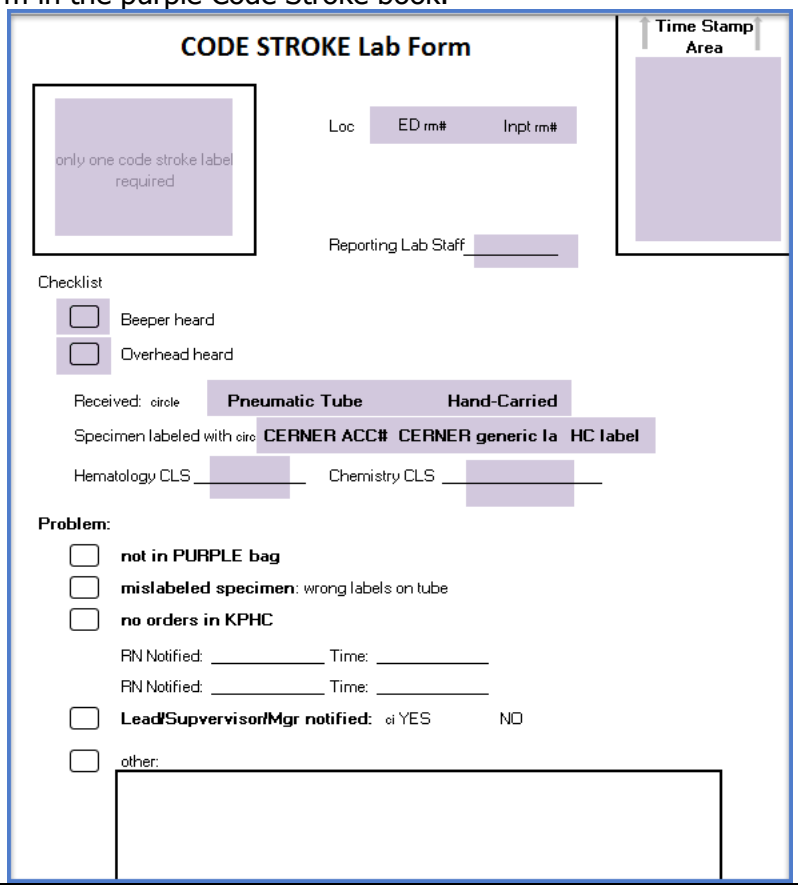
Technical Bulletin

SCPMG – SOUTH BAY LABORATORY

Code Stroke – February 2, 2016

Pre-Analytic Process

1. Complete a Code Stroke form (kept in the purple Code Stroke book) as soon as the overhead announcement has been made, as soon as the code stroke beeper has beeped, or as soon as the specimen is received, whichever is first.
   - Document the room number of the code stroke.
   - Write your name on the form as the reporting lab staff.
   - Place check mark if the code stroke beeper was heard.
   - Place check mark if overhead announcement was heard.
   - Time stamp the form when the specimen is received.
   - Circle if the Code Stroke specimens were received in pneumatic tube or hand carried.
   - Circle the label type received on the specimen.
2. Complete **Problem** section if applicable.
3. Process as required. Hand deliver specimens to the correct departments (warm handoff). **Document name of CLS.**
4. Notify supervisor/mgr if a problem is documented. On weekends and after hours notify the Lead CLS.
5. File the form in the purple Code Stroke book.



Department: **Medical Center Wide – 2000's**		Policy #: **MCW 2375**
Section: **Direct Patient Care / Emergency Procedures**	Effective Date: **5/11**	Page: Page **1** of **16**
Title: **Code Stroke Procedure**	Review/Revision Date: **4/14, 5/15, 4/16, 6/17, 4/18, 12/18, 5/19, 7/19, 9/19, 5/22**	
Accountable Department or Committees: Hospital Services Committee Approved by: Executive Committee		

WORKPLACE SAFETY MESSAGE: Work smarter not harder; use assistive devices available in your area.

Attachments:

- Attachment A: Code Stroke Log for Use During Health Connect Downtime.
- Attachment B: Tele-Neurologist Workflow.
- Attachment C: B.E.F.A.S.T criteria.
- Attachment D: Alteplase for Acute Ischemic Stroke Nursing Guideline.

Related Policies:

- MCW P&P 2148 - Rapid Response Process
- MCW P&P 2824 South Bay High Alert Medication

PURPOSE:

To ensure timely assessment and treatment of patients who present with B.E.F.A.S.T symptoms.

(B)ALANCE: Sudden changes in balance or coordination.
(E)YES: Vision changes: Does the patient have sudden vision loss or double vision.

(F)ACE: Facial droop: Does the face look uneven.
(A)RMS: Arm weakness: Sudden arm numbness or weakness.
(S)PEECH: Speech slurred: Sudden difficulty speaking or unable to speak clearly.
(T)IME: Make note of the time symptoms started.

Sections:

I. Emergency Department Code stroke
II. Emergency Department Code 24
III. In-Patient Code Stroke

I. **CODE STROKE in the Emergency Department**
   a. The patient is assessed for CODE STROKE using ESI (Emergency Severity Index) and B.E.F.A.S.T criteria.
      i. If B.E.F.A.S.T screening is positive in Triage, the Triage RN/CN notifies Triage MD to see the patient STAT in Triage and "Triage Neuro" is announced overhead in Emergency Department (E.D.)
         1. For patients who exhibit signs of acute stroke AFTER triage, the Primary Nurse immediately notifies E.D. Physician and Charge Nurse that patient is suddenly exhibiting signs of acute stroke.
      ii. The E.D. Triage Physician immediately evaluates the patient for Last Known Well time (LKWT), and whether patient is a potential candidate for thrombolytic therapy or thrombectomy.
      iii. If the E.D. Triage Physician determines patient is a potential candidate for thrombolytic therapy, or is a candidate for thrombectomy, the CODE STROKE protocol is initiated, and the Charge Nurse immediately dials ext.

6500 and notifies Hospital Operator of "CODE STROKE Emergency Department".

1. If the E.D. Triage Physician determines that the patient is NOT having a stroke or is not a candidate for thrombolytic therapy or thrombectomy, then CODE Stroke is NOT initiated, and E.D. Physician determines further care.
2. Presents case to Tele-Neurology.

b. Roles and Responsibilities

i. Computerized Tomography (CT) Technician

1. Prepares for STAT non-contrast CT scan of the head. Notifies E.D. as soon as ready for patient.
2. Notifies Radiologist (or Tele-Radiology after hours) of pending CODE STROKE patient.
3. Completes STAT non-contrast CT scan of the head.
4. Immediately transmits completed scan to Radiologist (or Tele-Radiologist) for STAT interpretation.

ii. E.D. Charge Nurse

1. Immediately dials x6500 and notifies Hospital Operator of "CODE STROKE Emergency Department".
2. Ensures that E.D. Physician has entered orders.
3. Contacts CT technician to notify them of patient's name and MRN.
4. Ensures House Supervisor has secured a critical care bed.
5. Notifies Pharmacist of pending CODE STROKE thrombolytic candidate in the E.D.
6. Assists Primary Nurse and House Supervisor with their duties, as needed.

iii. E.D. Physician

1. Presents the case to Tele-Neurology (If not done so by E.D. Triage Physician).
2. Obtains Tele-Neurology consent from patient or surrogate and documents consent in the chart.
3. Initiates orders, including a non-contrast CT scan of the head.
4. Orders thrombolytic and obtains informed consent to deliver thrombolytic if Tele-Neurologist is unavailable.
5. Reviews test results. The goal is to have EKG, chest x-ray, lab tests, and head CT reviewed within 45 minutes from time of arrival.
6. Notifies patient's family of change in condition, if applicable.
7. Transfers patient to indicated level of care and communicates with accepting physician(s).

iv. E.D. Primary Nurse

1. Assesses patient immediately, including the National Institutes of Health Stroke Scale (NIHSS), or Complex Neuro Checks stroke scale and documents in Health Connect.
2. Begins Stroke Log (Health Connect flowsheet 2028).
3. Obtains patient's weight and notifies pharmacy immediately.
    a. The preferred weight is an actual weight taken in the E.D.
    b. If obtaining an actual weight will significantly delay door to needle time, then a stated weight is acceptable.

c. The actual or stated weight will be documented.

4. Draws blood for STAT CODE STROKE lab panels. This is consistent with the "rainbow" blood draws that take place on all urgent E.D. patients at the beginning of the E.D. visit:
   a. Complete blood count (CBC) w/ Platelets (1 lavender top tube).
   b. Blood Chemistries (2 green top tubes).
   c. Prothrombin Time/International Normalized Ratio PT/INR and Activated Partial Thromboplastin Time APTT (1 blue top tube).
5. Places CODE STROKE blood tubes in purple CODE STROKE bag and sends to lab. Blood tests available for review by MD within 45 minutes from time of arrival.
6. Initiates two normal saline intravenous (IV) infusions, via two insertion sites, each infusing to keep vein open (TKO). (CT scan and/or thrombolytic infusion should not be delayed while attempting second IV insertion. Second IV insertion may be delayed until after CT scan has been performed and may be attempted by a second nurse while thrombolytic infusion is being initiated, if necessary).
7. Performs 12 lead EKG and hands to E.D. Physician for interpretation.
8. Accompanies patient to and from Radiology.
9. Completes bedside swallow screen (using Doc Flowsheet #973 in Health Connect), keeping patient NPO until swallow screen has been passed.
10. Follows up on all labs and tests that have been ordered, in an attempt to ensure that results are provided promptly to Tele-Neurologist and E.D. Physician.
11. Notifies pharmacist as soon as thrombolytic order has been written.
12. Administers thrombolytic and initiates post thrombolytic monitoring. (See High Alert Medication Safety Practices Policy, referenced at the beginning of this policy).
13. Completes Stroke Log (Health Connect flowsheet 2028).
14. Documents all treatments and interventions, including the patient's response, in the medical record (Health Connect).
15. Provides warm handoff and report to critical care RN prior to transport, including details of post thrombolytic monitoring.
16. Accompanies patient to Intensive Care Unit (ICU), if patient is being admitted to this hospital or hands off to ambulance personnel, if patient is being transferred to another facility.

v. Hospital Operator
   1. Pages ED CODE STROKE Response Team members, as per CODE STROKE Emergency Panel Beepers Table (below) via long term beepers and announces three times via overhead intercom, "CODE STROKE, Emergency Department."
   2. Paging Tele-Neurologist and Response Expectations:
      a. Page the Tele-Neurologist at (323) 699-4444.

b. If the Tele-Neurologist does not call back in 5 minutes, page Tele-Neurologist again (323) 699-4444.
c. If no call back, check call schedule and call cell phone. If still no call back in another 5 minutes, page the Regional Stroke pager at (323) 279-1111 (this is specifically for the stroke neurologist).
d. If still no call back in another 5 minutes. Page the local Neurologist on-call.

Table 1: CODE STROKE Emergency Pagers

RESPONDER
CT Technician
Lab
Pharmacist
House Supervisor
Tele-Neurologist
Stroke Medical Director
Stroke Program Coordinator

vi. House Supervisor
1. Secures an appropriate critical care bed by one of the following means:
   a. Collaborates with the ICU Charge Nurse to secure a critical care bed at this facility.
   b. Collaborates with E.D. Discharge Coordinators to secure a critical care bed at another facility.
2. Collaborates with E.D. Charge Nurse to ensure adequate nurse resources at bedside to assist the Primary Nurse.

vii. Lab
1. Responds to support Nursing.

viii. Pharmacist
1. Reviews STAT order in Health Connect for thrombolytic.
2. Prepares thrombolytic according to pharmacy policy. (See High Alert Medication Safety Practices Policy, referenced at the beginning of this policy).
3. Mixes thrombolytic and delivers to the bedside.
4. During a Health Connect downtime, verbal orders will not be accepted unless given by the Tele-Neurologist.

ix. Radiologist
1. Reviews CODE STROKE STAT non-contrast CT scan of the head and calls the E.D. Physician with the wet reading interpretation.
2. Documents in Health Connect Image Report the time that the results were discussed with the E.D. Physician. Results reported within 45 minutes from time of arrival.

x. Tele-Neurologist
1. Responds by phone to the E.D. Physician.
2. Documents:

a. Time of E.D. arrival.
b. Symptom onset/LKWT.
c. Time page received.
d. Time called back to E.D.
e. Time patient evaluated via Tele-Medicine.
f. Time CT read by Tele-Neurologist.
g. NIHSS

3. Discusses the potential risks during thrombolysis eligibility deliberation and weighs this against anticipated benefits.
4. Completes required order sets, including order for thrombolytic, provided patient is a candidate for thrombolytic therapy.

xi. Transportation Aide
1. Reports to the bedside to assist as needed. Hospital Transportation Aides or E.D. Techs may assist if an E.D. Transportation Aide is not available. (E.D. Charge Nurse will decide on who will be used in this role on a case by case basis).

II. **CODE 24 in the Emergency Department**

a. For patients who present to the Emergency Department with last known well time (LKWT) greater than 6 hours but less than 24 hours.
b. The patient is assessed for CODE 24 using ESI and B.E.F.A.S.T criteria.
i. If B.E.F.A.S.T screening is positive in Triage, the Triage RN/CN notifies E.D. Triage Physician to see the patient STAT in Triage and "Triage Neuro" is announced overhead in E.D.
c. E.D. Triage Physician immediately evaluates the patient for Last Known Well Time and evaluates if the patient is a possible CODE24 candidate.
i. A patient may be a CODE24 candidate under the following criteria:
1. LKWT is greater than 6 hours and less than 24 hours.
2. Based upon a quick initial assessment an NIHSS scale is deemed to be 6 or greater.
ii. If E.D. Triage Physician feels the patient fits the criteria for CODE24, the next E.D. physician available is assigned the patient.
d. The assigned E.D. Physician does a full evaluation including history and NIHSS stroke scale.
i. If the patient fits CODE24 criteria, then the Tele-Neurologist is paged (323) 699-4444.
ii. The E.D. Physician discusses the case with the Tele-Neurologist. If it is agreed that the patient is a potential CODE24 candidate, then a CODE24 is called.
1. "Code 24 Emergency Department" is announced overhead three times and is paged.
2. The E.D. Physician orders a STAT CT head without contrast and a CT Angiogram (CTA) of the head and neck.
iii. If a large vessel occlusion is found on CTA, then "code 24 LVO confirmed" is called overhead in the ED and is paged.
iv. The patient is then set up for transfer to a comprehensive stroke center.
e. Roles and responsibilities
i. Case manager

1. Starts the Emergency Transfer Assistance Program (ETAP) process for transfer to a comprehensive stroke center (CSC) once a large vessel occlusion (LVO) is confirmed by overhead announcement "Code 24 LVO confirmed".

ii. CT Technician
1. Prepares for STAT non-contrast CT scan of the head and CTA of the head and neck.
2. Notifies E.D. as soon as ready for patient.
3. Notifies Radiologist (or Tele-Radiology after hours) of pending CODE24 patient.
4. Completes exams.
5. Immediately transmits completed scan to Radiologist (or Tele-Radiologist) for STAT interpretation.

iii. E.D. Physician
1. Completes a full NIHSS evaluation.
2. Has ward clerk page Tele-Neurology.
3. Discusses case with Tele-Neurology.
4. Calls CODE24 if appropriate.
5. Places stat order for CT head without contrast and CTA of the head and neck.

iv. E.D. Primary RN
1. Starts IV line.
2. Draws labs and submits to Laboratory.
3. Obtains blood glucose.
4. Fills out CT allergy questionnaire.
5. Routine E.D. care.

v. Lab
1. Paged For informational purposes.

vi. Operator
1. Pages the following (Table 2):

Table 2: CODE24 Emergency Pagers

Responder
CT Tech
Emergency Assistant Clinical Director
Emergency Director
Emergency Manager/ Nurse Educator
Lab
Stroke Coordinator
Stroke Medical Director
Tele-Neurologist

vii. Radiologist
1. Reviews CODE24 STAT non-contrast CT scan of the head and CTA of the head and neck.
2. Calls the E.D. Physician with the wet reading interpretation.
3. Documents in Health Connect Image Report the time that the results were discussed with the E.D. Physician.

viii. Tele-Neurologist
1. Discusses case with E.D. physician and determines if CODE24 should be called.
2. Sets up ETAP for transfer to comprehensive stroke center if LVO confirmed.

ix. Ward Clerk Transcriber (WCT)
1. Connects Tele-Neurologist to E.D. Physician.
2. Calls Emergency operator for CODE24.
3. Calls Emergency operator if LVO confirmed.
4. Discharges patient from Health Connect immediately upon the patient's discharge. [for accurate Door In Door Out times (DIDO)]

III. **Initiation of CODE STROKE in an In-Patient Unit**

a. For patients already admitted with new neurologic symptoms less than 6 hours.
i. There are two possible pathways to instigate a "CODE STROKE" for an in-patient.
1. The treating Physician may instigate an in-patient code stroke.
2. The patient's nurse activates a rapid response.
a. IOD (Internist on Duty) responds to bedside (within 5 minutes) and determines whether to call a "CODE STROKE".

b. Roles and Responsibilities
i. Upon being notified of the CODE STROKE, members of the In-Patient CODE STROKE Response Team initiate their assigned duties as follows:
1. Central Supply
a. Restocks Intravenous Pumps in CT Holding area.
2. Critical Care Nurse (Rapid Response Nurse)
a. Responds to bedside as part of the rapid response team.
b. Performs assessment (obtains blood sugar, places patient on monitor, etc.).
c. Calls operator x6500 "In-patient Code Stroke" after directed by Physician.
d. Calls CT tech to find out which scanner to take patient.
e. Transports patient to CT and then to CT holding area.
f. Obtains patient's weight and blood pressure.
g. Conducts NIHSS assessment with Tele-Neurologist.
h. Notifies Pharmacy if thrombolytic will be given.
i. Performs independent double check of thrombolytic and administers it.
j. If CT Angiogram needed for suspected Large Vessel Occlusion (LVO), transports patient to CT scanner after thrombolytic infusion started.
k. While patient is in CT scanner, fills out ETAP form and initiates the call.
l. Places stat order for transportation in Health Connect (HC).
m. Continues patient management until patient is transported to Comprehensive Stroke Center (CSC) or another nurse assumes care.
3. CT Technician

a. Prepares a scanner for incoming code stroke patient.
b. Communicates with Rapid Response Nurse on which scanner will be used.
c. Clears out bay 1 in CT holding area.
d. Notifies Radiologist or Tele-Radiologist (after hours) of pending In-Patient "CODE STROKE".
e. Completes STAT non-contrast CT scan of the head.
f. Immediately transmits completed scan to Radiologist (or Tele-Radiologist) for STAT interpretation.
g. Prepares CT scanner for STAT CTA if deemed appropriate by Tele-Neurologist.

4. Hospital Operator
   a. Pages "In-Patient Code Stroke room_____ to CT Holding. (310)534-6500. SBMC.
   b. Announces three times via overhead intercom "In-Patient Code Stroke, Unit_____ to CT Holding".
   c. The following receive the code stroke page (Table 3).

Table 3: In-Patient pagers.

RESPONDER
Central Supply
Critical Care Charge Nurse
CT Technician
House Supervisor
In-patient Assistant Nurse Manager (ANM)
In-patient Nurse Managers
In-patient Pharmacy pager
*IOD
Lab
Patient Transportation
Respiratory
Security Medical Emergency Pager
Security Supervisor
Stroke Coordinator
Stroke Medical Director
Tele-Neurologist

*Internist On-Duty

5. House Supervisor
   a. Responds to CT holding area to be second verifier if thrombolytic is given.
   b. Performs an independent double check of the medication.
   c. Transports patient back to CT scanner if suspected LVO.
   d. Initiates call to ETAP if Rapid Response nurse is unable.
   e. Secures a bed in stroke unit or Intensive Care Unit (ICU).

f. Places STAT transportation order in Health Connect if Rapid Response nurse unable.

6. Pharmacist
   a. Reviews STAT order in Health Connect for thrombolytic.
   b. Prepares thrombolytic according to pharmacy policy. (See High Alert Medication Safety Practices Policy, referenced at the beginning of this policy).
   c. Mixes thrombolytic and delivers to the CT holding area.
   d. During a Health Connect downtime, verbal orders will not be accepted unless given by the Tele-Neurologist.
   e. Performs safety check to confirm patient name, MRN and weight.
7. IOD
   a. Responds to bedside (as part of the rapid response team).
   b. Evaluates patient and if stroke suspected, instructs RN to call x6500 "Inpatient Code Stroke".
   c. Consults with Tele-Neurologist.
   d. Places STAT orders for CT head, labs etc.
   e. Gives a verbal report to Physician assuming care of the patient.
8. Laboratory
   a. Responds to CT holding.
   b. Draws labs ordered by Physician.
   c. Places CODE STROKE blood specimens in purple CODE STROKE bag.
   d. Ensures transport to the lab.
9. Patient Transportation
   a. Responds to the patient's bedside to help transport the patient to CT.
10. Primary Nurse
    a. Recognizes BEFAST symptoms and calls Rapid Response at x6500.
    b. Transports patient and any family (maximum of 2) to CT area.
    c. Escorts family to CT holding area and obtains Tele-Health cart.
    d. Answers any questions the Tele-Neurologist may have regarding the patient.
    e. Returns to the floor when CT completed, and patient arrives in holding area.
11. Radiologist/Tele-Radiologist
    a. Reviews CT head.
    b. Documents in Health Connect.
12. Respiratory Therapist
    a. Responds to bedside (as part of rapid response team).
    b. Transports patient to CT area.
    c. If LVO suspected helps transport patient back to CT scanner.
13. Security Medical Emergency Page

a. Receives page for informational purposes only.

14. Security Supervisor
    a. Receives page for informational purposes only.
15. Stroke Coordinator
    a. Receives page for informational purposes only.
16. Stroke Medical Director
    a. Receives page for informational purposes only.
17. Tele-Neurologist
    a. Returns page to operator.
    b. Discusses case with the Physician who called the In-Patient "CODE STROKE".
    c. Performs NIHSS exam via tele-health cart.
    d. Reads the CT scan of the head.
    e. Determines if patient is a candidate for thrombolytic.
    f. Discusses the potential risks during thrombolysis eligibility deliberation and weighs them against anticipated benefits.
    g. Orders thrombolytic.
    h. Determines if CT angiogram is indicated to assess for LVO.
    i. Arranges ETAP transfer if thrombectomy indicated.
    j. Presents case to Physician initially involved in patient care.
    k. Presents case to outside Physician if transfer for thrombectomy indicated.

ATTACHMENT A – Healthconnect Downtime Code Stroke Log

PATIENT LABEL

CODE STROKE LOG For Use During Healthconnect Downtime

Name: MR#:
Date of Admission: Patient Location:

Last time known well (date/time):
Onset of stroke symptoms (date/time):

Your Name (print):

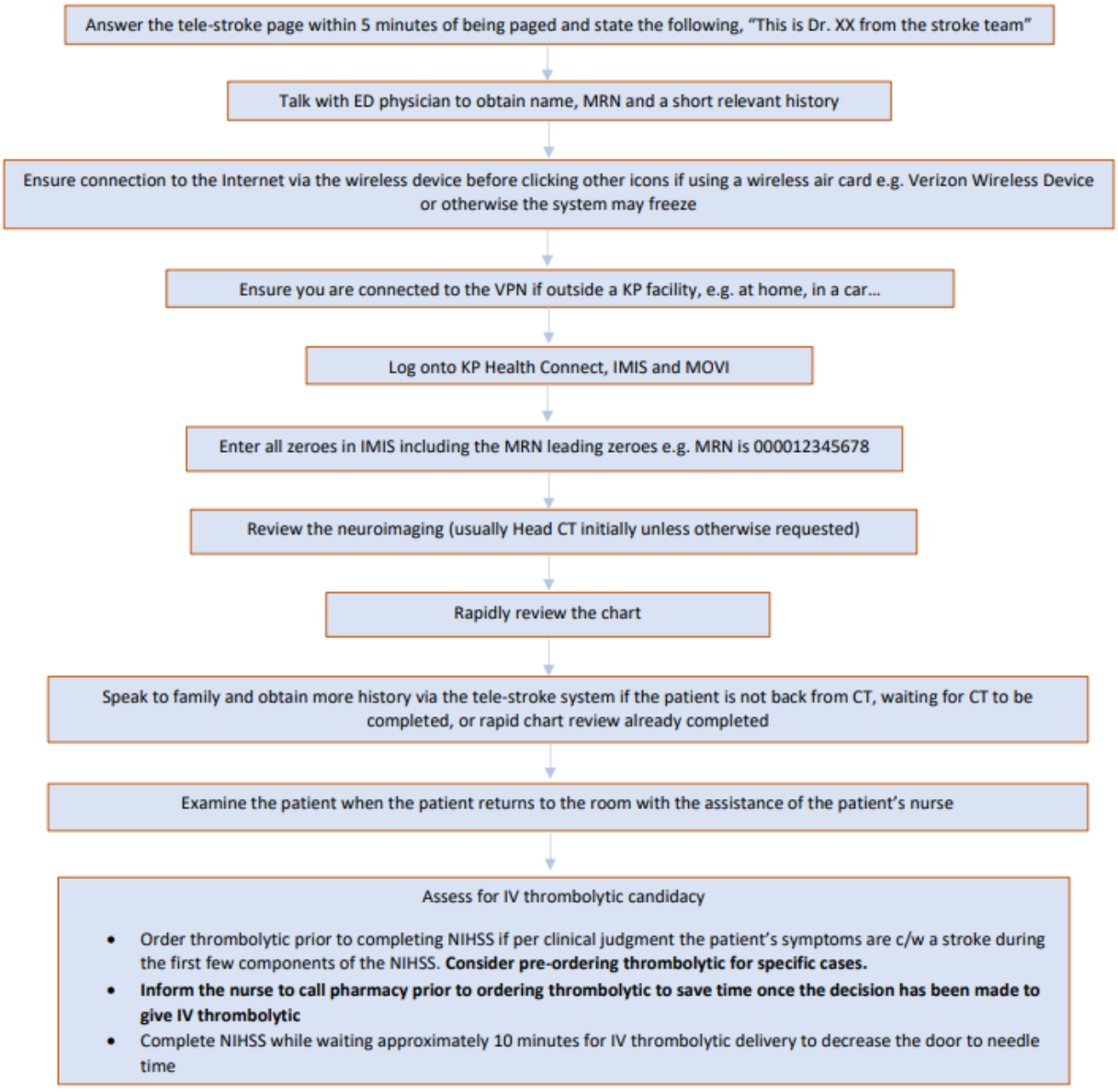
ED Stroke	Comments	Response time
ED arrival time		
ED physician at bedside		
Stroke Team Activation		
Stroke Team Arrival		
a. (name)		
b. (name)		
c. (name)		
Orders(s)		
a. CT order/result		/
b. Lab order/result		/
c. EKG order/result		/
NIHSS time done/result		/
Swallow Screen: time done	O pass O fail, NPO	
Antiplatelet given: time done		
Neurologist notified		

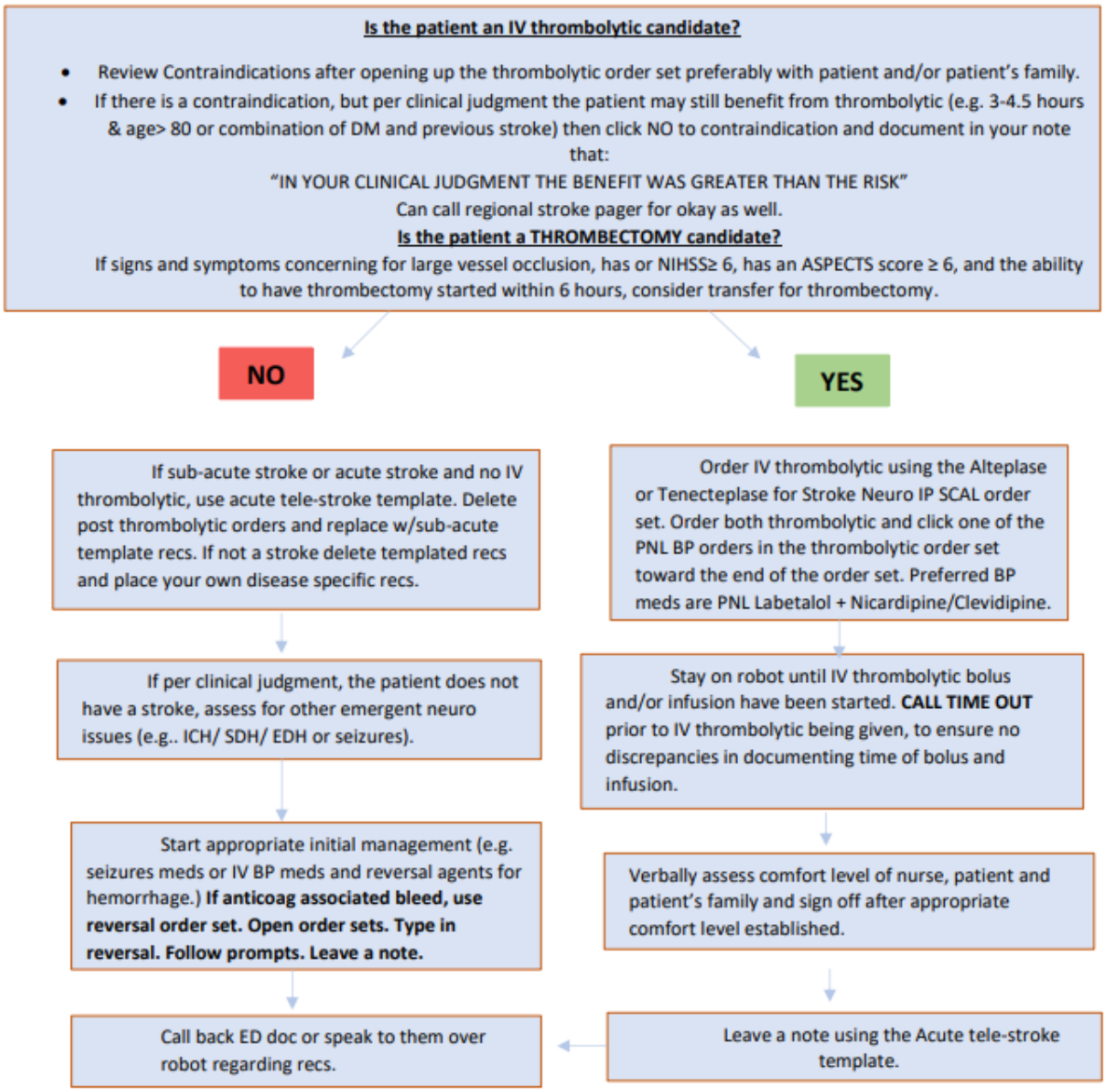
Thrombolytic ordered		
Thrombolytic baseline VS/neuro's		
Thrombolytic administered: start time		
Thrombolytic VS QlS" during infusion		

Inpatient Stroke	Comments	Response time
Stroke team Activation		
Stroke Team Arrival		
a. (name)		
b. (name)		
c. (name)		
Order(s)		
a. CT order / result		/
b. Lab order / result		/
c. EKG order/ result		/
d. Other		/
NIHSS time done/result		/
Swallow Screen: time done	O pass O fail, NPO	
Antiplatelet given: time done		
Thrombolytic ordered		
Thrombolytic baseline VS/neuro's		
Thrombolytic administered: start time		
Thrombolytic VS QlS" during infusion		

ATTACHMENT B

Tele-Neurologist Workflow





ATTACHMENT C

B.E.F.A.S.T CRITERIA

(B)ALANCE: Sudden changes in balance or coordination.
(E)YES: Vision changes: Does the patient have sudden vision loss or double vision.

(F)ACE: Facial droop: Does the face look uneven.
(A)RMS: Arm weakness: Sudden arm numbness or weakness.
(S)PEECH: Speech slurred: Sudden difficulty speaking or unable to speak clearly.
(T)IME: Make note of the time symptoms started.

ATTACHMENT D

ALTEPLASE (TPA) FOR ACUTE ISCHEMIC STROKE NURSING GUIDELINE

Order Guideline	YES	NO	N/A
ADMIT PATIENT TO ICU			
Imaging			
CT HEAD OR MRI BRAIN AT 24 HOURS AFTER THROMBOLYTIC			
Lab			
BLOOD GLUCOSE, SERUM ELECTROLYTE/RENAL FUNCTION TESTS, CBC INCLUDING PLATELETE COUNT, TROPONIN, INR, PTT			
Medications			
DO NOT GIVE HEPARIN PRODUCTS UNTIL REPEAT CT HEAD OR MRI BRAIN VERIFIES NO BLEED.			
DO NOT GIVE ANTICOAGULATION UNTIL REPEAT CT HEAD OR MRI BRAIN VERIFIES NO BLEED.			
DO NOT GIVE ANTIPLATELETS (ASPIRIN, AGGRENOX, PLAVIX) UNTIL REPEAT CT HEAD OR MRI BRAIN VERIFIES NO BLEED			
Nursing			
NEURO CHECKS: TIME 0 = START OF THROMBOLYTIC INFUSION. EVERY 15 MINUTES FOR 2 HOURS, THEN EVERY 30 MINUTES FOR 6 HOURS, THEN EVERY 1 HOUR FOR 16 HOURS. THEN PER ROUTINE, USE NIHSS DOC FLOWSHEET, or COMPLEX NEURO CHECK			
VITAL SIGNS: EVERY 15 MINUTES FOR 2 HOURS, EVERY 30 MINUTES FOR 6 HOURS, THEN EVERY 1 HOUR FOR 16 HOURS.			
NURSING RATIO 1:1 FOR FIRST 8 HOURS			
NOTIFY PHYSICIAN IF: SYSTOLIC BP GREATER THAN 180 OR LESS THAN 110, DIASTOLIC BP GREATER THAN 105 OR LESS THAN 60.			
NOTIFY PHYSICIAN IF WORSENING NEUROLOGIC EXAM			
NOTIFY PHYSICIAN IF PATIENT DEVELOPS SEVERE HEADACHE, NAUSEA OR VOMITING			
NPO UNTIL PATIENT PASSESS SWALLOW SCREEN			
BED REST UNTIL EVALUATED BY LOCAL NEUROLOGIST. HEAD OF BED KEPT FLAT FOR 24 HOURS UNLESS MD ORDER STATES OTHERWISE			
USE SCDS FOR DVT PROPHYLAXIS			