Target: Stroke
The Rapid Management of Acute Ischemic Stroke

October 15, 2013

Thank you for joining today’s webinar, the presentation will begin shortly

A special thank you to Cornerstone Therapeutics Inc., for sponsoring this educational event
Kaiser Permanente Northern California Region

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Kaiser Permanente Northern California Region

Kaiser Permanente Northern California Awarded: 2012-2013 American Heart Association *Get With The Guidelines Heart Partner Award* by Western State Affiliate.

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Stroke Program Medical Director
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Stroke Program Coordinator
Kaiser Permanente
San Jose Medical Center
Objectives

• Discuss Kaiser Permanente Northern California’s multi-site quality and process improvement approach to achieving American Heart Association/American Stroke Association’s Target: Stroke

• Describe Kaiser Permanente San Jose’s stroke program’s application of Performance Improvement methodology toward achieving and sustaining American Heart Association/American Stroke Association’s Target: Stroke honor roll status
Kaiser Permanente Northern California – 19 Primary Stroke Center Programs

- KP Santa Clara
- KP San Jose
- KP Sacramento
- KP Roseville
- KP Redwood City
- KP Walnut Creek
- KP South Sacramento
- KP San Francisco
- KP South San Francisco
- KP San Rafael
- KP Fremont
- KP Hayward
- KP Santa Rosa
- KP Oakland/Richmond
- KP Antioch
- KP Fresno
- KP Manteca/Modesto
- KP Vallejo
- KP Vacaville
- Antioch
- Fremont
- Redwood City
- Roseville
- Sacramento
- San Jose
- San Rafael
- Santa Clara
- Santa Rosa
- South Sacramento
- South San Francisco
- Walnut Creek

Fresno

San Francisco
KP Continuum of Care
o Leverage Resources: Collaboration with MD Quality Stroke group

o Stroke Scorecard – ED metric: % IV t-PA door to drug within 60 minutes

* Friendly competition

o KP NCAL Stroke coordinator network
Kaiser Permanente Northern California Performance Improvement Model

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act  Plan  Study  Do

Changes That Result in Improvement

Implementation of Change

Wide-Scale Tests of Change

Follow-up Tests

Very Small Scale Test

Model for Improvement developed by Associates in Process Improvement
Kaiser Permanente Northern California
Performance Improvement Approach

- Increase Efficiencies: Applying PDSA
- Increase Efficiencies: The Joint Commission Disease Specific Care Primary Stroke Center PI plan: objective
- Spread best practices
  - Efficiency
  - Standardization
  - Leveraging technology
Kaiser Permanente San Jose Medical Center

Stroke

Door-to-Needle Time for t-PA Administration

Barbara Finnegan, RN, MA, CPHQ
Stroke Program Coordinator

Pezhman M. Zadeh, MD
Stroke Medical Director
KP San Jose Background

- Joint Commission certified as Primary Stroke Center for **eight** years
- AHA Gold Plus awards since 2009
- AHA Target: Stroke Honor Roll since 2011
- Located in Northern California in Santa Clara County: 10 of 11 hospitals are stroke-certified, 2 being CSCs
TISSUE PLASMINOGEN ACTIVATOR FOR ACUTE ISCHEMIC STROKE
Total Volume of tPA and Percentage of tPA 2007 – June 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Total t-PA</th>
<th>Total Ischemic</th>
<th>% t-PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>11</td>
<td>183</td>
<td>6%</td>
</tr>
<tr>
<td>2008</td>
<td>8</td>
<td>177</td>
<td>5%</td>
</tr>
<tr>
<td>2009</td>
<td>22</td>
<td>206</td>
<td>11%</td>
</tr>
<tr>
<td>2010</td>
<td>27</td>
<td>222</td>
<td>12%</td>
</tr>
<tr>
<td>2011</td>
<td>35</td>
<td>257</td>
<td>14%</td>
</tr>
<tr>
<td>2012</td>
<td>37</td>
<td>236</td>
<td>16%</td>
</tr>
<tr>
<td>Jan. - June 2013</td>
<td>19</td>
<td>107</td>
<td>18%</td>
</tr>
</tbody>
</table>
Benefits of IV tPA

- The benefits of IV tPA decline with time
- “Golden Hour” – tPA within 60 minutes of patient arrival

Reference:
1-Guidelines for the Early Management of Adults With Ischemic Stroke, *Stroke*, 2007;38;1655-1711
2-Reference: (Lancet 2004:363:768-74)
Why Choose this Project?

The primary reason this project was chosen is that decreasing the time in which tPA is given would benefit our members. KP San Jose wished to be a leader in the community as well as a World Class Hospital.
National Trends: Door to Needle Time

AHA Target 50% ≤ 60 Minutes

DTN Times Within 60 Minutes %

- 2003
- 2011
The Kaiser Permanente Improvement Model

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act | Plan
--- | ---
Study | Do

Model for Improvement developed by Associates in Process Improvement
How We Chose Our Team

- Project Sponsors
- Co-leaders
- Multi-disciplinary team
  - ED
  - Lab
  - Pharmacy
  - Radiology
  - Neurologist
  - Improvement Advisor
Establish SMART Goals

- Decrease door to needle time for tPA administration in the ED from an average of 97 minutes on 10/21/10 to 60 minutes by 10/31/11

- For 85% of patients that present with and qualify as a stroke alert, the ED MD will make a decision on whether to give tPA within 40 minutes by 10/31/11
What Really Happens in the ED During A Stroke Alert?

Door to Needle Time for tPA Administration in ED Stroke Alerts (Pt... arrives by Ambulance)

<table>
<thead>
<tr>
<th>Role</th>
<th>Flowchart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td><img src="image" alt="Patient Flowchart" /></td>
</tr>
<tr>
<td>Charge Nurse</td>
<td><img src="image" alt="Charge Nurse Flowchart" /></td>
</tr>
<tr>
<td>Registration Clerk</td>
<td><img src="image" alt="Registration Clerk Flowchart" /></td>
</tr>
<tr>
<td>ED MD</td>
<td><img src="image" alt="ED MD Flowchart" /></td>
</tr>
<tr>
<td>Primary RN</td>
<td><img src="image" alt="Primary RN Flowchart" /></td>
</tr>
<tr>
<td>ED Tech</td>
<td><img src="image" alt="ED Tech Flowchart" /></td>
</tr>
</tbody>
</table>
1) Advance hospital notification by EMS,
2) Stroke Team notification
3) Single-call activation system
4) Rapid interpretation of brain imaging
5) Rapid interpretation of lab tests
6) Team based approach
7) Rapid access to tPA
Application of PI methodology

Driver Diagram

Decrease Door to needle time for t-PA from average of 97 minutes in 10/21/10 to 60 minutes by 10/31/11 2011

Primary Drivers

- Identification of patient
- Patient assessment (CT no bleed; lab nl)
- Patient/family approval for tPA
- MD decision to give tPA
- Administration of tPA

Secondary Drivers

- Arrival mode: ambulance versus walk-in
- Clarity of symptoms
- CT results within 40 minutes
- Lab results within 40 minutes
- Information provided
- Family availability
- Pt./family comprehension
- Time needed for discussions
- Neurologist available in timely fashion
- Pt./family can give accurate hx and timetables
- ED MD to document time to give/not give tPA
- RNs calculate tPA dose in advance
- Primary RN/charge calls pharmacy ASAP to mix
- Pharmacy delivers tPA within 14 minutes
- ED MD/neo don’t vacillate on decision
<table>
<thead>
<tr>
<th>Measure</th>
<th>Operational Definition (How is the measure calculated?)</th>
<th>Type (outcome, process, balancing)</th>
<th>Data Collection Plan (How will you collect data &amp; how frequently)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door to needle time</td>
<td>Time patient is registered in the ED to the time the bolus dose of tPA is charted in the medication record</td>
<td>Outcome</td>
<td>Document times on Project spread sheet for every tPA given</td>
</tr>
</tbody>
</table>
| Door time to time decision made to give/not give tPA | Time patient is registered in the ED to time the ED MD documents that decision is made to give or not give tPA | Outcome | Data collected from ED MD notes – either narrative or part of stroke smartphrase (electronic reminder tool) 
Document time on Project spread sheet for each stroke alert |
| CT | • Pt. will arrive in CT within 16 minutes of Pt. arrival to ED  
• CT will be completed within 21 minutes of Pt. arrival to ED (5 minutes)  
• CT results will be called within 31 minutes of Pt. arrival to ED (10 minutes) | Process | These three times are documented on CT stroke alert log; will be transferred to the Project spread sheet |
### How Will We Know a Change Is an Improvement? Family of Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Operational Definition</th>
<th>Type (outcome, process, balancing)</th>
<th>Data Collection Plan (How will you collect data &amp; how frequently)</th>
</tr>
</thead>
</table>
| Lab     | •RN will draw labs within 10 minutes of pt. arrival to ED  
•Lab specimens will be sent to lab within 5 minutes of draw  
•Lab staff will process & report lab results to ED within 35 minutes ED arrival (within 25 minutes of receiving specimen) | Process | These three times are documented on lab stroke alert log; transfer to the Project spread sheet |
| Pharmacy| •Will mix and deliver tPA within 54 minutes of ED arrival  (within 12 minutes of call to mix it) | Process | These three times are kept on pharmacy log; transfer to the Project spread sheet |
Timeline Graph: 0-60 Minutes
ED Arrival to tPA

- Stroke Alert called
- Lab spec. received (5 min)
- Pt... arrives in CT (6 min)
- CT done (5 min)
- Lab results reported (23 min)
- ED MD decision: to give / not to give tPA
- Pt... arrives in CT (6 min)
- CT done (5 min)
- CT results reported (10 min)
- Pharmacy delivers tPA (12 min)
- RN checks & hangs tPA (≤8 min)

Door time
Blood drawn
Pharmacy delivers tPA (12 min)
RN checks & hangs tPA (≤8 min)

0 10 15 16 21 31 33 40 52 60

Internal department goals in red
What Change Can We Make that Will Result in Improvement?

PDSA Benefits

- Try your change on a small scale
- Use many consecutive cycles to obtain information to determine how effective your change is
- Gives results rapidly
- Reduces risk of something going wrong
- Encourages team
What Changes Lead to Improvement?

**Act**
- Lab staff calls ED if no specimen within 10 minutes and draws in CT if needed, CT calls ED if no pt. w/in 16 min.
- Time goals set for each team members’ tasks

**Plan**
- Unit assistant brings lab labels to stroke room, & tubes specimen to lab

**Study**
- ED tech assigned to stroke alert; transfer pt. to/from CT; perform EKG
- 2 RNs assigned to stroke alert

**Do**
- ID stroke pt.

**Staff Roles**
- MD Decision to give tPA
Decrease Variation!

- Delineates roles of team members
- Specifies duties at time intervals
- Empowerment
- Increases standardization

<table>
<thead>
<tr>
<th>GOAL TIME (Minutes)</th>
<th>Primary Nurse (Grab Stroke Packet)</th>
<th>Secondary Nurse</th>
<th>EDT</th>
<th>UA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>□ Identify Door Time _____</td>
<td></td>
<td>□ Weigh pt _______</td>
<td>□ Doc. on Stroke log</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>□ NPO sign</td>
<td>□ Print/bring labels to RM</td>
</tr>
<tr>
<td>0-10</td>
<td>□ Chart Stroke alert time _____</td>
<td>□ Lab drawiSTAT</td>
<td>□ VS q 15 mins.</td>
<td>□ tube lab specimen</td>
</tr>
<tr>
<td></td>
<td>□ Direct Code</td>
<td>□ Fingerstick</td>
<td>□ Gown patient</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ mNIHSS q 15</td>
<td>□ Get the IV pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-16</td>
<td>□ CT w/ EDTech/chart time</td>
<td>□ Get &amp; set IV pump</td>
<td>□ Pt to CT scan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Calculate t-PA independently</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ MD/Family t-PA discussion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-21</td>
<td>□ Document time back from CT</td>
<td></td>
<td>□ Bring Pt back from CT</td>
<td></td>
</tr>
<tr>
<td>0-28</td>
<td>□ CT result back</td>
<td></td>
<td>□ EKG</td>
<td></td>
</tr>
<tr>
<td>0-32</td>
<td>□ Port CXR done</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Lab result back</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-40</td>
<td>□ MD decide give / not give tPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Call Pharmacy for t-PA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-55</td>
<td>□ Pharmacy delivers t-PA</td>
<td>□ Double check tPA</td>
<td>□ Double check tPA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Double check tPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-60</td>
<td>□ Administer tPA bolus</td>
<td>□ Administer tPA drip</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ VS &amp; mNIHSS q 15 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Stroke Educ Packet to pt/family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Complete VS &amp; mNIHSS tool &amp; do w/ receiving nurse at hand-off</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Swallow Screen</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Primary nurse reminders:

1. Remind MD to use order sets as appropriate
2. Document stroke team members: MD ________ Primary Nurse______ Secondary Nurse______
   EDT ________ UA ________
3. Set VS / mNIHSS to the quarter hour
4. Report time of vs/mNIHSS at ED/ICU hand off
   VS q 15 (8) _______ mNIHSS q 15 (8)_______
   last vs/mNIHSS ________
5. Document reason for delay
Our tPA Hall of Fame
Decrease Door to needle time for t-PA from average of 97 minutes in 10/21/10 to 60 minutes by 10/31/11 2011

Primary Drivers

- Staff Roles and time goals
- Identification of patient
- Patient/family agrees to tPA
- MD decision to give tPA
- Administration of tPA
Arrival Mode Affects Your Time: Car Versus Ambulance

Time: Door to Stroke Alert Initiation

- Car
- Ambulance

Minutes

Months
It’s Easy to Identify a Stroke Patient… Isn’t it??

F-A-S-T
- Facial Weakness
- Arm Drift
- Speech Slurred
- Time – Call 9-1-1

The first 3 hours are critical
Peninsula Stroke Association
650.565.8485  www.psastroke.org
What Changes Lead to Improvement?

Act
Plan
Study
Do

Triage tool revised to triage pt. arriving by car with vague s/s

Stroke assessment tool revised to include appropriate s/s

Method of notifying ED MD about potential pt.

MD referred to RNs triage tool, then did independent assessment

MD Decision to give tPA

Staff Roles

ID stroke pt.

Testing and adaptation
ED RN Triage Tool

- F-A-S-T tool doesn’t catch all patients
- Tool to identify patients with vague symptoms
- Physician evaluation is key for decision

<table>
<thead>
<tr>
<th>CTBAD</th>
<th>FEATURE</th>
<th>Yes or NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Features – any of these present upon arrival</td>
<td>Confusion - any deviation from normal mental baseline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any new onset of altered mental status</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arm Drift</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Balance problems (i.e. dizziness)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facial Droop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Numbness (unilateral)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speech Disturbance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visual disturbance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weakness (unilateral)</td>
<td></td>
</tr>
</tbody>
</table>

| Time                   | 0 – 6 hours from time last known well        |         |

| ANY RISK FACTORS       |                                             |         |
| Blood pressure         | Hx of hypertension                          |         |
|                        | Hx of CAD                                    |         |
| Age                    | ≥ 60 years                                   |         |
| D factors              | Hx of Diabetes                               |         |
|                        | Hx of Dyslipidemia (hx of high cholesterol)  |         |

Rapid Roomed (circle): Yes or No
If No, why ____________________________

DO NOT PLACE IN PATIENT CHART

Created by Kaiser Permanente San Jose 12/2010
Decrease Door to needle time for t-PA from average of 97 minutes in 10/21/10 to 60 minutes by 10/31/11 2011

**Primary Drivers**

- Identification of patient
- Patient assessment (CT no bleed; lab nl)
- Patient/family approval for tPA
- MD decision to give tPA
- Administration of tPA

**Secondary Drivers**

- Clarity of symptoms
  - CT results within 40 minutes
  - Lab results within 40 minutes

**Initiatives & Metrics**

- Arrival mode: ambulance vs. walk-in
- Information provided
- Family availability
- Pt./family comprehension
- Time needed for discussions

- Neurologist available
- Pt./family can give accurate hx and timetables
- ED MD to document time to give/not give tPA

- RNs calculate tPA dose in advance
- Primary RN/charge calls pharmacy ASAP to mix
- Pharmacy delivers tPA within 12 minutes
- ED MD/neuro don’t vacillate on decision
MD Decision to give tPA ID stroke pt.

ED MD will discuss possibility of tPA with pt./family prior to Ct scan

Pt./family given tPA flyer to read

ED MD will document time decision was made to give/not give tPA; added to Stroke Alert smartphrase

Staff Roles

Act

Plan

Study

Do

What Changes Lead to Improvement?

We Can Do It!

Act

Plan

Study

Do
ED Physician Documentation

STROKE MEDICAL DECISION MAKING ---
Smartphrase in Electronic Medical Record

STROKE MEDICAL DECISION MAKING

Last known well:
Discovery of stroke symptoms:
Neurologist consulted:
Stroke alert called:
tPA administration:

• If tPA not given in 0 - 4.5 hour window- reason:
• Time decided to give/not give tPA:

NIH Stroke Scale:
### What Changes Led to Improvement?

<table>
<thead>
<tr>
<th>Change Concept</th>
<th>PDSAs</th>
<th>Adopt, Adapt, Abandon?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve work flow</td>
<td>Identify staff who will participate in stroke alerts; delineate their roles</td>
<td>Adopt: 2 RNs (primary &amp; secondary), ED tech, Unit assistant, physician</td>
</tr>
<tr>
<td>Focus on time</td>
<td>Triage tool to identify patients arriving by car that demonstrate vague symptoms</td>
<td>Adapted triage tool several times then adopted</td>
</tr>
<tr>
<td>Focus on time</td>
<td>MD will initiate discussion about possible tPA with pt./family prior to CT scan</td>
<td>Adopt</td>
</tr>
<tr>
<td>Focus on variation</td>
<td>Defined shorter internal process time goals for ED staff, MD, lab, CT, and pharmacy</td>
<td>Set internal department goals as well as overall goal to give tPA within 60 minutes. Adapted then adopted</td>
</tr>
</tbody>
</table>
Stroke Alert Debriefing Tool

Stroke Alert Feedback Report

DATE: __________  Pt. Name: __________________________________ MRN: __________

DOOR TIME: ____________  Arrival: Ambulance or Car  ESI: ______

E.D. triage time: ________  CTbad Triage tool used: yes or no

Time to Room patient: (goal 5 minutes) ______ minutes
Reason > 5 minutes: ____________________________

Door to Lab Draw (goal ≤ 10 minutes): ______ minutes
Reason > 10 minutes: ____________________________

Door to Stroke Alert call (goal ≤ 10 minutes): ______ minutes
Reason > 10 minutes: ____________________________

Door to Pt. arrival in CT/MRI (goal ≤ 16 minutes): ______ minutes; CT/CTA at same time: yes or no
Reason > 16 minutes: ____________________________

Door to tPA decision (goal ≤ 40 minutes): ______ minutes; Decision time documented? Yes or no
Reason > 45 minutes: ____________________________
Reason for no TPA: NA or ____________________________

Door to pharmacy call to mix tPA (goal ≤ 41 minutes): ______ minutes
Reason > 41 minutes: ____________________________

Door to TPA delivery by pharmacy (goal ≤ 53 minutes): ______ minutes (delivered 12 minutes after call)
Reason > 60 minutes: ____________________________

Door to TPA administration of bolus dose (goal ≤ 60 minutes): ______ minutes
(start bolus within 5 min. after tPA delivered)
Reason > 60 minutes: ____________________________

EDT present: yes or no  2 RNs present: yes or no  Submitted by: __________

Remind MD: 1) Use CVA/TIA Stroke order set?  Yes or no  2) Use stroke smartphrase

ED MD: ____________  Debriefing done after stroke alert?  Yes or no? EKG Yes/No

Comments: ____________________________

Submitted by: __________
Door-To-Needle Time for tPA Administration (Jan 2010 – Jan 2012)
Run Chart: Door to tPA Administration Time (Jan 2010 – Jan 2012)

- Target: < 60 Minutes
- PDSAED triage tool many revisions 12/9/10 - 4/29/11
- ED AD started observing SA
- PDSA 2 RNs 11/1/11
- Project started 10/22/11
- PDSA ED Tech role 12/1/11
- PDSA: SA debrief tool
- SA process rolled out to all ED staff 6/1/11

(X Axis) Individual Patients Who Received IV t-PA

- Door to Needle
- Median
## Sustainability Plan

<table>
<thead>
<tr>
<th>Item</th>
<th>Measure</th>
<th>Responsible Person</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED staff Surveillance</td>
<td>Will monitor: use of triage tool,</td>
<td>Assistant directors</td>
<td>Each stroke alert -- specific trigger times for action</td>
</tr>
<tr>
<td></td>
<td>• lab specimen draw and delivery</td>
<td>ED Director</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• transport of patient to CT,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• EKG completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Time to initiate tPA med,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use of debriefing tool</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED MD surveillance</td>
<td>Will monitor:</td>
<td>ED MD stroke champion</td>
<td>Each stroke alert -- specific trigger times for action</td>
</tr>
<tr>
<td></td>
<td>• Time MD saw pt.</td>
<td>ED chief</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Time stroke alert was initiated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Time decision was made to give/not give tPA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT, lab, pharmacy</td>
<td>• CT will monitor: time to complete CT and time radiologists reported</td>
<td>CT lead/Radiology director</td>
<td>Each stroke alert -- specific trigger times for action</td>
</tr>
<tr>
<td>surveillance</td>
<td>radiologists reported results to ED MD</td>
<td>Lab Assistant Director</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lab will monitor: processing time, and time to report results to</td>
<td>Pharmacy Inpatient Supervisor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ED MD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pharmacy will monitor: tPA prep time, and time to deliver tPA to ED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tPA door to needle time</td>
<td>• tPA will be initiated ≤ 60 minutes of patient arrival to ED</td>
<td>All departments</td>
<td>Each tPA given</td>
</tr>
<tr>
<td>surveillance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sustaining Goal: Door–To-Needle Time for tPA Administration

January – December 2012

Target ≤ 60 Minutes

(x axis) Individual Patients who received tPA
Stroke 2012 Summary – Hoorahs!

• 38 patients received t-PA
  – 16% of ischemic patients! (nat’l average 5-6%)

• 70% of patients received t-PA within 60 minutes
  TARGET: STROKE award

• Average time from arrival was 60 minutes
Sustaining Goal: Door–To- Needle Time for tPA Administration

January – August 2013

Target ≤ 60 Minutes
### PI Project: Summary of Goals
#### 2nd Quarter 2013

<table>
<thead>
<tr>
<th>Number of Stroke Alerts</th>
<th>49</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tPA cases</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door to needle time for tPA administration in the ED ≤ 60 minutes</td>
<td>0:55</td>
</tr>
<tr>
<td>ED MD sees patient within 8 minutes of pt. arrival to ED</td>
<td></td>
</tr>
<tr>
<td>ED MD calls stroke alert within 10 minutes of arrival to ED</td>
<td>0:10</td>
</tr>
<tr>
<td>ED RN draws/sends blood avg. 10 minutes of arrival to ED</td>
<td>0:19</td>
</tr>
<tr>
<td>ED RN arrives w/ patient in CT avg. 16 minutes of arrival to ED</td>
<td>0:20</td>
</tr>
<tr>
<td>CT completed avg. 21 minutes of pt. arrival to ED</td>
<td>0:25</td>
</tr>
<tr>
<td>CT scan performed in average of 5 minutes of receiving pt.</td>
<td>0:04</td>
</tr>
<tr>
<td>CT results called to ED MD within 31 minutes of arrival, 75% of time</td>
<td>0:32</td>
</tr>
<tr>
<td>CT read per radiologist an average of 10 minutes</td>
<td>0:07</td>
</tr>
<tr>
<td>Lab results to ED MD within 35 minutes of arrival</td>
<td>0:42</td>
</tr>
<tr>
<td>Lab staff complete lab tests within 25 minutes of receiving specimen</td>
<td>0:19</td>
</tr>
<tr>
<td>ED MD orders tPA within 40 minutes of pt. arrival to ED</td>
<td>0:37</td>
</tr>
<tr>
<td>Pharmacy delivers tPA within 1 hour of pt. arrival to ED</td>
<td>0:39</td>
</tr>
<tr>
<td>Pharmacy delivers tPA within 14 minutes of receiving call to mix it</td>
<td>0:11</td>
</tr>
<tr>
<td>ED RNs do double-check and hang tPA within 5 minutes of receiving tPA</td>
<td>0:15</td>
</tr>
</tbody>
</table>
AHA Measure: Target: Stroke Annual Percentage tPA within 60 Minutes

Time to Intravenous Thrombolytic Therapy

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 Period: 01/2010 - 12/2013; Site: Kaiser Foundation Hospital - San Jose (35522)

Data For: Time to Intravenous Thrombolytic Therapy

<table>
<thead>
<tr>
<th>Benchmark Group</th>
<th>Time Period</th>
<th>Numerator</th>
<th>Denominator</th>
<th>% of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Hospital</td>
<td>2010</td>
<td>7</td>
<td>27</td>
<td>25.9%</td>
</tr>
<tr>
<td>My Hospital</td>
<td>2011</td>
<td>22</td>
<td>28</td>
<td>78.6%</td>
</tr>
<tr>
<td>My Hospital</td>
<td>2012</td>
<td>19</td>
<td>27</td>
<td>70.4%</td>
</tr>
<tr>
<td>My Hospital</td>
<td>2013</td>
<td>10</td>
<td>10</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Note: Data is intended for internal quality improvement and is not intended for external presentation or publication of benchmark data.
PI Project Summary

- Structured, standardized Stroke Alert process
  - Defined roles and time parameters
- ED triage tool to identify vague stroke symptoms, especially on walk-ins
- ED Physician use Smart Phrase
- Prior to CT, begin tPA discussion
- Complete CT first, CTA later
- Decision making within 40 minutes
- Debrief after each stroke alert
Thank You to Our Team!!

**Sponsors:**
- Terry Blay, MD, Chief of Emergency Department
- Susan Lin, RN, Interim Director of Emergency Nursing
- Robin Parsons, RN, Assistant Medical Group Administrator

**Co-Leads:**
- Catherine Peterson, RN, Assistant Director Emergency Nursing
- Carol Bautisa, RN, Clinical Educator
- Lisa Hung, DO, Emergency
- Kevin Ernsting, MD, Emergency

**CT:**
- David Katz, MD, Chief of Radiology
- Thomas Tharayil, RT, CT Lead

**Lab:**
- Thuy Pinheiro, CLS, Assistant Director

**Pharmacy:**
- Anita Nguyen, Pharm D, Inpatient Director
- Quang Minh Nguyen, PharmD, Assistant Director
QUESTIONS?