



## **Advanced ED Stroke Patient Diagnostics: Can the Use of CTA, MRI, MRA, & Perfusion Studies Be Utilized to Improve Patient Care?**

**Andrew Asimos, MD, FACEP**

### **Learning Objectives**

- Establish the key concepts that guide the decision making in the diagnosis and treatment of acute ischemic stroke patients.
- Consider how CT, CTA, MRI, MRA, transcranial Doppler, and perfusion studies can be used by emergency physicians in order to optimize IV tPA use, interventional radiology referral, and ED transfer to stroke specialty centers.
- Discuss which patient characteristics and study results available to ED physicians correlate with the greatest chance for revascularization and improved stroke patient outcome.

### **Background**

Diagnostics such as CTA and transcranial Doppler detect the site of CNS vascular occlusion, and CT and MR perfusion the physiologic state of the infarct core and ischemic penumbra. How these tests should be utilized by emergency physicians to determine the use of IV tPA, disposition for interventional radiology, and transfer for specialty care must be understood in order to maximize stroke patient outcomes.

### **Key Clinical Questions**

- What is the role of CT and MR neuroimaging in the initial diagnosis of ED stroke patients?
- How can advanced diagnostics be utilized to detect the site of the vascular occlusion, the size of the ischemic penumbra and infarct core, the use of IV tPA, and the triage of ED stroke patients for advanced IR therapeutics?
- What softwares, technologies and protocols are necessary in order to allow these diagnostics to be used by emergency physicians when deciding the use of IV tPA and other stroke therapeutics in their Emergency Departments?
- What advanced diagnostics are the standard of care in 2007, and why?