# 30-Day Acute Myocardial Infarction In-Hospital Mortality

<table>
<thead>
<tr>
<th>Name</th>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Description</td>
<td>The risk-adjusted rate of all-cause in-hospital death occurring within 30 days of first admission to an acute care hospital with a diagnosis of acute myocardial infarction (AMI)</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, Region</td>
</tr>
<tr>
<td>Indicator Results</td>
<td><a href="http://yourhealthsystem.cihi.ca/epub/?language=en">Link</a></td>
</tr>
</tbody>
</table>

## Identifying Information

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## Indicator Description and Calculation

### Description

The risk-adjusted rate of all-cause in-hospital death occurring within 30 days of first admission to an acute care hospital with a diagnosis of acute myocardial infarction (AMI)

For further details, please see the General Methodology Notes.

### Calculation: Description

The risk-adjusted mortality rate (RAMR) is calculated by dividing the observed number of in-hospital deaths by the expected number of in-hospital deaths and multiplying by the Canadian average in-hospital death rate.

### Calculation: Geographic Assignment

Unit of analysis for denominator cases: Single admission

### Calculation: Type of Measurement

Rate - per 100

### Calculation: Adjustment Applied

The following covariates are used in risk adjustment:

For a detailed list of covariates used in the model, please refer to the Model Specification document.

### Calculation: Method of Adjustment

Logistic regression

#### Description:

Total number of first AMI discharges in an 11-month period

#### Inclusions:

1. a. Acute myocardial infarction (AMI) (ICD-10-CA: I21, I22; ICD-9 /ICD-9-CM: 410) is coded as most responsible diagnosis (MRDx) but not also as a diagnosis type (2); or

   b. Where another diagnosis is coded as MRDx and also a diagnosis type (2), and a diagnosis of AMI is coded as a type (1) [type (C) for Quebec data] or type (W), (X) or (Y) but not also as type (2); or

   c. Where coronary artery disease (ICD-10-CA: I25.0, I25.1, I25.8, I25.9; ICD-9/ICD-9-CM: 429.2, 414.0, 414.8, 414.9) is coded as MRDx, AMI as type (1) [type (C) for Quebec data] or type (W), (X) or (Y) but not also as type (2); along with revascularization procedure (percutaneous coronary intervention—CCI: 1.IJ.50^; 1.IJ.57.GQ^; 1. IJ.54.GQ-AZ [this code is used for 2006–2007 to 2008–2009 data only]; CCP: 48.02, 48.03; ICD-9-CM: 36.01, 36.02, 36.05; or coronary artery bypass—CCI: 1.IJ.76^; CCP: 48.1^; ICD-9-CM: 36.1^)

   2. Admission between April 1 and March 1 of the following year (period of case selection ends March 1 to allow for 30 days of follow-up)

   3. Age at admission 20 years and older

   4. Sex recorded as male or female
5. Admission to an acute care institution (Facility Type Code = 1)
6. Admission category recorded as urgent/emergent (Admission Category Code = U)

Exclusions:
1. Records with an invalid health card number
2. Records with an invalid code for province issuing health card number
3. Records with an invalid admission date
4. Records with admission category of cadaveric donor or stillbirth (Admission Category Code = R or S)
5. Previous AMI: Records with an AMI inpatient admission [(ICD-10-CA: I21, I22; ICD-9/ICD-9-CM: 410) coded as diagnosis type (M), (1), (C) (for Quebec data only), (2), (W), (X) or (Y); Facility Type Code = 1] within one year prior to the admission date of the index discharge.

Description:
Number of deaths from all causes occurring in hospital within 30 days of admission for AMI

Inclusions:
1. Discharges as deaths (Discharge Disposition Code = 07)
2. Admission to an acute care institution (Facility Type Code = 1)
3. (Discharge date on death record) (Admission date on AMI record) less than or equal to 30 days

Exclusions:
1. Records with an invalid discharge date

Background, Interpretation and Benchmarks
A lower risk-adjusted mortality rate following AMI may be related to quality of care or other factors. It has been shown that the 30-day in-hospital mortality rate is highly correlated (r = 0.9) with total mortality (death in and out of hospital) following AMI.

Variations in 30-day in-hospital mortality rates may be due to jurisdictional and institutional differences in care practices, as well as to other factors that were not included in the adjustment.

Interpretation
Lower rates are desirable.

HSP Framework Dimension
Health System Outputs: Appropriate and effective

Areas of Need
Getting Better

Targets/Benchmarks
Not applicable

References


Availability of Data Sources and Results

Data Sources
DAD, HMDB

Type of Year:
Fiscal

Available Data Years
First Available Year: 1998
Last Available Year: 2016

Geographic Coverage
All provinces/territories

Reporting Level/Disaggregation
National, Province/Territory, Region

Result Updates
Every year

Web Tool:
Health Indicators e-Publication
URL: [http://yourhealthsystem.cihi.ca/epub/?language=en](http://yourhealthsystem.cihi.ca/epub/?language=en)

Beginning with the 2004 rates, AMI case selection criteria were revised to account for the fact that an increasing number of AMI
Updates

patients are undergoing revascularization procedure (percutaneous coronary intervention or coronary artery bypass) at their index admission. In the case of revascularization procedure, AMI may not be coded as the most responsible diagnosis, and these cases were previously excluded from the indicator. In addition, exclusion criteria were revised and patients with a length of stay of less than three days and discharged alive are no longer excluded.

Quality Statement
Caveats and Limitations

Not applicable

Starting with 2004 rates, AMI case selection criteria were revised; therefore, comparison of rates from 2004 onward with those of previous years should be made with caution.

Trending Issues

Indicator results by place of residence are based on three years of pooled data. The reference year reflects the mid-point of a three-year period.

Comments

Indicator results by place of service, based on one year of data, are also available at https://www.cihi.ca/sites/default/files/document/additional-facility-indicators-results-en.xlsx.