Suspected Stroke

History
- Previous CVA, TIA's
- Previous cardiac / vascular surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma
- Sickle Cell Disease
- Immune disorders
- Congenital heart defects
- Maternal infection / hypertension

Signs and Symptoms
- Altered mental status
- Weakness / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension / hypotension

Differential
- See Altered Mental Status
- TIA (Transient ischemic attack)
- Seizure
- Todd's Paralysis
- Hypoglycemia
- Stroke
  - Thrombotic or Embolic (~85%)
  - Hemorrhagic (~15%)
- Tumor
- Trauma
- Dialysis / Renal Failure

EMS Stroke Screen Assessment

Blood Glucose Analysis Procedure

Consistent with Acute Stroke

NO → Exit to Appropriate Protocol(s) ***as indicated***

YES

Determine:
1. Last Known Well Time
2. Time of Symptom Discovery

Time of Onset or Time Last Seen Normal < 6 Hours

YES → **Stroke Severity Screen Assessment**

NO

Altered Mental Status Protocol UP 4 ***if indicated***

B 12 Lead ECG Procedure

IV or IO Access Protocol UP 6

Age Appropriate Cardiac Protocol(s) ***if indicated***

Head Trauma Protocol TB 5
Multiple Trauma Protocol TB 6 ***if indicated***

Seizure Protocol UP 13 ***if indicated***

Transport Destination Facility based on:
Stroke
EMS Triage and Destination Plan

- **Refer to plan for Last Known Well Times and Stroke Severity Assessment Values**
- **Combination of factors will drive transport destination decision-making based on your local region**

Transport based on:
STROKE
EMS Triage and Destination Plan

Keep Scene Time to ≤ 15 Minutes
Provide Early Notification of Destination Facility
Suspected Stroke Alert

Reperfusion Checklist Procedure ***if time allows completion***

B Cardiac Monitor

IV or IO Access Protocol UP 6
Preferably 2 Sites
See Pearls

A Venous Access Blood Draw Procedure ***if applicable***

P Cardiac Monitor

Persistent Hypertension:
If SBP ≥ 185 or DBP ≥ 110 mmHg
After 3 readings, 5 minutes apart

Contact Receiving Facility for guidance on hypertension treatment

Notify Destination or Contact Medical Control

Universal Protocol Section

Suspected Stroke

TIME OF ONSET:

MUST obtain the Time of Onset or Time Last Seen Normal.

- Often stroke patients are discovered by someone (family, friends or caregivers), discovery time is not the time of onset.
- Must specifically ask about the Time Last Seen Normal.
- You must ask directed questions to determine the last time the patient is known to be normal or at their baseline.
- **Wake-up Stroke:**
  People often awaken with stroke symptoms – the time they were last seen normal, and awake, would be used in this case.
- When thrombolytics are given beyond 4.5 hours of symptom onset many of these patients have worse outcomes.

- You are often in the best position to determine the actual Time of Onset while you have family, friends or caretakers available.
- Often these sources of information may arrive well after you have delivered the patient to the hospital.
- Delays in decisions due to lack of information may prevent an eligible patient from receiving thrombolytics.
- **If the witness or family member cannot come with you then obtain their name and a contact number that hospital providers can contact for more information.**

Blood Draw Kits:

- Wake Forest University Baptist Medical Center furnish blood draw kits. The lab specimens should be obtained if at all possible as this will speed the assessment process upon arrival at the receiving facility.

Hospital notification:

- Receiving hospital should be given notification of suspected stroke patient at least 10 minutes prior to arrival, include Time of Onset, and include RACE Stroke Score.
- If possible place 2 IV sites during transport in the LUE, above the wrists if possible.

Time of Onset < 6 hours and RACE < 6 can be transported to KMC if patient requests.

Universal Protocol Section

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Stroke Care Toolkit.**
- **Acute Stroke care is evolving rapidly. Time of Onset/ Last Seen Normal may be changed at any time depending on the capabilities and resources of your regional hospital(s).**
- **Refer to your Stroke: EMS Triage and Destination Plan which should be updated when community resources change.**
- **Time of Onset or Last Seen Normal:**
  One of the most important items the pre-hospital provider can obtain, of which all treatment decisions are based.
  Be very precise in gathering data to establish the time of onset and report as an actual time (i.e. 13:47 NOT "about 45 minutes ago.")
  Without this information patient may not be able to receive thrombolytics at facility.
  Wake up stroke: Time starts when patient last awake or symptom free.
- **Time of Symptom Discovery:**
  Time when symptoms of stroke are first noticed by patient, bystanders, witnesses, or family/ caregivers.
- **Sources of information pertaining to Last Known Well Time or Symptoms Onset:**
  You are often in the best position to determine the actual Time of Onset while you have family, friends or caretakers available.
  Often these sources of information may arrive well after you have delivered the patient to the hospital.
  Delays in decisions due to lack of information may negatively impact patient care.
  Obtain contact information (phone number and name) of best witnesses and give to hospital providers.
- **The Reperfusion Checklist should be completed for any suspected stroke patient as time allows.**
- **If possible place 2 IV sites, preferably above the wrists, and if possible both in the left upper extremity.**
- **Blood Draw:**
  Many stroke centers utilize EMS venous blood samples. Follow your local policy and procedures.
- The differential listed in the UP 4 Altered Mental Status Protocol should also be considered.
- Be alert for airway problems (swallowing difficulty, vomiting/aspiration).
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- Document the EMS Stroke Screen, Stroke Severity Score, and Stroke Alert notification time in the ePCR or PCR.
- Agencies may use validated pre-hospital stroke screen of choice.
- **Pediatrics:**
  Strokes do occur in children, they are slightly more common in ages < 2, in boys, and in African-Americans.
  Newborn and infant symptoms consist of seizures, extreme sleepiness, and using only one side of the body.
  Children and teenagers symptoms may consist of severe headaches, vomiting, sleepiness, dizziness, and/or loss of balance or coordination.