Medication Reconciliation in Canada: Raising the Bar

Progress to date and the course ahead

A joint collaboration between

ACCREDITATION CANADA
AGRÉMENT CANADA
Driving Quality Health Services
Force motrice de la qualité des services de santé

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

Canadian Patient Safety Institute
Institut canadien pour la sécurité des patients

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How to cite this document:

Accreditation Canada, the Canadian Institute for Health Information, the Canadian Patient Safety Institute, and the Institute for Safe Medication Practices Canada. (2012). Medication Reconciliation in Canada: Raising The Bar – Progress to date and the course ahead. Ottawa, ON: Accreditation Canada.

Also issued in French under the title:

Bilan comparatif des médicaments au Canada : hausser la barre
Progrès à ce jour et chemin à parcourir

Table of Contents

Medication Reconciliation in Canada: Raising the Bar 5

Medication Reconciliation: Reducing risks for patients and the health system 6

Hospital Readmissions 6

Ambulatory Care Sensitive Conditions 7

Medication Use in Seniors 8

Medication Reconciliation in Canada: Considerable progress has been achieved 9

Medication Reconciliation: A Priority for Accreditation Canada 9

A Snapshot of Medication Reconciliation in Canada 10

Renewing the Focus on Medication Reconciliation Over the Last Two Years: Securing support and sharing resources 14

Consensus Statement 14

MedRec Check-Up Map and Leading Practices 15

MyMedRec 16

The Future of Medication Reconciliation in Canada: Where to from here? 17

Looking Ahead: Medication Reconciliation for All 18

Appendices 19

Figure A.1 – A profile of unplanned hospital readmissions in Canada: Conditions representing the largest number of readmissions and their reasons for return, for medical patients 19

Figure A.2 – A profile of ambulatory care sensitive conditions: Age-standardized rate of ambulatory care sensitive conditions, 2010-2011, by Health Region, Canada 20

Figure A.3 – A profile of medication use in Canadian seniors: Age-sex standardized rate of chronic Beers drug use among seniors on public drug programs, selected provinces, 2009 22

Figure A.4 – National compliance rates with the Accreditation Canada medication reconciliation ROPs 23

References 24

Accreditation Canada

www.accreditation.ca

Accreditation Canada is a not-for-profit, independent organization accredited by the International Society for Quality in Health Care (ISQua). Accreditation Canada provides national and international health care organizations with an external peer review process, standards and tools to assess and improve the services they provide to their patients/clients based on national standards. Accreditation Canada's programs and guidance have helped organizations promote quality health care for over 50 years.

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The Canadian Patient Safety Institute (CPSI)

www.patientsafetyinstitute.ca

CPSI is a not-for-profit organization that exists to raise awareness and facilitate implementation of ideas and best practices to achieve a transformation in patient safety. CPSI envisions safe health care for all Canadians and is driven to inspire extraordinary improvement in patient safety and quality.

The Canadian Patient Safety Institute would like to acknowledge funding support from Health Canada. The views expressed here do not necessarily represent the views of Health Canada.

The Canadian Institute for Health Information (CIHI)

www.cihi.ca

CIHI is an independent, not-for-profit corporation that provides essential information on Canada's health system and the health of Canadians. Established in 1994 and funded by federal, provincial and territorial governments, CIHI's vision is to 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.

Canadian Institute for Health Information
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The Institute for Safe Medication Practices Canada (ISMP Canada)

www.ismp-canada.org

ISMP Canada is an independent national not-for-profit organization committed to the advancement of medication safety in all health care settings. ISMP Canada works collaboratively with the health care community, regulatory agencies and policy makers, provincial, national and international patient safety organizations, the pharmaceutical industry and the public to promote safe medication practices. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

Medication Reconciliation in Canada: Raising the Bar

Communicating effectively about medications is a critical component of delivering safe care. Without it, patients are at risk. By identifying and resolving medication discrepancies, the likelihood of adverse events occurring within health care organizations across the continuum of care will be reduced.

Using medication reconciliation, health care providers follow a formal process to work together with patients, families and care providers to ensure accurate and comprehensive medication[1] information is communicated consistently across transitions of care. Medication reconciliation is a systematic and comprehensive review of all the medications a patient is taking to ensure that medications being added, changed or discontinued are carefully assessed and documented. Endorsed by patient safety organizations around the world, medication reconciliation is intended to ensure accurate communication at care transition points, for example, when patients enter a hospital, transition to another service or provider, or are discharged home.

A high proportion of adverse events are drug-related (Samoy et al., 2006; Baker et al., 2004). Medication reconciliation can help bring these numbers down:

- The total cost of preventable, drug-related hospitalizations is about $2.6 billion per year (Hohl et al., 2011).
- 20% of patients discharged from acute care facilities experience an adverse event, and of those, 66% are drug-related (Forster et al., 2003).

How are organizations across all sectors of the Canadian health care system progressing with medication reconciliation? Which groups of the Canadian population are most at risk? What aspects of medication reconciliation do organizations perform well and what aspects present challenges? What resources are available to help organizations implement medication reconciliation? In this report, four national health care organizations – Accreditation Canada, the Canadian Institute for Health Information, the Canadian Patient Safety Institute, and the Institute for Safe Medication Practices Canada – share information about medication reconciliation in Canada, thus painting a comprehensive picture of the situation.

[1] Medications include prescription medications, herbal remedies (e.g., St. John's Wort), and over-the-counter medications.

Medication Reconciliation:
Reducing risks for patients and the health system

Medication reconciliation may help to prevent unplanned hospital readmissions and hospitalizations for ambulatory care sensitive conditions.

Hospital Readmissions

Unplanned hospital readmissions to acute care are common, costly, and potentially avoidable. Unplanned hospital readmissions represent a burden to patients and their family members as well as to the health care system. Better communication about medication use at the time of discharge from hospital can reduce unplanned hospital readmissions and return emergency department visits, both of which are costly for the health system and disruptive for patients. Medication reconciliation can reduce some cases of unplanned readmission by preventing those caused by drug interactions and side effects. Figure 1 highlights the populations affected and the costs associated with hospital readmissions.

Figure 1 – A profile of unplanned hospital readmissions in Canada

- More than 180,000 Canadians had an unplanned readmission to acute care within 30 days of discharge in 2010, costing an estimated $1.8 billion and accounting for 11% of all acute hospital costs.
- The overall rate of readmission to inpatient acute care in 30 days was 8.5%; this rate was highest for medical patients (13%). The rate of return to the emergency department within 7 days was 11% for medical patients in jurisdictions where it could be measured.
- Chronic conditions and the number of other pre-existing conditions were important risk factors for readmission. Among medical patients, those with chronic obstructive pulmonary disease (COPD) had the highest number of readmissions, followed by patients with heart failure. These patients often require multiple medications to manage their conditions after discharge.

Source: Canadian Institute for Health Information. *All-Cause Readmission to Acute Care and Return to the Emergency Department*. (Ottawa, ON.: CIHI, 2012). Further information can be found in the appendix, Figure A.1. The full report is available at www.cihi.ca.

Ambulatory Care Sensitive Conditions

Better management of medications may lead to fewer hospitalizations for ambulatory care sensitive conditions. Ambulatory care sensitive conditions include asthma, chronic obstructive pulmonary disease, diabetes, high blood pressure and heart diseases. These conditions cause considerable illness, hospitalizations and death among Canadians, affecting an estimated 6.8 million Canadians aged 20 to 74, and resulting in about 13,000 deaths annually. Many of the complications and resulting hospitalizations associated with these conditions can be avoided or delayed with appropriate community care, including regular monitoring, healthy lifestyles, drug therapies, and regular visits with primary care providers.

These conditions often require medication as treatment and many patients with these chronic conditions take several types of drugs on a regular basis. However, as shown in Figure 2, patients report that they do not receive enough information from their primary health care provider on potential side effects and appropriate use of their medications. Medication reconciliation can play an important role in properly managing these conditions in the community, resulting in better control of the condition and fewer patients being admitted to acute care for treatment.

Figure 2 – A profile of ambulatory care sensitive conditions in Canada

- In 2010-2011, the age-standardized rate of ambulatory care sensitive conditions in Canada was 299 per 100,000. This rate varied substantially between jurisdictions.
- Over 40% of adults with at least one ambulatory care sensitive condition in 2008 reported not receiving appropriate management of their medications, and 58% reviewed and discussed prescription medications with their family physician.

Sources: Canadian Institute for Health Information. *Health Indicators 2012*. (Ottawa, ON.: CIHI, 2012) and *Disparities in Primary Health Care Experiences Among Canadians With Ambulatory Care Sensitive Conditions* (Ottawa, ON.: CIHI, 2012). Further information can be found in the appendix, Figure A.2. The full reports are available at www.cihi.ca.

Medication Use in Seniors

In 2011, the first members of the baby boom generation turned 65. As seniors age, many develop a progressively complex mix of health conditions that require a growing number of medications to prevent the development of more serious illness. Seniors take more medications than any other age group, and are therefore more at risk of potential drug interactions or adverse events. In fact, seniors in Canada take four times more over-the-counter medications than any other age group. With many seniors taking multiple drugs on a daily basis, effective medication management is critical. Figure 3 profiles medication use by seniors.

Figure 3 – A profile of medication use in Canadian seniors

- In 2009, 63% of seniors claimed five or more drugs from different drug classes. 23% had claims for 10 or more.
- More than half (52%) of seniors on public drug programs in six reporting provinces were using drugs on a regular basis to treat two or more chronic conditions, while a quarter (25%) were chronically using drugs to treat 3 or more conditions. Among seniors who were chronic drug users, 65% were taking a drug to treat high blood pressure or heart failure.
- The most common drug classes used by seniors in 2010-2011 were HMG CoA-reductase inhibitors (most commonly used to treat high cholesterol levels), used by 47% of seniors, and Ace inhibitors (most often used to treat heart failure and high blood pressure), used by 30% of seniors.
- The Beers list is an internationally recognized list of drugs identified as potentially inappropriate because the drugs are either ineffective or pose an unnecessarily high risk for older persons and a safer alternative is available. When looking at drug use by seniors on public drug programs, more than 1 in 10 seniors was taking a drug from the Beers list on a regular basis in 2009 (after adjusting for age and sex). In 2009, public drug program spending on Beers drugs used on a chronic basis was roughly $15 million, accounting for 1.4% of total program spending on seniors. Further information can be found in the appendix, Figure A.3.

Sources: Canadian Institute for Health Information. *Health Care in Canada 2011*: *A Focus on Seniors and Aging*. (Ottawa, ON.: CIHI, 2011) and Canadian Institute for Health Information. *A Snapshot of Health Care in Canada as Demonstrated by Top 10 Lists*. (Ottawa, ON.: CIHI, 2011). The full reports are available at www.cihi.ca.

In summary, the benefits of medication reconciliation are well-established, including reduced risk of medication errors, improved clinical outcomes, and increased system efficiency. System efficiency is achieved in part through cost avoidance, by reducing unnecessary admissions, and a reduction in medication-related adverse events.

Medication Reconciliation in Canada: Considerable progress has been achieved

Medication reconciliation has demonstrated positive results in a number of studies, including:

- Using a nurse-pharmacist led process, medication reconciliation was able to potentially avert 81 adverse drug events for every 290 patients (Feldman et al., 2012).
- In a comparative analysis of various strategies for reducing potential adverse drug events, pharmacist-led medication reconciliation was the only adequate cost effective strategy (Etchells et al., 2012).
- Over a six month period, implementation of a formal medication reconciliation process upon transfer out of the Intensive Care Unit (ICU) decreased the number of sampled patients found to have a medication error from 94% to nearly 0% (Pronovost et al., 2003).
- On admission to home care, 45% of eligible clients had at least one medication discrepancy requiring clarification by a physician/primary care practitioner based on a sample of more than 600 clients in 2010 (Victorian Order of Nurses Canada, CPSI, & ISMP Canada, 2010).
- Long-term care (LTC) residents, who had medication reconciliation completed upon return to LTC from acute care, were less likely to have a discrepancy-related adverse event as compared to residents who did not have medication reconciliation completed (Boockvar et al., 2004).

As part of consultations CPSI conducted in 2011, medication reconciliation was identified as one of the top three patient safety priorities in every jurisdiction by health care leaders across Canada. Internationally, Canada plays an important role in medication reconciliation as lead of the World Health Organization's (WHO) High 5s *Assuring Medication Accuracy at Transitions in Care*, guiding teams from Australia, France, Germany, and the Netherlands in their implementation of medication reconciliation. The High 5s project is focused on significantly reducing the frequency of 5 challenging patient safety problems in 5 countries over 5 years. Given the importance of medication reconciliation, how are Canadian health care organizations performing when it comes to medication reconciliation? What guidance has been provided to Canadian health care organizations to help them improve in this important area of medication management?

Medication Reconciliation: A Priority for Accreditation Canada

Over 1,100 health care organizations (equaling close to 6,000 sites) participate in Accreditation Canada programs every year. Depending on the province or territory in which they are located, their health care sector, and whether of public or private composition, the Accreditation Canada client organizations differ greatly in size, scope, and context. A client organization may be an entire provincial health system, made up of many sites providing a wide range of services, or a single-site independent organization providing a narrower scope of services. During the on-site survey, trained surveyors from accredited health organizations assess the leadership, governance, clinical programs, and services of health care organizations against the Accreditation Canada standards.

This assessment and validation of compliance contributes to improving quality and safety, mitigates risk, contributes to enabling the organization and/or jurisdiction to achieve its priorities, and promotes organizational effectiveness through identification of areas of strength and areas for improvement.

First introduced into the accreditation program in 2005, Required Organizational Practices (ROPs) are evidence-based practices that mitigate risk and contribute to improving the quality and safety of health services. In order to ensure their continuing relevance, all ROPs are developed and integrated into the program with input from health care experts including practitioners, researchers, policy-makers, ministries of health personnel, academics, and health services providers at the provincial, territorial, and national levels. Existing initiatives and priorities within each jurisdiction are important considerations in the development process. Each ROP is supported by research, including evidence that the safety practice contributes to the reduction of health care costs.

Medication reconciliation was introduced into the Accreditation Canada program in 2005 for assessment in 2006 based on the recommendations of the Accreditation Canada Patient Safety Advisory Committee. The emerging evidence demonstrated that medication reconciliation reduced medication errors. Two ROPs are included in many of the Accreditation Canada standards. These are: *Medication Reconciliation at Admission* and *Medication Reconciliation at Transfer or Discharge*. These service-level ROPs cover the detailed steps of the medication reconciliation process, such as completing a Best Possible Medication History and communicating up-to-date medication lists to the next care provider.

Recognizing the resources, infrastructure, and process change challenges faced by organizations across Canada in the successful implementation of medication reconciliation, the Qmentum accreditation program requirements for medication reconciliation were scaled back in 2008. The current approach is detailed in the Accreditation Canada Leadership Standards as the *Medication Reconciliation as an Organizational Priority* ROP, which requires the following:

- Medication reconciliation is implemented in one client service area at admission and one client service area at transfer or discharge.
- There is a documented plan to implement medication reconciliation throughout the organization, which includes locations and timelines.

In order to facilitate implementation, the Accreditation Canada medication reconciliation ROPs were re-examined in close partnership with ISMP Canada, CPSI, and stakeholders from across Canada. As a result, the ROPs were customized with specific guidelines and tests for compliance. In 2010-2011, the *Medication Reconciliation at Admission* ROP was adjusted to incorporate the unique requirements of ambulatory/outpatient services, home/community services, and emergency departments. In 2011-2012, the *Medication Reconciliation at Transfer or Discharge* ROP was enhanced to clarify the important process steps for acute care, long-term care, ambulatory/outpatient services, and home/community services.

A Snapshot of Medication Reconciliation in Canada

The Accreditation Canada ROPs

Since the Qmentum accreditation program was introduced in 2008, there has been a gradual improvement in organizational performance on medication reconciliation ROPs across the continuum of care. Of the current 37 Qmentum program ROPs, the medication reconciliation ROPs had the greatest improvement in the past year. As shown in Figure 4, Canadian health care

organizations are to be commended for the near 15-point increase in national compliance rates for all aspects of medication reconciliation. Despite this progress, the medication reconciliation ROPs remain three of the ROPs with the lowest compliance rates across Canadian organizations. Detailed ROP results by areas of care can be found in the appendix, Figure A.4.

At an organizational level, national compliance with the medication reconciliation requirement (medication reconciliation in two client service areas, plus having a plan to disseminate it throughout the rest of the organization) had a 16% increase from 61% in 2010 to 77% in 2011. At the service level (e.g., *Surgical Care Services*, *Long-Term Care Services*), compliance rates for *Medication Reconciliation at Admission* improved from 47% (2010) to 60% (2011), and *Medication Reconciliation at Transfer or Discharge* progressed from 36% (2010) to 50% (2011).

The difference in compliance (60% vs. 50%) for these two ROPs is not surprising — without a reliable medication reconciliation process at admission, one cannot have a successful medication reconciliation process at transfer or discharge.

Feedback from across the country has indicated that the ROPs within the accreditation program have been a crucial lever in moving medication reconciliation initiatives forward. For a detailed look at all ROPs (in the *Accreditation Canada 2012 ROP Handbook*) and compliance rates (in the *2012 Canadian Health Accreditation Report: Emerging Risks, Focused Improvements*), visit www.accreditation.ca.

Figure 4 – National compliance rates with the Accreditation Canada medication reconciliation ROPs

ROP	Compliance rate (%)*		
	2009	2010	2011
Medication Reconciliation as an Organizational Priority	N/A	61	77
Medication Reconciliation at Admission	46	47	60
Medication Reconciliation at Transfer or Discharge	44	36	50

*Some variation is expected in ROP compliance rates from year to year because different organizations undergo on-site surveys each year.
N/A = ROP had not yet been introduced.

Safer Healthcare Now

Medication reconciliation was one of the six original *Safer Healthcare Now!* (SHN) interventions designed to contribute to making the health care system safer for Canadians. Since SHN was launched seven years ago, medication reconciliation has been the most highly subscribed intervention. Both the development of the SHN intervention and the Accreditation Canada ROP gave further focus to medication reconciliation as a patient safety priority in Canada.

More than 500 SHN teams (representing 450 different organizations) have shared their expertise, resources, data, experiences, questions, and tools to create a learning network. The work of teams that were successful in implementing medication reconciliation within their organization has been profiled across Canada through national webinars, which are available to support the virtual community.

2011 National Summit

Feedback from health care teams across the country revealed that while there was a sense of strong support for medication reconciliation, there was also frustration at the unexpected complexity, the need for strong and consistent leadership and sufficient resources to advance this agenda. To address these concerns, in February 2011, CPSI, Canada Health Infoway and ISMP Canada hosted a national invitational summit to accelerate a system-wide strategy to implement medication reconciliation. Seventy Canadian health care CEOs, senior leaders, representatives from national associations and provincial quality councils, physicians, nurses and pharmacists worked together to identify themes that would accelerate and optimize medication reconciliation across the continuum of care. As shown in Figure 5, the key themes identified were leadership support and inter-professional engagement, including physicians.

Figure 5 – Key themes identified from the February 2011 national medication reconciliation summit

1. Leadership support and accountability
2. Inter-professional engagement, including the role of the physician
3. Public, consumer and caregiver engagement
4. Culture
5. Education and training
6. Information systems and technology
7. Tools and resources
8. Measurement
9. Research

Learning from Practice Leaders

In an effort to better understand the current landscape of medication reconciliation in Canada, health care organizations that were identified as potential practice leaders were surveyed in late 2011. The purpose was to identify challenges and success factors in the implementation of their medication reconciliation strategies, and to collect an inventory of tools and resources that contributed to their successes. Figure 6 shows the keys to success and the challenges identified. Medication reconciliation requires engagement of physicians, nurses and pharmacy staff and effective leadership is critical. The full report, *National Medication Reconciliation Strategy – Identifying Practice Leaders for Medication Reconciliation in Canada* (CPSI and ISMP Canada, 2012), is available at:

- www.saferhealthcarenow.ca/EN/Interventions/medrec/Documents/Identifying%20Practice%20Leaders%20for%20Medication%20Reconciliation%20in%20Canada.pdf
- www.ismp-canada.org/download/MedRec/Identifying_Practice_Leaders_for_Medication_Reconciliation_in_Canada.pdf.

Figure 6 – Key success factors and challenges identified from medication reconciliation practice leaders in Canada, 2012

Success factors	Challenges identified
1. Strong leadership support	1. Lack of both human and fiscal resources
2. Physician champions/leaders	2. Limited technology
3. Information technology support	3. Insufficient professional and government direction
4. Comprehensive staff education plan	

50 organizations, representing nine provinces, were interviewed using a standardized survey tool. They ranged from small, stand-alone facilities to large, regional health care organizations and academic centers. 74% of the organizations had fully implemented medication reconciliation on admission, while 44% had full implementation on transfer, and 37% on discharge. The majority had implemented medication reconciliation on medical units (65%) and on surgery units (59%). Of the respondents, 54% used a paper-based system, while 40% used a hybrid electronic/paper system, and 15% used a fully-integrated electronic system.

To improve effective communication about medications across interfaces of care all these issues need to be addressed. The most successful Canadian teams have strong leadership support, physician champions/leaders, information technology support, and adequate resources. For example, many respondents said that the successful implementation of medication reconciliation using paper-based tools was achievable at admission; however, the complexity of the process at other transitions requires either the availability of technology and/or improvements to existing technologies. When questioned about their implementation plans, respondents indicated their top three strategies were:

- Securing senior leadership commitment and support
- Collecting baseline data to demonstrate a need, then track improvements over time
- Small pilot tests before spreading new strategies more broadly

While organizations identified compliance with the Accreditation Canada ROPs as the single biggest driver for implementing medication reconciliation, many indicated that after successful implementation, the clinical benefit became the primary motivator to continue.

Renewing the Focus on Medication Reconciliation Over the Last Two Years:

Securing support and sharing resources

To accomplish the themes identified at the 2011 national summit a number of initiatives have since been developed. These initiatives demonstrate that improving communications about medications must involve health care leaders, practitioners, and the public.

Consensus Statement

The commitment of thirteen national, Canadian health care organizations to support strategies to improve communication on medication reconciliation was secured earlier in 2012. A unique component of this work led by CPSI and ISMP Canada was the development of a consensus statement endorsed by all organizations as shown in Figure 7. This statement was further strengthened by the endorsement of Patients for Patient Safety Canada — the national voice of patients to improve safety in health care. Work to define the roles and responsibilities of each health care professional in the medication reconciliation process is underway.

Figure 7 – Medication reconciliation 2012 consensus statement

Medication Safety: We all have a role to play.

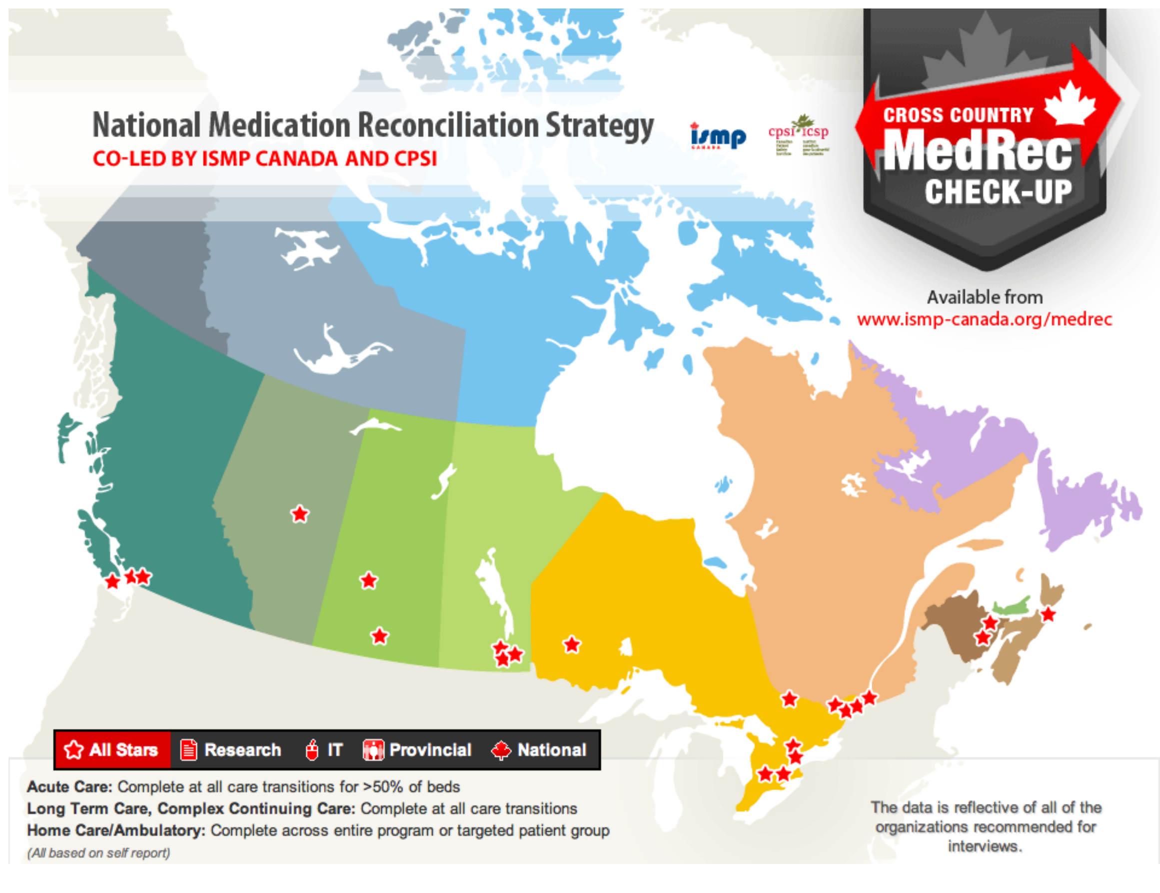
Safe patient care depends on accurate information. Patients benefit when clinicians work with patients, families, and their colleagues to collect and share current and comprehensive medication information. Medication reconciliation is a formal process to do this at care transitions, such as when patients enter the hospital, are transferred or go home. We all have a role to play.

Accreditation Canada, Canada Health Infoway, the Canadian Medical Association, the Canadian Nurses Association, the Canadian Pharmacists Association, the Canadian Society of Hospital Pharmacists, Patients for Patient Safety Canada, the Royal College of Physicians and Surgeons of Canada, The College of Family Physicians of Canada, Canadian Patient Safety Institute and the Institute for Safe Medication Practices Canada **actively support strategies to improve medication safety and call on all healthcare professionals to contribute to effective communication about medications at all transitions of care to improve the quality and safety of our Canadian healthcare system.**

MedRec Check-Up Map and Leading Practices

An interactive map was developed to profile Canadian medication reconciliation success. The map identifies practice leaders (see the 2012 CPSI and ISMP Canada report, *Identifying Practice Leaders for Medication Reconciliation in Canada,* for additional information), the use of technology, provincial and national supports, Canadian research and publications related to medication reconciliation. This Cross Country MedRec Check-Up Map is available on the CPSI and ISMP Canada websites (see www.ismp-canada.org/medrec/map) and is continually updated.

Figure 8 – Cross Country MedRec Check-Up Map



Accreditation Canada recognizes leading practices in Canadian organizations across the care continuum that are particularly innovative and cost-effective solutions to improve quality. Organizations are encouraged to participate in the promotion of quality and safety practices across the country by sharing their knowledge and learning from other organizations through Accreditation Canada's searchable online Leading Practices database at www.accreditation.ca/knowledge-exchange/leading-practices. The Leading Practices database can also be searched by key words such as "medication reconciliation". *Qmentum Quarterly*, a publication by Accreditation Canada, recently released an edition entitled "Medication Management" (Volume 4, Number 2) that features a number of articles by various organizations that have successfully implemented medication reconciliation strategies.

These resources allow innovative practices in medication reconciliation to be shared and provide an opportunity for organizations to share their success so that others can learn from their experience. Some of the practices recognized include customizing medication reconciliation supports for the homecare environment, using electronic data or paper-based forms to better track patient information as patients move across the system, and developing visual teaching aids so staff can better understand the process as a series of steps with a clear rationale for each one.

There are many varied approaches to medication reconciliation, which reflect the differing context and reality of each organization. While common fundamental principles are necessary, unique approaches are being implemented across Canada. For example, Fernandes and Shojania (2012) recently reviewed a number of approaches to implementing medication reconciliation in the Canadian hospital environment and discuss their respective benefits and challenges with uptake [*Medication Reconciliation in the Hospital: What, Why, Where, When, Who and How?*, *Healthcare Quarterly*, 15(Special Issue) 2012: 42-49, available at www.longwoods.com/content/22842].

MyMedRec

An interactive iPhone and iPad app, MyMedRec, was developed by ISMP Canada with input from Canadian patient groups and health care provider organizations (see Figure 9). Launched in 2012, this new electronic tool has been developed to help Canadians manage their own health care and use their medications safely and appropriately. MyMedRec allows patients and caregivers to have their medication and immunization record at their fingertips. The tool will help patients and caregivers compile a full list of their medications whether prescription, over-the-counter or natural health products and share the information with their health care team as they see fit. It includes features such as refill and dose reminders, medication histories, multiple patient profiles, e-mail and picture capabilities, as well as contact information of prescribers and pharmacies.

The app is supported by the www.knowledgeisthebestmedicine.org website which contains health information, relevant links and safe medication use tips, and downloadable medication records. The *Knowledge is the Best Medicine* program has been used by millions of Canadians for nearly two decades in collaboration with hundreds of health provider organizations, governments, hospitals, health units, doctors, nurses, pharmacists and patient groups.

Figure 9 – MyMedRec

Canada's Research-Based Pharmaceutical Companies (Rx&D), the Canadian Nurses Association, the Canadian Pharmacists Association, the Canadian Medical Association, ISMP Canada, the Victorian Order of Nurses and the Best Medicines Coalition have joined together to support development of the app.

The Future of Medication Reconciliation in Canada: Where to from here?

There is clearly value to the medication reconciliation process. Better communication about medication can reduce medication side effects and complications. Better communication about medication may also reduce return emergency department visits and unplanned hospital readmissions, contributing to achieving jurisdictional health care priorities. Medication reconciliation has been shown to be especially critical in patient populations that use more medications and are therefore more at risk of potential drug interactions or adverse events, including seniors and patients with Ambulatory Care Sensitive conditions.

Across Canada, rates of compliance with the Accreditation Canada medication reconciliation ROPs have continued to increase over the past years. Accreditation Canada has begun consultations with its national partners and medication reconciliation leaders from across Canada to inform the program enhancements that will position medication reconciliation as a continuing catalyst in improving medication safety. Consultations are focused on improving alignment with the National Medication Reconciliation Strategy, and opportunities for Accreditation Canada staff to offer additional support to client organizations implementing medication reconciliation. Client organizations have one year from when new ROP requirements are introduced into the program until they come into effect during accreditation surveys. Medication reconciliation will continue to be structured in a way that retains the benefits of customization in specific service areas, yet also permits surveyors to consistently evaluate requirements across organizations in all sectors, with varying structures and sizes, at different stages of the implementation process. As part of the Accreditation Canada surveyor certification program, training will strengthen surveyor capacity in recognizing high-quality medication reconciliation processes across the continuum of care.

To continue spreading medication reconciliation across the system, a number of strategies are designated priorities of the National Medication Reconciliation Strategy, co-led by CPSI and ISMP Canada:

- The development of a comprehensive strategy to engage and involve senior leaders (including board members) in understanding their roles and responsibilities in advancing medication reconciliation across their organizations.
- Continuing collaboration with national organizations (including Canada Health Infoway) to drive technology to front-line providers that is affordable, user-friendly, and accessible.
- Developing and disseminating tools and resources to support front-line providers to understand and perform their role in the medication reconciliation process successfully. Tools and resources are also being adapted for use by families, clients and unregulated care providers in the community setting.
- Including medication reconciliation as part of the curriculum of health care practitioners in Canadian faculties of medicine, nursing and pharmacy, prior to entering practice.

- Continuing collaboration with professional associations and national partners to create a comprehensive communication strategy to support medication reconciliation efforts in Canada. This strategy will target health care providers; provincial, territorial, and federal health ministries; and the public.

Looking Ahead: Medication Reconciliation for All

Medication reconciliation continues to be a complex and challenging component of patient safety for health care organizations across Canada. Committed and visible leadership is required for system-wide implementation and spread of this key patient safety priority. The partnership between Accreditation Canada, the Canadian Institute for Health Information, the Canadian Patient Safety Institute, and the Institute for Safe Medication Practices Canada will continue to provide leadership, comparable data and information on best practices, and ongoing support to make care safer for all Canadians. This collaboration will advance the national medication reconciliation agenda and foster improvements in the communication of medication information within the health care system, promote consistent measurement, and ensure tools are continually reviewed and updated to support this important work.

The end goal – implementation of medication reconciliation across the Canadian health system – is attainable. Health care organizations that have successfully implemented medication reconciliation have an overwhelming sense that medication reconciliation benefits patients, is the right thing to do, and makes care safer. This essential communication – to collect and share comprehensive medication information – must involve clinicians working with patients and families (to educate and promote self-management), other health care providers, and unwavering support from health care leaders. Communicating effectively about medications is a critical component of delivering safe high-quality care across all sectors of the Canadian health care system.

Appendices

Figure A.1 – A profile of unplanned hospital readmissions in Canada: Conditions representing the largest number of readmissions and their reasons for return, for medical patients

Condition	Readmission Rate	Readmission Volume	Two Most Frequent Conditions Upon Readmission (percentage)	
COPD	18.8	10,517	COPD (56.3%)	Heart Failure Without Coronary Angiogram (5.2%)
Heart Failure Without Coronary Angiogram	21	7,855	Heart Failure Without Coronary Angiogram (42.2%)	COPD (5.2%)
Pneumonia	12.5	4,386	Pneumonia (18.8%)	Heart Failure Without Coronary Angiogram (7.6%)
Symptoms/Signs of Digestive System	15.6	3,953	Symptoms/Signs of Digestive System (25.7%)	Gastrointestinal Obstruction (3.3%)
Arrhythmia Without Coronary Angiogram	12.6	3,548	Arrhythmia Without Coronary Angiogram (31.6%)	Heart Failure Without Coronary Angiogram (12.2%)

Sources: Discharge Abstract Database, 2010–2011, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2009–2010, ministère de la Santé et des Services sociaux du Québec.

Figure A.2 – A profile of ambulatory care sensitive conditions: age-standardized rate of ambulatory care sensitive conditions, 2010-2011, by Health Region, Canada

	Ambulatory Care Sensitive Conditions 2010–2011	
Health Region	Age-Standardized Rate per 100,000	95% CI
Newfoundland and Labrador	***461**	**(443–479)**
Eastern	*408	(386–431)
Central	*527	(479–574)
Western	*530	(480–579)
Prince Edward Island	***515**	**(478–552)**
Nova Scotia	***334**	**(323–345)**
South Shore	337	(290–384)
South West Nova	*480	(426–534)
Annapolis Valley	316	(280–352)
Colchester East Hants	322	(283–360)
Cape Breton	*506	(466–546)
Capital	*227	(213–242)
New Brunswick	***474**	**(459–489)**
Zone 1 (Moncton area)	*381	(355–408)
Zone 2 (Saint John area)	*430	(400–461)
Zone 3 (Fredericton area)	*520	(487–553)
Zone 6 (Bathurst area)	*511	(462–560)
Quebec	***289**	**(285–292)**
Bas-Saint-Laurent	322	(299–346)
Saguenay–Lac-Saint-Jean	*412	(388–436)
Capitale-Nationale	*231	(220–242)
Mauricie et Centre-du-Québec	313	(298–328)
Estrie	310	(291–329)
Montréal	*258	(251–265)
Outaouais	315	(296–333)
Abitibi-Témiscamingue	*414	(382–447)
Côte-Nord	*463	(421–505)
Gaspésie–Îles-de-la-Madeleine	*583	(538–628)
Chaudière-Appalaches	*261	(246–276)
Laval	*198	(185–212)
Lanaudière	291	(276–307)
Laurentides	*271	(257–284)
Montérégie	299	(290–307)
Ontario	***274**	**(271–277)**
Erie St. Clair	*321	(308–335)
South West	302	(292–313)
Waterloo Wellington	*245	(233–256)
Hamilton Niagara Haldimand Brant	*322	(312–331)
Central West	*261	(249–272)
Mississauga Halton	*196	(188–204)
Toronto Central	*244	(235–253)
Central	*180	(174–187)
Central East	*252	(244–260)
South East	*330	(314–346)
Champlain	*247	(238–256)
North Simcoe Muskoka	*329	(312–345)
North East	*476	(459–494)
North West	*531	(502–560)
Manitoba	***329**	**(319–339)**
Winnipeg	*241	(229–253)
Brandon	*380	(326–435)
South Eastman	*236	(198–274)
Interlake	*349	(311–387)
Central	*336	(301–371)
Assiniboine	*500	(447–553)

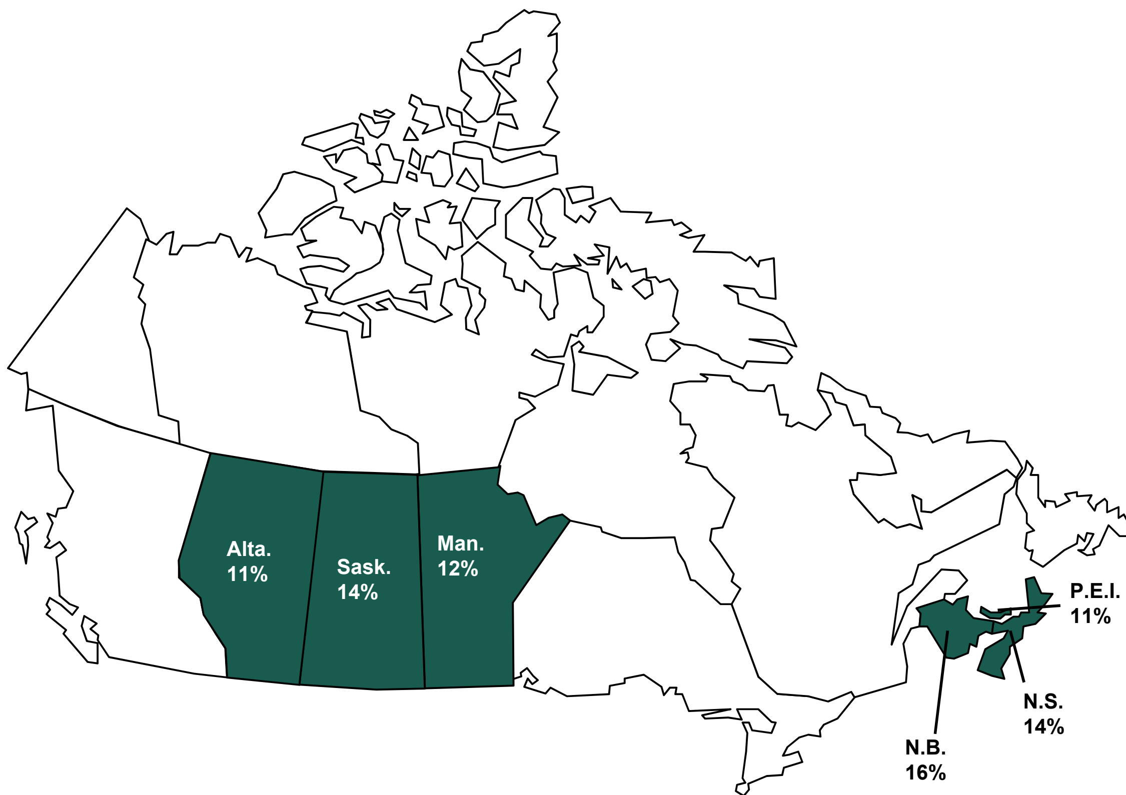
Health Region	Ambulatory Care Sensitive Conditions 2010–2011	
	Age-Standardized Rate per 100,000	95% CI
Saskatchewan	***478**	**(464–491)**
Sun Country	*520	(459–580)
Five Hills	*435	(378–493)
Regina	504	(476–532)
Sunrise	*716	(646–785)
Saskatoon	296	(277–316)
Prince Albert	*495	(445–544)
Prairie North	*631	(570–691)
Alberta	***309**	**(303–314)**
South Zone	*431	(406–455)
Calgary Zone	*237	(229–246)
Central Zone	*408	(389–427)
Edmonton Zone	*240	(230–249)
North Zone	*551	(527–575)
British Columbia	***263**	**(258–267)**
East Kootenay	*458	(411–505)
Kootenay Boundary	316	(277–356)
Okanagan	312	(294–331)
Thompson/Cariboo/Shuswap	*324	(301–347)
Fraser East	*333	(312–354)
Fraser North	*223	(210–235)
Fraser South	*253	(242–265)
Richmond	*156	(138–175)
Vancouver	*200	(189–211)
North Shore	*214	(196–231)
South Vancouver Island	*181	(166–195)
Central Vancouver Island	298	(277–319)
North Vancouver Island	297	(267–326)
Northwest	*520	(470–570)
Northern Interior	*497	(460–533)
Northeast	*380	(332–428)
Yukon	***504**	**(428–580)**
Northwest Territories	***644**	**(552–736)**
Nunavut	***913**	**(760–1,066)**
Canada	**299**	**(297–301)**

Ambulatory care sensitive conditions

Age-standardized acute care hospitalization rate for conditions where appropriate ambulatory care prevents or reduces the need for hospitalization, per 100,000 population younger than age 75. Hospitalizations for ambulatory care sensitive conditions are considered to be an indirect measure of access to appropriate primary health care. While not all admissions for these conditions are avoidable, appropriate ambulatory care could potentially prevent the onset of this type of illness or condition, control an acute episodic illness or condition, or manage a chronic disease or condition.

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

Figure A.3 – A profile of medication use in Canadian seniors: Age-sex standardized rate of chronic Beers drug use among seniors on public drug programs, selected provinces, 2009



Source: National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Drugs described as potentially inappropriate for seniors were designated as part of the Beers list. The current version is available from the *American Geriatrics Journal*, available at http://www.americangeriatrics.org/files/documents/beers/2012BeersCriteria_JAGS.pdf

In 2009, three drugs on the Beers list were used on a chronic basis by more than 1% of seniors on public drug programs: amitriptyline, an antidepressant; conjugated estrogens, used in hormone replacement therapy, and oxybutinin, used to treat incontinence.

Figure A.4 – National compliance rates with the Accreditation Canada medication reconciliation ROPs

Medication reconciliation at admission

	Compliance (%)		
Area of Care	**2009**	**2010**	**2011**
Ambulatory Care	29	31	49
Critical Care	41	46	54
Emergency Department	43	48	64
Home Care	30	26	47
Long-Term Care	67	64	69
Medicine	45	47	63
Mental Health	33	45	59
Obstetric Care	43	44	49
Surgical Care	35	54	60
Overall	46	47	60

Medication reconciliation at transfer or discharge

	Compliance (%)		
Area of Care	**2009**	**2010**	**2011**
Ambulatory Care	35	15	42
Critical Care	29	26	40
Emergency Department	45	41	55
Home Care	25	26	41
Long-Term Care	65	57	67
Medicine	47	32	50
Mental Health	33	27	51
Obstetric Care	39	30	38
Surgical Care	38	35	34
Overall	44	36	50

Note: Some variation is expected in ROP compliance rates from year to year because different organizations undergo on-site surveys each year and due to the ROP changes introduced beginning in 2010. Higher rates in long-term care are expected due to fewer admissions and transfers/discharges.

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