Suspected Stroke Alert Activation Process
Adele Hall Campus

- ☐ If stroke suspected, primary provider to **call transfer center** 816-234-3329 (53329) and request *"Suspected Stroke"* page to neurology
  - Discuss clinical scenario with Neurology Fellow and Attending
  - If concern for a stroke, Neurology presents to bedside for examination, obtains peds NIHSS and confirms last known normal
  - If clinically appropriate, Neurology will activate Stroke Protocol
    - Neurology to call Radiology attending if activating Stroke Protocol 816-234-3270 (53270) option 4
- ☐ Primary provider to order "**Stroke Suspected**" Powerplan in Cerner for all lab and imaging orders *at the direction of Neurology*
  - If MRI brain safely possible within 60 min
    - Obtain MRI/MRA *stroke alert series (through PowerPlan)*
  - If MRI not possible within 60 minutes
    - STAT non-contrast Head CT
    - CT to be reviewed by Radiologist while patient in scanner:
    - If no hemorrhage: obtain CTA Head and Neck
    - If hemorrhage: page Neurosurgery for additional recommendations
- ☐ If acute arterial ischemic stroke AND clot identified on image
  - If on the floor, transfer to PICU
  - Neurology to determine if tPa candidate (review contraindications)
    - If candidate, administer per guidelines below, order through Stroke PowerPlan
  - Neurology to contact KU Stroke for evaluation of thrombectomy
    - Call through CMH transfer center 816-234-3329 (53329)
      - CMH transfer center to call KU transfer center 913-588-9999
- ☐ If acute arterial ischemic stroke and NO clot identified
  - Admit to PICU
  - Utilize **PICU Stroke (Confirmed)** PowerPlan
  - See Post Stroke Care document
- ☐ Bedside huddle should occur between Neurologist, Intensivist, +/- Hematologist
  - Ensure everyone knows the current plan
  - Discuss next steps

KU Transfer for STROKE

- Neurology resident/attending call Radiology (53270 option 4) cloud images to KU
- Neurology to call KU through **CMH transfer center** 816-234-3329 (53329) for evaluation of transfer for thrombectomy
    - KU transfer center 913-588-9999
- If KU accepts transfer, CMH Transfer Center to conference in primary provider (ER/PICU attending) and KU admitting service (PICU or NeuroICU)
    - KU Stroke can accept transfer but handoff needs to occur between CMH primary team (ED/PICU) and KU admitting team (patient can go to PICU vs NeuroICU per KU preference)
        - KU transfer center 913-588-9999
    - PICU/ED to print H&P, pertinent lab and test results, DC summary (if available) to send with patient upon transfer

CONTRAINDICATIONS FOR TPA

Table 1. Contraindications to Alteplase IV for acute stroke in childhood:

(From Rivkin et al, *Stroke*, 2015)20

a. Time of symptom onset greater than 4.5 hours to initiation of treatment for IV tPA. Time of symptom onset is defined as time the patient was last seen awake and at neurological baseline.

b. Unknown time of symptoms onset

c. Alteplase should be used with great cautions in patients < 2 years of age due to the challenge of determining time of stroke onset and limitations of extrapolation from adult data to very young children

d. Perinatal stroke

e. Pregnancy

f. Sickle cell disease

g. Clinical presentation suggestive of subarachnoid hemorrhage (SAH)even if brain imaging is negative for blood

h. Patient who would decline blood transfusion if indicated

i. History of prior intracranial hemorrhage

j. Known cerebral arterial venous malformation, aneurysm, or neoplasm

k. Persistent systolic blood pressure > 15% above the 95th percentile for age while sitting or supine (SEE CHART BELOW)

l. Glucose <50 mg/dL (2.78 mmol/L) or > 400 mg/dL (22.22 mmol/L)

m. Bleeding diathesis including platelets < 100,000, PT > 15 sec (INR > 1.4) or elevated PTT > upper limits of the normal range.

n. Clinical presentation consistent with acute myocardial infarction (MI) or post-MI pericarditis that requires evaluation by cardiology prior to treatment

o. Prior stroke, major head trauma, or intracranial surgery within the past 3 months

p. Major surgery or parenchymal biopsy within 10 days (relative contraindication)

q. Gastrointestinal or urinary bleeding within 21 days (relative contraindication)

r. Arterial puncture at noncompressible site or lumbar puncture within 7 days (relative contraindication). Patients who have had a cardiac catheterization via a compressible artery are not excluded.

s. Patient with malignancy or within 1 month of completion of treatment for cancer

t. Patients with an underlying significant bleeding disorder

Stroke related exclusion criteria:

a. Mild deficit (PedNIHSS < 4) at start of Alteplase infusion or at time of sedation for neuroimaging, if applicable.

b. Severe deficit suggesting very large territory stroke, with pre-Alteplase PedNIHSS > 24, regardless of the infarct volume seen on neuroimaging.

c. Stroke suspected to be due to subacute bacterial endocarditis, moyamoya, sickle cell disease, meningitis, bone marrow, air or fat embolism.

d. Previously diagnosed primary angiitis of the central nervous system (PACNS) or secondary CNS vasculitis.

Neuro-imaging related exclusions:

a. Intracranial hemorrhage (HI-1, HI-2, PH-1 or PH-2) on pretreatment head MRI or head CT

b. Intracranial dissection (defined as at or distal to the ophthalmic artery)
c. Large infarct volume, defined by the finding of acute infarct involving 1/3 or more of the complete MCA territory involvement

Drug related exclusions:

a. Known allergy to recombinant tissue plasminogen activator
b. Patient on anticoagulation therapy must have INR ≤ 1.4
c. Patient who received heparin within 4 hours must have aPTT in normal range
d. LMWH within past 24 hours (aPTT and INR will not reflect LMWH effect)

tPA Administration and Monitoring Guidelines

DOSING:

- *Patients ≤100 kg:* Total dose 0.9mg/kg (maximum total dose: 90mg)
  - 10% of total dose given as bolus over 5 minutes
  - Remaining 90% of dose as continuous infusion over 55 minutes
- *Patients >100 kg:* Total dose 90mg
  - 9mg (10% of 90mg) as IV bolus over 5 minutes
  - Remaining 81mg (90% of 90mg) as continuous infusion over 55minutes

MONITORING:

- Neuro checks q15 minutes during infusion and first 2 hours post infusion
  - STOP tPA infusion if patient develops severe headache, nausea/ vomiting, acute HTN, angioedema, anaphylaxis, or other concern for acute intracranial hemorrhage
- VS q15 minutes during infusion and first 2 hours post infusion
  - BP parameters for tPA

AGE	50%ile for SBP	95%ile for SBP	>15% above 95%ile for SBP	>20% above 95%ile for SBP
1-4 years	90	112	129	134
5 years	95	113	130	136
6-10 years	96	121	139	145
11-18 years	105	140	161	168
>18 years	110	140	161	168

  - Goal SBP >50%ile for age but no more than >20% above 95%ile for age
  - IF SBP >15% above 95%ile for 1+hr, notify MCP, start anti-hypertensive therapy
  - IF SBP >20 above 95%ile at ANY TIME, notify MCP, start antihypertensive therapy
- HTN Management
  - Hydralazine 0.1mg/kg/dose IV q20 minutes x 3 doses (max dose 20mg)
  - Nicardipine infusion 0.5mcg/kg/min, titrate by 0.5mcg/kg/min q15-30 minutes
  - AVOID lowering SBP by >25% of highest SBP during the first 24 hours
- Anaphylaxis or angioedema
  - DC tPA immediately and notify MCP
  - Monitor for tongue swelling/airway edema
  - Methylprednisolone 2mg/kg IV (max dose 60mg), diphenhydramine 1mg/kg IV (max dose 50mg), ranitidine 1mg/kg (max dose 150mg)
  - Avoid racemic epi (may increase risk of intracranial bleeding)
  - Fluid bolus and epinephrine gtt for hypotension
- Indications to STOP tPA immediately
  - New, severe headache, acute HTN, nausea/vomiting, or other concern for acute intracranial hemorrhage
  - Acute hypotension
  - Anaphylaxis or angioedema
  - Serious bleeding