Acute Adult (> 25 years) In-Patient Stroke

**Activated MRT 2-9195 Call Patient’s Attending**

**Exam**
- ABCs (including BP + weight)
- NIH Stroke Scale (see reverse)

**History**
- Time of Onset
- Last known Normal Time
- Risk Factors for stroke (see box)

**Simultaneously**

**RN**
- Place IV – if no access
  - Upper Extremity
  - Unaffected side if possible
  - Minimum 22g, ideal 20g

**STAT Labs**
- iStat Lytes
- CBC
- PT, PTT, INR
- Renal Panel
- Type & Screen
- Pregnancy test (blood)
- Urine drug screen

**Prepare pt for Radiology (CT)**

**MD**
- Order STAT Non-Contrast Head CT and CTA
  - EKG
  - Stat CXR (portable)
  - (Place in Adult Stroke Order set)

**STAT Head CT**
- Keep patient in CT until preliminary result

**Yes**
- **If Onset < 4 hrs and no contraindications, order IV r-tpa (to bedside)**

**Normal or Subtle Ischemic Changes? (mild edema)**

**Alert CCHMC Pharmacy (513) 636-4291**
- Order TPA

**Administer TPA if indicated**
- Under guidance of stroke team/neurology
  - <4.5 hours from onset
  - BP<185 and <110
  - INR <1.7

**Q15 min vital signs**
- Stop TPA for acute deterioration**

**Ischemic changes (Hypodensity)**

**Intracranial Hemorrhage**

**Otherwise Abnormal (unlikely ischemic)**

**Activate Transfer to UC**
- Notify CCHMC Transport (513-636-7525)
- Transfer to Adult Stroke Center as indicated (513-584-BEDS)
- Page PACS pager at (513-736-1088) to have imaging sent to UC

**Risk Factors for Stroke**
- Prior stroke
- Hypertension, hyperlipidemia
- Heart arrhythmia (eg. atrial fibrillation)
- Congenital heart disease (polycythemia or R → L shunt)
- Recent head or neck trauma (eg. MVA, whiplash, risk of dissection)
- AVM
- Hypercoagulable state (eg. Factor V Leiden mutation, etc.)
- Oral contraceptive/hormone replacement therapy
- History of brain radiation
- Sickle cell disease (STOP: Call Hematology)

**Stroke Screen**
- Positive if any of following are present
  1. Sudden onset of focal neurologic deficit?
  2. Unilateral weakness, facial droop, and/or unilateral sensory changes
  3. Dysarthria / abnormal speech / loss of vision
  4. Vertigo plus focal deficit
  5. Altered consciousness
  6. 2. Altered mental status plus risk factor?
  7. Seizure with persistent focal deficit?

**Yes**
- **Call UC Stroke Team (513-844-7686)**
- **Call CCHMC Radiologist (636-9853): activate acute stroke imaging protocol, establish immediate availability of CTA/MRI**
- **Call CCHMC Neuro (513-736-7564)**
- **Transfer to PICU/CICU**

**NO**
- **Consider Transfer to Adult Stroke Center with Stroke team (UC NSICU)**

**MD: Discuss with Neuro-radiologist then Stroke MD immediately upon study completion**

**TFPA**

**Consider Transfer to UCMC NSICU**

**Discuss alternative therapy with UC Stroke Team**
- Consult Neurology
- Consult CCHMC Neurosurgery prn results
- Consult CCHMC Neurosurgery (Stat Box): 513.636.9853

**Otherwise Abnormal (unlikely ischemic)**

**Ischemic changes (Hypodensity)**

**Intracranial Hemorrhage**

**Otherwise Abnormal (unlikely ischemic)**

**Activate Transfer to UC**
- **Notify CCHMC Transport (513-636-7525)**
- **Transfer to Adult Stroke Center as indicated (513-584-BEDS)**
- **Page PACS pager at (513-736-1088) to have imaging sent to UC**

**Stroke Screening Positive**

**TPA Dosing**
- Total dose: 0.9 mg/kg IV (Max dose 90 mg)
  - Bolus (first 10% of dose over 1 minute)
  - Infusion (remaining 90% of dose over 60 minutes)

**TPA Complications**
- Intracranial Hemorrhage
- If patient develops acute neurological deterioration (new headache, seizure, nausea and vomiting, acute hypertension):
  - STOP TPA infusion until ICH is ruled out
  - Repeat STAT Head CT to eval for bleed
  - Prepare to administer cryoprecipitate (containing Factor VIII) and platelets

**TFPA**

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This algorithm has been developed by the Medical Resuscitation Committee of the CCHMC ED with Radiology, Neurology, Neurosurgery, Hematology, ICU, and Stroke Team input.

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**Recombinant Tissue Plasminogen Activator (r-tPA = Activase = Alteplase)**

**Eligibility:**
- Stroke patients up to 4.5 hours from onset of symptoms
- Select stroke patients: intra-arterial therapy up to 6 hours from onset

**Contraindications:**
- Known bleeding diathesis (INR > 1.7, Ptt <100K, heparin within 24 hours or ↑ aPTT, aspirin given in ED)
- Use of Factor Xa inhibitors in <48 hours
- Blood Glucose <50 or >400
- SBP > 180 or DBP > 110 on repeated measurements despite non-aggressive treatment (for Adults: Labetolol 10-20mg IV over 1-2 min, may repeat x 1)
- ICH on CT
- Stroke, intracranial surgery, or serious head trauma in prior 3 months

**Relative contraindications (stroke team input suggested):**
- Minor (NIHSS < 6) or rapidly resolving stroke
- Severe stroke (NIHSS > 25)
- Obvious or large hypodensity seen on CT
- Post myocardial infarction pericarditis, other pericarditis
- Seizure at onset (Todd’s paralysis as possible etiology)
- Recent surgery at non-compressible site
- Recent GI bleed, pregnancy, severe diabetes

**Dosing**
- Total dose: 0.9 mg/kg IV (Max dose 90 mg)
  - Bolus (first 10% of dose over 1 minute)
  - Infusion (remaining 90% of dose over 60 minutes)

**Complications**
- Intracranial Hemorrhage
- If patient develops acute neurological deterioration (new headache, seizure, nausea and vomiting, acute hypertension):
  - STOP TPA infusion until ICH is ruled out
  - Repeat STAT Head CT to eval for bleed
  - Prepare to administer cryoprecipitate (containing Factor VIII) and platelets

**Tests and Imaging**
- Chest X-Ray: r/o widened mediastinum suggestive of dissection (contraindication to lytic therapy (TPA))
- EKG: r/o MI, pericarditis (contraindication for lytic therapy), eval for arrhythmia predisposing to thrombus
- Stat Head CT (Non-Contrast)
  - Eval for intracranial hemorrhage
    - As etiology for stroke symptoms
    - As contraindication for lytic therapy
  - Eval for other causes of symptoms (mass, CSF obstruction, etc)

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