Determinants of Successful Thrombectomy Among Patients Transferred to a Comprehensive Stroke Center

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Background

- Endovascular therapy has revolutionized acute stroke management associated with large vessel occlusions (LVO).
- The province of Saskatchewan currently has 8 primary stroke centres (PSC) and 1 comprehensive stroke centre (CSC). The distance between PSCs and the CSC ranges from 140km to 460km.
- 73% of the population lives outside the Saskatoon metropolitan area, which houses the province's single CSC.
- Patients are brought to the CSC by ground ambulance, helicopter or fixed wing airplane.
- Limitations in financial, human and transportation resources motivated that Saskatoon Stroke Program to look closely into transportation factors that may effect a patients candidacy for mechanical thrombectomy upon arrival the CSC.

Estimated Travel Time PSC to Royal University Hospital (minutes)	Ground Ambulance	Helicopter (STARS)	Fixed Wing Airplane
Prince Albert	127	130	185
Yorkton	246	205	216
Northbattleford	127	160	172
Moose Jaw	168	164	193
Swift Current	266	166	206
Regina	187	159	221

PSC

- Rapid assessment
- Advanced Neurovascular imaging
- Access to neurology via telehealth
- tPA administration

CSC

- Rapid assessment
- Advanced Neurovascular imaging
- Access to neurology and neurosurgery
- tPA administration
- Endovascular treatment

Goals

- **Provide an effective and consistent approach to decision to transport patient**

Results

- 51 patients were transferred from PSCs to the CSC for possible endovascular therapy.
- 61% no longer qualified for thrombectomy, due to:

16% Clinical improvement

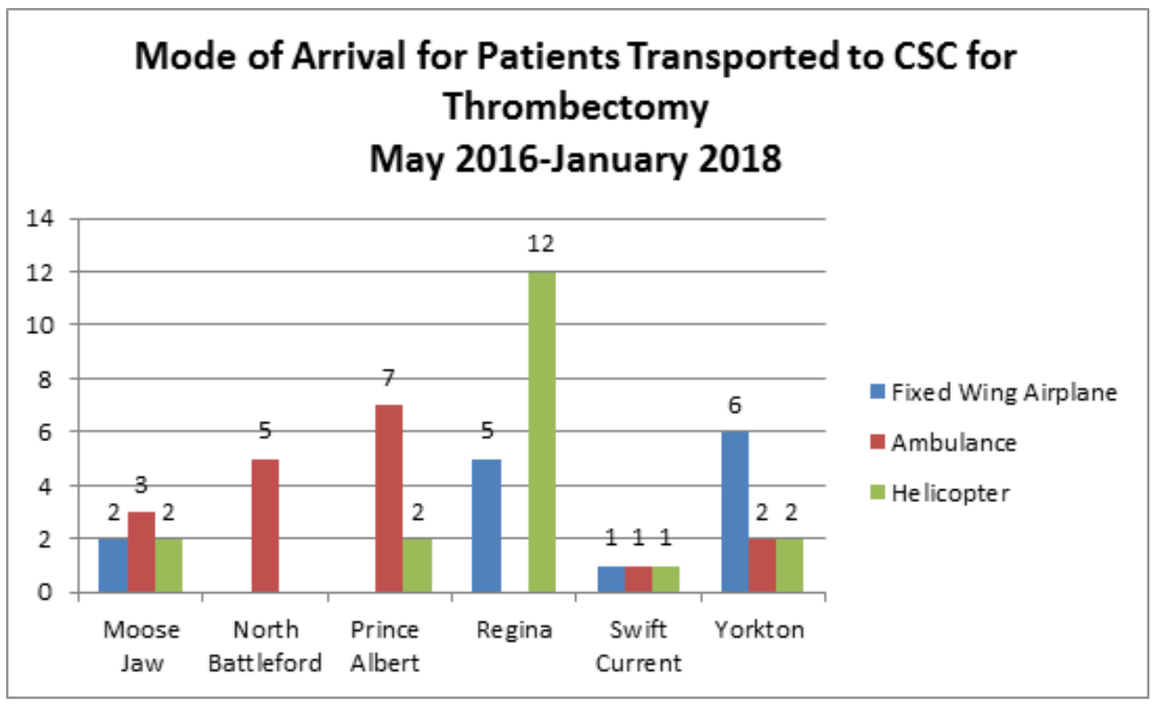
22% Recanalization (seen on CTA)

59% Progression of Stroke→ low aspects score upon reassessment at CSC

- 20 patients received mechanical thrombectomy.

Methods

- Retrospective chart review on all patients with LVOs transported to Royal University Hospital (RUH) between May 2016-January 2018
- Patient data including age, sex, referring PSC, mode of arrival, and reasons for not proceeding with thrombectomy were recorded
- Specific variables including:
  - →PSC actual CT time
  - →PSC to CSC estimated transport time
  - →CSC actual door in time
  - →PSC actual CT to CSC actual door time
  - →Difference between estimated travel time and
  - →PSC actual CT to CSC actual door in time
- Analysis was performed using Fisher's exact tests for categorical data and a two-tailed t test for continuous data



Conclusion

- There was no relationship between transport time and eligibility for mechanical thrombectomy.
- Further exploration of clinical factors may predict stroke progression is required, specifically collaterals.
- Improved pre-hospital communication with transport teams may improve efficiencies upon arrival at the CSC.
- Additional details around potential sources of delay between initial CT at PSC and arrival to CSC may reveal areas for improved efficiency.

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