Stroke
Beat the Clock:

Time Matters!

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SR Director QSI
AHA/ASA
# The Perceptions of Stroke

<table>
<thead>
<tr>
<th>MYTH</th>
<th>REALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke is not preventable</td>
<td>Many strokes are preventable</td>
</tr>
<tr>
<td>Stroke cannot be treated</td>
<td>Stroke can be treated</td>
</tr>
<tr>
<td>Stroke only strikes the elderly</td>
<td>Anyone can have a stroke</td>
</tr>
<tr>
<td>Stroke happens in the heart</td>
<td>Stroke is a “Brain Attack”</td>
</tr>
<tr>
<td>Stroke recovery ends after 6 months</td>
<td>Stroke recovery can last a lifetime</td>
</tr>
</tbody>
</table>
Time is Brain

- Every second 32,000 brain cells die
- 1.9 million brain cells per minute
- 14 billion synapses are lost per minute
- Without treatment, areas the size of a pea die every 12 minutes
Impact of Stroke

- Stroke is the fifth leading cause of death in the U.S.

- The number one cause of adult disability

- Every year nearly 800,000 Americans have a new or recurrent stroke

- Estimated direct and indirect costs of CVD and stroke in the U.S. is $316.1 billion

- No age limit for stroke

- Frequently takes people out of the workforce, and leaves them dependent on others for care

AHA 2017
So What Do We Do?

- PREVENTION!!!!!!!
- Approximately 80% of strokes are preventable
- Acute treatment possible up to 8 hours post stroke
- Clotbuster: t-PA is the only FDA approved treatment, but must be administered within a 3 hour window from onset of symptoms; current t-PA use is only 3-5% nationally
- Research-Always looking at novel treatments to salvage brain
- Education- Both the public and the medical community that serves them
Risk Factors for Stroke

**Unmodifiable**
- Age
- Race
- Gender
- Prior stroke
- Genes/family

**Modifiable**
- High blood pressure
- Diabetes
- Smoking
- High Cholesterol
- Heart disease
- Atrial Fibrillation
- Alcohol abuse
- Illicit drug use
- Poor diet/lifestyle
- Overweight BMI > 25
- Sedentary lifestyle
Signs & Symptoms – F.A.S.T.

F: FACE – sudden drooping of ONE side of the face
A: ARM – sudden numbness, clumsiness, or weakness of one arm/leg
S: SPEECH – sudden difficulty speaking or understanding language: slurred speech
T: TIME – call 911 and get to the hospital immediately
What Is Stroke?

A stroke occurs when blood flow to the brain is interrupted by a blocked or burst blood vessel.

- Also may be referred to as a “Brain Attack”
- Time is critical to survival and recovery

*Time is brain!!*
Two Types of Stroke

**Hemorrhagic**
- Bleeding inside Brain
- Possible Surgery/ ICU
- Coma management

**Ischemic**
- Blood Clot/Obstruction
- Administer Drug: t-PA
- “Clot Buster”
Transient Ischemic Attacks (TIAs)

- Stroke-like symptoms that usually resolve within 60 minutes and cause no permanent damage are called transient ischemic attacks (TIAs).
- TIAs are known as “warning strokes”.
- 1/3 of people that have had one or more TIAs will have a stroke.
- TIAs can occur days, weeks or months prior to a stroke.
- 50% of people that had TIAs had a stroke within one year.

(AHA, 2009)
What if symptoms go away?

- They still need to be evaluated!
- This could be a warning that a big stroke is on the way
- One study looked at patients diagnosed with TIA in ER
  
  - Within 90 days 10% of all patients (n=1707) had a stroke

  HALF of these happened within 1st 48 hours!!

IV tPA, the “Gold Standard”

- FDA Approved (1996)

- Only 8% of AIS are eligible for IV tPA
  - Narrow time window
  - Risk of cerebral and systemic hemorrhage

Achieves early reperfusion in only 13-50% of large vessel occlusion

IV t-PA Extended Window
3 - 4.5 hours

- ECASS III Study (Published in New England Journal of Medicine on Sept. 25, 2008)
- Slightly higher risk of hemorrhage, however, statistically significant benefit
- IRB approved
- ASA published statement to endorse use
- Not FDA approved
Endovascular Intervention

- Last Known Normal – 6 hours or less
- NIHSS between 8 – 29 or cortical signs
- Confirmed large vessel occlusion
- Treatment is extremely fast
  - Imaging to groin puncture <60 minutes
  - Imaging to reperfusion <90 minutes
- For every four patients treated, one more patient is independent at long term follow up
Patient Case Report

Acute Ischemic Stroke Follow-up

**Revascularization with the Solitaire Stent Retriever**

**Patient Presentation**
- **Initial NIHSS:** 20
- **Time Symptom Onset:** 13:30
- **Patient History:** 61 y/o female presented with left hemiparesis, left facial droop, right gaze deviation and slurred speech. Patient has a history of prior stroke, peripheral vascular disease, diabetes and carotid endarterectomy.

**Case Conclusion**
- **Total Door to Puncture Time:** 2h 23min
- **Post Procedure NIHSS:** 2
- **Comments:** Patient was walking around independently on day two and was discharged home.

**Time of Symptom Onset:** 13:30  
**Evaluated at Hospital:** 15:10  
**TPA Administered:** 16:00  
**Intervention Begins:** 17:25  
**TICI 2c Revascularization NR**

**Case Images**

- Before
- After
PATIENT PRESENTATION

- Initial NIHSS: 16
- Time Symptom Onset: 10:20AM
- Patient History: 49 y/o male presented with left hemiparesis, dysarthria, sudden slurred speech and weakness. Patient was newly diagnosed with cardiac myocarditis.

CASE CONCLUSION

- Total Procedure Time: 38 minutes
- Post Procedure NIHSS: 0
- Comments: Patients NIHSS was 0 in 24 hours and he was discharged home 3 days later!
How can you prevent stroke?

- Know your risk factors for stroke: diabetes, high blood pressure, etc.

- Follow your doctor’s advice, take medications as prescribed

- Modify your risk factors Example: lose weight, control high blood pressure by taking the medications your doctor prescribed

- Consider changing your lifestyle – example become more physically active, eat a good diet.
Learn to recognize a stroke. *Time lost is brain lost.*

- Stroke is a medical emergency
- Recognition is key to early treatment
- Stroke Centers / standards of care = better outcomes
- Stroke will continue to be a state & nationwide area of focus
American Heart Association
American Stroke Association

Stroke Update
History of GWTG - Stroke

- Significant opportunity to improve quality of care
- Created GWTG- Stroke in 2003
- Nearly 3,000 hospitals
  (Jan 17, 2018)
- 5 million patient records to benchmark against
- Target: Stroke developed as an extension of GWTG - Stroke in early 2010
Target: Stroke

- A National quality improvement campaign
- Stroke Teams work towards eliminating delays in treatment
- Ultimate Goal – improve outcomes

- Door-to-Needle (DTN) $\leq 60$ minutes (2010)
- Goal is DTN $\leq 45$ min (2015)
Percent of acute ischemic stroke patients receiving intravenous tissue plasminogen activator (tPA) therapy during the hospital stay who have a time from hospital arrival to initiation of thrombolytic therapy administration (door-to-needle time) of 60 minutes or less.
Time to IV tPA – 45 min
Texas Hospitals versus All (GWTG 1/18)

Percent of acute ischemic stroke patients receiving intravenous tissue plasminogen activator (tPA) therapy during the hospital stay who have a time from hospital arrival to initiation of thrombolytic therapy administration (door-to-needle time) of 45 minutes or less.
Texas Compared to All Hospitals
Age & Diagnosis

### Data For: Age
Note: Time periods at the end of the graph and data table have been omitted because there were no patient records during that time.

<table>
<thead>
<tr>
<th>Benchmark Group</th>
<th>Time Period</th>
<th>&lt;18 (%)</th>
<th>18 - 45 (%)</th>
<th>46 - 65 (%)</th>
<th>66 - 85 (%)</th>
<th>&gt;85 (%)</th>
<th>Total</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Hospitals</td>
<td>2017</td>
<td>128 (0%)</td>
<td>33502 (6.1%)</td>
<td>176004 (32%)</td>
<td>259822 (47.2%)</td>
<td>81321 (14.8%)</td>
<td>550777</td>
<td>69.5</td>
<td>20.2</td>
<td>70</td>
<td>-1 - 7373</td>
</tr>
<tr>
<td>All TX Hospitals</td>
<td>2017</td>
<td>15 (0%)</td>
<td>3246 (7.7%)</td>
<td>15574 (36.7%)</td>
<td>18733 (44.2%)</td>
<td>4831 (11.4%)</td>
<td>42399</td>
<td>67.2</td>
<td>14.8</td>
<td>68</td>
<td>5 - 118</td>
</tr>
</tbody>
</table>

### Data For: Diagnosis
Note: Time periods at the end of the graph and data table have been omitted because there were no patient records during that time.

<table>
<thead>
<tr>
<th>Benchmark Group</th>
<th>Time Period</th>
<th>Ischemic stroke</th>
<th>Transient ischemic attack (&lt;24 hours)</th>
<th>Subarachnoid Hemorrhage</th>
<th>Intracerebral Hemorrhage</th>
<th>Stroke not otherwise specified</th>
<th>No stroke related diagnosis</th>
<th>Elective Carotid Intervention only</th>
<th>Blank (&quot;Missing diagnosis&quot;)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Hospitals</td>
<td>2017</td>
<td>379791 (67.3%)</td>
<td>68284 (12.1%)</td>
<td>20703 (3.7%)</td>
<td>61854 (11%)</td>
<td>5219 (0.9%)</td>
<td>9995 (1.8%)</td>
<td>5737 (1%)</td>
<td>12817 (2.3%)</td>
<td>564400</td>
</tr>
<tr>
<td>All TX Hospitals</td>
<td>2017</td>
<td>28440 (66.5%)</td>
<td>5224 (12.2%)</td>
<td>1595 (3.7%)</td>
<td>4553 (10.7%)</td>
<td>511 (1.2%)</td>
<td>282 (0.7%)</td>
<td>350 (0.8%)</td>
<td>1780 (4.2%)</td>
<td>42735</td>
</tr>
</tbody>
</table>
New ACC/AHA High Blood Pressure Guidelines Lower Definition of Hypertension

Released at AHA Scientific Sessions Nov 13, 2018
# Definition of Hypertension – in mmHg

<table>
<thead>
<tr>
<th>Classification</th>
<th>Systolic BP, mmHg</th>
<th>Diastolic BP, mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>And</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120-129</td>
<td>And</td>
</tr>
<tr>
<td>Stage I Hypertension</td>
<td>130-139</td>
<td>Or</td>
</tr>
<tr>
<td>Stage II Hypertension</td>
<td>≥140</td>
<td>Or</td>
</tr>
<tr>
<td>Hypertensive Crisis</td>
<td>&gt;180</td>
<td>And/or</td>
</tr>
</tbody>
</table>

Consult your doctor immediately if the systolic blood pressure (BP) is greater than 180 mmHg or the diastolic BP is greater than 120 mmHg.
American Heart Association
American Stroke Association

Stroke Resources
An online Support Network by, and for, survivors and their caregivers.

JOIN FOR FREE TODAY
Rehabilitation Kit

- **Patient Resources**
  - Rehab Guidelines
  - Making Rehab Decisions guide
  - Checklist – “Stroke Rehab Planning List”

- **Healthcare Provider**
  - Five 2-page summaries of key 2016 recommendations
  - National Stroke Coordinator Webinar
  - New 2016 Rehab guidelines

http://www.strokeassociation.org/STROKEORG/AboutStroke/Recovery-Healthcare-Professional-Resource-Page_UCM_496009_Article.jsp#.WmDZiK2ouzm
Stroke Warmline

“Sometimes you need to hear from someone who’s walked a mile in your shoes.”

The Warmline: compassion born out of firsthand experience

Call 1-888-4-STROKE (1-888-478-7653) to reach the Warmline team

The Warmline connects stroke survivors and their families with an ASA team member who can provide support, helpful information or just a listening ear. We have trained several members of ASA's national call center to answer your questions about stroke.

Call us Monday-Friday between 8:00 a.m.-5:00 p.m. CT at 1-888-4-STROKE (1-888-478-7653).


Target stroke resources. www.targetstroke.org, http://www.strokeassociation.org/STROKEORG/Professionals/Target-Stroke_UCM_314495_SubHomePage.jsp