

## **RSNA Statement on Stroke Imaging** **Updated: 5/25/22**

*The Radiological Society of North America (RSNA) is committed to excellence in patient care through education and research.*

- Stroke is a leading cause of death and disability worldwide. Imaging plays a critical role in evaluating patients suspected of acute stroke and transient ischemic attack, especially for making treatment decisions. Major advances have occurred including approval of recanalization therapies by the Food and Drug Administration (FDA).
- The primary goal of imaging patients with acute stroke symptoms is to distinguish between hemorrhagic and ischemic stroke. In ischemic stroke patients, secondary goals of imaging prior to initiating revascularization treatment with intravenous (IV) thrombolysis or endovascular therapies include identification of the location and extent of intravascular clot as well as the presence and extent of “ischemic core” (irreversibly damaged tissue), “ischemic penumbra” (hypoperfused tissue at risk for infarction) and/or collateral circulation.
- There is strong evidence supporting the use of IV tissue plasminogen activator (tPA) as a recanalization therapy to improve clinical outcomes during the 0-3-hour time window and during the 3-4.5-hour time window following symptom onset. This benefit is despite an increased risk of symptomatic intracranial hemorrhage after infusion.
- The timely use of imaging before initiating IV thrombolytic therapy is supported by strong evidence and is part of AHA, FDA, CMS and Joint Commission guidelines. In acute stroke patients who are candidates for IV thrombolysis (0-4.5-hour time window), either non-contrast CT or MRI of the brain is recommended to exclude intracranial hemorrhage and determine the extent of ischemic changes. IV thrombolysis administered within 4.5 hours of stroke symptom recognition can also be beneficial in patients who awake with stroke symptoms or have unclear time of onset.
- There is strong evidence from several positive clinical trials (MR CLEAN, ESCAPE, SWIFT-PRIME, EXTEND IA, DAWN, DEFUSE 3, etc.) supporting the use of endovascular thrombectomy and clot retrieval techniques up to 24 hours after stroke onset in properly selected patients.
- In acute stroke patients who are candidates for endovascular therapy, vascular imaging (CTA/MRA) is strongly recommended during the initial imaging evaluation. Additional perfusion (CTP/MRP) and collateral imaging is recommended for certain patients.
- Early identification of the stroke etiology or mechanism (carotid atherosclerotic disease or other treatable causes) is critical to treatment decisions and long-term management. More specifically, vascular imaging of the head and neck should be performed to evaluate the mechanism of stroke and assess risk of future stroke.
- Importantly, “Time is brain” in acute stroke and hence it is critical that all imaging studies be performed as quickly as possible in patients who may be candidates for IV thrombolysis or endovascular treatment.
- To improve patient health and safety, appropriate precautions should always be taken to minimize radiation exposure through the use of the “As Low As Reasonably Achievable (ALARA)” principle.

*RSNA is a strong advocate for quality, safety, equity and strict adherence to appropriateness criteria in medical imaging and radiation oncology. Through its peer-reviewed journals, education programs and annual scientific assembly, RSNA continually informs radiologists, medical physicists, radiation oncologists and other radiology*

*professionals of the latest technologies and research developments designed to optimize dose and improve patient safety.*