CLINICAL PEARL

Stroke Care in Children

WHEN TO CONSIDER STROKE ON THE DIFFERENTIAL DIAGNOSIS

- Acute onset focal neurological deficits (face, arm or leg weakness, aphasia, ataxia, diplopia, dysarthria or vertigo)
- Symptoms may occur with or without seizures or headache

WHEN TO CONSIDER *EMERGENT* TRANSFER

- Hyperacute ischemic stroke (for children older than 1 year and less than 24 hours since last seen well) for consideration of thrombolysis or thrombectomy*
- Nontraumatic intracranial hemorrhage for diagnostic or interventional angiogram and/or neurosurgical treatment of hemorrhage source
- Monitoring or intervention for intracranial pressure (ICP) after ischemic or hemorrhagic stroke

WHEN TO CONSIDER *URGENT* TRANSFER

- Diagnostic workup of acute ischemic stroke, including arterial wall imaging. Rapid diagnosis of arteriopathy and other stroke risk factors may help prevent early recurrent stroke or stroke extension.
- Large volume ischemic or hemorrhagic stroke at risk for elevated intracranial pressure
- Altered mental status after stroke for detection of subclinical seizures by continuous video EEG monitoring

* **Hyperacute ischemic stroke reperfusion treatment** improves outcomes in adults and may be offered to selected children at UCSF Benioff Children's Hospital San Francisco on a case-by-case basis after clinical and radiologic evaluation. Potential treatment options include IV thrombolysis and endovascular thrombectomy. Risks and benefits of these have been studied only in adults (≥18 years old). Major factors for consideration:
  - Time from last seen normal within 24 hours
  - Arterial occlusion on vascular imaging consistent with clinical syndrome. Discuss plan to obtain emergent vascular imaging before versus after transport.

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WHILE AWAITING TRANSFER

- ☐ Consider need for airway, ventilation
- ☐ Obtain venous access (18 gauge preferred; 22 gauge OK for <30 kg); IV fluids NS for goal normovolemia
- ☐ Place cardiorespiratory monitor and pulse oximeter; record Q15-minute vital signs
- ☐ Oxygen supplementation to keep SaO^2 >95%
- ☐ Blood pressure (ischemic stroke): Typical goal of maintaining normal to high MAP for perfusion of penumbra (50-95% age norms or higher if chronic hypertension). Consider treatment with volume and pressors as needed.
- ☐ Blood pressure (hemorrhagic stroke): Consider treatment of severe hypertension if unsecured source (presumed ruptured aneurysm of AVM) while maintaining minimum MAP for age for adequate cerebral perfusion pressure
- ☐ Labs: CBC, platelets, PT/PTT, electrolytes, BUN/Cr, glucose, type and screen, β-HCG
- ☐ Point-of-care glucose; goal normoglycemia
- ☐ 12 lead EKG
- ☐ Bed rest. Head of bed flat if ischemic stroke; 30° if hemorrhagic stroke, elevated ICP or vomiting
- ☐ Make NPO
- ☐ Weight in kg
- ☐ Temperature: prevent hyperthermia, goal temp <37.5° C
- ☐ Evaluate for and treat seizures
- ☐ Consider a consultation with local neurosurgeon if obstructive hydrocephalus is present

To minimize delays, review history while awaiting transfer and communicate with transport team:

- ☐ Time from stroke ictus (last seen normal)
- ☐ Severity of deficit (NIHSS if possible)
- ☐ History of congenital heart disease, sickle cell disease, cancer, prior cerebral hemorrhage or tumor
- ☐ Medications: antiplatelet or anticoagulants
- ☐ Imaging and laboratory results
- ☐ Guardian contact information and availability for informed consent discussions

IMAGE TRANSFER

- Imaging from your emergency department can be efficiently transferred to UCSF Benioff Children's Hospitals 24/7, expediting your patient's care and reducing radiation exposure.
- Contact your radiology technician, imaging library, or medical records team to request that your patient's images be pushed to the UCSF Film Library. Then confirm the transfer by calling (415) 353-1640, option 3, or emailing radiologyfilmlibrary@ucsfmedctr.org. A UCSF Film Library technician is available 24/7.
- For more information, visit ucsfbenioffchildrens.org/image-transfer.

If digital image transfer is not possible, please include all imaging studies with the patient upon transfer.