Purpose

Why does this matter?

• Physicians taking care of patients presenting to the hospital with symptoms of acute stroke have a narrow time window for making treatment decisions.
• The earlier treatment can be initiated ultimately leads to reduced in-hospital mortality, reduced symptomatic intracranial hemorrhage, achievement of independent ambulation at discharge and increased discharge to home (1).
• Imaging plays a key role in triaging stroke patients to appropriate therapy.

Project Aim:

• Increase communication compliance between the Neuroradiology Division and clinical services regarding Head CT findings in patients presenting with acute stroke who are being considered for tPA (tissue plasminogen activator).
**Practice Quality Improvement Outline**

**P-LAN**
- Find a process to improve
- Organize a team
- Clarify Current Knowledge
- Understand Root Causes
- Select the Improvement

**D-O**
- Implement changes and do the improvement

**A-CT**
- Determine next steps in quality process

**C-HECK**
- Collect data
- Check results

**Background (PLAN)**

**Stroke Code CT Communication Compliance Background**
- American Stroke Association (ASA) practice guidelines state:
  - “For patients who are candidates for treatment with tPA, the goal is to complete the CT examination within 25 minutes of arrival at the ED, with the study interpreted within an additional 20 minutes (door-to-interpretation time of 45 minutes).”(2,3)
American Stroke Association (ASA) practice guidelines state:
- "For patients who are candidates for treatment with tPA, the goal is to complete the CT examination within 25 minutes of arrival at the ED, with the study interpreted within an additional 20 minutes (door-to-interpretation time of 45 minutes).”(1,2)

UHC (University Health System Consortium) based on Joint Commission Guidelines -- practice guidelines for stroke care
- "Acute ischemic stroke patients who arrive at this hospital within 2 hours of time last known well and for whom IV t-PA was initiated at this hospital within 3 hours of time last known well.”
- Included Populations: Discharges with an ICD-9-CM Principal Diagnosis Code for ischemic stroke as defined in Appendix A, Table 8.1
Stroke Code CT Communication Compliance Background

- UHC (University Health System Consortium) based on Joint Commission Guidelines --practice guidelines for stroke care
  - "Acute ischemic stroke patients who arrive at this hospital within 2 hours of time last known well and for whom IV t-PA was initiated at this hospital within 3 hours of time last known well."
- **Included Populations:** Discharges with an *ICD-9-CM Principal Diagnosis Code* for ischemic stroke as defined in Appendix A, Table 8.1
- **Excluded Populations:**
  - *Time Last Known Well* to arrival in the emergency department greater than 2 hours
  - Patients with a documented *Reason For Not Initiating IV Thrombolytic*

Materials/Methods (DO)

- We performed a group practice quality improvement project that included Neuroradiology faculty, clinical instructors, ACGME-accredited fellows and residents as well as administrative staff.
- The assessed metric was communication time in minutes, measured from the time of examination completion to the time of communication as dictated in the radiology report.
- Initial baseline communication compliance collected by the Radiology Department quality committee from one year prior to the initiation of this project was available as a baseline measurement.
Materials/Methods (DO)

Initial Data at the University of Wisconsin Hospital and Clinics:

- Based on random audit of patients with a discharge diagnosis of stroke
  - Initial auditing included all patients with stroke diagnosis regardless of time of presentation or whether patients were actually candidates for tPA (appropriate exclusion criteria had not been applied)
- Baseline Data: 20 min Communication Compliance 10/2011-10/2012: 53%
Clarify Current Knowledge

- Patient presents to ER/Floor with symptoms of stroke
- CT tech calls neuro RR (3823) notifies radiologists that stroke CT is complete
- CT scan performed, images sent to PACS
- Radiologist reviews CT scan for hemorrhage, stroke etc.
- Radiologist communicates findings to referring MD/Stroke team in 20 minutes
- TPA decision determined by stroke team
- Head CT without contrast ordered
- Patient assessed by Stroke team
- Stroke Code Called: Stroke pager activated

Understand Root Causes

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Changes Implemented (DO)

Problem
Radiologists do not know when stroke patients are being scanned

How Problem Was Addressed
- New exam order created called a "Stroke Code CT-Head" which should be ordered only on patients who are candidates for tPA (implemented 11/2012)
- Stroke pager in RR (11/12)
- CT tech to call RR when "stroke code CT's" are scanned
Changes Implemented (DO)

How Problem Was Addressed

- New exam order created called a “Stroke Code-CT Head” which should be ordered only on patients who are candidates for tPA (implemented 11/2012)
- Stroke pager in RR (11/12)
- CT tech to call RR when "stroke code CT's" are scanned

"Stroke Code-CT Head" labelled as separate procedure type helps to distinguish exam from other head CT studies on non-stroke patients

Problem

Inconsistent communication statement

Auditing Metric

- Currently all patients with d/c dx of stroke are being audited to meet the 20 minute communication benchmark

How Problem Was Addressed

- "Stroke Code” powerscribe Macro with standard communication statement
- Resident Education: emphasize priority of stroke studies and importance of documentation
- Patients being audited should only include those patients who are candidates for tPA. Need to apply appropriate exclusion criteria according to UHC guidelines when auditing these patients.
We measured the communication compliance in all patients who underwent a "Stroke Code Head CT" from November 2012 - July 2014.

Studies were designated as compliant if:
- a communication statement was included in the report that was within 20 minutes of the examination

Studies were designated as non compliant if:
- a communication statement was not included in the report
- the communication exceeded 20 minutes

Materials/Methods (DO)

Results (CHECK)

92% Compliance

Total Number of studies 619
586 Compliant
33 Non compliant
Results (CHECK)

- Initial Compliance: 53%
- After interventions (11/12-7/14): 92%
  - “Stroke Code CT” designation
  - Stroke Code Pager in reading room
  - CT technologist to call reading room when study is complete
  - Communication Macro in Powerscribe
  - Resident Education

Lessons Learned/Next Steps (ACT)

- Presented data to Radiology Quality and Safety Committee and to Hospital Quality and Safety Committee
- No longer auditing all patients with a discharge diagnosis of stroke, now applying appropriate inclusion and exclusion criteria based on UHC guidelines
- Now all patients who have a “Stroke Code CT” scan are audited for communication compliance
- Ongoing: provide compliance feedback to faculty and trainees on communication
- Next Steps: work with referring clinicians on appropriate ordering of “Stroke Code CT” exam
Conclusion

- This practice quality improvement project streamlined the ordering and interpretation of head CT examinations in patients presenting to our hospital system with acute stroke, leading to greater compliance with ASA door-to-interpretation time guidelines and contributing to more expeditious delivery of care in patients who need it most.

References


Stroke Code Communication Compliance: Practice Quality Improvement

Tabassum A. Kennedy MD\textsuperscript{1}, Nick Marinelli MD\textsuperscript{1},
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