

# TelEmergency®

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CENTER FOR TELEHEALTH



# UMMC TelEmergency® Program



# UMMC Telehealth Timeline



**1990s**

Diagnostic test interpretation  
Adult and Pediatric Cardiology

**2003**

First videoconferencing of telemedicine  
Emergency Medicine

**2008**

TelePsychiatry underway

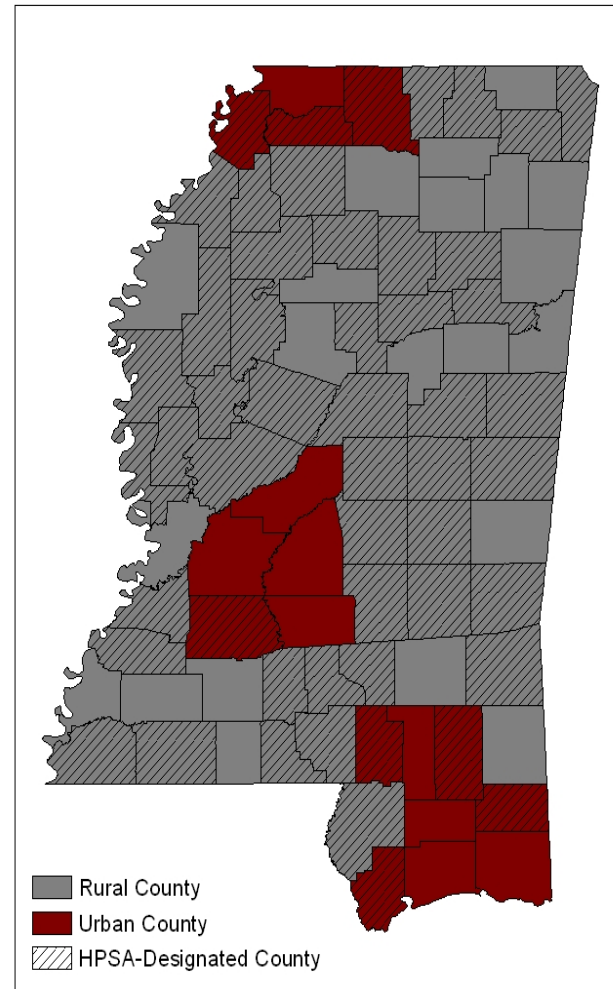
**2011**

Full-time staff assigned to Telehealth

**2013**

Center for Telehealth formed  
24/7 Telehealth Call Center

- In 2002, estimates reported that 20% of Americans resided in rural areas with only 9% of physicians practicing in rural areas
- 60% of Mississippians live in rural areas
- 37% of Mississippians live in medically underserved areas



## Stats



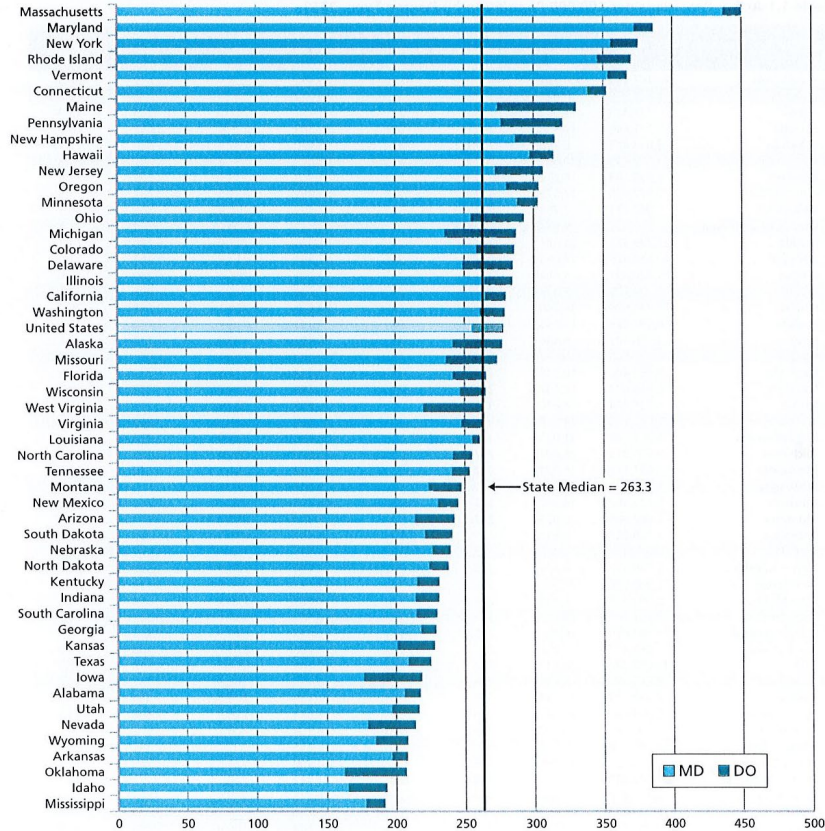
Time



**40 minutes** → The average time for Mississippians in 53 out of 82 counties to drive to receive specialized medical care



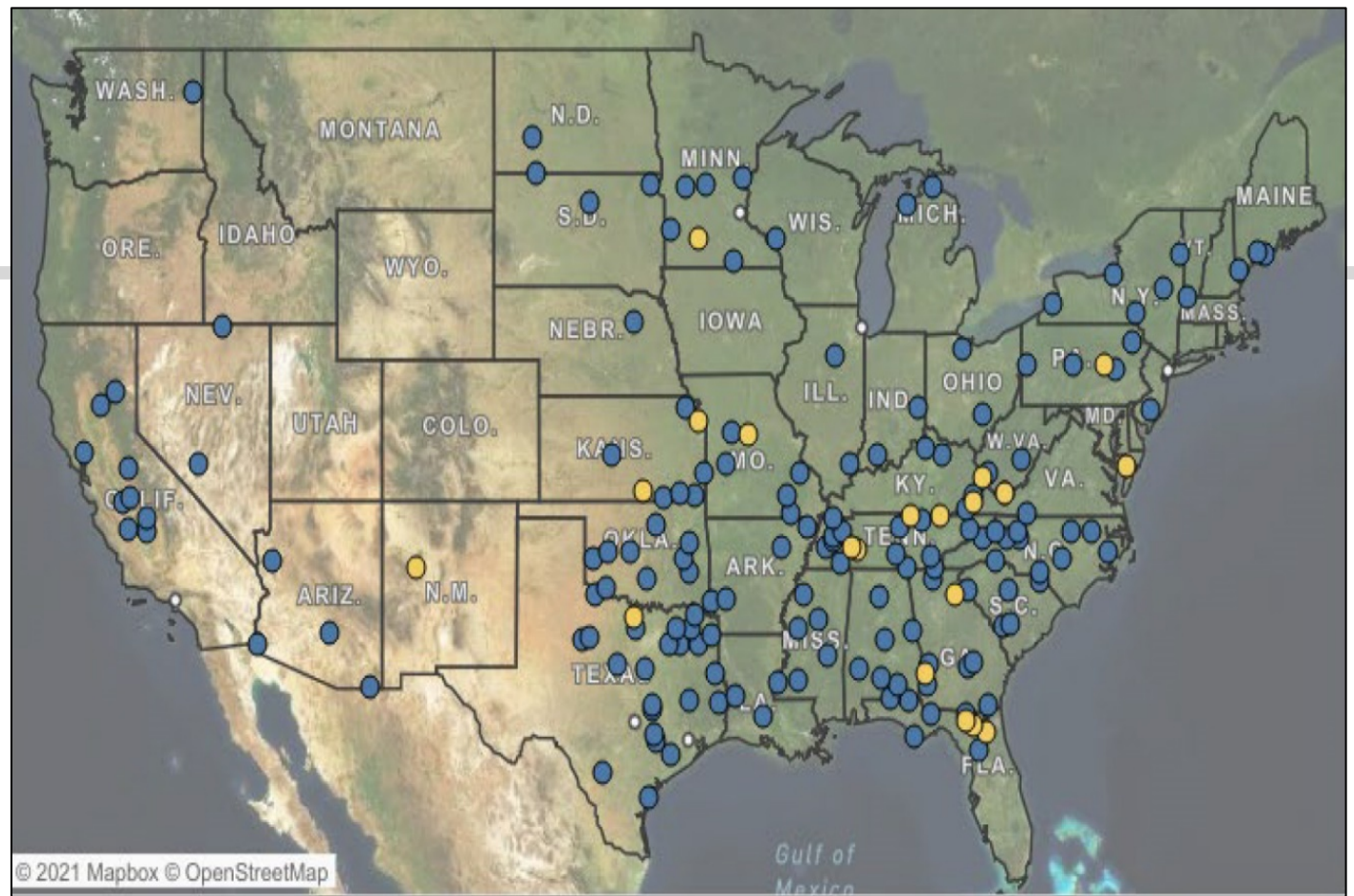
# State Physician Workforce



Sources: July 1, 2018, population estimates are from the U.S. Census Bureau (released December 2018). Physician data are from the 2019 AMA Physician Masterfile (Dec. 31, 2018). Note: Physicians whose degree type was unavailable (n = 50) are excluded.

Figure 1.1. Active physicians per 100,000 population by degree type, 2018.

# Rural Hospital Closures



**Figure 1. Rural Hospital Closures, 2005 – 2020.** *Blue dots represent rural hospital closures between 2005 and 2019. Yellow dots represent rural hospital closures in 2020.*

# Background



- Rural hospitals struggle with staffing EDs with EM trained and/or board certified physicians
- EDs are closing across the nation, leaving rural hospitals particularly vulnerable
- TelEmergency was developed to improve access to quality emergency care in rural areas - 2003



# TelEmergency



THE UNIVERSITY OF MISSISSIPPI  
MEDICAL CENTER  
Center for Telehealth



# Clinical Quality



Maintain **SAME STANDARD** as in-person care

If the technology can not replicate the exam you would do in-person then the visit is not appropriate for telehealth. Do not cut corners.

Study clinical outcomes and compare to in-person outcomes

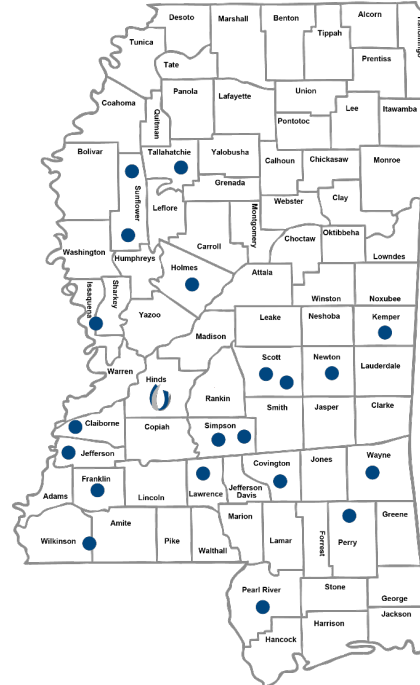
# TelEmergency Consult Model



# TelEmergency Sites in Mississippi



1. Claiborne County Medical Center
2. Covington County Hospital - Collins
3. Field Memorial Community Hospital
4. Franklin County Memorial Hospital
5. H.C. Watkins
6. Holmes County Hospitals & Clinics
7. John C. Stennis Memorial Hospital
8. Lackey Memorial Hospital
9. Laird Hospital
10. Lawrence County Hospital
11. Magee General Hospital
12. North Sunflower Medical Center
13. Pearl River County Hospital and Nursing Home
14. Perry County General Hospital
15. Scott Regional Hospital
16. Sharkey - Issaquena County Hospital
17. Simpson General Hospital
18. South Sunflower Hospital
19. Tallahatchie General Hospital
20. Jefferson County Hospital



# The impact of the TelEmergency program on rural emergency care: An implementation study

**Sarah A Sterling<sup>1</sup>, Samantha R Seals<sup>2</sup>, Alan E Jones<sup>1</sup>,  
Melissa H King<sup>1</sup>, Robert L Galli<sup>1</sup>, Kristen C Isom<sup>1</sup>,  
Richard L Summers<sup>1</sup> and Kristi A Henderson<sup>1</sup>**

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# TelEmergency<sup>®</sup> Sites in Mississippi - 18 years of Telemergency Practice

## Outcomes

### Access to Care

- 20 rural MS hospitals
- Thousands of patients treated

### Multidisciplinary Team

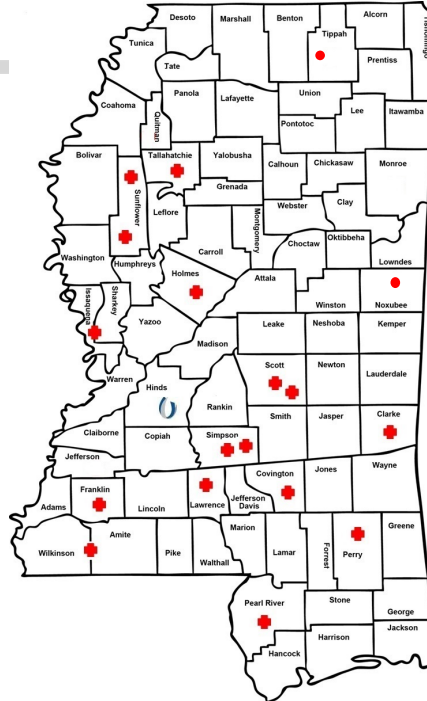
- NP & Board Certified EM physician

### Cost Effective Staffing

- EXPENSE 64% reduction in staffing costs

### Rural Communities Benefit

- 20% admissions locally



- Claiborne County Medical Center
- Covington County Hospital
- Field Memorial Community Hospital
- Franklin County Memorial Hospital
- H.C. Watkins Memorial Hospital
- Holmes County Hospitals & Clinics
- Jefferson County Hospital
- John C. Stennis Memorial Hospital
- Lackey Memorial Hospital
- Laird Hospital
- Lawrence County Hospital
- Magee General Hospital
- North Sunflower Medical Center
- Pearl River County Hospital
- Perry County General Hospital
- Scott Regional Hospital
- Sharkey- Issaquena County Hospital
- Simpson General Hospital
- South Sunflower County Hospital
- Tallahatchie General Hospital



## Results

### Top 10 Ontologies

Chest Pain	684 (11)
Blunt Trauma	413 (7)
Abdominal Pain	389 (6)
Syncope	258 (4)
General Medical	255 (4)
Shortness of Breath	239 (4)
Fracture	217 (4)
Infection	198 (3)
Dysrhythmia	181 (3)
N/V/D	176 (3)



Results  
(continued)

<b>PMH</b>	<b>Total Consults (n = 1,449)</b>
HTN	342 (24)
CAD	187 (13)
DM	225 (16)
CVA	225 (6)
MI	81 (6)
COPD	109 (8)
CHF	127 (9)
CA	102 (7)



## Results (final)

Variable	Admit (n = 843)	Death (n = 65)	Discharge (n = 1516)	Transfer (n = 1237)	Left AMA (n = 30)	p value
<b>Age (IQR)</b>	64 (50,80)	62 (50,80)	36 (18,56)	53 (31, 70)	43 (33, 56)	< 0.0001
<b>Gender</b>						
Male	375 (45)	41 (64)	780 (52)	618 (51)	16 (55)	0.0031
Female	456 (55)	23 (36)	718 (48)	601 (49)	13 (45)	
<b>Race</b>						
Black	248 (42)	23 (38)	482 (44)	440 (47)	5 (23)	0.1167
White	340 (57)	38 (62)	607 (55)	484 (52)	17 (77)	
Other	5 (1)	0 (0)	14 (1)	8 (1)	0 (0)	
<b>Attending vs Resident</b>						
Attending	427 (51)	31 (48)	779 (51)	585 (47)	12 (40)	0.1895
Resident	416 (49)	34 (52)	737 (49)	652 (53)	18 (60)	
<b>Type of Consult</b>						
Phone	749 (91)	9 (14)	1291 (88)	900 (75)	20 (77)	< 0.0001
Video	74 (9)	55 (86)	183 (12)	294 (25)	6 (23)	



# TelEmergency



25% reduction in rural emergency room staffing costs

20% reduction in unnecessary transfers

Produces patient outcomes in rural hospital that are on par with those of the academic medical center



- Connects 17 emergency departments in rural hospitals with UMMC's Level One Trauma Center
- Uses real-time video and audio connections



# Satisfaction?



- **98%** of patients describe their overall care as “excellent” or “good”
- **99%** of patients would likely come back and use the system again
- **97%** of patients were comfortable with this type of care

# Relative Survivability of Cardiopulmonary Arrest in Rural Emergency Departments Utilizing Telemedicine

Kristi Henderson, DNP, NP-BC,  
FAEN; Kristen C. Isom, RN;  
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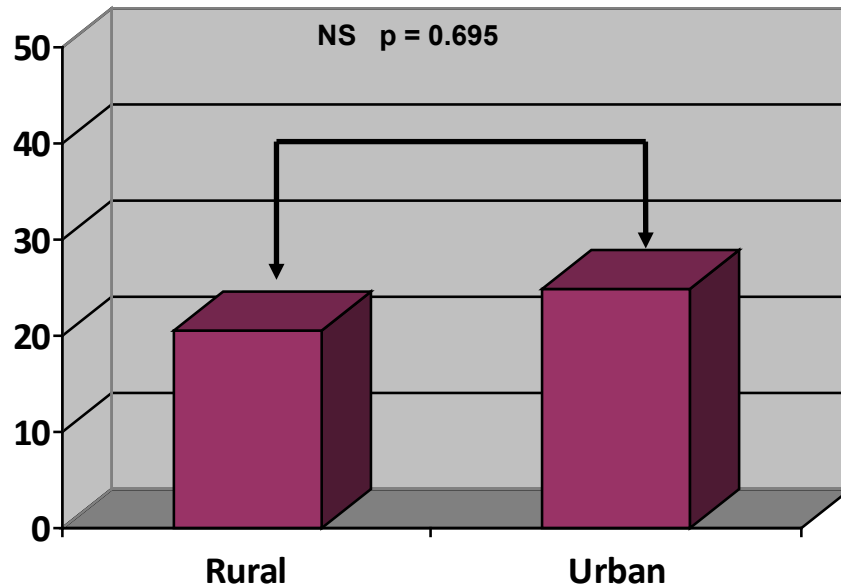
Keywords: rural,  
telemedicine,  
cardiopulmonary arrest

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## Introduction

In 2008 the Agency for Healthcare Research and Quality reported that as many as 20% of the population in the United States (U.S.) lives in what would be considered rural communities while only 9% of all physician's practice in these same designated areas.<sup>1</sup> There is even a greater scarcity of medical specialists within these underserved areas.<sup>1</sup> This intrinsic disparity along with geographic isolation and socioeconomic conditions has resulted in a significant gap in access to healthcare and often requires citizens of rural areas to commute long distances to receive medical attention. The situation is particularly problematic when the medical condition demands emergent attention. Access to timely emergency medical care is critical in the face of common health conditions such as myocardial infarctions, trauma, and acute ischemic strokes. However, regional disparities in access to emergency care have been noted to exist mostly in rural areas.<sup>2</sup>

Comparison of percent survival of urban and telemergency rural patients with cardiopulmonary arrest (NS = not significantly different  $p > 0.05$ ).




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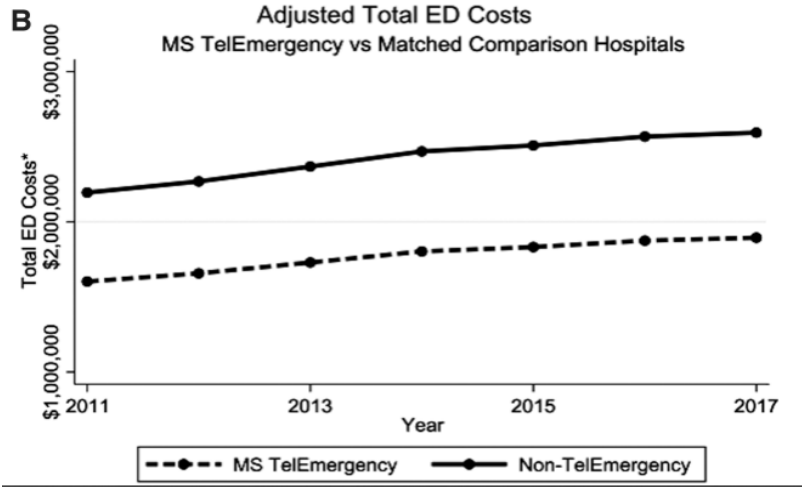
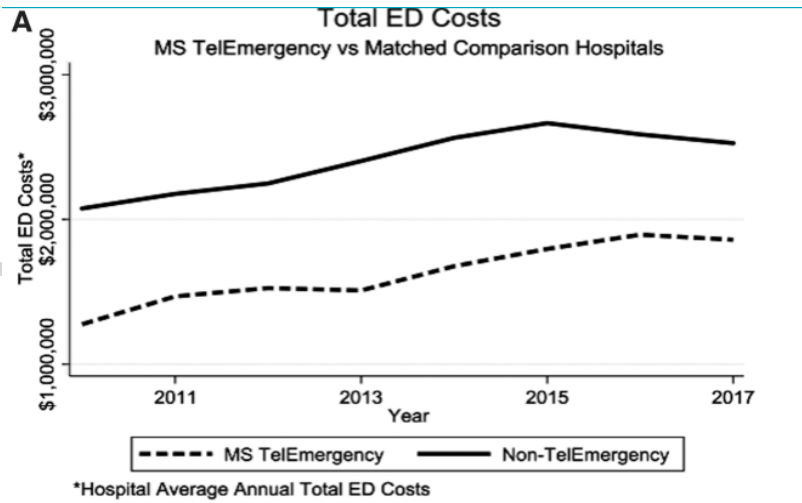
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## Original Research

# Do Hospitals Providing Telehealth in Emergency Departments Have Lower Emergency Department Costs?

Dunc Williams Jr, PhD<sup>1,2</sup>, Annie N. Simpson, PhD<sup>1,2,3</sup>, Kathryn King, MD, MHS<sup>2,3</sup>, Ryan D. Kruis, MSW<sup>2</sup>, Dee W. Ford, MD, MSCR<sup>2,4</sup>, Sarah A. Sterling, MD<sup>5</sup>, Alexandra Castillo, MPH<sup>6,7</sup>, Cory O. Robinson, MHA<sup>1</sup>, Kit N. Simpson, DrPH<sup>1,2</sup>, and Richard L. Summers, MD<sup>5,6</sup>

# ED Costs





# TelEmergency Acute Services Layering (ASL) Workplan - Overview



- TelEmergency can help to remotely workup the undifferentiated critically ill patient
  - But what if specialty care, such as in stroke, is needed?
- That is where ASL comes in - Remote specialty care through the established TelEmergency framework
- Through the UMMC Telehealth Center of Excellence, funds for research and project implementation have been obtained for ASL
- Specific focuses of UMMC's ASL project:
  - Telestroke
  - Tele-behavioral health
  - Tele-toxicology



# Integration



## Integration of Telestroke Services into an Established Telemedicine System

Kristen C. Isom, RN<sup>1</sup>, Richard L. Summers, MD<sup>2</sup>, Kristi Henderson, DNP, NP-BC<sup>2</sup>, Rebecca Sugg, MD

<sup>1</sup>Anderson Regional Hospital, Meridian, Mississippi

<sup>2</sup>University of Mississippi Medical Center, Jackson, Mississippi



### BACKGROUND AND PURPOSE

Most acute stroke patients first present to the emergency department. Emergency personnel are often encouraged to maintain a low threshold for stroke activations to capture all potential candidates for early treatment options. However, a national shortage of neurologists has placed a strain on the stroke specialists providing oversight for all these activations. Our stroke team faced a situation in which there were a limited number of neurologists and consistent coverage was not possible to satisfy stroke center qualifications. We report on the development of a hybrid system in which neurology oversight was provided by telemedicine consultation for times in which our neurologists were not available.

### STROKES IN MISSISSIPPI

#### MS % of Stroke Thrombolysis

University Hospital Comprehensive Stroke Center—**3.9%**

Anderson Regional — **3.34%**

Total Mississippi average — **1.7%**

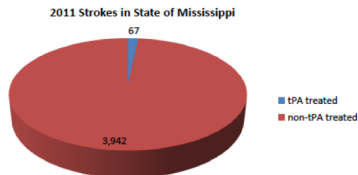


#### Unique Challenges to Treatment

- Primary Rural Population
  - Long distance to travel to hospital
- Late Presentation to Hospital
  - Poor public awareness/education
- Higher % Hemorrhagic Stroke
  - Lead nation in % hemorrhagic stroke
    - Frequent
- Contraindications
  - Leads Nation in Hypertension
  - Prior Stroke < 3 months – Common
  - Leads nation in advanced CA
- Stroke Mimics Common
  - Leads Nation in Diabetes
  - Drug and ETOH intoxication

Source: Truven Medicare Discharges 2011 MS – DRGs 21–27 common seizure disorders > national

### 2011 Strokes in Mississippi



Of the 4,009 Strokes in Mississippi only 67 (1.7%) were treated with tPA.

Source: Truven Medicare Discharge 2011 MS-DRGs 61-66

### METHODS

Telestroke services were integrated into an established telemedicine system already servicing 17 EDs for general emergency consultations. The system has been in operation for ten years seeing over 425,000 patients with a technical failure rate of 0.00025%. In this protocol, the client ED is considered an extension of the ED of the comprehensive stroke center and activations are simultaneously initiated at both the telemedicine and consultant sites to engage the stroke specialists. After activation, the neurologist is video-conferenced into the telemedicine consultation by way of a personal ipad. Neuroimages are available to the neurologist at the telemedicine consulting site by cloud technology.



“Telestroke networks should be deployed wherever a lack of readily available stroke expertise prevents patients in a given community from accessing a primary stroke center (or center of equivalent capability) within a reasonable distance or travel time to permit eligibility for intravenous thrombolytic therapy<sup>23</sup>

–ASA Recommendations for the

implementation of

telemedicine within stroke systems of care.

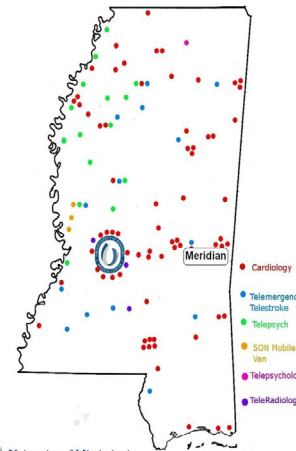
2013

### RESULTS

This telemedicine system is experienced in remotely assisting in stroke management. There is a first line triage of stroke patients by emergency physicians at a comprehensive stroke center with input from a stroke neurologist. If the case requires a neurointerventionalist then rapid transport to the comprehensive stroke center is facilitated by having routed the consultation through an emergency telemedicine system. By integrating with an established system, the telestroke service was operational within 45 days of the agreement.

### CONCLUSIONS

By using this innovative hybrid approach which utilizes a combination of both local neurologists and telemedicine consultations we were able to meet the coverage requirements for stroke center certification.



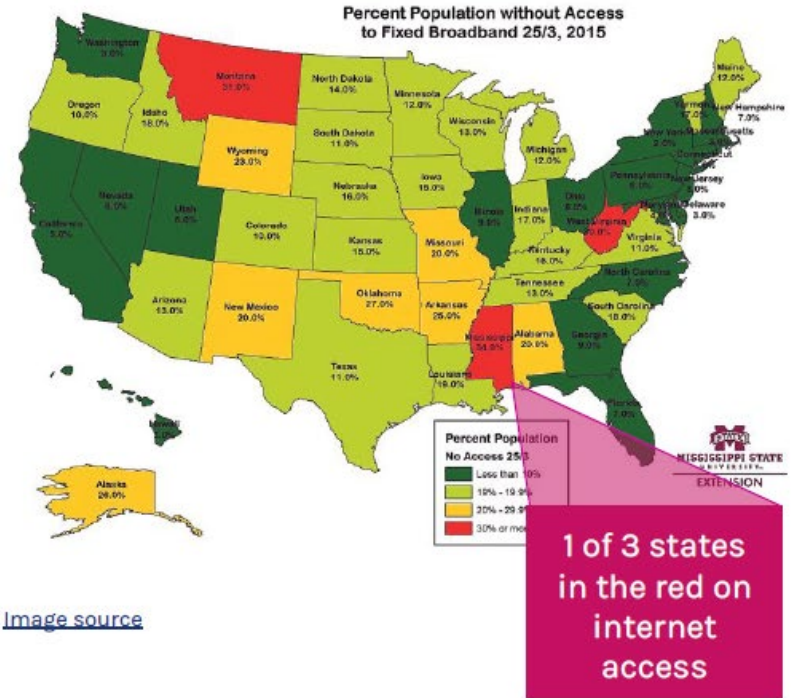
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# Challenges



- Mississippi ranks 49th nationally on connectivity to the Internet; **more than 30% of residents lack access to a capable service provider**<sup>1</sup>
  - Presents challenges for telemedicine delivery; FCC's \$100 million Connected Care Pilot aims to bring more access to rural, poorer populations
- Over **25% on Medicaid**<sup>2</sup>; heard from UMMC that it can be “archaic” in ways (ie Medicaid covers some rides to medical procedures but not others)
- **12% of population uninsured**; 19% of women 19-44 years old are uninsured<sup>3</sup>



# Reimbursement



- **Medicare: 75 codes are reimbursed for telehealth**
  - Geographic restrictions
  - Facility (Q3014) and professional services
  - New codes added in January including CCM
- **Mississippi 3<sup>rd</sup> Party Insurance & Medicaid**
  - Parity reimbursement
  - Professional billing is at the same rate as in-person services
  - Modifier used
  - RPM
  - Medication adherence management
  - Store & forward



# Resource Manual

## A TelEmergency Cookbook:

### A Resource Manual for Developing a Tele-Emergency System



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# TelEmergency

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## Questions?