

CANADIAN INSTITUTE FOR HEALTH INFORMATION

Canadian Hospital Reporting Project

Interpreting Indicator Results

Last Updated: March 2013

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Health System Performance—Clinical Indicators

1. Indicators: Effectiveness (Quality and Outcomes)

i. 5-Day In-Hospital Mortality Following Major Surgery

Definition

This indicator measures the rate of in-hospital deaths due to all causes occurring within five days of major surgery.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of in-hospital deaths within five days of major surgery per 1,000 major surgical cases.

Why Is This Important?

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,¹⁻³ intra-operative surgical and anesthetic management¹⁻³ and post-operative support in preventing surgical deaths.^{1,2} 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.

While 30-day mortality is commonly used for reporting hospital mortality,^{2,4-6} the 5-day time frame was selected to capture deaths that occur shortly after major surgery. This time criterion is based on the median length of stay after surgery for major surgical cases.ⁱ

Interpretation Note

This indicator links patients across facilities. For example, if a patient had major surgery in Hospital A and was then immediately transferred to Hospital B, where no major surgery occurred, and died in Hospital B two days later, Hospital A would be attributed both the

i. Based on data from CIHI's Discharge Abstract Database for 2007–2008.

denominator and the numerator, while Hospital B would not be attributed either the denominator or the numerator.

For this indicator, a lower rate is more desirable.

ii. 30-Day In-Hospital Mortality Following Acute Myocardial Infarction

Definition

This indicator measures the rate of in-hospital deaths due to all causes occurring within 30 days after the first acute myocardial infarction (AMI) admission to an acute care hospital.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of in-hospital deaths per 100 first AMI admission episodes.

Why Is This Important?

AMIs, or heart attacks, are a manifestation of heart disease, which is the second leading cause of death in Canada after cancer⁷ and one of the top 10 causes of death in the world.⁸ Over the past several decades, advances in the treatment of AMI have made it a highly treatable condition.⁹ Clinical guidelines have been created to assist health care providers in clinical decision-making for the purpose of improving the quality of cardiovascular care.¹⁰⁻¹²

Measuring and monitoring patient outcomes have been identified as essential components of quality improvement,^{9, 11} and reductions in mortality rates for patients with AMI have been related to better processes of care.^{13, 14}

Not all deaths are preventable. Nevertheless, 30-day risk-adjusted mortality is considered an appropriate measure to reflect the quality of care for AMI,^{9, 15} which could be used to potentially identify opportunities for improving patient outcomes.

Interpretation Note

For multi-hospital episodes of care, death was attributed to the hospital to which the patient was admitted at the beginning of the episode of care.

For this indicator, a lower rate is more desirable.

iii. 30-Day In-Hospital Mortality Following Stroke

Definition

This indicator measures the rate of in-hospital deaths due to all causes occurring within 30 days after the first stroke admission to an acute care hospital.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of in-hospital deaths per 100 first stroke admission episodes.

Why Is This Important?

Stroke is a leading cause of death and long-term disability. Stroke and other cerebrovascular diseases are one of the top 10 causes of death in the world⁸ and the third leading cause of death in Canada.⁷ Improving care for stroke patients has become a priority, and expert working groups have been formed to develop guidelines, best practices and performance measures for quality improvement for stroke care.¹⁶⁻¹⁸ Mortality 30 days following stroke is influenced by certain processes of care and may be improved by involving an interdisciplinary stroke team,^{16, 17, 19} using brain imaging for diagnostic testing and managing intracerebral hemorrhage.^{16, 17} Not all deaths are preventable. Nevertheless, an examination of the rate of death within 30 days after stroke could identify improvement opportunities in the processes of stroke care.^{13, 19}

Interpretation Note

For multi-hospital episodes of care, death was attributed to the hospital to which the patient was admitted at the beginning of the episode of care.

For this indicator, a lower rate is more desirable.

iv. 28-Day Readmission After Acute Myocardial Infarction

Definition

This indicator measures the rate of urgent readmissions within 28 days of discharge for an acute myocardial infarction (AMI) episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 AMI episodes.

Why Is This Important?

Readmission to hospital after AMI has been shown to negatively affect the quality of life of patients and their families.²⁰ Research has shown that there are lower readmission rates after a first AMI when there are more intensive cardiac management practices, as measured by the appropriate use of initial emergency department assessments, early interventions and drug therapy.²¹

Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁸ and a lack of timely follow-up care.²⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission. For some jurisdictions, planned readmissions are included in the readmission rate.

For this indicator, a lower rate is more desirable.

v. **28-Day Readmission After Stroke**

Definition

This indicator measures the rate of urgent readmissions within 28 days following discharge for a stroke episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 stroke episodes.

Why Is This Important?

Patient outcomes after stroke can be influenced by many factors, including age, socio-economic status and the type of institution to which the patient is admitted.²⁵ Differences in the level of follow-up care provided have also been associated with readmission rates after stroke. For example, one study found that different health care professionals were associated with different 30-day readmission rates after stroke; this variation was likely a result of differences in using swallowing assessments and providing rehabilitation therapy.²⁶ Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁷ and a lack of timely follow-up care.²⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission.

For this indicator, a lower rate is more desirable.

vi. 90-Day Readmission After Hip Replacement

Definition

This indicator measures the rate of urgent readmissions within 90 days of discharge for an elective hip replacement surgery episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 elective hip replacement surgery episodes.

Why Is This Important?

According to recent statistics, joint replacement surgical procedures are some of the most commonly performed elective procedures in Canada, and their frequency is rapidly increasing.²⁸ Evidence shows that unplanned readmission within approximately one month of hip replacement surgery is largely associated with procedure-related complications.²⁹ These may include wound complications such as infection or hematoma, non-traumatic dislocation and swelling of the affected limb.²⁹ Incidence rates of complications such as deep infection and dislocation have also been found to be elevated for up to three months following hip replacement surgery.³⁰

Investigating hospital readmission rates after a surgical procedure may help provide insight into a facility's quality of care³¹ and processes of care.^{32, 33}

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the first hospital at which the patient had the surgery.

For this indicator, a lower rate is more desirable.

vii. 90-Day Readmission After Knee Replacement

Definition

This indicator measures the rate of urgent readmissions within 90 days of discharge for an elective knee replacement surgery episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 elective knee replacement surgery episodes.

Why Is This Important?

Joint replacement surgery is one of the most commonly performed elective procedures in Canada, and its frequency is rapidly increasing.²⁸ According to experts, certain post-surgical outcomes, like infection, are often related to the quality of care provided during the initial joint replacement surgery.²⁸ Investigating hospital readmission rates after a surgical procedure may help provide insight into a facility's quality of care³¹ and processes of care.³⁰

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the first hospital at which the patient had the surgery.

For this indicator, a lower rate is more desirable.

viii. 30-Day Overall Readmission

Definition

This indicator measures the rate of urgent readmissions within 30 days of discharge for episodes of care for the following patient groups:

- Obstetric;
- Patients age 19 and younger;
- Adult surgical; and
- Adult medical.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 episodes.

Why Is This Important?

Urgent, unplanned readmissions to acute care facilities are increasingly being used to measure institutional or regional quality of care and care coordination. While not all unplanned readmissions are avoidable, interventions during and after a hospitalization can be effective in reducing readmission rates.

Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁷ and a lack of timely follow-up care.²⁴ Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Data from the United States has shown that hospital readmissions contribute significantly to health care costs.⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission.

For this indicator, a lower rate is more desirable.

ix. 30-Day Obstetric Readmission

Definition

This indicator measures the rate of urgent readmissions within 30 days of discharge for an obstetric episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 obstetric episodes.

Why Is This Important?

Urgent, unplanned readmissions to acute care facilities are increasingly being used to measure institutional or regional quality of care and care coordination. While not all unplanned readmissions are avoidable, interventions during and after a hospitalization can be effective in reducing readmission rates.

Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁷ and a lack of timely follow-up care.²⁴ Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Data from the United States has shown that hospital readmissions contribute significantly to health care costs.⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission.

For this indicator, a lower rate is more desirable.

x. 30-Day Readmission—Patients Age 19 and Younger

Definition

This indicator measures the rate of urgent readmissions within 30 days of discharge for an episode of care for patients age 19 and younger.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 episodes for patients age 19 and younger.

Why Is This Important?

Urgent, unplanned readmissions to acute care facilities are increasingly being used to measure institutional or regional quality of care and care coordination. While not all unplanned readmissions are avoidable, interventions during and after a hospitalization can be effective in reducing readmission rates.

Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁷ and a lack of timely follow-up care.²⁴ Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Data from the United States has shown that hospital readmissions contribute significantly to health care costs.⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission.

For this indicator, a lower rate is more desirable.

xi. 30-Day Surgical Readmission

Definition

This indicator measures the rate of urgent readmissions within 30 days of discharge for an adult surgical episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 adult surgical episodes.

Why Is This Important?

Urgent, unplanned readmissions to acute care facilities are increasingly being used to measure institutional or regional quality of care and care coordination. While not all unplanned readmissions are avoidable, interventions during and after a hospitalization can be effective in reducing readmission rates.

Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁷ and a lack of timely follow-up care.²⁴ Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Data from the United States has shown that hospital readmissions contribute significantly to health care costs.⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission.

For this indicator, a lower rate is more desirable.

xii. 30-Day Medical Readmission

Definition

This indicator measures the rate of urgent readmissions within 30 days of discharge for adult medical episodes of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of urgent readmissions per 100 adult medical episodes.

Why Is This Important?

Urgent, unplanned readmissions to acute care facilities are increasingly being used to measure institutional or regional quality of care and care coordination. While not all unplanned readmissions are avoidable, interventions during and after a hospitalization can be effective in reducing readmission rates.

Hospital readmission rates can be influenced by a variety of factors, including poor hospital discharge planning²⁷ and a lack of timely follow-up care.²⁴ Monitoring unplanned/potentially avoidable readmissions within approximately one month of discharge can be useful for hospital quality surveillance²² and can be combined with other indicators to provide additional information.²³ Data from the United States has shown that hospital readmissions contribute significantly to health care costs.⁴

Interpretation Note

For episodes of care that involved transfers, readmissions were attributed to the last hospital from which the patient was discharged before the readmission.

For this indicator, a lower rate is more desirable.

2. Indicators: Patient Safety

i. In-Hospital Hip Fracture in Elderly (65+) Patients

Definition

This indicator measures the rate of in-hospital hip fractures among acute care inpatients age 65 and older.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of in-hospital hip fractures per 1,000 inpatient cases.

Why Is This Important?

With nearly 1 in every 1,000 elderly patients (age 65 and older) suffering a hip fracture after admission to a Canadian acute care hospital,^{34, ii} in-hospital hip fractures remain a significant patient safety concern. The rate and risk of patient falls resulting in hip fracture increase with age.^{34, 35}

In addition to the profound impact hip fractures can have on the independence and quality of life of elderly patients,^{35, 36} such injuries occurring within hospital are also associated with longer lengths of stay and increased health care costs.^{36, 37} Many falls and their consequences are potentially preventable by knowing about and identifying known risk factors.^{37–39}

This indicator is intended to help hospitals monitor prevention efforts; high rates should be used to identify areas for improvement.

Interpretation Note

For this indicator, a lower rate is more desirable.

ii. Based on data from CIHI's Discharge Abstract Database from 2000–2001 to 2002–2003, excluding patients from Quebec and Manitoba.

ii. Nursing-Sensitive Adverse Events for Medical Patients

Definition

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;
- Pressure ulcers;
- In-hospital fractures; and
- Pneumonia.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of nursing-sensitive adverse events per 1,000 medical discharges.

Why Is This Important?

A study of adverse events estimated that approximately 70,000 preventable adverse events occur annually in Canadian hospitals.⁴⁰ 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.^{40–42}

Some studies have found that adverse events increase the costs of patient care^{43, 44} and have suggested that nurse staffing, in particular, is associated with adverse events such as pneumonia,⁴⁵ urinary tract infections,^{45, 46} pressure ulcers⁴⁷ and in-hospital falls.^{47, 48}

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.^{49, 50} 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.

Interpretation Note

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.

For this indicator, a lower rate is more desirable.

iii. Nursing-Sensitive Adverse Events for Surgical Patients

Definition

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;
- Pressure ulcers;
- In-hospital fractures; and
- Pneumonia.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of nursing-sensitive adverse events per 1,000 surgical discharges.

Why Is This Important?

A study of adverse events estimated that approximately 70,000 preventable adverse events occur annually in Canadian hospitals.⁴⁰ 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.^{40–42}

Some studies have found that adverse events increase the costs of patient care^{43, 44} and have suggested that nurse staffing, in particular, is associated with adverse events such as pneumonia,⁴⁵ urinary tract infections,^{45, 46} pressure ulcers⁴⁷ and in-hospital falls.^{47, 48}

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.^{49, 50} 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.

Interpretation Note

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.

For this indicator, a lower rate is more desirable.

iv. Obstetric Trauma—Vaginal Delivery With Instrument

Definition

This indicator measures the rate of obstetric trauma (fourth-degree lacerations or greater in severity) for instrument-assisted vaginal deliveries.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of obstetric traumas per 100 instrument-assisted vaginal deliveries.

Why Is This Important?

Obstetric trauma is among the most common adverse events in Canada.⁵⁰ Within Canadian hospitals (excluding Quebec), approximately 9,100 obstetric traumas were reported per year between 2003 and 2006.⁵⁰ Obstetric trauma may result in longer lengths of stay for mothers⁵⁰ and chronic complications such as fecal incontinence⁵¹ and uterine prolapse.⁵²

Risk factors for obstetric trauma include large fetal size, premature delivery, prolonged pregnancy, long labour, maternal age and episiotomy extraction.^{50, 53, 54} One of the most significant and potentially modifiable risk factors for obstetric trauma is the use of instruments during vaginal delivery.^{50, 53} From 2003–2004 to 2005–2006, approximately 15% of all vaginal deliveries in Canada (excluding Quebec) involved instrument assistance.⁵⁰ However, by ensuring appropriate training and adherence with best practice guidelines during instrument-assisted deliveries, hospitals can potentially reduce the risk of obstetric trauma.

The obstetric trauma indicators are intended to be used as flags to identify areas for improvement and to help identify processes of care that require hospital-level evaluation.

Interpretation Note

For this indicator, a lower rate is more desirable.

v. Obstetric Trauma—Vaginal Delivery Without Instrument

Definition

This indicator measures the rate of obstetric trauma (fourth-degree lacerations or greater in severity) for vaginal deliveries without instrument assistance.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of obstetric traumas per 100 unassisted vaginal deliveries.

Why Is This Important?

Obstetric trauma is among the most common adverse events in Canada.⁵⁰ Within Canadian hospitals (excluding Quebec), approximately 9,100 obstetric traumas were reported per year between 2003 and 2006.⁵⁰ Obstetric trauma may result in longer lengths of stay for mothers⁵⁰ and chronic complications such as fecal incontinence⁵¹ and uterine prolapse.⁵²

Risk factors for obstetric trauma include large fetal size, premature delivery, prolonged pregnancy, long labour, maternal age and episiotomy extraction.^{50, 53, 54} One of the most significant and potentially modifiable risk factors for obstetric trauma is the use of instruments during vaginal delivery.^{50, 53} From 2003–2004 to 2005–2006, approximately 15% of all vaginal deliveries in Canada (excluding Quebec) involved instrument assistance.⁵⁰ However, by ensuring appropriate training and adherence with best practice guidelines during instrument-assisted deliveries, hospitals can potentially reduce the risk of obstetric trauma.

The obstetric trauma indicators are intended to be used as flags to identify areas for improvement and to help identify processes of care that require hospital-level evaluation.

Interpretation Note

For this indicator, a lower rate is more desirable.

3. Indicators: Appropriateness and Accessibility

i. Caesarean Section Rate: Excluding Pre-Term and Multiple Gestations

Definition

This indicator measures the rate of deliveries via Caesarean section (C-section), excluding pre-term and multiple-gestation pregnancies.

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of C-sections per 100 deliveries.

Why Is This Important?

C-section is one of the most commonly performed surgical procedures for Canadian women. The rate of C-sections being performed among Canadian women is concerning, as these procedures are associated with increased risk of maternal morbidity^{53, 55} and are more costly than vaginal deliveries.⁵⁶

Multiple and pre-term deliveries are among the main indications for a C-section delivery.⁵⁷⁻⁵⁹ Teaching and larger community hospitals may have a higher rate of these complex cases. Excluding these cases from analysis will provide hospitals with a more in-depth look at their C-section rate and improve the comparability of rates across hospitals.

Interpretation Note

The implicit assumption is that a lower rate indicates more appropriate as well as more efficient care; however, variations in rates can serve as a flag to examine appropriateness of care, as well as maternal and neonatal outcomes.

ii. Vaginal Birth After Caesarean Section

Definition

This indicator measures the rate of women who delivered vaginally after previously having had a Caesarean section (C-section).

Unit of analysis: The measuring unit of this indicator is a single admission. The indicator is expressed as a rate of vaginal deliveries per 100 previous C-sections.

Why Is This Important?

C-section is one of the most commonly performed surgical procedures for Canadian women and now accounts for more than 25% of all deliveries.⁵⁷ Approximately 80% of women who had a previous C-section had a repeat C-section in 2007–2008.⁵⁷ The increasing rate of C-sections being performed among Canadian women is concerning, as these procedures are associated with increased risk of maternal morbidity^{55, 60} and are more costly than vaginal deliveries.⁵⁶ In 2008, in response to the increasing number of C-section births in Canada, the Society of Obstetricians and Gynaecologists of Canada (SOGC) released a joint policy statement to encourage and promote normal childbirth within Canadian hospitals.⁶¹

Interpretation Note

The implicit assumption is that a higher rate indicates more appropriate as well as more efficient care; however, variations in rates can serve as a flag to examine appropriateness of care, as well as maternal and neonatal outcomes.

iii. Use of Coronary Angiography Following Acute Myocardial Infarction

Definition

This indicator measures the rate of first acute myocardial infarction (AMI) inpatient admissions that have coronary angiography within the episode of care.

Unit of analysis: The measuring unit of this indicator is an episode of care. The indicator is expressed as a rate of coronary angiography per 100 first AMI admission episodes.

Why Is This Important?

Coronary angiography is recommended for ST-elevation myocardial infarction (STEMI, which is the more severe type of MI) patients with cardiac electrical and/or hemodynamic instability. It is also recommended for those who are candidates for revascularization (percutaneous coronary intervention or coronary artery bypass graft) and surgical repair of ventricular septal rupture.⁶² For non-STEMI patients and patients with angina who are at high risk, invasive diagnostic strategies such as early angiography are generally preferable.^{63, 64} Delays in angiography are associated with a higher risk of adverse events and longer hospital stays for high-risk non-STEMI patients.⁶⁵

The use of angiography might not be suitable for all AMI patients; depending on the patient's conditions and characteristics, health care providers must make the final decision based on the risks and benefits to the patient.^{64, 66} While our current indicator methodology does not differentiate between STEMI and non-STEMI patients, by examining this indicator, hospitals could further investigate the appropriateness of this diagnostic technique.

Interpretation Note

The implicit assumption is that higher rates indicate more appropriate as well as more efficient care; however, very high rates should be further examined for possible over-utilization.

iv. Hip Fracture Surgical Procedures Performed Within 48 Hours: Wait Time Across Facilities

Definition

This indicator measures the proportion of hip fracture surgical procedures performed within 48 hours of initial admission across facilities.

Unit of analysis: The measuring unit of this indicator is a single admission or multiple admissions. The indicator is expressed as a rate of hip fracture procedures performed within 48 hours of admission per 100 hip fracture procedures.

Why Is This Important?

Although the age-adjusted rate of hip fractures in Canada has been declining in recent years, the absolute number of hip fractures continues to increase due to changes in the age distribution of the population.⁶⁷ In 2005, provincial and territorial leaders identified wait times for hip fracture surgery as a priority by including them in a list of national wait time benchmarks and stating that the delay for this procedure should be less than 48 hours.⁶⁸

There is strong evidence to suggest that hip fracture procedures that are delayed by more than 48 hours (compared with those performed within 48 hours) are associated with poorer outcomes, specifically with respect to length of hospital stay,^{69, 70} self-reported pain,⁷⁰ 30-day mortality⁷¹ and one-year mortality rates.⁷¹ Measuring the delay to hip fracture surgery provides an opportunity for hospitals to monitor and improve access to this health care service.

Interpretation Notes

For this indicator, a higher rate is more desirable. Please note that this indicator captures the wait time across all facilities. In cases where patients were transferred from another hospital to receive surgery, the initial time spent at the other hospital(s) prior to surgery is included in the calculation of the patient's total wait time.

Health System Characteristics—Financial Indicators

Note that only data from **acute care** hospitals that participate in CHRP will be displayed in CHRP and will be used to calculate all averages, pending data availability.

1. Indicators: Efficiency

i. Administrative Service Expense as a Percentage of Total Expense

Definition

This indicator measures the percentage of the legal entity's expenses that were spent in administrative departments, such as finance and human resources, to total expense.

Unit of analysis: The measuring unit of this indicator is a dollar of expense. The indicator is expressed as the percentage of total expenses that are in administrative departments.

It is important to note that this indicator is calculated at the regional level for jurisdictions that have a regionalized health system structure. Otherwise, it is calculated at the hospital level.

Numerator: The numerator includes all expenses associated with the administrative, finance, human resources and communication functional centres.

Denominator: The denominator includes all expenses net of recoveries.

Interpretation

Administrative expense is a measure of a hospital's efficiency. It represents the percentage of the legal entity's total expenses that were spent in administrative departments, such as finance and human resources. A high percentage indicates that administrative costs are a large portion of the region's hospital expenses; a low percentage indicates that administrative costs are a small portion of a region's hospital expenses. Please note the structure of a legal entity varies across the jurisdictions. For example, this indicator is calculated at the hospital level in Ontario and Yukon, whereas in other jurisdictions, hospitals and other health service organizations are included.

ii. Cost per Weighted Case (CPWC)

Definition

This indicator measures the relative cost-efficiency of a hospital's ability to provide acute inpatient care.

Unit of analysis: The measuring unit for this indicator is an acute inpatient weighted case. The indicator is expressed as the total inpatient expenses incurred to produce a weighted case.

Numerator: The numerator is the total inpatient cost.

Denominator: The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

Interpretation

This indicator compares a hospital's total acute inpatient care expenses with the number of acute inpatient weighted cases related to the inpatients that it provided care for. The result is the hospital's average full cost of treating the average acute inpatient. Other things being equal, a lower value indicates greater cost-efficiency. Please note that a new methodology has been implemented and the indicator values are not comparable with those from previous years.

2. Indicators: Productivity

i. Nursing Inpatient Services Total Worked Hours per Weighted Case

Definition

This indicator measures the number of worked hours from all personnel (excluding medical personnel) in hospital nursing units to produce a weighted case.

Unit of analysis: The measuring unit for this indicator is an acute inpatient weighted case. The indicator is expressed as the worked hours in nursing inpatient service functional centres (adjusted for inpatient activity) needed to produce a weighted case.

Numerator: The numerator includes all worked and purchased hours in nursing inpatient functional centres. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics.

Denominator: The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

Interpretation

Other things being equal, a lower value implies greater efficiency.

ii. Diagnostic Services Total Worked Hours per Weighted Case

Definition

This indicator measures the number of worked hours from all personnel (excluding medical personnel) in hospital diagnostic units to produce a weighted case.

Unit of analysis: The measuring unit for this indicator is an acute inpatient weighted case. The indicator is expressed as the worked hours in diagnostic service functional centres (adjusted for inpatient activity) needed to produce a weighted case.

Numerator: The numerator includes all worked and purchased hours in diagnostic functional centres. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics.

Denominator: The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

Interpretation

Other things being equal, a lower value implies greater efficiency.

iii. Clinical Lab Total Worked Hours per Weighted Case

Definition

This indicator measures the number of worked hours required from all personnel working in hospital laboratory units to produce a weighted case.

Unit of analysis: The measuring unit for this indicator is an acute inpatient weighted case. The indicator is expressed as the worked hours in clinical laboratory service functional centres (adjusted for inpatient activity) needed to produce a weighted case.

Numerator: The numerator includes all worked and purchased hours in clinical laboratory functional centres. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics.

Denominator: The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

Interpretation

Other things being equal, a lower value implies greater efficiency.

iv. Pharmacy Total Worked Hours per Weighted Case

Definition

This indicator measures the number of worked hours required from all personnel (excluding medical personnel) working in hospital pharmacy functional centres to produce a weighted case.

Unit of analysis: The measuring unit for this indicator is an acute inpatient weighted case. The indicator is expressed as the worked hours in pharmacy service functional centres (adjusted for inpatient activity) needed to produce a weighted case.

Numerator: The numerator includes all worked and purchased hours in pharmacy functional centres. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics.

Denominator: The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

Interpretation

Other things being equal, a lower value implies greater efficiency.

Health System Performance—Clinical Indicators: Data Sources

Name of Indicator	Data Sources
5-Day In-Hospital Mortality Following Major Surgery	DAD
30-Day In-Hospital Mortality Following Acute Myocardial Infarction	DAD, NACRS, AACRS
30-Day In-Hospital Mortality Following Stroke	DAD, NACRS, AACRS
28-Day Readmission After Acute Myocardial Infarction	DAD, NACRS, AACRS
28-Day Readmission After Stroke	DAD, NACRS, AACRS
90-Day Readmission After Hip Replacement	DAD, HMDB, NACRS, AACRS
90-Day Readmission After Knee Replacement	DAD, HMDB, NACRS, AACRS
30-Day Overall Readmission	DAD, HMDB, NACRS, AACRS
30-Day Obstetric Readmission	DAD, HMDB, NACRS, AACRS
30-Day Pediatric Readmission	DAD, HMDB, NACRS, AACRS
30-Day Surgical Readmission	DAD, HMDB, NACRS, AACRS
30-Day Medical Readmission	DAD, HMDB, NACRS, AACRS
In-Hospital Hip Fracture in Elderly (65+) Patients	DAD
Nursing-Sensitive Adverse Events for Medical Patients	DAD
Nursing-Sensitive Adverse Events for Surgical Patients	DAD
Obstetric Trauma—Vaginal Delivery With Instrument	DAD
Obstetric Trauma—Vaginal Delivery Without Instrument	DAD
Caesarean Section Rate: Excluding Pre-Term and Multiple Gestations	DAD, HMDB
Vaginal Birth After Caesarean Section	DAD, HMDB
Use of Coronary Angiography Following Acute Myocardial Infarction	DAD, NACRS, AACRS
Hip Fracture Surgical Procedures Performed Within 48 Hours: Wait Time Across Facilities	DAD, NACRS, AACRS

Notes

DAD: Discharge Abstract Database; HMDB: Hospital Morbidity Database; NACRS: National Ambulatory Care Reporting System; AACRS: Alberta Ambulatory Care Reporting System.

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