Rural Health and Research Congress

#RHRC2019

Impact of State Wide Stroke Services on Patients in Rural and Remote Areas

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Co-Authors: Grant Elliott, Joseph Suttie

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RESEARCH CONGRESS 2019

Endovascular therapy for ischemic stroke

Save a minute—save a week

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ABSTRACT

Objective: To quantify the patient lifetime benefits gained from reduced delays in endovascular therapy for acute ischemic stroke.

Methods: We used observational prospective data of consecutive stroke patients treated with IV thrombolysis in Helsinki (1998-2014; n = 2,474) to describe distributions of age, sex, stroke severity, onset-to-treatment times, and 3-month modified Rankin Scale (mRS) in routine clinical practice. We used treatment effects by time of endovascular therapy in large vessel occlusion over and above thrombolysis as reported by the Multicenter Randomized Clinical Trial of Endovascular Treatment for Acute Ischemic Stroke in the Netherlands (MR CLEAN) study to model the shift in 3-month mRS distributions with reducing treatment delays. From the 3-month outcomes we derived patient-expected lifetimes and cumulative long-term disability with incremental treatment delay reductions.

Results: Each minute saved in onset-to-treatment time granted on average 4.2 days of extra healthy life, with a 95% prediction interval 2.3-5.4. Women gained slightly more than men due to their longer life expectancies. Patients younger than 55 years with severe strokes of NIH Stroke Scale score above 10 gained more than a week per each minute saved. In the whole cohort, every 20 minutes decrease in treatment delays led to a gain of average equivalent of 3 months of disability-free life.

Conclusions: Small reductions in endovascular delays lead to marked health benefits over patients' lifetimes. Services need to be optimized to reduce delays to endovascular therapy.

Neurology® 2017;88:1-5

GLOSSARY

DALY = disability-adjusted life-years; **ICA** = internal carotid artery; **MR CLEAN** = Multicenter Randomized Clinical Trial of Endovascular Treatment for Acute Ischemic Stroke in the Netherlands; **mRS** = modified Rankin Scale; **NIHSS** = NIH Stroke Scale; **OR** = odds ratio; **tPA** = tissue plasminogen activator.

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Meretoja A, Keshtkaran M, Tatlisumak T, Donnan GA, Churilov L. Endovascular therapy for ischemic stroke: save a minute—save a week. Neurology. 2017 May 30;88(22):2123-7.

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Each minute saved in onset-to-treatment time granted on average 4.2 days of extra healthy life

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Patients younger than 55 years with severe strokes of NIH Stroke Scale score above 10 gained more than a week per each minute saved

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Mr J

65M Farmer

Last seen well at 9:30pm

Woke up at 02:00am to go to the bathroom

Found to have R facial droop, difficulty speaking and R sided weakness

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Mr J

65M Farmer

Last seen well at 9:30pm

Woke up at 02:00am to go to the bathroom

Found to have R facial droop, difficulty speaking and R sided weakness

02:30am – arrived at local hospital

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Mr J

~0300am arrive at regional hospital

Stroke Code: R facial droop, dysathria, R homonymous hemianopia and R sided weakness (NIHSS 15)

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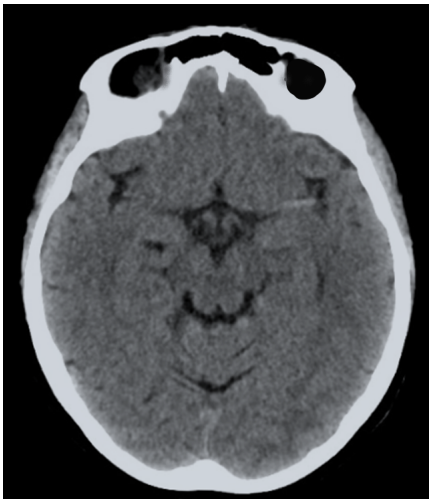

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Mr J

~3:10am D/W Neurology via telemedicine -> for consideration of clot retrieval

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RURAL HEALTH AND RESEARCH CONGRESS 2019

Mr J

~3:10am D/W Neurology via telemedicine –> for consideration of clot retrieval
D/W interventionalist -> for clot retrieval. For T/F to Metropolitan Hospital
*D/W transport -> mobilizing team (***Helicopter** *v Plane)*

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Mr J

~3:20am update. Due to weather will be plane, mobilizing team. ETA 4:40am to arrive to Metro Hospital 6:30am

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Mr J

~3:20am update. Due to weather will be plane, mobilizing team. ETA 4:40am to arrive to Metro Hospital 6:30am

~3:30am update. Due to conditions, may be delays. ETA 5:10am to arrive to Metro Hospital 7:00am

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Mr J

~3:20am update. Due to weather will be plane, mobilizing team. ETA 4:40am to arrive to Metro Hospital 6:30am

~3:30am update. Due to conditions, may be delays. ETA 5:10am to arrive to Metro Hospital 7:00am

~4:00am. Ongoing difficulties. Decision to pursue alternate statewide service.

D/W this service – transport organized + clot retrieval team mobilized. Clot retrieved at 8am.

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Mr J

~9:30pm. Last seen well
~02:00am. Symptom onset
~02:30am. Presented small rural hospital
~03:00am. Presented to regional hospital
~03:10am. Stroke identified. D/W neurology + transport + interventionalist.
~03:20am. Update - weather delays
~03:30am. Update - weather delays
~04:00am. Decision to pursue alternate statewide service.
~06:10am. Transport arrived at regional hospital.
~07:45am. Arrived at alternate metropolitan hospital.
~08:00am. Clot retrieved

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Mr J is not alone

Deloitte Access Economics. 2017. Stroke in Australia – No postcode untouched.

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Each year more than 56,000 Australians will suffer a stroke

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Deloitte Access Economics. 2017. Stroke in Australia – No postcode untouched.

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Regional and rural Australians are 19 percent more likely to suffer a stroke than their city counterparts

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Deloitte Access Economics. 2017. Stroke in Australia – No postcode untouched.

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Importance of time:

The odds of better disability outcomes at 90 days (mRS scale distribution) with the endovascular group declined with longer time from symptom onset to arterial puncture.

Each 1-hour delay to reperfusion was associated with a less favorable degree of disability (cOR, 0.84 [95% CI, 0.76 to 0.93]; ARD, −6.7%) and less functional independence (OR, 0.81 [95% CI, 0.71 to 0.92], ARD, −5.2% [95% CI, −8.3% to −2.1%])

Each minute saved in onset-to-treatment time granted on average 4.2 days of extra healthy life

Saver JL. Time to treatment with endovascular thrombectomy and outcomes from ischemic stroke: a meta-analysis. Jama. 2016 Sep 27;316(12):1279-89.
Meretoja A, et al. Endovascular therapy for ischemic stroke: save a minute—save a week. Neurology. 2017 May 30;88(22):2123-7.

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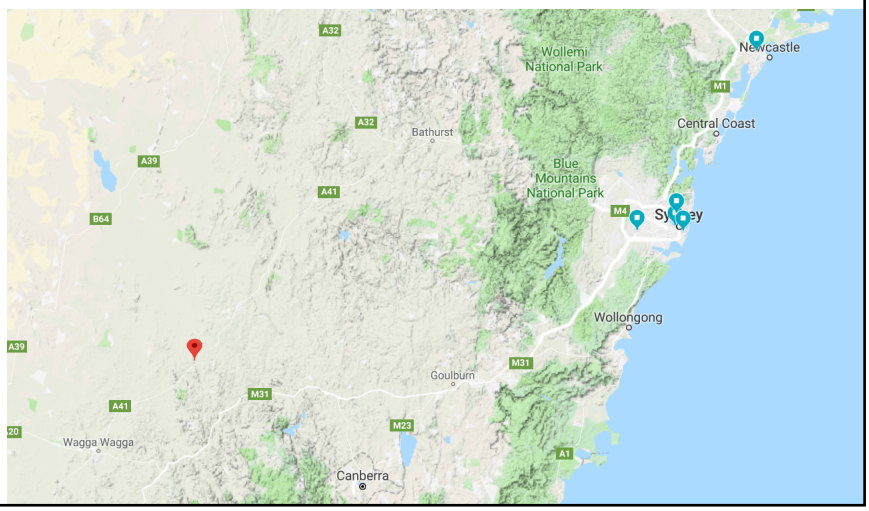

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ECR Service	Hours of operation	Contact Number
Prince of Wales	24/7	Please call - **1800 4 STROKE**
Liverpool	24/7	Please call - **1800 4 STROKE**
Royal Prince Alfred	24/7	Please call - **1300 ECRNOW (1300 327 669)**
John Hunter Hospital	24/7	Please call - **02 4921 3000**
Royal North Shore	In-hours only*	Please call- **1800 738 764**
Westmead	In-hours only*	Please call- **1800 738 764**

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To sustainably provide this [endovascular therapy] 24-hour coverage, 2 to 3 neurointerventionalists are usually needed per service.

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Smith EE, Schwamm LH. Endovascular clot retrieval therapy: implications for the organization of stroke systems of care in North America. Stroke. 2015 Jun;46(6):1462-7.

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