Rapid Arterial oCclusion Evaluation (RACE) Stroke Severity Scale and New Jersey EMS Education:

Frequently Asked Questions (FAQ)

1. What is a Large Vessel Occlusion (LVO) stroke?

An ischemic stroke is a type of stroke where a blood vessel becomes blocked, often by a blood clot, and a portion of the brain becomes deprived of oxygen and stops functioning[i]. A Large Vessel Occlusion (or LVO) is caused by a blockage in one of the major arteries of the brain. LVO strokes are associated with increased risk of death and severe long-term disability compared to non-LVO ischemic strokes[ii].

2. How can LVO strokes be treated?

IV alteplase is an FDA-approved treatment for ischemic strokes, which works by dissolving a clot and improving blood flow. However, due to the size of clots that cause LVOs, IV alteplase alone is often ineffective at dissolving an LVO clot[iii]. Fortunately, recent breakthroughs in endovascular therapy, or "EVT," provide ways to mechanically remove LVO clots. In appropriate patients, these mechanical clot removals, or thrombectomy procedures, can greatly help stroke victims, and in some cases can be performed up to 24 hours after stroke onset. Mechanical thrombectomy with a stent retriever has been established as the most appropriate care for selected patients suffering from an LVO stroke[iv]. Depending on patient eligibility, mechanical thrombectomy may be performed with or without treatment with IV alteplase.

3. How can EMS identify a potential LVO patient in the field?

As with all strokes, the faster an LVO stroke patient receives appropriate treatment, the better their chance for a positive outcome. Several stroke severity assessment scales have been developed to help EMS providers identify patients who may be experiencing an LVO stroke, and therefore may be a candidate for mechanical thrombectomy. New Jersey medical and EMS leadership recommend EMS providers use the Rapid Arterial oCclusion Evaluation (RACE) Stroke Severity Scale as its severity assessment.

If any sign or symptom of stroke is identified during initial assessment, EMS providers should next use a standardized, nationally recognized tool to screen for the presence of a stroke. Stroke screening tools provide a simple method to generate either a positive result, indicating a stroke is suspected, or negative result, indicating a stroke is not suspected. BE FAST, Cincinnati Prehospital Stroke Scale (CPSS), and the Los Angeles Prehospital Stroke Scale (LAPSS)) are all examples of standardized tools to screen for the presence of stroke. When a stroke screen is positive it is important EMS providers next assess the potential severity of the stroke. The RACE Scale is a nationally recognized assessment for determining the severity of neurologic deficits. The RACE scale evaluates and scores a patient for impairment in several areas, for a final score from 0 to 9. There is no single score that indicates with certainty whether a patient has an LVO. However, a RACE score of greater than or equal to 5 indicates a greater probability of an LVO.

4. Why is it important for EMS to prenotify the receiving hospital of the RACE Scale score?

As soon as a potential stroke diagnosis is made, EMS should immediately notify its online medical control or receiving hospital. This includes notifying the receiving hospital of the RACE Scale score, and therefore the likelihood of an LVO stroke. Early notification allows the hospital to activate stroke resources prior to patient arrival, saving valuable treatment time. This includes resources needed for IV alteplase and/or thrombectomy, for appropriate patients.

5. Are there recommendations for which hospital a patient should be transported to, based on the RACE Scale score?

For patients suspected of having an LVO stroke based on the RACE Scale score, determining which hospital they should be transported to requires balancing the benefits of rapid access to mechanical thrombectomy, with potential delay in initiation of IV alteplase in longer transport to a hospital capable of mechanical thrombectomy. When deciding if a stroke facility with lesser stroke capabilities/certification level should be bypassed in favor of taking a patient with a likely LVO directly to a more comprehensive stroke center, uncertainty remains about the amount of additional transport time that is acceptable. However, evidence is accumulating, and updated guidance can be expected in the coming year or two. Additionally, optimal destination protocols must account for regional prehospital and health care resources, individual stroke center capabilities and performance, and geographic considerations.[v] For these reasons, there is no single national recommendation on stroke destination plans.

In New Jersey, decision-making should consider results of the RACE scale, patient time last known well, distance and travel time to the closest NJ Department of Health Designated Stroke Center, hemodynamic stability of the patient, as well as distance and expected transport time to a hospital capable of providing mechanical thrombectomy, and any additional considerations as developed over time. If LVO is suspected and there is an opportunity to get to a hospital capable of advanced treatment in a timely fashion, that option should be considered for the patient.

New evidence, however, is emerging on optimal stroke destination plans, as well more tools to support local regional planning. New Jersey Stroke Guidelines may be updated in the near future to include more specific transport decision-making guidance, as more data and expert consensus emerge on acceptable approaches to the care of patients with suspected LVO.

6. What is the purpose of the NJ Education?

The 2021 New Jersey EMS Education on the RACE Stroke Severity Scale has been developed to update you regarding LVO strokes, describe the steps for performing the RACE Scale, provide best practices for EMS communications with online medical control / receiving hospital, and describe some considerations for how the RACE Scale score can generally be applied when considering to which hospital to transport a patient.

7. Where can I get more information on the purpose of Stroke Severity Scales and transport considerations?

For more national information on stroke severity scales and transport consideration, please visit stroke.org/stroketransportplans.

---

[i] Centers for Disease Control and Prevention. Stroke Facts. Retrieved from https://www.cdc.gov/stroke/facts.htm on [April 11, 2019].

[ii] Smith WS, Lev MH, English JD, et al. Significance of large vessel intracranial occlusion causing acute ischemic stroke and TIA. Stroke. 2009; 40: 3834-3840.

[iii] Bhatia R, Hill MD, Shobha N, et al. Low rates of acute recanalization with intravenous recombinant tissue plasminogen activator in ischemic stroke. Stroke. 2010; 41: 2254-2258.

[iv] Powers WJ, Rabinstein AA, Ackerson T, et al. 2018 Guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stoke Association. Stroke. 2018; 49: e46-e99.

[v] Jauch EC, Schwamm LH, Panagos PD, et al. Recommendations for regional stroke destination plans in rural, suburban, and urban communities from the Prehospital Stroke System of Care Consensus Conference: A consensus statement from the American Academy of Neurology, American Heart Association/American Stroke Association, American Society of Neuroradiology, National Association of EMS Physicians, National Association of State EMS Officials, Society of NeuroInterventional Surgery, and Society of Vascular and Interventional Neurology: Endorsed by the Neurocritical Care Society. Stroke. 2021; 52:00–00. DOI: 10.1161/STROKEAHA.120.033228