Telemedicine: How Telemedicine Allows Rapid Specialized Assessment in Rural Communities
Wesley Medical Center & WCTN Telemedicine Network

For the purpose of this presentation, we are presenting the model of the WCTN network to showcase the efficacy of the teleneurology system and its benefit to rural and medically-underserved communities. No relevant financial relationships exist.
WCTN or *WesleyCare Telemedicine Network*

- Based at Wesley Medical Center in Wichita, KS market. WCTN utilizes an 8-panel stroke trained neurology group affiliated with HCA.

- WCTN Telemedicine Neurologists have direct interaction with Wesley Medical Center, and we call their partner facilities “WCTN Network Partners.”
• Third leading cause of death in the U.S.
• Approx. 700,000 people suffer strokes each year.
• Incidence increases with age.
• Mortality from stroke increases with age.
• Leading cause of disability.
• Pre-hospital care has been primarily supportive to this point.
• TIME is BRAIN!
Team Approach

• Detection
  – Importance of early recognition by lay public

• Dispatch (9-1-1)
  – Obtains pertinent info; identifies urgency

• Delivery (EMS)
  – Evaluates, obtains symptom onset, minimizes on scene time; immediate transport and pre-notification to Emergent Stroke Ready hospital or PSC as soon as possible!
Have a plan

- Communication with hospital staff before, during, and after
- Know resources available (Telemedicine)
- Be consistent
- Be reliable
Stroke in Pre-Hospital Setting

• Stroke must be suspected quickly by EMTs and Paramedics in the field.

• Extensive neurological exams are impractical in the pre-hospital setting.

• After assessment, notify hospital, plan rapid transport without delay to closest certified stroke facility.
  – In rural areas, this may mean transport to a “gtt and ship facility and then transfer to an Emergent Stroke Ready Hospital or Primary Stroke Center.
  – This allows for the rapid diagnosis and treatment of stroke that benefits from the administration of t-PA.
• One of the most important aspects of your patient assessment must be the time of onset of first symptom.

• Document time the patient was last seen acting normal.

• The onset time has the most important implications for potential therapy.

• Early notification to STROKE facility is essential.
Cincinnati Stroke Scale

- Identifies patients with strokes
- Evaluates three major physical findings
  - Facial droop
  - Motor arm weakness
  - Speech abnormalities
• Once the diagnosis of stroke is suspected, *time in the field must be minimized.*

• The presence of a patient with acute stroke is a "*load and go*"

• A more extensive examination or initiation of supportive therapies should be accomplished en-route to the hospital.
• Notify receiving facility ASAP

• Monitor/record VS every 5 minutes if unstable, or every 15 minutes if stable.

• Position the patient, protecting paralyzed extremities.

• Secure patient to stretcher and transport rapidly without excessive movement or noise.

• Use treatment eligibility checklist en-route and include information in documentation.
Pre-Hospital Care

• Contact medical control *prior* to administering any drugs.
• IV access & 12 lead should not delay transport.
SAMPLE

• Age, Sex

• Past HX of stroke or TIA

• Onset time and last seen at baseline

• Assessment and care provided (BLS/ALS)

• Receiving Primary Stroke Service (PSS)

• Trip times (dispatch, patient contact, hospital notified, hospital arrival)

• Eligibility checklist (include all information)
Documentation

• Remember to leave a copy of the Patient Care Report at the hospital.

• The EMS patient care report is a CRITICAL part of the patient’s medical record and contains vital information pertinent to continuing care at the hospital and to providing follow-up information to EMS.
ACUTE HOSPITAL CARE OF SUSPECTED STROKE
Acute Medical Treatment of the Suspected Acute Stroke

- Immediate CT with STAT read and results to provider
  - You cannot see inside of the brain with any assessment tool. Ischemic and Hemorrhagic strokes will both present with neurological changes and deficits.

- Stabilize patient. Permissive hypertension should be allowed except for hemorrhage.
  - Cerebral perfusion pressure is the pressure needed to provided oxygen and glucose to the brain via the circulatory system. An increase in intracranial pressure due to edema, or mass will result in a higher pressure required to perfuse the brain.
  - A stroke patient can deteriorate quickly and reversibly if we are unable to provide the needed perfusion to the brain.
Acute Medical Treatment of the Suspected Acute Stroke

- Evaluate for thrombolytic therapy – minutes lost equals brain cells lost. – Review provided list of inclusion and exclusion criteria.
  - Is Telemedicine available?
  - Where is closest Neurologist?
  - KNOW AND UTILIZE YOUR RESOURCES FOR OPTIMAL CARE!

- Obtain history
  - Anticoagulant use including new novel meds
  - Seizure disorders
  - Cardiac history (afib)

- IV access x 2 - Blood for labs
  - Chemistry
  - PT/INR
  - Complete blood count

- Vital Signs (include weight) and Neuro checks every 15 minutes
Acute Medical Treatment of the Suspected Acute Stroke

- **Correct hypovolemia**
  - Normal Saline – does not increase cerebral edema
  - Maintain blood pressure to save penumbra

- **Correct metabolic disturbances**
  - Euglycemia

- **Correct hypoxia**

- **Treat Infection** – Slows metabolic demand for oxygen and glucose

- **Correct Fever**

- **Minimize aspiration risk**

- **Do not over treat hypertension**
WHY TELEMEDICINE?
Which is BEST for decision making in acute consultations?

Phone Consult? Telemedicine?
Correct treatment decisions were made more often in the telemedicine group than telephone-only group.
RURAL COMMUNITIES NEED ACCESS
Rural Communities Need Sub-Specialty Physicians
Meet Cora, “Dr. Spock,” and Colleen
Tele-Stroke Stats 2006 – July 2014

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Total number of consults</td>
<td>+3,500</td>
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<tr>
<td>t-PA rate</td>
<td>16.95%</td>
</tr>
<tr>
<td>National t-PA average</td>
<td>5-6%</td>
</tr>
<tr>
<td>Program Transfer rate</td>
<td>35.59%</td>
</tr>
<tr>
<td>Stays in home community</td>
<td>64.41%</td>
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Technology: An Important Consideration

- Program strategy and legal compliance balance the complexity of technology solutions and the appropriate level of care delivery.
- The FDA has published guidelines for Telemedicine technology solutions, for which HCA’s interpretation of applicability and implementation requires that all devices utilized in patient care be FDA Class II cleared. (NOT STORE & FORWARD)

**Portable Workstation (Pre-hospital)**
**Control Station**
**Endpoint**

**Key Points**

- Medical Education
- Emergent Consult
- Intake Assessment
- Clinic Follow up

Technology is a COMPONENT, not THE solution!
HOW TO SUCCEED
A True Partnership: Co-Managing Complex Patients

Wesley Medical Center
“HUB”

Network Partner
“Spoke”

HCA
Telemedicine is BEST for Acute, Collaborative Consults
MEET DR. BARTT, NEUROLOGIST, NEUROHOSPITALIST, TELEMED DOC!
TELEMEDICINE = CARING FOR COMMUNITIES
Red circles – Emergent Stroke Ready Hospitals
Green and Yellow – Primary Stroke Centers

HCA
AHA Policy Statement

Burden of Stroke
Stroke is a major public health problem worldwide. A major challenge will be to increase access to appropriate interventions for stroke among patients in more remote or underserved regions. The United States has approximately 4.0 neurologists per 100,000 persons, caring for more than 700,000 acute strokes per year, although many parts of the United States are without access to acute stroke services entirely. Across the United States, a growing number of neurologists are opting out of call coverage for acute stroke and other neurological emergencies, thereby increasing the number of patients who could be described as neurologically underserved. State and local regulations requiring hospitals to provide this emergency call coverage if they wish to be licensed or recognized as acute stroke–capable facilities or primary stroke centers are further exacerbating this gap between supply and demand for on-site acute stroke expertise. Direct and indirect costs of stroke are estimated to be $62.7 billion annually in the United States, with 15% to 30% of stroke survivors being permanently disabled and 20% requiring institutional care at 3 months after stroke.
Win-Win Situation for All Involved

• **Benefits of Teleneurology to the hospital**
  – Access to an expert in the field of neurology
  – Allows the presence of expert consultation in a rural setting
  – Resource for medical provider and nursing
    • Diagnosis
    • t-PA dosing and administration
    • Monitoring post administration
    • Ship or not ship

• **Benefits to Community**
  – Rapid diagnosis and care of the stroke patient
  – Expert monitoring of stroke patient
  – Rapid treatment means decreased disability and faster return to community
Win-Win Situation for All Involved

• Benefits to Medical Provider
  – Access to expert for consultation
  – Education for staff
  – Assistance in monitoring patient
  – Partner in decision making
Case Review: 68 yo male with hx of HTN, DLD, and CAD with sudden onset of visual loss, expressive aphasia, severe dysarthria, and inability to stand.

- 1222- Presents to hospital ED
- 1225- ED physician in room
- 1226 – CT and lab notified
- 1230- NIH- 4 with noted loss of movement to right leg minimal movement right arm, visual changes and dysarthria.
- 1302- Labs drawn
- 1304- CT results to MD
- 1320 air evac notified of pending transfer
- 1325- tPA infusion started
- 1345- symptoms improving
- 1400- speech improving
- 1425- speech at baseline, able to move right side
- 1429- departs for WMC
- 1435- tPA complete
- 1606- Arrival to WMC
- 1634- NIH at WMC- score of 1
- Patient had 2 day stay. Symptoms completely resolved. Discharge NIH 4/18/14- 1305 scored at 0
- Discharge to Home
Case Synopsis

• Symptoms to presentation to ED – 60 minutes
• Arrival to ED until tPA started – 63 minutes
• Symptom onset to infusion – 123 minutes
• Without a Stroke Ready facility and EMS transport
  – Minimal time from symptoms to Wesley for treatment, 298 minutes (based on notification times for Eagle Med to on campus time at WMC.)
  – Out of window for t-PA.
  – Progression of embolic stroke
  – Probable disability and loss of quality of life and productivity
# Why Partnerships are Vital

Maintaining partnerships and our role as a Telemedicine leader revolves around supporting our partners’ efforts to improve care.

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<th>Support</th>
<th>Example</th>
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| Education           | • Share clinical expertise.  
                         • Offer resources and expertise to facilitate community education.  
                         • Outreach efforts to community partners.                                   |
| Tracking Metrics    | • Leverage processes to capture data.  
                         • Share processes and technology for capturing data.  
                         • Promote their metrics of success to community.  
                         • Utilization performance and assistance with program growth.                |
| Care Feedback       | • Share outcomes of patients who are transferred.  
                         • Be conscientious not to take away partner’s volumes.  
                         • Help manage acute phase, but return patients back to the community.       |
| Our Performance     | • How effectively are we being utilized as a resource?  
                         • How quickly do we respond to our partners?  
                         • Track and improve call-to-response time.                                    |
May we answer any questions?