| Acute Stroke Toolkit | [Facility Name] |
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**PATIENT PRESENTING WITH ACUTE STROKE TO [FACILITY NAME]**

**POLICY**

Patients presenting to [FACILITY NAME] with symptoms of an acute stroke will be emergently assessed, treated and admitted or transported to [IDENTIFIED FACILITY] after assessment and evaluation for thrombolytic therapy. Total time from assessment and treatment to the initiation of transfer to the nearest appropriate facility for continued care and monitoring of the patient will be less than 60 minutes per best practice guidelines.

**PROCEDURE**

Patient presents with onset of stroke and qualifies for thrombolytic therapy.

***Emergent Evaluation*:** Patients with stroke or suspected stroke are admitted and evaluated emergently

1. ***Diagnosis & Time of Onset.*** Evaluate patient for diagnosis of stroke and determine time of onset of symptoms
2. ***Brain Imaging***. Order STAT non-contrast head CT; specify Dx: "Emergent Acute Stroke"
3. ***IV Access***: Establish IV line, preferably 2 separate lines on opposite arms
4. ***STAT Laboratories***:
   - ***a.*** CBC & platelet count
   - ***b.*** PT, PTT, INR
   - ***c.*** Serum electrolytes, BUN, creatinine, glucose
   - ***d.*** Markers of cardiac ischemia
   - ***e.*** Glucose finger stick

   ****Because time is critical, the only lab result required in all patients before thrombolytic therapy is initiated is a glucose. Do NOT wait for PT, aPTT, or platelet count unless a bleeding abnormality or thrombocytopenia is suspected.***

5. ***Perform and document NIHSS exam and score***
6. ***Document RACE score if available***
7. ***Obtain 12-Lead ECG***
8. ***Obtain O2 Saturation***
9. ***Blood Pressure monitoring q 15 minutes***
10. ***Place on Cardiac Monitor***
11. ***Elevate Head of Bed 30 degrees***

***Based on Radiology Report:***

***If NO evidence of intracerebral hemorrhage proceed with evaluation and administration of Alteplase (tPA)***

***If evidence of intracerebral hemorrhage proceed to acute intracerebral hemorrhagic stroke protocol***

12. ***Evaluate and administer (tPA) Alteplase (refer to Alteplase protocol )***
13. ***Evaluation for Endovascular Therapy (LVO considerations pg2)***
14. ***Emergent Notification of Receiving Facility for Further Management if Necessary***
    - ***a.*** **Transfer**
      - i. Notify the receiving facility of the patient transfer request
      - ii. Determine with receiving facility appropriate transfer (air or ground)
      - iii. Alteplase (tPA) can be infusing during transfer, appropriate monitoring needed
    - ***b.*** If appropriate and available, consider telestroke

**CRITERIA FOR IV THROMBOLYTIC TREATMENT**

The Criteria below are intended as guidelines to assist in determining eligibility for thrombolytic therapy. The decision to administer thrombolytics is at the discretion of the treating physician.

**Eligibility Criteria:**

1) Age older than 18.
2) Clinical presentation consistent with acute ischemic stroke
3) Significant and persistent neurologic deficits
4) Onset of symptoms well established. (Onset of symptoms is defined as the time the patient was last known to be normal; (i.e. if awakened with stroke, the onset is defined as the time patient went to sleep the night before, etc)
5) If duration is less than 4.5 hours
6) Head CT consistent with acute ischemic stroke (No hemorrhage, SDH, or tumor)
7) Blood Glucose >50

**EXCLUSION CRITERIA FOR TREATMENT WITH IV THROMBOLYTICS FROM 0 – 4.5 HOURS OF SYMPTOM ONSET:**

***Clinical Presentation Exclusion Criteria***

a) Symptoms suggestive of subarachnoid hemorrhage (even if head CT normal)

***History Exclusion Criteria***

a) Previous history of intracerebral hemorrhage
b) History of GI hemorrhage in the past 3 weeks
c) Head trauma in preceding 3 months
d) Use of Low Molecular Weight Heparin in the past 24 hours with elevated PTT
e) Use of warfarin and elevated INR > 1.7 (for patients presenting within 3 hours) or platelets <100,000
f) Factor Xa inhibitors or Thrombin inhibitors if they have received a dose within 48 hours

***Blood Pressure Exclusion Criteria***

a) Persistent after treatment SBP > 185 mm Hg; DBP > 110 mm Hg. (See treatment plan)

***Head CT (non-contrast) Exclusion Criteria***

a) Evidence of non-ischemic intracranial pathology: tumor, abscess or metastases
b) Evidence of intracranial hemorrhage: parenchymal, subarachnoid, subdural, epidural
c) Early signs of large cerebral infarction: edema, hypodensity, mass effect

**ENDOVASCULAR THERAPY FOR LARGE VESSEL OCCULUSION (LVO) CONSIDERATONS**

**Eligible Patients**

- **0-24 hours from symptom onset. Some wake up stroke if imaging shows mismatch**
- **Post tPA if symptoms persist**
- **CTAngio shows large vessel occlusion**

**If patient presents with:**

- **Gaze deviation**
- **Vision**
- **Aphasia**
- **Neglect**
- **Paralysis**
- **NIHSS >6**
- **RACE score >4**

**CT Angiography is needed for diagnosis if able to perform and read immediately, if unable to perform in 20 minutes or less transfer higher level of care**

**Alteplase Protocol**

**IV THROMBOLYTIC TREATMENT PLAN**

***BP Management:***

If patient ***is eligible*** for treatment with intravenous t-PA or other acute reperfusion intervention, then blood pressure should be: Systolic <185 mm Hg or Diastolic < 110 mm Hg.

Treatment options to lower blood pressure if Systolic >185 or Diastolic >110:

a. Labetalol 10 to 20 mg IV over 1 to 2 minutes may repeat x 1;
   or
b. Nicardipine infusion, 5 mg/h, titrate up by 2.5 mg/h at 5 to 15 minute intervals, maximum dose 15 mg/h; when desired blood pressure attained, reduce to 3 mg/h

***WARNING* IF BLOOD PRESSURE DOES NOT DECLINE AND REMAINS > 185/110 MM HG AFTER 30 MIN***
***THEN STOP AND DO NOT ADMINISTER T-PA***

**IV t-PA DOSE AND ADMINISTRATION**

***Persons to Order (Immediately after CT) in order of preference***

[MUST SPECIFIY WHO WILL HAVE RESPONSIBILITY FOR ORDERING THROMBOLYTIC]

***Order***

[INSTRUCTIONS SPECIFIC TO FACILITY FOR ORDERING t-PA]:
**Drug**: "intravenous t-PA (Alteplase) for ischemic stroke"

***Administration***:

1) Dose: 0.9 mg/kg body weight (maximum 90 mg). Dose will be calculated and verified by two providers (defined by Institution)
   a. Drug will arrive in two vials/bags (one bolus, one infusion)
   b. Intravenous administration methods will be provided on labels
   c. 10 % of dose given as bolus (over one minute)
   d. Remainder of dose infused over 60 minutes
   e. After the tPA infusion is complete, infuse 50 ml of normal saline at the same infusion rate as the tPA infusion rate in order to infuse the remaining drug in the tubing. **DO NOT FLUSH TO AVOID ADDITIONAL BOLUS**

**POST-INFUSION CARE**

**First 24 hours**

a. Admission to Intensive Care Unit
b. Cardiac and O2 monitoring
c. BP monitoring q 15 minutes x 2 hr; then q 30 minutes x 6 hr; then q 1 hr x 16hr
d. Treatment of BP to keep SBP $\leq$ 180 mm Hg; DBP $\leq$ 105 mm Hg
e. Neuro checks q 15 min x 2 hr, then q 30 minutes x 6 hr; then q 1 hr x 16hr
f. Avoid NG tube, Foley catheter, or invasive lines/procedures x 24 hr unless absolutely necessary
g. **STAT** brain CT with any signs of clinical deterioration, or suggestion of intracranial bleed
h. Observe carefully for any signs of systemic bleeding
i. No anticoagulant or antiplatelet Alteplase (tPA): CBC, platelet count, electrolytes, BUN, creatinine, UA

**After First 24 Hours**

a. If patient stable move out of ICU to [APPROPRIATE UNIT]
b. Follow-up CT exam 24 hours post Alteplase
c. Close observation over the following 2 days for any neurologic worsening or symptoms of intracranial hemorrhage
d. Neuro checks and vital signs q 4 hours x 24 hours, then q shift
e. Antiplatelet agents initiated if indicated
f. Perform dysphagia screen (nursing bedside swallow screen) prior to any oral intake
g. Initiate early nutrition

**GUIDELINES FOR BLOOD PRESSURE MANAGEMENT POST Alteplase (tPA) INFUSION**

Monitor blood pressure during the first 24 hours:
- Every 15 minutes for 2 hours, then
- Every 30 minutes for 6 hours, then
- Every 60 minutes for 16 hours

If BP still elevated, continue monitoring every 60 minutes
If BP below 180/105, then check measurements q 4 hours x 24 hrs then to every shift

**Management of Acute Hypertension Post-Infusion**

Blood pressure level
*Systolic >180 mm Hg or diastolic >105 mm Hg*

a. Labetalol 10 mg IV over 1 to 2 minutes, may repeat every 10 to 20 minutes, maximum dose of 300 mg;

or

b. Labetalol 10 mg IV followed by an infusion at 2 to 8 mg/min

a. Nicardipine infusion, 5 mg/h, titrate up to desired effect by Increasing 2.5 mg/h every 5 minutes to maximum of 15 mg/h

After First 24 hours consider beginning oral
maintenance therapy.

**MANAGEMENT OF INTRACRANIAL HEMORRHAGE (ICH) POST IV t-PA INFUSION**

**Indicators of higher risk for Symptomatic Intracerebral Hemorrhage**

a. Severity of initial neurologic deficit (NIHSS > 20)
b. Age > 75 years
c. Significant large areas with early ischemic abnormalities on CT (< 3 hours from onset)
d. Time interval from stroke onset to starting treatment (> 3 hours)
e. Treatment with anti-platelet or anti-coagulant in first 24 hours
f. Refractory hypertension not adequately managed prior to treatment

**Procedures**

a. If ICH SUSPECTED, discontinue t-PA infusion immediately and notify MD
b. STAT brain CT scan for any neurological deterioration
c. STAT lab studies: PT, PTT, fibrinogen, CBC, platelet count
***d. Emergent Notification of Receiving Facility for Further Management if Necessary***
**1) Transfer**
i. Notify the receiving facility of the patient transfer request
ii. Determine with receiving facility appropriate transfer (air or ground)
e. Anticipate and prepare for patient transfer
1) Documentation to Be Sent with Patient to Receiving Facility
a. CD-Rom Copies of Imaging if Available
b. Lab Results
c. History and Physical
d. Medication List

**RELATED POLICIES/PROCEDURES**
[XXX Acute Stroke Team] Management
[XXX Stroke Team Pager Protocol]

**Developed by**:
Nebraska Stroke Advisory Council, Task Force for ED/Hospital

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[FACILITY COORDINATOR]
(can also put your own logo here)