

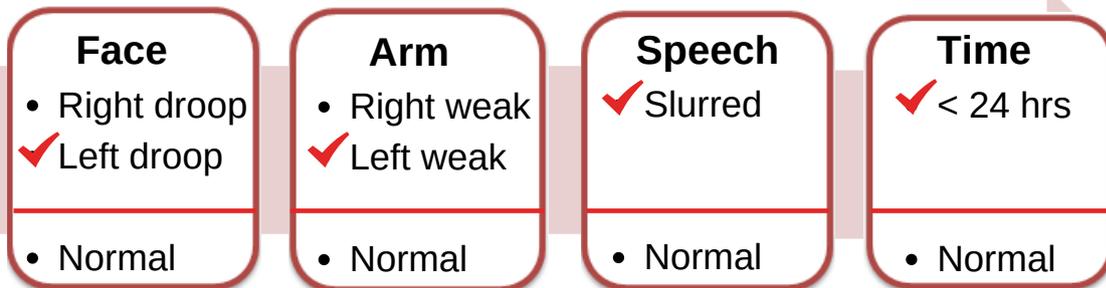
STROKE AWARENESS MONTH

The Acute Code Stroke

Prompt reperfusion is the most effective treatment for ischemic stroke.

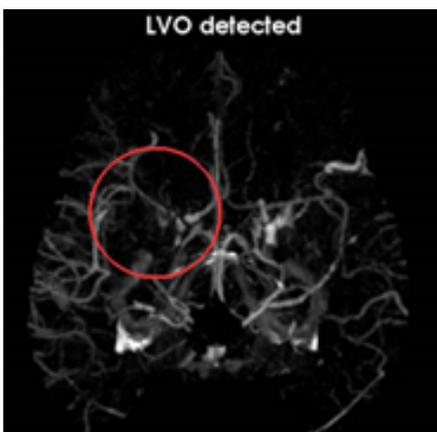
Clinical Case: Part 1

Mr. Smith a 57 year-old accountant, presented to the emergency department by ambulance at 1338 with a sudden onset of left-sided weakness and slurred speech at work (1300). Past medical history includes hypertension and a 20 pack/year smoking history. On arrival he had left hemiplegia, left visual field deficit, left-sided facial droop, dysarthria, and left neglect. His stroke severity scale indicated a moderate stroke (NIHSS-14). A code stroke was activated. After assessment he was taken to the CT scanner. His first image is recorded at 1354.



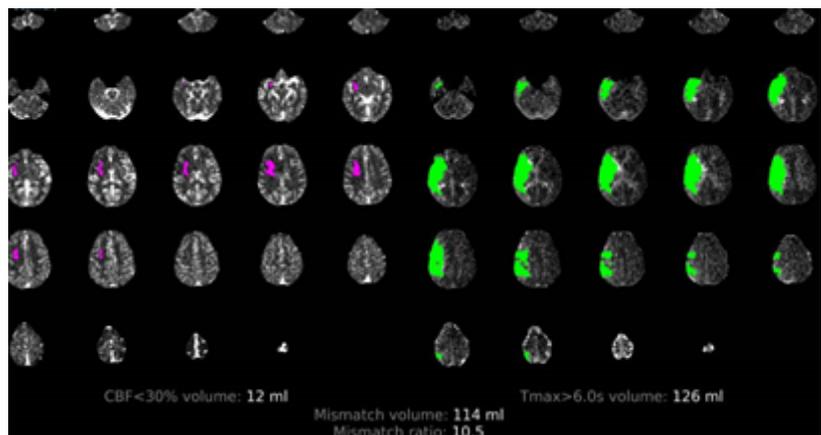
Code Stroke Imaging.

Plain films look for the presence of a hemorrhage, and other more subtle signs of stroke. This image shows no hemorrhage, but does show a **hyperdense area** in the proximal segment of the middle cerebral artery suggesting a blockage of that vessel.



An **angiogram** looks specifically at the blood vessels and identifies blocked vessels.

A **“RAPID scan”** image shows the estimated area of the brain damaged by the stroke (pink), versus the area at risk for dying if the stroke isn’t treated (green).



GOAL: To CT ≤ 15 minutes.

Acute Stroke Treatment

In the “at-risk area” the tissue is ischemic, also known as the penumbra, where blood flow is less than 10-25%. This results in the rapid death of neurons and glial cells. It is estimated that 1.9 million neurons are lost during each minute of ischemia. The three principles of acute stroke treatment are reperfusion, collateral blood flow optimization, and avoidance of secondary brain injury. Time to re-perfusion is a major determinant in stroke outcomes. **tPA and EVT are treatments used to achieve reperfusion.**

tPA, also known as Alteplase is a thrombolytic (“breaks up the clot”) medication that can be used if no contraindications exist and the patient is within 4.5 hours from stroke onset.

GOAL:
tPA within
30 minutes

GOAL:
EVT within 60
minutes

Endovascular therapy (EVT) involves mechanical removal of the thrombus/embolus from the blood vessel using a stent retriever and/or suctioning. EVT is used for large vessel occlusions. This procedure is done in the interventional radiology suite. Imaging helps guide the stroke team to assess the amount of viable brain tissue and whether mechanical thrombectomy is an option. The sooner patients receive EVT the more likely it is to be successful. Many patients receive both tPA and EVT.

Clinical Case: Part 2

With a large vessel occlusion on the right side of his brain, and no contraindications to therapy Mr. Smith was eligible for both tPA and EVT. He had tPA started in the hallway at 1438. He was in the interventional radiology room for Endovascular therapy (EVT) at 1445. His vessel was successfully opened with nearly full flow restored (TICI 2B). The Interventional team also inserted a STENT to restore flow to a nearly occluded internal carotid artery.

On discharge he was able to walk and anticipated at some point returning to work. He had mild left arm weakness, mild decreased sensation, and very mild dysarthria. His stroke scale severity was rated as minor (NIHSS-3).

References

1. Silva, G. & Nogueira, R. (2020). Endovascular Treatment of Acute Ischemic Stroke. *Continuum*, 26 (2), 310-331.
2. Furie, K. (2020), Cerebrovascular disease, Epidemiology and primary prevention of Stroke. *Continuum*, 26 (2), 260-367.
3. Rabinstein, A. (2020), Update on Treatment of Acute Ischemic Stroke. 26(2). 268-286.