



Prehospital Rapid Arterial Occlusion Evaluation (RACE) Stroke Severity Scale Essentials for the Emergency Department

Stroke is a leading cause of serious long-term disability and the fifth leading cause of death in the United States. Learning to recognize stroke, rate its severity, and transport a patient to the proper hospital is a fundamental contribution EMS can make in stroke management. Several prehospital stroke severity scales have been developed to help EMS do just this.

The RACE Stroke Severity Scale is one of several nationally recognized stroke severity scale options. Like all stroke severity scales, **the purpose of the RACE Scale is to help EMS identify patients whose symptoms may be due to a Large Vessel Occlusion (LVO), and may benefit from mechanical thrombectomy.**

Receiving Hospitals' collaboration with EMS, including communication of RACE Scale scores and quality transitions of care, is crucial for optimal patient outcomes.

1. Know the basics of the RACE Scale

If a prehospital stroke screen is positive, EMS should assess severity by using a stroke severity scale. With support from medical and EMS leadership, the state of New Jersey recommends the RACE Scale as the statewide tool for prehospital stroke severity assessment. The RACE Scale focuses on NIH Stroke Scale items more likely to predict an LVO stroke, and has been validated by EMS in the field in a prospective study^{1,2}. There is no score that indicates with certainty whether a patient has an LVO, however, a score ≥ 5 indicates a greater probability of an LVO.

Item	Instruction	Result	Score
Facial Palsy	Ask the patient to show his or her teeth, or to smile.	Absent facial palsy (Facial movement symmetrical) Mild facial palsy (Facial movement slightly asymmetrical) Moderate/severe facial palsy (Facial movement completely asymmetrical)	0 1 2
Arm Motor Function	Patient extends his or her arms, to 90 degrees if sitting or 45 degrees if lying on his or her back*.	Normal/mild arm motor dysfunction (Upholds both arms ≥ 10 seconds) Moderate arm motor dysfunction (Upholds either arm < 10 seconds) Severe arm motor dysfunction (Unable to raise either arm against gravity)	0 1 2
Leg Motor Function	Patient separately raises his or her legs 30 degrees from the supine (lying on back) position*.	Normal/mild leg motor dysfunction (Upholds each leg ≥ 5 seconds) Moderate leg motor dysfunction (Upholds either leg < 5 seconds) Severe leg motor dysfunction (Unable to raise either leg against gravity)	0 1 2
Head & Gaze Deviation	Ask the patient to look to the left, then to the right.	Absent: head & gaze deviation absent (Eye movement to both sides w/o head deviation) Present: head & gaze deviation present (Patient's eyes or head deviate to one side)	0 1
Aphasia (if right hemiparesis) -OR- Agnosia (if left hemiparesis)	<u>If right hemiparesis or without motor impairment:</u> First ask the patient to close his or her eyes; Second ask the patient to make a fist with his or her left hand. -OR- <u>If left hemiparesis:</u> First show the patient his or her left arm and ask, "Whose arm is this?"; Second ask the patient, "Can you move your arms and clap your hands?"	Absent aphasia (Performs both tasks correctly) Moderate aphasia (Performs one of two tasks correctly) Severe aphasia (Unable to perform either task correctly) -OR- Absent agnosia (Recognizes arm and attempts to move weakened arm) Moderate agnosia (Does not recognize arm <u>or</u> is unaware of arm weakness) Severe agnosia (Does not recognize arm <u>and</u> is unaware of arm weakness)	0 1 2 -OR- 0 1 2
Total Score			= Sum of items

*If the patient cannot lift his or her limbs, raise his or her limbs. Score according to the time the patient can maintain his or her limbs against gravity, without touching the bed or surface.

2. Understand EMS' considerations when determining hospital destination

For any patient with acute stroke symptoms who is otherwise stable, EMS should transport the patient to a hospital Designated as a Stroke Center by the New Jersey Department of Health. For patients suspected of having an LVO, EMS' determination of which hospital they should transport the patient 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.

For patients suspected of having an LVO, EMS should also consider:

- The RACE Scale score
- Patient time last known well
- Distance and travel time to the closest NJ Department of Health Designated Stroke Center
- Hemodynamic stability of the patient
- Distance and travel time to a hospital capable of mechanical thrombectomy
- Additional considerations developed over time

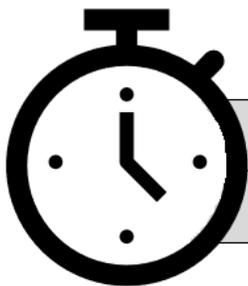
For more information on the purpose of Stroke Severity Scales and hospital transport considerations, please visit stroke.org/stroketransportplans.

3. Ensure rapid triage protocols and stroke team activation

As soon as a potential stroke diagnosis is made, EMS should immediately notify its online medical control or receiving hospital. Hospital acute stroke teams should be activated as soon as there is prenotification from EMS of a stroke patient, in order to reduce time to treatment. Rapid neurological evaluation should be performed as soon as possible in the Emergency Department or on the CT table.

4. Know treatment recommendations based on time from stroke onset

IV alteplase is recommended for selected ischemic stroke patients who may be treated within 3 hours of stroke onset (who otherwise meet eligibility criteria). IV alteplase is also recommended for selected ischemic stroke patients who can be treated within 3–4.5 hours of stroke onset (who otherwise meet eligibility criteria). The time window for patients who have an LVO to be treated with mechanical thrombectomy can extend out as much as 24 hours after stroke onset, if they meet clinical brain imaging eligibility criteria³.



Within 3–4 ½ Hours:

Consider clot-dissolving drug alteplase for mild and severe strokes

Within 24 Hours:

Consider mechanical thrombectomy with stent retrievers for large-vessel clots

5. Get access to the latest Acute Ischemic Stroke treatment guidelines

Guidelines for the Early Management of Patients with Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals from the American Heart Association / American Stroke Association can be accessed at <https://professional.heart.org/en/guidelines-and-statements>.

¹ Pérez de la Ossa N, Carrera D, Gorchs M, et al. Design and validation of a prehospital stroke scale to predict large arterial occlusion: The Rapid Arterial Occlusion Evaluation Scale. *Stroke*. 2014; 45: 87–91.

² Pérez de la Ossa N, Ribó M, Jiménez X, et al. Prehospital scale to identify patients with large vessel occlusion: It is time for action. *Stroke*. 2016; 47:2877–2878.

³ Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the Early Management of Patients with Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the early management of acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2019; 50: DOI: 10.1161/STR.0000000000000211.