



Physician Follow-Up After Hospital Discharge: Progress in Meeting Best Practices

Types of Care



Canadian Institute
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Physician Follow-Up After Hospital Discharge: Progress in Meeting Best Practices

Key Findings

The period immediately after discharge from hospital can potentially be high risk and a vulnerable transition point for patients. Continuity of care is critical during the patient's transition from the hospital to the community. Improved continuity of care has many benefits, such as fewer medical errors and better ongoing management of the patient's condition. Using newly acquired physician billing data, this analysis from the Canadian Institute for Health Information (CIHI) assessed Alberta's and Saskatchewan's adherence to best practices for patient follow-up in the community after hospitalization.

- For 3 selected conditions—acute myocardial infarction (AMI), heart failure (HF) and chronic obstructive pulmonary disease (COPD)—where a follow-up visit is recommended from within the first week to a month after discharge, we found that the majority of patients (77% to 92%) saw a physician within a month of their discharge. However, fewer patients saw a physician within the first week (35% to 56%).
- There is considerable variation in follow-up rates among these conditions and across health regions. Patients with chronic conditions (HF or COPD), those from lower-income neighbourhoods and rural areas, and patients discharged home with support services or from community hospitals (as opposed to teaching hospitals) had lower 7-day follow-up rates.
- Follow-up visits increased when patients had a “familiar” physician, especially for patients with COPD.

Study Objectives

Post-discharge follow-up can ensure a smooth transition for patients from the hospital to the community. Best practices recommend that many patients should see a doctor for follow-up shortly after hospital discharge. Improved continuity of care has many benefits, such as fewer medical errors, improved communication between care providers and the translation of knowledge into health-promoting actions at home.¹⁻³ However, much is unknown about physician follow-up rates in Canada.

Given that the rates of physician follow-up are not well-documented in Canada, the objectives of this study were two-fold:

- To determine rates of physician follow-up with a primary care physician or specialist after discharge from an acute care hospital; and
- To examine physician-, patient- and hospital-related factors affecting physician follow-up.

The study focused on patients discharged for 1 of 3 conditions: AMI, HF or COPD. The analysis was based on Alberta and Saskatchewan, where information on follow-up physician visits was readily available to CIHI.

Continuity of Care

Continuity of care is a high priority for health systems around the world. It involves coordinating the care and experience of patients over time as they navigate through the health care system, with the goal of reducing disruptions caused by the involvement of different practitioners and different care settings. Poor continuity of care can lead to unnecessary repetition of diagnostic tests, inappropriate drug prescriptions or poor information transfer.⁴ Physician follow-up is recommended as best practice because it improves continuity of care and information transfer, reducing the probability of these negative outcomes. This allows for smoother transitions to the community and avoids gaps and delays in communication, consistent treatment and continuity of care.⁵

The benefits of physician follow-up include providing patients with an opportunity to ask questions about their hospitalization, clarify any misunderstandings about post-discharge instructions (including medication discrepancies) and identify potential barriers to recovery. Follow-up also provides an opportunity for physicians to learn what happened in hospital and to see whether their patients are progressing as expected.

The period immediately after discharge from hospital can potentially be high risk and a vulnerable transition point for some patients. Best practices recommend that many patients discharged from hospital should see a doctor for follow-up within a few days of discharge.⁶ Canadian and international guidelines suggest that follow-up for certain conditions should occur from 1 week to 1 month after discharge.^{7–9} Selected studies in Canada^{6, 10, 11} and the U.S.^{12–18} report 7- or 30-day physician follow-up rates. Results vary by patient population, follow-up time and geographic location; however, most suggest room for improvement.

Although follow-up is important for a number of diseases, this study examined physician follow-up for patients hospitalized for AMI, HF or COPD. These 3 conditions were chosen due to their burden on the population and the role of follow-up in reducing potential post-discharge complications. Both HF and COPD are chronic conditions that are commonly regarded as ones that should be treated in the community, outside of hospital (i.e., they are ambulatory care sensitive conditions).¹⁹ AMI was also included to examine differences in follow-up rates, as it is a common acute condition.²⁰ In addition to their burden on the population, timely follow-up (usually within 1 or 2 weeks) has often been recommended for these specific conditions by a number of medical associations.^{7, 8, 21–23}

Methods

Physician (primary or specialist) follow-up was measured in patients age 18 and older with a most responsible diagnosis of AMI, HF or COPD. Hospital admissions were identified from the Discharge Abstract Database and National Ambulatory Care Reporting System. The first hospital admission that was not preceded by a previous hospitalization 30 days prior was selected for each patient. Data was restricted to hospitalizations occurring in Alberta or Saskatchewan, where linkable physician billing data was available to CIHI. These hospitalizations were then linked to the National Physician Database (for 2010–2011 to 2012–2013) using physician billing claims (both fee-for-service and alternative payments) from Alberta Health and Saskatchewan Health.

All physician visits that occurred outside of hospital or within a hospital clinic were included. We did not include physician visits that occurred during a patient's hospital stay as follow-ups. Visits included fee codes covering discussion of care, physical examination or patient assessments. Detailed methodological notes can be found in **Appendix A**.

Patient-Level Physician Billing Data

Canada provides universal coverage for medically necessary health services, including physician visits, for services covered by provincial health plans. These services are billed to the respective province's or territory's medical care plan and captured in a billing or claims database. Each claim includes information on who was involved, what service was performed, where it occurred, when it occurred and the diagnostic code for the disease or condition that was treated.²⁴ These databases include both fee-for-service billings, where physicians are paid for each individual treatment or service provided, and shadow billings, where physician payment is not directly linked to the services reported.²⁵ Although there are multiple payment models, the majority of services are reimbursed through fee-for-service billings. No systematic differences were seen in outcomes measured in this study based on payment types.

Using billing data to measure follow-up has its limitations. Other service providers, such as pharmacists or nurse practitioners, are not included in this data. Claims use a single diagnostic code, which often does not contain information on the severity or complexity of the disease or the extent of care provided by the physician.²⁶

For more information on CIHI's physician databases, visit www.cihi.ca.

Results

Between 2010–2011 and 2012–2013, there were close to 24,000 index hospitalizations for patients with AMI, HF or COPD in Alberta and close to 10,000 index hospitalizations in Saskatchewan (Table 1).

Table 1: Number of Index Hospitalizations, Alberta and Saskatchewan, 2010–2011 to 2012–2013

	AMI		HF		COPD	
	Alta.	Sask.	Alta.	Sask.	Alta.	Sask.
Index Hospitalizations	8,616	3,416	5,684	2,523	9,519	3,710

Notes

AMI: Acute myocardial infarction.

HF: Heart failure.

COPD: Chronic obstructive pulmonary disease.

Sources

Discharge Abstract Database, National Ambulatory Care Reporting System and National Physician Database, 2010–2011 to 2012–2013, Canadian Institute for Health Information.

Physician Follow-Up Rates

For 3 selected conditions (AMI, HF and COPD) where a follow-up visit is recommended from within the first week to a month, we found that the majority of patients (77% to 92%) saw a physician within a month of discharge. However, fewer patients saw a physician within the first week (35% to 56%).

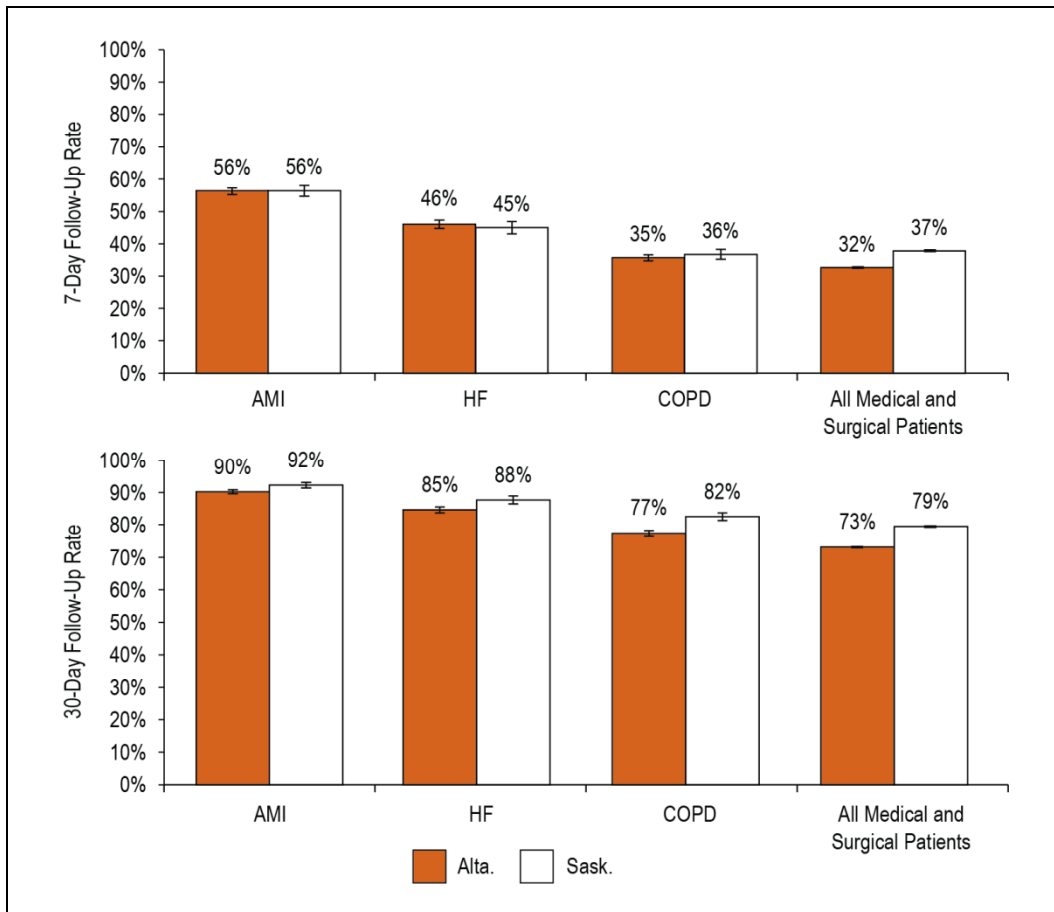
Best Practices

There is some variation in follow-up recommendations across organizations and diseases. Both in Canada and internationally, guidelines typically suggest that follow-up for COPD should be between 1 and 2 weeks.^{11, 21, 27} Similar guidelines exist for HF patients, suggesting that follow-up occur within 2 to 4 weeks.^{7, 28} A set of Canadian quality indicators for AMI care suggests follow-up within 1 month.⁹

Between one-third and one-half of patients in this study saw a physician within a week of being discharged from hospital. Rates were highest for AMI (56%) and lowest for COPD (35% to 36%). Results for the 2 provinces were similar for the 3 patient condition groups at the 7-day mark. Patients hospitalized for these conditions had similar (for COPD) or higher (for HF and AMI) follow-up rates than all medical and surgical patients combined (Figure 1).

Most patients (77% to 92%) hospitalized for these 3 conditions in both provinces were seen by a physician within 30 days of hospital discharge. The 30-day follow-up rates were slightly higher in Saskatchewan.

Figure 1: Crude 7- and 30-Day Physician Follow-Up Rates by Patient Group and Province, 2010–2011 to 2012–2013



Notes

AMI: Acute myocardial infarction.

HF: Heart failure.

COPD: Chronic obstructive pulmonary disease.

All Medical and Surgical Patients includes those with AMI, HF and COPD.

Sources

Discharge Abstract Database, National Ambulatory Care Reporting System and National Physician Database, 2010–2011 to 2012–2013, Canadian Institute for Health Information.

Variation in Follow-Up Rates

There is considerable variation in follow-up rates among these 3 conditions and across health regions. Patients with chronic conditions (HF or COPD), those from lower-income neighbourhoods or rural areas, and patients discharged home with support services or from community hospitals (as opposed to teaching hospitals) had lower 7-day follow-up rates.

In both provinces, follow-up care varied by *condition* and *region*:

- 7- and 30-day follow-up rates were higher for patients with AMI than for those with chronic conditions (HF or COPD) in both provinces (Figure 1).
- There were notable differences in 7-day follow-up rates for AMI in the urban regions in each province (**Appendix B**). This variation might be because a higher proportion of AMI patients were treated in teaching hospitals, and teaching hospitals are generally located in urban regions. Our analysis found that teaching hospitals had higher rates of follow-up.
- In both provinces, urban regions—those with a higher population density, more hospital beds and more physicians per capita—generally had higher follow-up rates (**Appendix B**). In both provinces, the northern regions had the lowest follow-up rates.
- The regional variation in follow-up became smaller at the 30-day mark.

Factors Associated With Follow-Up Rates

30-day follow-up rates were high—more than three-quarters of patients hospitalized for these diseases had a physician follow-up visit. Since there was more variation (and hence room for improvement) in the 7-day follow-up rates, additional analysis was conducted on this group to identify factors that can be associated with lower follow-up rates. These factors were not always consistent across provinces and diseases. However, some factors showed a consistent pattern of influence on follow-up rates. Lower follow-up rates were seen in patients who

- Lived in lower-income neighbourhoods;
- Lived in rural areas;
- Were discharged home with support services; and
- Were discharged from community hospitals (versus teaching hospitals).

The likelihood of prompt follow-up for these patients may increase depending on hospital-, physician- and patient-level factors. For example, hospitals with better information systems (e.g., teaching hospitals) might have better follow-up rates because information can be shared more quickly between the hospital and community care providers. Patients with higher disease severity (using proxy measures such as being discharged home with support services) had lower follow-up rates, possibly due to their reduced mobility or the availability of other types of care. Patients who live in more remote or lower-income communities have reduced access to physicians in general, potentially due to fewer available physicians²⁹ and more restricted hours for care.

More details about factors that correlate with low rates of 7-day follow-up are available in the supplementary tables at www.cihi.ca.

Physician Type

Follow-up visits increased when patients had a “familiar” physician, especially for patients with COPD.

Focusing on the 7-day follow-up results, the majority of patients saw a family physician on their first visit after discharge. The proportion of patients who saw a specialist rather than a primary care physician at their first visit was higher in Saskatchewan than in Alberta for AMI (48% versus 11%), HF (29% versus 16%) and COPD (23% versus 12%).

Measuring Physician Familiarity

Similar to the approach used by McAlister et al.,¹⁰ we considered any physician with whom the patient had had at least 2 visits in the 12 months preceding the index hospitalization (community physician) or at least 1 visit during the hospital stay (hospital physician) to be familiar with the patient’s health. By this definition, a patient could have more than 1 familiar physician.

This definition of a familiar physician has been used previously in the literature; however, other definitions may have also been used. In Alberta, for example, a 4- or 6-step process is used to define the most responsible provider. A continuity of care index (COCI) has also been used to determine the familiarity of a physician; however, this index looks only at primary care providers and allows for the assignment of only 1 familiar physician per patient.³⁰ Specialists are not captured by this definition; however, they play an important role in follow-up for AMI patients, as well as for HF and COPD patients.

Regardless of whether the patient saw a specialist or generalist, a key component of continuity of care is that patients are familiar with their care providers. Having a familiar physician may have positive benefits, including making patient care more efficient, improving patient–physician communication, facilitating patient compliance with medication and improving patient adherence with follow-up appointments.³¹ Research has shown that seeing a physician who is familiar with the patient’s health might have a beneficial impact on follow-up rates.¹⁰

In this analysis, we considered 2 types of familiar physicians:

1. **Familiar community physician:** A physician the patient had seen at least twice prior to the hospitalization.
2. **Familiar hospital physician:** A physician the patient had seen during the hospital stay.

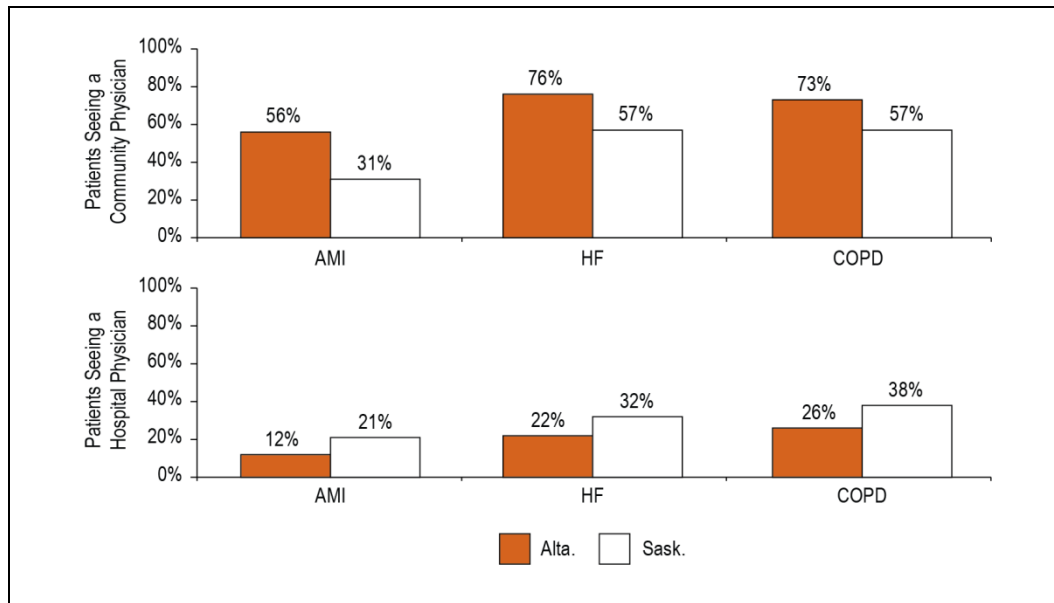
The majority of follow-up visits were made with a familiar community physician, especially for those in Alberta (Figure 2). This may reflect the nature of these conditions: HF and COPD are chronic conditions requiring regular/continual care. A similar trend between conditions was seen in follow-up with familiar hospital physicians, although fewer patients followed up with familiar hospital physicians than with familiar community physicians.

There is an overlap between these 2 types of familiar physicians. A number of patients had their follow-up with a familiar hospital physician who was also their familiar community physician—that is, the physician had previously treated them in the community. This overlap varied by condition and province, ranging from 6% for AMI patients in both provinces to 26% for COPD patients in Saskatchewan. This consistency in physicians across locations may demonstrate high continuity of care in this patient group.

Having a familiar physician increased the chance of having a 7-day follow-up visit by up to 3 times, especially for COPD patients (Table 2). After adjusting for previous primary care visits (a potential proxy for disease severity and access—independent of the index hospitalization), having a familiar physician was still significantly associated with 7-day follow-up for COPD patients in Alberta. When looking at 30-day physician follow-up (data can be found in the supplementary tables at www.cihi.ca), having a familiar physician was associated with higher follow-up for AMI and COPD patients in both provinces.

Having a familiar physician may improve continuity of care, patient self-management and health behaviours, including better medication compliance or lifestyle. It could also signal greater health care usage, worse disease severity or better mobility/access.

Figure 2: Percentage of Patients Seeing a Familiar Physician (Community or Hospital), 7-Day Follow-Up, Alberta and Saskatchewan, 2010–2011 to 2012–2013



Notes

AMI: Acute myocardial infarction.

HF: Heart failure.

COPD: Chronic obstructive pulmonary disease.

Excludes index hospitalizations in 2010 (community physicians only). Familiar community physicians were considered to be any physician with whom the patient had had at least 2 visits in the 12 months preceding the index hospitalization. Familiar hospital physicians were considered to be any physician the patient saw during the index hospitalization. By this definition, a patient could have more than 1 familiar physician.

Sources

Discharge Abstract Database, National Ambulatory Care Reporting System and National Physician Database, 2010–2011 to 2012–2013, Canadian Institute for Health Information.

Table 2: Association Between Familiar Physician and 7-Day Physician Follow-Up, Alberta and Saskatchewan, 2010–2011 to 2012–2013

		Unadjusted Odds Ratio (95% Confidence Interval)	Adjusted Odds Ratio (95% Confidence Interval)
Alta.	AMI	1.3 (1.1–1.4)	1.1 (1.0–1.3)*
	HF	2.4 (1.8–3.1)	1.2 (0.9–1.6)*
	COPD	2.7 (2.2–3.3)	1.4 (1.1–1.8)
Sask.	AMI	1.3 (1.1–1.6)	1.1 (0.9–1.4)*
	HF	1.4 (0.9–2.0)*	0.9 (0.6–1.4)*
	COPD	1.8 (1.3–2.6)	1.1 (0.8–1.5)*

Notes

* Not significant.

AMI: Acute myocardial infarction.

HF: Heart failure.

COPD: Chronic obstructive pulmonary disease.

The adjusted odds ratio controls for frequency of previous visits to community physicians.

Sources

Discharge Abstract Database, National Ambulatory Care Reporting System and National Physician Database, 2010–2011 to 2012–2013, Canadian Institute for Health Information.

Summary

The post-discharge period can potentially be high risk and a vulnerable transition point for some patients. Best practices recommend that AMI, COPD and HF patients discharged from hospital should see a doctor for follow-up shortly after discharge.^{6,9} Most patients hospitalized with these conditions in Alberta and Saskatchewan had a physician follow-up within 30 days of hospitalization. Rates ranged from 77% to 92%, depending on the patient's condition. Most patients' first follow-up was with their family physician.

Although early physician follow-up rates were similar for the 2 provinces, there was noticeable variation when rates were examined by health region. Larger urban areas generally had higher follow-up rates than more remote, rural regions, such as northern Alberta and Saskatchewan. Lower follow-up rates were also seen in patients who were discharged from community hospitals (versus teaching hospitals), were discharged home with support services or lived in lower-income neighbourhoods.

At least half of follow-ups after the index hospitalization were made with a familiar physician (made familiar either in the community or in the hospital). In some cases, having a familiar physician increased the chance of having a follow-up visit. Having a familiar physician may signal the potential for better continuity of care, patient self-management and health behaviours, including better medication compliance or lifestyle. It could also signal greater health care usage, worse disease severity or better mobility/access.

Conclusions and Strategies for Improvement

Using newly acquired provincial billing data, this study found that a large portion of AMI, HF and COPD patients in both provinces had a physician follow-up within 30 days of discharge. However, 7-day follow-up rates were lower and showed room for improvement. Continuity of care may be broken down into 2 types: informational continuity and relational continuity. Informational continuity aims to ensure that patient information is relayed to all providers caring for a particular patient, to ensure that they have sufficient information to provide the best care. Relational continuity embodies the idea of consistency in providers, such that a patient has familiar physicians who know him or her and understand his or her health conditions. Improving both types of continuity requires inputs from multiple sources, including those at the patient, provider and hospital/community levels.

- **Patients** may consider taking an active role in their care. Through their daily choices surrounding medication, nutrition and observing complications of their condition, patients play a key role in determining the course of their disease.³² Patients can improve relational continuity by booking their follow-up appointments in a timely manner with a familiar physician. Self-management can reduce a patient's own uncertainty in the condition, and allow him or her to use resources more appropriately and effectively.³³

- **Physicians** and other care providers have an important role in ensuring patients receive both relational and informational continuity of care. In 2010, the Canadian Cardiovascular Society created guidelines that emphasized the importance of physicians providing a plan of care and follow-up for HF patients.⁷ Health Quality Ontario lists a number of strategies to achieve better follow-up after discharge, including patient education and timely patient information handover between the hospital and the physician's office.¹¹ Strategies that improve patient access to primary care physicians or specialists include scheduling a follow-up before a patient leaves the hospital, ensuring that the patient has a means of transportation, clarifying with the patient the purpose of the follow-up visit and prioritizing appointments to see recently discharged patients promptly.³⁴ In Alberta, primary care networks are designed to ensure that every Albertan has a health "home" with a particular familiar physician or health team.³⁵ This strategy allows patients to have improved familiarity with their care providers, potentially improving the likelihood of scheduling follow-up appointments.
- **Hospital- and community-**level factors are vital for smooth transitions and continuity of care. In a recent survey, only 16% of Canadian physicians received information needed for follow-up care within 48 hours of their patient's discharge, lower than in many of Canada's comparator countries.³⁶ This indicates potential issues in informational continuity. Investments in health information technology that can communicate between hospitals and physician offices could help physician practices identify and monitor care for high-risk patients.³⁷ Both Alberta and Saskatchewan have team-based care models to improve relational continuity. Patients can interact with a team of health care providers regularly to improve access and reliability of care.³⁸ Effective team-based care models require solid governance, an understanding of local context, an appropriate staff mix and proper communication with other teams.³⁹ In the South Zone of Alberta, for example, the Medical Home model emphasizes the use of team-based care, enhances access to primary care and improves information-sharing between hospitals.

Improving continuity of care for patients with chronic diseases is not a simple task; however, it has value to patients and leads to better care outcomes and lower costs. Increasing post-discharge follow-up requires participation from patients, providers and policy-makers alike.

Appendix A: Methods

Data Sources

The analysis is based on the Discharge Abstract Database (DAD), National Ambulatory Care Reporting System (NACRS) and National Physician Database (NPDB) from 2010–2011 to 2012–2013.

Defining an Index Hospital Admission

A hospital admission was defined as an index admission if

- The patient was age 18 and older and was admitted to an acute care hospital in Alberta or Saskatchewan for AMI, HF or COPD.
- The patient stayed in hospital between 1 and 30 days.
- The patient was discharged home or home with support services.
- It was the first hospital episode for each patient during the study period and it was not preceded by a previous hospitalization, for any reason, within the 30 days prior.

Hospital admissions before May 1, 2010, were excluded; hospital discharges in the last 30 days of the fiscal year were excluded as follow-up could not be determined. Transfers between hospitals within 12 hours were built into the same episode.

Defining a Physician Follow-Up Visit

Physician follow-up was determined using physician billing claims (both fee-for-service and alternative payments) from Alberta and Saskatchewan. Recognizing that the general descriptions of fee-for-service codes in each province may slightly differ, we applied the following criteria to select relevant fee codes to define a physician follow-up visit:

- Visits with primary care physicians or specialists had to occur in a physician's office, a patient's home *or*, if within a facility, in a clinic, including an urgent care clinic, day/night procedure area or that defined as "clinic" by functional centre coding (where applicable).
- Visits included fee codes covering discussion of care, physical examination or patient assessments.
- Visits for lab tests and diagnostic procedures, emergency department visits and hospitalizations for acute inpatient care were excluded.

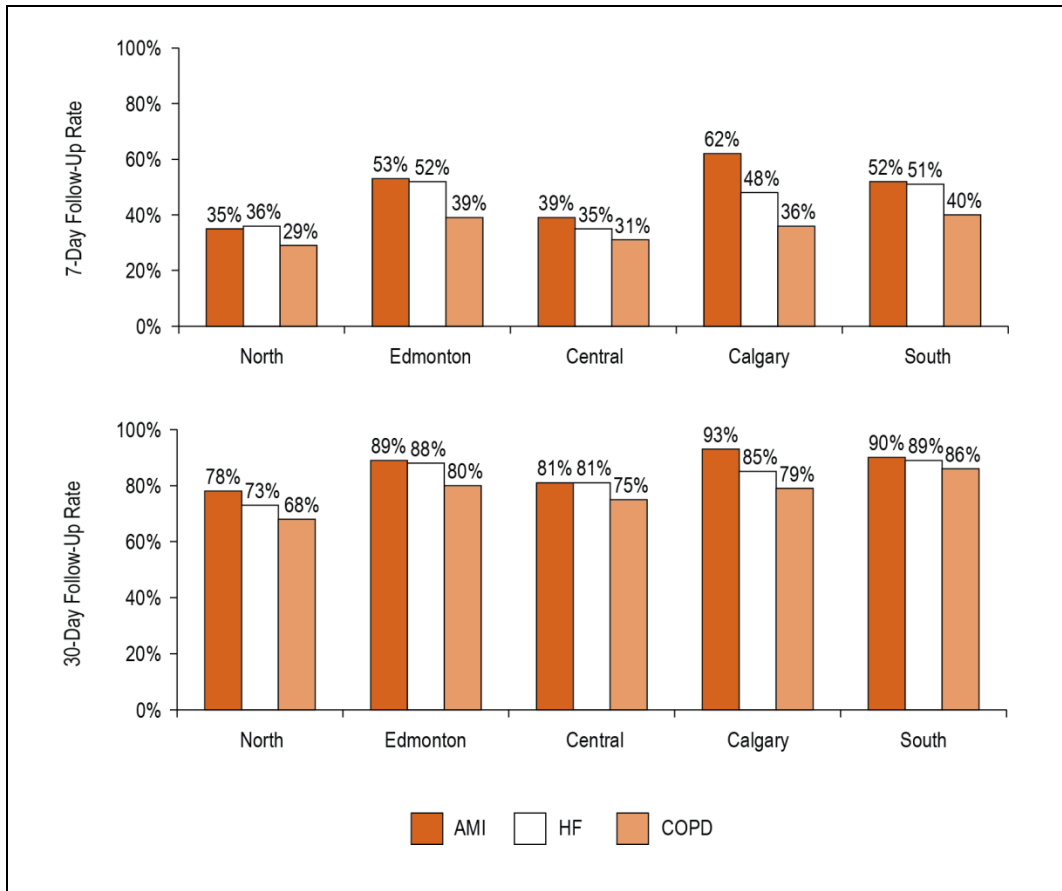
A familiar physician was defined as one with whom the patient had had at least 2 out-of-hospital visits in the 12 months preceding the index hospitalization (community physician) or at least 1 visit during the index hospitalization (hospital physician). By this definition, a patient could have more than 1 familiar physician in either setting.

Statistical Analysis

Rates of physician follow-up were calculated at provincial and regional levels. For each of the 3 condition groups, logistic regression models were used to examine factors related to physician follow-up.

Appendix B: Adjusted Follow-Up Rates by Health Region

Figure 3a: Adjusted 7- and 30-Day Physician Follow-Up Rates by Health Region and Condition, Alberta, 2010–2011 to 2012–2013



Notes

AMI: Acute myocardial infarction.

HF: Heart failure.

COPD: Chronic obstructive pulmonary disease.

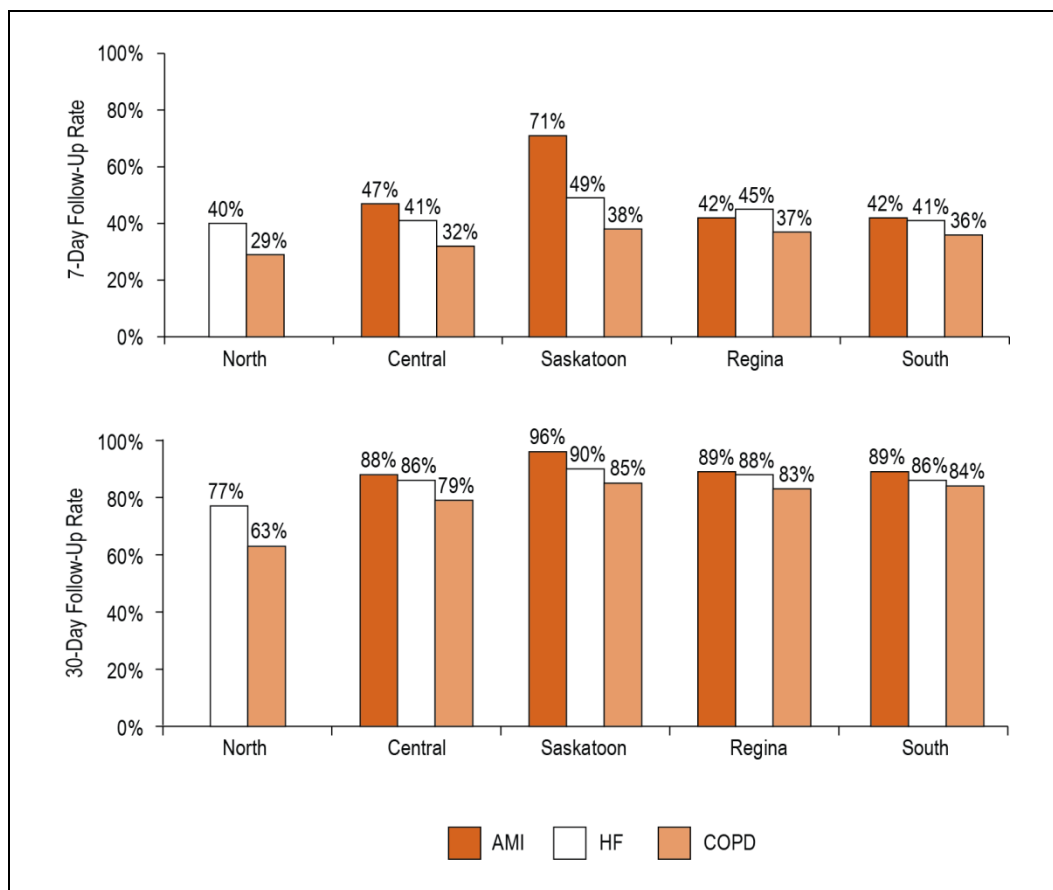
Physician follow-up rates were adjusted for age, sex and neighbourhood income.

Follow-up rates are standardized to condition-specific populations.

Sources

Discharge Abstract Database, National Ambulatory Care Reporting System and National Physician Database, 2010–2011 to 2012–2013, Canadian Institute for Health Information.

Figure 3b: Adjusted 7- and 30-Day Physician Follow-Up Rates by Health Region and Condition, Saskatchewan, 2010–2011 to 2012–2013



Notes

AMI: Acute myocardial infarction.

HF: Heart failure.

COPD: Chronic obstructive pulmonary disease.

Physician follow-up rates were adjusted for age, sex and neighbourhood income.

For the purposes of this analysis and with external advisement, we combined 13 regions into 5 groups to avoid excluding some regions because of small patient volumes; the 5 groups are Saskatoon, Regina, South (includes Sun Country, Five Hills, Cypress and Sunrise), Central (includes Heartland, Kelsey Trail, Prince Albert Parkland and Prairie North) and North (includes Athabasca, Keewatin Yatthé and Mamawetan Churchill River). Follow-up rates for AMI patients in the North group were suppressed due to small numbers. Use caution when interpreting other rates in the North group because of low patient volumes.

Follow-up rates are standardized to condition-specific populations.

Sources

Discharge Abstract Database, National Ambulatory Care Reporting System and National Physician Database, 2010–2011 to 2012–2013, Canadian Institute for Health Information.

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