

Use of Emergency Department Services and Trends in Access to Primary Care since the Implementation of a Real-Time Primary Care Orchestration

HSD26

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Background

- Access to primary care is associated with better population health and lower overall healthcare utilization and costs (1,2,3)
- Limited access to timely primary care is a key driver of emergency department (ED) overcrowding (4)
 - Patients with non-urgent or less urgent conditions often turn to ED when primary care is not readily accessible
 - It results in longer wait times for patients, increased workload for clinical staff, and higher system-wide costs
- In Canada, ~22% of adults (~16% in Quebec) do not have a regular primary care provider, e.g., family physician or nurse practitioner (5,6)
- Approximately 14% of ED visits are for conditions that could be managed in primary care settings
- Since 2020, Quebec has implemented the Petal real-time orchestration platform, aka the Patient Hub, to connect the primary care ecosystem, which
 - integrates 850 primary care clinics, via electronic medical records, as well as 120 EDs, health info lines, and patient portals across multiple existing systems
 - provides real-time visibility into the availability of over 19,000 health care professionals
 - enables informed decision-making, improved care coordination, and more efficient resource management to improve access to care

The Patient Hub enables real-time triage and orientation to guide low-acuity patients to appropriate care, reducing unnecessary ED visits and costs.

Objective

- To evaluate the Patient Hub's economic impact on ED utilization, trends in ED use by acuity level, and ED utilization patterns by patient attachment status to a primary care provider.

Methodology

Data sources

- ED utilization data were obtained through a Freedom of Information request to Sante Quebec
- Unit costs (CAD) were sourced from the literature (7-10):
 - \$440 per ED visit
 - \$171.45 per ED triage
 - \$78.73 for a primary care visit

Study design

- A cost model was used to compare projected ED visits with and without the Patient Hub over the years, to evaluate the economic impact of the orchestration platform

Outcomes

- Additional redirections from EDs to primary care settings
 - Defined as the yearly increase in ED redirections observed after the implementation of the Patient Hub (2022-2025) compared with the pre-implementation period (2018-2019)
- Reduction in ED visits estimated by
 - Projecting ED visits volume in the absence of the Patient Hub, assuming a constant per capita rate based on 2018-2019
 - Calculating the difference between the projected number of ED visits (without the Patient Hub) and the actual number observed (with the Patient Hub) for each post-implementation year
 - Adjusting 2022-2023 estimates by 25% to reflect partial-year (9 out of 12 months) implementation of the Primary Care Access program

Statistical Analysis

- Descriptive and trend analyses were conducted using data on ED and primary care utilization
- Analyses were stratified by acuity levels and attachment status

Results

ED Utilization with and without the Patient Hub

Over the 6-year study period, ED visits per capita declined, resulting in a substantial reduction of total visits compared with a scenario without the Patient Hub, as well as an increase in ED visits redirected to more appropriate care

- ED visits per capita declined by 6.8%, from 0.4402 in 2018-2019 to 0.4104 in 2024-2025
- In 2024-2025, this corresponds to 269,238 fewer ED visits associated with the implementation of the Patient Hub (Table 1)
- Redirected visits increased from 4.5% to 8.0% of ED visits, corresponding to 128,459 additional redirected visits in 2024-2025

Table 1. ED utilization with and without the Patient Hub

	Before	After			Total
	2018-2019	2022-2023	2023-2024	2024-2025	2022 - 2025
Total ED visits					
Without the Patient Hub*	3,711,052	3,848,664	3,921,765	3,980,939	11,751,368
With the Patient Hub		3,604,347	3,621,313	3,711,701	10,937,361
Adjustment for Primary Care Access Point program entry**		61,079			
Reduction in ED visits		183,238	300,452	269,238	814,007
Total redirected visits					
Redirected visits	168,218	286,604	274,854	296,677	
% of visits redirected	4.5%	8.0%	7.6%	8.0%	
Difference relative to 2018-2019		118,386	106,636	128,459	

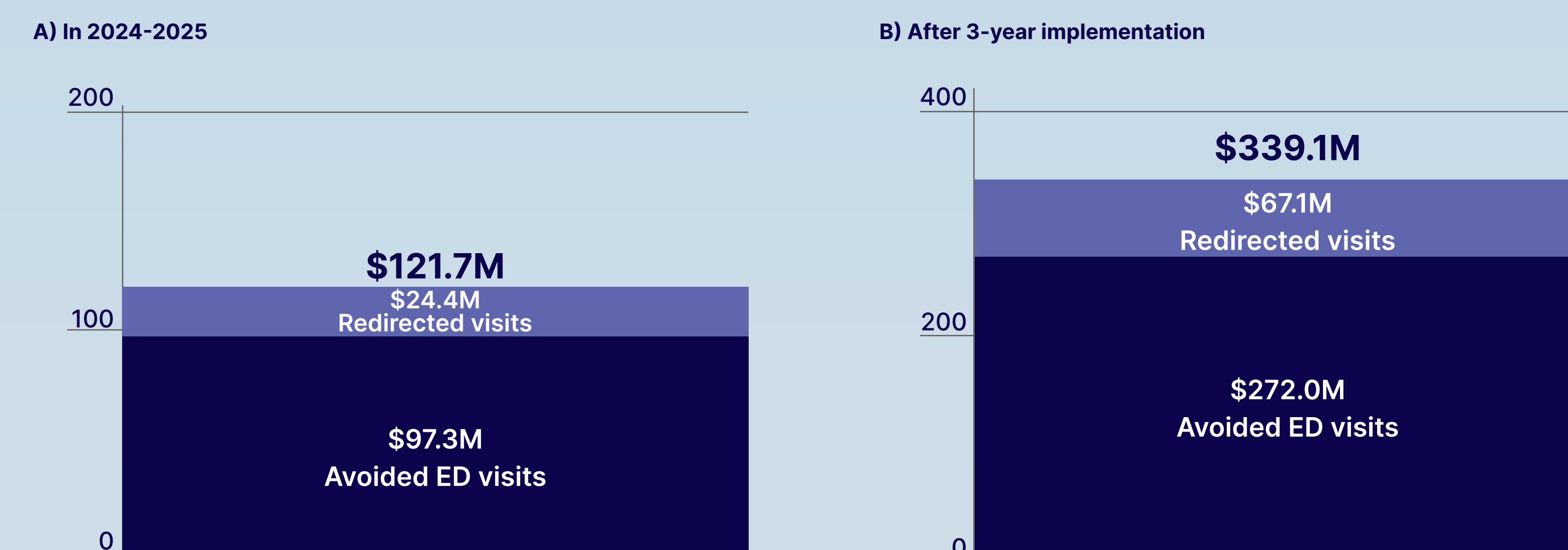
*Assuming the number of ED visits per capita is the same as in 2018-2019. Adjusted for population growth.** Assuming only 75% of the difference is attributable to the Access program for the year 2022-2023, due to its entry in July 2022.

Economic benefits of implementing the Patient Hub

Avoided and redirected ED visits generated substantial annual and cumulative economic benefits following implementation

- The combined impact of avoided and redirected ED visits resulted in an estimated annual economic benefit of \$121.7 million in 2024-2025 (Figure 1)
- Cumulative economic benefits since the Patient Hub implementation are estimated at \$339.1 million

Figure 1. Total economic benefits of implementing the Patient Hub

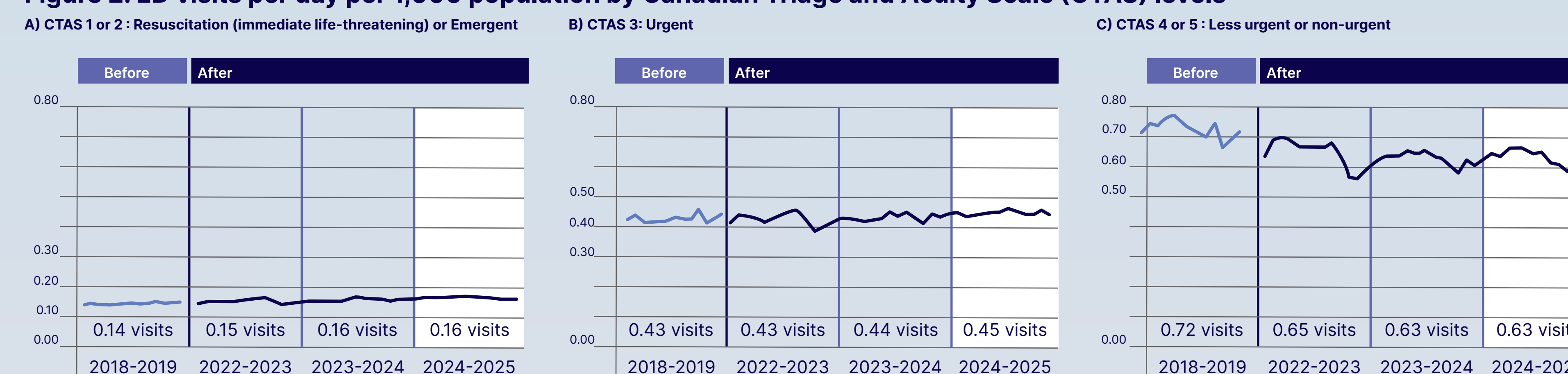


Impact of the Patient Hub on low-acuity ED visits

The decline in ED visits was primarily driven by a reduction in low-acuity ED visits

- The reduction in ED visits was primarily driven by a decline in low-acuity ED visits (CTAS 4-5, from 0.72 to 0.63 per capita (2018-2019 to 2024-2025) (Figure 3)

Figure 2. ED visits per day per 1,000 population by Canadian Triage and Acuity Scale (CTAS) levels

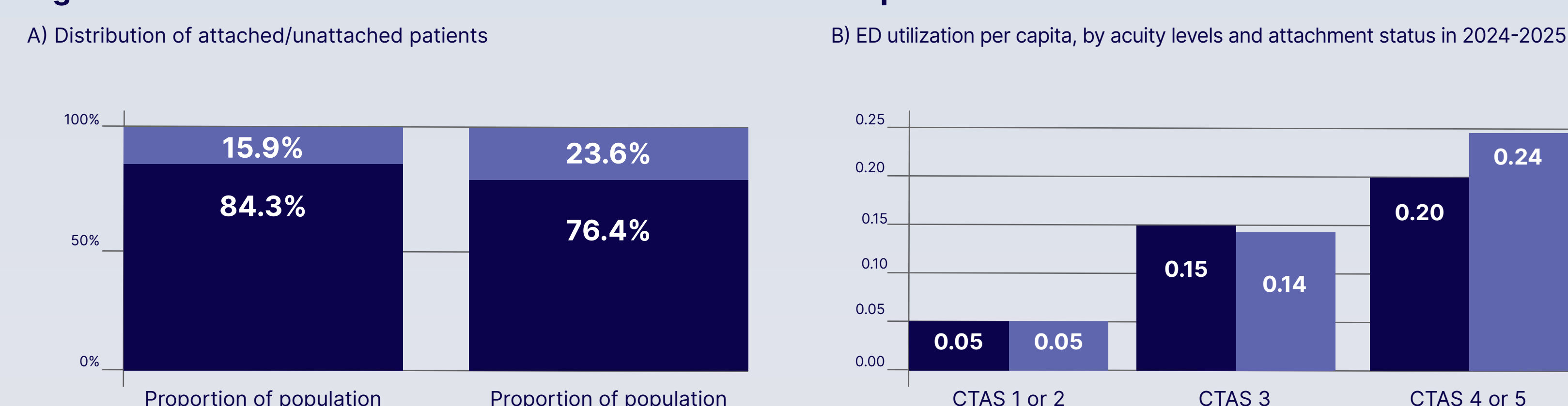


Difference in ED use by attachment to a primary care provider

The gap in ED visits between unattached and attached patients is driven by low-acuity ED visits

- Unattached patients (16% of the population) accounted for 24% of ED use in 2024-2025 (Figure 4)
- They tend to incur more low-acuity ED visits (CTAS 4 or 5) than attached patients; however the difference has narrowed over time (results not shown)

Figure 3. ED utilization trends for attached and unattached patients



Patient Hub in Care Coordination

A Patient Hub is real-time care orchestration platform that improves access to appropriate care and directs patients to the right setting and provider, reducing avoidable emergency department (ED) use, optimizing capacity, and lowering total cost of care.

- Enables real-time triage and patient orientation, guiding individuals, especially those with low-acuity needs, to the most appropriate and timely care setting, reducing unnecessary ED visits
- Improves access to primary and ambulatory care by matching patients to available providers, helping close access gaps and relieve pressure on high-cost settings
- Connects patients, providers, and care teams through secure, interoperable data sharing, enabling seamless coordination across the care continuum
- Standardizes care pathways and supports value-based care by ensuring consistent routing to high-quality, cost-effective care options
- Drives measurable clinical and financial impact by reducing delays, duplication, and inappropriate utilization, improving patient flow, resource use, and overall cost of care

Limitations

- The analysis assumes stable ED utilization trends absent the Patient Hub
- No statistical comparisons or causal inference analyses were performed. However, exploratory interviews with representatives from the Quebec Ministry of Health suggest the Patient Hub likely played an important role in these observed trends
- Results reflect the Quebec context and may need to be adapted to other contexts

Conclusions

- In Quebec, the Patient Hub appears to have improved system efficiency by reducing non-urgent ED use and increasing redirections to primary care
- The gap in access to care between attached and unattached patients has narrowed over time
- The cumulative economic benefit of \$339.1 million highlights the potential value of integrated digital infrastructure in supporting system-level efficiency gains
- These findings suggest that real-time primary care orchestration platforms, such as the Patient Hub, may serve as a policy lever to reduce low-acuity ED use, improve equity in access, and generate system-level savings

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