IS EMS A PART OF YOUR STROKE TEAM?

S. R. Scott, MD
Chief of Service
Associate EMS Medical Director
Department of Emergency Medicine
New Jersey Medical School-Newark
Presenter Disclosure Information

Sandra R. Scott, MD

Is EMS a part of your Stroke Team?

FINANCIAL DISCLOSURE:
No relevant financial relationship exists
EMS & Stroke

- Emergency Medical Services (EMS) provide the first medical contact for 35% to 70% of all stroke patients.
- Prehospital personnel are in a unique position to reduce delays in presentation and treatment.
Goals for EMS Response

Rapid...

- Recognition of Stroke warning signs
- EMS Dispatch
  - EMS transport
  - Hospital pre-notification, and facilitate
  - Diagnosis and and treatment
Does your EMS system have a call receiving algorithm for suspected stroke?

1. Yes
2. No
3. Unsure
Many callers do not use the word “stroke”
Dispatchers should recognize the seriousness of stroke and be familiar with stroke symptoms.
Strokes should be dispatched as a high priority call, send closest unit- similar to acute MI or trauma

- A call-receiving algorithm is recommended to insure appropriate questions to callers
Rapid Identification

- It is recommended that all EMS Systems use a screening tool for stroke

- Two stroke scales have a high sensitivity
  - the Cincinnati Prehospital Stroke Scale and
  - the Los Angeles Prehospital Stroke Screen
Cincinnati Prehospital Stroke Scale

- The CPSS is a 3-item scale based on a simplification of the National Institutes of Health (NIH) Stroke Scale.
- The CPSS has excellent reproducibility among prehospital personnel and physicians.²
- The CPSS is an effective prehospital stroke scale for the determination of stroke severity and identification of candidates for thrombolytic therapy.³
Cincinnati Prehospital Stroke Scale

Facial Droop
Normal: Both sides of face move equally
Abnormal: One side of face does not move at all

Arm Drift
Normal: Both arms move equally or not at all
Abnormal: One arm drifts compared to the other

Speech
Normal: Patient uses correct words with no slurring
Abnormal: Slurred or inappropriate words or mute

The LAPSS has a high degree of sensitivity and specificity for the identification of stroke.\textsuperscript{4}

It is a 1-page instrument that takes 3 minutes to complete and consists of 4 history items, a blood glucose measure, and 3 examination items designed to detect unilateral motor weakness.\textsuperscript{4}
The Los Angeles Prehospital Stroke Scale

<table>
<thead>
<tr>
<th>Screening Criteria</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age over 45 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. No prior history of seizure disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. New onset of neurologic symptoms in last 24 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Patient was ambulatory at baseline (prior to event)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Blood glucose between 60 and 400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Exam: look for obvious**

<table>
<thead>
<tr>
<th>Facial smile / grimace:</th>
<th>Normal</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Droop</td>
<td>Droop</td>
</tr>
<tr>
<td>Grip:</td>
<td></td>
<td>Weak Grip</td>
<td>Weak Grip</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Grip</td>
<td>No Grip</td>
</tr>
</tbody>
</table>

| Arm weakness:          |        | Drifts Down | Drifts Down|
|                        |        | Falls Rapidly | Falls Rapidly|

6. Based on exam, patient has only unilateral weakness: Y/N

If Yes (or unknown) to all items above, LAPSS screening criteria met.
If LAPSS criteria for stroke met, call receiving hospital with “code stroke.” If not, then return to the appropriate treatment protocol. (Note: the patient may still be experiencing a stroke even if LAPSS criteria are not met.)
EMS dispatch protocols should be sensitive for these symptoms to ensure more accurate and timely ambulance dispatch.\textsuperscript{5}
EMS Transport

- Patient transport with EMS was independently associated with faster hospital arrival and shorter time periods from hospital admission to brain imaging and to the frequency of thrombolysis.\(^6\)
Should suspected Stroke patients be transported by ALS or BLS units?

1. ALS only
2. BLS only
3. BLS, unless resuscitation is required
ALS vs BLS

- Unless resuscitation is required, the BLS skills of
  - early recognition of suspected acute stroke,
  - prompt transport, and
  - coordination of care with the receiving facility
are of more importance than ALS skills.¹
Stroke Centers

- There may be times when primary transportation to a stroke center is not feasible within an EMS system.
- Some EMS systems will not have a stroke center in the geographic region.
- EMS systems should take a leadership role in developing local and regional strategies for the transportation of patients with acute stroke symptoms.
Pre-Hospital Notification

- EMS arrivals with hospital pre-notification experienced the most rapid evaluation.
EMS Treatment

- Oxygen
- IV access
- Electrocardiographic (ECG) Monitoring
- Blood Glucose Monitoring
- Blood Pressure Monitoring—don’t intervene in pre-hospital setting
- Identification of the last known well time
Implications for EMS

- Education of EMS personnel to facilitate:
  - Rapid recognition using a validated tool
  - EMS dispatch of ALS when available
  - Transport to a stroke center
  - Prehospital notification
  - Optimal treatment en route: IV, Oxygen, Monitoring, Blood Glucose Measurement
Is EMS a Part of your Stroke Team?

1. Yes
2. No
3. No, but they will be soon!
References


