

UNC Pediatric Acute Stroke Pathway

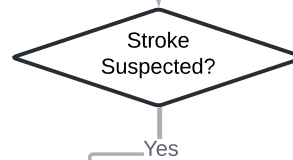


Acute stroke criteria

1. Acute onset change from baseline neuro exam
Usually < 24 hours but can be up to 4 days or more for venous infarcts
2. New onset seizure especially in **high risk patient** (see green box)
3. Focal neurologic deficit
 - Unilateral weakness/sensory change
 - Vision loss/double vision
 - Speech difficulty
 - Dizziness/trouble walking
 - Sudden severe HA w/accompanying symptoms

High Risk Patients

1. Congenital Heart Disease, myocarditis, arrhythmias
2. Coagulopathies
3. Anemia, dehydration
4. Vasculopathies, **Sickle Cell Disease** (see purple box)
5. Infection (meningitis, mastoiditis, Lemierre's, etc)
6. Trauma (head and cervical)
7. Cerebral hemorrhage/edema
8. Drugs (Cocaine, amphetamines, OCPs, etc)



Neuroprotective Care

- NPO, establish access (≥2 large bore IVs)
- STAT Labs: CBC w/diff, DIC profile, T&S + ABO/Rh, Chem10
- **HOB flat - for ischemic strokes**
- Normonatremia
- Normotension: SBP 50th-90th %ile for age
 - Tx hypotension w/NS +/- pressors
 - Tx significant HTN to lower by ~25% over 24 hrs (faster if tPa candidate)
- Normovolemia: isotonic fluid (i.e. NS)
- Normoglycemia
 - Age ≥ 2y: No glucose in fluids unless hypoglycemic
 - Age < 2y: Glucose containing fluids (i.e. D5NS)
- Normal O₂, CO₂, and pH
- Normothermia: consider scheduled acetaminophen
- Seizure control: AED ASAP with suspected seizure activity
- Consider placement of arterial line

Call Operator (4-4111) and ask for Peds Code Stroke Page

- This is not an overhead page
- Only location will be given. NO PHI
- This page will notify multiple groups, a neurologist will arrive to the bedside

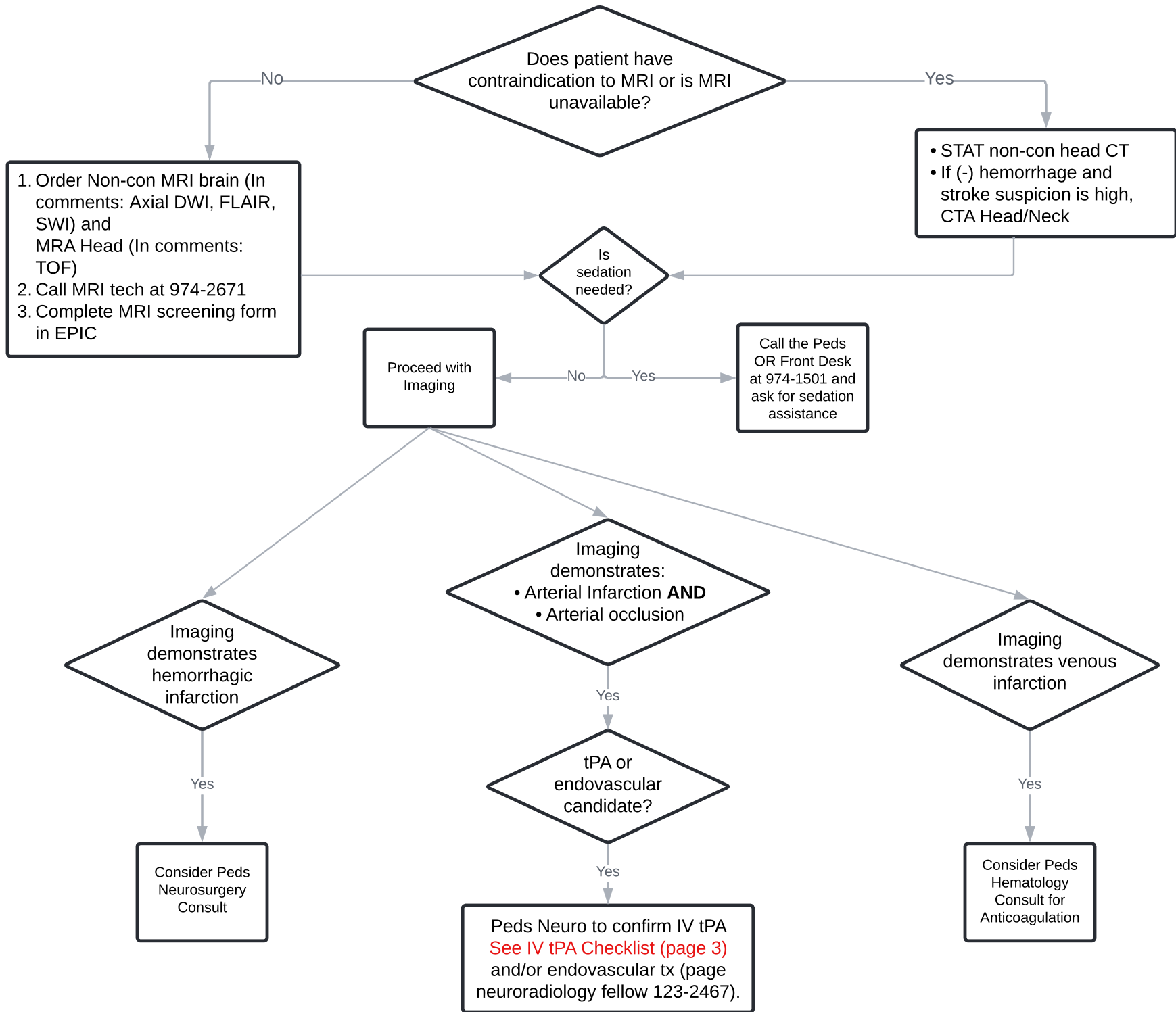
Initiate neuroprotective care (see blue box)

- Assessment by stroke team
- Stroke team documentation via **.pedneurocodestroke** dotphrase
- If imaging is requested, move to page 2

Note: Patients with Sickle Cell Disease

Add the following:

- Consult peds hem/onc
- Notify pheresis lab of possible urgent exchange transfusion
 - < 10 kg = manual exchange. Place PAL and PIV
 - > 20 kg = automated exchange. Place > 8Fr line
 - 10-20 kg, discuss with pheresis
- While awaiting pheresis, consider:
 - simple transfusion if Hgb < 10
 - confirmatory imaging (see page 2)
- Obtain additional labs
 - HGBSCD = hemoglobin/thalassemia profile - most important and needs to be ordered STAT to determine pheresis
 - HEA = RBC phenotyping - only needs to be sent on new sickle cell patients
 - LFTs and retic



IV tPA Checklist

- Confirm no contraindication to tPA (see red box)
- PICU notifies Pharmacy to prepare STAT tPA infusion
 - Total: 0.9 mg/kg iv
 - Bolus: 10% total dose over 5 mins
 - Infusion: Remaining dose over 1 hr
- Serial neuro exams: q15 minutes during infusion and q1 x2 after infusion
- Indications to stop tPA include concern for acute intracranial hemorrhage (new worse headache, acute hypertension, emesis, etc), acute hypotension, anaphylaxis
- During infusion, maintain SBP above 50th percentile for age and below 20% above 95th percentile
 - If > 20% above 95th percentile at any time, TREAT HYPERTENSION
 - Labetalol 0.2 mg/kg IV push over 2-3 mins, repeat q15mins PRN, max dose 40mg
 - hydralazine 0.2 mg/kg IV, max dose 20mg
 - Nicardipine gtt, 0.5-10 mcg/kg/min
 - Note: Use caution in asthmatics or those with underlying cardiac disease

SBP Parameters

Age	50%	95%	>15%	>20%
1-4 years	90	111	128	133
5 years	94	113	130	136
6-10	96	121	139	145
11-17	105	131	151	157
> 17	-Prior to administration of tPA treat any SBP > 185 -During and after administration of tPA, treat any SBP > 180			

IV tPA contraindications:

HISTORY

- > 4.5h from last seen well
- Time of symptom onset unknown
- Stroke, major head trauma, or intracranial surgery in last 3 months
- Hx of prior intracranial hemorrhage, known AVM, or aneurysm
- Major surgery or parenchymal biopsy within 10 days
- GI or GU bleeding within 21 days
- Current neoplasm/malignancy
- Completed cancer treatment within 1 month
- Underlying significant bleeding disorder
 - Mild platelet dysfxn, mild von Willebrand disease, or other mild bleeding disorders NOT excluded
- Previously diagnosed CNS primary angiitis of the central nervous system or secondary arteritis

PATIENT FACTORS

- Current anticoagulation use (aspirin, enoxaparin, etc)
- Presentation c/w acute MI or post-MI
- Pericarditis that requires evaluation by Cardiology before treatment
- Arterial puncture at noncompressible site or lumbar puncture within 7 days
 - History of cardiac cath via compressible artery NOT excluded.

ETIOLOGY

Stroke due to SBE, meningitis, moyamoya disease, embolism (bone marrow, air or fat). Note: cardiac embolism NOT excluded.

EXAM

- SBP > 20% above the 95th percentile for age must be treated first
- persistent NIHSS \geq 6 at start of tPA infusion

IMAGING

- Sx suggest SAH even if imaging normal
- CT with hypodensity/sulcal effacement >33% of MCA territory or ASPECTS \leq 7
- Intracranial cervicocephalic arterial dissection
- Small hemorrhagic conversion NOT a contraindication

LAB DATA

- Glucose <50 mg/dL or >400 mg/dL
- Bleeding diathesis:
 - Platelets <100,000
 - PT >15 sec (INR >1.4)
 - Elevated PTT > upper limits of normal