

Lesson ACLS-Traditional 8A

Learning Station: Acute Stroke— Video Discussion 1

30 minutes

Learning Objectives

- Discuss early recognition and management of stroke, including appropriate disposition

Instructor Tips

- Allow students to work together to answer questions and allow for self-discovery
 - Encourage student-to-student interaction
- These video-based lessons are designed to allow you to challenge students, whether they are novice or experienced providers. Adjust the difficulty of your questions based on the knowledge level of the students in the course



Play Stroke Video

- Address what students will learn from the video
- Play the video (automatically pauses)
 - Address pause 1 questions 1, 2, and 3
- Refer to Part 2 in the provider manual
- Lead the discussion with the group



Discussion

- Advise students to refer to Part 2, Acute Stroke in the *ACLS Provider Manual*. Capture key concepts from the discussion



Pause 1

1. What signs and symptoms is this patient having?

Students should recognize that the patient is having difficulty speaking and moving. These are some of the warning signs of stroke. Ask students what some other warning signs or symptoms of stroke are.

How are they typical of stroke?

The signs and symptoms of a stroke may be subtle. They can include

- Sudden weakness or numbness of the face, arm, or leg, especially on one side of the body
- Sudden confusion
- Trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking
- Dizziness or loss of balance or coordination
- Sudden severe headache with no known cause

2. What are the major types of stroke?

The major types of stroke are

- **Ischemic stroke:** Accounts for 87% of all strokes and is usually caused by an occlusion of an artery to a region of the brain
- **Hemorrhagic stroke:** Accounts for 13% of all strokes and occurs when a blood vessel in the brain suddenly ruptures into the surrounding tissue. Fibrinolytics are contraindicated in this type of stroke

In addition:

- **Transient ischemic attack:** Transient ischemic attack is a transient episode of neurologic dysfunction caused by focal brain, spinal cord, or retinal ischemia, without acute infarction

Is there any treatment that can reduce disability?

Stroke is a general term. It refers to acute neurologic impairment that follows interruption in blood supply to a specific area of the brain. Although expeditious care for stroke is important for all patients, this case emphasizes reperfusion therapy for acute *ischemic* stroke because rapid therapy with a fibrinolytic agent can reduce the disability from stroke.

3. If this patient is having a stroke, what are some goals for stroke care?

The goal of stroke care is to minimize brain injury and maximize the patient's recovery. The Stroke Chain of Survival described by the AHA and the American Stroke Association is similar to the Chain of Survival for sudden cardiac arrest. It links actions to be taken by patients, family members, and healthcare providers to maximize stroke recovery. These links are

- Rapid recognition and reaction to stroke warning signs
- Rapid activation of the EMS system
- Rapid EMS-system transport to and prearrival notification of the receiving hospital
- Rapid diagnosis and treatment in the hospital

Lesson ACLS-Traditional 8B

Learning Station: Acute Stroke—Video Discussion 2



Play Stroke Video

- Address what students will learn from the video
- Play the video (automatically pauses)
 - Address pause 2 questions 1, 2, and 3
- Refer to Part 2 in the provider manual
- Lead the discussion with the group



Discussion

- Advise students to refer to Part 2, Acute Stroke in the *ACLS Provider Manual*. Capture key concepts from the discussion



Pause 2

1. What are the critical EMS assessments and actions to provide the best outcome for this patient with a potential stroke?

- **Identify signs:** Define and recognize the signs of transient ischemic attack and stroke.
- **Assess ABCs:** Administer oxygen if the oxygen saturation is 94% or less or the oxygen saturation is unknown.
- **Complete stroke assessment:** Perform a rapid out-of-hospital stroke assessment and stroke severity score.
- **Establish time:** Determine when the patient was last known to be at neurologic baseline. This represents time zero. If the patient wakes from sleep and is found with symptoms of stroke, time zero is the last time the patient was seen to be normal.
- **Transport:** Transport the patient to a stroke center on the basis of stroke assessment, stroke severity score, and local stroke protocols. Consider bringing a witness, family member, or caregiver with the patient to confirm time of onset of stroke symptoms.
- **Alert hospital:** Provide prehospital notification to the receiving hospital so they can activate their stroke team.
- **Check glucose:** During transport, support cardiopulmonary function, monitor neurologic status, and, if authorized by medical control, check blood glucose.

2. What type of hospital is appropriate for this patient?

A stroke center has the capability to rapidly triage and treat patients by using a multidisciplinary approach.

Why is advance notification so important?

Evidence indicates a favorable benefit when stroke patients are triaged directly to designated stroke-prepared centers (primary/comprehensive centers).

Advance notification allows activation of the facility stroke plan and team, minimizing delay in evaluation and treatment.

3. What stroke screen was used in the video?

Cincinnati Prehospital Stroke Scale (CPSS)

What are the 3 important physical findings?

The CPSS identifies stroke on the basis of 3 physical findings:

- Facial droop (have the patient smile or try to show teeth)
- Arm drift (have the patient close eyes and hold both arms out)
- Abnormal speech (have the patient say, "You can't teach an old dog new tricks")

Using the CPSS, medical personnel can evaluate the patient in less than 1 minute.

The presence of 1 finding on the CPSS indicates a 72% probability of stroke.

The presence of all 3 findings indicates that the probability of stroke is greater than 85%.

Lesson ACLS-Traditional 8C

Learning Station: Acute Stroke—Video Discussion 3



Play Stroke Video

- Address what students will learn from the video
- Play the video
 - Address pause 3 questions 1, 2, and 3
- Lead the discussion with the group



Discussion

- Advise students to refer to Part 2, Acute Stroke in the *ACLS Provider Manual*. Capture key concepts from the discussion



Pause 3

1. Let's review. What is the initial emergency department assessment and stabilization?

- **Assess ABCDs:** Assess the ABCDs and evaluate baseline vital signs.
- **Provide oxygen:** Provide supplemental oxygen if the patient is hypoxemic, ie, oxygen saturation is 94% or less, or in patients with an unknown oxygen saturation value.
- **Establish IV access and obtain blood samples:** Establish IV access and obtain blood samples for baseline blood count, coagulation studies, and blood glucose, but do not let this delay obtaining a CT scan of the brain.
- **Check glucose:** Promptly treat hypoglycemia.
- **Perform neurologic screening:** National Institutes of Health Stroke Scale or Canadian Neurological Scale.
- **Activate stroke team:** Activate the stroke team or arrange consultation with a stroke expert.
- **Order CT brain scan:** Order an emergent CT scan of the brain and have it read promptly by a radiologist.
- **Obtain 12-lead ECG:** Obtain a 12-lead ECG, which may identify a recent acute myocardial infarction or arrhythmias (eg, atrial fibrillation) as a cause of embolic stroke. Life-threatening arrhythmias can follow or accompany stroke, particularly intracerebral hemorrhage. If the patient is hemodynamically stable, treatment of non-life-threatening arrhythmias (bradycardia, VT, and atrioventricular conduction blocks) may not be necessary. This should not delay getting the CT scan of the brain.

2. What are the possible outcomes of the CT scan?

Emergent CT or magnetic resonance imaging scans of patients with suspected stroke should be promptly interpreted by an expert. The presence of hemorrhage versus no hemorrhage determines the next steps in treatment and whether the patient is a candidate for fibrinolytic therapy.

Which test result makes the patient a candidate for fibrinolytic therapy?

No, hemorrhage is not present.

If the CT scan shows no evidence of hemorrhage, the patient may be a candidate for fibrinolytic therapy.

Yes, hemorrhage is present.

If hemorrhage is noted on the CT scan, the patient is **not** a candidate for fibrinolytics. Consult a neurologist or neurosurgeon and consider transfer for appropriate care.

3. What does fibrinolytic therapy do for patients with ischemic stroke?

Several studies have demonstrated a higher likelihood of good-to-excellent functional outcome when alteplase was given to adults with acute ischemic stroke within 3 hours of symptom onset. These results occurred only when alteplase was given by physicians in hospitals with a stroke protocol that rigorously adhered to the eligibility criteria and therapeutic regimen of the National Institute of Neurological Disorders and Stroke protocol. Evidence from prospective randomized studies in adults also documents a greater likelihood of benefit when treatment begins earlier.

Studies have also shown improved clinical outcome in carefully selected patients when fibrinolytic administration occurred between 3 and 4.5 hours after symptom onset, although the degree of benefit was smaller than seen in the group receiving treatment at 3 hours or more.

Lesson ACLS-Traditional 8D

Learning Station: Acute Stroke—Review of 8 D's

Instructor Tip

- Advise students to refer to Part 2 in the *ACLS Provider Manual*. Capture key concepts from the discussion



Discussion

In a large group, with all students, discuss the following:

- Patients with acute ischemic stroke have a time-dependent benefit for fibrinolytic therapy similar to that of patients with ST-segment elevation MI, but this time-dependent benefit is much shorter
- The critical time period for administration of IV fibrinolytic therapy begins with the onset of symptoms
 - **Detection:** Rapid recognition of stroke signs and symptoms
 - **Dispatch:** Early activation and dispatch of EMS by phoning 9-1-1
 - **Delivery:** Rapid EMS stroke identification, management, triage, transport, and prehospital notification
 - **Door:** Urgent emergency department triage to a high-acuity area and immediate assessment by the stroke team
 - **Data:** Rapid clinical evaluation, laboratory testing, and brain imaging
 - **Decision:** Establishing stroke diagnosis and determining optimal therapy selection
 - **Drug/Device:** Administration of fibrinolytic and/or endovascular therapy if eligible
 - **Disposition:** Rapid admission to the stroke unit or critical care unit, or emergency interfacility transfer for endovascular therapy