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Portrait of the Quebec trauma care network: 2016-2022

English summary

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SUMMARY

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Introduction

The Institut national d'excellence en santé et en services sociaux (INESSS) is mandated to plan, coordinate, and carry out the performance evaluation of the 59 acute care facilities designated for trauma care in Québec. Through regular evaluation cycles, quality and performance reports containing descriptive statistics and quality indicators are generated for each facility. The 6th evaluation cycle took place from September 2023 to August 2024, and each designated trauma facility received its quality and performance report along with its data covering the period from 2016 to 2022.

In addition to generating site-specific reports, a provincial portrait of the quality and performance of designated trauma facilities was produced. The objective was to describe the profile of patients admitted to acute care trauma facilities between 2016 and 2022, as well as the performance of these sites at the provincial level based on a series of quality indicators.

Methodology

The Système d'information du Registre des traumatismes du Québec (SIRTQ, the Québec Trauma Registry Information System) and the hospitalization database (MED-ECHO) were used to:

1) identify all patients admitted with a traumatic injury to any of the 59 designated trauma facilities between April 1, 2016, and March 31, 2022; and
2) obtain information on patients and their care episodes.

The portrait of the clientele served by these facilities is based on statistics describing admitted patients and the continuum of services (e.g., patient age, prehospital transport mode, mechanisms and severity of injury, whether transferred or directly transported to the facility, destination at discharge, etc.). The provincial performance of Québec's trauma network was assessed using 13 process indicators, 4 indicators of clinical practices of low value, and 4 indicators estimating health outcomes—mortality, major complications, unplanned readmissions within 30 days of discharge, and average length of stay in hospital.

The results of the statistics and indicators were generated and aggregated at the provincial level. They are presented anonymously in this report and discussed in terms of their inter-facility variation. Comparisons with results from the previous evaluation cycle are also provided where possible. A rapid literature review was conducted to obtain benchmark data for the quality indicators measured by this portrait. Only results from trauma centres and networks comparable to those in Québec were retained.

Results

Increase in admissions to designated trauma facilities

- A 22% increase in annual admission volume was observed for the period 2016–2022 in the designated facilities, compared to the 5th evaluation cycle (April 2013–March 2016), with approximately 23,000 patients admitted per year in the recent period.
- The proportion of admissions of patients aged 65 and older increased between 2016 and 2022.
- A steady rise in admissions among female patients aged 65 and older for minor injuries (ISS [Injury Severity Score] ≤ 8) or injuries caused by same-level falls was noted during the period from 2016 and 2022.

Decrease in pediatric admissions between 2016 and 2022

- Pediatric patients aged 15 and under accounted for 8% of all admissions in the trauma network between 2016 and 2022, with the proportion declining steadily each year during this period. The vast majority (93%) of admitted pediatric patients had minor injuries.

Increase in direct patient transfers to the definitive care facility

- Ambulance remained the primary mode of transport from the trauma site to the hospital (for 75% of patients), a stable proportion when compared to the 5th cycle (74%).
- The proportion of direct ambulance transports to the facility where definitive care was received increased from 83% in the 5th cycle (2013–2016) to 86 % in the 6th cycle.
    - This increase may be linked to the provincial rollout of the Échelle québécoise de triage préhospitalier en traumatologie (EQTPT; the Québec Prehospital Trauma Triage Scale) between 2016 and 2018.

High compliance for certain processes in designated facilities

- Tertiary and regional secondary facilities achieved an average compliance above 80% for three process indicators (PI):
    - airway protection in the emergency department for patients with a Glasgow Coma Scale (GCS) score < 9;
    - administration of tranexamic acid in the emergency department;
    - provision of rehabilitation services during acute care.
- For secondary and primary facilities, the transfer of spinal cord injury patients to a specialized centre was the PI with the highest average compliance (90%).

Processes that could be improved in designated facilities

- For tertiary and regional secondary trauma facilities, lower average compliance as well as notable inter-facility variation were observed for:
  - two prophylaxis-related PIs (antibiotics for open fractures [48%] and antithrombotics for deep vein thrombosis in intensive care [41%]);
  - head CT scan for patients with severe traumatic brain injury (TBI) within 60 minutes of arrival in the emergency department (37%);
  - transfer of spinal cord injury patients to one of the two centres of expertise (31%).
- Secondary and primary facilities showed lower average compliance for:
  - administration of antibiotic prophylaxis for open fractures (37% overall, but observed mostly in secondary facilities);
  - emergency department stay ≤ 4 hours for severely injured patients (44%).
- The average compliance for transferring patients with moderate or severe TBI to a neurotrauma centre decreased between the two evaluation cycles, from 79% to 64%.

Compliance with indicators of low-value clinical practice

- Good performance was observed in tertiary and regional secondary facilities, with a frequency below 12% for three of the four indicators of low-value clinical practice:
  - initial head or cervical spine CT scan in low-risk patients;
  - whole-body CT scan in patients with minor injuries or injuries affecting a single region of the body;
  - neurosurgical consultation in patients without significant brain injury.
- Repeat CT scans in transferred patients was the most frequent low-value clinical practice across all designated trauma facilities:
  - frequency reached 22% in tertiary and regional secondary facilities;
  - in secondary and primary facilities, performing a CT scan on patients with an indication for immediate transfer (i.e., where imaging is not recommended before transfer) was the most common low-value practice, with a frequency of 68% and 53%, respectively.
- The use of low-value clinical practices was higher in primary-level facilities, except for whole-body CT scans.

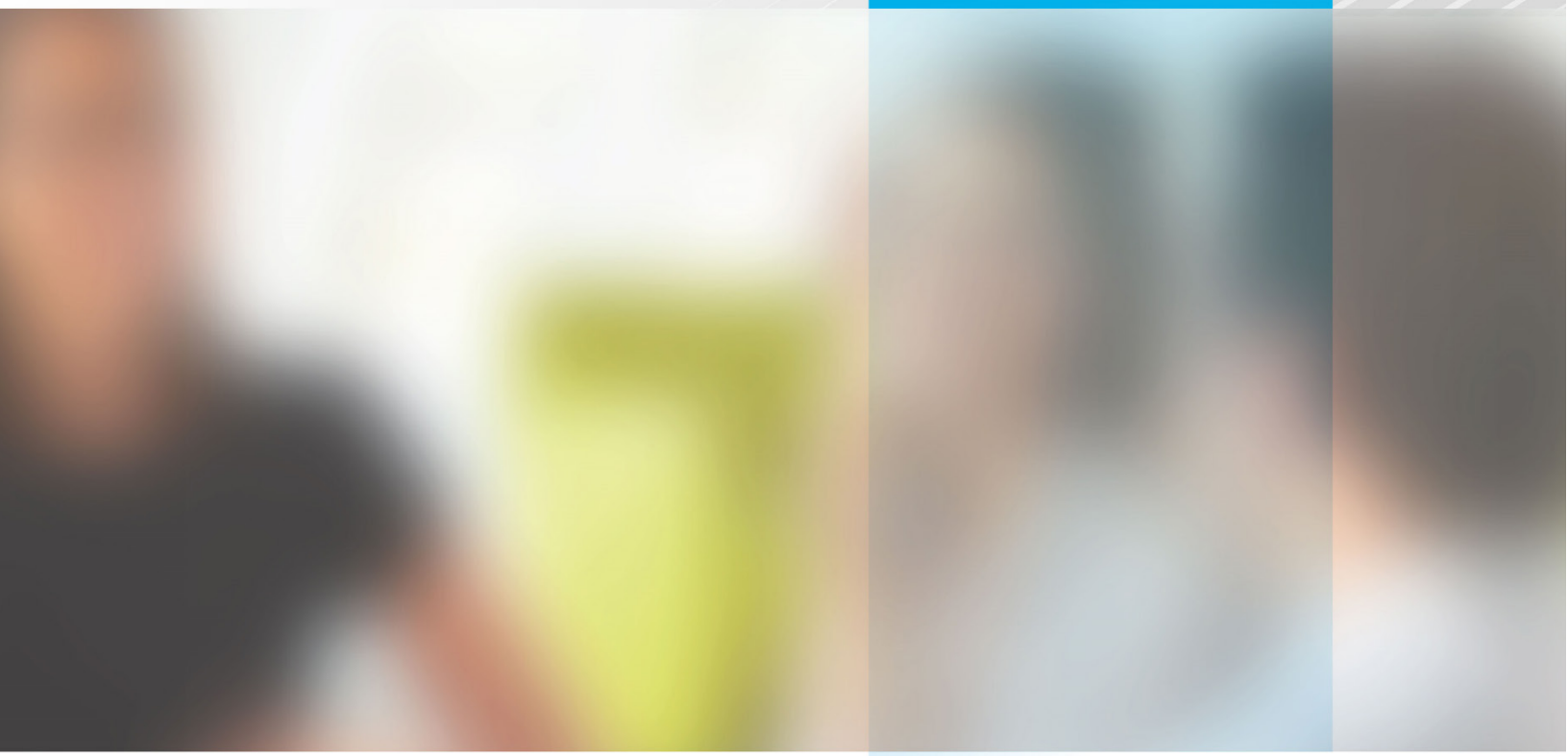
On-track health outcomes and organizational performance

- Low **in-hospital mortality** was observed among patients admitted to designated trauma facilities, with an average death percentage of 5.7% (for tertiary and regional secondary facilities) and 4.4% (secondary and primary facilities).
- On average, 15.8% of patients admitted to tertiary or regional secondary facilities between 2016 and 2022 experienced at least one **major complication**. This frequency was 9.8% in secondary and primary facilities.
- The frequency of **unplanned 30-day readmissions** was comparable between the two facility designation levels, except in the subgroup of patients aged 65 and older, for whom readmissions were higher in tertiary and regional secondary facilities (12.4% vs. 10.3%).
- The longest average **hospital length of stay (LOS)** was observed among severely injured patients admitted to higher-level facilities (10.2 days), followed by patients aged 65 and older in both designation levels (9.1 and 9.2 days). A greater amount of variation in LOS was noted between individual facilities.
- Few evaluation results from other countries could be compared to those from Québec. However, comparisons between Canadian provinces place Québec's designated trauma facilities in a high position for certain health outcomes. The tertiary and regional secondary facilities achieved the lowest in-hospital mortality and shortest LOS for severely injured patients compared to other provinces.

Conclusion

This portrait highlights the strong performance of designated trauma facilities in Québec. While certain processes warrant improvement within the network, the designated facilities generally maintain good health outcomes. The profile of trauma patients between 2016 and 2022 confirms a trend observed across the healthcare system: an aging patient population. To support trauma network facilities in managing this increasingly large and specific clientele, provincial standards on best clinical and organizational practices should be proposed that will allow the system to adequately meet the needs of older persons.

With ongoing structural and clinical governance changes in the healthcare system, it is more important than ever to maintain and strengthen the trauma network's core strengths. The successful governance mechanisms specific to this network—built over years of collaboration, through coordinated efforts, monitoring, and evaluation—must be maintained and encouraged to support continuous improvement and responsiveness to change by the stakeholders in Québec's trauma network.



Siège social

2535, boulevard Laurier, 5e étage
Québec (Québec) G1V 4M3
418 643-1339

Bureau de Montréal

2021, avenue Union, 12e étage, bureau 1200
Montréal (Québec) H3A 2S9
514 873-2563
inesss.qc.ca

Institut national d'excellence en santé et en services sociaux
Québec