



Ambulance Use for Time-Sensitive Conditions: Stroke and Heart Attack

Strokes and heart attacks are time-sensitive conditions where timely care may prevent mortality or significant morbidity. Recommendations across Canada encourage anyone with signs of stroke or heart attack to call an ambulance. Paramedics can assess and manage the patient, pre-notify the hospital and transport the patient to the hospital best equipped to treat him or her. This analysis reports the percentage of stroke and heart attack patients who arrive at the hospital by ambulanceⁱ and describes characteristics of patients who do not use an ambulance.

The Heart and Stroke Foundation's recent signs of stroke campaign focuses on [Face, Arm, Speech, Time \(FAST\)](#) to raise awareness of stroke and tells people who see or experience any of these signs to call 9-1-1 or their local emergency number immediately.

i. Excludes patients transferred from other institutions, such as other hospitals or long-term care facilities, as these patients are typically transported by ambulance, and the decision is out of the patient's hands.

Findings

Figure 1 Some patient characteristics and their influence on using an ambulance (for stroke and heart attack)



Note

The influence of factors is stronger for heart attack patients.

Source

Discharge Abstract Database, 2014–2015, Canadian Institute for Health Information.

In 2014–2015 in Canada (excluding Quebec), more than 34,000 patients were admitted to hospital for a stroke and more than 75,000 for a heart attack.¹ Despite recommendations that all patients experiencing signs of stroke or heart attack should call an ambulance, 1 in 3 stroke patients and 1 in 2 heart attack patients did not arrive at the hospital by ambulance.

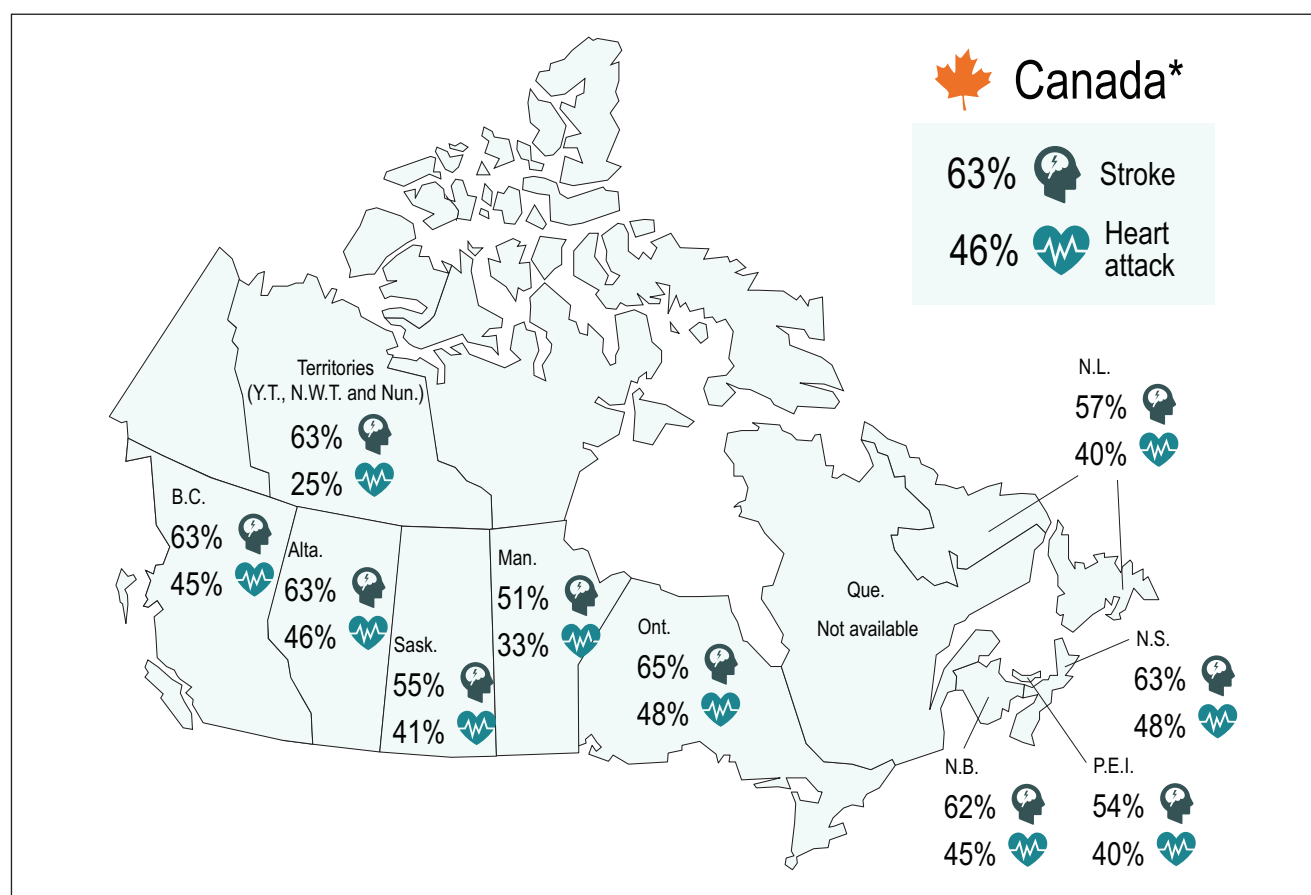
Overall, stroke and heart attack patients who were less likely to arrive at the hospital by ambulance were younger (<45), male, living closer to the hospital and residing in a higher-income neighbourhood. However, the influence of these factors was stronger for heart attack patients. Even after accounting for disease severity (adjusting for comorbidities, number of interventions, length of stay and death), these characteristics remained significant.

Nonetheless, there were some differences between patients with these 2 conditions:

- Having a history of stroke or heart attack affected the likelihood of patients using an ambulance. Younger stroke patients (<45) who'd had a previous stroke (within 12 months of their hospitalization) were less likely to arrive by ambulance. In contrast, heart attack patients across all age groups who'd had a previous heart attack were more likely to arrive by ambulance.
- Heart attack patients living closer to the hospital and in an urban area were less likely to arrive by ambulance, unlike stroke patients.

There was provincial variation in ambulance use for both conditions: Saskatchewan, Manitoba and Prince Edward Island had the lowest rates of ambulance use. Ambulance use for stroke was higher than that for heart attack in all provinces and territories, and the difference in ambulance use between stroke and heart attack (about 20%) was consistent.

Figure 2 Percentage of stroke and heart attack patients arriving at the hospital by ambulance, by jurisdiction, 2014–2015



Note

* Quebec data excluded.

Source

Discharge Abstract Database, 2014–2015, Canadian Institute for Health Information.

Ambulance costs in Canada range from around \$40 to \$500 per ride. It is difficult to determine whether these costs affect the rate of use, as there is no information on whether patients paid for the ambulance through subsidies, private insurance or out of pocket.

Figure 3A Common signs of stroke

LEARN THE SIGNS OF STROKE

FACE is it drooping?

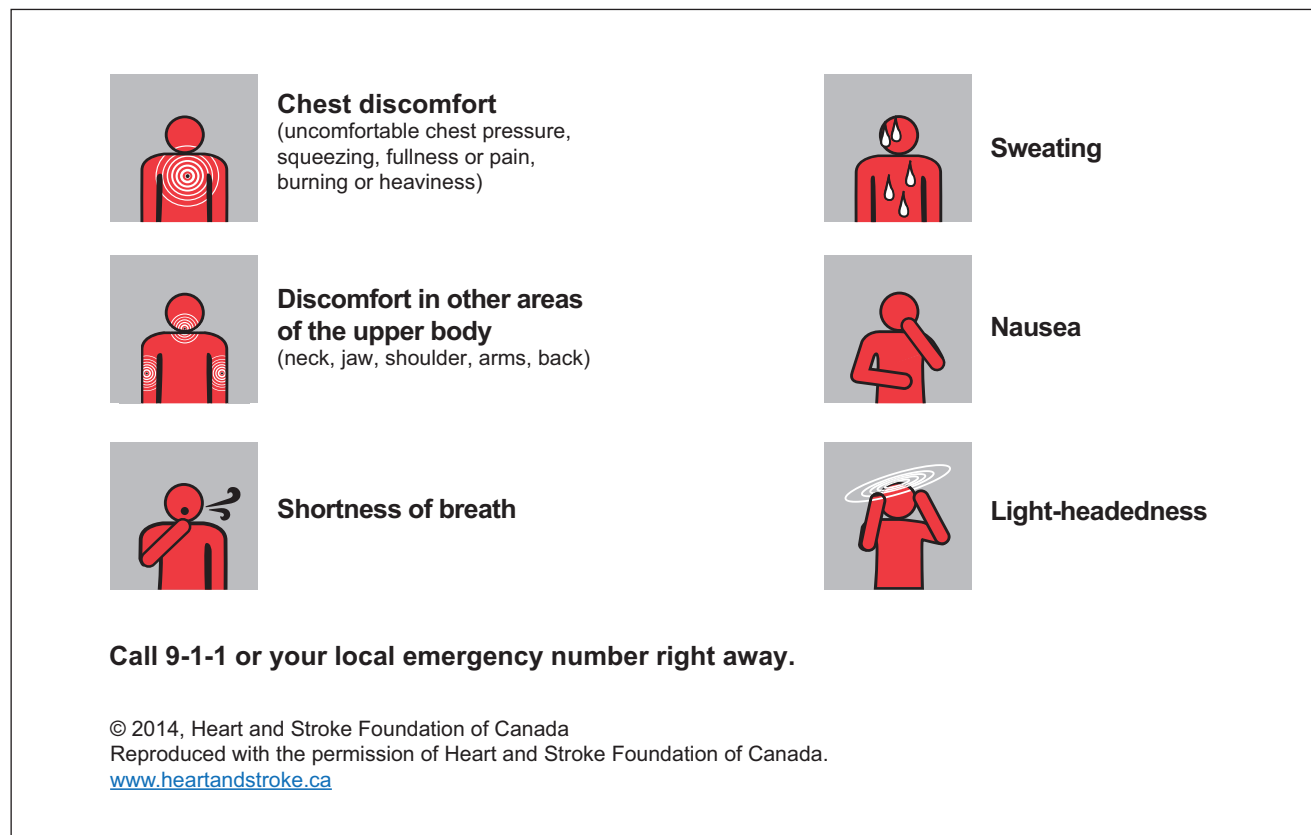
ARM can you raise both?

SPEECH is it slurred or jumbled?

TIME to call 9-1-1 right away.

ACT **F A S T** BECAUSE THE QUICKER YOU ACT,
THE MORE OF THE PERSON YOU SAVE.

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Figure 3B Common signs of heart attack

Data source

This analysis included patients age 18 and older who were discharged following an inpatient stay in 2014–2015 using the ICD-10-CA codes (from the Discharge Abstract Database) for stroke (I60, I61, I63 and I64) or heart attack (I21 and I22). It excluded transient ischemic attacks, Quebec cases (ambulance use data was not available), cases with invalid health card numbers, transfers from other institutions, elective visits, in-hospital events and air ambulance use.

This study was done in consultation with the Heart and Stroke Foundation.

Please refer to the companion Excel file for data tables and methodology information.



Talk to us

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Reference

1. Canadian Institute for Health Information. [Your Health System](#). Accessed May 20, 2016.

Appendix

Text alternative for images

Figure 1 Patient characteristics and their influence on using an ambulance

Factors that are linked to being more likely to use an ambulance for stroke and heart attack, by decreasing degree of influence, are older age, living further from the hospital, living in a lower income–quintile neighbourhood and being female.

Factors that are linked to being less likely to use an ambulance for stroke and heart attack, by decreasing degree of influence, are younger age, living closer to the hospital, living in a higher income–quintile neighbourhood and being male.

Figure 2 Percentage of stroke and heart attack patients arriving at the hospital by ambulance, by jurisdiction, 2014–2015

Jurisdiction	Stroke	Heart attack
Canada*	63%	46%
Newfoundland and Labrador	57%	40%
Prince Edward Island	54%	40%
Nova Scotia	63%	48%
New Brunswick	62%	45%
Quebec	Not available	Not available
Ontario	65%	48%
Manitoba	51%	33%
Saskatchewan	55%	41%
Alberta	63%	46%
British Columbia	63%	45%
Territories (Yukon, Northwest Territories and Nunavut)	63%	25%

Note

* Quebec data excluded.

Figure 3A Common signs of stroke

The signs of stroke are best remembered using the Heart and Stroke Foundation's FAST mnemonic. The F stands for "face": is it drooping? The A stands for "arms": can you raise both? The S stands for "speech": is it slurred or jumbled? The T stands for "time": call 9-1-1 right away.

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Figure 3B Common signs of heart attack

The signs of a heart attack are chest discomfort, discomfort in other areas of the upper body (i.e., neck, jaw, shoulder, arms, back), shortness of breath, sweating, nausea and light-headedness.

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