Comparison of Stroke Care Indicators in Eastern Health to Three Regions of Canada

Canadian Stroke Best Practice Recommendation

Administer intravenous thrombolytics within 4.5 hours of ischemic stroke onset.

Practice Points

1. Thrombolysis with tissue plasma activator (tPA) is a proven intervention that will improve outcomes in ischemic stroke but needs to be provided within 4.5 hours of symptom initiation.

2. Thrombolysis rates were poor (<10%) in Newfoundland and Labrador (NL) prior to 2017. Knowledge translation efforts by Quality of Care NL, implementation team visits to Regional Health Authorities (RHAs) by content experts, and initiation of an e-record for stroke patients in emergency rooms occurred in 2017–19 with the objective of improving thrombolysis rates to over 20%.

3. The pathway to thrombolysis involves multiple steps: recognition of symptoms, paramedics and transport, ER response, CT to support a diagnosis of ischemic stroke, and administration of tPA. Delay in any step can limit thrombolysis use.

Data (PI: P.B. Parfrey)

Aggregate data were obtained from CIHI on ischemic stroke care indicators for comprehensive stroke centres and primary stroke centres in 4 regions of Canada: Eastern Health (EH) Newfoundland, Central Zone Nova Scotia, Southeastern Ontario, and Calgary Zone Alberta for the 5 years from 2016/17 to 2020/21.

Results

Table 1. A Summary of the 2020/21 Ischemic Stroke Care Indicators for the Four Comprehensive Stroke Centres

Metrics	QEII	Foothills	Kingston	HSC
Ischemic Strokes	561	1252	487	332
7-Day Mortality	9.3%	5.7%	5.7%	6.3%
30-Day Mortality	16.8%	10.0%	12.3%	13.9%
TLOS	8	7	7	7
Discharged Home	37.4%	58.2%	36.8%	54.5%
Arriving by Ambulance	77.7%	83.7%	81.3%	75.9%
CT/MRI Scan	93.6%	96.6%	96.7%	97.1%
Thrombolysis Rate	21.2%	15.1%	21.8%	19.0%
Anti-Thrombotics	82.1%	90.5%	92.5%	95.4%

- In 2020/21, stroke care at NL's Health Sciences Centre (HSC) was similar when compared to the three comprehensive stroke centres of NS (QEII), Calgary (Foothills), and southeastern ON (Kingston) in 7-day mortality, 30-day mortality, length of stay, percentage discharged home, thrombolysis rates, and the use of anti-thrombotics.

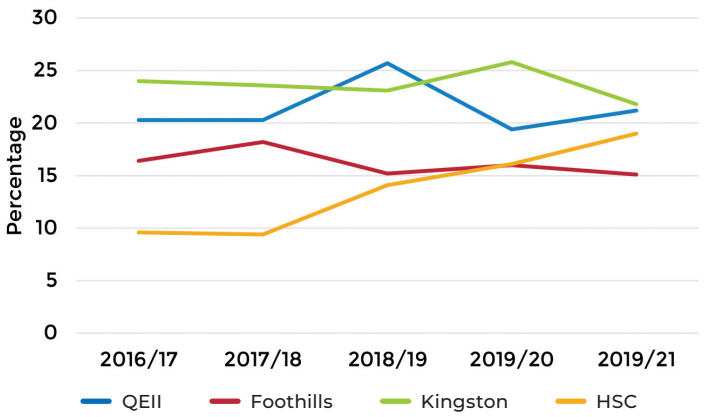

Figure 1. Percentage of Ischemic Stroke Patients Who Received Thrombolytic Therapy by Comprehensive Stroke Centre

- HSC has shown that they can improve their ischemic stroke care as they have steadily improved in thrombolysis rate from 9.6% in 2016/17 to 19% in 2020/21. In 2020/21, HSC had a thrombolysis rate just below the target of 21%. Kingston (21.8%) and QEII (21.2%) were above the target, but Foothills (15.1%) appeared to be lower.

Table 2. A Summary of the 2020/21 Ischemic Stroke Care Indicators for the Primary Stroke Centres

Metrics	NS	AB	ON	EH*
Ischemic Strokes	99	311	452	243
7-Day Mortality	12.1%	7.6%	6.0%	5.8%
30-Day Mortality	18.2%	12.0%	9.5%	14.0%
TLOS	8	7.4	5.5	8.4
Discharged Home	34.3%	52.7%	52.9%	51.0%
Arriving by Ambulance	73.7%	60.5%	79.6%	74.5%
CT/MRI Scan	93.5%	96.0%	98.0%	95.1%
Thrombolysis Rate	N/R	N/R	12.6%	7.4%
Anti-Thrombotics	79.0%	73.7%	90.2%	95.5%

*HSC is not included as it is a Comprehensive Stroke Centre (CSC).

- In 2020/21, stroke care at the Primary Stroke Centres (PSC) in EH was comparable to the other three health regions. EH was highest in total length of stay (TLOS), the lowest in 7-day mortality, but only below NS in 30-day mortality. The PSCs were similar in the proportion of their ischemic stroke patients discharged home, arriving by ambulance, receiving a CT/MRI scan within 24 hours, ON and EH were the highest in the proportion of their ischemic stroke and tPA patients receiving anti-thrombotics. The PSCs in AB and NS had non-reportable cells for thrombolysis. The PSCs in EH had a low thrombolysis rate of 7.4%.

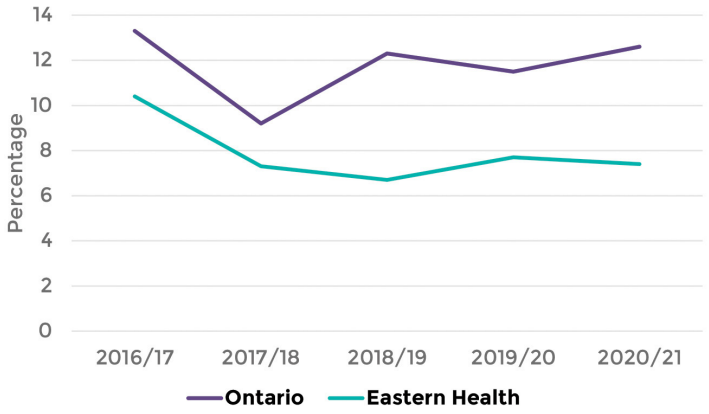

Figure 2. Percentage of Ischemic Stroke Patients Who Received Thrombolytic Therapy by Primary Stroke Centre

- Throughout the five years thrombolysis rates were low and did not improve over time in the 4 primary stroke centres in EH. The primary Central NS reported a thrombolysis rate of 14% in 2018/19 but all other years were non-reportable by CIHI due to the low cell counts. Calgary were either non-reportable or 0.0% each year.

Conclusions

1. Improvement in thrombolysis rates at HSC occurred over 5 years achieving rates comparable to other comprehensive stroke centres in Canada (CA).

2. Ranking among the top quartile of hospitals in CA would target a rate of greater than 21%.

3. Rates in the 4 primary stroke care centres in EH are low. A comprehensive provincial stroke program, with a Learning Health System approach, should be instituted as soon as possible to target improvement in thrombolysis rates.