

30-Day In-Hospital Mortality After Isolated Coronary Artery Bypass Graft (CABG)

Name	30-Day In-Hospital Mortality After Isolated Coronary Artery Bypass Graft (CABG)
Short/Other Names	CABG Mortality
Description	Risk-adjusted rate of all-cause in-hospital deaths occurring within 30 days for patients undergoing an isolated coronary artery bypass graft (CABG) surgery. For further details, please see the CCQI General Methodology Notes .
Interpretation	Lower rates are desirable.
HSP Framework Dimension	Health System Outputs: Appropriate and effective
Areas of Need	Getting Better
Geographic Coverage	All provinces/territories
Reporting Level/Disaggregation	National, Province/Territory, Facility
Indicator Results	https://www.cihi.ca/en/cardiac-care

Identifying Information

Name 30-Day In-Hospital Mortality After Isolated Coronary Artery Bypass Graft (CABG)

Short/Other Names CABG Mortality

Indicator Description and Calculation

Description Risk-adjusted rate of all-cause in-hospital deaths occurring within 30 days for patients undergoing an isolated coronary artery bypass graft (CABG) surgery. For further details, please see the [CCQI General Methodology Notes](#).

The risk-adjusted rate for a facility is calculated by dividing the observed number of in-hospital deaths for each facility by the expected number of in-hospital deaths for the facility and multiplying by the Canadian average in-hospital death rate.

Calculation: Unit of analysis: Episode of care

Description 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:

Calculation: Adjustment Applied Age, sex, urgent admission, shock, coronary syndrome status, previous acute myocardial infarction, previous cardiac surgery, cardiac dysrhythmias, 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: Method of Adjustment Logistic regression

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 at the end of the episode between April 1 and March 31 of the fiscal year
3. CABG date on or before March 1 of the fiscal year (to allow for a 30-day follow-up to capture deaths occurring in the same fiscal year)

Denominator

4. First CABG within 30 days (i.e., repeat CABGs within 30 days are excluded)

Exclusions:

1. Episodes with valve procedures (CCI codes 1.HS.^^ *Therapeutic Interventions on the Tricuspid Valve*, 1.HT.^^ *Therapeutic Interventions on the Pulmonary Valve*, 1.HU.^^ *Therapeutic Interventions on the Mitral Valve*, 1.HV.^^ *Therapeutic Interventions on the Aortic Valve*, 1.HW.^^ *Therapeutic Interventions on the Annulus not elsewhere classified*)

2. 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 that resulted in an in-hospital death within 30 days of the CABG procedure

Numerator

Inclusions:

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

Exclusions:

None

Background, Interpretation and Benchmarks

Considering that about 2.4 million Canadians are living with heart disease and that Canada's population is increasingly at risk,¹ it's important to examine the quality of cardiac care in order to support improvements in care and ultimately in the health of Canadians.

Rationale

CABG, along with percutaneous coronary intervention (PCI), is a well-established procedure to treat coronary artery stenosis. With the growth of PCI as a revascularization option to treat coronary artery stenosis, CABG surgery is being performed more on patients with advanced coronary disease and comorbid conditions such as diabetes.² Short-term mortality after CABG has been identified as a key quality indicator for cardiac surgery care by the Canadian Cardiovascular Society.³

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

1. Government of Canada. [Heart disease — Heart health](#). Accessed February 2, 2017.

References

2. Deb S, et al. [Coronary artery bypass graft surgery vs percutaneous interventions in coronary revascularization: A systematic review](#). *JAMA*. November 2013.

3. Canadian Cardiovascular Society. [Quality Indicators for Cardiac Surgery](#). 2015.

4. Donabedian A. *The Criteria and Standards of Quality*. 1982.

Availability of Data Sources and Results

Data Sources

DAD, HMDB, NACRS

Type of Year:

Fiscal

Available Data Years

First Available Year:

2013

Last Available Year:

2016

Geographic Coverage

All provinces/territories

Reporting Level/Disaggregation

National, Province/Territory, Facility

Result Updates

Update Frequency

Web Tool:

Indicator Results

[Cardiac Care Quality Indicators Report](#)

URL: <https://www.cihi.ca/en/cardiac-care>

Updates

Please refer to the [CCQI General Methodology Notes](#).

Quality Statement

– 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.

Caveats and Limitations

– 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.

– Out-of-hospital deaths are not captured in CIHI's administrative databases.

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.