 2010 is expected to be \$5,614 per person; total per capita spending is forecast to range from a low of \$5,096 in Quebec to a high of \$6,266 in Alberta at the provincial level.⁴ In the territories, total per capita spending was estimated to range from \$7,977 in the Yukon to \$12,356 in Nunavut in 2010.⁴ Likely, the higher per capita spending in the territories is due in part to costs associated with travel to receive certain types of care. Several factors may have contributed to the spending variations among provinces and territories, including differences in populations and their health status, patterns of health service delivery and coverage, geography and population density, and the costs of providing care.

i. Health expenditure per capita was converted to U.S. dollars using purchasing power parities (PPPs) for GDP, which are the rates of currency conversion that eliminate the differences in price levels between countries. That is, PPPs equalize the purchasing power of different currencies.

Figure 29 International Health Spending by Public Sector, 30 Select OECD Countries, 2008



Notes

* Data for 2006.

† Data for 2007.

§ Data for 2009.

Source

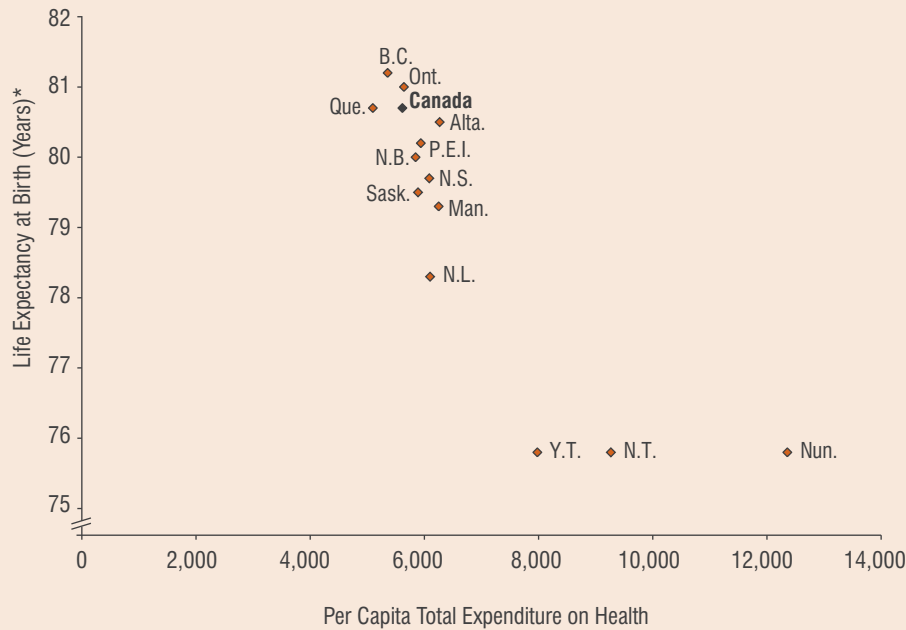
Organisation for Economic Co-operation and Development, *OECD Health Data 2010* (June Edition) (Paris, France: OECD, 2010).

Similarly, there is variation across the country in life expectancy at birth, but the variation in the two measures does not appear to be highly correlated. That is, jurisdictions that have higher per capita health care spending do not appear to have similarly higher life expectancy. The converse is also true: jurisdictions with lower per capita health care spending do not necessarily have lower life expectancy. For example, British Columbia and Quebec spend the least per person compared to the other provinces (\$5,355 in B.C. and \$5,096 in Quebec), yet they both fall in the top three for average life expectancy (81.2 years in B.C. and 80.7 in Quebec) in Canada.

The United States is another example. Despite having the highest per capita spending of 33 OECD countries, life expectancy in the U.S. is among the lowest (77.9 years).

Figure 30

Health Expenditures per Capita, by Province and Territory, Canada, 2010†



Notes

* Life expectancy at birth; data from 2005 to 2007.

† Forecast.

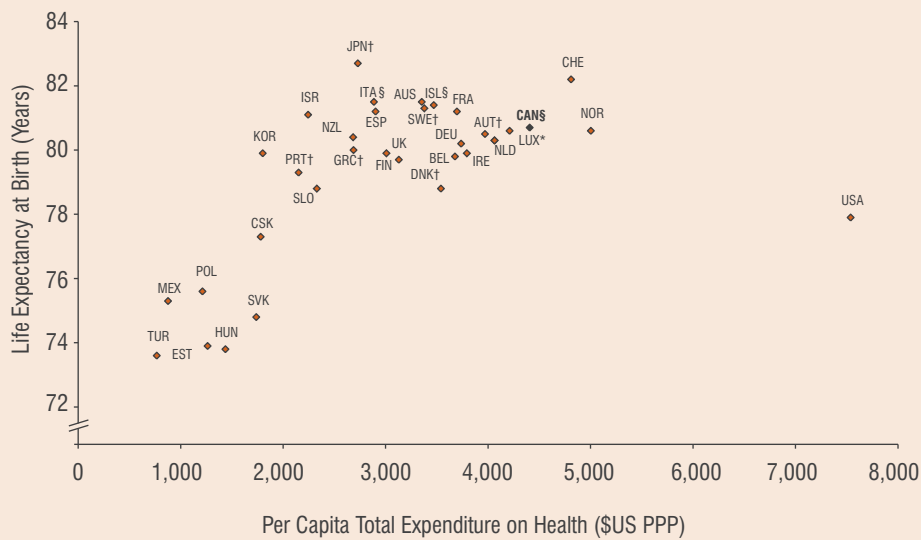
Sources

National Health Expenditure Database, 2010, Canadian Institute for Health Information; Statistics Canada, *Table 102-0512—Life Expectancy at Birth and at Age 65, by Sex, Canada, Provinces and Territories, Annual (2005/2007)* (CANSIM—Birth Database; Death Database), last modified June 21, 2010, accessed on July 12, 2010, from <<http://www40.statcan.ca/101/cst01/health26-eng.htm>>.

Analysis of regional variations in spending and health outcomes in the United States also concluded that higher spending does not equal better health. Increased investments in greater availability of physicians, hospital beds and more inpatient-based and specialist-oriented patterns of practice were not associated with improved access to care, better quality of care⁸ or better health outcomes or satisfaction.⁹ Further, these studies concluded that additional growth in health care spending may not be explained primarily by advances in science and technology, and increased spending may not result in greater quality of care or better health.^{8, 9}

Without obvious links to improved health it is hard to understand why health care expenses continue to rise. The following section examines some of the cost drivers.

Figure 31 Health Spending per Capita and Life Expectancy in 33 Selected OECD Countries, 2008



Notes

* Data for 2006.

† Data for 2007.

§ Data for 2009.

PPP: purchasing power parity.

Source

Organisation for Economic Co-operation and Development, *OECD Health Data 2010—Frequently Requested Data*, accessed on June 30, 2010, from <http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html>.

Cost Drivers and Cost Escalators

A common misconception is that the aging baby-boomer population is driving health care spending and that this will continue into the future.¹⁰ This does not tell the complete story. In reality, the aging population is responsible for 0.8% of spending growth per year, which is less than overall population growth (1%) and the rate of inflationary growth (2.5%).^{11, 12} The biggest cost increases in the system are spending on new drugs, medical technology, medical imaging, costly interventions and community services.^{11–15} Simply put, more care is being provided.

Health Care Reform in the United States

Many factors influenced the health care reform undertaken by the U.S. in 2010. One factor was that, despite higher per capita health spending than any other developed country, such spending was not contributing to better health or longer life expectancies for Americans. The current round of reform has been compared to that country's creation of Social Security (1935) and the advent of Medicare (1965).

President Obama's health reform plan for the U.S. as currently put forth has promised to

- Control the insurance industry with new consumer protections and ensure that premiums will be kept down and coverage will not be denied (including for pre-existing conditions);

continued on next page

The Conference Board of Canada separates these areas into two categories: cost drivers and cost escalators.¹¹ **Cost drivers** are the underlying structural forces and include factors such as population aging, demand, inflation and increased chronic disease prevalence.¹¹ **Cost escalators** are short- and medium-term issues, meaning that once introduced, their impact is felt far more quickly. The escalators include pharmaceuticals, new technologies, home and community services, and health human resources.¹¹ Drugs are one of the fastest-growing expenditure items in our system and have been for the past 25 years.¹¹ These increased costs may be subsiding, however, as spending on prescription drugs was expected to increase by 4.6% in 2010, the smallest increase in 14 years. As new drugs hit the market and costs continue to climb, this area remains one of the most challenging for health policy in the coming years.¹¹

- Make health insurance affordable for middle-class families and small business owners and provide improved security to those who have lost their jobs;
- Strengthen Medicare benefits, with lower prescription drug costs for vulnerable groups; and
- Reduce the deficit by more than \$100 billion over the next decade.⁶

Some of these reforms began immediately, but many may not begin until 2014.⁷ Both nationally and internationally, eyes will be on the U.S. to assess both the positive and negative impacts of these changes.

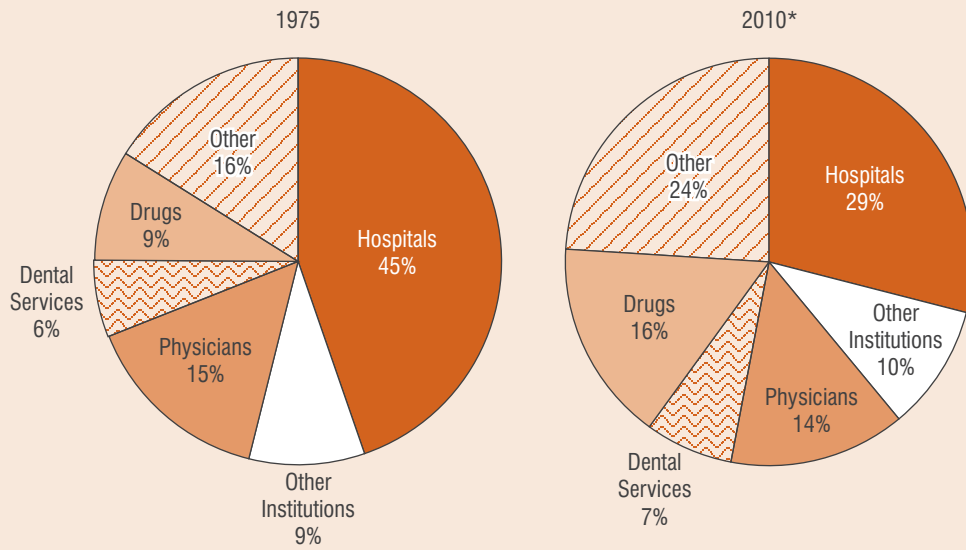
With respect to health human resources, current models of physician compensation in Canada have been identified as a potential cost escalator. According to a recently released OECD report, physician income in Canada is higher than the OECD average.¹⁶ Physician payment recommendations coming from the report that might aid overall cost containment include

- Considering alternative payment models, such as paying doctors partially by capitation or salary instead of solely by fee-for-service. In Canada this already exists and continues to increase over time. Based on data collected by CIHI, in 2008–2009, approximately 27% of total clinical payments to Canadian physicians were made through alternative payment methods. The proportion ranged from 49% in Nova Scotia to 15% in Alberta and up to 96% in the Northwest Territories.¹⁷ This may reflect each province’s and territory’s decision-making toward a variety of goals such as physician recruitment and retention in rural/remote areas, increasing collaboration between providers, and continuity of care, prevention and health promotion;¹⁸
- Having fees regulated from the provincial level to the regional level;¹⁶ and
- Implementing cost-sharing arrangements among physicians (such as specialist referrals).¹⁶

New medical technologies are also major cost escalators. Advances in biomedical imaging have already affected diagnostic imaging, medical treatment and surgical procedures.¹⁹ In addition, genetic sciences and biotech research—though still emerging fields—have begun to inform medical advancements, particularly through pharmaceutical research activity.¹¹

Figure 32

Health Expenditures by Use of Funds, Canada, 1975 and 2010*



Note
* Forecast.
Source
National Health Expenditure Database, Canadian Institute for Health Information.

In Summary

CIHI has been collecting data and reporting on health expenditures in Canada for many years. Over the past 30 years steady growth in health expenditures—both at the pan-Canadian and jurisdictional levels—was documented. While health expenditures in 2010 are estimated to be \$191.6 billion, as a percentage of gross domestic product the growth in spending has changed by just one or two percentage points (from 10.0% in 2002 to 11.9% of GDP in 2010)⁴ over the last several years. Canada’s health care spending and life expectancy are among the highest of 33 comparable developed countries, although considerable variation in both measures exists across provinces and territories. Efforts, including new funding initiatives, are under way to bend the cost curve. The success of these efforts will be reflected in data collected and reported on in the years to come.

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Issues on the Horizon

Issues on the Horizon

Managing health system performance is about measuring and assessing, questioning the results and translating them into actions for improvement.¹ To be successful at this requires an understanding of the current state. Success also requires the implementation of targeted improvement initiatives to maintain good performance or improve performance where necessary.

Health Care in Canada 2010 highlights some specific areas where there have been successes, where there is room for improvement and where further investigation is needed to better understand the underlying issues.

This publication also demonstrates how sustained effort and focused attention can facilitate lasting improvements. During times of economic uncertainty, where sustainability and health care share many headlines, it is particularly important to focus efforts and demonstrate successes. Canadians should be receiving care in the right place, at the right time, by the right person and in the most effective way;² in other words, they should be getting the most appropriate care possible.

In **Part A: The Year in Review** of this report, three health care stories that captured headlines over the last year were highlighted. These issues will have both immediate and longer-term effects. The H1N1 pandemic and disruptions in the supply of medical isotopes required the redeployment of personnel and other resources; prompt, coordinated, local and system responses; and modification of some processes. Significant changes in funding models were announced and discussed. Some, like the funding for generic pharmaceuticals, were implemented rapidly. Other funding changes are still in development and their impact is yet to be seen.

Part B: Aligning Care With Evidence of this report focused on appropriateness of care. The first set of examples looked at procedures that research evidence suggests should not be carried out in some circumstances. It also looked at procedures that had significant rate variations across the country, thereby calling into question the appropriateness of care. Potential savings—at both the patient and system levels—through better care alignment were estimated, where possible.

In cases when appropriate care is not the provided care, both the system and the patients are affected. The examples of avoidable hospital admissions, preventive care for diabetes patients and the extent of alternate level of care (ALC) days all spoke to what can happen when, despite knowing what the right care is, it is not provided for a variety of reasons. These examples suggest gaps where care could be optimized.

Finally, in the discussion of appropriateness, two of the system's success stories were highlighted to show that, with focused effort, there can be sustained improvement. This was exemplified by noted improvements in cardiac care: rates of hospitalizations, mortality and readmissions all continue to decline. Yet, even here, room for improvement was indicated by rate variations across the country. To this end, potential savings for patients and the system if heart attack rates were more similar across the country were estimated. Health system performance was also explored at a high level by examining the hospital standardized mortality ratio (HSMR)—a measure of system performance that has seen continued improvements across Canada since it was first calculated by CIHI in 2004.

In addition to the new and updated analyses and focused discussion of appropriateness, **Part C: Health Care System Resources** of *Health Care in Canada 2010* provided updated information on health human resources and health expenditures. Counts of physicians and nurses, as well as growth in other health professions, were presented along with international comparators to situate Canada within a global context. Similarly, updated per capita health spending for Canada was provided alongside international information on spending and life expectancy.

In providing the information and analyses in this report, the goal of *Health Care in Canada 2010* was to initiate discussion.

With health care systems—both across Canada and internationally—increasingly focused on providing quality care, how health care is provided in the not-too-distant future may be affected by issues such as the following:

- **Recognition of the need to standardize clinical practice guidelines** for the care and treatment of many more patient populations than are covered currently. This effort would help improve health care quality and outcomes, and ensure maximum value for health care dollars spent.
- **Increasing focus on regional variations** of the cost of care, coupled with evidence suggesting that high costs do not necessarily lead to improved patient outcomes or higher levels of care. These types of analyses have contributed to substantial learnings in the U.S. and will continue to influence how care is provided and distributed in the U.S., Canada and elsewhere.
- **Increasing attention on where government policies and investments are focused.** Where investments are made affects the care that is delivered. In 2003–2004, wait times for care were identified as problematic. In response, the first ministers signed the *2004 Health Accord*, which directed funding to reducing wait times for care in five priority areas. In 2010, some governments tested the idea of focused funding to physicians to ensure that care is aligned with evidence. (Diabetic patients are at the centre of some of these funding incentives.) There are mixed international reviews on whether incentive payments ensure optimal care for patients.³ Canada might have to go through its own learning curve to understand what works and what does not for ensuring optimal care in the Canadian context.

- **Where care takes place matters.** Many ALC stays occur because patients do not have access to home care or are unable to transition readily into long-term care settings at the end of their hospital stay. Recently, the Canadian Medical Association advocated for increased numbers of long-term care facilities across the country.⁴ This was largely directed at mitigating the impact of an aging population on the health care system. Others, however, have advocated for improved access to home care, and not just medical services in the home.⁵ Improving access to home care was also a focus of the *2004 Health Accord*. Reducing the impact of ALC stays on the health care system and patients is probably not a one-size-fits-all solution. Understanding who these patients are, what their specific care needs are and what the magnitude of the impact of ALC days on the system is may all help to improve and focus care decisions for these patients.
- **Renewal of the 2004 Health Accord.** In 2014, the 10-year plan to improve health care will have expired and a new health accord will be negotiated. The provisions of a new accord may have a significant impact on the future direction of health care in Canada.
- The potential impact of **the rising rates of obesity, high blood pressure and other risk factors** on the health of Canadians, especially in light of an aging population. What mechanisms might exist to bend the curve of these rising rates?

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