

Unplanned hospital readmissions in British Columbia

Reducing the rate of unplanned hospital readmissions can address associated patient discontent, increased health care costs, and increased risks for morbidity and mortality.

ABSTRACT: Rates of unplanned hospital readmissions are publicly reported in Canada and often interpreted as a marker of health care system performance. In 2016 British Columbia's 30-day risk-adjusted readmission rate of 9.7% was higher than the national average of 9.1%. This is regrettable because readmissions are associated with patient discontent, increased health care costs, and increased risks of morbidity and mortality. The fact that readmissions affect many Canadian patients and cost more than \$1.8 billion per year should motivate clinicians, hospitals, and health authorities to institute programs to monitor and prevent unplanned

hospital readmissions. No single intervention has been successful in reducing unplanned readmission thus far; multiple-component interventions have shown promise, but their success has proven difficult to replicate. Clinicians and administrators aiming to reduce unplanned readmissions should consider tracking local readmission rates, implementing context-appropriate interventions, and using risk-prediction models to identify and target patients at the highest risk of readmission. Given the poor outcomes and increased costs associated with hospital readmissions, a concerted effort should be made to address this issue.

In 2009 a landmark study found that nearly 20% of US Medicare beneficiaries were readmitted to hospital within 30 days, prompting hospital readmissions to become a major focus of health care quality improvement efforts.¹ Subsequent recognition of wide regional variability in readmission rates suggested that a proportion of hospital readmissions might be preventable if a focused effort was made to improve hospital and community care.^{1,2} A number of organizations in Canada, the United Kingdom, and the United States now recognize a high rate of unplanned hospital readmission as a marker

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of suboptimal health care system performance.³

According to the Canadian Institute for Health Information (CIHI), unplanned hospital readmissions affect almost 200 000 Canadians annually.⁴ Unfortunately, British Columbia's 2016 risk-adjusted 30-day readmission rate of 9.7% was significantly higher than the national average of 9.1% (Figure 1).⁵ The readmission rates in Saskatchewan (9.7%) and Ontario (9.2%) were also higher than the national average. Manitoba (8.7%), Quebec (8.6%), Nova Scotia (8.5%), and New Brunswick (8.8%) had rates that were significantly lower than the national average. As well, in 2016 Vancouver Coastal Health had a readmission rate of 9.8%, which was the second highest among BC's five regional health authorities and exceeded both national and provincial averages (Figure 2). These comparisons highlight an opportunity to improve the performance of BC's health system.

Why do readmissions matter?

Unplanned hospital readmissions are associated with patient discontent, in-

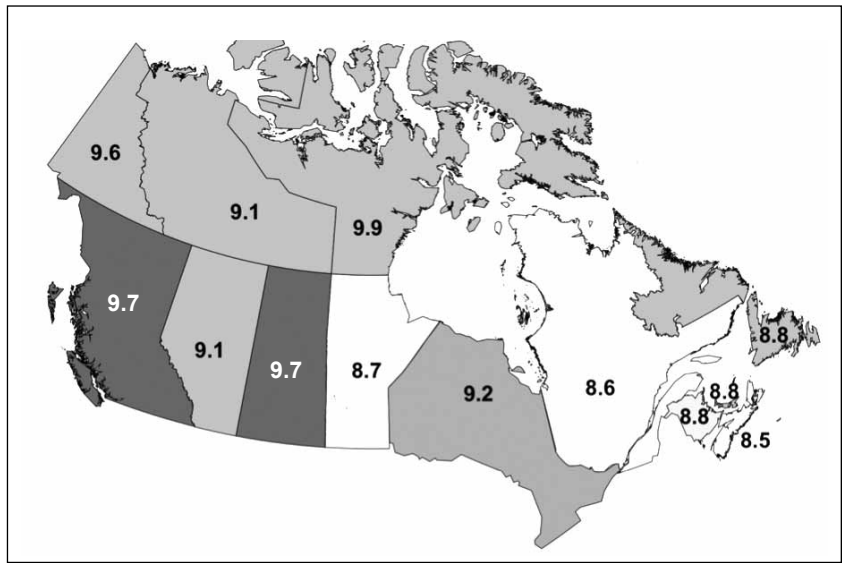


Figure 1. Risk-adjusted 30-day readmission rate (%) by province and territory. Based on data for 2015–2016 obtained from CIHI.⁵

creased health care costs, and increased risks for morbidity and mortality. Patient dissatisfaction may arise from the perception that the readmission was preventable.^{6,7} Hospital readmissions cost Canadian taxpayers over \$1.8 billion per year, which represents 11% of annual inpatient costs.⁴ Moreover, the average cost of a second hos-

pitalization is often greater than the first (\$10404 versus \$7287 for medical patients).⁴ Hospital readmissions may be complicated by iatrogenic infection, venous thromboembolism, drug reactions, falls, and pressure ulcers.⁸ Large cohort studies have found the mortality rate after a hospital readmission to be 19% at 30 days and 39% at 1 year; the latter represents a threefold increase in risk for patients who were readmitted compared with patients who remained in the community after hospital discharge.^{9,10}

How are readmission rates tracked?

Hospital readmission rates are calculated by determining the proportion of discharged patients who are readmitted within a designated time frame. A 30-day time frame is usually used, although there is no clear biological justification for this choice.¹¹⁻¹³ Eligibility criteria for the numerator and denominator often differ among institutions, making it difficult to compare hospitals' self-reported readmission

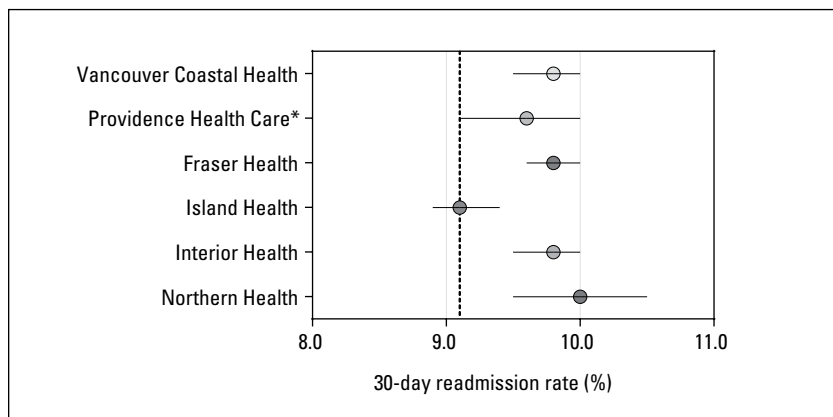


Figure 2. Risk-adjusted 30-day readmission rates for BC regional health authorities compared with national average (dashed line). Based on data for 2015–2016 obtained from CIHI.⁵

* Providence Health Care is not a health authority; however, it is a major hospital network within the Lower Mainland with many physicians and administrators to whom this statistic may be relevant.

rates. For example, planned readmissions (e.g., for elective surgery) are frequently excluded from the numerator, but only some hospitals exclude psychiatric and palliative discharges from the denominator. Hospital-based tracking programs also often fail to consider the 20% of readmissions that are known to occur at a different hospital.⁹ Standardized reporting by CIHI overcomes many of these challenges and facilitates equal comparisons between hospitals and regions by accounting for site-specific differences in patient age and comorbidity burden.

Who is at risk?

Patient risk factors for unplanned hospital readmission include male sex, advanced age, increased comorbidity burden, lower socioeconomic status, and increased hospitalizations within the last 6 months.⁴ Patients with medical admissions are at highest risk for readmission (Figure 3). About 20% of patients initially admitted for chronic obstructive pulmonary disease (COPD) or heart failure are readmitted within 30 days. Among surgical patients, those undergoing colostomy or enterostomy are at highest risk for readmission. The main independent readmission risk factor in any patient is having been hospitalized twice or more in the 6 months before the index admission. Hospital-specific risk factors for readmission are small patient volume (fewer than 2000 weighted cases annually) and rural location. Hospitals with a longer average length of stay have lower risk-adjusted readmission rates. On average, discharging a patient at least 1 day earlier than the national expected length of stay increases the relative risk of readmission by around 40%.⁴ The cumulative influence that these competing forces have on cost to the health care system remains

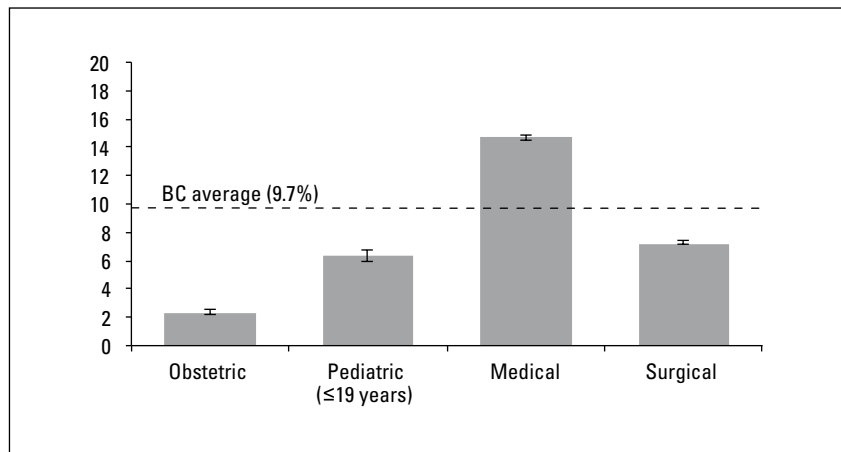


Figure 3. Program-specific 30-day readmission rates for British Columbia. Based on data for 2015–2016 obtained from CIHI.⁵

controversial.^{14,15} The full impact of length of stay on risk of readmission is not fully understood as other studies have found a longer length of stay to be associated with a higher risk for readmission.¹⁶

Are readmissions preventable?

About 25% of unplanned hospital readmissions are retrospectively determined to be preventable, but reliably effective and focused interventions to prevent them remain elusive.^{11,17,18} Multiple-component interventions, specifically where at least three strategies are used to reduce readmissions, have shown promise but have been difficult to replicate.^{19,20} The largest and most effective readmission reduction effort to date is the ongoing Hospital Readmissions Reduction Program (HRRP) in the US. Through the HRRP policy, hospitals with higher-than-expected condition-specific 30-day readmission rates for US Medicare patients are financially penalized. This has resulted in significant reductions in the 30-day readmission rate for both targeted conditions (from 24.1% to 22.5%) and for non-targeted conditions (from 17.8% to

17.3%).²¹ However, recent analyses found that the introduction of the HRRP was associated with a 30-day mortality rate increase after an admission for heart failure (from 7.2% to 8.6%).²² Further debate over the merits of this program is inevitable. Local researchers believe that implementation of an HRRP-like policy in BC is unlikely, in part because global hospital budgets make such disincentives less effective.²³

How can readmissions be addressed?

Clinicians and administrators may consider tracking the local readmission rate, implementing context-appropriate interventions, and refining their approach with sequential plan-do-study-act quality improvement cycles.²⁴ Risk prediction models such as the LACE index and the HOSPITAL score can be used to help identify patients at the highest risk of readmission.²⁵⁻²⁷ Frameworks for developing readmission risk-reduction interventions are available from the Institute for Healthcare Improvement's STate Action on Avoidable Re-hospitalizations (STAAR) program and from the Care Transitions Pro-

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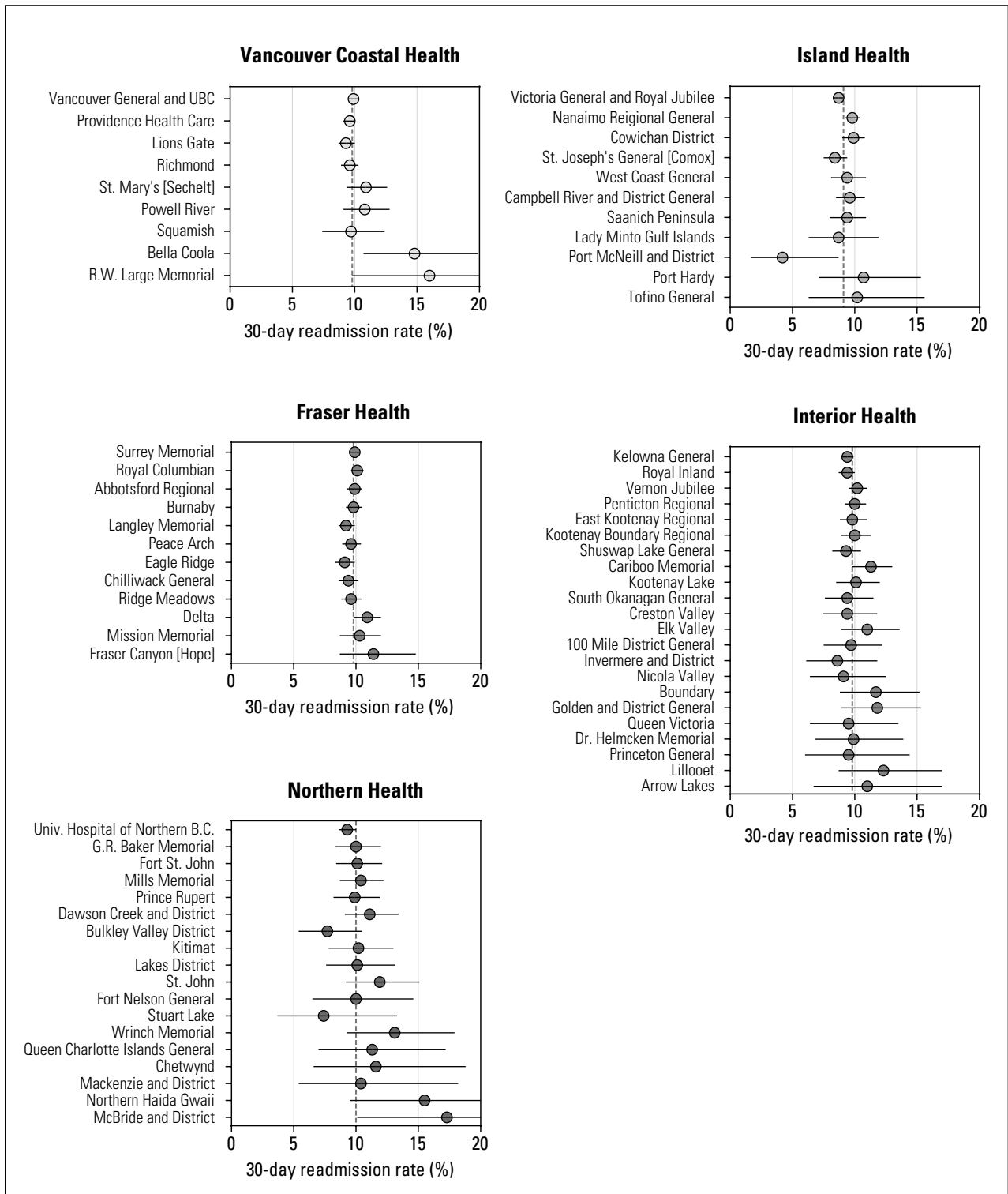


Figure 4. Risk-adjusted 30-day readmission rates for BC hospitals compared with regional health authority averages (dashed lines). Based on data for 2015–2016 obtained from CIHI.⁵

gram.²⁸ CIHI data can be used to continue comparing progress among provinces, health authorities, and hospitals (**Figure 4**).⁵

Unplanned hospital readmissions are a major burden on health care systems in BC and nationwide. Given the poor outcomes and high costs associated with readmissions, a concerted effort should be made to address this issue with the help of those working at all levels of the health care system, including clinicians, hospital administrators, and policymakers. **BCMJ**

Competing interests

None declared.

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