

**THE ALABAMA TELESTROKE NETWORK**

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**Presenter Disclosure Information**

Toby Gropen, MD, FAHA  
The Alabama Telestroke Network

**FINANCIAL DISCLOSURE:**  
None

**UNLABELED/UNAPPROVED USES DISCLOSURE:**  
None



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**AGENDA**

- The Rationale and Evidence for Telestroke
- The ideal Telestroke Program within the stroke system of care
- Telestroke models
- What is the Alabama Telestroke Network?



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### VASCULAR NEUROLOGIST SHORTAGE

Year	2005	2006	2008	2009	2011	2012 (as per April 2012)
Total examinees	238	150	343	286	165	56
Grandfathering track	131	84	200	200	1	0
Non-ACGME fellowship track	102	56	92	33	2	0
ACGME fellowship track	5	3	45	37	140	50
Repeat examinees	0	7	6	16	13	6
Total certified	240	139	325	264	147	N/A

**Total Vascular Neurologists=1115**  
**717 strokes per VN per year**

Leira, E.C., et al., 2013

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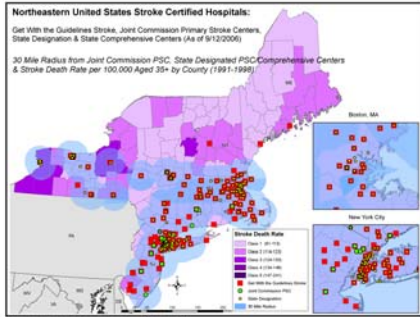
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### ACCESS TO STROKE CENTERS IN THE NORTHEAST



Gropen et al., 2009

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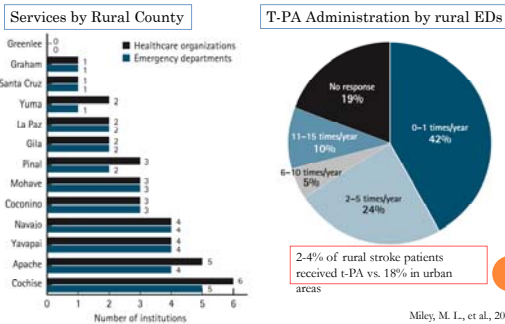
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### ACCESS TO EMERGENCY CARE AND T-PA IN RURAL ARIZONA



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### TELEPHONE THROMBOLYSIS

- Treatment with telephone consultation increased the number of patients treated with tPA at the referral stroke center by 72%.
- However, the reported patient outcomes were poorer

Outcome	Telephone group (%)	In-house group (%)
Home	30%	55%
Rehab	42%	38%
SNF	22%	5%
Death	8%	1%

Legend: Solid: Telephone group, Hatched: In-house group

Home p = .004, Rehab p = .72, SNF p = .003, Death p = .08

Frey et al., 2005

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### TELEPHONE VERSUS TELESTROKE: STROKE DOC TRIAL IN CALIFORNIA

- 234 patients were prospectively evaluated.
- Randomized to telemedicine or telephone consultation
- Mean NIHSS score was 9.5 (11.4±8.7 telemedicine, 7.7±7.0 telephone; p=0.0020).
- The primary outcome measure was whether the rt-PA decision was appropriate, as determined using a rigorous, multi-stage, blinded adjudication process
- Correct treatment decision was made more often in telemedicine

Telemedicine N = 110	Telephone N = 111	OR	P	Absolute Difference (95% CI)	Number Needed to Assess (NNA) (95% CI)
108 (98%)	91 (82%)	10.9 (2.7-44.6)	0.0009	16 (9-24)	6 (4-12)

- Mean duration of consultations with telemedicine was longer

	Telemedicine	Telephone	P
Onset to decision (consultation duration)	32.0 min N = 107	22.9 min N = 107	0.0001
Onset to decision	258.0 min	230.6 min	0.07
Onset to thrombolysis	157.2 min	143.0 min	0.14

Meyer, et al., 2008; Capampangan, 2009

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### TELESTROKE IN RURAL GEORGIA

Hospital By County (City)	Bed Size	Average Stroke Activity (1999-2002)	Emergency Department Volume (Annual)	Distance to MCHS (Miles)	No. of Ambulances in County	ALS on Ambulance	African American Population by County
McCollum (Thomas, GA)	47	64	11,266	30.5	6	Y	27%
Washington (Sandersville, GA)	56	45	8,777	81.8	4	Y	53%
Springell (Swainsboro, GA)	72	82	10,164	16.4	4	Y	23%
Jefferson (Louisville, GA)	65	67	8,252	45.5	4	Y	56%
Jenkins (Milledgeville, GA)	10	25	3,272	49.8	3	Y	40%
Wilkes (Washington, GA)	30	33	6,134	54.9	4	Y	42%
Coche (Waynes, GA)	71	60	11,822	132.8	4	Y	9%
Elbert (Elberton, GA)	62	64	7,377	83.7	6	Y	51%
Morgan (Macon, GA)	30	30	4,888	92.7	3	Y	31%

Study	No. Treated	OTT	SD	Lower 95% Confidence Limit	Upper 95% Confidence Limit	% < 90 Min	% < 120 Min	SICH (%)
MCHS ED	26	145.88	46.99	126.0	164.87	19	35	0
REACH	49	127.57	36.33	117.14	138.01	22	50	2

Switzer et al., 2009

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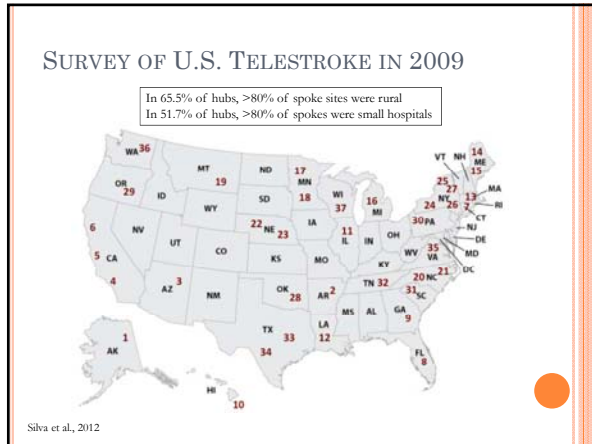
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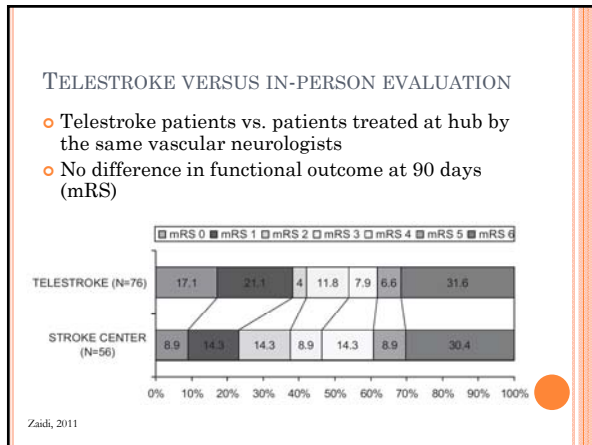
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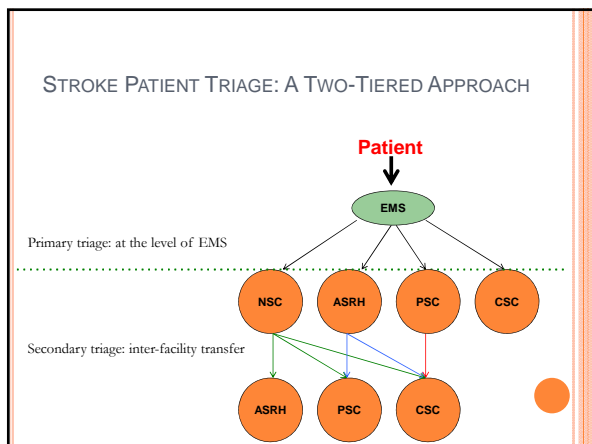
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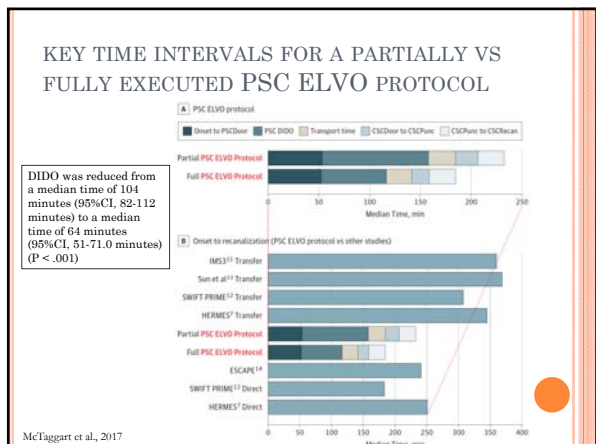
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- ### THE IDEAL TELESTROKE PROGRAM WITHIN THE STROKE SYSTEM OF CARE
- Provides high-quality, reliable, full-time vascular neurology consultation that is easily accessed
  - Facilitates access to timely acute therapies
    - T-PA
    - Mechanical thrombectomy
    - Neurosurgical and neurocritical care expertise
  - Facilitates appropriate and rapid triage based on patient needs, hospital capacity, and travel time
    - Nonstroke patients who do not require transfer for stroke center services
    - Stroke patients who may be managed without transfer
    - Patients who require transfer for PSC or CSC services
  - Is integrated in the stroke system with
    - the prehospital EMS
    - the interfacility transfer process
    - Receiving facilities/providers in the event of secondary triage
  - Minimizes DIDO for patients who need a higher level of care

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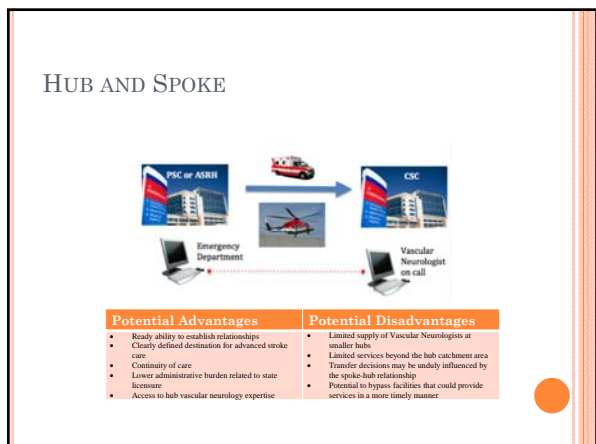
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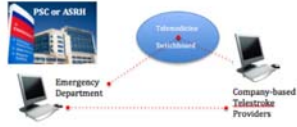
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### TELEMEDICINE COMPANY



Potential Advantages	Potential Disadvantages
<ul style="list-style-type: none"> <li>Ability to provide telestroke services to hospitals located outside of the catchment area of the nearest hub</li> <li>Ability to draw on a large pool of providers who may be anywhere</li> </ul>	<ul style="list-style-type: none"> <li>Possible barrier to formation of relationships due to a large number of providers</li> <li>Potential for variable vascular neurology expertise</li> <li>Lack of access to hub vascular neurology expertise</li> <li>Lack of continuity of care and delayed triage for advanced care</li> <li>Higher administrative burden related to state licensure</li> </ul>

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### PRIVATE PRACTICE-BASED



Potential Advantages	Potential Disadvantages
<ul style="list-style-type: none"> <li>Ready ability to establish relationships</li> <li>Ability to provide telestroke services to hospitals located outside of the catchment area of the nearest hub</li> </ul>	<ul style="list-style-type: none"> <li>Potential for variable vascular neurology expertise</li> <li>Lack of access to hub vascular neurology expertise</li> <li>Lack of continuity of care and delayed triage for advanced care</li> <li>Higher administrative burden related to state licensure</li> </ul>

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### A PROPOSAL: THE ALABAMA TELESTROKE NETWORK

- Create a State-based network of telestroke provided by Alabama-based neurologists, the Alabama Telestroke Network (ATN)
- Link the Alabama Trauma Communication Center (ATCC) to the ATN by telemedicine to provide a novel model of medical control for stroke triage
- Goal is to provide high-quality telestroke consultation that is integrated with prehospital care and secondary triage/inter-facility transfer

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## A PROPOSAL: THE ALABAMA TELESTROKE NETWORK

**1. Mobilization of resources starts from the field**

**Potential Advantages**

- Ready ability to establish relationships
- ATCC determines destination for advanced stroke care based on real-time capacity and travel time
- Continuity of care with handoff
- Lower administrative burden related to state licensure
- Access to ATN vascular neurology expertise
- Ability to provide telestroke services to hospitals located outside of the catchment area of the nearest hub
- Ability to draw on a pool of providers across the State

**Potential Disadvantages**

- Disrupts traditional referral patterns
- May require modification when state lines are crossed
- If scaled to other states, will require modifications of prehospital systems

**2. Telestroke consult with ATCC dispatch of critical care transport team**

**3. Handoff to physicians at secondary triage destination**

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