

Take Me to the Closest Hospital!

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Disclosures

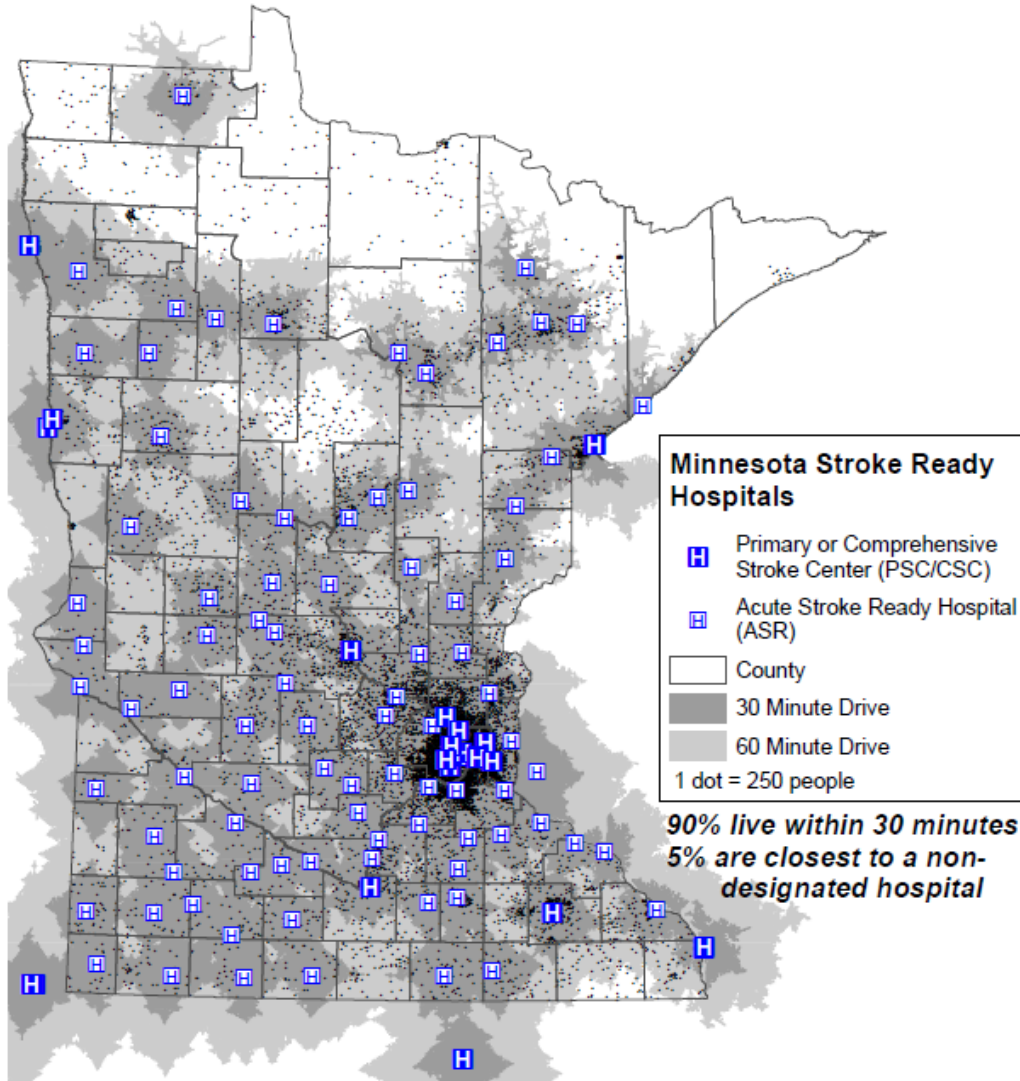
- I have no financial relationships or other conflict of interests to disclose
- I will not discuss off label use and/or investigational use in my presentation

Please Don't Send Me Hate Mail

- I am NOT advocating against the use of endovascular therapy for acute ischemic among eligible patients
- I am promoting a stepwise approach to the care of our stroke population in the state of Minnesota
 - Generalize the practice as a state
 - Avoid several *if/then* permutations that complicates care



Drive Times to Designated Stroke Hospitals and Minnesota Population Distribution, January 2017



88 ASRHs
17 PSCs (7 can do MTs)
7 CSCs

Door to IV Alteplase in 60 Minutes

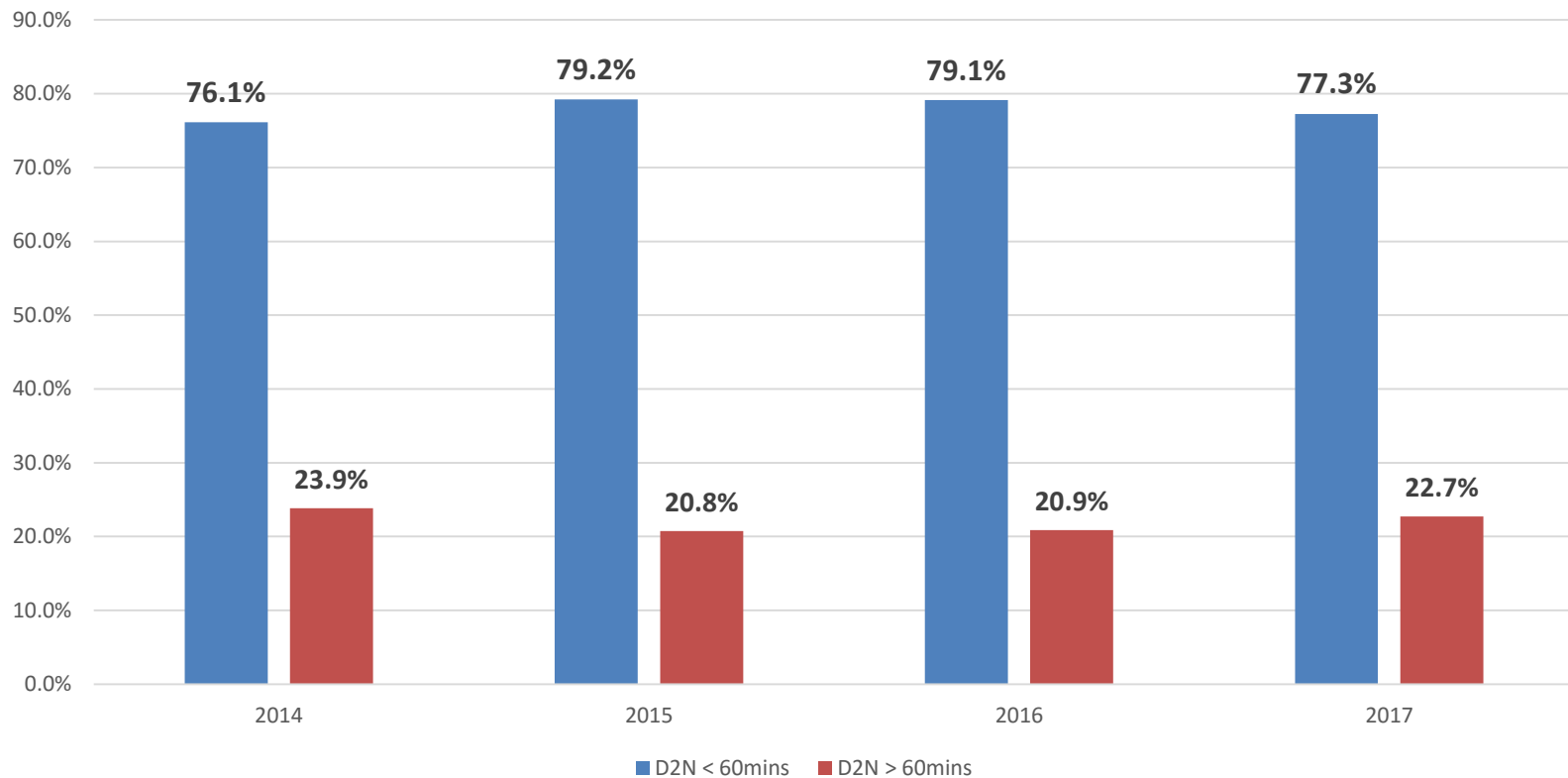
Door-to-Needle

Facility: MSR-Participating Hospitals

Report Interval: Annually, **Range:** 2014 - 2017

Filters: Diagnosis: *Ischemic Stroke* -- Last Known Well Filter: *Arrived within 3.5 hours of time last known well*

Created on April 10, 2017 by Megan Hicks



Door to IV Alteplase in 60 Minutes

- GWTG-Stroke: 16,901 patients
 - Median door to needle time 56 [42-75] minutes
 - **59.3%** patients treated within 60 minutes

The Next Step

- Randomized trials HAVE PROVEN the benefit of endovascular therapy in conjunction with IV alteplase among eligible stroke patients
 - Small minority treated without IV alteplase
- How do we generalize the results of the 2015 trials to the practice in Minnesota?

Key Features

- Time
- Imaging
- Use of IV alteplase
- Important questions
 - How many were transferred?
 - From what distance?

The Trials

- ESCAPE
 - 57/238 patients receiving IV alteplase were “Drip and Ship”
 - From how far?
- EXTEND IA
 - 1044 IV alteplase patients screened for the study
 - 22% (225 patients) were excluded because neurointerventional services were not available (“out of operating hours”)
- REVASCAT
 - No data available

Goyal M et al., Campbell BCV et al., Jovin TG et al. NEJM 2015.

The Trials

- SWIFT PRIME
 - Transfer in (31)
 - Alteplase to puncture 160 [134-195] min
 - Onset to puncture 275 [245-334] min
 - Hub (67)
 - Alteplase to puncture 58 [39-80] min
 - Onset to puncture 179.5 [147-238] min
- No evidence of heterogeneity of treatment effect

The Trials

- MR CLEAN
 - Inclusion criteria
 - Must have operator with experience
 - At least 5 procedures with a particular device
 - 3 hospitals “close” to the endovascular capable hospital
 - 1 hospital with thrombectomy resources but no interventionalist

Treatment Paradigm Comparison

- 100 drip and ship vs 59 mothership patients
 - IV alteplase
 - Adjunctive mechanical thrombectomy
- Favorable outcome
 - Transfer 61% vs Hub 51% (p=0.26)
- Treatment time delays
 - Onset to needle
 - Onset to puncture
 - Onset to recanalization
- No difference in outcomes (mRS 0-2) between both groups

Challenges Faced in Minnesota

- Large area to cover
- Resource utilization
 - ALS, BLS services
 - Helicopter
 - Fixed wing
- Endovascular capable areas concentrated to few areas
- WEATHER!
- Overtriage with bypass
- Overuse of resources when not needed

Conclusions

- In the absence of evidence avoid excessive time delay
- Need convincing trial data
 - Short delay of alteplase initiation in favor of bypass
 - Direct thrombectomy vs bridging therapy
- For now
 - Utilize current resources available
 - Telemedicine capabilities
 - Quality process including time metrics
 - Cultivate pre-hospital stroke alert process

#everysecondcounts

Early Recanalization after IV Thrombolysis

- Overall incidence of partial or complete early recanalization was 33%
 - 52% distal MCA
 - 35% proximal MCA
 - 13% distal ICA
 - 13% basilar

External Validation of Scales

- Chicago study
 - Clinical scales overdiagnose LVO
 - Responsible for majority of stroke code transfers not undergoing thrombectomy
 - 105/192 transferred patients did not undergo thrombectomy