Code Stroke Guidelines

POLICY STATEMENT

This policy includes the guideline and procedure for the rapid assessment and treatment of acute stroke patients in the Emergency Department. It outlines a safe and consistent process for the triage, stability assessment, expedited CT scan, and treatment of this subset of ED patients.

REASON FOR POLICY

To establish a guideline for the safe and rapid management of acute strokes (<10 hours since onset) so that eligible patients may receive thrombolytic therapy.

WHO SHOULD READ THIS POLICY

All AU Medical Center Emergency Department, ECC, Radiology, and Neurology staff involved in the care of stroke patients in the emergency department.

DEFINITIONS

- BMW: Bedside Mobile Workstation
- COW: Computer On Wheels
- CT: Computerized Tomography suite and/or technician
- CTA: CT Angiogram
- CTP: CT Perfusion study
- CXR: Chest X-Ray
- ECC: Emergency Communications Center
- ED: Emergency Department
- EKG: Electro Cardiogram
- EMR: Electronic Medical Record
- EMS: Emergency Medical (ambulance) Services
- EMT: Emergency Medical Technician
- LKN: Last Known Normal time
MRA  Magnetic Resonance Angiogram
MRI  Magnetic Resonance Imaging
(Fast Forseen protocol is an abbreviated, multi-sequence MRI study)
NIHSS  National Institutes of Health Stroke Score
POV  Privately Owned Vehicle
REACH  Remote Evaluation of Acute isCHemic stroke telemedicine program
tPA  tissue Plasminogen Activator (the only FDA approved tPA for acute stroke is alteplase (Activase ®))
WUT  Wake Up Time (with stroke symptoms)

GUIDELINES and STAFF ROLES

Triage Criteria for activation of “Code Stroke”

1. Age 18 and over with sudden onset of
   a) focal weakness,
   b) loss of speech,
   c) change in state of awareness, or
   d) change in gaze or vision.

2. Onset of symptoms less than 10 hours prior to arrival to the Emergency Department.
   (Note: If patient awakened with symptoms, then onset is considered to have occurred when patient was last known to be symptom free.)

3. Awakening stroke: Patient presents less than 10 hours since last known normal after awakening with stroke symptoms (e.g., patient at 9 am after awakening at 8 am with CVA symptoms, he/she needed to have been normal until at least 11 pm the night before for code stroke activation).

4. If there is a question about eligibility or if Code Stroke should be activated, an ED attending can be asked. Alternatively, the mantra, “if in doubt, call it out,” is recommended.
Emergency Communications Center / Triage Nurse

Using the above criteria, the Emergency Communications Center (ECC) staff or triage nurse will identify patients eligible for Code Stroke evaluation. The ECC may identify a potentially eligible patient during contact with the EMS service en route with a possible stroke patient. The ECC may remind EMTs to follow the EMS Acute Stroke Protocol [establish IV access (18-gauge antecubital preferred), draw blood samples in a “rainbow” of colored topped tubes, check capillary blood glucose, check BP, and treat elevated BP per EMS Acute Stroke Elevated BP Protocol]. ECC will ask EMS for last known normal (LKN) time or wake up time (WUT) with CVA symptoms. The ECC will activate the Code Stroke system prior to the patient’s arrival by announcing over the intercom system that there is a “Code Stroke patient, ETA ‘X’ minutes” (similar to the existing announcement of incoming trauma or cardiac arrest patients). ECC will also page 7700 (Code Stroke Pager) to alert the Neurology team and the CT technician. The page will include LKN or WUT. For patient arriving by privately owned vehicle (POV), the triage nurse will notify the ECC [including LKN (last known normal) or WUT (wake up time)] who will announce overhead, “Code Stroke patient in the ED, now,” and page 7700 with the Code Stroke alert.

Patients arriving via EMS (ground)

If the patient is coming by EMS, a D-POD physician (or A-POD physician depending on current work load), critical care nurse, and a registration clerk [preferably all with COWs (cart on wheel), aka BMWs (bedside mobile workstation)] will meet the patient, in the hallway by the elevator closest to the ECC, for a quick evaluation and registration. The Charge Nurse should coordinate this meeting and make sure a room is ready for the patient when they come back from CT.

During the “hallway assessment” of a CODE STROKE patient, Neurology, if present, will have a TIMEOUT and complete a full NIH Stroke Scale before going to CT (should take less than 4-minutes). If neurology is not present for the “hallway assessment,” proceed to CT ASAP.

CT will be called to see if they are ready and the order for CT must be entered electronically by the physician.

If CT is ready, the stable patient is sent to CT (on the EMS stretcher) with the nurse and then back down to the appropriate room (does not need to be a D-POD domain room).

Since CT cannot scan anyone without a patient armband, someone will have to bring the labeled armband up to CT (either another nurse, EMT, or registration clerk).

If this does not happen in a timely manner, CT has the capability of printing off a single patient label (they currently use these for their paperwork). The label is similar to the patient sticker and has all pertinent patient information except the account number (it has the MRN). The label can only be printed if the physician has placed the
electronic order for the CT. The CT techs also have access to patient armbands. If the nurse or physician can identify the patient or the patient can identify themselves, the CT tech can print the sticker and the stickered armband can be placed on the patient.

If CT is not ready or the patient is unstable, they will be placed immediately into a critical room for any life saving measures before proceeding to CT.

Any other IVs, labs, EKGs, for the stable patient, will be done after CT scan.

Patients arriving via EMS (air)

If the patient arrives via helicopter, the Charge Nurse and EM Resident and/or ED Attending will report to the helideck to determine patient stability. If stable, the patient will go directly to CT (via the ED and rapid neurology evaluation) with registration clerks obtaining sufficient information along the way to register the patient. A critical care nurse will meet the patient at the CT elevators and assume care from the charge nurse. As with the patient arriving by ground, an ID band will need to be produced and placed onto the patient before radiology will perform the CT scan.

Patients presenting to triage - Triage Nurse / ECC

If the patient comes in by POV, eligible patients will typically be placed in critical care room (C1-8) immediately upon completion of the triage determination that a patient is a Code Stroke candidate. ECC will be notified by the Triage Nurse so they can make the "Code Stroke in the ED now" announcement and send out the alert via the pager.

The EM resident and attending will report to the room immediately to assess patient stability. The registration clerk will register the patient on COWs or BMWs to produce an ID band so that the CT scan will be performed by radiology.

Clerk

An available ED Clerk will report to the patient’s bedside (in the hallway or room) with a Code Stroke packet. The clerk will give the Code Stroke Registry Form (from the Code Stroke Packet) to the nurse taking the patient to CT. The clerk will make themselves available to assist as needed with management of lab specimens, patient’s valuables, registration, etc. until released from this duty by the nurse caring for the patient (similar to trauma patient activations). This will include calling the transporter to take Code Stroke blood tubes to the laboratory.

Transporter

The transporter will notify a laboratory technician upon arrival to the lab that Code Stroke blood specimens have been delivered
Physician

The EM physician will initiate the appropriate set of Code Stroke orders.

Upon diagnosing a possible acute stroke, the EM physician will arrange for an immediate CT scan of the brain. This is part of the computerized Code Stroke (power) order set. For computer downtime periods, the Code Stroke Head CT order in the Code Stroke packet is already completed for a non-contrasted scan. Additionally, orders for a CT Angiogram (CTA) and Perfusion CT (CTP) are included in case the neurologist requests to proceed with these studies while the patient is already in the CT scanner (see below under Neurology physician). The CT Technician should already be aware of the patient’s arrival, but may be contacted directly at x11111 to facilitate/coordinate STAT Head CT scan. “Code Stroke” should be specifically marked on the electronic request or stated via telephone. The radiologist may be notified of the Code Stroke activation, especially if there is any delay reaching the CT Technician.

Radiology

The Code Stroke patient will receive priority for CT scan equal to that of an unstable trauma patient. The EM physician will be responsible for negotiating with another service and the radiologist to ensure the appropriate order of patients being scanned if there are several patients waiting for CT scans. Patients must have a medical record number entered into the scanner to perform the scan.

Critical Care Nurse

If not already completed by EMS, an 18-gauge antecubital IV access shall be attempted. A blood sample should be run STAT at point of care (POC) in the ED for BUN and creatinine. If the CT has not been done and radiology indicates that the scanner is ready for the patient, any yet uncompleted routine orders for the patient should be immediately stopped and the patient should immediately be transported to the scanner. Any previously incomplete orders may be completed after the patient returns from CT. Obviously, if the patient is unstable, this sequence of events may need to be modified.

Blood tubes drawn by the EMTs may be used for lab testing.

Physician

As soon as the decision is made to proceed with the immediate CT of the brain, the EM physician will request the CT scan. Neurology consult will already have been initiated via the 7700 pager to the on-call neurology resident with the initial Code Stroke callout. If the neurology resident has not called back or been seen by the time the patient returns from CT, then the ED physician will re-page the resident and also notify the stroke fellow and/or stroke attending on call (the ECC has this information on the REACH On-Call schedule).
**Code Stroke Registry Form**

This form is an efficient way to document arrival of various personnel as well as any other time stamps for events (eg time to CT, time neurology arrives, ...) as they occur during the patient’s evaluation and treatment. Anyone may make notes on the form and the notes may be used later as a convenient reference when various parties are documenting in the Electronic Medical Record. The form will NOT become part of the patient’s permanent medical record.

**Alteplase Orders**

Orders for Alteplase (tPA) are computerized and should be activated as soon as the decision is made to give this medication. The order may be entered by EM or Neurology physicians. During computer downtime, paper orders are available in the Code Stroke packet. Patient weight and calculations of the bolus and infusion doses should be checked by a second healthcare provider.

**Neurology Physician**

Upon receiving a Code Stroke page the neurology resident on call will respond in person or with a telephone call to the EM physician within 5 minutes of receiving the Code Stroke page. If present for the “hallway assessment,” the neurology resident will be allowed a TIME OUT to perform a rapid NIHSS examination before the patient goes to the CT scanner (this should take about 4 minutes to complete). Before returning to the ED with the patient, allow the neurology resident the opportunity to review the CT scan in the radiology suite. Upon reviewing the non-contrasted CT scan, the neurologist/REACH Attending will decide at their discretion whether or not to proceed with Alteplase, as well as CTA and/or CTP or other imaging modality (eg MRI, MRI fast Forseen protocol, MRA).

**Neurology Physician**

As soon as thrombolytic therapy or other appropriate stabilizing measures have been instituted the neurology resident will make the necessary arrangements to have the patient transferred to an ICU or other appropriate bed.

**Critical Care Nurse**

Once in the Critical Care room, if Alteplase is to be given, focus on intravenous access (x 2), labs, and the administration of Alteplase before the EKG or CXR (can occur simultaneously if multiple staff are working together).

The nurse assigned to the patient will carry out the physicians’ orders for care as appropriate and document on the patient’s medical record. Critical care nurse will obtain patient weight with bed scale. If unable to weigh patient, at least 2 individuals [nurse(s) and/or physician(s)] will concur on an estimated patient weight.

If Alteplase is given, then vital signs and neuro checks will be performed and
documented every 15 minutes for 2 hours, then every 30 minutes for 6 hours, and then every 1 hour until 24 hours after starting Alteplase.

If Alteplase is NOT given, then vital signs and neuro checks should be performed and documented as follows:

- Every hour if ICU admission is anticipated;
- Every 4 hours if floor admission anticipated.

Documentation of vital signs, neuro checks, and bedside swallow testing may be documented electronically or on the paper forms included in the Code Stroke packet during computer down time. All other documentation will be in the EMR.

The nurse caring for the patient is responsible for completing the Code Stroke Registry Form and presenting same to the Charge Nurse for review and routing.

A copy of the Code Stroke Registry form will go to Dr. Gross’ box in the ED. The original will go to the floor/ICU (with the rest of the patient’s paper documents) for eventual routing as directed at the bottom of the form.

**Recommended Time Goals:** (per American Stroke Association)

- Door to physician 10 minutes
- Notification of Stroke Team 15 minutes
- Door to CT initiation 25 minutes
- Door to CT read 45 minutes
- Door to treatment (tPA) 60 minutes**

** It is the goal of this Comprehensive Stroke Center to have an average door to tPA treatment time of under 45 minutes.

** RELATED DOCUMENTS, FORMS, AND TOOLS**

None

**AUTHORIZING SIGNATURE**

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