

# Acute Large Vessel Occlusion Treatment Indications

CTA for patients with NIHSS score  $\geq 10$  (correlates with with [large vessel occlusion](#) (LVO)) to identify candidates for [thrombectomy](#) (do not delay IV tPA to get CTA).

A noninvasive intracranial vascular study (usually a CTA) is obtained in potential candidates for [endovascular treatment](#) (EVT) (viz. patients with large vessel occlusion (LVO)) who are best identified by the NIHSS score <sup>1)</sup>:

- NIHSS score  $\geq 10$ : is 73% sensitive & 74% specific for LVO
- NIHSS score  $\geq 6$ : is 87% sensitive and 52% specific for LVO

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No clinical score has become widely accepted as an eligible prehospital marker for large vessel occlusion (LVO) and the need of mechanical thrombectomy (MT) in ischemic stroke. On the basis of pathophysiological considerations, we propose that cortical symptoms such as aphasia and neglect are more sensitive indicators for LVO and MT than motor deficits. Methods- We, thus, retrospectively evaluated a consecutive cohort of 543 acute stroke patients including patients with ischemia in the posterior circulation, hemorrhagic stroke, transient ischemic attack, and stroke mimics to best represent the prehospital setting. Results- Cortical symptoms alone showed to be a reliable indicator for LVO (sensitivity: 0.91; specificity: 0.70) and MT (sensitivity: 0.90; specificity: 0.60) in acute stroke patients, whereas motor deficits showed a sensitivity of 0.85 for LVO (specificity: 0.53) and 0.87 for MT (specificity: 0.48). Conclusions- We propose that in the prehospital setting, the presence of cortical symptoms is a reliable indicator for LVO and its presence justifies transportation to an MT-capable center <sup>2)</sup>.

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Using [guidelines](#) for [evidence based medicine](#) proposed by the Stroke Council of the [American Heart Association](#), a critical review of all available medical literature supporting best initial medical management of patients with acute ischemic stroke (AIS) secondary to emergent large vessel occlusion (ELVO) was performed. The purpose was to identify processes of care that most expeditiously determine the eligibility of a patient with an acute stroke for interventions including intravenous [fibrinolysis](#) with recombinant [tissue plasminogen activator](#) (IV tPA) and [endovascular treatment](#) (EVT) using mechanical embolectomy.

A review identifies four elements that are required to achieve timely revascularization in ELVO.

In addition to non-contrast [CT brain scan](#), [CT angiography](#) should be performed in all patients who meet an institutional threshold for clinical stroke severity. The use of any advanced imaging beyond CT brain scan should not delay the administration of [tissue plasminogen activator](#) in eligible patients.

Activation of the neurointerventional team should occur as soon as possible, based on either confirmation of large vessel occlusion or a prespecified clinical severity threshold.

Additional imaging techniques, particularly those intended to physiologically select patients for EVT

(CT perfusion and diffusion-perfusion mismatch imaging), may provide additional value, but should not delay EVT.

Routine use of general anesthesia during EVT procedures, should be avoided if possible. These workflow recommendations apply to both primary and comprehensive stroke centers and should be tailored to meet the needs of individual institutions.

Patients with ELVO are at risk for severe neurologic morbidity and mortality. To achieve the best possible clinical outcomes stroke centers must optimize their triage strategies. Strategies that provide patients with ELVO with the fastest access to reperfusion depend upon detail-oriented process improvement <sup>3)</sup>.

<sup>1)</sup>

Smith EE, Kent DM, Bulsara KR, et al. Accuracy of Prediction Instruments for Diagnosing Large Vessel Occlusion in Individuals With Suspected Stroke: A Systematic Review for the 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke. *Stroke*. 2018; 49: e111-e122

<sup>2)</sup>

Beume LA, Hieber M, Kaller CP, Nitschke K, Bardutzky J, Urbach H, Weiller C, Rijntjes M. Large Vessel Occlusion in Acute Stroke. *Stroke*. 2018 Oct;49(10):2323-2329. doi: 10.1161/STROKEAHA.118.022253. PubMed PMID: 30355088.

<sup>3)</sup>

McTaggart RA, Ansari SA, Goyal M, Abruzzo TA, Albani B, Arthur AJ, Alexander MJ, Albuquerque FC, Baxter B, Bulsara KR, Chen M, Almandoz JE, Fraser JF, Frei D, Gandhi CD, Heck DV, Hetts SW, Hussain MS, Kelly M, Klucznik R, Lee SK, Leslie-Mawzi T, Meyers PM, Prestigiacomo CJ, Pride GL, Patsalides A, Starke RM, Sunenshine P, Rasmussen PA, Jayaraman MV; Standards and Guidelines Committee of the Society of NeuroInterventional Surgery (SNIS). Initial hospital management of patients with emergent large vessel occlusion (ELVO): report of the standards and guidelines committee of the Society of NeuroInterventional Surgery. *J Neurointerv Surg*. 2015 Aug 31. pii: neurintsurg-2015-011984. doi: 10.1136/neurintsurg-2015-011984. [Epub ahead of print] PubMed PMID: 26323793.

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