

Impact of EVT on Enhanced PSCs (PSC-E) and Stroke Systems

Shreyansh Shah, MD
Assistant Professor
Division of Stroke and Neurocritical Care
Department of Neurology



Disclosures

~ None



What is Enhanced PSCs (E-PSC)?



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No widely agreed upon definition exist currently



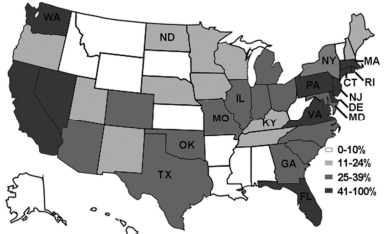
Timeline of Stroke Center Establishment

- ~ 1995: NINDS-tPA trial published
- ~ 1997: Brain Attack Coalition formed
- ~ 2000: Primary Stroke Center Criteria formed
- ~ 2004: Joint Commission started certifying PSC
- ~ 2017: Joint Commission proposed "Thrombectomy Capable Stroke Centers"

Hberts MJ JAMA 2000
Hberts MJ Stroke 2005



Percentage of PSC among all hospitals

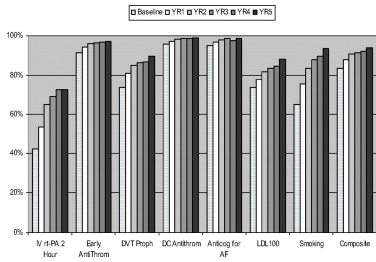


About 1500 PSCs: 1100 certified by JC and rest by other agencies

Uchino K Stroke 2015



Improvement in quality of care at PSC



Schwamm LH Circulation 2009



Challenges at PSC

- ~ Disparities in delivery of healthcare:
 - Women less likely to receive defect-free care
 - Stroke subtype influences quality of care at PSCs, with ICH and SAH patients less likely to receive recommended preventive measures
 - Racial and Regional discrepancies exist



Joint Commission Certification for Thrombectomy Capable Stroke Center*

~ Goal: To increase quality access to EVT

~ Requirements:

- ~ Ability to perform EVT 24/7
- ~ Volume requirement

# of Neurointerventionists	Minimum # of thrombectomies in the previous 12 months	Or, Minimum number of thrombectomies in previous 24 months
1	12	24
2	24	48
3	36	72

~ Collect data regarding performance measures and adverse outcomes

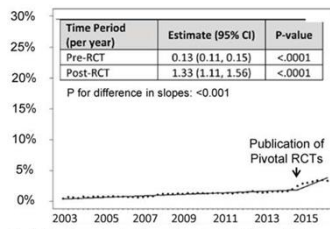
* Beginning in January 2018



What is the current state of EVT in US?



Trend and uptake of EVT

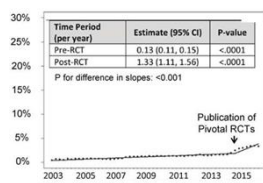


A. All ischemic stroke patients at all hospitals

Smith EE Circulation 2017



Trend and uptake of EVT

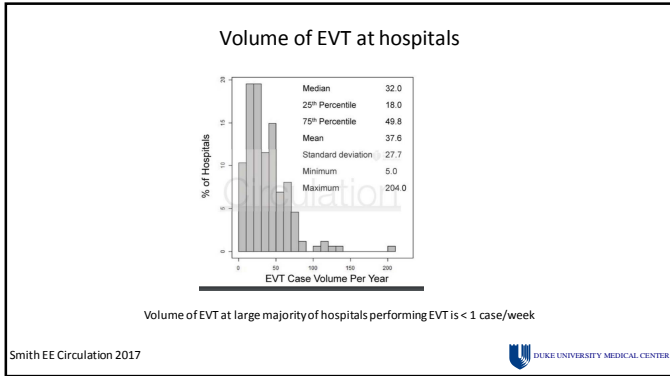


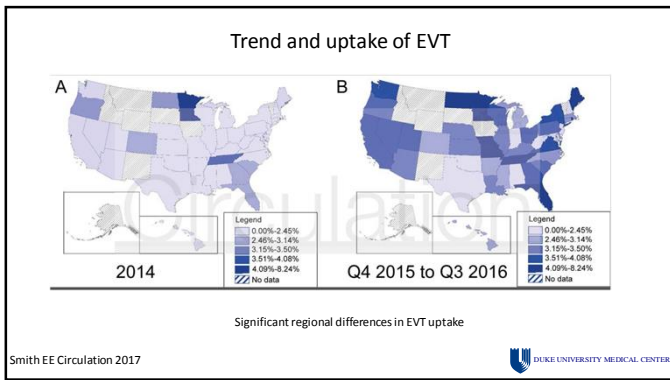
A. All ischemic stroke patients at all hospitals

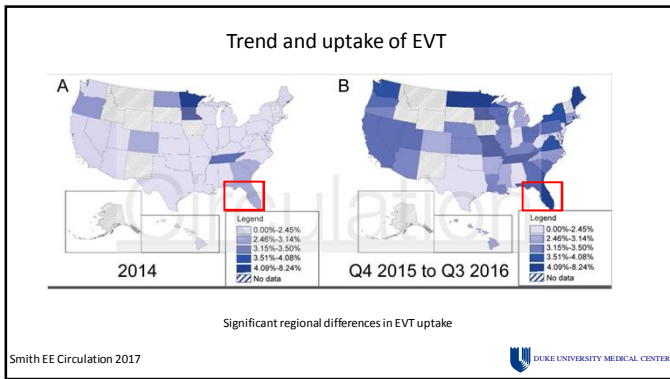
- There is significant increase in EVT
- But still only 3.3% of ischemic stroke patients received EVT in last quarter of 2016

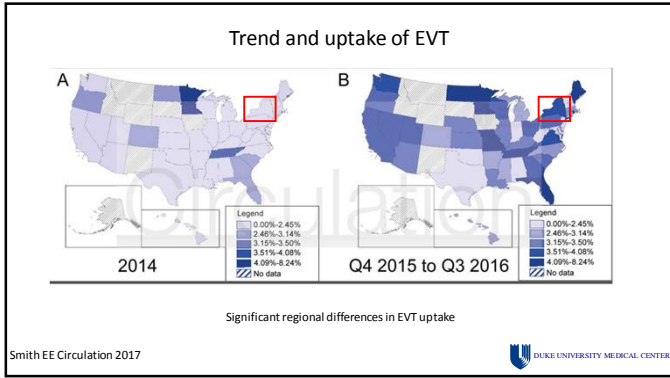
Smith EE Circulation 2017

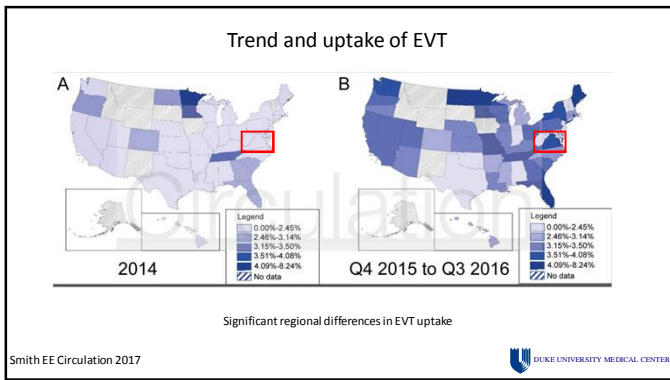


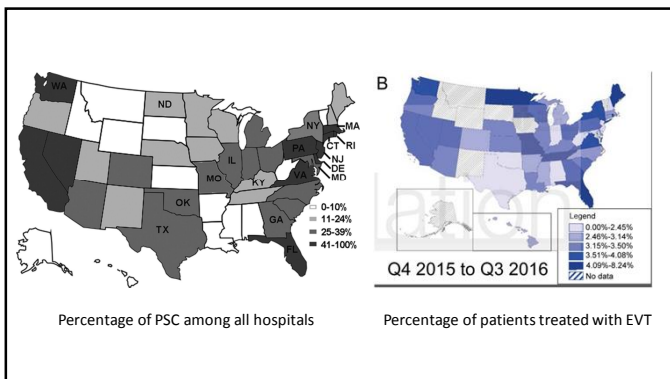




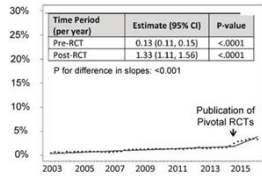








Trend and uptake of EVT



A. All ischemic stroke patients at all hospitals

- ~ There is significant increase in EVT
- ~ But still only 3.3% of ischemic stroke patients received EVT in last quarter of 2016

Smith EE Circulation 2017



How to improve access to EVT?

- ~ Biggest constrain: reaching EVT capable center in time
- ~ CSCs tend to be large urban teaching hospitals
- ~ More than half of US population has access to PSC in reasonable time¹

1. Albright KC JAMA Neurology 2010



EVT at PSC

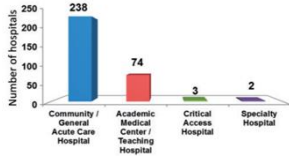
- ~ How many EVTs are performed at PSCs?
- ~ How many PSCs are able to provide EVT?
- ~ How does outcomes of EVT performed at PSC compared to CSC?
- ~ How would it affect Stroke System of care?

VERY SPARSE DATA EXISTS



Survey of EVT Capabilities at PSC

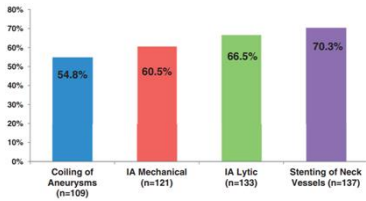
~ 943 PSCs surveyed: 352 provided responses



Alberts MJ INR 2016



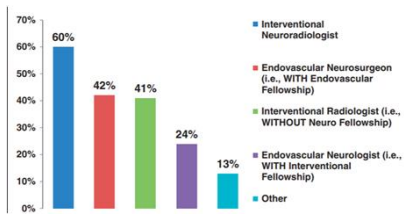
Availability of EVT on 24/7/365 basis at PSC



Alberts MJ INR 2016



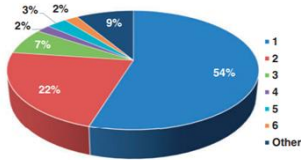
EVT providers at PSC



Alberts MJ INR 2016



Number of concurrent hospitals covered by EVT providers at PSC



Alberts MJ INR 2016



Survey of EVT Capabilities at PSC

~ Academic PSC more likely to offer round the clock access to EVT compared to community hospitals

~ Other interesting fact: 80% PSCs providing EVT didn't take part in any national registry for EVT and outcomes!

Alberts MJ INR 2016



Challenges for providing EVT at PSCs

~ Availability of trained personnel and equipments

~ Availability of Periprocedural care for patients receiving EVT

~ How to incorporate them in Stroke Systems of Care?



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Challenges: Availability of trained personnel and facility

~ From the PSCs surveyed, 40% didn't offer round the clock services

~ Current EVT mainstay is mechanical thrombectomy and require more skills than IA tPA

~ Relationship with volume of procedure and outcomes

~ Incorporation of newer treatment paradigms: Perfusion imaging?



Challenges for providing EVT at PSCs

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Challenges: Periprocedural care for patients receiving EVT at PSC

- ~ Requirement of multidisciplinary team
- ~ Management of complications: Access to Vascular Neurosurgeons and Neurointensivists
- ~ Unclear availability of these resources at PSCs
- ~ Lack of standards and guidelines for post-EVT care



Challenges for providing EVT at PSCs

- ~ Availability of trained personnel and equipments
- ~ Availability of Periprocedural care for patients receiving EVT
- ~ **How to incorporate them in Stroke Systems of Care?**



Challenges: Incorporation of PSCs providing EVT into Stroke Systems of Care

- ~ Knowledge of available capabilities at PSCs at any particular point in time will be important in EMS decisions regarding triaging of patients.
- ~ Relationship between EVT providing PSCs with neighboring CSCs can play big role in providing good quality postprocedure care.



Take home messages

~ PSCs are going to play a very critical role in improving access to timely life saving therapies including EVT

~ Need to encourage participation in national registries to track outcomes and benchmarking of performance, results and complications of EVT

~ Efforts to improve coordination of care at system level: Keep in mind capabilities at local PSC in designing EMS diversion protocols!