# 30-Day All-Cause Readmission Rate After Isolated Coronary Artery Bypass Graft (CABG)

<table>
<thead>
<tr>
<th>Name</th>
<th>30-Day All-Cause Readmission Rate After Isolated Coronary Artery Bypass Graft (CABG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short/Other Names</td>
<td>CABG Readmission</td>
</tr>
<tr>
<td>Description</td>
<td>Risk-adjusted rate of all-cause urgent readmission occurring within 30 days following discharge for an episode of care with an isolated coronary artery bypass graft (CABG) surgery. For further details, please see the Cardiac Care Quality Indicators (CCQI) General Methodology Notes.</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Lower rates are desirable.</td>
</tr>
<tr>
<td>HSP Framework Dimension</td>
<td>Health System Outputs: Appropriate and effective</td>
</tr>
<tr>
<td>Areas of Need</td>
<td>Getting Better</td>
</tr>
<tr>
<td>Geographic Coverage</td>
<td>All provinces/territories</td>
</tr>
<tr>
<td>Reporting Level/Disaggregation</td>
<td>National, Province/Territory, Facility</td>
</tr>
<tr>
<td>Indicator Results</td>
<td><a href="https://www.cihi.ca/en/cardiac-care">https://www.cihi.ca/en/cardiac-care</a></td>
</tr>
</tbody>
</table>

## Identifying Information

### Name

<table>
<thead>
<tr>
<th>Name</th>
<th>30-Day All-Cause Readmission Rate After Isolated Coronary Artery Bypass Graft (CABG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short/Other Names</td>
<td>CABG Readmission</td>
</tr>
</tbody>
</table>

### Indicator Description and Calculation

#### Description

Risk-adjusted rate of all-cause urgent readmission occurring within 30 days following discharge for an episode of care with an isolated coronary artery bypass graft (CABG) surgery. For further details, please see the Cardiac Care Quality Indicators (CCQI) General Methodology Notes.

The risk-adjusted rate for a facility is calculated by dividing the observed number of readmissions for each facility by the expected number of readmissions for the facility and multiplying by the Canadian average readmission rate.

#### Calculation: Description

Unit of analysis: Episode of care

An episode of care refers to all contiguous inpatient hospitalizations and same-day surgery visits. For episodes with transfers within or between facilities, transactions were linked regardless of diagnoses. For further details, please see the CCQI General Methodology Notes.

#### Calculation: Geographic Assignment

Place of service

#### Calculation: Type of Measurement

Rate - Rate - per 100

The following covariates are used in risk adjustment:

- Age, sex, urgent admission, previous acute myocardial infarction, cardiac dysrhythmias, hypertension, multiple cardiac interventions, peripheral vascular disease, acute renal failure, Charlson Index

For detailed definitions of covariates and the risk-adjustment methodology, please refer to the CCQI General Methodology Notes.

#### Calculation: Adjustment Applied

Logistic regression

#### Calculation: Method of Adjustment

**Description:**

Number of hospitalization episodes for patients age 18 and older who underwent an isolated CABG

**Inclusions:**

1. Episodes that had a CABG (CCI code 1.IJ.76.^), where the intervention was not coded as out of hospital or abandoned (Out-of-Hospital Indicator not equal to Y and Intervention Status Attribute not equal to A)

2. Discharge date of end of episode between April 1 and March 1 of the fiscal year (to allow for a 30-day follow-up to capture readmissions occurring in the same fiscal year)

**Exclusions:**

1. In-hospital death (Discharge Disposition = 07)

2. Episodes with valve procedures (CCI codes 1.HS.^ and Therapeutic Interventions on the Tricuspid Valve, 1.HT.^ Therapeutic)
3. Episodes with core concomitant procedures. Please see the CCQI General Methodology Notes for the detailed list of procedures and codes.

**Description:**
Number of hospitalization episodes in the denominator with an urgent readmission within 30 days of discharge after the CABG index episode of care

**Inclusions:**
1. Emergent or urgent (non-elective) readmission to an acute care hospital (Admission Category = U)
2. (Admission date on readmission record) ≤ (Discharge date on the last record of the index episode of care) less than or equal to 30 days

**Exclusions:**
None

**Background, Interpretation and Benchmarks**

**Rationale**
Considering that about 2.4 million Canadians are living with heart disease and that Canada’s population is increasingly at risk, it’s important to examine the quality of cardiac care in order to support improvements in care and ultimately in the health of Canadians.

CABG, along with percutaneous coronary intervention (PCI), is a well-established procedure to treat coronary artery stenosis. Recently, there has been a large increase in the number of PCIs being performed as another revascularization option to treat coronary artery stenosis; the focus of CABG surgery has shifted to patients with more advanced coronary disease and comorbid conditions such as diabetes. 30-day readmission after CABG has been identified as a key quality indicator for cardiac surgery care by the Canadian Cardiovascular Society.

Urgent readmissions to acute care facilities are increasingly being used to measure institutional or regional quality of care and care coordination. Readmission rates can be influenced by a variety of factors, including patient characteristics, the quality of inpatient and outpatient care (including potential complications of the intervention), the effectiveness of the care transition and coordination, and the availability and use of effective community-based disease management programs. Understanding the reasons for readmission and whether it was avoidable is an important metric by which to evaluate quality of care.

The indicator can provide direction for quality improvement and can help hospitals identify peers to facilitate knowledge sharing around best practices of care.

**Interpretation**
Lower rates are desirable.

**HSP Framework Dimension**
Health System Outputs: Appropriate and effective

**Areas of Need**
Getting Better

**Targets/Benchmarks**
Not applicable


Caveats and Limitations

- Cardiac care is delivered by many different health care professionals, and the resulting outcomes are a reflection of the whole system of care, rather than being attributable to a particular physician in a centre. Quality outcomes depend not only on a physician's technical skills, but also on the structure and care processes that are found in the environment in which health care is delivered.⁴

- Some cardiac care centres are more specialized, perform interventions on more complex patients or accept higher-risk patients than average. CIHI is able to adjust for some of these differences across patient populations; however, the administrative data submitted is limited in its ability to capture and adjust for all differences associated with patient populations. Centres with more complex patients may have increased mortality and/or readmission rates because not all aspects of complexity can be adjusted for in the administrative data.

- Transferring patients to a different hospital following a cardiac intervention is normal practice for many cardiac care centres. As such, there are potential learning opportunities beyond the centres included in this indicator.

- Rates with wide confidence intervals should be interpreted with caution as they reflect a less-precise estimate.

- Direct comparisons between cardiac care centres or provinces are discouraged. Comparisons with the Canadian average provide more meaningful information.

- Indicator results do not provide a final conclusion about cardiac care performance and can be used as a first step in an improvement process to identify areas for follow-up and potential improvements.

Trending Issues

Not applicable

This indicator belongs to a suite of Cardiac Care quality indicators (CCQI) that provide pan-Canadian comparable information on outcomes related to selected cardiac interventions. The goal is to support monitoring and quality improvement in cardiac care.

More information on the CCQI Report is available on our Cardiac Care web page.

Comments

Publicly available indicator results are based on 3 years of pooled data.

Indicator results based on 1 year of data are also available

- In the Data Preview for Indicators Tool (https://www.cihi.ca/en/secure/health-system-performance/your-health-system-tools/data-preview-for-indicators)
- By request.