### Nursing-Sensitive Adverse Events for Surgical Patients

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This indicator measures the rate of nursing-sensitive adverse events for all surgical patients. The following adverse events are captured in this indicator:

- Urinary tract infections (UTIs)
- Pressure ulcers
- In-hospital fractures
- Pneumonia

For further details, please see the General Methodology Notes.

#### Interpretation

Lower rates are desirable.

High or low rates for this indicator must be interpreted with caution as they may be a consequence of inconsistent coding practices by hospitals when reporting post-admission adverse events to the DAD.

#### HSP Framework

- Dimension: Health System Outputs: Safe

#### Geographic Coverage

- All provinces/territories except Quebec

#### Reporting Level/Disaggregation

- National, Province/Territory, Region, Facility, Peer Group

#### Indicator Results


#### Identifying Information

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#### Indicator Description and Calculation

This indicator measures the rate of nursing-sensitive adverse events for all surgical patients. The following adverse events are captured in this indicator:

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- Pressure ulcers
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For further details, please see the General Methodology Notes.

The indicator is expressed as a rate of nursing-sensitive adverse events per 1,000 surgical discharges.

#### Calculation: Description

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

#### Calculation: Geographic Assignment

Place of service

#### Calculation: Type of Measurement

Rate - per 1,000

#### 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

#### Denominator

Description:

Acute care hospitalizations where a surgical procedure was performed

**Inclusions:**

1. Admission to an acute care institution (Facility Type Code = 1)
2. Patients within the surgical patient group (MCC intervention partition)
3. Age at admission 55 years and older
4. Sex recorded as male or female

**Exclusions:**

1. Obstetric (MCC 13), neonatal (MCC 14) or mental health (MCC 17) patients
2. Records with admission category of cadaveric donor or stillbirth (Admission Category Code = R or S)
**Description:**
Cases within the denominator with one or more adverse events

**Inclusions:**
One of the following ICD-10-CA codes, coded as type 2 (except where specified):

**Urinary tract infection (UTI):**
- Site not specified (N39.0)
- 2012-2013 onward: Related to Foley catheter (T83.5 [type 2] + N39.0 [type 3] + Y84.6 [type 9] all within same diagnostic cluster)

**Pressure ulcers:**
- Decubitus ulcer (L89)

**In-hospital fractures:**
- Fracture of shoulder and upper arm (S42)
- Fracture of forearm (S52)
- Fracture at wrist and hand level (S62)
- Fracture of femur (S72)
- Fracture of lower leg, including ankle (includes malleolus) (S82)
- Fracture of foot, except ankle (S92)
- Fractures involving multiple regions of one upper limb (T02.2)
- Fractures involving multiple regions of one lower limb (T02.3)
- Fractures involving multiple regions of both upper limbs (T02.4)
- Fractures involving multiple regions of both lower limbs (T02.5)
- Fractures involving multiple regions of upper limb(s) (T02.6)
- Fracture of upper limb, level unspecified (T10)
- Fracture of lower limb, level unspecified (T12)

**Pneumonia:**
- Non-viral pneumonia (J13, J14, J15, J16, J18, J85.1 or J69.0)
- 2013-2014 onward: Ventilator-assisted pneumonias* (J95.88 [type 2] + J15 [type 3], J16.8 [type 3], J18 [type 3] or J85.1 [type 3] + Y60-Y84 [type 9], all within same diagnosis cluster)

*For ventilator-assisted pneumonias, all 3 conditions must be present on the same abstract and all 3 conditions must have the same cluster code that is not blank.

**Background, Interpretation and Benchmarks**
A study of adverse events in Canada estimated that approximately 70,000 preventable adverse events occur annually in hospitals. Based on the definition used by the World Health Organization and other studies, adverse events refer to incidents caused by medical management instead of complications of disease.

Some studies have found that adverse events increase the costs of patient care and have suggested that nurse staffing, in particular, is associated with adverse events such as pneumonia, urinary tract infections, pressure ulcers and in-hospital falls.

While nurses are not solely responsible for adverse events that occur in hospital, many believe that there is a strong relationship between nurse staffing and patient outcomes. This indicator can help hospitals identify potential issues in nursing care. Further investigation and analysis based on the indicator results may possibly lead to quality improvement in nursing care.

Lower rates are desirable.

High or low rates for this indicator must be interpreted with caution as they may be a consequence of inconsistent coding practices by hospitals when reporting post-admission adverse events to the DAD.

**HSP Framework**
- **Dimension:** Health System Outputs: Safe
- **Areas of Need:** Getting Better
- **Targets & Benchmarks:** Not applicable


References


Availability of Data Sources and Results

| Data Sources | DAD |
| Type of Year: | Fiscal |
| First Available Year: | 2011 |
| Last Available Year: | 2016 |

Geographic Coverage

All provinces/territories except Quebec

Reporting Level/Disaggregation

National, Province/Territory, Region, Facility, Peer Group

Result Updates

Update Frequency Every year

Web Tool:

CIHI Health Indicators

URL: [https://www.cihi.ca/en/cihi-health-indicators](https://www.cihi.ca/en/cihi-health-indicators)

Starting in 2013-2014, the following inclusion criteria updates were made:

Updates

- Added ventilator-assisted pneumonias

Quality Statement

Caveats and Limitations

Quebec data is not included in this indicator; therefore, pan-Canadian comparisons cannot be made.

Trending Issues

The inclusion of Foley catheter-associated UTIs in 2012-2013 may affect trending for this indicator.

Comments

Not applicable