

PREHOSPITAL STROKE EVALUATION AND TRIAGE

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Goals

To provide initial medical stabilization and to shorten delays in evaluation and treatment of patients with stroke.

Patient Data Needed

1. Early signs and symptoms of stroke:

- Sudden... weakness on one side of the body
 numbness or tingling of one side of the face, arm or leg
 loss of vision or blindness, particularly in one eye, or double vision
 difficulty in speaking, or slurring of speech
 inability to understand what other people are saying
 dizziness and loss of balance or sudden trouble in walking
 severe and unusual headache

2. Oxygen saturation: _____ %

3. Capillary blood sugar: _____ mmol/L (or mg/dL)

4. Time of onset of stroke symptom(s)

Actions

1. Ensure ABC — Airway, Breathing and Circulation.
2. Give supplemental oxygen if oxygen saturation is $\leq 92\%$.
3. Perform rapid identification and assessment of stroke using the Cincinnati Prehospital Stroke Scale or the Face Arm Speech Test (FAST). (*See Insert 1 in this section*)
4. Check capillary blood sugar to exclude hypoglycemia. Give D50 intravenously if the blood sugar level < 4 mmol/L (< 70 mg/dL).
5. Send the patient promptly to a hospital with acute stroke facilities in view of the narrow time window for thrombolysis.
6. Notify (pre-arrival) the receiving hospital to mobilize the Emergency Department and Acute Stroke Team.
7. Exclude stroke mimics in the Emergency Department. (*See section on Stroke/TIA versus Mimics*)
8. Conduct fast-track evaluation of patients who present within 3 h of stroke for possible thrombolysis with rtPA. (*See section on Thrombolysis (rTPA) for Acute Ischemic Stroke*)

Evidence

1. Prehospital stroke care plays an important role in the “stroke chain of recovery”.
2. Both the Cincinnati Prehospital Stroke Scale and FAST are highly reliable and reproducible for rapid identification of stroke patients. Interrater agreement is high amongst paramedics, the emergency department and neurologists.
3. Appropriately selected patients with acute ischemic stroke benefit from early treatment and thrombolysis.

Selected Readings

1. Suyama J, Crocco T. (2002) Prehospital care of the stroke patient. *Emerg Med Clin North Am* **20**: 537–552.
2. Mosley I, Nicol M, Donnan G, *et al.* (2007) The impact of ambulance practice on acute stroke care. *Stroke* **38**: 2765–2770.
3. Brice JH, Griswell JK, Delbridge TR, Key CB. (2002) Stroke: From recognition by the public to management by emergency medical services. *Prehosp Emerg Care* **6**: 99–106.
4. Kothari RU, Pancioli A, Liu T, *et al.* (1999) Cincinnati Prehospital Stroke Scale: Reproducibility and validity. *Ann Emerg Med* **33**: 373–378.
5. Hossain O, Jenkinson D, Davis J, *et al.* (2003) Diagnostic accuracy of stroke referrals from primary care, emergency room physicians, and ambulance staff using the face arm speech test. *Stroke* **34**: 71–76.
6. Nor AM, McAllister C, Louw SJ, *et al.* (2004) Agreement between ambulance paramedic- and physician-recorded neurological signs with Face Arm Speech Test (FAST) in acute stroke patients. *Stroke* **35**: 1355–1359.
7. Goldstein LB, Simel DL. (2005) Is this patient having a stroke? *JAMA* **293**: 2391–2402.

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Insert 1. Prehospital Rapid Stroke Assessment Tools

Cincinnati Prehospital Stroke Scale

Suspect stroke if any of the following is abnormal:

- a) Facial droop. Ask patient to smile or show teeth.
Normal: Both sides of face move equally
Abnormal: One side of face does not move as well as the other
- b) Arm drift. Patient closes eyes and holds both arms straight out for 10 sec.
Normal: Both arms move equally or not at all
Abnormal: One arm drifts compared to the other
- c) Speech. Ask patient to repeat "It is hot and sunny in Singapore".
Normal: Patient says correct words without slurring
Abnormal: Slurred or inappropriate words or mute

Face Arm Speech Test (FAST)

Suspect stroke if any of the following is answered "yes":

a) *Facial movements*

Ask patient to smile or show teeth. Look for new asymmetry.

Tick YES if there is an unequal smile or grimace or obvious facial asymmetry.

YES

NO

b) *Arm movements*

Lift the patient's arms together to 90° if sitting, or 45° if supine. Ask him to hold that position for 5 sec and then let go.

Does one arm drift down or fall more rapidly?

YES

NO

c) *Speech impairment*

Look for new disturbances in speech. Look for slurred speech and word-finding difficulties. Ask the patient to name common nearby objects such as a cup, chair, key and pen.

If there is a severe visual disturbance, place an object in the patient's hand and ask him to name it.

YES

NO