Hitting the Target: New Target Stroke III Measures

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Disclosures

• No Disclosures
Objectives

• Describe the history of Target: Stroke Phase I and II goals
• Review Target: Stroke Phase III initiative and recognition criteria
• Briefly review Stroke Phase III rationale
• Cover Key Strategies to improve door-to-needle and door-to-device times and how we are working on this at Saint Luke’s Hospital
Where We’ve Been - Target: Stroke

• Target: Stroke was launched by the American Heart Association in 2010

• Studies found less than 30% of US acute ischemic stroke (AIS) patients were being treated within the 60 minute window (Fonarow et al., 2010)

• Initiative to improve door-to-needle times for patients being treated with IV thrombolytics

• Introduced early key strategies to improve the process and provide rapid feedback
Phase I Goals

• Primary Goal: Achieve door-to-needle times within 60 minutes in 50 percent or more of AIS patients treated with IV Alteplase.
Phase I Outcomes

Table 1: Door-to-Needle Times for Tissue Plasminogen Activator Administration and Clinical Outcomes in Acute Ischemic Stroke Before and After a Quality Improvement Initiative (Fonarow et al., 2014)

- September 2013: 53.3%
- December 2009: 29.6%

Target: Stroke initiation

December 2009 - 29.6%

September 2013 - 53.3%
## Phase I Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Patients With Acute Ischemic Stroke, %</th>
<th>Preintervention (n = 27,319)</th>
<th>Postintervention (n = 43,850)</th>
<th>P Value</th>
<th>Unadjusted OR (95% CI)</th>
<th>P Value</th>
<th>Adjusted OR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital all-cause mortality</td>
<td></td>
<td>9.93</td>
<td>8.25</td>
<td>&lt;.001</td>
<td>0.81 (0.77-0.86)</td>
<td>&lt;.001</td>
<td>0.89 (0.83-0.94)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Discharged to home</td>
<td></td>
<td>37.6</td>
<td>42.7</td>
<td>&lt;.001</td>
<td>1.23 (1.18-1.27)</td>
<td>&lt;.001</td>
<td>1.14 (1.09-1.19)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Ambulatory status of independent</td>
<td></td>
<td>42.2</td>
<td>45.4</td>
<td>&lt;.001</td>
<td>1.14 (1.09-1.20)</td>
<td>&lt;.001</td>
<td>1.03 (0.97-1.10)</td>
<td>.31</td>
</tr>
<tr>
<td>Symptomatic ICH ≤36 h</td>
<td></td>
<td>5.68</td>
<td>4.68</td>
<td>&lt;.001</td>
<td>0.81 (0.75-0.88)</td>
<td>&lt;.001</td>
<td>0.83 (0.76-0.91)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>tPA Complications</td>
<td></td>
<td>6.68</td>
<td>5.50</td>
<td>&lt;.001</td>
<td>0.80 (0.75-0.87)</td>
<td>&lt;.001</td>
<td>0.83 (0.77-0.90)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Table 2: Door-to-Needle Times for Tissue Plasminogen Activator Administration and Clinical Outcomes in Acute Ischemic Stroke Before and After a Quality Improvement Initiative (Fonarow et al., 2014)
Phase II Goals

• Primary Goal: Achieve door-to-needle times within 60 minutes in 75 percent or more of AIS patients treated with IV Alteplase
• Secondary Goal: Achieve door-to-needle times within 45 minutes in 50 percent or more of AIS patients treated with IV Alteplase
Phase II Outcomes

Table 3: Achieving More Rapid Door-to-Needle Times in Acute Ischemic Stroke: Results of Target: Stroke Phase I, and Target: Stroke Phase II

(Fonarow, et al., 2017 & Fonarow & Schwamm (n.d.))
### Phase II Outcomes

#### Clinical Outcomes Pre-Target: Stroke, Target: Stroke Phase I, and Target: Stroke Phase II

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre-Target: Stroke (n=24,365)</th>
<th>Post-Target: Stroke Phase I (n=44,257)</th>
<th>Post-Target: Stroke Phase II (74,447)</th>
<th>P value</th>
<th>Adjusted OR 95% CI (Phase I vs Pre Target: Stroke)</th>
<th>Adjusted OR 95% CI (Phase II vs Pre Target: Stroke)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Hospital Mortality</td>
<td>10.0%</td>
<td>8.2%</td>
<td>6.2%</td>
<td>&lt;0.0001</td>
<td>0.85 (0.80-0.91)</td>
<td>0.72 (0.67-0.77)</td>
</tr>
<tr>
<td>Discharge Home</td>
<td>35.8%</td>
<td>41.5%</td>
<td>49.0%</td>
<td>&lt;0.0001</td>
<td>1.21 (1.16-1.27)</td>
<td>1.35 (1.27-1.45)</td>
</tr>
<tr>
<td>Ambulatory Status Independent</td>
<td>41.5%</td>
<td>44.6%</td>
<td>52.7%</td>
<td>&lt;0.0001</td>
<td>1.05 (0.99-1.22)</td>
<td>1.35 (1.27-1.45)</td>
</tr>
<tr>
<td>Symptomatic ICH within 36 Hours</td>
<td>5.7%</td>
<td>4.5%</td>
<td>3.6%</td>
<td>&lt;0.0001</td>
<td>0.79 (0.72-0.86)</td>
<td>0.67 (0.61-0.73)</td>
</tr>
</tbody>
</table>

Table 4: Achieving More Rapid Door-to-Needle Times in Acute Ischemic Stroke: Results of Target: Stroke Phase II (Fonarow, et al., 2017 & Fonarow & Schwamm (n.d.))
Phase III Goals-
Effective January 1, 2019 (2020 awards)

• Primary Goals:
  • Achieve door-to-needle times within 60 minutes in 85% or more of AIS patients treated with IV thrombolytics
  • **Achieve door-to-device times (arrival to first pass of thrombectomy device) in 50% or more of eligible AIS patients within 90 minutes (for direct arriving patients) and within 60 minutes (for transfer patients) treated with endovascular therapy (EVT)**

• Secondary Goals:
  • Achieve door-to-needle times within 45 minutes in 75% or more of AIS patients treated with IV thrombolytics
  • Achieve door-to-needle times within 30 minutes in 50% or more of AIS patients treated with IV thrombolytics
# Recognition Criteria

<table>
<thead>
<tr>
<th>Honor Roll</th>
<th>Target: Stroke Phase II</th>
<th>Target: Stroke Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time to thrombolytic therapy within <strong>60 minutes</strong> in <strong>50%</strong> or more of acute ischemic stroke patients treated with IV thrombolytic</td>
<td>DTN times within <strong>60 minutes</strong> for at least <strong>75%</strong> of applicable patients are required.</td>
</tr>
<tr>
<td>Honor Roll Elite</td>
<td>Time to thrombolytic therapy within <strong>60 minutes</strong> in <strong>75%</strong> or more of acute ischemic stroke patients treated with IV thrombolytic</td>
<td>DTN times within <strong>60 minutes</strong> for at least <strong>85%</strong> of applicable patients are required.</td>
</tr>
<tr>
<td>Honor Roll Elite Plus</td>
<td>Time to thrombolytic therapy within <strong>60 minutes</strong> in <strong>75%</strong> or more of acute ischemic stroke patients treated with IV thrombolytic AND time to thrombolytic therapy within <strong>45 minutes</strong> in <strong>50%</strong> of acute ischemic stroke patients treated with IV thrombolytic</td>
<td>DTN times within <strong>45 minutes</strong> for at least <strong>75%</strong> of applicable patients and DTN times within <strong>30 minutes</strong> for at least <strong>50%</strong> of applicable patients.</td>
</tr>
<tr>
<td>Honor Roll Advanced Therapy</td>
<td></td>
<td>DTD times in at least <strong>50%</strong> of applicable patients within <strong>90 minutes</strong> for direct arriving and within <strong>60 minutes</strong> for transfers</td>
</tr>
</tbody>
</table>

(American Heart Association)
Rationale

• Programs to integrate the tools provided with the Target: Stroke quality improvement initiative have substantially improved care and outcomes for patients with AIS (Fonarow et al., 2014)

• Target Stroke Phase III is designed to further improve care and outcomes for patients with AIS (Caputo et al., 2017)

• Target Stroke Phase III aims to facilitate and incentivize hospitals and stroke systems of care to provide IV thrombolytic and endovascular therapy to eligible patients with AIS in a timely fashion (American Heart Association, n.d.)

• Significant addition to goals (Saver et al., 2016)
  • Improved outcomes within first 7.3 Hours of onset
  • Endovascular Therapy- each 1-hour delay to reperfusion was associated with less favorable degree of disability
Door-to-Needle Best Practice Strategies

1. EMS pre-notification (Lin, C. B et al., 2012)
   • Early detection of stroke symptom
   • Faster imaging
   • Community outreach

2. Stroke toolkit
   • Rapid triage protocol
   • Clinical decision support
   • Stroke-specific order sets
   • Guidelines
   • NIH Stroke Scale- prior to intervention
Door-to-Needle Best Practice Strategies, cont’d

3. Rapid triage protocol and stroke team notification
   • Activate team as soon as there is pre-hospital notification or the stroke is identified in the emergency department
   • Rapid neurologic evaluation

4. Single call activation system
   • Central page operator who then pages team
Door-to-Needle Best Practice Strategies, cont’d

5. Timer or clock attached to chart, clip board or patient bed
   • Keep the clock visible
   • Other creative ideas such as Grease Pencil with patient arrival time on Glass Doors in ED

6. Transfer directly to CT scanner
   • Stroke team meet patient at CT scanner
   • Reduced DTN times (Caputo, L. M., et al 2017)
   • Neurological exam
   • Brain imaging
   • Initial bolus if criteria is met
Door-to-Needle Best Practice Strategies, cont’d

7. Rapid acquisition and interpretation of brain imaging
   • Reserve advanced imaging for unclear cases

8. Rapid laboratory testing (including point of care testing if indicated)
   • When Indicated-
     • Glucose
     • INR- suspicion of coagulopathy or Warfarin treatment
     • Point-of-care testing for faster turnaround
Door-to-Needle Best Practice Strategies, cont’d

9. Mix Alteplase ahead of time
   • Prepare as soon as patient is recognized as a possible Alteplase candidate
   • Can be done prior to imaging

10. Rapid access and administration of intravenous Alteplase
    • Readily available in Emergency Department or CT Scanner
Door-to-Needle Best Practice Strategies, cont’d

11. Team-based approach
   • Meet frequently
   • Review processes, care quality, patient safety parameters and clinical outcomes
   • Make recommendations for improvements

12. Prompt data feedback
   • Accurately measure/track door-to-needle times
   • Other metrics such as time to stroke team arrival and time to CT should be monitored
Door-to-Device Best Practice Strategies

1. Rapid administration of Alteplase
2. Rapid acquisition and interpretation of CT/MR Angiography
3. Rapid acquisition and interpretation of additional imaging
4. Pre-notification and rapid activation of the Neurointerventional team
5. Rapid availability of the Neurointerventional team
6. Timer or clock attached to chart, clip board or bed
Door to Device Best Practice Strategies, cont’d

7. Transfer directly to Neuroangiography suite
8. Transfer directly from brain imaging suite to Neuroangiography suite
9. Endovascular therapy ready Neuroangiography suite
10. Anesthesia Access and Protocols
11. Team based approach
12. Prompt Data Feedback
Opportunities for Key Strategy Employment

Figure 3: Use of Strategies to Improve Door-to-Needle Times With Tissue-Type Plasminogen Activator in Acute Ischemic Stroke in Clinical Practice (Xian et al. 2017)
Quality Approach at Saint Luke’s Hospital

• Continuous Data Abstraction
  • Analysis
  • Identify Gaps
  • Review with the Team
  • Create Action Plan
  • Educate & Make Changes
  • Monitor Results
  • Hardwire
Our Focus

• Good Documentation!

• Back to the Basics-
  • Real time feedback to bedside staff for their times and fallouts
  • Manager being involved in code stroke process- front line staff relationship
  • Get patients to CT as quick as possible!
  • Reliance on iSTAT labs over serum labs to improve times
  • Team meetings
  • Feedback report
Sources


• American Heart Association. (n.d.) Target Stroke phase III and health equity.
Sources


Questions

• Thank You!
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