Title: CODE STROKE Emergent Evaluation of Patient INHOUSE Exhibiting Acute Stroke Symptoms

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SCOPE
Any department staff identifying patients with Stroke Symptoms.

RELATED POLICIES/PROCEDURES
PCD #11.007 Dysphagia Screening

DEFINITIONS
None

PURPOSE
A. To provide a timely systematic response to patients exhibiting stroke symptoms within 24 hours of last known well (LKW) time.
B. Prevent delays in an acute stroke emergency to provide early intervention and timely thrombolysis when indicated.

POLICY
A. CODE STROKE team will be activated for patients who are identified as having acute stroke symptoms within 24 hours of last known well (LKW) time by dialing 3-4444.
B. If the patient is F.A.S.T. positive, the operator will page the code stroke team to the scene by a group beeper page and an overhead announcement CODE STROKE.
C. See Section III e. of this PCD for stroke team roles and responsibilities.
D. CODE STROKE Team Activation:
   1. CODE STROKE team will be activated based upon activation criteria; F.A.S.T. assessment. Facial droop, arm weakness, speech difficulty, time last known well is within 24 hours.
   2. If the patient experiencing stroke symptoms while at Eastern Maine Medical Center is an outpatient, they will be stabilized in the area where the code occurred, transported directly to CT and transferred to the ED for continued care.
   3. If they are a visitor, they will be sent to the emergency department for triage and activation of CODE STROKE by ED process.
E. CODE STROKE Team Activation Criteria:
   1. A CODE STROKE may be called if the patient is F.A.S.T. positive. Facial droop, Arm weakness, difficulty speaking, (any ONE of those symptoms) and Time–must be
within 24 hours of last seen well or the last time the patient was seen without that neurological deficit. The call is activated by calling 34444.

2. If patient is not F.A.S.T. positive, do not call a code stroke, call the patients primary in-patient provider. The F.A.S.T. protocol may be overridden by a physician or a charge nurse if it is felt the patient is having other symptoms of stroke such as leg weakness, ataxia and vision loss.

PROCEDURE
A. CODE STROKE team activation procedure:
   1. Patients primary nurse or designee:
      a. Identifies a patient who has signs and symptoms of an acute stroke (as above). Performs a
         F. A.S.T. assessment.
      b. **Notify charge nurse or supervisor immediately.**
         c. Obtain patients **vital signs and blood sugar** as soon as possible
      d. If the patient is F.A.S.T. positive initiate CODE STROKE by dialing 34444
      e. Notify the attending physician
      f. Initiate Stroke Inpatient STAT orderset per protocol.
      g. Expedite patients transport to CT scan -You do not need to wait for neurology response
         before sending patient to CT scan.
      h. Keep patient NPO until nursing dysphagia screen is performed. If patient fails dysphagia
         screen, order speech therapy swallow evaluation per protocol.
      i. Perform assessments and interventions specified by the Stroke Inpatient STAT orderset
         and as directed by the responding EMIC physician and /or neurologist for patient
         management.
      j. Provide Stroke Patient Education binder and educate patient and family and document in
         EMR.

B. tPA process: If Neurologist has determined the CODE STROKE patient is a candidate for t-PA, next steps include:
   1. Take patient’s blood pressure and report to neurologist.
   2. **Confirm actual weight in EMR.**
   3. Provider will initiate Stroke Ischemic (with tPA) Powerplan.
   4. If pharmacy is not able to respond to the bedside, the resource RN or designee will notify the
      pharmacy that tPA is needed at the bedside by dialing the pharmacy stat line at 3-8286.
   5. tPA will be prepared by the pharmacy to include the bolus and infusion and delivered to the
      bedside STAT.
   6. Perform an independent 2 RN medication check to confirm dose (pharmacist may perform
      check in place of second RN).
   7. Critical care/resource RN will administer tPA bolus and infusion.
   8. If during the bolus or infusion the patient develops severe headache, acute hypertension,
      nausea or vomiting, bleeding, worsening neurological status, swelling (angioedema) or any
      allergic reaction; STOP the infusion, notify neurologist, ED physician immediately and
      obtain a head CT stat.
   9. Notify bed management for placement of patient in critical care unit
   10. **Note: The completion of lab tests, ECG, and chest x ray should not delay the administration
       of IV thrombolytic.**
   11. Physician documentation will indicate the reason eligible ischemic stroke patients did not
       receive IV thrombolytic therapy or if indicated, the reason why IV thrombolytic therapy was
       delayed past the 60 minute door to needle goal.

C. Screen for emergent large vessel occlusion:
   a. Physician or neurologist identifies patient with cortical signs of stroke or
      complete hemispheric syndrome.
b. If positive screen for any one of the above and patient within 24 hours of last known well physician or neurologist will:
   (1) Order stat CTA of head and neck
   (2) Activate emergent management of large vessel ischemic stroke protocol (CODE STROKE TIER 2) when EMMC endovascular interventionalist is on. EMMC operator will know schedule.
   (3) If EMMC endovascular interventionalist is not on:
      (a) Activate life flight service
      (b) Contact endovascular interventionalist at Maine Medical Center. 1-866-662-6632.
      (c) See attachment B.

D. Code Stroke Tier 2 procedure
1. This process will be initiated for patients CTA or MRA confirmed large vessel occlusion within 24 hours of last seen well.
2. Code stroke tier 2 can be activated by calling 34444. The operator will page code stroke tier 2 overhead and will notify the members of the team.
3. Code stroke tier 2 can be activated by neurointerventionalist or the neurologist.
4. Once paged the endovascular team will report to P2 within 30 minutes of being paged.
5. The endovascular team will call the resource nurse/charge nurse for the patient once the team is assembled.
6. The patient will be escorted to the P2 suite for intervention, then to the ICU for post procedure care.
7. The PACU may be used for post-operative recovery if the ICU bed is not immediately available
8. The code stroke tier 2 team will consist of
   a. The neurointerventionalist
   b. The anesthesiologist
   c. The resource nurse
   d. Transport
   e. Nursing supervisor
   f. Security
   g. ICU charge nurse
   h. Kevin Morgan
   i. Jen Modrey
   j. Radiology technicians per call schedule
   k. Interventional RN per call schedule
9.

E. Post-tPA Protocol:
1. Utilize the Post- tPA Checklist located on the EMMC intranet homepage http://intranet.emhs.org/EMMC/The-Hub/Post-tPA-Checks.aspx
2. In the event of a downtime, see tPA Administration Worksheet in downtime toolbox
3. Begin vital signs and neurological assessments from time of bolus administration. Every 15 minutes for 2 hours, then every 30 minutes for 6 hours, then every hour post t-PA for 16 hours and document in the electronic medical record (EMR).
4. If patient comes to EMMC with t-PA infusing or administered prior to arrival: RN accepting patient will determine administration time of tPA, and continue vital signs and neurological assessments as outlined above.
F. **Code Stroke team roles and responsibilities:** The following staff will be notified of CODE STROKE team activation via group pager and overhead announcement indicating “CODE STROKE”. Responsibilities of the Code Stroke team:

1. **Neurologist**  
   i. Respond to the bedside within 15 minutes within normal working hours Monday-Friday 0800-1700.  
   ii. After 1700 until 0800 Monday through Friday and weekends/hospital holidays, the neurologist on call will respond by phone within 15 minutes and 30 minute bedside response time per physician’s request.  
   iii. Complete National Institute of Health Stroke Scale (NIHSS).  
   iv. Assess patient’s eligibility for iv alteplase  
   v. Verbally review the risk and benefits of IV alteplase with patient and family members as available. If no family members available 2 physician consent is appropriate. Consider CTA head and neck to rule out large vessel occlusion (CODE STROKE TIER 2).  
   vi. Discuss the case with the neurointerventionalist, assist in decision making for endovascular intervention  
   vii. Perform standard post alteplase and/or post procedure follow up care as appropriate.  
   viii. Communicate plans of care with EMIC or ED physician as appropriate.

2. **EMIC**  
   i. Will respond to the bedside as soon as possible. See Attachment A for appropriate EMIC Physician to be paged.  
   ii. Will oversee the care of the patient.  
   iii. Discuss case with neurologist r/o IV tPA.  
   iv. Collaborate with neurologist to perform LVO screen.

3. **House Resource RN/Critical Care RN**  
   i. Respond to patient bedside for CODE STROKE  
   ii. If unable to respond to bedside, inform ICU charge nurse.  
   iii. Assist with patient transport to CT as needed.  
   iv. Assist with patient care as needed.  
   v. Assist with code stroke tier 2 as needed

4. **Nursing Supervisor or designee**  
   i. Respond to bedside for CODE STROKE when able.  
   ii. Begin patient placement process if needed.

5. **CT Scan Technologist**  
   i. Clear CT scanner for incoming stroke patient and perform exam as ordered.  
   ii. Notify radiologist when exam is complete.

6. **Radiologist**  
   i. Will call ordering physician with the preliminary positive or negative reading of CT brain, CTA head/neck and MRI as soon as possible.

7. **Pharmacy**  
   i. Will remain on alert in the event they are needed to assist with tPA reconstitution or verification of tPA dose calculation.  
   ii. Will respond to the bedside when able.  
   iii. Will mix iv alteplase at the bedside  
   iv. will verify patient weight and dose of iv alteplase  
   v. can provide the second check of the medication and dosing if a second nurse is not present

8. **Phlebotomy Staff**  
   i. Respond to the bedside for CODE STROKE team activation to draw labs per stroke orders.
9. MRI technician
   i. Will now receive the code stroke page and remain on alert in the event an urgent MRI brain needs to be completed to establish the core infarct
   ii. Perform a rapid short sequence stroke protocol
   iii. Alert radiologist as soon as exam is complete

10. Neurointerventional surgeon
   i. Will be on alert for potential code stroke tier 2 (emergent large vessel strokes)
   ii. Will respond to a page within 20 minutes
   iii. Will review CTA, MRA or other advance vessel imaging and discuss the role of intervention with the treating neurologist
   iv. Will activate the code stroke tier 2 team
   v. Will discuss with family members the endovascular procedure and obtain consent for care. If no family member available, the physician may do 2 physician consent as this is an emergency and the standard of care for large vessel occlusive stroke.
   vi. Perform neuro-endovascular procedure as appropriate.
   vii. Perform post-operative follow up care.

The following staff are paged when there is a CODE STROKE for notification purposes only and are not required to respond to the bedside:
   1. Nurse Coordinator for Stroke Program
   2. Nurse Manager Grant 5 Ortho/Neuro
   3. Clinical Educator Grant 5 Ortho/Neuro
   4. EMMC Stroke Medical Director

G. Time Parameters
   1. A CT of the head will be completed within 25 minutes of patient presentation of stroke symptoms.
   2. Interpretation of a head CT by a physician will be completed within 20 minutes and documented.
   3. Laboratory tests, electrocardiogram, and chest x-ray will be completed within 45 minutes of patient presentation with stroke symptoms, if ordered by the physician.
   4. Brain imaging (MRI, MRA, CTA) scans are interpreted within 60 minutes hours of completion, if these tests are to be completed as soon as possible.
   5. Door to IV thrombolytic goal is as soon as possible and within 60 minutes of patient’s acute onset of stroke symptoms.
   6. NOTE: for all above parameters: if these timeframes cannot occur, there must be documentation in the record to support delay.
   7. Door to groin puncture will be 60 minutes for code stroke tier 2.

H. Possible Stroke interventions based on time Last known well.
   1. See attached flow sheet.
   2. For eligible patients within 3 hours or 4.5 hours of last seen well, iv alteplase and endovascular interventions based on clinical indications.
   3. For eligible patients within 6 hours of last seen well, endovascular intervention will be offered as appropriate. These patients will not need advanced imaging of the penumbra prior to intervention.
   4. For patients with unknown time last seen well or within the 6-24 hours window and a large vessel occlusive stroke, eligibility for thrombectomy will be determined based on DAWN and DEFUSE 3 criteria. Eligible patients will be offered intervention based on either CT perfusion with rapid or MRI DWI imaging of the core infarct.
      a. DAWN eligibility criteria: Clinical imaging mismatch (CIM) defined by age, core, and NIHSS
         (1) A. ≥80 y/o and NIHSS ≥10 + core <21cc
         (2) B. <80 y/o and NIHSS ≥10 + core <31cc or NIHSS ≥20 + core <51cc
b. DEFUSE 3 eligibility criteria where MRA / CTA reveals M1 segment MCA occlusion, or ICA occlusion (cervical or intracranial; with or without tandem MCA lesions AND Target Mismatch Profile on CT perfusion or MRI (RAPID):
   (1) Ischemic core volume < 70 mL and
   (2) Mismatch ratio > 1.8 and Mismatch volume ≥ 15 mL

REFERENCES
- AHA/ASA guidelines for early management of patients with acute ischemic stroke, 2018
- Continuum, evaluation and management of acute ischemic stroke, 2014.
- The Joint Commission Disease Specific Care Certification Manual July 2014

ATTACHMENTS
A- In-House Code Stroke Protocol
B- Code Stroke Tier 2 Process
C- ALL CODE STROKE Patients: NIHSS and CT head within 24 hours of LSW

This document was approved by the committee(s) noted below on the date(s) as noted:
Provision of Care Committee, 11/14/2017
ATTACHMENT A

In-House Code Stroke Protocol
January 4, 2017

Answer Code Phone “What Code, and Location”

If this is a Code Stroke you will need to obtain the room number and patient’s name to enter into the group page.
(Do NOT Overhead Page this Information)

OVERHEAD PAGE
Press CTRL F7 – Emergency Overhead Announcement and say
“Attention Please Code Stroke and location (Nursing floor or dept)” 3 times (2 times 11p-7a)

The hospital operator will send a group page to the STROKE TEAM (INPATIENT) using XTEND
The message will say “Code Stroke, Room Number, & patient’s last name”

The operator will page the Neurologist on-call with the following message
“Call EMMC Operator 973-7000 concerning Code Stroke”
When the Neurologist calls, the operator will connect the physician to a staff member in the stroke patients room.
**If there is no call back within 2 minutes, please re-page until call is returned

0800-1800
Look up the patient on the EMIC list. Contact the assigned EMIC physician notify them of the stroke alert, patients name and room number.
**If the patient is not on the EMIC list contact the EMIC RRT physician. Notify them of the Code Stroke, patients name and room number.**

1800-0800
Contact the EMIC RRT physician on the CROSS PHONE notify them of the stroke alert, patients name and room number.
ED or INHOUSE CODE STROKE

Suspected LVO
Get CTA head and neck

ED physician or Neurologist will Call Operator asking for endovascular interventionalist on call.

If Dr. Singer is not on for EMMC endovascular services, call the endovascular interventionalist at Maine Medical Center 1-866-662-6632

YES endovascular candidate for EMMC

Dr. Singer will activate his team = CODE STROKE TIER 2

Neurologist or ED physician will place order for 'SP EMBOLIZATION' And Post IV tPA powerplan if appropriate

This will be an EMIC admission and patient will go to the ICU post op

Outside Facility Code Stroke: Neurologist or Dr. Singer have already spoken with OSF

Transfer Center CODE STROKE:

Requesting provider needs to speak to ED doc of the day before transfer

CODE STROKE called when patient arrives to EMMC ED even if they already received tPA

CODE STROKE TIER 2 Process
ATTACHMENT C

ALL CODE STROKE Patients: NIHSS and CT head within 24 hours of LSW

- 0-3 h
  - NIHSS <25
    - IV rtPA 0.9 mg/kg
  - Stat CTA Head and Neck
    - DAWN/DEFUSE

- 3-4.5 h
  - NIHSS <25
    - Stat CTA Head and Neck
      - Open large vessels
      - ICU and Standard St 0.9 mg/kg Stroke Care

- 4-6 h
  - Stat CTA Head and Neck
    - + CTA for Large vessel occlusion AND MRI Mismatch
    - Endovascular and ICU care