



Wait Times for Priority Procedures in Canada, 2021

Methodology Notes



Canadian Institute
for Health Information

Institut canadien
d'information sur la santé

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ISBN 978-1-77479-006-9 (PDF)

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How to cite this document:

Canadian Institute for Health Information. *Wait Times for Priority Procedures in Canada, 2021 — Methodology Notes*. Ottawa, ON: CIHI; 2021.

Cette publication est aussi disponible en français sous le titre *Les temps d'attente pour les interventions prioritaires au Canada, 2021 — notes méthodologiques*.
ISBN 978-1-77479-007-6 (PDF)

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Wait Times for Hip Fracture Repair From Inpatient Admission

Data sources

Patients discharged from April 1, 2020, to September 30, 2020, from acute care facilities that submit to the Discharge Abstract Database (DAD) at the Canadian Institute for Health Information (CIHI). Open-year data may not contain complete provincial/territorial submissions to CIHI. At the time of analysis, it is estimated that CIHI had received 90.0% of abstracts, relative to 2019–2020 for the same time period. While provincial completeness is high, there may be distinct analytic impacts for provinces with slower submissions to CIHI. Additionally, open-year data will not have been subjected to the full cycle of quality validation, at both CIHI and the submitting facilities. Hospitals may still add, delete or correct records.

Quebec wait times for hip fracture repair are not included due to methodological differences in the data. For information on Quebec hip fracture wait times, see CIHI's report *Comparing Wait Times for Hip Fracture Repair in Quebec With Those in Other Jurisdictions*.

The methodology used for this report differs from that used in previous Health Indicators reports. As of 2009–2010, inclusion of “time of intervention” is captured and allows for a more accurate estimate of wait times. This document has been updated to reflect methodology changes that were instituted for the 2017 data year.

This document describes the methodology used to calculate hip fracture repair wait times indicators using CIHI's administrative databases. For all other priority procedures, aggregate wait time data is submitted to CIHI by ministries of health and other provincial agencies. For information on these indicators, please refer to CIHI's [Wait Time metadata web page](#).

Definitions

benchmark: Hip fracture repair within 48 hours (set by federal, provincial and territorial governments in December 2005).

In discussion with provinces and recognizing the limitations of the data, this benchmark has been interpreted as

$$\begin{array}{l} \text{Percentage meeting} \\ \text{benchmark of 48 hours} \\ \text{from inpatient admission} \end{array} = \begin{array}{l} \text{The number of hip fracture patients, age 18 and older,} \\ \text{who underwent hip fracture surgery within 48 hours} \\ \text{of the time of inpatient admission} \\ \\ \text{divided by} \\ \\ \text{The total number of hip fracture patients, age 18 and older,} \\ \text{who received hip fracture surgery} \end{array}$$

inpatient hip fracture surgery wait segment/time: The number of hours the patient waited, from the time of first inpatient admission with a hip fracture (index admission) to the time the patient received hip fracture repair surgery.

Note: Waits were calculated only for patients who had a surgical repair.

50th percentile: The number of hours within which half of the patients in the sample received surgery and half were still waiting.

90th percentile: The number of hours within which 90% of the patients in the sample received surgery and 10% were still waiting.

Methodology

Episode building

The unit of analysis is an episode of acute care; patients may be admitted to one hospital and transferred to another for further treatment. Linking all admissions together into a single episode of care allows us to see the entire acute portion of the pathway of care.

Linkage is done by combining the first 10 digits of the health care number and province issuing the health care number to create a unique identifier for each patient and identifying all relevant acute care admissions.

A transfer is defined as follows:

- An acute care hospitalization or a same-day surgery visit that occurs less than or equal to 6 hours after discharge from the previous acute care hospitalization or same-day surgery visit, regardless of whether the transfer is coded; or
- An acute care hospitalization or same-day surgery visit that occurs between 6 and 12 hours, inclusive, after discharge from the previous acute care hospitalization or same-day surgery visit, and at least one of the hospitalizations or visits has coded the transfer.

Inclusions

- Males and females age 18 and older
- Any episode where all 6 of the following conditions are met:
 1. a. Hip fracture ICD-10-CA code S72.0, S72.1 or S72.2 is coded as the most responsible diagnosis (MRDx) but not also as a diagnosis type (2); or
 - b. Another diagnosis is coded as the MRDx and also as a diagnosis type (2), and a hip fracture is coded as a diagnosis type (1), (W), (X) or (Y) but not also as a diagnosis type (2); or
 - c. Convalescence or rehabilitation ICD-10-CA code Z50.1, Z50.8, Z50.9, Z54.0, Z54.4, Z54.7, Z54.8 or Z54.9 is coded as the MRDx and a hip fracture is coded as a diagnosis type (1), (W), (X) or (Y) but not also as a diagnosis type (2)
 2. A relevant CCI procedure code is recorded in any position:
 - a. 1.VA.74.^ Fixation, hip joint
 - b. 1.VA.53.^ Implantation of internal device, hip joint
 - c. 1.VC.74.^ Fixation, femur
 - d. 1.SQ.53.^ Implantation of internal device, pelvis
 3. Sex is recorded as male or female
 4. Admission is to an acute care institution (Facility Type Code = 1)
 5. Admission category is recorded as emergent/urgent (Admission Category Code = U)
 6. Hip fracture diagnosis appears in the initial abstract of the episode as well as in the surgical abstract (codes do not need to match)

Note: In 2012, the CCI code 1.VA.53.PN-PN *Implantation of internal device, hip joint robotics assisted approach [e.g., telemanipulation of tools] uncemented dual-component prosthetic device [femoral & acetabular]* was deactivated to separate robotic telemanipulation techniques.

Exclusions

Records are excluded if any of the following conditions exist:

1. Records with an invalid health card number
2. Records with an invalid code for province issuing health card number
3. Cadaveric donor or stillbirth records (Admission Category Code = R or S)
4. Records with an invalid admission date or time
5. Records with an invalid discharge date or time
6. Records with an invalid procedure date or time
7. A hip fracture event where hip fracture is coded as post-admission diagnosis (diagnosis type (2)) on the index hospitalization or the surgery hospitalization (regardless of the admission category)
8. Records with an invalid birthdate or gender code
9. Records with unknown date/time “9999” (in 2011–2012, the DAD introduced the valid value “9999” for unknown admission/discharge/surgery times)
10. Potential and true duplicate discharges
11. Procedures coded as out of hospital (OOH indicator flag = Y) and abandoned after onset (status attribute = A)

Elective admissions time calculations

Time to surgery is calculated as time from initial inpatient admission for a hip fracture to start time of surgical episode for a hip repair.

Wait Times for Hip Fracture Surgery From Emergency Department

Data sources

Patients discharged from April 1, 2020, to September 30, 2020, from Ontario and Alberta emergency care facilities (based on the ED Visit Indicator variable) that submit to CIHI’s National Ambulatory Care Reporting System (NACRS), as well as to the DAD, as indicated in the previous section — inpatient admission methodology.

Wait times from the province of Newfoundland and Labrador and Prince Edward Island were directly submitted to CIHI from their wait time registries.

Definitions

benchmark: Hip fracture repair within 48 hours (set by federal, provincial and territorial governments in December 2005).

This benchmark has been interpreted as

$$\begin{array}{l} \text{Percentage meeting} \\ \text{benchmark of 48 hours} \\ \text{from ED admission} \end{array} = \frac{\begin{array}{l} \text{The number of hip fracture patients, age 18 and older,} \\ \text{who underwent hip fracture surgery within 48 hours of} \\ \text{the time of admission to the emergency department (ED)} \end{array}}{\begin{array}{l} \text{The total number of hip fracture patients who were} \\ \text{admitted to the ED, age 18 and older, who received} \\ \text{hip fracture surgery} \end{array}}$$

emergency department hip fracture surgery wait time: Measured in hours from the time the hip fracture patient was first registered in an ED (index admission) to the time when hip surgery was received.

Note: Waits were calculated for patients who had a surgical repair only.

Methodology

The methodology for ED wait times for hip fracture surgery is based on linking the acute care episodes defined above to ED visits in Ontario and Alberta. Comparable ED data is not available for other provinces in NACRS in a comprehensive manner.

Transfer/episode building: Linking cases across ED visits and acute care

- Patients are identified in the DAD and NACRS with a personal identifier created using the first 10 digits of the health care number and the province issuing the health care number.
- The ED visit is considered related to the inpatient admission for hip fracture if the length of time between leaving the ED and admission to acute care is between -12 and 24 hours.
- If more than one ED episode is linked to a single acute hip fracture episode, then the ED episode with the earliest entry date/time is selected.

Inclusion

- Unscheduled ED visits to an emergency department

Exclusions

- Invalid/unknown health care numbers, gender, province issuing health care number, date/time patient left ED, disposition date/time, registration date/time or triage date/time, invalid birthdates

Note: According to the NACRS Manual, valid values for date/time patient left ED, disposition date/time, registration date/time or triage date/time include “9999” for unknown date/time. All ED visits with unknown date/time “9999” are excluded.

- Potential and true duplicate ED visits (as specified by the *Data Quality Documentation — Current-Year Information*)
- Elective admissions

Note: With the exception of direct admissions into an inpatient facility, acute care episodes were excluded if there were no matching ED visits, as the pathway of care was incomplete.

Time calculations

- Overall wait time was calculated as the time patient first registered in the ED (index ED admission) to the start time of surgical repair in acute care.

Note: For wait time calculations involving multi-hospital stays, the total wait time is attributed to the province where the surgery was performed.

Calculating the all-Canada estimates

Part 1: Calculating all-Canada percentage meeting benchmark

The national percentage meeting the benchmark estimate for hip fracture repair was calculated directly using record-level data. For all other procedures, the national percentage meeting benchmark estimates was calculated as follows:

$$\text{National percentage meeting benchmark} = \frac{\text{Total patients meeting benchmark for each province}^*}{\text{Total procedures performed}}$$

Note

* Estimated by provincially submitted volumes and percentage meeting benchmark. National estimates of percentage meeting benchmark exclude procedures in the territories.

Part 2: Calculating all-Canada median and 90th percentile wait times

The national median and 90th percentile wait times for hip fracture repair were calculated directly using record-level data. For all other procedures, the national estimates for median and 90th percentile were calculated using a weighted average of provincial submissions. Weights were calculated using provincially submitted surgical volumes.

Note: National estimates of median and 90th percentile wait times exclude procedures in the territories.



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