Process Improvement: An Interdepartmental Approach to Improve Processes and Admission Times of Stroke Patients Receiving Alteplase

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sentara nurse

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Background and Purpose

Sentara CarePlex Hospital is a Primary Stroke Center that initiates approximately 120-130 Stroke Alerts each year and administers Alteplase intravenously to an average of 20-25 stroke patients a year. The Stroke Alert outcomes in the Emergency Department (ED) and Intensive Care Unit (ICU) involving administration of alteplase require an effective process to ensure patient safety and quality. Challenges with timely delivery of care led to an extensive review of the current Stroke Alert process. Inconsistent role assignments in a core team and the process flow contributed to delays with patient exams, orders and treatments. Documentation of assessments following alteplase administration also varied as evidenced by a lack of understanding of the required time intervals and components of neuro checks and vital sign assessments.

A Process Improvement (PI) project requiring an interdisciplinary, interdepartmental approach led by Nursing Leadership and heavily relying upon ED and ICU Practice Councils was warranted to improve the Stroke Alert process when alteplase is administered and to aid bedflow during these cases.

Project Aims

- Ensure patient safety, quality care, and exceptional customer service to patient and family.
- Eliminate unnecessary delays by:
  - ✓ Clarifying team member roles
  - ✓ Streamlining the Stroke Alert process
- Improve vital signs and neuro check documentation compliance related to post alteplase administration assessments
- Assist with meeting the three-hour goal for the Primary Stroke Center Door-to-Monitored Bed Admission time by engaging ICU staff to obtain bedside report in the ED and transport the patient to the ICU

Methods/Engagement

An interdepartmental, multidisciplinary approach was utilized to obtain buy-in to reduce expected times for deliverables and streamline the process of administering alteplase. ED and ICU Practice Councils were challenged with creating a process to improve ED flow of alteplase eligible patients, admission time goals, and documentation of post- alteplase assessments. Each Practice Council tackled their own department's education while collaborating to improve admission time. The Practice Council Chairs maintained contact via email and text and completed cross-attendance of departmental practice council meetings. Emails were sent to staff ahead of time and flyers were posted on the units prior to the meetings to raise awareness of the topic and issues along with encourage attendance. Attendance and employee engagement at each of these meetings was above average due to the importance of the discussions directly impacting registered nurse (RN) workflow.

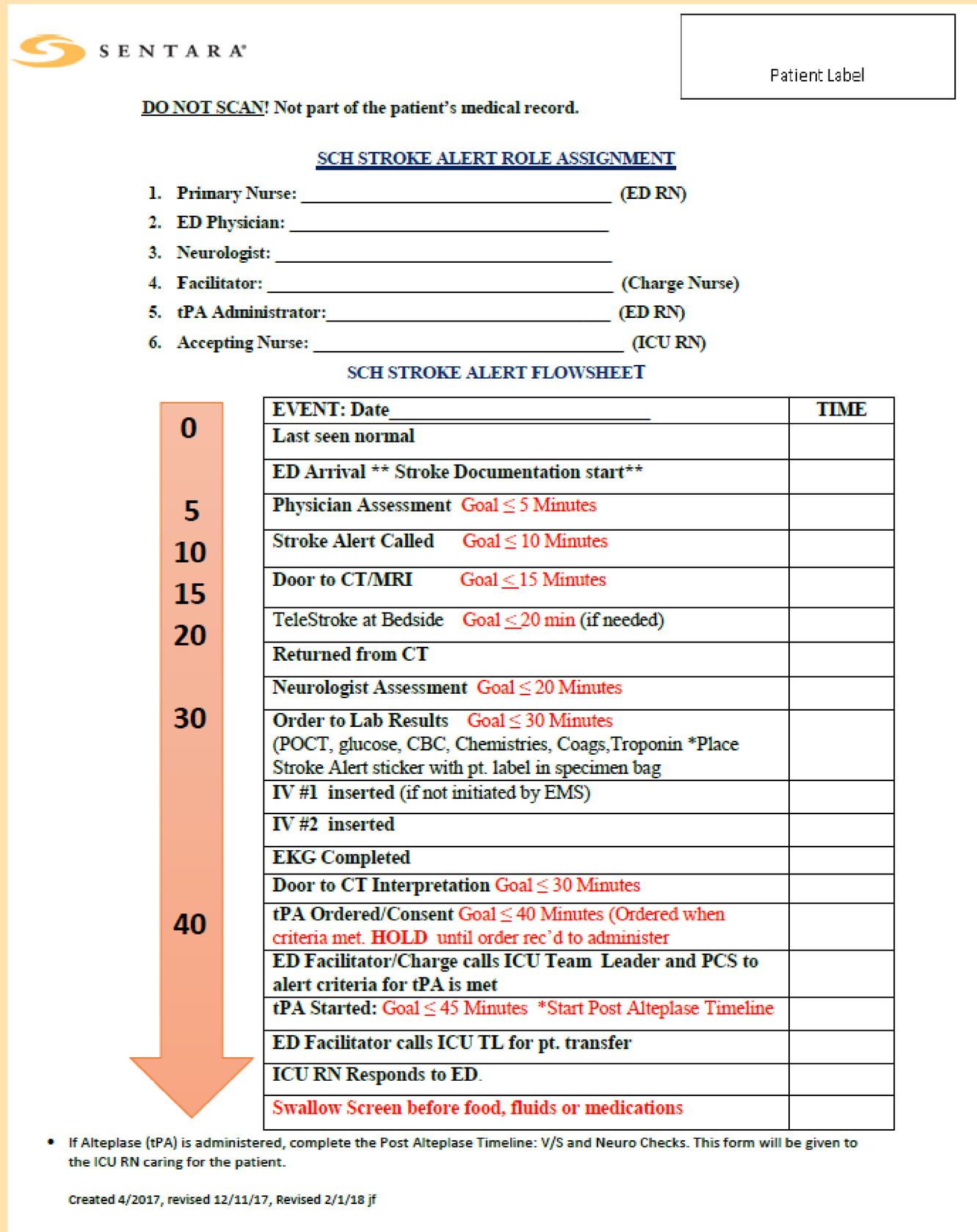
Implementation

An interdisciplinary team was assembled to review the current process using the Plan-Do-Check-Act (PDCA) method to develop a clear and effective means to safely provide care during Stroke Alerts. First, the existing Stroke Role Assignment document was augmented to emphasize the importance of time constraints and team member involvement; the revised document was reviewed and approved by the Stroke Quality Oversight Committee as it aligned with the 2018 Stroke Program Goals (see Figure 1). The most critical component of the modifications was the addition of the role of Facilitator to keep everyone on track. Next, the ICU manager and team leaders were added to the Stroke Alert page notification as a advance warning for a possible admission if alteplase

Implementation (continued)

should be given. Along with the page, the ED Stroke Facilitator notifies the ICU Team Leader and Patient Care Supervisor to communicate when the decision to give alteplase is made.

Education material, focusing on role assignments, neuro checks, care plans, and patient education documentation, was created by each of the Practice Councils and reviewed with their corresponding staff during the month of December. To reduce Door-to-Monitored Bed Admission time, the admission process was changed for patients who received alteplase; instead of the ED bringing the patient up to the ICU, the receiving ICU nurse travels to the ED for bedside report and to transport the patient. A job aid involving Stroke Alerts with alteplase administration was developed for clarification of ED and ICU roles (see Figure 2).



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Patient Label

DO NOT SCAN! Not part of the patient's medical record.

SCH STROKE ALERT ROLE ASSIGNMENT

1. Primary Nurse: ____________ (ED RN)
2. ED Physician: ____________
3. Neurologist: ____________
4. Facilitator: ____________ (Charge Nurse)
5. tPA Administrator: ____________ (ED RN)
6. Accepting Nurse: ____________ (ICU RN)

SCH STROKE ALERT FLOWSHEET

Minutes	EVENT: Date________	TIME
0	Last seen normal	
	ED Arrival ** Stroke Documentation start**	
5	Physician Assessment Goal ≤ 5 Minutes	
10	Stroke Alert Called Goal ≤ 10 Minutes	
15	Door to CT/MRI Goal ≤ 15 Minutes	
20	TeleStroke at Bedside Goal ≤ 20 min (if needed)	
	Returned from CT	
	Neurologist Assessment Goal ≤ 20 Minutes	
30	Order to Lab Results Goal ≤ 30 Minutes (POCT, glucose, CBC, Chemistries, Coags, Troponin *Place Stroke Alert sticker with pt. label in specimen bag	
	IV #1 inserted (if not initiated by EMS)	
	IV #2 inserted	
	EKG Completed	
	Door to CT Interpretation Goal ≤ 30 Minutes	
40	tPA Ordered/Consent Goal ≤ 40 Minutes (Ordered when criteria met. HOLD until order rec'd to administer	
	ED Facilitator/Charge calls ICU Team Leader and PCS to alert criteria for tPA is met	
	tPA Started: Goal ≤ 45 Minutes *Start Post Alteplase Timeline	
	ED Facilitator calls ICU TL for pt. transfer	
	ICU RN Responds to ED.	
	Swallow Screen before food, fluids or medications	

- If Alteplase (tPA) is administered, complete the Post Alteplase Timeline: V/S and Neuro Checks. This form will be given to the ICU RN caring for the patient.

Created 4/2017, revised 12/11/17, Revised 2/1/18 jf

Figure 1. SCH Stroke Alert Role Assignment Job Aid.

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CarePlex Hospital

Job Aid: Stroke Alert Patients Who Receive Alteplase (tPA)- ED and ICU Departments

ED Facilitator /Charge Nurse
- Notifies ICU TL and PCS
- Once admission order entered, PCS assigns ICU bed

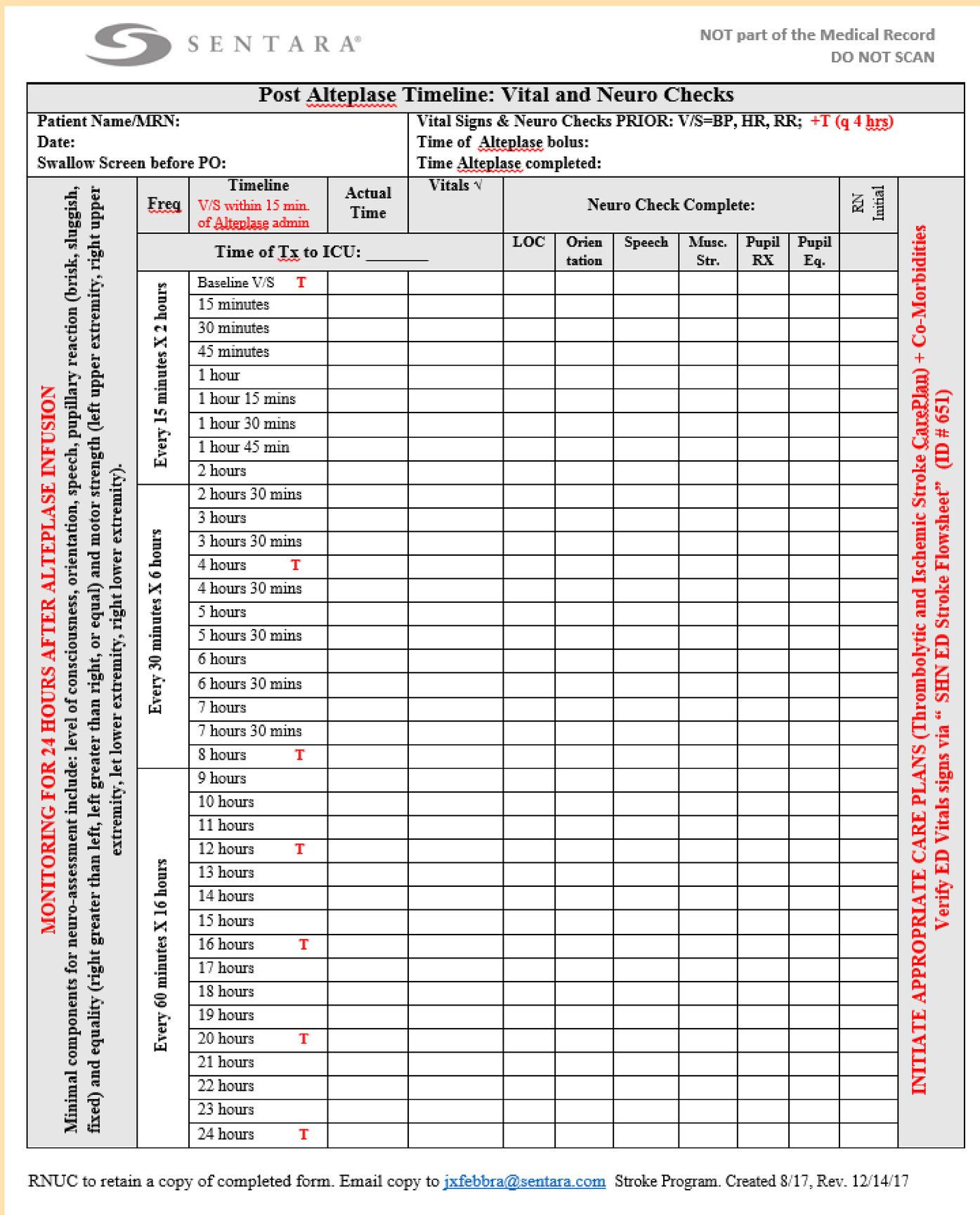
ICU Team Leader
- Receives notification from ED Facilitator tPA has been initiated
- ICU TL will notify receiving RN
- Receiving ICU RN reports to the ED

ED RN
- Prepare effective handoff to ICU RN
- Obtain V/S within 15 minutes Prior to tPA administration
- Prepare for tPA administration per protocol
- Mix tPA for administration
- Perform double check of tPA dose
- Implement Post Alteplase Timeline: V/S & Neuro Check Job Aid
- Document start and end times for bolus and start of infusion
- List time intervals for V/S and Neuro checks Round to the nearest ¼ hr. ONE TIME Only. DO NOT exceed time frame
- Call ICU for patient transfer after ED Physician Assessment
- Review with ICU RN:
  - ✓ Documentation of V/S and complete minimum Neuro assessments
  - ✓ Double check all meds
  - ✓ Bedside Neuro assessment

ICU RN
- Receives effective handoff from ED RN
- Review with ED RN:
  - ✓ Documentation of V/S and complete minimum Neuro assessments
  - ✓ Double check all medications
  - ✓ Bedside Neuro assessment
- Review V/S and Neuro check times
- ED staff and ICU RN transport to ICU after completed MD assessment

Arrival to ICU
- Continue delivery of care using Post Alteplase Timeline V/S & Neuro Checks as timed until infusion is complete
- Review Post Alteplase Timeline with on-coming RN
- Document end time of tPA Infusion, if not completed in ED
- Administer Saline Flush through tPA tubing as ordered and document accordingly
- RNUC reviews Post Alteplase Timeline for compliance following infusion
- Forward Post Alteplase Timeline to Stroke Coordinator within 24 hrs. of completion

Figure 2. Role Assignment Job Aid.



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NOT part of the Medical Record
DO NOT SCAN

Post Alteplase Timeline: Vital and Neuro Checks

Patient Name/MRN:
Date:
Swallow Screen before PO:

Vital Signs & Neuro Checks PRIOR: V/S=BP, HR, RR; +T (q 4 hrs)
Time of Alteplase bolus:
Time Alteplase completed:

MONITORING FOR 24 HOURS AFTER ALTEPLASE INFUSION

Minimal components for neuro-assessment include: level of consciousness, orientation, speech, pupillary reaction (brisk, sluggish, fixed) and equality (right greater than left, left greater than right, or equal) and motor strength (left upper extremity, right upper extremity, let lower extremity, right lower extremity).

Time of Tx to ICU: _______

Freq	Timeline V/S within 15 min. of Alteplase admin	Actual Time	Vitals √	Neuro Check Complete: LOC	Orientation	Speech	Musc. Str.	Pupil RX	Pupil Eq.	RN Initial
Every 15 minutes X 2 hours	Baseline V/S T									
	15 minutes									
	30 minutes									
	45 minutes									
	1 hour									
	1 hour 15 mins									
	1 hour 30 mins									
	1 hour 45 min									
	2 hours									
Every 30 minutes X 6 hours	2 hours 30 mins									
	3 hours									
	3 hours 30 mins									
	4 hours T									
	4 hours 30 mins									
	5 hours									
	5 hours 30 mins									
	6 hours									
	6 hours 30 mins									
	7 hours									
	7 hours 30 mins									
	8 hours T									
Every 60 minutes X 16 hours	9 hours									
	10 hours									
	11 hours									
	12 hours T									
	13 hours									
	14 hours									
	15 hours									
	16 hours T									
	17 hours									
	18 hours									
	19 hours									
	20 hours T									
	21 hours									
	22 hours									
	23 hours									
	24 hours T									

INITIATE APPROPRIATE CARE PLANS (Thrombolytic and Ischemic Stroke CarePlan) + Co-Morbidities
Verify ED Vitals signs via " SHN ED Stroke Flowsheet" (ID # 651)

RNUC to retain a copy of completed form. Email copy to jxfebbra@sentara.com Stroke Program. Created 8/17, Rev. 12/14/17

Figure 3. Post Alteplase Timeline Job Aid.

Another piece of the PI project included the implementation of the "Post Alteplase Timeline: Vital Signs and Neuro Checks" Job Aid, (see Figure 3), to assist nurses and team leaders in keeping track of required documentation of assessments, care plans and education at appropriate time intervals during the first twenty-four hours after alteplase administration. It guides the RN to add frequently missed items, such as the Thrombolytic and the Ischemic Stroke care plans and care plans for co-morbities, and it directs them to utilize a flowsheet that puts all documentation components in one place for ease of use. Times are rounded to the nearest quarter hour to keep time frames easy. Documentation on this tool is simplified to a checklist and does not require repeat documentation of that which is in the electronic medical record. This tool is not a permanent part of the patient record, but is submitted to the ICU Team Leader and the Stroke Coordinator for review within 24 hours of completion.

Contact Information

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Results/Conclusions

The new process rolled out in December 2017. Since this time we have had seven patients with stroke symptoms who were treated with alteplase . The Stroke Coordinator completes audits on 100% of alteplase stroke patients.

This project had a positive impact on vital signs and neuro check documentation compliance related to post alteplase administration. For the ten cases prior to implementation, an average of 21.7 incidences of vital signs or neuro checks were missed. For the seven cases post-implementation, an average of 9.4 incidences were missed, a decrease of 12.3 incidences per case.

This project has also had a positive impact on bedflow (see Figure 4). For the ten cases prior to implementation, we met the Primary Stroke Center Door-to-Monitored Bed Admission goal of 3 hours 40% of the time, with an average admission time of 3 hours 20 minutes. The seven cases since implementation have met the goal 57% of the time, a 17% increase, with an average admission time of 2 hours 50 minutes, a 30 minute decrease.

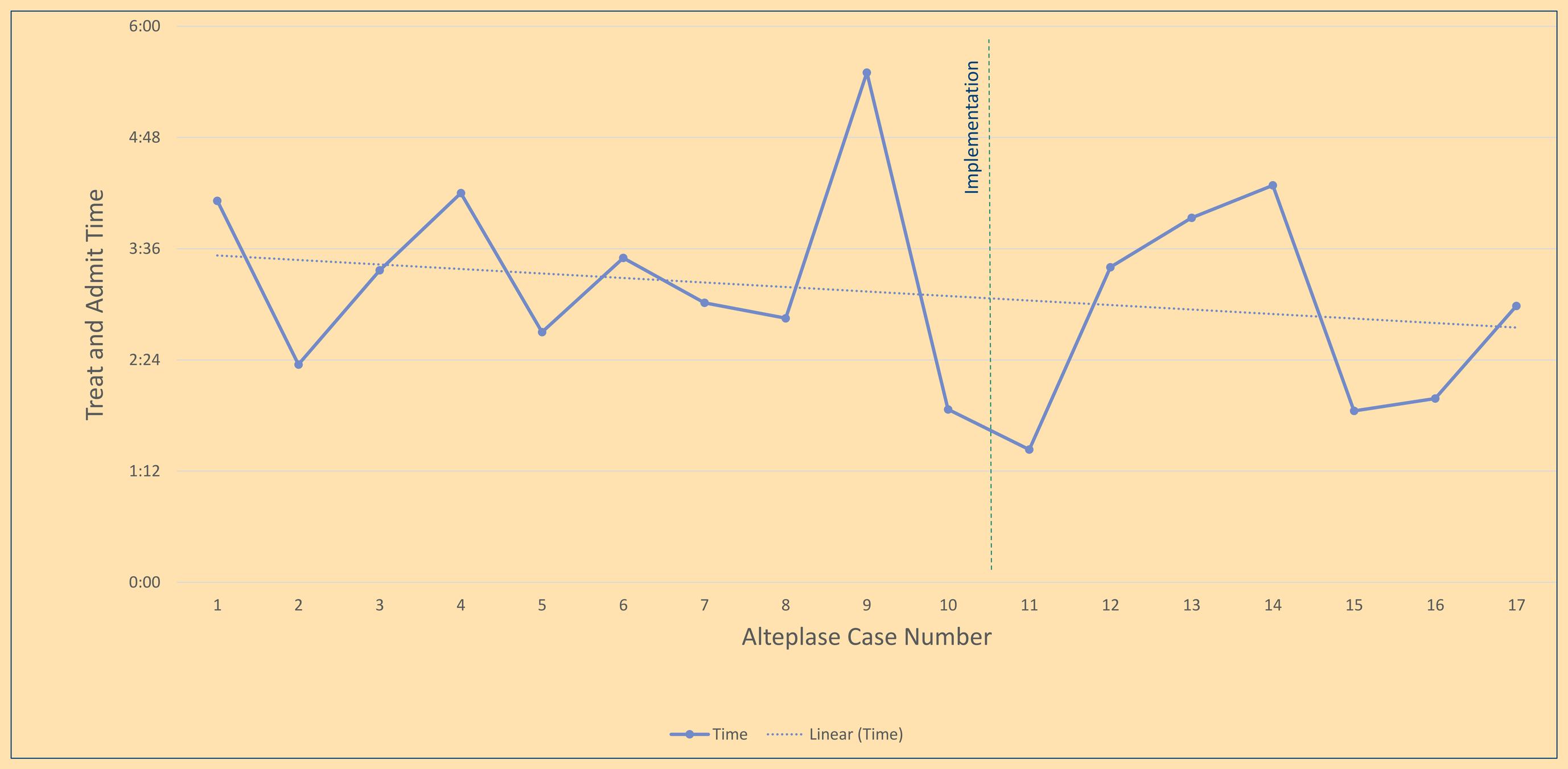

Figure 4. Treat and Admit times after alteplase administration.

Lessons Learned & Next Steps

We had many of the same challenges that other process improvement projects come across. Getting everyone on board takes hard work and dedication. Both the ED and ICU can have staffing challenges and rolling out the new process during flu season may have intensified this issue. The ED Charge Nurse is responsible for supervision of care in the ED while simultaneously serving as Stroke Facilitator when patients with stroke symptoms arrive. This dual role can make it difficult to consistently maintain management of response times by the Stroke Team members and necessary procedures and treatments. To address this, the ED Facilitator role will evolve to include a backup plan for when the ED Charge Nurse is unavailable.

Additionally, at times there has been some confusion of new expectations by all parties involved, to include who and when to respond to the ED to transport the patient to the ICU. Continued reinforcement of the roles and revision of the Role Assignment job aid as new issues arise should help to alleviate the role confusion.

The project brought awareness to the fact that the hospitalist team was unaware of the issue of how their assessment and admission order times could delay the stroke admission process and the goals to maintain our status as a Primary Stroke Center. We will continue to evaluate the impact of this project on Door-to-Needle and Door-to-Monitored Bed Admission times to assess for additional opportunities for improvement and to further streamline the process, to include ED physician and hospitalist engagement, which has increased since the start of the project. This project is still in its infancy, and we look forward to evaluating its continued impact.