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# The key messages from 2015 North American (US and Canada) Guidelines for the Early Management of Patients With Acute Ischemic Stroke: Focus on endovascular treatment



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## ABSTRACT

Recently published randomized trials collected large evidence supporting endovascular interventions as the most effective treatment of acute ischemic stroke. The first two scientific societies (one in the US, another in Canada) reflected this evidence into new guidelines. The key messages along with the personal view of the author are presented in this manuscript.

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## Introduction

During the last 12 months the guidelines for the acute treatment of ischemic stroke had to be significantly modified facing the presentation and publication of several randomized trials ([1-7], Table 1). Based on these convincing data collected through varying study protocols (differences mainly in the study inclusion criteria: penumbra imaging or not) and in different countries and health care systems, it became immediately clear, that guidelines for the treatment of acute ischemic stroke need to be updated. The first update was published by the American Heart Association (AHA) Stroke Council [8,9] and by the Heart and Stroke Foundation of Canada [10]. The AHA document is focused on endovascular interventions, while the Canadian document is broadly covering all acute phase treatments. I present here the slightly shortened key recommendations from these two publications.

## AHA/ASA 2015 recommendations for Endovascular Interventions

1. Patients eligible for intravenous r-tPA should receive intravenous r-tPA even if endovascular treatments are being considered (Class I; Level of Evidence A).
2. Patients should receive endovascular therapy with a stent retriever if they meet all the following criteria (Class I; Level of Evidence A):
  - (a) prestroke normal or near-normal neurologic function (mRS 0-1),
  - (b) acute ischemic stroke receiving intravenous r-tPA within 4.5 h of onset according to guidelines,
  - (c) causative occlusion of the internal carotid artery or proximal middle cerebral artery – MCA (M1 segment),
  - (d) age  $\geq 18$  years,
  - (e) NIHSS score of  $\geq 6$ ,
  - (f) ASPECTS of  $\geq 6$ , and
  - (g) groin puncture possible within  $< 6$  h of symptom onset
3. To ensure benefit, reperfusion to TICI grade 2b/3 should be achieved as early as possible and within  $< 6$  h of stroke onset (Class I; Level of Evidence B-R).
4. When treatment is initiated beyond 6 h from symptom onset, the effectiveness of endovascular therapy is uncertain for patients with acute ischemic stroke who have causative occlusion of the internal carotid artery or proximal MCA (M1) (Class IIb; Level of Evidence C).
5. In patients with anterior circulation occlusion who have contraindications to intravenous r-tPA, endovascular therapy with stent retrievers completed within  $< 6$  h of stroke onset is reasonable (Class IIa; Level of Evidence C).
6. Endovascular therapy with stent retrievers may be reasonable for selected patients with acute ischemic stroke in whom treatment can be initiated (groin puncture) within 6 h of symptom onset and who have causative occlusion of the M2 or M3 portion of the MCAs, anterior cerebral arteries, vertebral arteries, basilar artery, or posterior cerebral arteries (Class IIb; Level of Evidence C).
7. Endovascular therapy with stent retrievers may be reasonable for some patients  $< 18$  years of age with acute ischemic stroke who have demonstrated large vessel occlusion in whom treatment can be initiated (groin puncture) within 6 h of symptom onset, but the benefits are not established in this age group (Class IIb; Level of Evidence C).
8. Use of endovascular therapy with stent retrievers may be reasonable for patients with acute ischemic stroke in whom treatment can be initiated (groin puncture) within 6 h of symptom onset and who have prestroke mRS score of  $> 1$ , ASPECTS  $< 6$ , or NIHSS score  $< 6$  and causative occlusion of the internal carotid artery or proximal MCA (M1) (Class IIb; Level of Evidence B-R).
9. Observing patients after intravenous r-tPA to assess for clinical response before pursuing endovascular therapy is not required to achieve beneficial outcomes and is not recommended (Class III; Level of Evidence B-R). In other words: patients fulfilling criteria for endovascular intervention should proceed to such intervention immediately after initiation of thrombolysis (and not after its completion) in order to minimize the time delay to mechanical reperfusion.
10. The use of mechanical thrombectomy devices other than stent retrievers may be reasonable in some circumstances (Class IIb, Level B-NR).
11. The use of proximal balloon guide catheter or a large bore distal access catheter rather than a cervical guide catheter alone in conjunction with stent retrievers may be beneficial (Class IIa; Level of Evidence C). Future studies should

**Table 1 – Overview of the first seven randomized trials proving the benefit of endovascular interventions (catheter-based thrombectomy) in acute ischemic stroke. The first number (recovered patients) is the number of patients achieving neurological functional recovery (mRS 0-2 within 3 months after stroke). The second number denotes all patients in the group.**

Trial acronym	Intervention + medical therapy (recovered patients/all patients)	Medical therapy alone (recovered patients/all patients)
MR CLEAN	77/233 (33%)	51/267 (19%)
ESCAPE	89/164 (54%)	43/147 (29%)
EXTEND-IA	25/35 (71%)	14/35 (40%)
SWIFT PRIME	59/98 (60%)	33/93 (35%)
REVASCAT	45/103 (44%)	29/103 (28%)
THERAPY	17/41 (41%)	12/41 (29%)
THRACE	103/190 (54%)	82/195 (42%)
All trials	415/864 (48%)	264/881 (30%)

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