

Blood Pressure Management in Acute Ischemic Stroke

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[Endovascular thrombectomy](#) (EVT) is the standard [acute ischemic stroke treatment](#) due to [large-vessel occlusion](#) (LVO), but optimal post-EVT [blood pressure](#) (BP) control remains debated.

To assess the association of different [systolic blood pressure](#) targets following EVT with [functional outcomes](#), mortality, and complications in patients with AIS due to LVO.

Systematic review and meta-analysis of databases (PubMed, Embase, Web of Science, Scopus, and Cochrane Library) to September 8, 2023.

Inclusion criteria consisted of randomized clinical trials examining post-EVT management of systolic BP in patients with AIS and LVO comparing intensive vs conventional targets. Nonrandomized studies, observational studies, noninterventional trials, meeting abstracts, duplicate studies, studies with overlapping data, and non-English language studies were excluded. Two authors independently applied these criteria through a blinded review, with discrepancies resolved through consensus. The risk of bias in the included studies was assessed using the revised tool for assessing the risk of bias in randomized trials.

This study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting guidelines. Three authors extracted data regarding study characteristics, baseline patient data, and outcomes of interest. The pooled data were analyzed using a random-effects meta-analysis.

Rates of functional independence, 90-day mortality, symptomatic intracranial hemorrhage, and hypotensive events.

Results: A total of 4 randomized clinical trials with 1571 initially enrolled patients were included in the analysis. Lower functional independence rates were observed in the intensive control group (relative risk [RR], 0.81 [95% CI, 0.67-0.98]). No significant differences were found in 90-day mortality (RR, 1.18 [95% CI, 0.92-1.52]), symptomatic intracranial hemorrhage (RR, 1.12 [95% CI, 0.75-1.67]), or

hypotensive events (RR, 1.80 [95% CI, 0.37-8.76]). There was minimal heterogeneity among the studies included in the functional independence outcome ($I^2 = 13\%$ and $\tau^2 = 0.003$), which was absent among other outcomes ($I^2 = 0$ and $\tau^2 = 0$).

These findings suggest that intensive post-EVT BP reduction does not yield benefits and may carry risks. While awaiting the results of additional ongoing [trials](#), a conservative BP management strategy after endovascular [recanalization](#) is favored in daily practice ¹⁾

American Heart Association Guidelines for the Early Management of Patients With Acute Ischemic Stroke

a) for [patients](#) with [HTN](#) who are otherwise candidates for [IV Recombinant human tissue plasminogen activator \(tPA\)](#): carefully lower [SBP](#) to < 185 mm Hg, and [DBP](#) to < 110 before giving IV-tPA (Level I), and maintain $< 180/105$ for 24 hours after tPA ([Level I](#))

b) avoid [hypotension](#) and [hypovolemia](#) (Level I): no specifics provided. Suggestion: for patients presenting with $SBP < 110$ or $DBP < 70$:

- unless contraindicated (viz.: [ICH](#), [cerebellar infarction](#), or decreased cardiac output) gives 250 cc NS over 1 hr, then 500 cc over 4 hrs, then 500 cc over 8 hrs

- if [fluid](#) ineffective or contraindicated: consider pressors

c) the benefit of drug-induced hypertension is not well-established in [AIS](#) (Level II) ²⁾.

The periprocedural [blood pressure](#) management of patients undergoing [endovascular thrombectomy](#) can be viewed in two phases relative to the achievement of [recanalization](#). In the hyperacute phase, prior to recanalization, [hypotension](#) should be avoided to maintain adequate penumbral perfusion. The [American Heart Association Guidelines for the Early Management of Patients With Acute Ischemic Stroke](#) should be followed for the upper end of prethrombectomy blood pressure: $\leq 185/110$ mm Hg, unless post-tissue plasminogen activator administration when the goal is $< 180/105$ mm Hg. After successful recanalization (thrombolysis in cerebral infarction [TICI]: 2b-3), we recommend a target of maximum systolic blood pressure of < 160 mm Hg, while the persistently occluded patients (TICI $< 2b$) may require more permissive goals up to $< 180/105$ mm Hg. Future research should focus on generating randomized data on optimal blood pressure management both before and after endovascular thrombectomy, to optimize patient outcomes for these divergent clinical scenarios ³⁾.

¹⁾

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²⁾

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³⁾

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