## Hospital Deaths Following Major Surgery

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### Indicator Description and Calculation

#### Description

This indicator measures the rate of in-hospital deaths due to all causes occurring within 30 days of major surgery. For further details, please see the [General Methodology Notes](#). The indicator is expressed as the rate of in-hospital deaths within 30 days of major surgery per 100 major surgical cases.

#### Calculation: Description

Risk-adjusted rate = Observed cases ÷ Expected cases × Canadian average

#### Calculation: Geographic Assignment

Place of service

#### Calculation: Type of Measurement

Rate - per 100

#### Calculation: Adjustment Applied

The following covariates are used in risk adjustment:

- Risk-adjusted rate
- For a detailed list of covariates used in the model, please refer to the [Model Specification](#) document.

#### Calculation: Method of Adjustment

Logistic regression

#### Denominator

1. Admission to an acute care institution (Facility Type Code = 1)
2. Major surgery (please refer to the [General Methodology Notes](#) document for the detailed list of major surgery Case Mix Groups [CMGs])
3. Procedure date for major surgery = April 1 to March 1
4. Age at admission 18 years and older
5. Sex recorded as male or female

#### Exclusions:

1. Records with missing/invalid major surgery date (CMG intervention date)
2. Records with invalid health card number
3. Records with an invalid code for province issuing health card number
4. Records with missing/invalid admission date
5. Records with missing/invalid discharge date
6. Cadaveric donor or stillbirth records (Admission Category Code = R or S)
7. 2018–2019 data onward: Medical assistance in dying (MAID) (Discharge Disposition Code = 73)
**Description:**
Cases within the denominator where an in-hospital death occurred within 30 days of major surgery

**Inclusions:**
1. Admission to an acute care institution (Facility Type Code = 1)
2. Discharge as death (Discharge Disposition Code = 07, 72*, 74*)
3. (Discharge [death] date) (CMG intervention date) less than or equal to 30 days

**Exclusions:**
1. 2018–2019 data onward: Medical assistance in dying (MAID) (Discharge Disposition Code = 73)

**Background, Interpretation and Benchmarks**

**Rationale**
The volume of surgical procedures undertaken every year is considerably large. Complications in surgical care have become a major cause of death; as a result, surgical safety has been recognized as a significant public health concern and was one of the areas selected for the Global Patient Safety Challenges by the World Health Organization.

Studies have shown the importance of pre-operative assessment of patient conditions and risk, intra-operative surgical and anesthetic management and post-operative support in preventing surgical deaths. Although not all deaths are preventable, reporting on and comparing mortality rates for major surgical procedures may increase awareness of surgical safety and act as a signal for hospitals to investigate their processes of care before, during or immediately after the surgical procedure for quality improvement opportunities.

A 30-day follow-up time frame is commonly used for reporting hospital mortality, including mortality following major surgery. This allows for sufficient follow-up for complications from major surgery such as failure to wean, systemic sepsis, stroke and renal failure.

**Interpretation**
A lower rate is more desirable.

**Health System Outputs: Appropriate and effective**

**Getting Better**

**Not applicable**

**References**

**Availability of Data Sources and Results**

**Data Sources:** DAD, HMDB

**Type of Year:** Fiscal

**First Available Year:** 2014

**Last Available Year:** 2018

**Geographic Coverage:** All provinces/territories

**Reporting Level/Disaggregation:** National, Province/Territory, Region, Facility

**Result Updates:** Update Frequency Every year
Web Tool: Your Health System: In Depth

URL: Accessing Indicator Results on Your Health System: In Depth

Updates Not applicable
Quality Statement Not applicable
Caveats and Limitations Not applicable
Trending Issues Not applicable

Comments
  • Your Health System: Insight, updated monthly starting from 2014–2015