

HEART CENTER

Stroke Alert Activation Process

- ☐ Call transfer center 816-234-3329 (53329) and request “*Suspected Stroke*” page to neurology
 - Discuss clinical scenario with Neurology Fellow/Attending via Transfer Center
- ☐ Neurology to determine if Stroke Alert Activation is indicated based on clinical scenario
 - **Primary team to notify cardiac intensivist of cardiac stroke activation**
- ☐ Neurology will notify Transfer Center of *Stroke Alert Activation*
- ☐ Order “Stroke Suspected” Powerplan in Cerner for all lab and imaging orders *at the direction of Neurology* (do not use “PICU STROKE” Powerplan)
 - To be ordered by provider currently caring for patient or Neurology
 - Anesthesia board runner to notify/call-in **CARDIAC ANESTHESIA for MRI**
 - If MRI brain safely possible within 60 min
 - Obtain MRI/MRA *stroke alert series*
 - If MRI not possible within 60 minutes or contraindicated
 - 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 (refer to *Spontaneous Intracranial Hemorrhage protocol for additional imaging recommendations*)
- ☐ Neurology to determine if tPA is indicated
 - **If tPA is indicated, patient should be transferred CICU**
 - **CICU attending to notify on-call cardiac surgeon if patient is post-op**
 - **CICU attending or delegate to notify on-call cardiologist**
 - **On-call cardiologist to notify EP, Heart Failure when appropriate**
 - **On-Call cardiologist to notify KU cardiologist if transferring to KU**
 - Use “*PICU STROKE*” Powerplan for confirmed stroke for further monitoring orders and tPA dosing (refer to tPA Administration and Monitoring guidelines)
 - tPA for stroke can only be ordered from a STROKE powerplan
 - tPA should be administered in the PICU while arrangements are being made for KU transfer
 - Hematology is available for questions but does NOT need to be immediately consulted prior to giving tPA
- ☐ If tPA is being given and/or patient is candidate for Neuro-IR consultation, prepare for KU transfer
 - **ECMO, VAD, Berlin Heart are NOT candidates for KU transfer**

KU Transfer for CARDIAC STROKE

- Neurology to communicate and provide sign out to Neuro-IR and Neurologist at KU
 - Radiology images available on the Cloud for KU
 - **Intensivist will need to provide pertinent anatomic or vascular access concerns**
- **Cardiac Intensivist** to call **Transfer Center 53329** to coordinate transport and sign out to KU PICU Physician (numbers below if needed, but should be done via Transfer Center)
 - Direct KU PICU number 913-588-6363
 - KU Stroke Line 913-588-3727
- **APRN to prepare the following as part of the DC/transfer packet**
 - **Recent, updated cardiac anatomy diagram**
 - **H&P, DC Summary including:**
 - **Documentation of known femoral or neck vessel occlusion (arterial and venous, right vs left)**
 - **Documentation of femoral or neck ECMO cannulation sites**
 - **Documentation of known anatomic aorta and/or aortic arch issues (stent, coarc, stenosis, aberrant subclavian, vascular ring, etc)**
 - **Goal oxygen saturations**
 - **Most recent echo report**
 - **Operative Note**

****if patient is coming by Transport from outside or CMHK, notify Neurology via Transfer Center of suspected stroke patient and route patient through CMH Main Campus ER for further evaluation and Stroke Alert Activation**

Patients with complex congenital heart disease will be transferred back to the CICU immediately following IR procedure. Communicate with KU NeuroIR regarding timing of repeat imaging, timing of anticoagulation, duration of tight BP parameters, and monitoring of catheter access sites.

CARDIAC STROKE TRANSFER CHECKLIST

- ☐ On-call surgeon notified for post-op patient
- ☐ On-call cardiologist notified
 - Heart Failure team notified if pre/post transplant or actively managed by HF
 - EP/Interventional cardiology notified if recent EP/Cath case
 - KU pediatric cardiologist on-call notified
- ☐ H&P, DC Summary, Operative Notes
- ☐ Recent heart diagram with goal oxygen saturations
- ☐ Recent echo report
- ☐ Vessel Integrity

Femoral artery

known occlusion	YES/NO	used for ECMO cannulation	YES/NO
	RIGHT		RIGHT
	LEFT		LEFT

Femoral vein

known occlusion	YES/NO	used for ECMO cannulation	YES/NO
	RIGHT		RIGHT
	LEFT		LEFT

Carotid artery

known occlusion	YES/NO	used for ECMO cannulation	YES/NO
	RIGHT		RIGHT
	LEFT		LEFT

Jugular Vein

known occlusion	YES/NO	used for ECMO cannulation	YES/NO
	RIGHT		RIGHT
	LEFT		LEFT

Aorta

- ☐ Dilated root
- ☐ Surgical reconstruction (DKS)
- ☐ Aberrant subclavian
- ☐ Coarctation
 - Repaired
 - Unrepaired
 - Stented
 - Other- _____
- ☐ Other- _____

Transport Checklist for Potential Stroke

Suspected Stroke

- ☐ Acute neurologic deficit (hemiparesis, facial droop, slurred speech, “word salad”, dysphagia/drooling, unilateral eye deviation, vision loss, focal deficit after seizure, etc)
- ☐ Young children may have sudden onset of irritability, altered LOC, or first time unprovoked seizure as initial presenting symptom
- ☐ Notify MCP ASAP of suspected stroke
- ☐ STAT neurology consultation by MCP via phone call
- ☐ Potential TPA candidates
 - ☐ ≥ 24mo of age
 - ☐ Last seen well <4.5 hrs from presentation
 - ☐ Confirmed clot on neuroimaging
- ☐ Potential candidate for neuroradiology intervention
 - ☐ ≥ 24mo of age
 - ☐ Last seen well <24hrs but >4.5hrs from symptom onset
 - ☐ Confirmed clot on neuroimaging

Stroke Specific Clinical Questions

- ☐ Time child was last seen well
- ☐ Time of symptom onset
- ☐ Current aspirin, lovenox , or other anticoagulation use
- ☐ Major stroke, head trauma, or intracranial surgery in last 3 months
- ☐ GI or urinary bleeding with last 21 days
- ☐ Major surgery within last 10 days
- ☐ Past Medical History (congenital heart disease, sickle cell disease, cancer)
- ☐ NPO status

Clinical Management

- ☐ Obtain hard copy of any neuroimaging
- ☐ NPO
- ☐ Large bore IV in antecubital vein (at least 22g for small children)
- ☐ Isotonic IVF
- ☐ Avoid hypotension
- ☐ Avoid hyper/hypoglycemia
- ☐ Keep HOB flat to promote cerebral perfusion
- ☐ Treat seizures per Transport Seizure Protocol
- ☐ Maintain normothermia, treat with rectal Tylenol if febrile
- ☐ Evaluate at CMH Adele Hall ER

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 HA, nausea/ vomiting, acute HTN, 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)
 - Avoid racemic epi (may increase risk of intracranial bleeding)
 - Fluid bolus and epinephrine 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