STROKE OF GENIUS - IMPROVING STROKE CARE IN THE ED
SPECTRUM HEALTH GRAND RAPIDS - BUTTERWORTH

Publication Year: 2014

SUMMARY:
The purpose of the acute stroke Rapid Improvement Event (RIE) was to improve performance of Target Stroke® recommendations and the thrombolytic therapy core measures.

SUBMISSION CATEGORY:
- Safety and Quality
- Flow and Efficiency
- Care Coordination
- Patient Experience
- Cost-Consciousness

HOSPITAL: Spectrum Health
LOCATION: Grand Rapids, MI
CONTACT: Adrien M. Ross MSN, RN, NE-BC Quality Improvement Specialist 2, Adrien.Pop@spectrumhealth.org

CATEGORY:
- A: Arrival
- C: Clinician Initial Evaluation
- D: Disposition Decision/Throughput

KEY WORDS:
- Care Transitions
- Communication
- Consults
- Door-to-Doc
- Geriatric
- Hand-Offs
- Lean
- Length of Stay
- Patient Satisfaction
- Rapid Intake
- Safety Net
- Wait Times

HOSPITAL METRICS:
- Annual ED Volume: 106,000
- Hospital Beds: 838
- Ownership: Not-For-Profit
- Trauma Level: 1
- Teaching Status: Yes

TOOLS PROVIDED:
- N/A

CLINICAL AREAS AFFECTED:
- Ancillary Departments
- ED
- EMS
- Neurology
- Radiology

STAFF INVOLVED:
- Administrators
- Ancillary Departments
- Clerks
- Communications
- Consult Services
- ED Staff
- Nurses
- Pharmacists
- Physicians
- Social Workers/Care Managers
- Technicians

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Innovation

Each year, 795,000 people experience a stroke—one every 40 seconds—with ischemic stroke accounting for 87% of stroke cases. On average a stroke code is initiated on 3 patients per day in the Emergency Department at Spectrum Health - Butterworth. Door-to-needle treatment times were not meeting benchmark standards. The purpose of the acute stroke Rapid Improvement Event (RIE) was to improve performance of Target Stroke recommendations and the thrombolytic therapy core measures.

Using an A3 method, staff participated in a 4 day Rapid Improvement Event (RIE) to develop a care model that would impact patients presenting with stroke-like symptoms, with a focus on ischemic stroke patients. Lean tools were utilized to capture waste and bring transparency to the process. Key process implementations include; standard work for all members of the stroke care team, a standardized pathway for stroke patients in alignment with national practice guidelines, and staff education to best practice standards of stroke care and IV tPA administration.

Innovation Implementation

The use of lean tools to implement change has allowed the Butterworth ED to make significant process changes in a minimal time footprint. A3 thinking is an organized method to understand the current state, develop the future state, track metrics for improvement and to identify the gap and waste in current process. During a rapid improvement event, A3 thinking is applied and an interdisciplinary team is pulled together for 4 days to develop and implement an experiment to impact the desired metrics. The future state is identified in a way to minimize waste and add value to the patient's experience. Most importantly, lean principles are striving to create a culture of continuous improvement. This engages all members of the interdisciplinary team to make continuous improvements and quickly identify waste present in the work environment. When bedside staff are engaged and committed they are able to identify waste in their daily process, the patient and the interdisciplinary team benefit from an efficient, safe, and innovative workplace.

Description & Method

A Process Improvement Value Stream Analysis identified the need to look more closely at Acute Stroke Care through a Rapid Improvement Event.²

PLAN: Using an A3 method, a multidisciplinary team including pre-hospital and hospital staff met to develop a care model that would impact patients presenting with stroke-like symptoms, with a focus on ischemic stroke patients. A standardized pathway was developed in alignment with national practice guidelines.

DO: Staff education was provided specific to best practice standards of stroke care and IV tPA administration. A method for daily monitoring of performance metrics was established.

STUDY: Lean tools were utilized to capture waste and bring transparency to the process.³ Daily huddles to debrief on successes and barriers from each case as a way to increase staff engagement and familiarity with the new process.

ACT: Standard work was written for all members of the stroke team to establish the guideline for care.

Timeline

The Butterworth ED participated in a four day Rapid Improvement Event which included all key stakeholders in which we identified current state and future state. An experiment was developed and trialed during the four day event. The stroke event was implemented on December 1, 2013, only 9 days after the event.

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Results/Evaluation

Lean principles proved to be an effective tool to improve the emergency room care of patients experiencing stroke.\(^4\) There was a reduction in process times for each component of Target Stroke® recommendations and significantly improved performance for the thrombolytic therapy core measures. A new Spectrum Health record for timely administration of tPA to a patient with acute stroke symptoms occurred in January 2014, at 22 minutes length of stay.

Door to CT exam start time has demonstrated a favorable process shift from 24 minutes down to 13 minutes. The Target Stroke® benchmark is within 25 minutes.

Door to CT exam resulted time has demonstrated a favorable process shift from 32 minutes to 21 minutes. The Target Stroke® benchmark is within 45 minutes.

Door to IV tPA administration median time in 2013 was 81 minutes. Post-RIE the monthly median times have been at or below the Target Stroke® benchmark of 60 minutes. Primary stroke center certification standards require treatment within 60 minutes for at least 50% of eligible patients.

Pre-RIE only 23% of eligible patients received IV tPA within 60 minutes however post-RIE rate has increased to 54% of eligible patients.

Thrombolytic Therapy (STK 4) Core Measure was at 76% pre-RIE. The rate has improved to 100% post-RIE. Door to CT exam start time has demonstrated a favorable process shift from 24 minutes down to 13 minutes. The Target Stroke® benchmark is within 25 minutes. Door to IV tPA administration median time in 2013 was 81 minutes. Post-RIE the monthly median times have been at or below the Target Stroke® benchmark of 60 minutes. Primary stroke center certification standards require treatment within 60 minutes for at least 50% of eligible patients. Pre-RIE only 23% of eligible patients received IV tPA within 60 minutes however post-RIE rate has increased to 54% of eligible patients.
Cost/Benefit Analysis
The cost associated with the 4 day rapid improvement event was $39,140 related to staffing costs and facilitation of the event. Although cost savings can be difficult to realize for the improvements made the patient outcomes may contribute to cost avoidance. According to Krueger, Lindsay, Cote, Kapral, Kaczorowski, and Hill (2012), improved stroke care could result in a cost avoidance of $682 million annually.

Advice and Lessons Learned
Through this process the team has learned the following for success of this process:

- Developing a core group of staff to standardize the process. The BW ED is a large emergency department with 240 RN/NT's and 60 ED Providers.
- Leadership rounding/auditing presence
- The need for staff engagement
- Succession planning as a result of significant change
- Demonstrate the success to staff, workload decrease, improvement in metrics, improvement in efficiencies
- Committing to the process change, even if the initial implementation is challenging.

Sustainability
In order to sustain our results the team has developed a plan for daily and monthly review. After a stroke code, the ED RN documents all successes and/or barriers during the case, this information is communicated to leadership as well as the team through huddles. The team has developed data metrics that are evaluated daily and monthly for not only increased transparency but also to identify improvement opportunities and celebrate successes. We also have an interdisciplinary team that meets monthly to look more in depth at the process and "fallout" cases.

In order to continue our success at Spectrum Health, the stroke team is taking their learnings from the event and sharing them with all SH entities.