Enhancing Your Skills in Stroke Quality Improvement & Data Analysis: Using Data to Drive Outcomes

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Disclosures

• Christy Franklin has no actual or potential conflict of interest in relation to this presentation.

• Lynn Hundley has no actual or potential conflict of interest in relation to this presentation.
Objective

• Describe how the use of stroke performance measures enhances adherence to guidelines and promotes interventions known to improve outcomes, provide an example of utilizing data to identify and address improvement opportunities and explain the collection of monthly data points for stroke performance measures.

Your Mission

(should you choose to accept it...)

• Identify the PI mission for your program:
• Create a culture of process improvement and decision making that is patient-focused, and data driven

• Ideally, this culture should:
  • Support the organizations core values
  • Enable growth
  • Allow for the provision of safer, more effective care at a lower cost
Examples of Scientific Methodology

FOCUS PDCA

FIND PROCESS IMPROVEMENT OPPORTUNITY

CHARACTERIZE WHAT IS NOT AS IT SHOULD BE

CLARIFY CURRENT KNOWLEDGE OF THE PROCESS

UNCOVER ROOT CAUSES OF PROCESS VARIATION

START IMPROVEMENT CYCLE

Brainstorming

ACT PLAN

Checklist

Pareto Chart

Run Chart

Flow Chart

Cause & Effect Diagram

Brainstorming

DMAIC

Performance Improvement Methodology

Define

Measure

Analyze

Improve

Control

Define the Problem

Measure the Current State

Analyze the Root Causes

Design & Implement the Solution

Measure the Impact & Establish Control Plan
Comparison of Frameworks

<table>
<thead>
<tr>
<th>FOCUS / PDCA</th>
<th>PDCA</th>
<th>DMAIC</th>
<th>Training Within Industry (TWI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Find a process to improve</td>
<td>Plan</td>
<td>Define</td>
<td>No defined step, but pre-work/planning is needed</td>
</tr>
<tr>
<td>Organize team that knows the process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Clarify current knowledge of the process</td>
<td>Plan</td>
<td>Measure</td>
<td>Break Down the Job</td>
</tr>
<tr>
<td>3 Understand causes of process variation</td>
<td>Plan</td>
<td>Analyze</td>
<td>Question Every Detail</td>
</tr>
<tr>
<td>4 Select the process improvement</td>
<td>Do,</td>
<td>Improve</td>
<td>Develop the New Method</td>
</tr>
<tr>
<td>Plan, Do, Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Act</td>
<td>Act</td>
<td>Control</td>
<td>Apply the New Method</td>
</tr>
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</table>

Tools
Quality is a process not an event...

- Anonymous

Clinical Practice Guidelines

• Guidelines are the basis for protocols for treating the Acute Stroke Patient
  • e.g. BAC - www.stroke-site.org/guidelines/guidelines.html

• Drive the quality care of stroke patients

• GWTG-Stroke helps facilities ensure continuous improvement of stroke treatment by aligning clinical care with *evidence-based guidelines*
Evidence-Based Practice

• A problem-solving approach to the delivery of health care
• Integrates the best evidence from studies and patient care data with clinician expertise and patient preferences and values
• Highest quality of care and best patient outcomes can be achieved

Design the Process: Using Guidelines to Develop Tools for Facilitating Best Practice

• Stroke-specific policies/protocols that are routinely reviewed
• Stroke-specific order sets
• Stroke-specific documentation tools
  • NIHSS
  • ED stroke alert flow sheet
  • Frequent VS and Neuro Assessment
  • Patient Education and Stroke Risk Reduction
  • Dysphagia Screening
Tools are in place….now what?

• Are our processes ensuring adherence to the clinical guidelines?

• Do they promote interventions to improve outcomes?

Data Collection

• How?
  • Sampling vs 100% abstraction
  • Inter-rater reliability/ validation process
  • Home grown database/ Registry (e.g. Get With The Guidelines®, Coverdell)

• When?
  • Retrospective vs prospective data

• Who?
  • Who will collect the data?
  • EHR integration?

What works for your organization?
Data Collection

• What data should we collect?
  • Door to Treatment data
  • Core measure data
  • Outcome data

• Why?
  • Get With The Guidelines-Stroke
    • Access to the most up-to-date research and scientific publications
    • Clinical tools and resources
    • QI field staff support
    • Submission of CMS Core Stroke Measures and other data
    • Real time performance feedback reporting for continuous quality improvement
    • External Benchmarking

Door to Treatment Goals

Door to treatment ≤60 min

0 min
Suspected stroke patient arrives at ED

≤10 min
Complete initial MD evaluation, including patient history and time line/corticosteroid onset

≤15 min
Notify stroke team (including neurologist or neurologist expert)

≤25 min
Initiate CT scan

≤45 min
Interpret CT scan and labs

≤60 min
Give Anticoagulation and initiate thrombolysis in eligible patients
Data Review

- Regular review of data points will address areas needing improvement
- For example, at SMMC:
  - Stroke program performance measurement data is distributed monthly to interested stakeholders as well as posted to Intranet for review by staff
  - Door-to-Treatment team meets monthly to review treated patient cases
  - Multidisciplinary stroke leadership team meets quarterly to review data
Performance Measurement Reporting Form

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEASURE</th>
<th>IMPLEMENTATION/DEPARTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIA Performance Measures (PAM)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quarterly Presentation of Data

• Reviewed by stroke leadership team at quarterly meeting

• PPT format

Process Improvement: Examples from SMMC

• Documentation of discharge NIHSS

• Stroke alert lab TAT
The Guidelines

- During the original t-PA clinical trial the NIHSS was completed at baseline prior to treatment, at 2 hours post-treatment, at 24 hours, at 7-10 days, and at 3 months.
- Today, hospital protocols vary in the frequency of NIHSS.
- SMMC – interest in hospital outcomes

SMMC Adopted Process

NIHSS to be completed:
- Acute stroke and TPA patients
  - Upon arrival, 2 hours post TPA, 24 hours post TPA, with any change in status, and upon discharge
- Non-treated patients
  - Upon admission, with change in status, and upon discharge.
Identified the Problem - FOCUS

• **Found a problem** that we were not following our own established protocol

• **Organized a team** of Stroke Unit nurses and manager

• **Clarify** – No clear understanding of who was responsible for doing the assessment

• **Uncover root cause** - Team model with unclear responsibility for certain discharge tasks

• **Start** improvement cycle
Plan – Do

- **Plan** – Team clarified discharge roles and educated staff
  - Bedside RN made responsible for completing NIHSS with assessment on day of discharge
  - Education planned
- **Do** – Staff educated, target set and process implemented.

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**Check - The Data**

![Bar Chart]

<table>
<thead>
<tr>
<th>Year</th>
<th>% NIHSS at Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>75</td>
</tr>
<tr>
<td>2011</td>
<td>87</td>
</tr>
<tr>
<td>2012</td>
<td>94.3</td>
</tr>
<tr>
<td>2013</td>
<td>96</td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
</tbody>
</table>
PI in Action

• Improvement seen, but not where we wanted to be
• Team opted to move towards an accountability process
  • Chart review and staff member discharging patient without a documented NIHSS was identified
• Staff member received a memo with cc to nurse manager regarding the failed measure

MEMO

Date:

Dear ____________,

In review of our ____________ Stroke Data you were identified as having one or more patients that did not have documentation of a discharge NIH Stroke Scale. For non-thrombolytic candidates, it is our protocol to perform an NIHSS at baseline, with any change in status, and at discharge. Please be sure to document the discharge NIHSS in the appropriate column. If you have any questions, please don’t hesitate to contact me.

Thank you for your support in our continuing efforts to improve patient care.

[Signature]

Stroke Program Coordinator

P-D-C-A

• Continue to monitor data monthly
• Continue to review each chart failing measure to identify discharging nurse
• December 2014 – all 62 patients had documentation of discharge NIHSS for 100% compliance
FOCUS - Lab Turnaround Time

• 2008 - Identified problem that reporting of some lab results exceeded 45 minute NINDS goal
• Team organized including stroke coordinator, ED managers and staff, and laboratory personnel
• Clarified current process...

Stroke Alert Lab TAT

• Originally obtained time of collection from laboratory system (time entered by the lab tech)
• Blood being “tubed” to main lab
• No way of tracking when blood left ED
  • ? Delay in actual transport
  • ? Delay in lab acknowledging receipt of specimen

Very high avg door to collection time
**PI in Action**

- **Focus-PDCA**
- Stroke alert blood draw basket created and placed in CT scan room of ED
- Bright yellow “stroke” sticker placed on outside of specimen bag to indicate stroke alert (run labs stat)
- Began monitoring time of when ED nurse documented the blood was drawn rather than using the time lab stated it was drawn
- Stat lab included in new ED construction
- ED tech to draw blood and hand-deliver to stat lab (no tube system use)

**PI in Action**

- Truer picture of where to focus efforts in improving TAT
- Blood being drawn quickly
- Actual delay in getting the specimen to lab
- Data sent to ED/lab for review each month indicating which patients failed measure

**ED STROKE FLOW SHEET**

<table>
<thead>
<tr>
<th>Time Seen By ED MD</th>
<th>Time to CT</th>
<th>Time CT Results Called to ED</th>
<th>Time Lab Drawn</th>
<th>Time Lab Results Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time:</td>
<td>Who:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(GOALS: Door to stroke team arrival < 10 minutes; Door to CT completion < 15 minutes; Lab results available < 45 minutes)

EN Signature: __________________________ Date: __________________________
**NHC: DTN Project Overview**

- **Project Description**: In 2011, 24 ED Stroke Patients were treated with rt-PA out of a total ischemic stroke patient population of 558 patients (4.5%). Of the 24 patients, only 4 (16%) had a door-to-needle time of 60 min or less. Timely use of rt-PA benefits the patient in the following ways:
  - Drug Effectiveness: 33% probability of a higher-score recovery outcome vs. no treatment
  - Increased Benefit: Increased probability of favorable outcome at 3 months post-event as OTT (Last known well to rt-PA administration) decreased showing statistical significance ($p=0.005<<0.05$)

- **Project Scope**: All stroke patients eligible for rt-PA (LKW).
  - Start: Patient arrival at ED / End: Administration of rt-PA

- **Project Goal**: Achieve median DTN time of 60 min or less.

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**What we wanted to know: How does the process perform?**

**2011 DTN Performance**

The process has NO statistical outliers despite the poor performance to goal and high variation in DTN times.

What we found: The process is displaying more variation than our goal can permit.
What we wanted to know: What is the overall process?

rt-PA Admin Process Map

- Process was mapped with System Stroke Team and there was agreement that this was the basic process from hospital to hospital
- Variation was noted in the VSM (Value Stream Map) study of the Current State (see next slide)

What we found: All 4 adult hospitals use the same basic process.

What we wanted to know: How does the process flow?

Current State VSM

- Cross-location and cross-functional team walked each adult hospital’s process
- Process observations were made for each process step
- Process was timed (stopwatch, checklists, timestamps)
- Current State VSM was assembled based on findings
- Expected DTN Time for 12/01/11 – 03/31/12 was 110 min, which is worse than the 2011 baseline
  - Some Hawthorn effect seen after the study began

What we found: Most of the process time is spent waiting after the patient is done in Radiology and there are opportunities to improve.
What we wanted to know: What is the impact of our efforts?

**Impact of Top 3 Priorities**

- **#1 Tx Decision**
- **#2 Lab Label**
- **#3 rt-PA Box**

What we found: Focusing on just the Top 3 improvement priorities alone will address over 70 min of the 110 min expected DTN Time.

What we wanted to know: How does our view of risk impact flow?

**View of Risk**

- **Aspect**
  - Burden of Proof
  - Timeliness
  - Typical Application
  - Management of Risk (Control Phase)

What we found: Our view of risk will determine the process management approach we take.
What we wanted to know: How is delay in the Tx Decision addressed?

#1: Tx Decision Roadmap

- Mapped with input from EBP research and Stroke Neurologists (red is contraindication)
- Minimizes delay between receiving required results and issuing an order
- Included in related physician onboarding documentation

What we found: This is the EBP and NHC Neurologist accepted Tx Criteria. Following this and the broader process for Acute Stroke will reduce delays in Tx.

NHC: Improvement Sustained??

DTN Scorecard for Date Range 1/2014 thru 12/2014

<table>
<thead>
<tr>
<th>Predictor</th>
<th>NAH</th>
<th>NBH</th>
<th>NH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>rt-PA Tx Cases</td>
<td>10</td>
<td>22</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>Goal Time (min)</td>
<td>60</td>
<td>65</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Above Goal</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Within Goal</td>
<td>12</td>
<td>15</td>
<td>4</td>
<td>31</td>
</tr>
<tr>
<td>% Within Goal</td>
<td>40%</td>
<td>100%</td>
<td>0%</td>
<td>30%</td>
</tr>
<tr>
<td>Average Time</td>
<td>67</td>
<td>50</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

DTN Time (All NHC) 1/2014 thru 12/2014

- Average Time: 60 minutes
- Median Time: 50 minutes
- % Within Goal: 30%
Celebrate Your Success!!

NHC Facility       DTN (mins)
• Norton Brownsboro  23
• Norton Audubon     37
• Norton St. Mattews 37
• Norton Hospital    21

Resources/Websites

• Brain Attack Coalition - www.stroke-site.org/guidelines/guidelines.html
• American Heart Association/American Stroke Association - www.americanheart.org
• Comprehensive Overview of Nursing and Interdisciplinary Rehabilitation Care of the Stroke Patient
• Guidelines for the Management of Spontaneous Intracerebral Hemorrhage
• NIHSS Certification - www.asatrainingcampus.org
• AHA/ASA Representative
• The Joint Commission - http://www.jointcommission.org/
• American Association of Neurological Nursing - www.AANN.org
• Get with the Guidelines® – www.americanheart.org/getwiththeguidelines
Thank you!