Contra Costa County Emergency Medical Services

Suspected Stroke

History
- Previous stroke or TIA
- Previous cardiac or vascular surgery
- Associated diseases (diabetes, hypertension, CAD)
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma

Signs and Symptoms
- Altered mental status
- Weakness or paralysis
- Blindness or other sensory loss
- Aphasia or dysarthria
- Syncope
- Vertigo or dizziness
- Vomiting
- Headache
- Seizure
- Respiratory pattern change
- Hypertension/hypotension

Differential
- See Altered Mental Status
- TIA
- Seizure
- Todd's paralysis
- Hypoglycemia
- Stroke
  - Thrombotic or embolic (~85%)
  - Hemorrhagic (~15%)
- Tumor
- Trauma
- Dialysis or renal failure

---

**Recent signs and symptoms consistent with Stroke**

- Perform Cincinnati Stroke Screen
- If stroke Cincinnati stroke screening is positive, perform LAMS
- Blood glucose analysis
- Cardiac monitor
- 12-Lead ECG

**CINCINNATI STROKE SCREEN consistent with acute Stroke?**

Yes
- Time of onset OR last seen normal is < 6 hours
- INITIATE TRANSPORT
  Keep scene time < 10 minutes
  If available, transport a family member or guardian with patient
- Declare a Stroke Alert
  Establish IV
  Consider one 20g or larger IV or saline lock in each AC
  Transport to a Stroke Receiving Center

No
- Consider other causes
- Monitor and reassess

**Time of onset OR last seen normal is >= 6 hours but <= 24 hours**
- Consider IV
- Transport per Policy 4002

**Time of onset OR last seen normal is > 24 hours**
- Consider IV

**Approved Stroke Receiving Centers**
- John Muir – Concord
- John Muir – Walnut Creek
- Kaiser – Antioch
- Kaiser – Richmond
- Kaiser – Walnut Creek
- San Ramon Regional
- Eden – Castro Valley
- Kaiser – Oakland
- Kaiser – Vallejo
- Marin General
- Summit – Oakland
- Sutter – Solano
- Valley Care

---

Effective September 2019
A Stroke Alert is indicated when the Cincinnati Stroke Screen findings are abnormal and onset (time last seen normal) is less than 6 hours from time of patient contact. Report time last seen normal (clock time), the medical record number or name and birthdate, results of the Cincinnati Stroke Screen and the LAMS score, physical exam, and ETA using an approved report format.

If a family member or guardian is available, assure their availability by either transporting them in the ambulance or obtain their name and phone number to allow the receiving physician to contact them. Encourage a family member to be available to speak with hospital staff.

- If any portion of the Cincinnati Stroke Screen is abnormal and it is a new finding, the stroke screen is positive and may indicate an acute stroke.
- Pre-arrival information is necessary for the receiving hospital to make rapid treatment and potential transfer decisions.
- Because the patient may need to receive thrombolytic therapy, avoid multiple IV attempts.
- Avoid distal placement of IVs, if possible, as this is a preferred access site by Interventionalists.
- When turning over patient care to hospital staff, make sure to include common anticoagulants taken by the patient. Known use of these medications may affect the course of hospital treatment:
  - Warfarin (Coumadin)
  - Enoxaparin (Lovenox)
  - Apixaban (Eliquis)
  - Heparin
  - Dabigatran (Pradaxa)
  - Fondaparinux (Arixtra)
  - Rivaroxaban (Xarelto)

<table>
<thead>
<tr>
<th>Finding</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial Droop</td>
<td>Normal: Symmetrical smile or face</td>
</tr>
<tr>
<td></td>
<td>Abnormal: Asymmetry</td>
</tr>
<tr>
<td>Arm Weakness</td>
<td>Normal: Both arms move symmetrically</td>
</tr>
<tr>
<td></td>
<td>Abnormal: Asymmetrical arm movement</td>
</tr>
<tr>
<td>Speech Abnormality</td>
<td>Normal: Correct words; no slurring</td>
</tr>
<tr>
<td></td>
<td>Abnormal: Slurred or incorrect words</td>
</tr>
</tbody>
</table>

**Cincinnati Stroke Screen**

**LAMS Assessment**

<table>
<thead>
<tr>
<th>Finding</th>
<th>Scoring</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial Droop</td>
<td>Absent - 0 points</td>
<td>Normal: Equal grip in both hands</td>
</tr>
<tr>
<td></td>
<td>Present - 1 point</td>
<td>Abnormal: Unequal grip in one hand</td>
</tr>
<tr>
<td>Arm Weakness</td>
<td>Absent - 0 points</td>
<td>Normal: Both arms move symmetrically</td>
</tr>
<tr>
<td></td>
<td>Drifts - 1 point</td>
<td>Abnormal: Asymmetrical arm movement</td>
</tr>
<tr>
<td></td>
<td>Falls rapidly - 2 points</td>
<td>Falls rapidly: some or no effort</td>
</tr>
<tr>
<td>Grip</td>
<td>Normal - 0 points</td>
<td>Normal: Equal grip in both hands</td>
</tr>
<tr>
<td></td>
<td>Weak - 1 point</td>
<td>Abnormal: Unequal grip in one hand</td>
</tr>
<tr>
<td></td>
<td>No grip - 2 points</td>
<td>No grip: no muscle strength or contraction</td>
</tr>
</tbody>
</table>

A LAMS score of ≥ 4 indicates a high likelihood of a LVO stroke

**Pearls**

- **Acute stroke care is evolving rapidly.**
- **Time last seen normal:** One of the most important items that prehospital providers can obtain, on 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. 13:45 NOT “about 45 minutes ago”). Without this information, patients may not be able to receive thrombolytics at the hospital. For patients with “woke up and noticed stroke symptoms,” time starts when the patient was last awake.
- The differential listed on the Altered Mental Status TG should also be considered.
- Be alert for airway problems (difficulty swallowing, vomiting and aspiration).
- Hypoglycemia can present as a LOCALIZED neurologic deficit, especially in the elderly.
- Document the Cincinnati Stroke Screen and LAMS in the EHR.