Nursing-Sensitive Adverse Events for Medical Patients

Name	Nursing-Sensitive Adverse Events for Medical Patients
Short/Other Names	Not applicable
Description	This indicator measures the rate of nursing-sensitive adverse events for all medical 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
Areas of Need	Getting Better
Geographic Coverage	All provinces/territories except Quebec
Reporting Level/Disaggregation	National, Province/Territory, Region, Facility, Peer Group
Indicator Results	https://www.cihi.ca/en/cihi-health-indicators

Identifying Information

Name	Nursing-Sensitive Adverse Events for Medical Patients
Short/Other Names	Not applicable

Indicator Description and Calculation

Description	This indicator measures the rate of nursing-sensitive adverse events for all medical 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. The indicator is expressed as a rate of nursing-sensitive adverse events per 1,000 medical discharges.
Calculation: Description	Risk-adjusted rate = Observed cases ÷ Expected cases × Canadian average
Calculation: Geographic Assignment	Unit of analysis: Single admission 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 with medical conditions **Inclusions:** 1. Admission to an acute care institution (Facility Type Code = 1) 2. Patients within the medical patient group (MCC diagnostic 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:
Numerator	- 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 estimated that approximately 70,000 preventable adverse events occur annually in Canadian 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.
Rationale	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.
Interpretation	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	Baker GR, et al. The Canadian Adverse Events Study: The incidence of adverse events among hospital patients in Canada. *CMAJ*. 2004.
	World Health Organization. *WHO Draft Guidelines for Adverse Event Reporting and Learning Systems*. 2005.
	Kellogg VA, Havens DS. Adverse events in acute care: An integrative literature review. *Research in Nursing & Health*. 2003.
	Cho SH, et al. The effects of nurse staffing on adverse events, morbidity, mortality, and medical costs. *Nursing Research*. 2003.
	Pappas SH. The cost of nurse-sensitive adverse events. *Journal of Nursing Administration*. 2008.
	Needleman J, et al. Nurse staffing in hospitals: Is there a business case for quality? *Health Affairs*. 2006.
	Unruh L. Licensed nurse staffing and adverse events in hospitals. *Medical Care*. 2003.
	Blegen MA, Vaughn TE, Goode CJ. Nurse experience and education: Effect on quality of care. *Journal of Nursing*

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White P, Hall LM. Chapter 6: Patient safety outcomes. In: Doran DM, ed. *Nursing Sensitive Outcomes: State of the Science.* 2003.

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Availability of Data Sources and Results

Data Sources	DAD
Available Data Years	**Type of Year:** Fiscal **First Available Year:** 2012 **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
Indicator Results	**Web Tool:** CIHI Health Indicators **URL:** https://www.cihi.ca/en/cihi-health-indicators
Updates	Starting in 2013-2014, the following inclusion criteria updates were made: • Added ventilator-assisted pneumonias

Quality Statement

Caveats and Limitations	Not applicable
Trending Issues	Not applicable
Comments	Not applicable