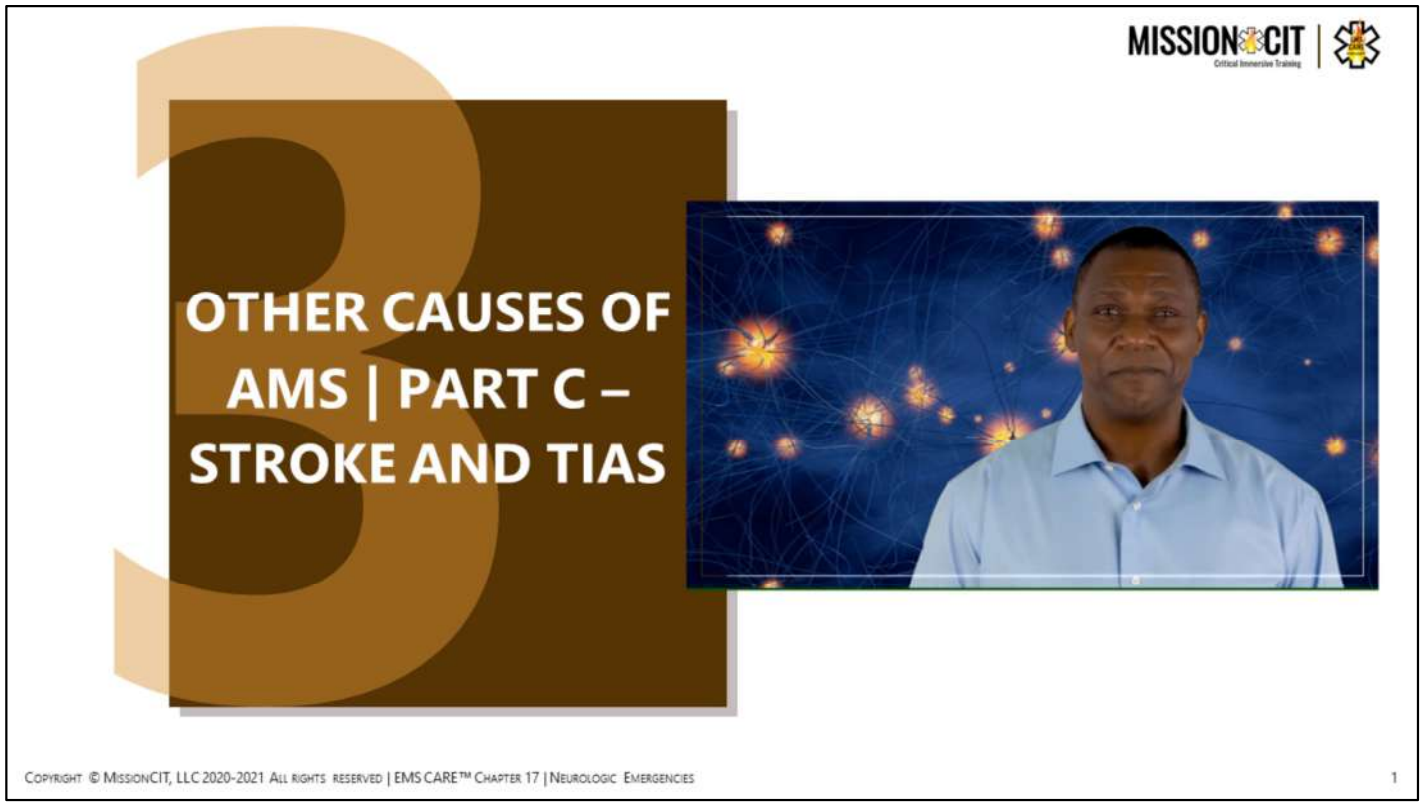
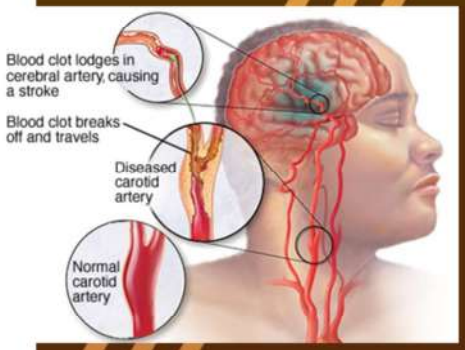


Stroke refers to the death or injury of brain tissue, as a result of a lack of oxygen. This can be caused by an arterial blockage or from bleeding from a ruptured blood vessel.

Stroke | What is it?

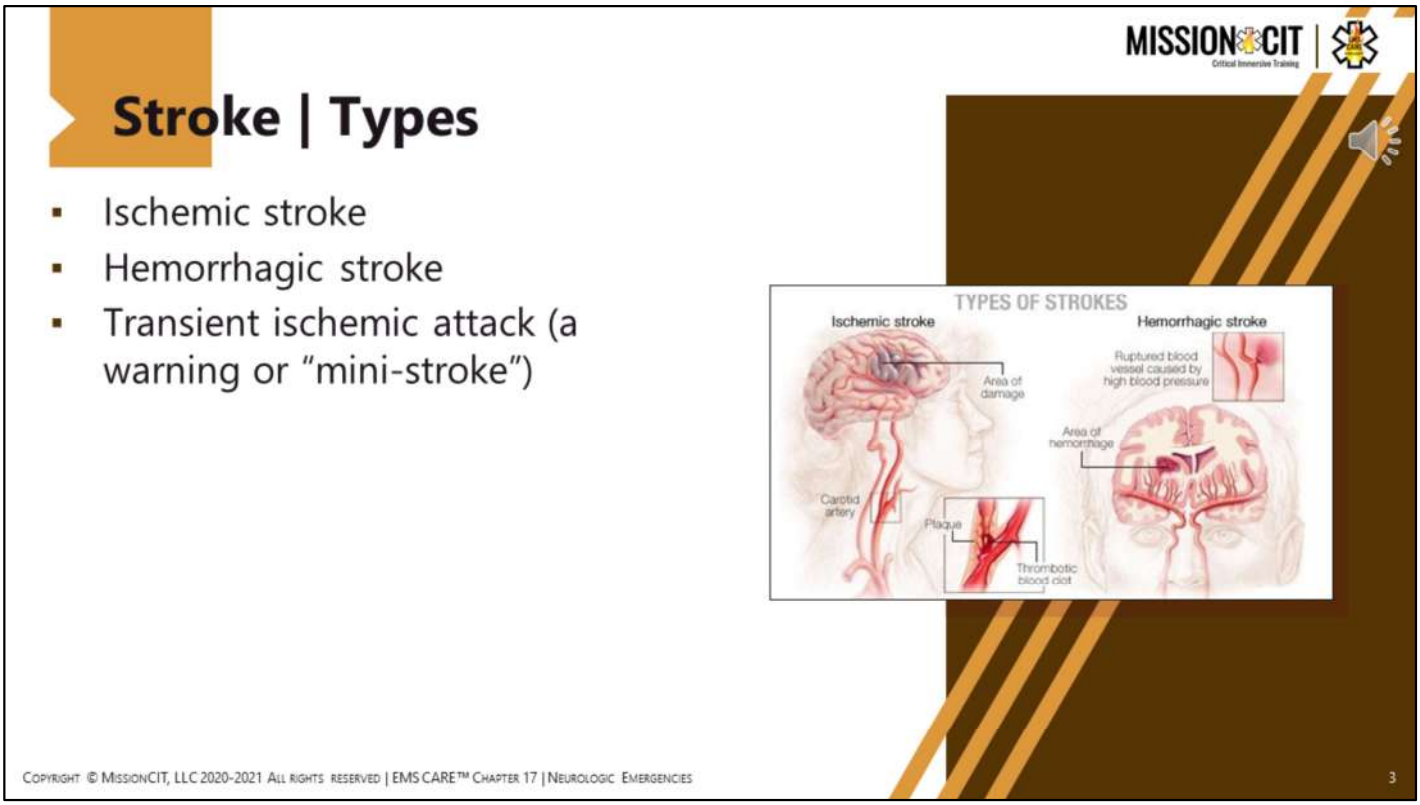
- Death or injury of brain tissue from oxygen deprivation
- Causes:
  - ✓ Blockage of artery supplying blood to part of the brain
  - ✓ Bleeding from a ruptured blood vessel in the brain



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Causes of stroke include:

- The blockage of an artery supplying blood to part of the brain,
- And bleeding from a ruptured blood vessel in the brain.



The three main types of stroke are:

- Ischemic stroke.
- Hemorrhagic stroke.
- And Transient ischemic attack (TIA).

According to the CDC, most strokes (87%) are ischemic strokes. An ischemic stroke happens when blood flowing through the artery that supplies oxygen-rich blood to the brain, becomes blocked. Blood clots often cause the blockages that lead to ischemic strokes.

A hemorrhagic stroke happens when an artery in the brain leaks blood or ruptures. The leaked blood puts too much pressure on the brain cells, which damages them. High blood pressure and aneurysms, are examples of conditions that can cause a hemorrhagic stroke.

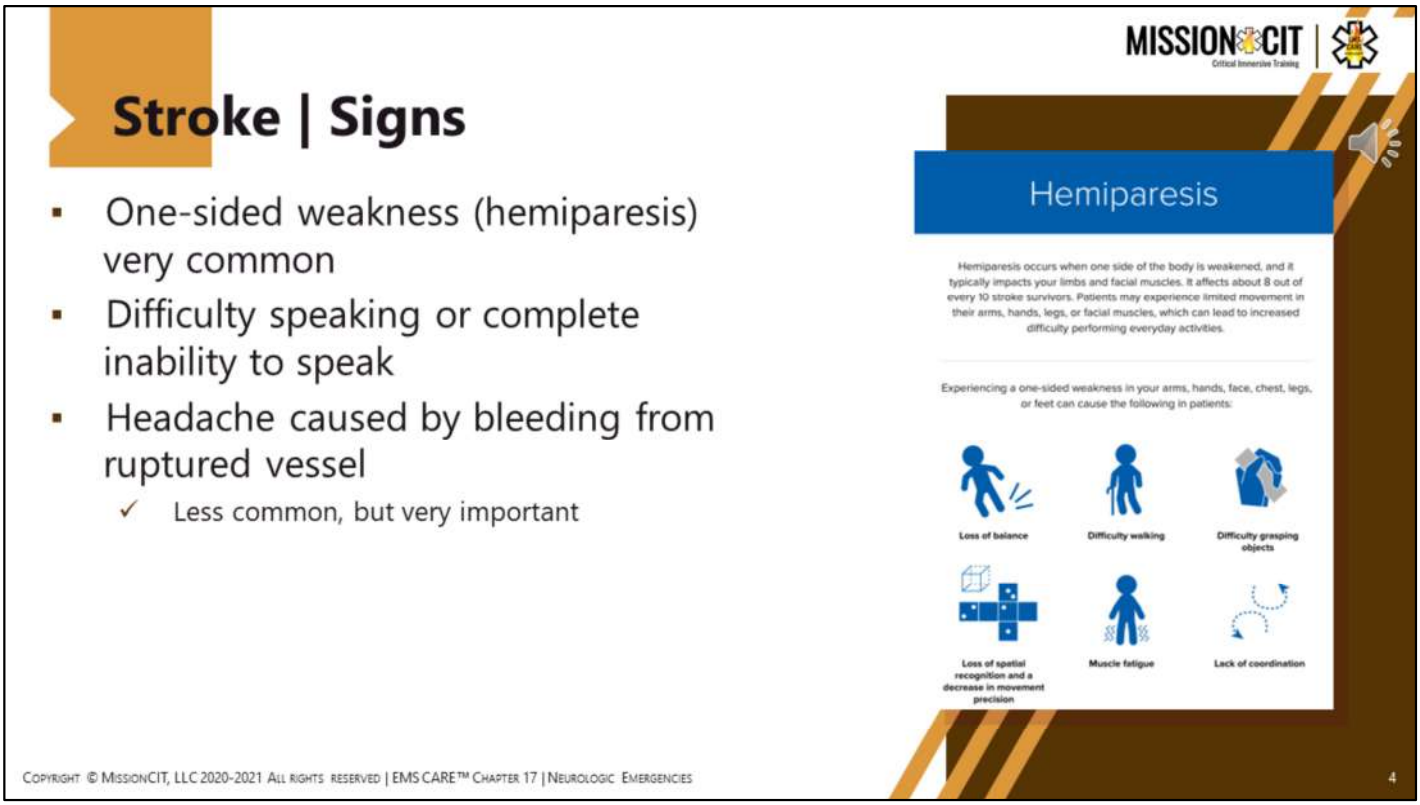
There are two types of hemorrhagic strokes:

- Intracerebral hemorrhage is the most common type of hemorrhagic stroke. It occurs when an artery in the brain bursts, flooding the surrounding tissue with blood.
- Subarachnoid hemorrhage is a less common type of hemorrhagic stroke. It refers to bleeding in the area between the brain and the thin tissues that cover it.

A transient ischemic attack (TIA) is sometimes called a "mini-stroke." It is different from the

major types of stroke because blood flow to the brain is blocked for only a short time—usually no more than 5 minutes.

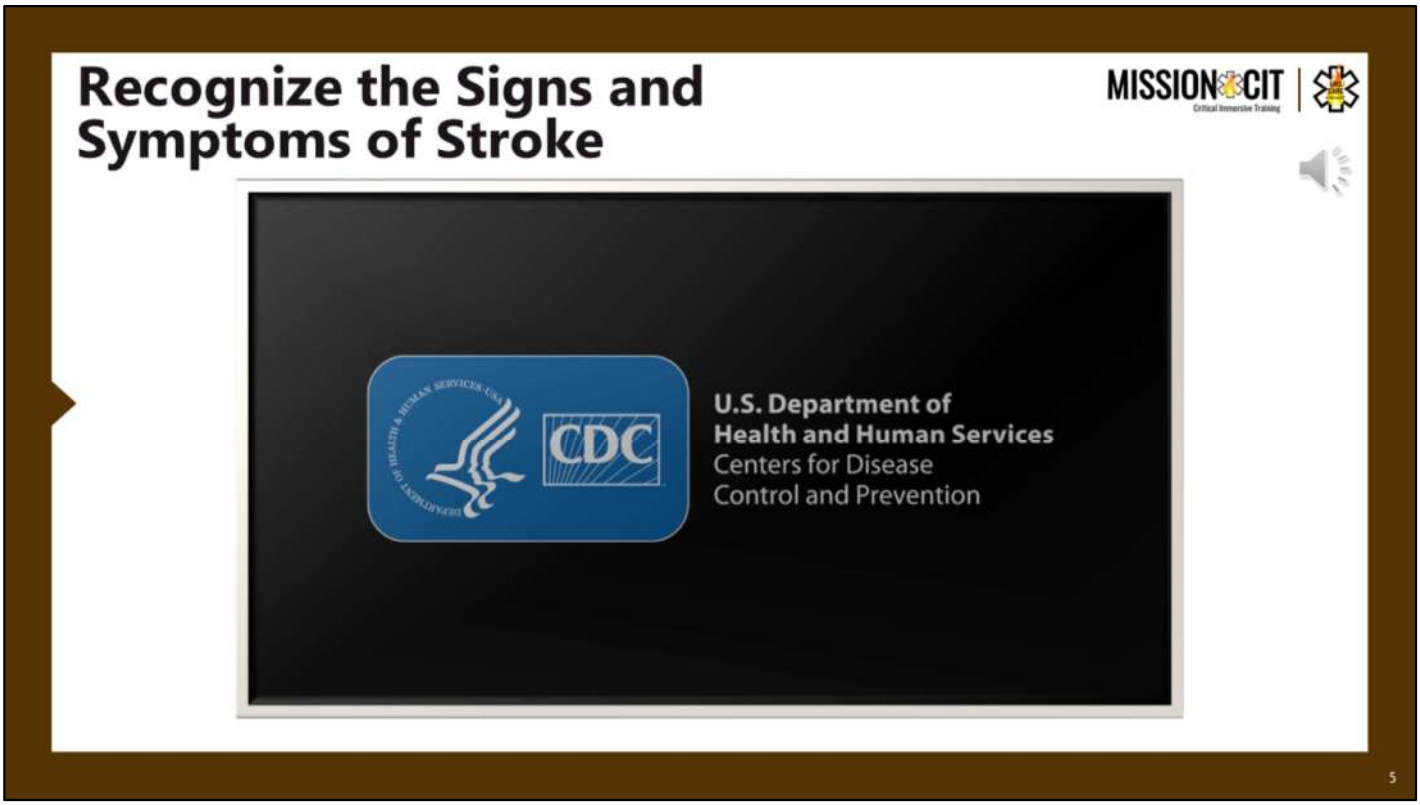
There is no way to know in the beginning whether symptoms are from TIA's or from a major type of stroke. Like ischemic strokes, blood clots often cause TIA's.



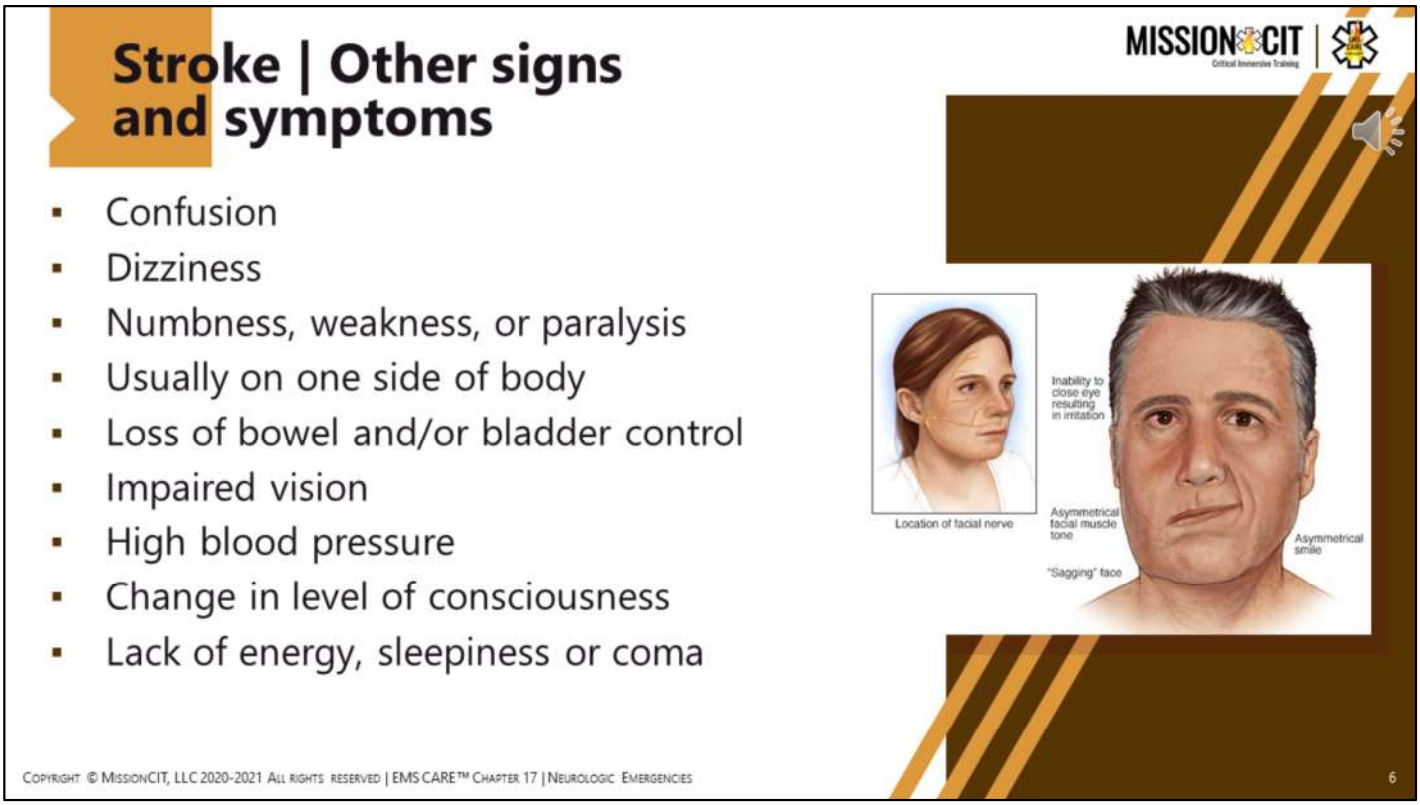
There are many potential Signs of Stroke in Men and Women. We'll go over them over the next few slides. They include:

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

The NIH advises a growing recognition of the clinical and public health importance of stroke in women. Although age-specific stroke incidence and mortality rates are higher in men than in women, stroke affects a greater number of women because of their increased longevity. And the fact that stroke event rates increase substantially in the oldest age groups. Moreover, stroke-related outcomes, including disability and quality of life, are consistently poorer in women than in men.

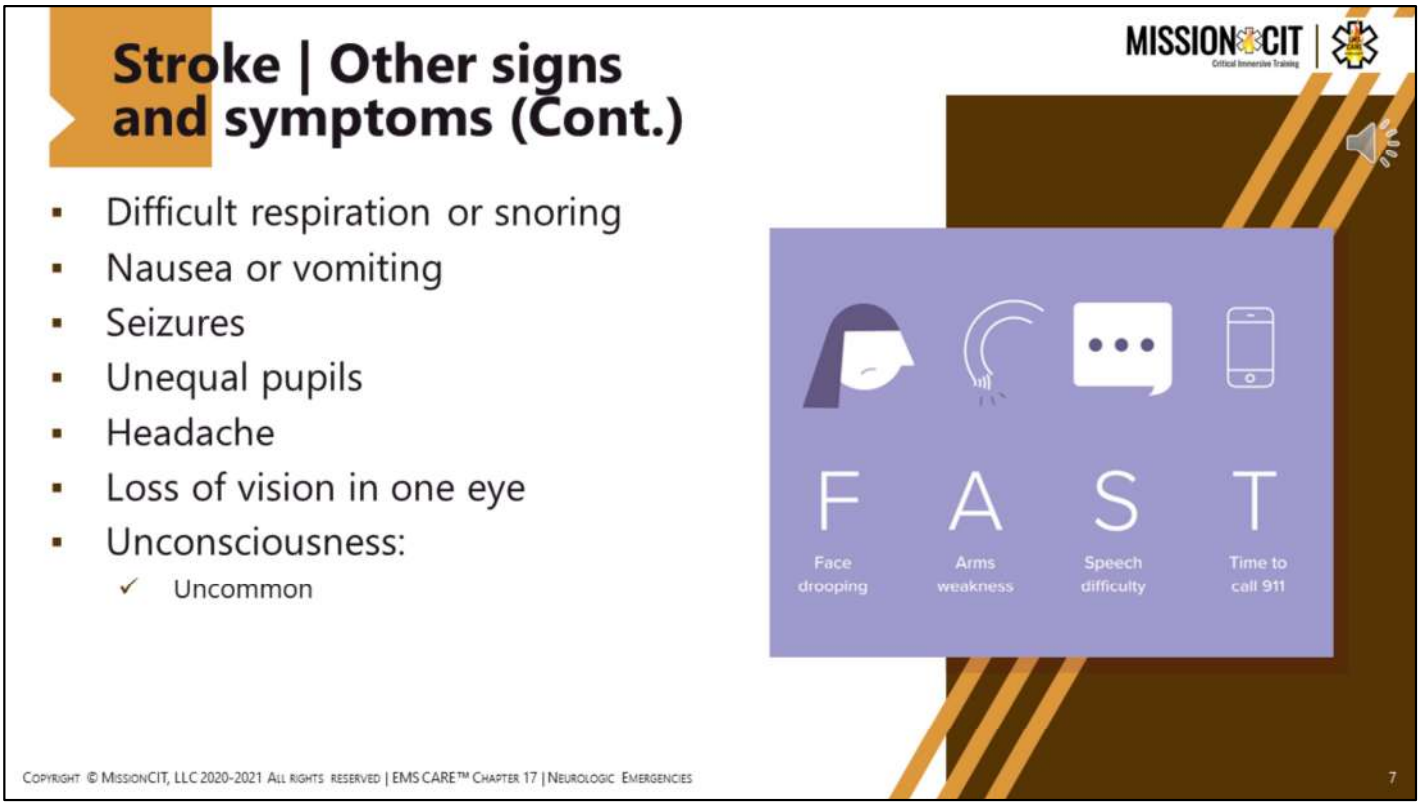


When someone is having a stroke, every minute counts. Just as putting out a fire quickly can stop it from spreading, treating a stroke quickly can reduce damage to the brain. If you learn how to recognize the telltale signs of a stroke, you can act quickly and save a life—maybe even your own.



Continuing with more potential stroke symptoms including:

- Confusion,
- Dizziness,
- Numbness, weakness, or paralysis, usually on one side of the body.
- Loss of bowel and/or bladder control,
- Impaired vision,
- High blood pressure, and.
- Change in level of consciousness or alertness, lack of energy, sleepiness or coma.



Continuing with more potential stroke symptoms including:

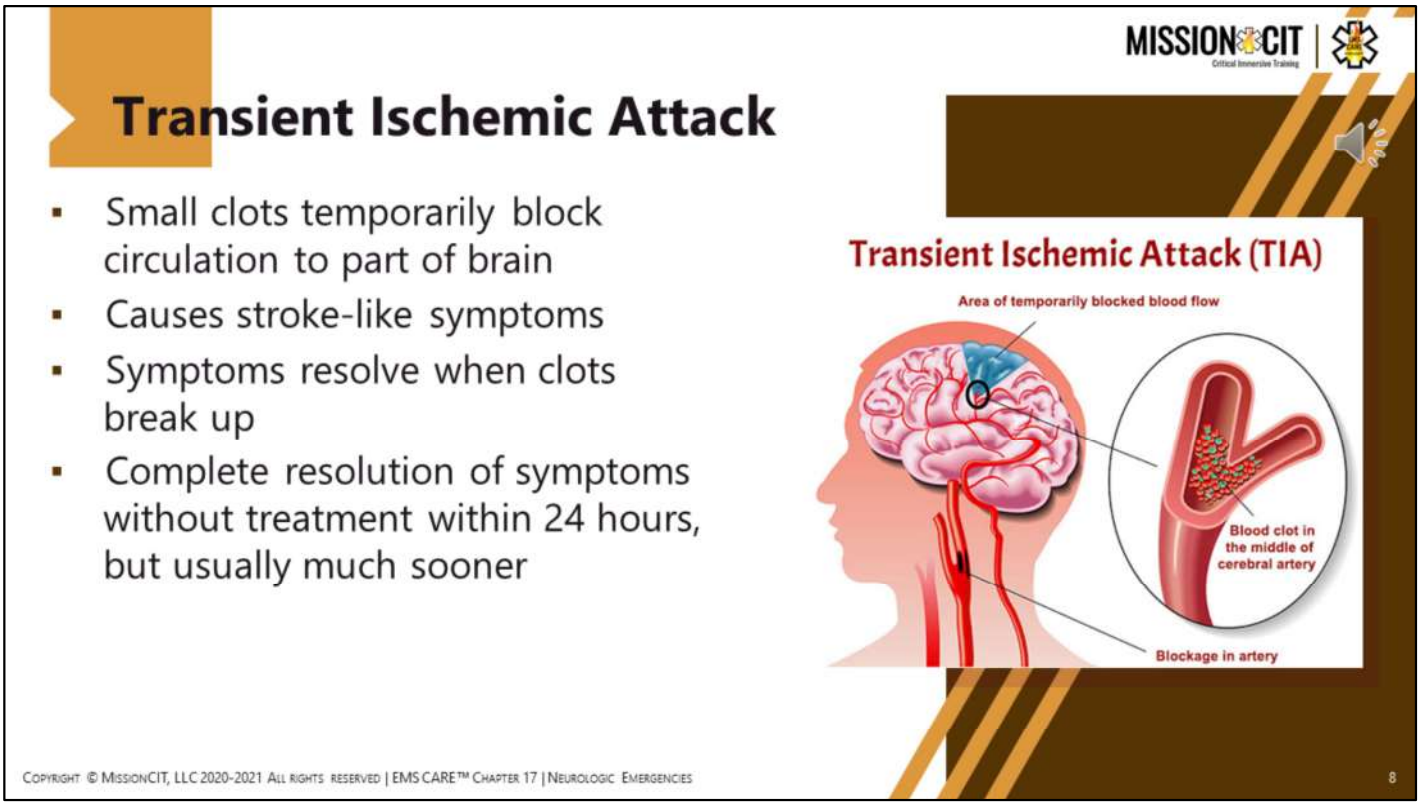
- Difficult respiration or snoring.
- Nausea or vomiting,
- Seizures,
- Unequal pupils,
- Headache,
- Loss of vision in one eye,
- Unconsciousness, though it's uncommon.

Acting FAST can help stroke patients get the treatments they desperately need. The stroke treatments that may work best, are available only if the stroke is recognized and diagnosed within 3 hours of the first symptoms. Stroke patients may not be eligible for these treatments, if they don't arrive at the hospital in time.

If you think someone may be having a stroke, the F A S T mnemonic is a good place to start.

- F: —Face: Ask the person to smile. Does one side of the face droop?
- A: —Arms: Ask the person to raise both arms. Does one arm drift downward?

- S:—Speech: Ask the person to repeat a simple phrase. Is the speech slurred or strange?
- T:—Time: If you see any of these signs, follow your protocol for stroke.



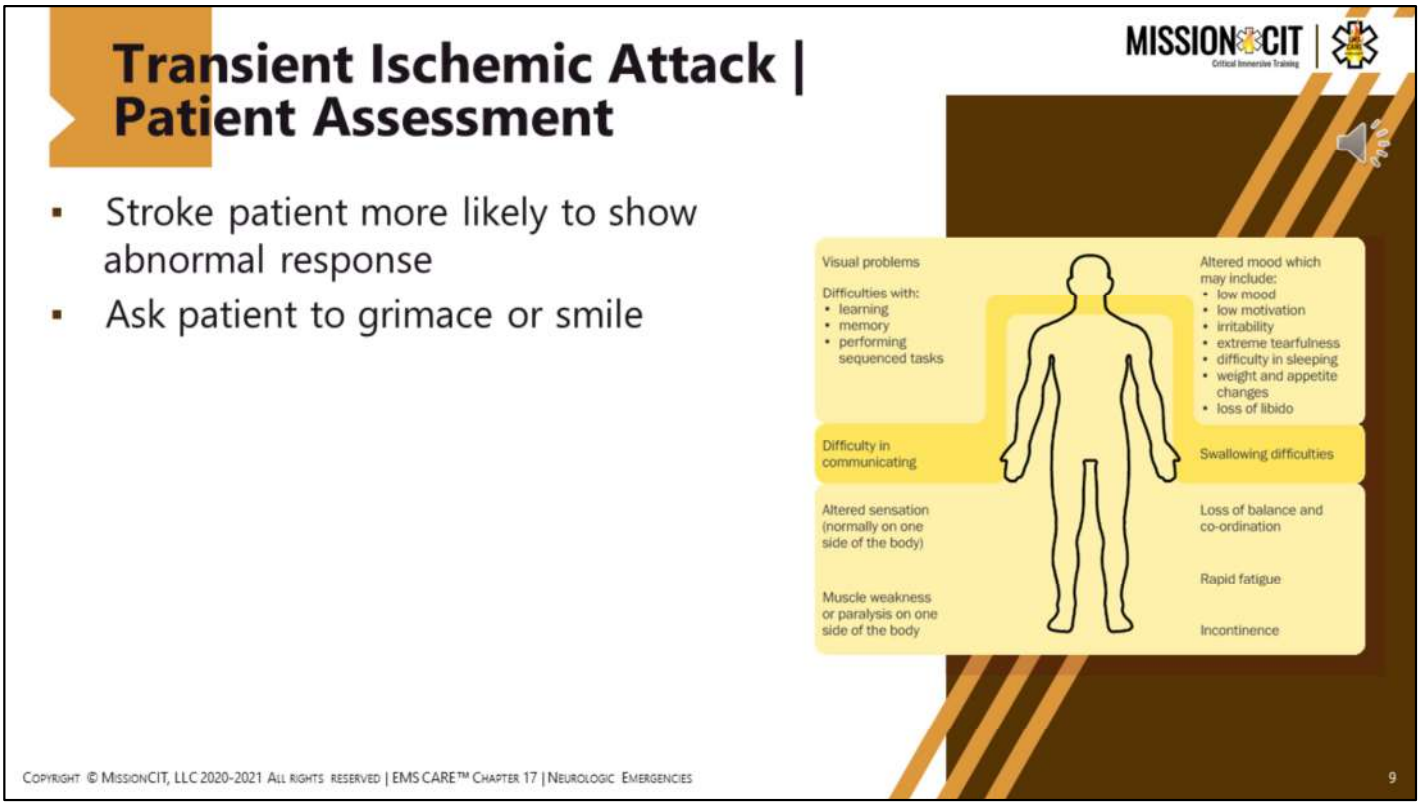
Recognizing and treating TIA's can lower the risk of a major stroke. A transient ischemic attack is sometimes called a "mini-stroke." It is different from the major types of stroke because blood flow to the brain is blocked for only a short time—usually no more than 5 minutes.

Characteristics may include:

- The TIA's cause stroke-like symptoms,
- Symptoms resolve when clots break up.
- Complete resolution of symptoms occurs without treatment within 24 hours, but usually much sooner.

It is important to know that:

- TIA's may be a warning sign of a future stroke, and
- TIA's are a medical emergency, just like a major stroke.



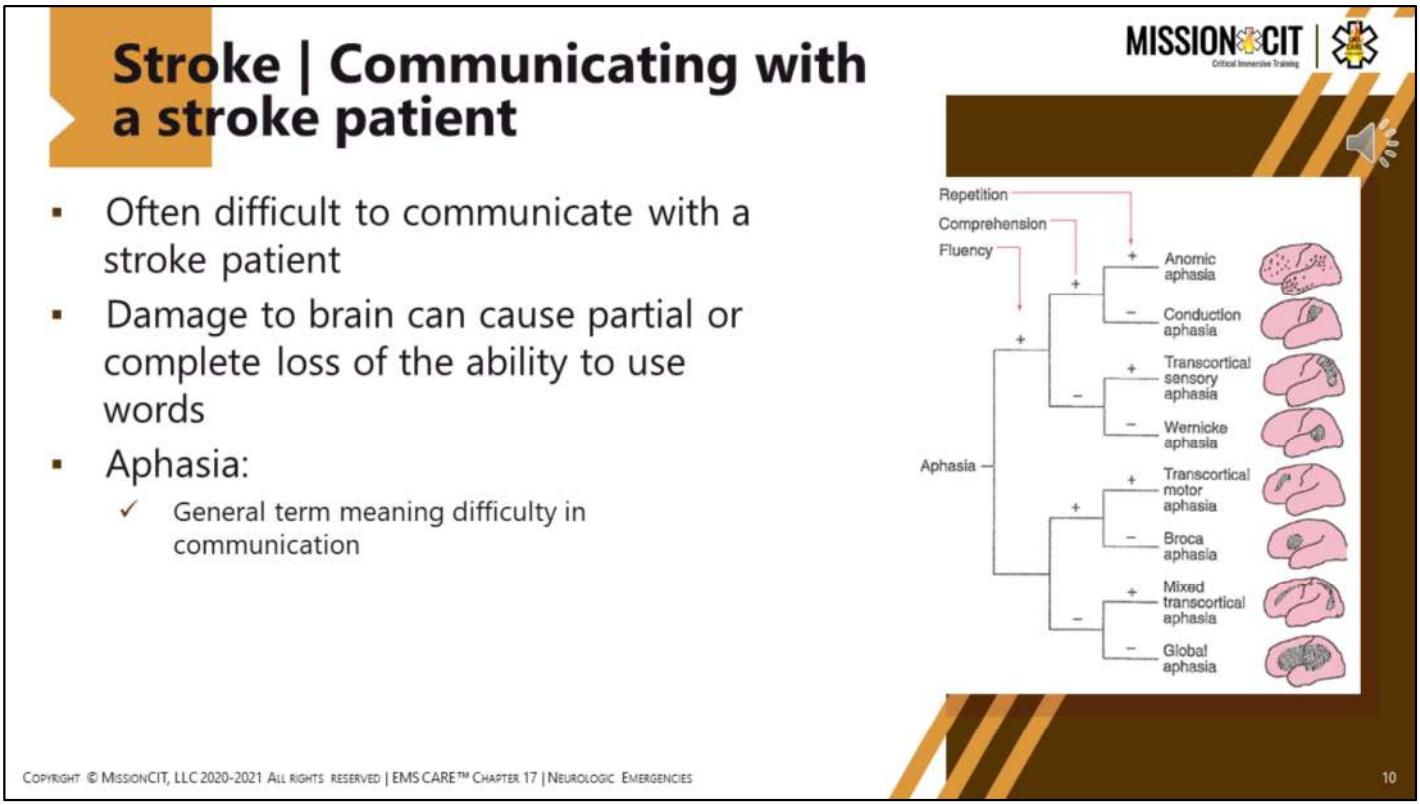
Symptoms of T I A's are the same as for an ischemic stroke. Transient ischemic attack symptoms happen suddenly, and stop when the clot dissolves or dislodges on its own. They usually cause no side effects, or any permanent brain damage.

The graphic shows the many symptoms that may occur in both (TIA) and Ischemic Stroke patients.

A corollary to the F A S T mnemonic is the BE FAST mnemonic. It's similar and is as follows:

- Balance – Ask if the person feels dizzy or has trouble standing.
- Eyes – Ask if the person has blurred or double vision.
- Face – Ask the person to smile and see if one side of the face droops.
- Arms – Ask the person to raise both arms and see if one arm drifts downward.
- Speech – Ask the person to repeat a simple phrase like, "The sky is blue," and note whether it's repeated correctly or if speech is confused, slurred, or garbled.
- Time – follow your protocol if the person has any or several of these symptoms. Time lost is brain lost.

Note that a CT Scan or MRI is required to differentiate between a Stroke and a Transient ischemic attack.

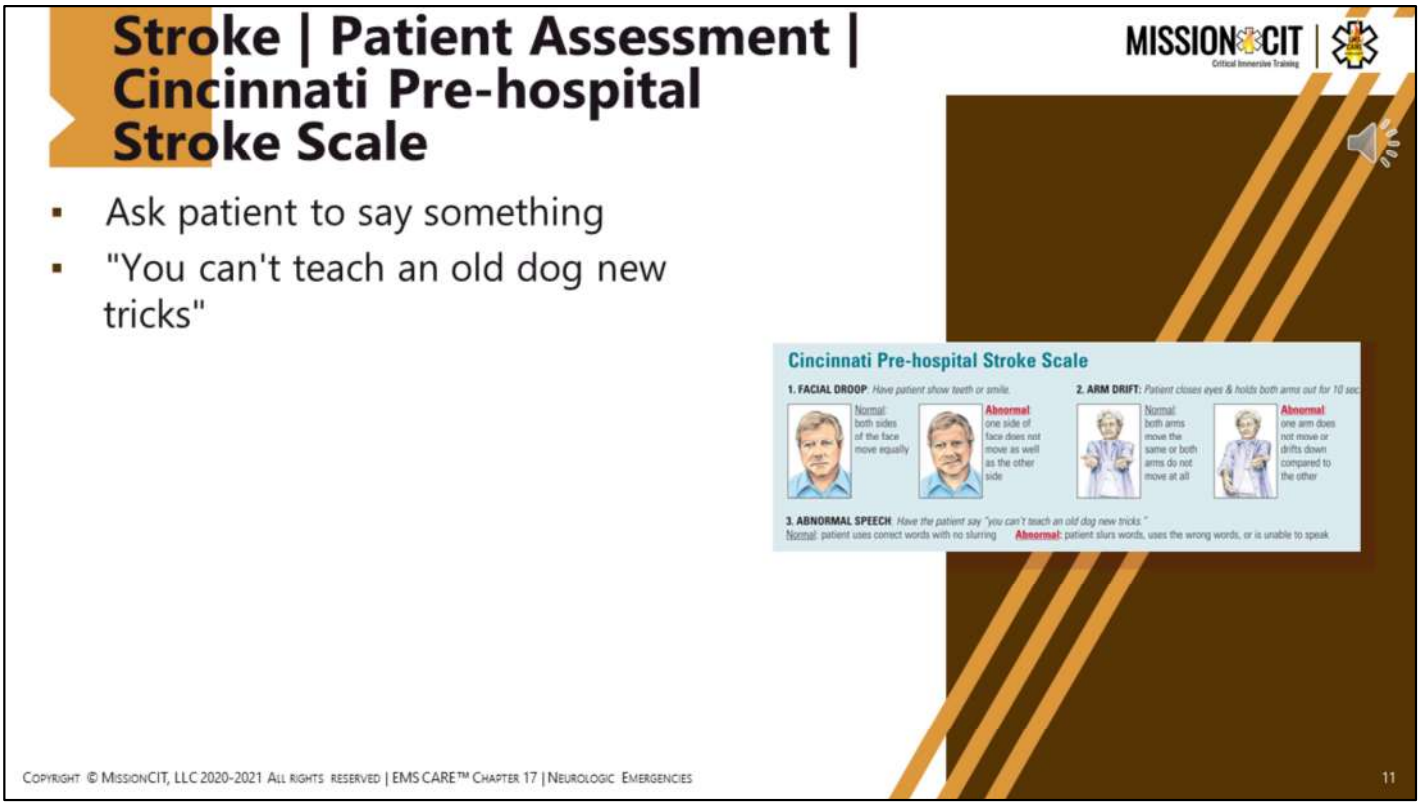


So, it is often difficult to communicate with a stroke patient, as damage to the brain can cause partial or complete loss of the patient's ability to use words.

Aphasia is the loss of ability to understand or express speech, caused by brain damage. It can occur suddenly after a stroke or head injury, or develop slowly from a growing brain tumor or disease.

Aphasia is a sign of some other condition, such as a stroke or a brain tumor. A person with aphasia may:

- Speak in short or incomplete sentences,
- Speak in sentences that don't make sense,
- Substitute one word for another or one sound for another,
- Speak unrecognizable words,
- Not understand other people's conversation, or
- Write sentences that don't make sense.



The American Heart and Stroke Associations, recommend the following for EMS Management, and clinical assessment of a suspected stroke:

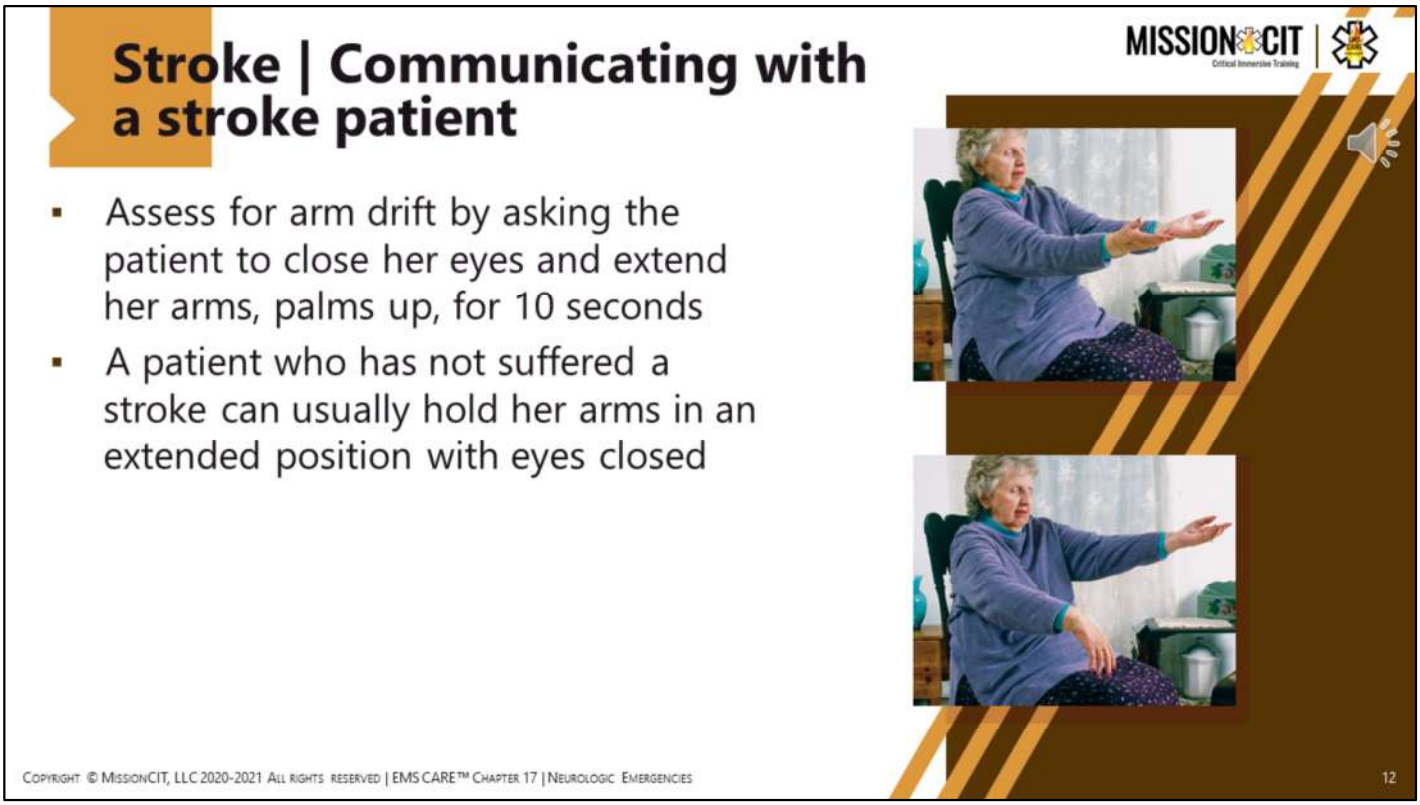
- Assess using ABCs: airway, breathing, circulation – give oxygen if needed,
- Perform prehospital stroke assessment. We will use the Cincinnati prehospital Stroke Scale.
- Establish the time when the patient was last known to be normal,
- Rapidly transport the patient. We recommend triage to a center with a stroke unit if appropriate; consider bringing a witness, family member, or caregiver.
- Alert receiving hospital stroke center, communicating “CODE STROKE”, and
- Check the glucose level if possible.

There are three parts to the Cincinnati Prehospital Stroke Scale. Note, that if any 1 of these 3 indicators is abnormal, the probability of a stroke is 72%.

We will start by assessing facial droop. Do this by having the patient show their teeth or smile: The result will either be:

- Normal—both sides of the face move equally; or

- Abnormal—one side of the face does not move as well as the other side.

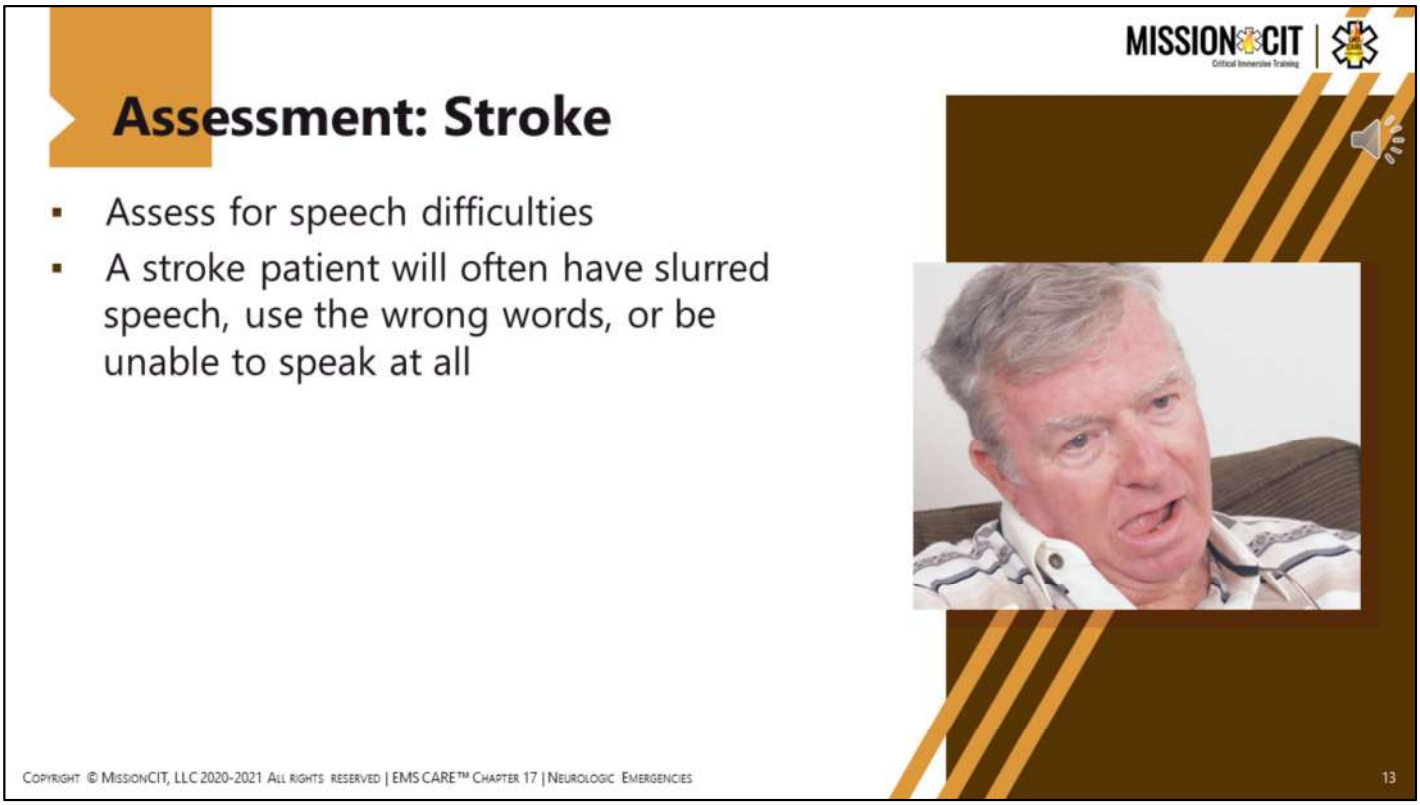


Here we assess for arm drift, by asking the patient to close her eyes and extend her arms, palms up, for 10 seconds. A patient who has not suffered a stroke can usually hold her arms in an extended position with eyes closed.

The result will either be:

- Normal—both arms move the same or both arms do not move at all; or.
- Abnormal—one arm does not move, or one arm drifts down compared with the other.

Note that other findings, such as pronator drift, may be helpful.



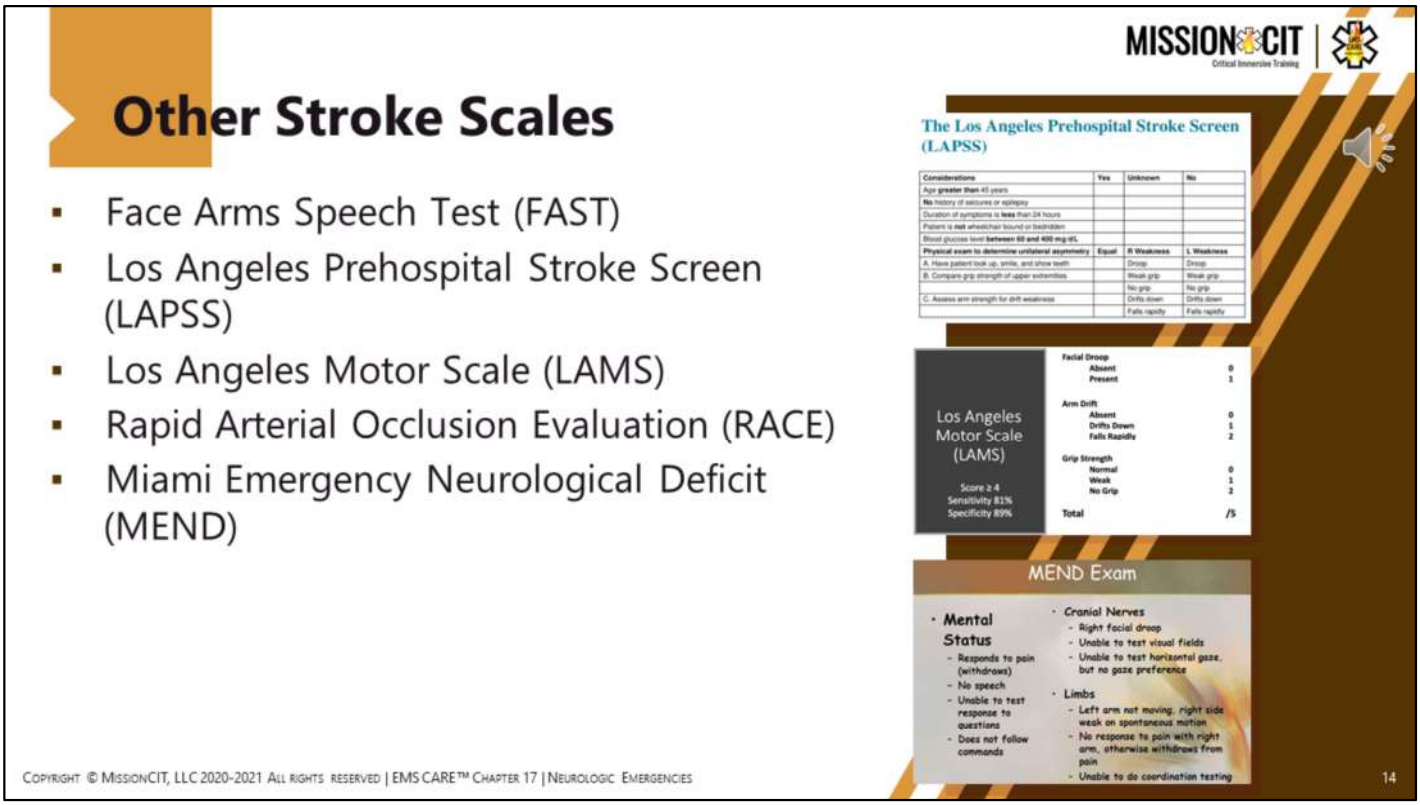
Here we assess for speech difficulties. A stroke patient will often have slurred speech, use the wrong words, or be unable to speak at all.

The test for abnormal is to have the patient say, “you can’t teach an old dog new tricks.”

The result will either be:

- Normal—patient uses correct words with no slurring; or
- Abnormal—patient slurs words, uses the wrong words, or is unable to speak.

Again, if any 1 of these 3 indicators is abnormal, the probability of a stroke is 72%.



A wide range of clinical assessment tools for selecting subjects with acute stroke has been developed over years. Here is a list of stroke scales other than the previously discussed Cincinnati Pre-Hospital Stroke Scale.

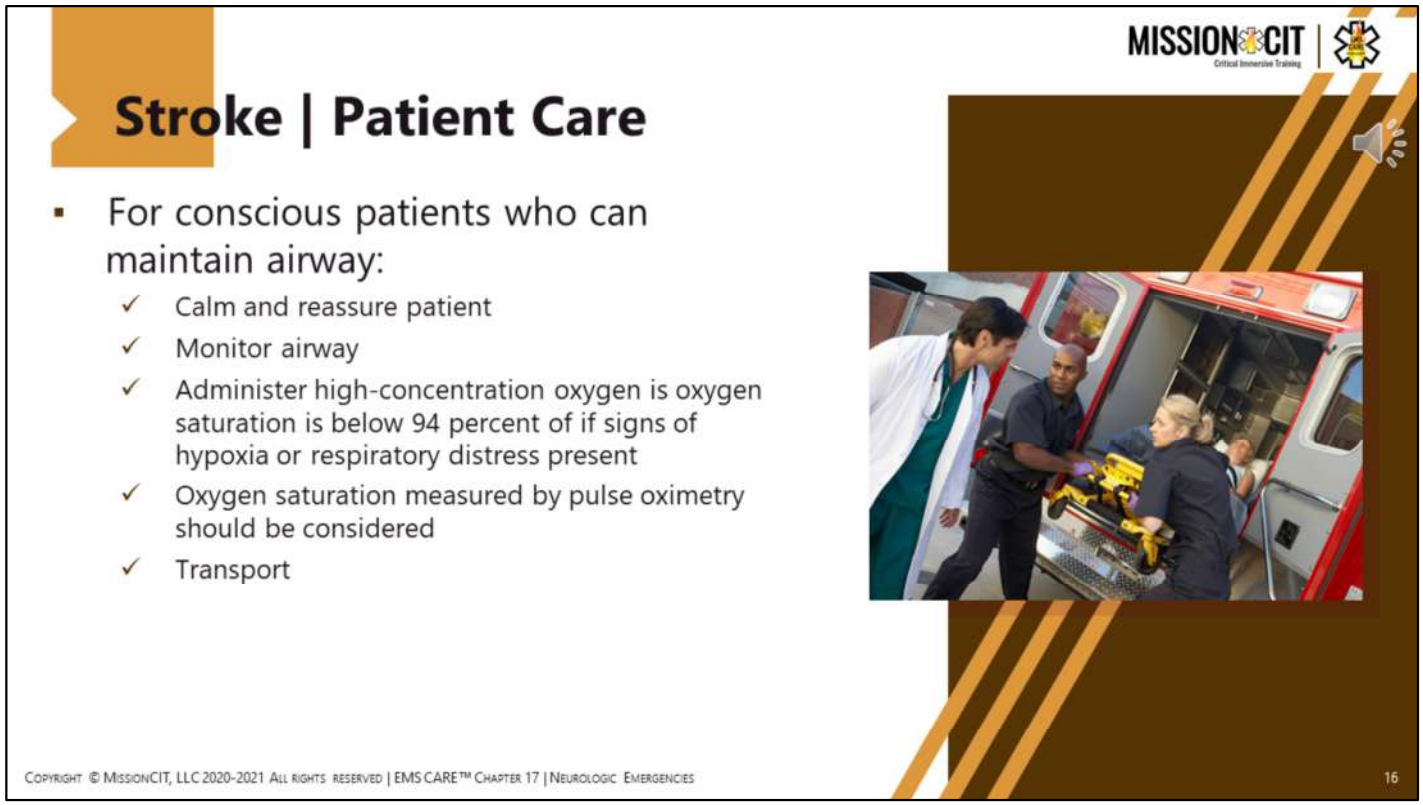
- Face Arms Speech Test
- Los Angeles Prehospital Stroke Screen
- Los Angeles Motor Scale
- Rapid Arterial Occlusion Evaluation
- Miami Emergency Neurological Deficit



Hypertension, is a main risk factor for stroke. About 1 in 3 men have stage 2 hypertension. That is, having a blood pressure greater than or equal to 140 over 90 mmHg. And more than half do not have it under control.

According to the CDC, other risk factors for stroke include:

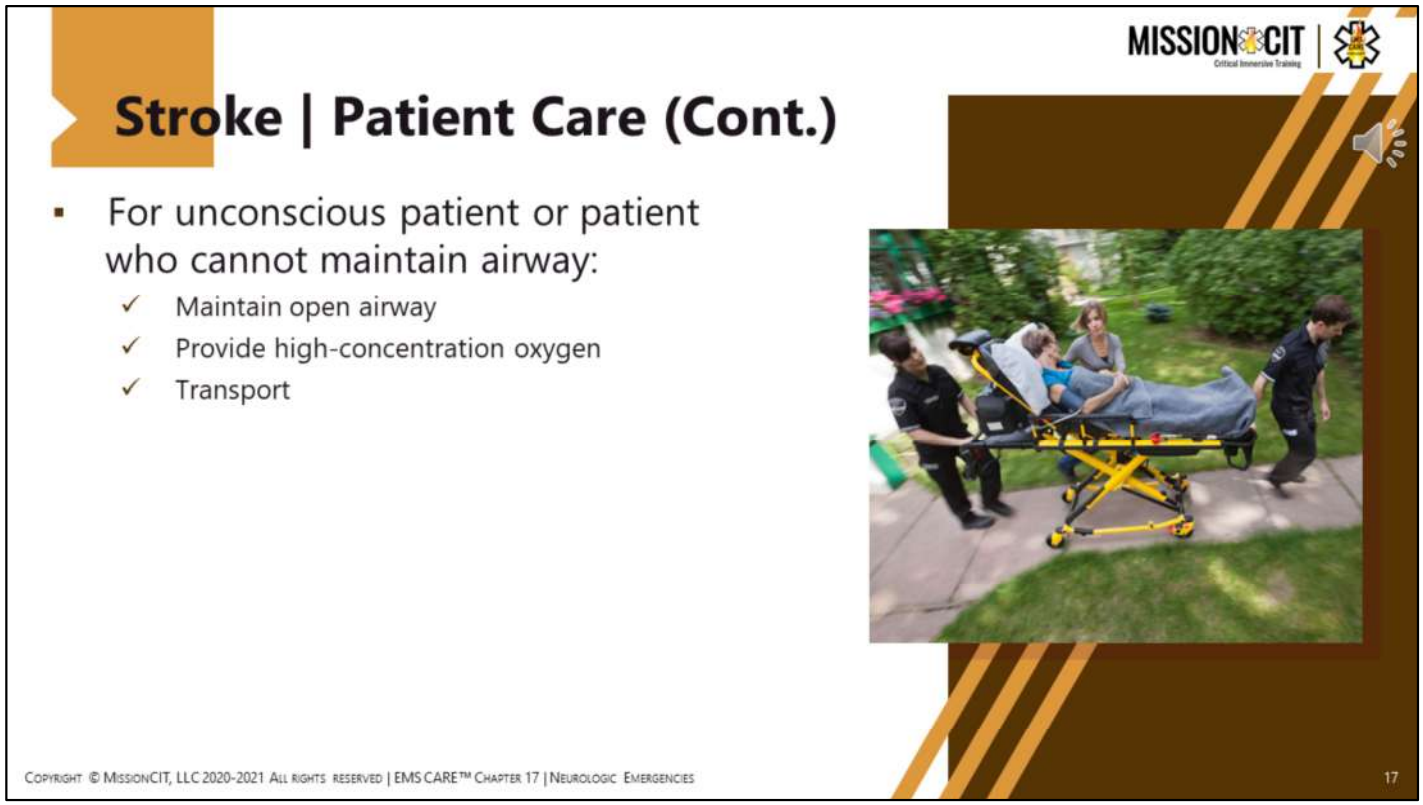
- Smoking damages blood vessels, which can cause a stroke. About 1 in 6 men smoke. Men are also more likely to be smokers than women.
- Being overweight or obese increases stroke risk. About 3 in 4 men in the United States are overweight or obese.
- Diabetes increases stroke risk because it can harm blood vessels in the brain. About 1 in 8 men have diabetes.
- Drinking too much alcohol can raise blood pressure levels and increase the risk of stroke. It also increases levels of triglycerides, a form of fat in your blood that can harden your arteries. Men are more likely than women to drink too much alcohol.
- Not getting enough physical activity can lead to other health conditions that can raise the risk of stroke. Only 1 in 4 men get enough physical activity.



So, as we discussed before, follow your protocol for assessing a patient. Then, follow the secondary assessment protocol for a suspected stroke patient.

In addition, for conscious patients who can maintain airway:

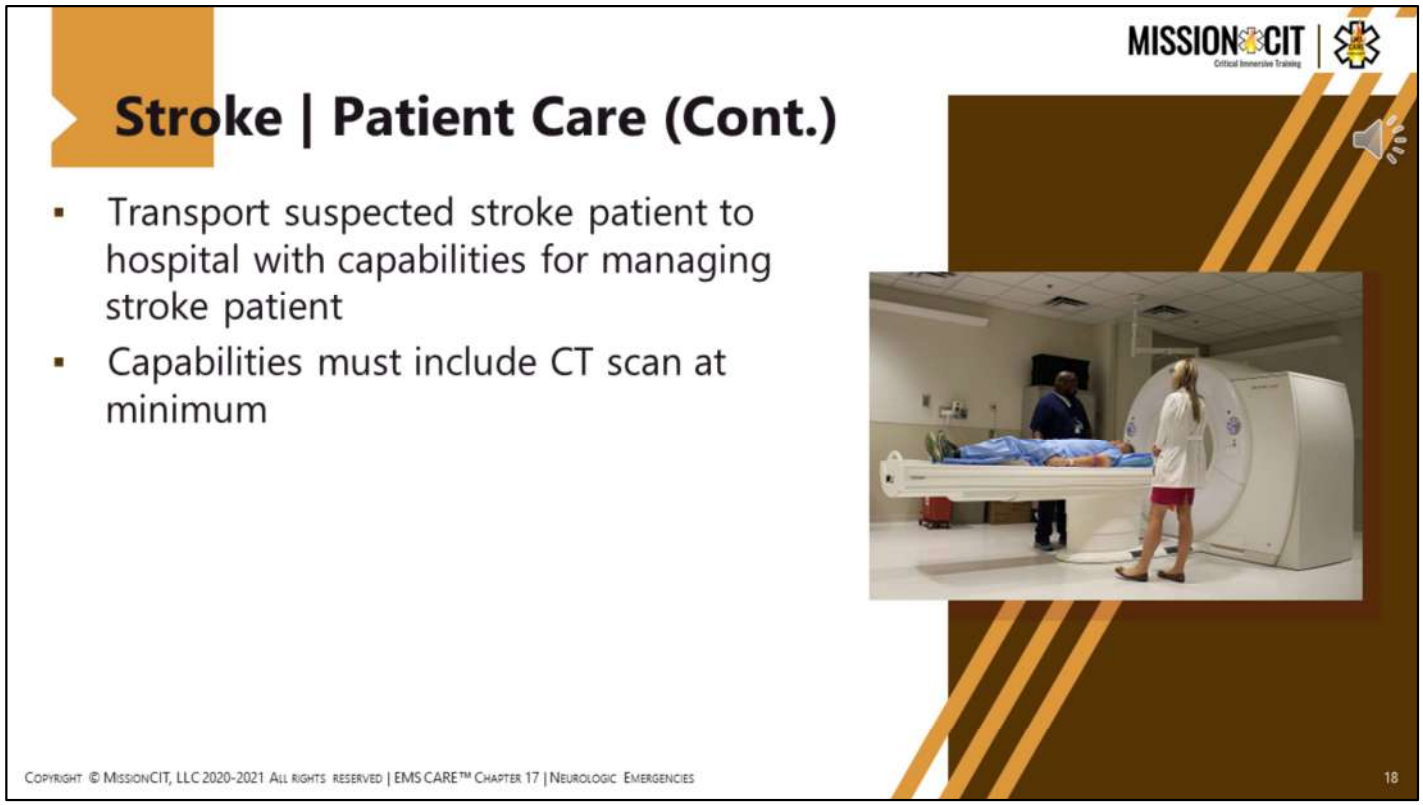
- Calm and reassure the patient.
- Monitor the airway.
- Administer high-concentration oxygen if the oxygen saturation is below 94 percent, or if signs of hypoxia or respiratory distress are present;
- Oxygen saturation measured by pulse oximetry should be considered a ‘vital sign’ and documented with other vital signs in patient assessment and management, and
- Transport.



Again, as we discussed before, follow your protocol for assessing a patient. Then, follow the secondary assessment protocol for a suspected stroke patient.

For the unconscious patient or patient who cannot maintain airway:

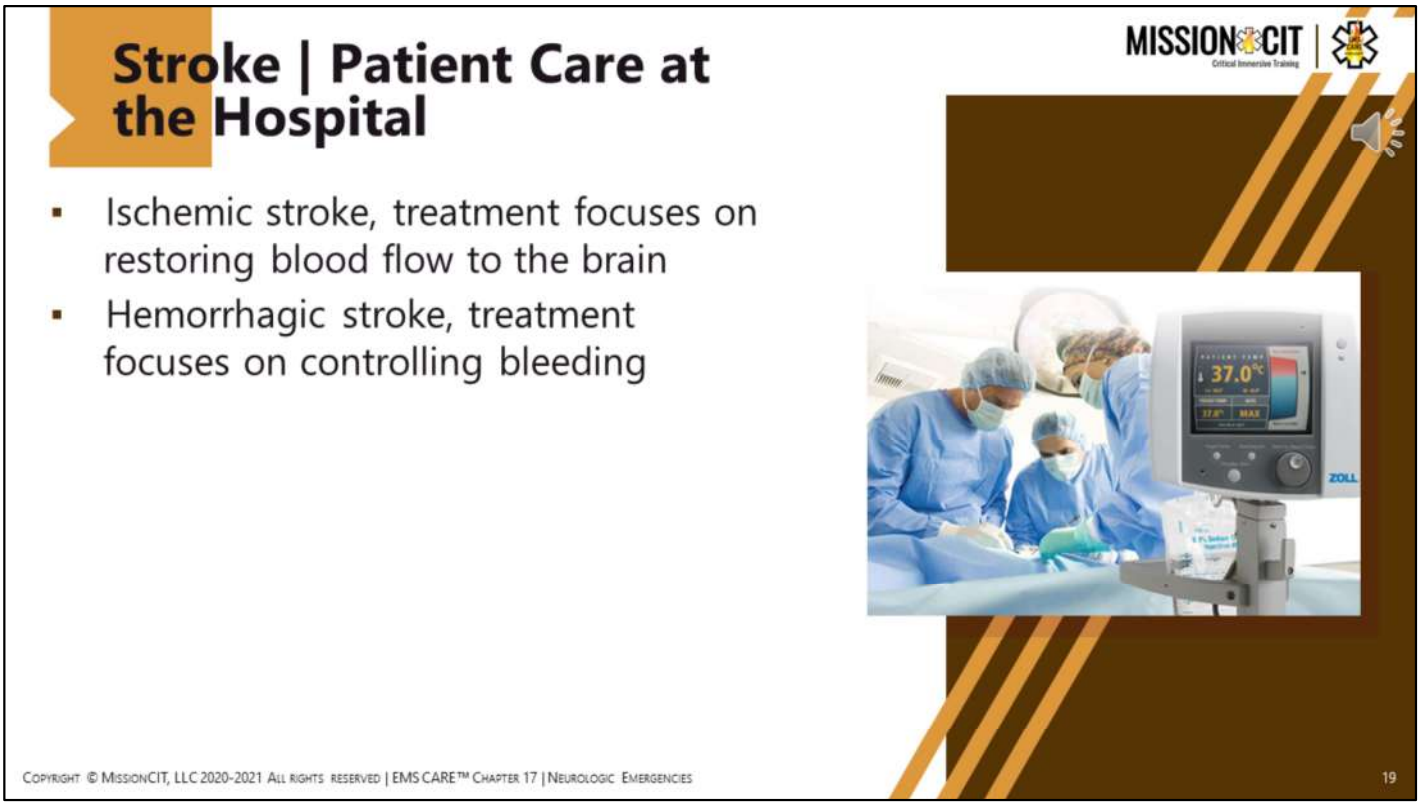
- Maintain an open airway.
- Provide high-concentration oxygen; and
- Transport.



Rapid intervention is crucial in the treatment of stroke. Transport suspected stroke patients to a hospital with the capabilities for managing stroke patients.

Capabilities must include a CT scan at minimum.

Alert the receiving hospital as soon as possible of the potential stroke patient, with a “CODE STROKE”

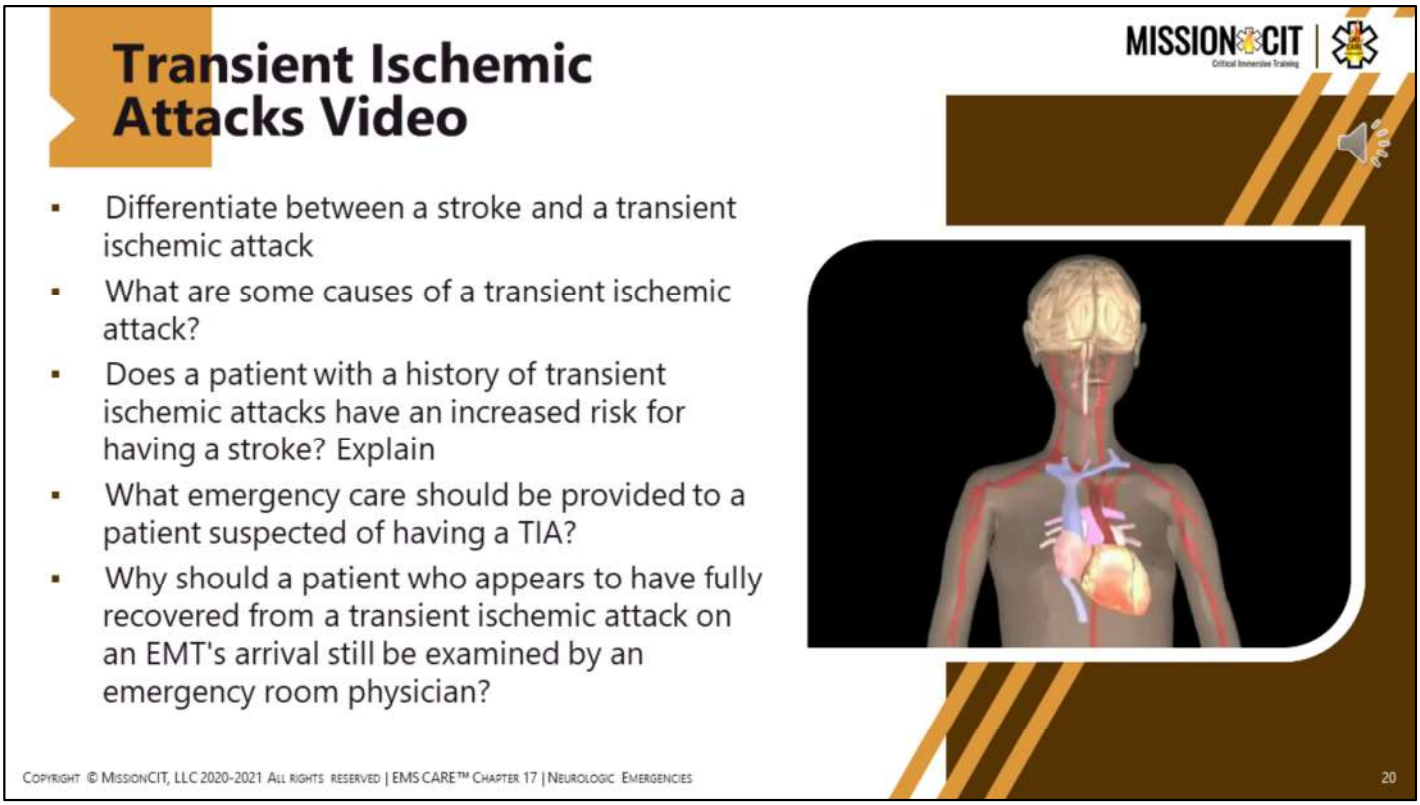


So once you get your patient to the hospital, treatment there depends on the type of stroke: ischemic or hemorrhagic.

For an Ischemic stroke, treatment focuses on restoring blood flow to the brain.

If the patient gets to the hospital within 3 hours of the first symptoms of an ischemic stroke, the ER may administer a clot-dissolving medicine called tissue plasminogen activator (TPA). This medicine can improve recovery from a stroke, especially if it's given as soon as possible after the stroke happens.

For a hemorrhagic stroke, treatment focuses on controlling bleeding, reducing the pressure in the brain, and stabilizing vital signs, especially blood pressure.



Here is a video on transient ischemic attacks. While watching the video, think about:

- How to differentiate between a stroke and a transient ischemic attack.
- What are some causes of a transient ischemic attack?
- Does a patient with a history of transient ischemic attacks have an increased risk of having a stroke? Explain.
- What emergency care should be provided to a patient suspected of having TIA's?
- Why should a patient who appears to have fully recovered from a transient ischemic attack on an EMT's arrival still be examined by an emergency room physician?

So that's it for our lesson on Strokes and TIA's. We'll next be discussing Dizziness and Syncope. See you shortly after the video.