Stroke Center Designation: The Path to Readiness

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Stroke Program Manager
Upstate CSC
Disclosures

I have no financial disclosures
History of Stroke Center Designation

• 2002-2003 pilot in Brooklyn and Queens
• 2004 all NY hospitals invited to designate
• Currently 120 NYSDOH stroke designated facilities
• 93 non designated facilities
• 63 Coverdell participating hospitals
## Cerebrovascular disease (stroke) mortality rate per 100,000

*Source: 2012-2014 Vital Statistics Data as of May, 2016*

*Adjusted Rates Are Age Adjusted to The 2000 United States Population*

<table>
<thead>
<tr>
<th>Region/County</th>
<th>Deaths</th>
<th>Average population</th>
<th>Crude Rate</th>
<th>Adjusted Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>2013</td>
<td>2014</td>
<td>Total</td>
</tr>
<tr>
<td>Reg-7 Tug Hill Seaway</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jefferson</td>
<td>46</td>
<td>52</td>
<td>48</td>
<td>146</td>
</tr>
<tr>
<td>Lewis</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>St. Lawrence</td>
<td>50</td>
<td>43</td>
<td>42</td>
<td>135</td>
</tr>
<tr>
<td>Region Total</td>
<td>106</td>
<td>101</td>
<td>100</td>
<td>307</td>
</tr>
<tr>
<td>Reg-8 Central NY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cayuga</td>
<td>40</td>
<td>37</td>
<td>39</td>
<td>116</td>
</tr>
<tr>
<td>Cortland</td>
<td>22</td>
<td>25</td>
<td>21</td>
<td>68</td>
</tr>
<tr>
<td>Madison</td>
<td>39</td>
<td>35</td>
<td>29</td>
<td>103</td>
</tr>
<tr>
<td>Oneida</td>
<td>131</td>
<td>111</td>
<td>109</td>
<td>351</td>
</tr>
<tr>
<td>Onondaga</td>
<td>196</td>
<td>203</td>
<td>221</td>
<td>620</td>
</tr>
<tr>
<td>Oswego</td>
<td>37</td>
<td>47</td>
<td>51</td>
<td>135</td>
</tr>
<tr>
<td>Region Total</td>
<td>465</td>
<td>458</td>
<td>470</td>
<td>1,393</td>
</tr>
</tbody>
</table>

Why Designation?

- Standardizes methods in which we provide stroke care
- Compliance with clinical practice guidelines
- Shown to improve quality of care delivered to patients
- Paul Coverdell project (63 NYS hospitals)
- Better marketability
- Time sensitive treatment
- EMS bypass protocols
(2-45) General: Stroke

**EMT**
- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Check blood glucose level, if equipped. If abnormal, refer to the “General: Hyperglycemia” or “General: Hypoglycemia” protocol, as indicated
- Perform a neurological exam, including Cincinnati Stroke Scale or other regionally approved stroke scale
- Determine the exact time the patient was last in his or her usual state of health and/or seen without symptoms by interviewing the patient, family, and bystanders
- If time from symptom onset to estimated arrival in the ED will be less than 3 hours, transport the patient to a NYS DOH Designated Stroke Center, or consult medical control to discuss an appropriate destination facility
- Notify the destination hospital ASAP
- Request ALS, if available, but do not delay transport to appropriate hospital

**ADVANCED STOP**

**ADVANCED**
- Vascular access

**CC AND PARAMEDIC STOP**

**CC PARAMEDIC**
- Cardiac monitor
- 12-lead ECG when possible
- Maintain systolic BP > 120 mmHg or MAP > 90 mmHg
- If systolic BP > 220 mmHg or diastolic BP > 120 mmHg, contact medical control

**MEDICAL CONTROL CONSIDERATIONS**
- Metoprolol 5 mg slow IV push

**Reference**
- Cincinnati Prehospital Stroke Scale:
  - Have the patient repeat, “You can’t teach an old dog new tricks”
    - Assess for correct use of words and lack of slurring
  - Have the patient smile
    - Assess for facial droop
  - Have the patient close eyes and hold arms straight out for 10 seconds
    - Assess for arm drift or unequal movement of one side
Types of Designation

- Acute Stroke Ready Hospital
- Primary Stroke Center (NYSDOH)
- Comprehensive Stroke Center
• Smaller and rural hospitals
• Demonstrate excellence in initial treatment of stroke
• Become part of a region’s larger stroke system
• Capability of administering Alteplase
• Resources to diagnose, stabilize, treat and transfer
• Establish telemedicine link to a PSC or CSC
• Transfer arrangements with PSC/CSC to expedite transfers
Comprehensive Stroke Center

AHA/ASA POLICY STATEMENT

Interactions Within Stroke Systems of Care
A Policy Statement From the American Heart Association/American Stroke Association


and

on behalf of the American Heart Association Advocacy Coordinating Committee

• Intended to care for the most complex stroke cases
• Provide surgical or endovascular interventions
• Presence of a neuro ICU staffed by intensivists
• Ability to perform advanced imaging
• Advanced capabilities available 24/7
Primary Stroke Center

• Demonstrate ability to provide basic level of acute stroke care
• Stroke transfers are appropriate for services not available at the facility
• Application made to NYSDOH
• Yearly self audit tool (HERDS)
Key Components of a Primary Stroke Center

- Stroke Team
- Education
- 24/7 Capabilities
- Quality assurance/Data registration
Stroke Team

- Identify Stroke Medical Director
- Stroke Coordinator
- Identify team members (ED MDs, RNs, neurologist, stroke unit staff)
- Demonstrate knowledge of stroke care/protocols
- Organizational chart
Upstate Comprehensive Stroke Center Organizational Chart

Chief Quality Officer
Hans Cassagnol, MD

Stroke Program Medical Director
Julius Gene Latorre, MD

Stroke Program Manager
Jennifer Schleier, RN

Nursing Administration
Nancy Page, CNO

Vascular Neurology

Neurointerventional

Emergency Medicine

Neuroradiology

Physical Medicine and Rehabilitation

Neurosurgery

Cardiology

Stroke Program Outreach Coordinator
Joshua Ouyang, RN

Stroke Program Quality Coordinator
Open Position

Stroke Program Data Coordinator
Michelle Yatachunga, RN

Ancillary Services***

Neuro ICU/Intermediate Care Manager
Kim Spinelli, RN

Neuroscience Medical-Surgical Manager
Kyle Choquette, RN

ED Manager
Susan Rainbow, RN

Neuro IR Manager
Ann Marie Seller, RN

SWAT Manager
Ellen Anderson, RN

PMR Manager
Kathy Mahaney, RN

Neurology Outpatient Clinic
Deb Greiner, RN

Transfer Center Manager
Joey Angelina, RN

***Ancillary services: Pharmacy, PT/OT/Speech therapies, neuroscience NP/Pas, lab, vascular lab, trauma program, emergency medicine quality, EMS, EMS liaison, CT/MRI
Stroke Medical Director: Requirements

• Participation in 2 regional, national, international stroke conferences yearly
• Complete a stroke fellowship
• Eight or more CMEs
• Five or more peer review publications

* 2 are required in 1st year, one required subsequently
* Appointment at multiple designated centers

https://www.health.ny.gov/facilities/hospital/stroke
Education

- Stroke Team (ED, ICU, Stroke unit)
- Other professionals caring for stroke patients (PT, OT, SLP)
- Patients/families
- EMS providers/agencies
- Community education/outreach
<table>
<thead>
<tr>
<th>Position</th>
<th># of required hours</th>
<th>Position</th>
<th># of required hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke Medical Director</td>
<td>8</td>
<td>Stroke Physicians</td>
<td>8 initial, 4 annual</td>
</tr>
<tr>
<td>Stroke Coordinator</td>
<td>8</td>
<td>ED physicians</td>
<td>8 initial, 4 annual</td>
</tr>
<tr>
<td>Core Stroke Team</td>
<td>8</td>
<td>ED/9F/9E managers</td>
<td>8</td>
</tr>
<tr>
<td>Acute Stroke Team</td>
<td>Based on role</td>
<td>RNs 9F/9E/9G/ED/SWAT/IR</td>
<td>8 initial, 4 annual</td>
</tr>
<tr>
<td>Stroke Response Team</td>
<td>Based on role</td>
<td>Adult Inpatient RNs/LPNs</td>
<td>2 initial, 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OT/PT/SLT</td>
<td>2</td>
</tr>
<tr>
<td>2016 Stroke Education: Stroke Team</td>
<td>Certification</td>
<td>Role</td>
<td>Location</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------</td>
<td>-----------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Jennifer Schleier (year 2 and beyond)</td>
<td>8 hours of CE on file</td>
<td>Manager</td>
<td>Stroke Program</td>
</tr>
<tr>
<td>Michelle Valletunga (year 2 and beyond)</td>
<td>8 hours of CE on file</td>
<td>Data Coordinator</td>
<td>Stroke Program</td>
</tr>
<tr>
<td>Josh Onyan (Year 1)</td>
<td>8 hours of CE on file</td>
<td>Outreach Coordinator</td>
<td>Stroke Program</td>
</tr>
<tr>
<td>Julius Gene Latorre (year 2 and beyond)</td>
<td>4 hours of CE on file</td>
<td>Medical Director</td>
<td>Stroke Program</td>
</tr>
<tr>
<td>Antonio Culebras (year 2 &amp; beyond)</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Anuradha Duleep (year 2 &amp; beyond)</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Elvaleed Elnour (year 2 &amp; beyond)</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Carmen Martinez (year 2 &amp; beyond)</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Hesham Masoud (year 2 &amp; beyond)</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Seri-Ann Yonaty (year 2 &amp; beyond)</td>
<td>4 hours of CE on file</td>
<td>NP</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Michael Vertino</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Klaus Werner</td>
<td>4 hours of CE on file</td>
<td>MD</td>
<td>Stroke Unit</td>
</tr>
<tr>
<td>Marcia Harris</td>
<td>4 hours of CE on file</td>
<td>NP</td>
<td>Stroke Unit</td>
</tr>
</tbody>
</table>
24/7 Capabilities

• Stroke unit: at least 2 beds w/monitoring equipment
• Neuro imaging services (CT scan)
• Lab services
• Neurosurgery (transfer agreements)
Stroke Quality

- Stroke evaluation and written treatment protocols including tPA administration
- Stroke log includes time target data for ischemic, hemorrhagic, TIA, inpatient
- Meet time targets
- Compliance with performance measures
- Established quality assurance groups/stroke quality committee
- Method for corrective action/PI
Addendum I: Clinical Algorithm for Patients with Acute Ischemic Stroke

1. Suspected Acute Stroke
   - Non-contrast head CT scan
   - No ICH and no early ischemic changes on >1/4 of vessel distribution

2. Onset < 4.5 hours AND eligible for tPA
   - IV tPA (0.9 mg/kg)

3. Onset < 4.5 hours AND NOT eligible for tPA
   - TIA/HAS 3.0 or symptoms suggestive of large vessel occlusion
   - CTA head and neck

4. Onset > 4.5 hours or onset unknown
   - Consider Physiologic insult**
   - Consider Clinical Table
   - If no standard of care
   - Admit to appropriate Neuroscience Unit

5. If YES – NEURO IR
   - Review Risks/Benefits with patient and family
   - Obtain written consent
   - IR Groin puncture

6. Consider Anesthesia for Interventional Radiology cases

*Review IV tPA inclusion/exclusion criteria F81603
**Failed IV tPA: no significant improvement at the end of IV tPA
***Physiologic imaging: CT/MR perfusion, MRI brain
****Review Neuro IR inclusion/exclusion criteria F87884
### Stroke Quality: NYS DOH Time Targets

<table>
<thead>
<tr>
<th>Target Time</th>
<th>Measure</th>
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<tbody>
<tr>
<td>10 minutes</td>
<td>Door to MD</td>
</tr>
<tr>
<td>15 minutes</td>
<td>Door to team</td>
</tr>
<tr>
<td>25 minutes</td>
<td>Door to CT</td>
</tr>
<tr>
<td>45 minutes</td>
<td>Door to CT read</td>
</tr>
<tr>
<td>60 minutes</td>
<td>Door to treatment</td>
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</table>
## Stroke Quality: Performance Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Ischemic</th>
<th>TIA</th>
<th>Hemorrhagic</th>
<th>Not Otherwise Specified</th>
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</thead>
<tbody>
<tr>
<td>DVT Prophylaxis</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Early Antithrombotics</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticoagulation for AF</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV tPA (arrive by 2)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antithrombotics at D/C</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL 100 or ND</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysphagia screening</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Stroke education</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Rehabilitation considered</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>NIHSS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Discharge destination</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</table>
Stroke Quality Organizational Chart

University Executive Committee

Quality Governance Sub-council / Chief Quality Officer

Quality and Patient Safety Council

Stroke Quarterly Meetings

Stroke Quality Monthly Meetings

Physician Peer Review
Mortality Review Taskforce
Quality Provider Dashboard
Medicine Quality
COI
Stroke Quality:
Process Improvement Project

2016 Upstate Comprehensive Stroke Center Quality Initiative:
EMS Quality Committee (sub-committee of Stroke Quality)

**Problem:** EMS pre-notification of presumptive stroke patients impacts the timeliness of care in the emergency department and the ability to activate the stroke team prior to the patient’s arrival. Percent of pre-notification of stroke patients by EMS in 2015 was 45.6%.

**Project goal:**
- Increase the percent of stroke pre-notification by EMS to 85%
- Increase the percent of stroke team activations prior to arrival to 85%
- Improve methods of pre-notification data collection

**Team members and roles:**
Jennifer Schleier RN, BSN, Stroke Program Manager: Act as liaison to the Stroke Quality Committee, mentor and guide project leader.
Josh Onyan, RN, Stroke Program Outreach Coordinator: Project Leader, lead group meetings, collect and interpret EMS pre-notification data, provide EMS feedback related to pre-notification
Doug Sandbrook, Upstate EMS liaison: assist with establishing relationships with regional EMS agencies
EMS agency representatives: attend group meetings, identify system weakness or gaps related to stroke pre-notification from EMS perspective, assist with EMS educational efforts to improve pre-notification
Susie Suprenant, CNYEMS Director

**Interventions:**
- Identify members, obtain EMS buy-in and establish EMS Stroke Quality work group/committee
- Identify and initiate additional pre-notification data gathering tools
- Create EMS educational plan with pre-notification tools and roll out to EMS agencies across region
- Provide consistent EMS feedback related to stroke pre-notification data

**Progress to date:** 2016 cumulative stroke pre-notification by EMS percentage is 71.3%. EMS stroke pre-notification forms were released in the ED in April of 2016 as an additional data collection tool. Educational materials regarding pre-notification were provided to regional EMS agencies in September of 2016. There has been a slow but steady increase in the percentage of pre-notified stroke patients since implementation of the group. There has also been a significant rise in the number of stroke codes activated prior to arrival based on EMS pre-notification which has contributed to a slow steady reduction in door to needle times (data available upon request).

**Lessons learned:** Achievement of our goal of 85% pre-notification along with an 85% stroke code PTA rate will take time and perseverance of this work group. Stroke centers will need to develop a multi-faceted approach to improving EMS pre-notification rates and will need to engage EMS in participation on such groups.

**Next steps:** The next steps are to do an in-depth review of those stroke patients who were not pre-notified by EMS to identify consistencies. This will allow for the planning and implementation of targeted EMS educational sessions and materials to reach our goals.
## Stroke Quality:
### Corrective action/PI

### CASE REVIEW

<table>
<thead>
<tr>
<th>Time Targets: (Bold=DNV)</th>
<th>Clock Time</th>
<th>Standard</th>
<th>Does not meet standard</th>
<th>Meets standard</th>
<th>Exceeds standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIV arrival</td>
<td>15:27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke Page</td>
<td>15:24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED MD</td>
<td>15:28</td>
<td>10 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuro MD</td>
<td>15:30</td>
<td>15 min</td>
<td></td>
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<tr>
<td>CT 1- complete</td>
<td>15:33</td>
<td>25 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT report</td>
<td>15:50</td>
<td>45 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPA order</td>
<td>15:41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPA delivery</td>
<td>15:47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPA bolus</td>
<td>15:47</td>
<td>60 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTA complete</td>
<td>15:33</td>
<td>60 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin puncture</td>
<td>16:18</td>
<td>120 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recanal Time</td>
<td>17:02</td>
<td>150 min</td>
<td></td>
<td></td>
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</tbody>
</table>

### DISCUSSION/DECISION/ACTIONS

- Pre-notification call made with all pertinent information.
- Patient transported ALS with interventions completed on route.

**Chief Complaint/Presentation:**
48 yr old male, R side weakness facial droop, sensory loss, slurred speech, aphasia
EMS Provider: AMR
CPSS positive: Y
Pre-notification: Y
NIHSS on admission: 19
NIHSS post Tx: 2
IVTPA eligible: Y
IA/MER eligible: Y
Consent documentation: Yes documented

**Final Diagnosis:**
Acute Ischemic Stroke
Data Collection

- GWTG database (not required)
- Excluded data
- Internal database
- Hospital specific goals based on strengths and weaknesses
- Be as concurrent as possible
EMS

• Collaborative relationship
• Track EMS pre-notification and content of call
• Provide feedback and loop closure
• Provide educational events (2 per year)
ED Stroke Code

- Activate for any actual or presumptive stroke
- Prior to arrival whenever possible
- ED attending evaluated upon arrival
- Send patient direct to CT when possible
Direct to CT

Direct to CT protocol initiated here
Overcoming Barriers to Stroke Designation

- Administrative support to provide resources (written)
- Gap analysis
- Partner with an experienced stroke center
- Establish telestroke
Thank you…..

Jennifer Schleier
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315-464-2661