# CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

# Acute Stroke Management Evidence Tables

## Seventh Edition, Interim Update 2025

## *Acute Ischemic Stroke Treatment*

## *Endovascular Therapy*

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*Acute Stroke Management Writing Group and in collaboration with the*
*Canadian Stroke Consortium and Canadian Neurological Sciences Foundation*

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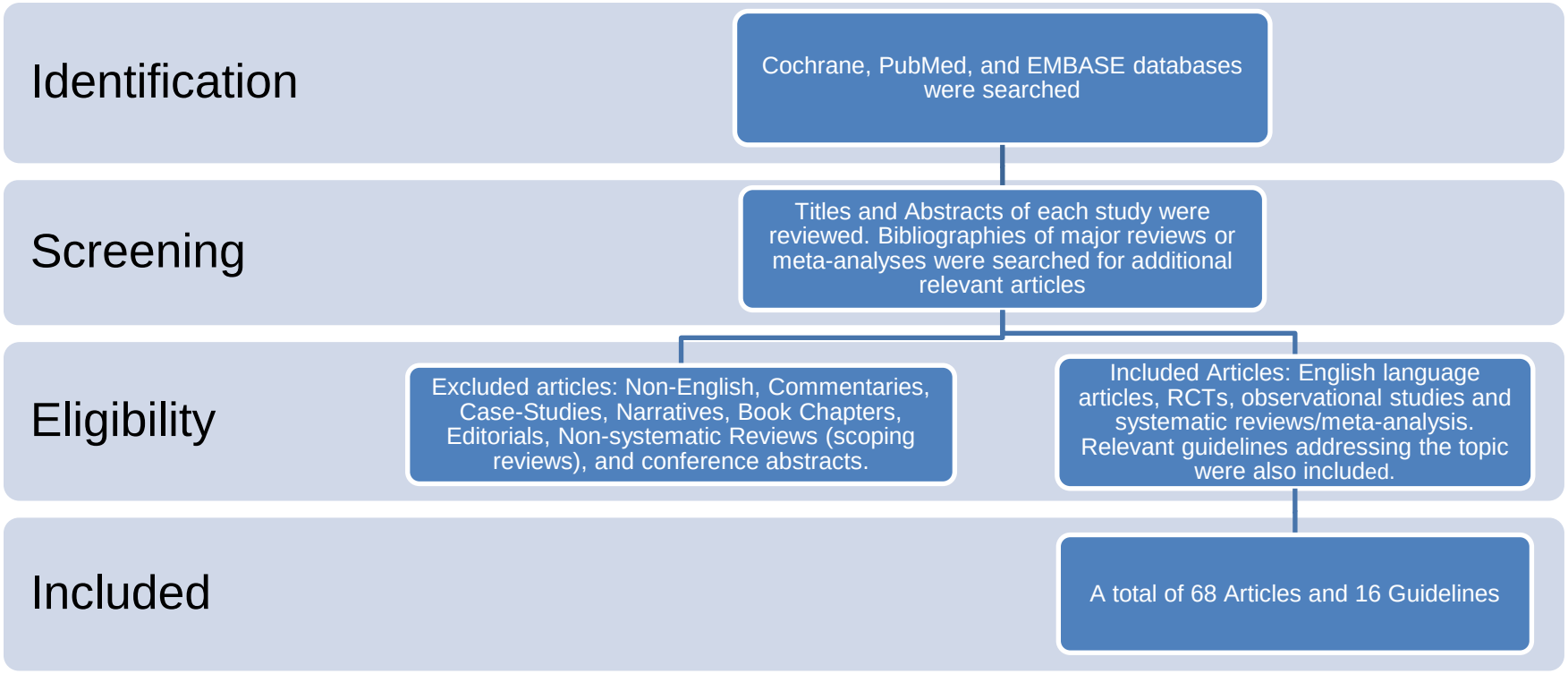
## Search Strategy




PubMed, EMBASE and the Cochrane Central Register of Controlled Trials databases were search using the terms ischemic stroke AND mechanical thrombectomy OR endovascular therapy OR intra-arterial therapy. Titles and abstract of each article were reviewed for relevance. Bibliographies were reviewed to find additional relevant articles. Articles were excluded if they were: non-English, commentaries, case-studies, narrative, book chapters, editorials, non-systematic review, or conference abstracts. A total of 16 guidelines and 68 articles were included and were separated into separate categories designed to answer specific questions.

# Published Guidelines

| Guideline | Recommendations |
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| **Strbian D, Tsivgoulis G, Ospel J, Räty S, Cimflova P, Georgiopoulos G et al.**<br><br>**European Stroke Organisation and European Society for Minimally Invasive Neurological Therapy guideline on acute management of basilar artery occlusion.**<br><br>***Eur Stroke J.* 2024 Dec;9(4):835-884.** | PICO 2 For adults with BAO-related acute ischaemic stroke within 6 h of symptoms onset, does endovascular treatment (EVT) plus best medical treatment (BMT) compared with BMT alone improve outcomes?<br>For adults with BAO-related acute ischaemic stroke presenting within 6h from the time last seen well, we suggest EVT plus BMT over BMT alone*. However, there are caveats, and this recommendation does not apply to all patients as detailed below. The recommendation considers only patients with NIHSS⩾10 (please see also PICO 4). *The effect of treatment depends on use of IVT in BMT group, with greater benefit of EVT seen in those trials with lesser use of IVT. Actually, much of this evidence comes from Asian trials with high prevalence of ICAD, and in which BMT often comprises conventional therapy only (antiaggregatory and anticoagulation). For imaging criteria, please refer to PICO 5). Quality of evidence: Very low ⊕ Strength of recommendation: Weak for intervention ↑?<br><br>PICO 3 for adults with BAO-related acute ischaemic stroke 6–24h from the time last known well, does EVT plus BMT compared with BMT alone improve outcomes?<br>For adults with BAO-related acute ischaemic stroke presenting within 6–24h from the time last known well, we suggest EVT plus BMT over BMT alone.* However, there are caveats, and this recommendation does not apply to all patients as detailed below. The recommendation considers only patients with NIHSS⩾10 (please see also PICO 4). * Much of this evidence comes from Asian trials with high prevalence of ICAD, and in which BMT often comprises conventional therapy only (antiaggregatory and anticoagulation). For imaging criteria, please refer to PICO 5. Quality of evidence: Very low ⊕ Strength of recommendation: Weak for intervention ↑?<br><br>PICO 7 for adults with BAO-related acute ischaemic stroke without contraindication for IVT, does direct EVT compared to EVT plus IVT improve outcomes?<br>For adults with BAO-related acute ischaemic stroke, we suggest combined IVT and EVT treatment over direct EVT in case IVT is not contraindicated. Quality of evidence: Low ⊕⊕ Strength of recommendation: Weak for intervention ↑? |
| **Nguyen TN, Castonguay AC, Siegler JE, Nagel S, Lansberg MG, de Havenon A. et al; SVIN GAPS Committee.**<br><br>**Mechanical Thrombectomy in the Late Presentation of Anterior Circulation Large Vessel Occlusion Stroke: A Guideline from the Society of Vascular and Interventional Neurology Guidelines and Practice Standards Committee.**<br><br>***Stroke Vasc Interv Neurol.* 2023 Jan;3(1):e000512.** | *Patient Selection*<br>1. In patients presenting within 6 to 24 hours from last known well with proximal anterior circulation LVO and with clinical–imaging mismatch as defined in the DAWN or DEFUSE 3 trials, EVT is recommended (COR-1; LOE A).<br>2. In patients with proximal anterior circulation LVO 6 to 24 hours from last known well, NCCT can be used as the sole imaging modality to evaluate infarct size, particularly when access to CTP or MRI is limited or if their performance would incur substantial delay to treatment (COR-2a; LOE B-NR).<br><br>*Periprocedural Considerations*<br>4. In patients presenting within 6 to 24 hours from last known well with a proximal anterior circulation LVO who are candidate for EVT, the use of either CS or GA is reasonable (COR-2a; LOE B-NR).<br>5. In patients with late-window LVO following successful reperfusion (TICI 2b/3), reduction and maintenance of systolic BP to a target of ≤140 mm Hg may be reasonable (COR-2b; LOE B-NR).<br>6. In patients presenting within 6 to 24 hours from last known well with a proximal anterior circulation LVO, the use of a balloon-guided catheter is reasonable during EVT in the extended window (COR-2b; LOE B-NR).<br>7. In patients presenting within 6 to 24 hours from last known well with a proximal anterior circulation LVO, the use of a stent retriever is recommended (COR-1; LOE A). |

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| **(selected)** | 8. In patients presenting within 6 to 24 hours from last known well with a proximal anterior circulation LVO, first-line contact aspiration or combined aspiration and stent retriever technique can be as effective as first-line stent retriever technique (COR-2a; LOE B-R). |
| **National Clinical Guideline for Stroke for the UK and Ireland. London: Intercollegiate Stroke Working Party; 2023 May 4.**<br><br>**Available at:** www.strokeguideline.org.<br><br>**(selected)** | Patients with acute ischaemic stroke eligible for mechanical thrombectomy should receive prior intravenous thrombolysis (unless contraindicated) irrespective of whether they have presented to an acute stroke centre or a thrombectomy centre. Every effort should be made to minimise process times throughout the treatment pathway and thrombolysis should not delay urgent transfer to a thrombectomy centre. [2023]<br><br>Patients with acute anterior circulation ischaemic stroke, who were previously independent (mRS 0-2), should be considered for combination intravenous thrombolysis and intra-arterial clot extraction (using a stent retriever and/or aspiration techniques) if they have a proximal intracranial large artery occlusion causing a disabling neurological deficit (NIHSS score of 6 or more) and the procedure can begin within 6 hours of known onset. [2023]<br><br>Patients with acute anterior circulation ischaemic stroke and a contraindication to intravenous thrombolysis but not to thrombectomy, who were previously independent (mRS 0-2), should be considered for intra-arterial clot extraction (using a stent retriever and/or aspiration techniques) if they have a proximal intracranial large artery occlusion causing a disabling neurological deficit (NIHSS score of 6 or more) and the procedure can begin within 6 hours of known onset. [2023]<br><br>Patients with acute anterior circulation ischaemic stroke and a proximal intracranial large artery occlusion (ICA and/or M1) causing a disabling neurological deficit (NIHSS score of 6 or more) of onset between 6 and 24 hours ago, including wake-up stroke, and with no previous disability (mRS 0 or 1) should be considered for intra-arterial clot extraction (using a stent retriever and/or aspiration techniques, combined with thrombolysis if eligible) providing the following imaging criteria are met:<br>– between 6 and 12 hours: an ASPECTS score of 3 or more, irrespective of the core infarct size;<br>– between 12 and 24 hours: an ASPECTS score of 3 or more and CT or MRI perfusion mismatch of greater than 15 mL, irrespective of the core infarct size. [2023] |
| **Turc G, Tsivgoulis G, Audebert H, Boogaarts H, Bhogal P, De Marchis GM, et al.**<br><br>**EXPRESS: European Stroke Organisation (ESO) – European Society for Minimally Invasive Neurological Therapy (ESMINT) expedited recommendation on indication for intravenous thrombolysis before mechanical thrombectomy in patients with acute ischaemic stroke and anterior circulation large vessel occlusion.**<br><br>***Eur Stroke J* February 2022;7: I–XXVI.** | PICO 1: For large vessel occlusion acute ischaemic stroke (≤ 4.5 hrs of symptom onset) patients directly admitted to a thrombectomy capable centre and eligible for both treatments, does mechanical thrombectomy alone compared with intravenous thrombolysis plus mechanical thrombectomy lead to:<br><br>a) a non-inferior proportion of patients with good outcome (mRS 0-2) at 90 days?<br>b) non-inferior or better results on other efficacy outcomes (whole range of the mRS; mRS 0-1; successful reperfusion)?<br>c) a reduction in the risk of adverse events (mortality at 90 days, sICH, any ICH)?<br>d) a reduction in key time metrics?<br><br>Evidence-base recommendation<br>For patients directly admitted to a thrombectomy-capable centre for an acute ischaemic stroke (≤4.5 hrs of symptom onset) with anterior circulation large vessel occlusion and who are eligible for both treatments, we recommend intravenous thrombolysis plus mechanical thrombectomy over mechanical thrombectomy alone. Both treatments should be performed as early as possible after hospital arrival. Mechanical thrombectomy should not prevent the initiation of intravenous thrombolysis, and intravenous thrombolysis should not delay mechanical thrombectomy. Quality of evidence: Moderate ⊕⊕⊕ Strength of recommendation: Strong ↑↑ |

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| | Expert consensus statement<br>For patients directly admitted to a thrombectomy-capable centre within 4.5 hours of symptom recognition after wake-up ischaemic stroke caused by anterior circulation large vessel occlusion, we suggest intravenous thrombolysis plus mechanical thrombectomy over mechanical thrombectomy alone in selected patients. The selection criteria for IVT and MT for patients with wake-up stroke are detailed in the corresponding European guidelines. Notably, eligibility imaging criteria for IVT include DWI-FLAIR mismatch or perfusion core/penumbra mismatch. |
| **Berge E, Whiteley W, Audebert H, De Marchis GM, Fonseca AC, Padiglioni C et al.**<br><br>**European Stroke Organisation (ESO) guidelines on intravenous thrombolysis for acute ischaemic stroke.**<br><br>***Eur Stroke J.* 2021; 6: I-LXII.**<br><br>**(with respect to EVT-selected)** | 1.1 For patients with acute ischaemic stroke of <4.5 h duration, we recommend intravenous thrombolysis with alteplase. Quality of evidence: High ⊕⊕⊕⊕, Strength of recommendation: Strong ↑↑<br><br>2.1 For patients with acute ischaemic stroke of 4.5–9 h duration (known onset time), and with no brain imaging other than plain CT, we recommend no intravenous thrombolysis. Quality of evidence: Moderate ⊕⊕⊕, Strength of recommendation: Strong ↓↓<br><br>4.1 For patients with acute ischaemic stroke on awakening from sleep, who were last seen well more than 4.5 h earlier, who have MRI DWI-FLAIR mismatch, and for whom mechanical thrombectomy is either not indicated or not planned, we recommend intravenous thrombolysis with alteplase. Quality of evidence: High ⊕⊕⊕⊕, Strength of recommendation: Strong ↑↑<br><br>12.1 For patients with acute ischaemic stroke of <4.5 h duration, who used single or dual antiplatelet agents prior to the stroke, we suggest intravenous thrombolysis with alteplase. Quality of evidence: Low ⊕⊕, Strength of recommendation: Strong ↑↑<br><br>12.2 For patients with acute ischaemic stroke of <4.5 h duration, who use vitamin K antagonists and have INR ≤1.7 we recommend intravenous thrombolysis with alteplase. Quality of evidence: Low ⊕⊕, Strength of recommendation: Strong ↑↑<br><br>For patients with acute ischaemic stroke of <4.5 h duration, who use vitamin K antagonists and have INR >1.7 we recommend no intravenous thrombolysis. Quality of evidence: Very Low ⊕, Strength of recommendation: Strong ↑↑<br><br>For patients with acute ischaemic stroke of <4.5 h duration, who use vitamin K antagonists, and for whom the results of coagulation testing is unknown, we recommend no intravenous thrombolysis. Quality of evidence: Very low ⊕, Strength of recommendation: Strong ↑↑<br><br>12.3 For patients with acute ischaemic stroke of <4.5 h duration, who used a NOAC during the last 48 h before stroke onset, and for whom there is no specific coagulation tests available (i.e. calibrated anti-Xa-activity for factor Xa inhibitors, thrombin time for dabigatran, or the NOAC blood concentrations), we suggest no intravenous thrombolysis. Quality of evidence: Very Low ⊕, Strength of recommendation: Strong ↑↑ |
| **Liu L, Chen W, Zhou H, Duan W, Li S, Huo X et al.**<br><br>**Chinese Stroke Association guidelines for clinical management of** | **Patients within 6 hours after AIS—bridging/endovascular treatment.**<br>1. Mechanical thrombectomy is strongly recommended for patients within 6hours after AIS if they meet all the following criteria: (1) prestroke mRS score of 0–1; (2) causative occlusion of the internal carotid artery (ICA) or middle cerebral artery (MCA) segment 1 (M1); (3) age ≥18 years; (4) NIHSS score of ≥6 and (5) ASPECTS of ≥6 (class I, level of evidence A). |

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| **cerebrovascular disorders: executive summary and 2019 update of clinical management of ischaemic cerebrovascular diseases.**<br><br>***Stroke Vasc Neurol.* 2020; 5(2): 159-176.**<br><br>**(selected)** | 2. It is reasonable to initial treatment with intra-arterial thrombolysis within 6hours after AIS caused by occlusions of the MCA for carefully selected patients who have contraindications or no clinical response to the use of IV rt-PA and could not perform mechanical thrombectomy (class IIa, level of evidence B).<br>3. Endovascular treatment should be performed as soon as possible after its indication. Patients eligible for IV rt-PA should receive IV rt-PA and direct perform bridging treatment for mechanical thrombectomy (class I, level of evidence A).<br>4. Mechanical thrombectomy should performed as the first-line treatment for patients who have contraindications to the use of IV rt-PA (class IIa, level of evidence A).<br>5. Stent retrievers is indicated for mechanical thrombectomy as first choice (class I, level of evidence A). Other thrombectomy or aspiration devices approved by local health authorities may be used at the operators' discretion (class IIa, level of evidence B).<br><br>**Patients within 6–24 hours after AIS—endovascular treatment**<br>1. In selected patients with AIS within 6–16hours of last known normal who have LVO in the anterior circulation and meet other DAWN or DEFUSE 3 eligibility criteria, mechanical thrombectomy is recommended (class I, level of evidence A).<br>2. In selected patients with AIS within 16–24hours of last known normal who have LVO in the anterior circulation and meet other DAWN eligibility criteria, mechanical thrombectomy is reasonable (class IIa, level of evidence B).<br>3. Patients with acute basilar artery occlusion within 6–24hours should be evaluated in centres with multimodal imaging and treated with mechanical thrombectomy or they may be treated within an RCT for thrombectomy approved by the local ethical committee (class IIb, level of evidence B).<br>4. The benefits of mechanical thrombectomy are uncertain for patients with acute large vascular occlusion for >24hours (class IIb, level of evidence C). |
| **Pierot L, Jayaraman MV, Szikora I, Hirsch JA, Baxter B, Miyachi S et al.**<br><br>**Standards of practice in acute ischemic stroke intervention: International recommendations.**<br><br>***Interv Neuroradi.* 2019 Feb;25(1):31-7.** | General recommendations that describe the minimum organization and workload, based on expert consensus, that is necessary for a hospital to practice acute ischemic stroke intervention, including thrombectomy, aspiration, percutaneous transluminal angioplasty, stent implantation, and drug infusion.<br><br>(same recommendations also published: *J Neurointerv Surg*. 2018 Nov;10(11):1121-1126; *AJNR Am J Neuroradiol*. 2018 Nov;39(11):E112-E117; *Can J Neurol Sci.* 2019 Mar 20:1-6.) |
| **Turc G, Bhogal P, Fischer U, Khatri P, Lobotesis K, Mazighi M et al.**<br><br>**European Stroke Organisation (ESO)–European Society for Minimally Invasive Neurological Therapy (ESMINT) Guidelines on Mechanical Thrombectomy in Acute Ischaemic Stroke. Endorsed by Stroke Alliance for Europe (SAFE).** | There are 15 questions/recommendations in total (Expert opinion statements are also included)<br><br>In adults with anterior circulation LVO-related acute ischaemic stroke presenting within 6 hours after symptom onset, we recommend MT plus best medical management (BMM), including IVT whenever indicated, over BMM alone to improve functional outcome. Quality of evidence: High; Strength of recommendation: Strong<br><br>In adults with anterior circulation LVO-related acute ischaemic stroke presenting between 6 and 24 hours from time last known well and fulfilling the selection criteria of DEFUSE-3 or DAWN, we recommend MT plus BMM over BMM alone to improve functional outcome. Quality of evidence: Moderate; Strength of recommendation: Strong |

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| ***Eur Stroke J*. 2019 Feb 26:2396987319832140.**<br><br>**(selected)** | In LVO-related ischaemic stroke patients eligible for both treatments, we recommend IVT plus MT over MT alone. Both treatments should be performed as early as possible after hospital arrival. MT should not prevent the initiation of IVT, and IVT should not delay MT. Quality of evidence: Very low; Strength of recommendation: Strong<br><br>In LVO-related ischaemic stroke patients not eligible for IVT, we recommend MT as standalone treatment. Quality of evidence: Low; Strength of recommendation: Strong<br><br>In patients with suspected stroke, we cannot make a recommendation on the use of a prehospital scale for improving identification of patients eligible for MT. We suggest enrolling patients in a dedicated randomized controlled trial, whenever possible. Quality of evidence: Very low; Strength of recommendation N/A<br><br>We do not recommend an upper NIHSS score limit for decision-making on MT. We recommend that patients with high stroke severity and LVO-related acute ischaemic stroke be treated with MT plus BMM, including IVT whenever indicated. These recommendations also apply for patients in the 6-24h time window, provided that they meet the inclusion criteria for the DAWN or DEFUSE-3 studies. Quality of evidence: High; Strength of recommendation: Strong<br><br>In the 0-6 hour time window, we recommend MT plus BMM (including IVT whenever indicated) over BMM alone in LVO-related anterior circulation stroke patients without evidence of extensive infarct core (e.g. ASPECTS 6 on non-contrast CT scan or infarct core volume 70 ml). Quality of evidence: High; Strength of recommendation: Strong<br><br>In adult patients with anterior circulation LVO-related acute ischaemic stroke presenting from 0-6 hours from time last known well, advanced imaging is not necessary for patient selection. Quality of evidence: Moderate; Strength of recommendation: Weak |
| **Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K et al; on behalf of the American Heart Association Stroke Council.**<br><br>**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**<br><br>***Stroke* 2019;50:e344–e418.**<br><br>**(selected)** | **1.7. Organization and Integration of Components**<br>2. Mechanical thrombectomy requires the patient to be at an experienced stroke center with rapid access to cerebral angiography, qualified neurointerventionalists, and a comprehensive periprocedural care team. Systems should be designed, executed, and monitored to emphasize expeditious assessment and treatment. Outcomes for all patients should be tracked. Facilities are encouraged to define criteria that can be used to credential individuals who can perform safe and timely intra-arterial revascularization procedures. Class I; LOE C-EO.<br><br>**3.7. Mechanical Thrombectomy**<br>**3.7.1. Concomitant with IV Alteplase**<br>1. Patients eligible for IV alteplase should receive IV alteplase even if EVTs are being considered. Class I; LOE A.<br>2. In patients under consideration for mechanical thrombectomy, observation after IV alteplase to assess for clinical response should not be performed. Class III: Harm; LOE B-R.<br><br>**3.7.2. 0 to 6 Hours from Onset**<br>1. Patients should receive mechanical thrombectomy with a stent retriever if they meet all the following criteria: (1) prestroke mRS score of 0 to 1; (2) causative occlusion of the internal carotid artery or MCA segment 1 (M1); (3) age ≥18 years; (4) NIHSS score of ≥6; (5) ASPECTS of ≥6; and (6) treatment can be initiated (groin puncture) within 6 hours of symptom onset. Class I: LOE A. |

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| | 3. Although the benefits are uncertain, the use of mechanical thrombectomy with stent retrievers may be reasonable for carefully selected patients with AIS in whom treatment can be initiated (groin puncture) within 6 hours of symptom onset and who have causative occlusion of the MCA segment 2 (M2) or MCA segment 3 (M3) portion of the MCAs. Class IIb; LOE B-R.<br><br>5. Although the benefits are uncertain, the use of mechanical thrombectomy with stent retrievers may be reasonable for carefully selected patients with AIS in whom treatment can be initiated (groin puncture) within 6 hours of symptom onset and who have causative occlusion of the anterior cerebral arteries, vertebral arteries, basilar artery, or posterior cerebral arteries.<br><br>**3.7.3. 6 to 24 Hours from Onset**<br>1. In selected patients with AIS within 6 to 16 hours of last known normal who have LVO in the anterior circulation and meet other DAWN or DEFUSE 3 eligibility criteria, mechanical thrombectomy is recommended. Class I; LOE A<br><br>2. In selected patients with AIS within 16 to 24 hours of last known normal who have LVO in the anterior circulation and meet other DAWN eligibility criteria, mechanical thrombectomy is reasonable. Class IIa; B-R.<br><br>**3.7.4. Technique**<br>1. Use of stent retrievers is indicated in preference to the Mechanical Embolus Removal in Cerebral Ischemia (MERCI) device. Class I; LOE A<br><br>2. The technical goal of the thrombectomy procedure should be reperfusion to a modified Thrombolysis in Cerebral Infarction (mTICI) grade 2b/3 angiographic result to maximize the probability of a good functional clinical outcome. Class I; LOE A<br><br>5. It is reasonable to select an anesthetic technique during EVT for AIS on the basis of individualized assessment of patient risk factors, technical performance of the procedure, and other clinical characteristics. Class IIa; LOE B-R |
| **Eskey CJ, Meyers PM, Nguyen TN, Ansari SA, Jayaraman M, McDougall CG, et al.**<br><br>**American Heart Association Council on Cardiovascular Radiology and Intervention and Stroke Council. Indications for the performance of intracranial endovascular neurointerventional procedures: A Scientific Statement from the American Heart Association.**<br><br>***Circulation* 2018;137:e661–e689.**<br><br>**(selected)** | 1. 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.<br><br>6. If endovascular therapy is contemplated, a noninvasive intracranial vascular study is strongly recommended during the initial imaging evaluation of the patient with acute stroke but should not delay intravenous r-tPA if indicated. For patients who qualify for intravenous r-tPA according to guidelines from professional medical societies, initiating intravenous r-tPA before noninvasive vascular imaging is recommended for patients who have not had noninvasive vascular imaging as part of their initial imaging assessment for stroke. Noninvasive intracranial vascular imaging should then be obtained as quickly as possible.<br><br>9. Patients should receive endovascular therapy with a stent retriever if they meet all the following criteria: (1) prestroke mRS score of 0 to 1, (2) AIS receiving intravenous r-tPA within 4.5 hours of onset according to guidelines from professional medical societies, (3) causative occlusion of the ICA or proximal MCA (M1), (4) age ≥18 years, (5) NIHSS score of ≥6, (6) ASPECTS of ≥6, and (7) ability to initiate treatment (groin puncture) within 6 hours of symptom onset. |

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| **Stroke Foundation. Clinical Guidelines for Stroke Management 2017. Melbourne Australia (Part 3)** | Strong recommendation New<br>For patients with ischaemic stroke caused by a large vessel occlusion in the internal carotid artery, proximal cerebral artery (M1 segment), or with tandem occlusion of both the cervical carotid and intracranial arteries, endovascular thrombectomy should be undertaken when the procedure can be commenced within six hours of stroke onset.<br><br>Strong recommendation New<br>Eligible stroke patients should receive intravenous thrombolysis while concurrently arranging endovascular thrombectomy, with neither treatment delaying the other.<br><br>Strong recommendation New<br>In selected stroke patients with occlusion of the basilar artery, endovascular thrombectomy should be undertaken. |
| **Papanagiotou P, Ntaios G, Papavasileiou V, Psychogios K, Psychogios M, Mpotsaris A et al.**<br><br>**Recommendations for Mechanical Thrombectomy in Patients with Acute Ischemic Stroke. A Clinical Guide by the Hellenic Stroke Organization.**<br><br>***Clin Neuroradiol* 2018; Mar;28(1):145-151.** | 1. In patients with significant neurological symptoms due to an ischemic stroke with occlusion of a large vessel of the anterior cerebral circulation, we recommend endovascular treatment (EVT) with mechanical thrombectomy in the first 6 h after the onset of the symptoms (1A). Coexistence of ipsilateral extracranial carotid artery disease is not a contraindication (2B). Beyond the 6-h window, we recommend EVT for selected patients (1A). If no contraindications exist, we recommend that patients are firstly treated with intravenous thrombolysis with alteplase, provided that alteplase can be administered within 4.5 h after the onset of symptoms (1A).<br><br>2. Patients who are eligible for intravenous thrombolysis should receive alteplase, even if EVT is planned. The EVT should not delay the administration of alteplase, and vice versa, the administration of alteplase should not delay EVT. If the patient is a candidate for mechanical thrombectomy, we do not recommend waiting for clinical improvement after administration of alteplase (1A).<br><br>3. Patients who, based on the clinical setting, are candidates for EVT should be assessed with urgent intracranial computed tomography (CT) angiography or magnetic resonance angiography (1A). Furthermore, in patients who, based on the clinical setting, are candidates for EVT within the 6–24 h window, we recommended magnetic resonance imaging diffusion-weighted imaging (MRI-DWI) or perfusion CT to select the most suitable patients (1A).<br><br>4. In cases where intravenous thrombolysis with alteplase is contraindicated, we recommend mechanical thrombectomy as a first-line therapy for patients with acute occlusion of a large vessel of the anterior cerebral circulation (1B).<br><br>5. When there is an indication for mechanical thrombectomy, we recommend that EVT should be performed immediately without any delay, given that the time period from the onset of symptoms to recanalization is significantly correlated with the patient's clinical outcome (1A).<br><br>6. Mechanical thrombectomy should aim to achieve TICI (Thrombolysis in Cerebral Infarction) reperfusion grade 2b/3 (1A).<br><br>7. We recommend the use of stent-retriever devices or aspiration catheters to perform mechanical thrombectomy (1A)<br><br>8. Mechanical thrombectomy can be performed with the patient either under general anesthesia or conscious sedation. Due to the absence of strong evidence in favor of one of these approaches, the final decision should be made on clinical judgment (2B). |

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| | 9. We recommend the establishment of specialized units that can provide urgent stroke diagnosis and treatment, as well as recruitment of sufficient, specialized and dedicated medical, nursing and paramedical personnel. These centers should offer 24/7 availability of intravenous thrombolysis with alteplase and EVT (1A).<br><br>10. In the case of acute occlusion of a large vessel of the anterior cerebral circulation in a patient that has an indication for EVT in a hospital that does not offer this treatment option, we recommend to transfer the patient immediately after intravenous thrombolysis to a center where mechanical thrombectomy can be performed (2B). |
| **Fiehler J, Cognard C, Gallitelli M, Jansen O, Kobayashi A, Mattle HP et al.**<br><br>**European recommendations on organisation of interventional care in acute stroke (EROICAS)**<br><br>***Eur Stroke J* 2016; 1(3): 155–170.**<br><br>**(selected Q1 &Q2/Q14)** | 1. What service organization is associated with favorable outcome after thrombectomy?<br>Services should demonstrate established organization at the center to support rapidly instituted IV rtPA use, team organization of a level sufficient to support clinical trial participation, a process for monitoring door-to-needle/ groin puncture, and procedural duration times, and a governance process to ensure that these are reviewed (Quality of evidence: moderate, Strength of recommendation: strong).<br><br>Services should include a neuroradiological/radiological department with experience with acute CT/ MR interpretation including ASPECTS, and experience with CTA in acute stroke patients as a minimum additional imaging modality (Quality of evidence: Moderate, Strength of recommendation: Strong).<br><br>Operators and services should conform to minimum requirements for training, certification, caseload and ongoing education for acute neurovascular procedures by national/European neurointerventional/ radiological organizations and national statutory bodies (Quality of evidence: Moderate, Strength of recommendation: Strong).<br><br>2. What operator characteristics are associated with favorable outcome after thrombectomy?<br>Thrombectomies should be performed by physicians competent in intracranial endovascular procedures. Competence in Interventional neurovascular procedures is based on:<br>– Proven capacity to perform, conduct, and interpret standard diagnostic Neuroradiology (CT, MR, multimodal-imaging) for appropriate case selection.<br>– Proven capacity to perform, conduct, and interpret standard intracranial endovascular procedures as well as management skills for procedural complications.<br>– Skills in interdisciplinary management of hemorrhagic and ischemic stroke patients with stroke physicians or neurologists/neurosurgeons in stroke centers. Treatment in the context of an acute stroke unit is an option in geographically remote regions.<br>– Meeting the minimum requirements for training, certification, caseload, and ongoing education for acute neurovascular procedures by national/European neurointerventional/radiological organizations and national statutory bodies (e.g. certification by a European or National Certificate/Diploma/Master).<br>– Continuous updating of the interventional neuroradiology (INR) diagnostic and therapeutic methods and skills. (Quality of evidence: Moderate, Strength of recommendation: Strong). |
| **Wahlgren N, Moreira T, Michel P, Steiner T, Jansen O, Cognard C, et al; ESO-KSU, ESO, ESMINT, ESNR and EAN.** | Mechanical thrombectomy, in addition to intravenous thrombolysis within 4.5 h when eligible, is recommended to treat acute stroke patients with large artery occlusions in the anterior circulation up to 6 h after symptom onset (Grade A, Level 1a, KSU Grade A). – new. |

| Guideline | Recommendations |
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| **Mechanical thrombectomy in acute ischemic stroke: Consensus statement by ESO-Karolinska Stroke Update 2014/2015, supported by ESO, ESMINT, ESNR and EAN.**<br><br>***Int J Stroke* 2016;11(1):134-147.**<br><br>**(selected)** | Mechanical thrombectomy should not prevent the initiation of intravenous thrombolysis where this is indicated, and intravenous thrombolysis should not delay mechanical thrombectomy (Grade A, Level 1a, KSU Grade A). – changed.<br>Mechanical thrombectomy should be performed as soon as possible after its indication (Grade A, Level 1a, KSU Grade A).<br>For mechanical thrombectomy, stent retrievers approved by local health authorities should primarily be considered (Grade A, Level 1a, KSU Grade A). – new.<br>Other thrombectomy or aspiration devices approved by local health authorities may be used upon the neurointerventionists discretion if rapid, complete and safe revascularisation of the target vessel can be achieved (Grade C, Level 2a, KSU Grade C) – new.<br><br>If intravenous thrombolysis is contraindicated (e.g. Warfarin-treated with therapeutic INR) mechanical thrombectomy is recommended as first-line treatment in large vessel occlusions (Grade A, Level 1a, KSU Grade A) – changed and updated level of evidence.<br>Patients with acute basilar artery occlusion should be evaluated in centres with multimodal imaging and treated with mechanical thrombectomy in addition to intravenous thrombolysis when indicated (Grade C, Level 4, KSU Grade C); alternatively they may be treated within a randomized controlled trial for thrombectomy approved by the local ethical committee – new.<br><br>The decision to undertake mechanical thrombectomy should be made jointly by a multidisciplinary team comprising at least a stroke physician and a neurointerventionist and performed in experienced centres providing comprehensive stroke care and expertise in neuroanaesthesiology (Grade C, Level 5, GCP, KSU Grade C).<br><br>Mechanical thrombectomy should be performed by a trained and experienced neurointerventionist who meets national and/or international requirements (Grade B, Level 2b, KSU Grade B) – changed in level of evidence. |
| **Lavine SD, Cockroft K, Hoh B, Bambakidis N, Khalessi AA, Woo H et al.**<br><br>**Training guidelines for endovascular stroke intervention: an international multi-society consensus document.**<br><br>***Interv Neurol.* 2016 Jun;5(1-2):51-6.** | **Physician qualifications**<br>Baseline training and qualifications:<br>1. Residency training (in radiology, neurology or neurosurgery) which should include documented training in the diagnosis and management of acute stroke, the interpretation of cerebral arteriography and neuroimaging under the supervision of a board-certified neuroradiologist, neurologist or neurosurgeon with subsequent board eligibility or certification. The residency program and supervising physicians should be accredited according to national standards as they pertain to the countries involved. Those physicians who did not have adequate such training during their residencies must spend an additional period (typically one year) by training in clinical neurosciences and neuroimaging, focusing on the diagnosis and management of acute stroke, the interpretation of cerebral arteriography and neuroimaging prior to their fellowship in neuroendovascular interventions. AND<br><br>2. Dedicated training in Interventional Neuroradiology (also termed Endovascular Neurosurgery or Interventional Neurology) under the direction of a Neurointerventionalist (with neuroradiology, neurology or neurosurgical training background), at a high-volume center. It is preferred that this is a dedicated year, which occurs after graduating from residency (i.e., a fellowship). A training program accredited by a national accrediting body is also strongly preferred but not required. Published standards exist for various countries [15–21]. Within these programs, specific training for intraarterial therapy for acute ischemic stroke should be performed, including obtaining appropriate access even in challenging anatomy, microcatheter navigation in the cerebral circulation, knowledge, and training of the use of stroke specific devices and complication avoidance and management. |

| Guideline | Recommendations |
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| | **Maintenance of physician qualifications:**<br>Outcomes should be tracked and recorded. While threshold levels for recanalization, complication rates, etc. have yet to be established, we suggest the following as a minimum:<br>1. Successful recanalization (modified TICI 2b or 3) in at least 60 % of cases.<br>2. Embolization to new territory of less than 15 %<br>3. Symptomatic intracranial hemorrhage (i.e., parenchymal hematoma on imaging with clinical deterioration) rate less than 10 %.<br><br>**Hospital requirements:**<br>We feel it is critical that the patients be treated in a center, which has 24/7 access to the following:<br>1. Angiography suites suitably equipped to handle these patients, as well as equipment and capability to handle the complications.<br>2. Dedicated stroke and intensive care units (preferably dedicated neuro-intensive care unit), staffed by physicians with specific training in those fields.<br>3. Vascular neurology and Neurocritical care expertise.<br>4. Neurosurgery expertise, including vascular neurosurgery.<br>5. All relevant neuroimaging modalities (CT/CTA, MR/ MRA, Trans-cranial Doppler [TCD]), including 24/7 access to CT and MRI. |
| **Toni D, Mangiafico S, Agostoni E, Bergui M, Cerrato P, Ciccone A et al.**<br><br>**Intravenous thrombolysis and intra-arterial interventions in acute ischemic stroke: Italian Stroke Organisation (ISO)-SPREAD guidelines.**<br><br>***Int J Stroke* 2015;10:1119–1129** | In patients eligible for IVT, intra-arterial reperfusion treatments are not recommended as an alternative. Grade A<br><br>The techniques of mechanical thrombectomy are recommended within six-hours of stroke onset in patients with occlusion of ICA terminus, middle cerebral artery M1–M2, or anterior cerebral artery A1 who do not respond to or cannot be treated with IVT. Grade B.<br><br>The techniques of mechanical thrombectomy are recommended within six-hours of stroke onset in patients with occlusion of vertebral artery, basilar artery, or posterior cerebral artery P1 who do not respond to or cannot be treated with IVT. Good practice point. |
| **Talke PO, Sharma D, Heyer EJ, Bergese SD, Blackham KA, Stevens RD.**<br><br>**Society for Neuroscience in Anesthesiology and Critical Care Expert consensus statement: anesthetic management of endovascular treatment for acute ischemic stroke*: endorsed by the Society of NeuroInterventional Surgery and the Neurocritical Care Society.** | We recommend that the choice of anesthetic technique and pharmacological agents should be individualized based on clinical characteristics of each patient, in close communication with the neurointerventionalist. GA may be preferable in uncooperative or agitated patients or patients with elevated neurological severity who cannot protect their airway (most patients with posterior circulation stroke, depressed level of consciousness, respiratory compromise) (class IIa, level of evidence B).<br><br>Local anesthesia with sedation and GA are feasible options for patients with anterior circulation stroke who can protect their airway and are cooperative (class IIa, level of evidence B).<br><br>In all patients receiving local anesthesia with sedation, the anesthesia provider should be prepared to rapidly convert to GA if needed (class IIa, level of evidence C). |

| Guideline | Recommendations |
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| ***J Neurosurg Anesthesiol.* 2014 Apr;26(2):95-108.**<br><br>**(selected)** | If GA is chosen, standardized protocols for early postprocedural neurological assessment and extubation should be used to minimize the postextubation risks. There is no recommendation on a specific pharmacologic agent or combination for the provision of sedation or GA. Anesthesia-related procedures should be done as quickly as possible to avoid delay in endovascular treatment. |

# Evidence Tables

## Landmark Trials of Endovascular Thrombectomy (+/- intravenous thrombolysis) vs. Best Medical Management

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Jovin et al. 2015**<br><br>**Dávalos et al. 2017 (1-year follow-up)**<br><br>**Spain**<br><br>**RCT**<br>***Randomized Trial of Revascularization with Solitaire FR Device versus Best Medical Therapy in the Treatment of Acute Stroke Due to Anterior Circulation Large Vessel Occlusion Presenting within Eight Hours of Symptom Onset (REVASCAT)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 206 patients aged 18-80 years, with premorbid mRS score ≤1, baseline NIHSS score ≥6, ischemic stroke attributable to an occlusion of the internal carotid or proximal MCA (M1) arteries who could be treated within 8 hours of stroke onset.<br>Mean age was 66 years, 55% were male. Median baseline NIHSS score was 17 in both groups. Median ASPECTS scores were 7 (intervention) and 8 (control) | Patients were randomized to receive mechanical embolectomy with Solitaire FR device + best medical management (n=103), which could include rt-PA or best medical management only, which could include intravenous t-PA (n=103). | **Primary outcome:**<br>Shift in mRS score distribution at day 90<br><br>**Secondary outcomes:**<br>Infarct volumes at 24 hours, vessel revascularization at 24 hours, early dramatic response to treatment (defined as a decrease in the NIHSS score of ≥8 from baseline or an NIHSS score of 0 to 2 at 24 hours), NIHSS score and Barthel Index scores at 90 days and EuroQol<br><br>**Safety outcomes:**<br>90-day mortality, symptomatic ICH within 90 days. | Trial was terminated early (690 planned) after first interim analysis when efficacy of intervention was established.<br><br>Median time from stroke onset to groin puncture was 269 minutes.<br><br>Over the range of mRS scores, the odds for improvement by 1 point at 90 days were increased significantly in the intervention group (adj OR=1.7, 95% CI 1.05-2.8)<br><br>The odds of achieving mRS score of 0-2 at 90 days were increased significantly in the intervention group (adj OR=2.1, 95% CI 1.1-4.0).<br><br>The odds of dramatic neurological improvement at 24 hours were increased significantly in the intervention group (adj OR=5.8, 95% CI 3.0-11.1).<br><br>The median infarct volume was significantly lower in the intervention group (16.3 vs. 38.6 mL, p=0.02).<br><br>At 90 days, the rates of death and symptomatic ICH were similar between groups (18.4% vs. 15.5% and 1.9% vs. 1.9%, respectively).<br><br>No treatment effects were noted in planned sub-group analyses of age, baseline NIHSS score, site of occlusion, time to randomization, treatment with t-PA, ASPECTS score.<br><br>**1-year outcomes**<br><br>Data for 1 patient (control group) were missing.<br><br>The odds of improvement in the mRS score across any cut-off point of the mRS were increased significantly for patients in the thrombectomy group |

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| | | | | | (OR=1.80, 95% CI 1.09–2.99).<br><br>The proportion of patients who were functionally independent (mRS score 0–2) was significantly higher for patients in the thrombectomy group (44% vs. 30%; OR=1.86, 95% CI 95% CI 1.01-3.44).<br><br>Mean EQ-5D utility index scores were significantly higher for patients in the thrombectomy group at 1 year (0·46 vs. 0.33, MD=0·12, 95% CI 0·03–0·22, p=0·01).<br><br>One-year mortality was similar between group (23% vs. 24%). |
| **Goyal et al. 2015, Ganesh et al. 2021**<br><br>**Canada**<br><br>**RCT**<br>***Endovascular Treatment for Small Core and Proximal Occlusion Ischemic Stroke (ESCAPE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 316 patients ≥18 years, with stroke onset <12 hours, NIHSS > 5 at the time of randomization, previously independent in ADL and confirmed symptomatic intracranial occlusion in selected regions of the anterior circulation and moderate-to-good collateral circulation, based on CTA findings.<br><br>Median age of patients was 70 years, 48% were male. Median baseline NIHSS scores were 16 (intervention) and 17 (control). Median ASPECTS score was 9 (both groups). | Patients were randomized to receive endovascular mechanical thrombectomy, using available devices +/- intravenous t-PA (intervention group, n=165); or best medical management +/- tPA (control group, n=150). | **Primary outcome:**<br>Shift in mRS scores at day 90<br><br>**Secondary outcomes:**<br>Proportion of patients who achieve: a NIHSS or mRS score of 0-2 or Barthel Index score of 95-100, and proportion patients who are independent (mRS 0-2) vs. dependent (mRS 3-6), EQ-5D, all assessed at day 90. | The trial was stopped early.<br><br>One patient in the control group crossed over to the endovascular therapy group and 14 patients in the experimental group did not receive the assigned treatment.<br><br>Retrievable stents were used in 130/151 patients who underwent an endovascular procedure. Median time from stroke onset to first reperfusion was 241 minutes. 125/150 patients in the control group were treated with iv t-PA.<br><br>The odds of improvement in mRS score by 1 point were significantly higher among patients in the experimental group (adj OR=3.2, 95% CI 2.0-4.7).<br><br>The odds of attaining a mRS score of 0-2 at 90 days were higher in the experimental group (adj OR=1.7, 95% CI 1.3-2.2). The odds of a NIHSS score of 0-2 and Barthel Index score of 95-100 were also significantly higher in the experimental group (adj OR=2.1, 95% CI 1.5-3.0 and 1.7, 95% CI 1.3-2.22, respectively).<br><br>The risk of death was significantly lower in the experimental group (adj RR=0.5, 95% CI 0.31 to 0.77). The risk of large or malignant stroke was significantly lower in the intervention group (adj |

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| | | | | | RR=0.3, 95% CI 0.1-0.7).<br><br>There was no significant increase in the risk of symptomatic ICH (adj RR=1.2, 95% CI 0.3-4.6).<br><br>In subgroup analyses, based on age, sex, baseline NIHSS score, baseline ASPECTS, occlusion location, and status with respect to alteplase treatment) or according to the presence or absence of cervical carotid occlusion, all of which favoured the intervention.<br><br>**Ganesh et al. 2020 (analysis to explore factors associated with infarct size and outcome)**<br><br>Persons with small post-treatment infarct volume (PIV) (volume ≤25th percentile) and large PIV (volume ≥75th percentile) on 24–48-h CT/MRI were identified, as were those with a good outcome (mRS ≤2) and those with a poor outcome (mRS>3).<br><br>Independent factors associated with discrepant cases (i.e., patients with 90-day poor outcome/small PIV [n=27] and patients with a good outcome/large PIV [n=12]) were identified using multivariable models.<br><br>Pre-treatment factors associated with small PIV/poor outcome included increasing age, presence of cancer, and absence of vascular risk factors. Post-treatment factors included increasing NIHSS score at 48 hours and serious adverse events.<br><br>Pre-treatment factors associated with large PIV/good outcome included younger age, absence of vascular risk factors, and sparing of lentiform nucleus on imaging. Post-treatment factors included lower NIHSS score at 48 hours and absence of serious adverse events. |
| **Berkhemer et al. 2015**<br><br>**van den Berg et al. 2017 (2-year** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ | 500 patients from 16 centres, ≥18 years, with NIHSS ≥2 at the time of randomization, a symptomatic anterior | Patients were randomized to receive endovascular treatment with intravenous t-PA or urokinase, and/or intra-arterial (IA) treatment with | **Primary outcome:** mRS score at day 90<br><br>**Secondary outcomes:** Vessel recanalization at | 89.0% of patients were treated with IV t-PA prior to randomization. 10.7% of patients in the intervention group were also treated with intra arterial t-PA.<br><br>Retrievable stents were used in 81.5% of patients |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **follow-up)**<br><br>**Netherlands**<br><br>**RCT**<br>***Multicenter Randomized Clinical Trial of Endovascular Treatment for Acute Ischemic Stroke in the Netherlands (MR CLEAN)*** | Assessor ☑<br><br>ITT: ☑ | proximal artery occlusion in selected regions treatable within 6 hours of stroke onset.<br><br>Mean age was 65 years. 58.4% male. Median baseline NIHSS scores were 17 (intervention) and 18 (control). Median ASPECTS score was 9 (both groups) | available devices (n=233) or best medical management only, +/- intravenous t-PA (n=267). | 24 hours, infarct size at day 5-7, NIHSS score at 24 hours and 1 week after discharge, EQ-5D and Barthel Index (BI) scores, dichotomized mRS scores (0-1 vs. 2-6, 0-2 vs. 3-6, 0-3 vs. 4-6) at day 90. | assigned to IA treatment. IA thrombolytic agents, provided as monotherapy were used in 0.4% of patients.<br><br>There was a significant shift towards more favourable mRS scores among patients in the intervention group (adj common OR=1.67, 95% CI 1.21-2.30).<br><br>The odds of more favourable outcome (mRS 0-1 and mRS 0-2) at day 90 were significantly higher among patients in the intervention group (adj OR=2.07, 95% CI 1.07-4.02 and adj OR=2.16, 95% CI 1.39-3.38, respectively).<br><br>The mean NIHSS score at day 5-7 was significantly lower among patients in the intervention group (2.9 points, 95% CI 1.5-4.3).<br><br>The odds of a BI score of 19-20 were significantly higher among patients in the intervention group (adj OR=2.1, 95% CI 1.4-3.2).<br><br>There was no significant difference in the median EQ-5D scores between groups.<br><br>Patients in the intervention group were more likely to have no evidence of intracranial occlusion on follow-up CTA (adj OR=6.88, 95% CI 4.34-10.94, n=394) and to have a lower median final infarct volume (-19 mL, 95% CI 3-34, n=298).<br><br>There was no difference in the mean number of serious adverse events between groups at 90 days. There were procedure-related complications in 26 patients (11.2%).<br><br>There were no treatment-related interaction effects found for any of the pre-specified subgroups (NHISS strata, age ≥80 years, time to randomization, the presence of additional extracranial internal carotid artery occlusion and ASPECTS). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | | | | **2-year follow-up**<br>Data were available for 391 patients.<br>The distribution of mRS scores favored the intervention group (adjusted common OR=1.68, 95% CI 1.15- 2.45, p=0.007).<br>The odds of an mRS score of 0-2 were significantly higher in the intervention group (37.1% vs. 23.9%, adj OR= 2.21, 95% CI 1.30−3.73, p=0.003).<br>The mean EQ-5D score was significantly higher in the intervention group (0.48 vs. 0.38, p=0.006)<br>The risk of death associated with the intervention was not significantly higher (HR=0.9, 95% CI 0.6-1.2, p= 0.46). |
| **Saver et al. 2015**<br><br>**USA**<br><br>**RCT**<br>***Solitaire With the Intention for Thrombectomy as Primary Endovascular Treatment (SWIFT-PRIME)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 196 patients aged 18-80 years with pre-morbid mRS score ≤ 1, NIHSS ≥ 8 and < 30 at randomization, infarction located in the intracranial internal carotid artery, MCA, or carotid terminus confirmed by CT or MRA, treatment with IV t-PA within 4.5 hours of onset of stroke symptoms and ability to be treated within 6 hours of onset of stroke symptom. Mean age 65.5 years. Median baseline NIHSS score was 17 in both groups. | Patients were randomized to receive intravenous t-PA therapy + intra-arterial mechanical clot retrieval with the Solitaire FR device (n=98) or treatment with intravenous t-PA only (n=98) | **Primary outcome:**<br>Global disability at 90 days (mRS scores)<br><br>**Secondary outcomes:**<br>All-cause mortality, proportion of patients with mRS score ≤2 at 90 days, change in NIHSS score at 27 ± 6 hours post randomization | Median time from stroke onset to first deployment was 252 minutes.<br>There was a significant shift in mRS scores towards lower scores associated with the endovascular therapy group (p=0.0001).<br>The likelihood of successful reperfusion (>90%) at 27 hours was significantly higher in the endovascular therapy group (82.8% vs. 40.4%, RR=2.05, 95% CI 1.45-2.91, p<0.001).<br>A significantly higher percentage of patients were independent at day 90 (mRS 0-2) (60.2% vs. 35.5%, RR=1.70, 95% CI 1.23-2.33, p=0.001).<br>There was no significant reduction in the risk of death at 90 days associated with the intervention (9.2% vs. 12.4, RR=0.74, 95% CI 0.33-1.68, p=0.50).<br>There was no increased risk of serious adverse events, including symptomatic ICH, parenchymal hematoma and SAH associated with endovascular treatment.<br>No treatment effects were found in subgroup |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | | | | analyses, based on age, sex, baseline NIHSS score, baseline ASPECTS, occlusion location, time to randomization, site of care or geographic location. |
| **Campbell et al. 2015**<br><br>**Australia**<br><br>**RCT**<br>***Extending the Time for Thrombolysis in Emergency Neurological Deficits – Intra-Arterial (EXTEND- IA)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 70 patients ≥18 years, with anterior circulation acute ischemic stroke, no baseline NIHSS criteria, eligible for treatment with IV tPA within 4.5 hours of stroke onset, ASPECTS ≥6, with good premorbid function (mRS 0-2), with evidence of salvageable brain tissue on CT perfusion imaging, who could receive intra-arterial treatment within 6 hours of stroke onset. Mean age was 69 years, 49% were male. Median baseline NIHSS scores were 17 (intervention) and 13 (control). | Patients were randomized to undergo mechanical clot retrieval with the Solitaire device after receiving standard therapy with intravenous rt-PA (n=35) or intravenous t-PA only (n=35) | **Primary outcomes:** Reperfusion at 24 hours, favorable clinical response (reduction in NIHSS scores by ≥8 points or score of 0–1) by day 3.<br><br>**Secondary outcomes:** mRS scores day 90, death within 90 days, symptomatic ICH with 36 hours of treatment and ≥4-point increase in NIHSS from baseline. | The trial was stopped early (100 planned). 8 patients in the endovascular treatment group did not undergo the procedure.<br><br>Median time from stroke onset to groin puncture was 210 minutes.<br><br>Median reperfusion at 24 hours was significantly higher in the endovascular group (median 100% vs. 37%, p<0.001). Significantly more patients in the endovascular group experienced >90% reperfusion without ICH at 24 hours (89% vs. 34%, p<0.001).<br><br>A significantly greater proportion of patients in the endovascular group experienced early neurological improvement (80% vs. 37%, p<0.001), and were independent at day 90 (71% vs. 40%, p=0.009).<br><br>There was a significant shift in mRS scores towards lower scores associated with the intervention group (p=0.006).<br><br>There were no significant differences between groups in any of the safety outcomes (death, symptomatic ICH or parenchymal hematoma). |
| **Muir et al. 2017**<br><br>**USA**<br><br>**RCT**<br>**Pragmatic Ischaemic Stroke Thrombectomy Evaluation *(PISTE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 65 patients ≥18 years, with occlusion of the intracranial ICA, M1 segment of the MCA or a single M2 MCA branch, who were eligible to receive intravenous t-PA, started within 4.5 hours of symptom onset. Mean age was 65.5 years, 45% were men. | Patients were to receive best medical therapy with intravenous thrombolysis (IVT) alone (n=32), or to undergo additional (adjunctive) mechanical thrombectomy (MT) with any approved device (n=33), performed by an experienced operator, without delay following t-PA. | **Primary outcome:** Independence (mRS score 0-2) at 90 days<br><br>**Secondary outcomes:** Excellent recovery (mRS score 0–1), change in the distribution of scores on the mRS; early major neurological improvement (improvement by ≥8 points on the NIHSS or NIHSS of 0 or 1 at 24 | Trial recruitment was suspended in prematurely, following presentation of other relevant thrombectomy trial results.<br><br>In ITT analysis, the odds of the primary outcome were not increased significantly for the MT group (51% vs. 40%, adj OR=2.12, 95% CI 0.65- 6.94, p=0.204). The odds were significantly increased in the per protocol analysis (57% vs 35%, OR=4.92, 95% CI 1.23 to 19.69, p=0.021).<br><br>In ITT analysis, the odds of achieving an excellent outcome were significantly increased for the MT group (OR= 7.63, 95% CI 1.56-37.22, p=0.010). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | | | hours after stroke) | There was no significant difference between groups in the distribution of mRS scores at 90 days.MT was not associated with a significantly increased risk of early neurological improvement, death of symptomatic ICH |
| **Bracard et al. 2016**<br><br>**France**<br><br>**RCT**<br>***Thrombectomy in Patients with Acute Ischemic Stroke (THRACE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 414 patients from 26 centres, aged 18-80 years with an occlusion in the intracranial carotid, the MCA (M1) or the upper third of the basilar artery with onset of symptoms <4 hours and NIHSS ≥ 10 and ≤25 at randomization.<br><br>Mean age 63 years, 53% were male. Mean NIHSS score 17.4. ASPECTS scores14.3% (0-4), 33.1% (5-7), 52.5% (8-10). | Patients were randomized to receive dual IV t-PA therapy + intra-arterial mechanical clot retrieval with the Merci, Penumbra, Catch or Solitaire devices (n=204) or treatment with IV t-PA only (n=208) | **Primary outcome:**<br>mRS scores at day 90<br><br>**Secondary outcomes:**<br>EQ-5D scores and Barthel Index (BI) scores at day 90 | Median times from symptom onset to t-PA were 150 minutes (IVT group) and 153 minutes (t-PA group).<br><br>Median time from symptom onset to thrombectomy was 250 minutes.<br><br>The odds of achieving mRS score of 0-2 at 90 days were increased significantly in the thrombectomy group (53% vs. 42.1%, OR=1.55, 95% CI 1.05-2.3, p=0.028, NNT=10).<br><br>Median NIHSS scores at days 7 and 3 months were significantly lower for thrombectomy patients (4 vs. 8, p=0.001 and 2 vs. 4, p=0.01, respectively).<br><br>The proportion of patients with Barthel Index scores of 95-100 at 3 months was significantly higher in thrombectomy group (92% vs. 79%, p=0.04).<br><br>Median EQ-5D scores at 3 months were not significantly different (0.64 vs. 0.62, p=0.38).<br><br>There were no differences between groups in the number of patients with symptomatic or asymptomatic hemorrhages at 24 hours.<br><br>There were no interactions noted in any of the subgroup analyses for the primary outcome (age, sex, diabetes, HTN, hypercholesterolemia, time to randomization, occlusion site, NIHSS baseline score, or ASPECTS score). |

## Landmark Trials of EVT vs. Best Medical Management in the Late Window (>6 hours)

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Olthuis et al. 2023, Huijberts et al. 2024**<br><br>**The Netherlands**<br><br>***Multicenter Randomized Clinical Trial of Endovascular Treatment of Acute Ischemic Stroke in The Netherlands for Late arrivals: (MR CLEAN-LATE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 502 adult patients, recruited from 18 centres with acute ischemic stroke, eligible for endovascular therapy, which could be initiated (groin puncture) between 6 and 24 hours after symptom onset or last seen well < 24 hours including wake-up strokes. Median age was 74 years, 48% were men. Median NIHSS score was 10. Median ASPECTS score was 8.5. | Patients are randomized to received best medical management plus endovascular therapy (EVT group) or best medical management only (control group). | **Primary outcome:**<br>mRS scores at 90 days<br><br>**Secondary outcome:**<br>Dichotomised mRS scores of 0–1 vs. 2–6, 0–2 vs. 3–6, and 0–3 vs. 4–6 at 90 days, Barthel Index (BI) at 90 days, EQ-5D 5-Levels at 90 days, recanalization at 24 hours, NIHSS score at 24 hours and 5-7 days after randomization<br><br>**Safety outcomes:**<br>Mortality at 90 days, symptomatic ICH at 24 hours, and 5-7 days after randomization | There was a shift in the distribution of mRS scores towards a better outcome on the primary outcome in the EVT group (mRS 3 vs. 4; adj common OR=1·67, 95% CI 1·20–2·32).<br><br>There was significantly greater improvement in NIHSS scores at 24 hours and 5-7 days in the EVT group (differences of -16% [95% CI –27 to –5] and -27% [–38 to –13], respectively).<br><br>EQ-5D-L scores were significantly higher in the EVT group (0.53 vs. 0.28).<br><br>Median BI scores were significantly higher in the EVT group (100 vs. 95).<br><br>A higher percentage of patients had complete recanalization in the EVT group (81% vs. 53%; OR= 3·14, 95% CI 2·15 to 4·58).<br><br>90-day mortality was similar in both group (EVT 24% vs. control group 30%; OR=0·72, 95% CI 95% CI 0·44–1·18).<br><br>sICH was significantly higher in the EVT group (7% vs. 2%; OR=4·59, 95% CI 1·49–14·10).<br><br>There were no treatment interactions noted in subgroup analysis of the primary outcome.<br><br>5% of patients in the EVT group and 8% in the control group were treated with intravenous thrombolysis.<br><br>**2-year follow-up (Huijberts et al. 2024)**<br><br>Data were available for 428 persons.<br><br>The median 2-year mRS score was significantly lower in the EVT group (4 vs. 6; common OR=1·41, 95% CI 1·00 to 1·99).<br><br>There was no significant difference in mortality (34% vs. 41%; HR=0·81, 95% CI 0·60 to 1·08). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Albers et al. 2018, Lansberg et al. 2019, Sarraj et al. 2019, Tate et al. 2019**<br><br>**USA**<br><br>**RCT**<br>***Endovascular Therapy Following Imaging Evaluation for Ischemic Stroke 3 (DEFUSE 3)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 182 patients, aged 18-90 years, recruited from 38 centres, last been known to be well 6-16 hours earlier, with ICA or MCA-M1 occlusion, and an initial infarct volume <70 ml, a ratio of volume of ischemic tissue to initial infarct volume ≥ 1.8 more, and an absolute volume of potentially reversible ischemia (penumbra) ≥ 15 ml and baseline NIHSS ≥6.<br><br>Median age was 70.5 years, 50.5% were men. Baseline NIHSS score was 16. Median ASPECTS score was 8. Median time from stroke onset to randomization was 10 h 50 min. | Patients were randomized to treatment with thrombectomy using an FDA-approved device + medical management (n=92) or medical management alone (n=90). | **Primary outcome:**<br>Distribution of mRS scores at 90 days<br><br>**Secondary outcome:**<br>Functional independence at 90 days (mRS 0-2)<br><br>**Primary safety outcomes:**<br>Death within 90 days, sICH at 36 hours<br><br>**Imaging outcomes:**<br>Infarct volume at 24 hours, lesion growth, reperfusion at 24 hours, | Trial was stopped early due to efficacy (476 maximum planned).<br><br>11% (thrombectomy) and 9% (medical management) of patients were treated with iv. t-PA.<br><br>The distribution of mRS scores was more favourable for patients in the endovascular group at 90 days (unadjusted common OR=2.77, 95% CI 1.63- 4.70, p<0.001).<br><br>A significantly higher proportion of patients in the thrombectomy group was independent at 90 days (45% vs. 17%; RR=2.67, 95% CI 1.60-4.48, p<0.001).<br><br>Mortality at 90 days was 14% for patients in the endovascular group vs. 26% for patients in medical management group (p=0.05).<br><br>The risks of sICH, early neurological deterioration and parenchymal hematoma type 2 were similar between group (7% vs. 4%, p=0.75; 9% vs. 12%, p=0.44; and 9% vs. 3%, p=0.21, respectively)<br><br>Median infarct volume and growth at 24 hours were not significantly different: 35 vs. 41 mL, p=0.19 and 23 vs. 33 mL, p=0.08, respectively.<br><br>Complete recanalization 24 hours was achieved in a significantly higher proportion of patients in the endovascular group (78% vs. 18%, p<0.001).<br><br>There were 2 procedure-related complications in the thrombectomy group. Serious adverse reactions were reported for 45% of patients in the thrombectomy group vs. 53% in the medical management group (p=0.18).<br><br>General anesthesia was used in 26% of patients.<br><br>No differences were found between groups in sub-group analysis (time from stroke to randomization, volume of ischemic core, baseline NIHSS, age, sex, ASPECTS, site of occlusion, baseline imaging, atrial |

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| | | | | | fibrillation).<br><br>**Secondary analysis (Lansberg et al. 2019)**<br><br>The common OR for improved functional outcome with endovascular therapy, adjusted for age, NIHSS score, and serum glucose was 3.1 (95% CI, 1.8-5.4).<br><br>There was no interaction between treatment and time to randomization, age, or baseline stroke severity at time of randomization.<br><br>**Secondary analysis (Sarraj et al. 2019)**<br><br>Of the 182 patients randomized, 61 were transferred directly to the study site and 121 were transferred from another facility.<br><br>All outcomes were similar between direct and transfer groups (primary outcome, functional independence, reperfusion, mortality, spontaneous ICH<br><br>**Secondary analysis (Tate et al. 2019)**<br><br>Among the 167 patients who did not die during acute hospitalization, median length of hospital stay was significantly shorter in the endovascular group (6.5 vs. 9.1 days, p<0.001).<br><br>Median time at home during the first 90 days was significantly greater in the endovascular group (55 vs. 0 days, p<0.001).<br><br>The endovascular group had more favorable living situations at time of discharge, 30 days and 90 days poststroke (all p<0.001). |
| **Nogueira et al. 2018, Jadhav et al. 2019**<br><br>**USA**<br><br>**RCT**<br>***DWI or CTP*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ | 206 patients, recruited from 26 centres, ≥18 years with ischemic stroke, last been known to be well 6 to 24 hours earlier, with no previous disability (mRS 0-1) who had either failed IV t-PA | Patients were randomized to treatment with thrombectomy with Trevo device + medical management (n=107) or medical management alone (n=99). | **Primary outcomes:** Utility-weighted mRS score and functional independence (mRS 0-2) at 90 days,<br><br>**Secondary outcomes:** Early response (day 5-7 | Trial was terminated early at 31 months (500 maximum planned) after interim analysis when efficacy of thrombectomy was established.<br><br>The median interval between the time that a patient was last known to be well and randomization was 12.2 hours in the thrombectomy group and 13.3 hours in the control group. The median interval |

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| ***Assessment with Clinical Mismatch in the Triage of Wake-Up and Late Presenting Strokes Undergoing Neurointerventi on (DAWN)*** | | therapy (defined as a confirmed persistent occlusion 60 min after administration), or those persons for whom IV t-PA administration was contraindicated, because of late presentation. Imaging criteria: < 1/3 MCA territory involved, occlusion of the intracranial ICA and/or MCA-M1 on MRA or CTA Clinical Imaging criteria: Mismatch (CIM) defined as one of the following on MR-DWI or CTP-rCBF maps: 0-<21 cc core infarct and NIHSS ≥ 10 (and age ≥ 80 years old); 0-<31 cc core infarct and NIHSS ≥ 10 (and age < 80 years old); 31 cc to <51 cc core infarct and NIHSS ≥ 20 (and age < 80 years old).<br><br>Mean age was 70.0 years, 45% were men. Median baseline NIHSS score was 17. | | or discharge (whichever is earlier), defined as a NIHSS score decrease of ≥10 from baseline or NIHSS score 0 or 1, stroke-related 90-day mortality and all-cause 90-day mortality. | between the time the patient was last known to be well and reperfusion was 13.6 hours<br><br>The mean UW-mRS score was significantly higher in the thrombectomy group (5.5 vs. 3.4, adj difference =2.0, 95% Cr I 1.1-3.0, prob of superiority >0.999). There were no interactions in subgroup analysis (mismatch criteria, sex, age, baseline NIHSS score, occlusion site, interval between time that patient was last known to be well and randomization and type of stroke onset).<br><br>A significantly higher proportion of patients in the thrombectomy group were independent at 90 days (49% vs. 13%, adj difference= 33, 95% Cred I 21–44, prob of superiority >0.999).<br><br>A significantly higher proportion of patients in the thrombectomy group experienced an early response and had achieved recanalization at 24 hr (48% vs. 19%, RR=3.0, 95% CI 2-4, p<0.001 and 77% vs. 39%, RR=2.0, 95% CI 2-4, p<0.001, respectively).<br><br>Median infarct volume was significantly lower at 24 hours post treatment in the thrombectomy group (8 vs. 22 mL, p<0.001).<br><br>There were no significant differences between groups in the proportions of patients with stroke-related deaths, or all-cause mortality at 90 days (16% vs. 18%, and 19% vs. 18%, respectively).<br><br>There was no significant difference between groups in the proportion of patients with symptomatic ICH at 24 hours (65 vs. 3%).<br><br>*Jadhav et al. 2019 (mode of onset)*<br><br>Modes of onset were wake-up stroke (55.3%, n=114), witnessed onset (12.1%, n=25), and unwitnessed onset (32.5%, n=67) with median times last seen well to randomization of 13.4±3.7, 10.0±3.7, and 14.1±4.9 hours, respectively.<br><br>The benefit of thrombectomy was similar across |

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| | | | | | groups, compared with best medical management. The proportions of patients with mRS score of 0-2 at 90 days were: 49.3% vs.10.6% (wake up stroke), 63.6% vs. 21.4% (witnessed onset), and 41.4% vs. 13.2% (unwitnessed stroke). P for interaction=0.79) |

## EVT vs. Best Medical Management for Medium to Large Core Infarcts

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Yoo et al. 2024**<br><br>**USA**<br><br>**RCT**<br>***Thrombectomy for Emergent Salvage of Large Anterior Circulation Ischemic Stroke (TESLA)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 300 patients, recruited from 44 sites, aged 18-85 years with occlusion of the anterior circulation occlusion of the internal carotid artery (ICA) terminus and/or middle cerebral artery main stem (MCA M1) segment, NIHSS score ≥6 at the time of randomization and an ASPECTs score of 2-5 on NCCT only (no additional imaging permitted), who could be randomized within 24 hours of stroke onset. Median age was 67 years, 53% were men. Median ASPECTs score was 4. Median baseline NIHSS score was 18. Mean age was 67 years, 46% were women. | Patients were randomised to undergo endovascular thrombectomy (EVT) + medical care or medical care only.<br><br>Patients in both groups were eligible to receive +/- intravenous t-PA or intra-arterial treatment (IAT)<br><br>20% of patients in both treatment arms received t-PA. | **Primary outcome:**<br>Utility-weighted distribution of mRS score at 90 days<br><br>**Secondary outcomes:**<br>1-year utility-weighted mRS, 1-year mRS ordinal shift (mRS 5 and 6 combined), 1-year dichotomized mRS 0 to 2 outcome, 1-year dichotomized mRS 0 to 3 outcome, 90-day mRS ordinal shift (mRS 5 and 6 combined), 90-day dichotomized mRS 0 to 2 outcome, 90-day dichotomized mRS 0 to 3 outcome, NIHSS at 24 hours (16–36 hours) from randomization, EQ-5D at 90 days and 1 year<br><br>**Safety outcomes:**<br>90-day mortality, symptomatic intracerebral hemorrhage (sICH) at 24 hours | The mean average utility weighted mRS score at 90 days was not significantly different between the groups (2.93 vs 2.27, adjusted mean difference=0.63, 95% CI credible interval [CrI], −0.09 to 1.34), not meeting the prespecified threshold for superiority.<br><br>The shift in the distribution of mRS scores at 90 days was not significantly better in the EVT group (common OR=1.40, 95% CI 0.75-2.63).<br><br>The percentage of patients with an mRS score of 0-2 at 90 days was not significantly higher in the EVT group (14.5% vs. 8.9%, RR=1.64, 95% CI 0.86-3.12).<br><br>The percentage of patients with an mRS score of 0-3 at 90 days was significantly higher in the EVT group (30% vs. 20%, RR=1.50, 95% CI 1.00-2.26)<br><br>The risks of sICH and 90-day mortality were not significantly higher in the EVT group (4% vs. 1.3%, RR=2.96, 95% CI 0.61-14.4 and 35% vs. 33.3%, RR=1.06, 95% CI 0.77-1.45, respectively). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Costalat et al. 2024**<br><br>**USA**<br><br>**RCT**<br>***Large Stroke Therapy Evaluation (LASTE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 333 patients with proximal cerebral vessel occlusion in the anterior circulation and a large infarct and ASPECTs score ≤5 on NCCT or DWI and negative FLAIR imaging) identified within 6.5 hours after symptom onset and a baseline NIHSS score ≥6. Median age was 74 years, 52.5% were men. Median NIHSS score was 21. Median ASPECTS value was 2. | Patients were randomised 1:1 to undergo endovascular thrombectomy (EVT) + medical care or to receive medical care only.<br><br>34.9% of patients received t-PA. | **Primary outcome:**<br>mRS score at 90 days<br><br>**Secondary outcomes:**<br>Good functional outcome (mRS 0-2) at 3 and 6 months, favourable outcome (mRS 0-3) at 3 and 6 months, change in the infarct volume on CT or MRI between baseline and 24 hours, early neurologic improvement (defined as a decrease in the NIHSS score of ≥8 points from baseline or an NIHSS score of 0 to 1 at either 7 days or the time of hospital discharge [whichever occurred first]); decompressive craniectomy by day 7, distribution of utility weighted mRS (UW mRS) at 3 and 6 months, EQ-5D at 3 and 6 months<br><br>**Safety outcomes:**<br>90-day mortality, symptomatic intracerebral hemorrhage (sICH) | The trial was stopped early for efficacy.<br><br>The median time from symptom onset and the procedure was 305 minutes.<br><br>The shift in the distribution of mRS scores at 90 days towards better outcomes favoured the EVT group (median score of 4 vs. 6; generalized OR=1.63; 95% CI 1.29 to 2.06) and was maintained at 6 months (generalized OR=1.71, 95% CI 1.35 to 2.18).<br><br>The proportions of patients with good functional outcome at 90 days and 6 months were significantly higher in the EVT group (13.3% vs. 4.9%, adjusted RR= 2.39, 95% CI 1.18 to 6.22 and 18.5% vs. 4.9%, adjusted RR=3.26; 95% CI 1.67 to 8.46, respectively).<br><br>The proportions of patients with favourable outcome at 90 days and 6 months were significantly higher in the EVT group (33.5% vs. 12.2%, adjusted RR= 2.62, 95% CI 1.72 to 4.36 and 36.9% vs. 13.0%, adjusted RR=2.67; 95% CI 1.79 to 4.41, respectively).<br><br>UW mRS scores at 3 and 6 months were significantly higher in the EVT group, as were EQ-5D scores.<br><br>A significantly higher proportion of patients in the EVT group experienced early neurologic improvement (30.0% vs. 11.4%, adjusted RR=2.62, 95% CI 1.70 to 4.56).<br><br>The risk of all-cause mortality was significantly lower in the EVT group (36.1% vs. 55.5%; adjusted RR=0.65, 95% CI 0.50 to 0.84).<br><br>The risk of sICH at 24 hours was significantly higher in the EVT group (9.6% vs. 5.7%, adjusted RR=1.73, 95% CI 0.78 to 4.68).<br><br>There were 11 adverse events related to the procedure or device. |

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| **Bendszus et al. 2023, Thomalla et al. 2024**<br><br>**European Union**<br><br>***Efficacy and Safety of Thrombectomy in Stroke with Extended Lesion and Extended Time Window (TENSION)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 253 patients aged 18-80 years, with moderate to severe acute ischemic stroke (NIHSS <26), eligible for endovascular therapy, with occlusion of the M1 segment of the MCA and/or the intracranial segment of the distal ICA, with an ASPECT score of 3–5, assessed locally on NCCT and in whom treatment could be accomplished within 12 hours after stroke onset. Median age was 74 years, 51% were men. Median baseline NIHSS score was 19. | Patients were randomized 1:1 to receive best medical management (+/- thrombolysis) plus endovascular therapy (EVT) or best medical management only.<br><br>Intravenous t-PA was given to 39% patients in the EVT group and 34% patients in the medical treatment group. | **Primary outcome:**<br>Ordinal shift in mRS scores at 90 days<br><br>**Secondary outcome:**<br>Independence (mRS 0-2) at 90 days, death or dependency (mRS 4–6) at 90 days, sICH, adverse events, health-related QoL (PROMIS-10, EQ-5D) ay 90 days, and poststroke depression (PHQ) at 90 days | The trial was stopped early for efficacy after the first pre-planned interim analysis.<br><br>Median interval between symptom onset and groin puncture was 4.2 hours. Median interval between randomization and recanalization was 2.4 hours.<br><br>Successful recanalization (mTICI 2b or better) was achieved in 83% of patients.<br><br>There was significantly greater improvement in the primary outcome in the EVT group (adjusted common OR=2·58, 95% CI 1·60-4·15).<br><br>The odds of independence at 90 days were significantly higher in the EVT group (17% vs. 2%; (adjusted OR=7·16, 95% CI 2·12–24·21).<br><br>Median EQ-5D index at 90 days was significantly higher in the EVT group (0.6 vs. 0.4, p=0.006). Median PROMIS-10 physical and mental health t scores at 90 were significantly higher in the EVT group (39·8 vs. 34.9, p=0.0008 and 43·5 vs. 38·8, p=0.025, respectively).<br><br>The risk of death or dependency at 90 days was significantly lower in the EVT group (69% vs. 87%, adjusted HR=0·34, 95% CI 0·18–0·65).<br><br>90-day mortality was significantly lower in the EVT group (40% vs. 51%, adjusted HR=0·67, 95% CI 0·46–0·98).<br><br>There were no significant differences between groups in the number of parenchymal hemorrhage type 2 (9% vs. 9%), symptomatic intracranial hemorrhages (5% vs. 5%) or fatal symptomatic intracranial hemorrhages (2% vs. 3%).<br><br>A significantly higher percentage of patients in the medical management group had ≥1 serious adverse event (70% vs. 55%, p=0.014).<br><br>*12-month outcomes (Thomalla et al. 2024)*<br><br>There was significantly greater improvement in the |

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| | | | | | primary outcome in the EVT group (adjusted common OR=2·39, 95% CI 1·47-3.90).<br><br>The median EQ-5D score was significantly higher in the EVT group (0.7 vs. 0.4, p<0.0024).<br><br>The median PROMIS-10 global physical health score, but not the mental health score was significantly higher in the EVT group (39·8 vs. 37.4, p< 0·032, and 41.1 vs. 38.8, p<0.14, respectively).<br><br>There were no significant differences between groups in the percentage of patients with symptoms of depression or anxiety.<br><br>Thew risk of morality was significantly lower in the EVT group (HR=0·70, 95% CI 0·50–0·99, p< 0·048).<br><br>The percentages of patients with mRS scores of ≤2 and ≤3 were significantly higher in the EVT group. |
| **Huo et al. 2023, Huo et al. 2025**<br><br>**China**<br><br>**RCT**<br>***Study of Endovascular Therapy in Acute Anterior Circulation Large Vessel Occlusive Patients with a Large Infarct Core (ANGEL-ASPECT)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 456 patients aged 8 to 80 years recruited from 46 hospitals with large-vessel occlusion of the initial segment of the middle cerebral artery or the intracranial segment of the distal internal carotid artery (or both), an ASPECTS of 3 to 5, or ASPECTS >5 (6h-24h) with infarct core volume 70-100 ml, or ASPECTS <3 with infarct core volume 70-100 ml, baseline NIHSS of 6-30, and premorbid mRS score of 0-1. Median age was 68 years, 38.7% were women. The median baseline NIHSS score was 16, median ASPECTS value was 3, | Patients were randomized within 24 hours of symptom onset to received best medical management (+/- thrombolysis) plus endovascular therapy (EVT) with a stent retriever or contact aspiration (n=231) or best medical management only (n=225).<br><br>28% of patients in both groups received Intravenous thrombolysis with t-PA or urokinase. | **Primary outcome:**<br>Ordinal shift analysis of mRS scores at 90 days<br><br>**Secondary outcomes:**<br>Percentage of patients with mRS score 0-2, percentage with NIHSS score of 0 or 1 or improvement in score by ≥10 points at 36 hours, change from baseline in infarct-core volume<br><br>**Safety outcomes:**<br>Symptomatic ICH within 48 hours, any ICH within 48 hours, 90-day mortality | The trial was stopped early due to efficacy when data for 336 patients were available.<br><br>At 90 days, there was a shift in mRS scores towards greater improvement in the EVT group (median mRS 4 vs. 4, common OR=1.37; 95% CI 1.11 to 1.69).<br><br>At 90 days, a significant higher percentage of patients in the EVT group had an mRS score of 0-2 (30% vs. 11.6%; RR=2.62, 95% CI 1.69 to 4.06).<br><br>At 36 hours, a significant higher percentage of patients in the EVT group had greater neurological improvement (5.7% vs. 1.8%; RR=4.29, 95% CI 1.28 to 14.46).<br><br>There was no significant difference between groups in change in infarct-core volume (61.7 vs. 90.5 mL)<br><br>There was no significant difference between groups in the sICH (6.1% vs. 2.7%; RR=2.07, 95% CI 0.79 to 5.41).<br><br>The risk of any ICH within 48 hours was significantly |

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| | | and the median infarct-core volume was 62 ml. | | | higher in the EVT group (49.1% vs. 17.3%, RR=2.71, 95% CI 1.91 to 3.84).<br><br>90-day mortality was similar between groups (21.7% vs. 20.0%).<br><br>**One-year outcomes**<br><br>At one year, there was a shift in mRS scores towards greater improvement in the EVT group (median mRS 3 vs. 4; common OR=1.25, 95% CI 1.01 to 1.56). There were no significant differences between groups in subgroup analyses (e.g., age, wake-up stroke)<br><br>At one year, a significant higher percentage of patients in the EVT group had an mRS score of 0-2 (30.4% vs.17.1%; RR=1.87, 95% CI 1.27 to 2.75).<br><br>At one year, a significant higher percentage of patients in the EVT group had an mRS score of 0-3 (50.0% vs.35.6%; RR=1.46, 95% CI 1.15 to 1.85).<br><br>One year mortality was similar between groups (31.3% [EVT] vs. 26.5% [medical management]). |
| **Sarraj et al. 2023, 2024**<br><br>**USA**<br><br>**RCT**<br>***Randomized Controlled Trial to Optimize Patient's Selection for Endovascular Treatment in Acute Ischemic Stroke (SELECT2)*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ | 352 patients aged 18 to 85 years, recruited from 31 sites following acute ischemic stroke due to occlusion of the internal carotid artery (either cervical or intracranial) or the M1 segment (main trunk) of the middle cerebral artery or both, with ASPECTS of 3-5 or an estimated ischemic-core volume ≥50 mL, with premorbid mRS of 0-1. Median age was 66.5 years, 41.2% were women. The median baseline NIHSS score | Patients were randomized within 24 hours of symptom onset to received best medical management (+/- thrombolysis) plus endovascular therapy (EVT) performed with stent retrievers, aspiration devices, or both (n=178) or best medical management only (n=174).<br><br>19% of patients received Intravenous thrombolysis. | **Primary outcome:**<br>Ordinal shift analysis of mRS scores at 90 days<br><br>**Secondary outcomes:**<br>Functional independence (mRS score 0-2), functional ambulation (mRS 0-3) at 90 days, successful reperfusion, early neurological improvement NIHSS, defined as a score of 0 or 1 or improvement in score by ≥8 points at 24 hours, discharge destination and Neuro-QoL measures (mobility, | The trial was stopped early due to efficacy of EVT. Sample size of 560 was planned.<br><br>At 90 days, there was a shift in mRS scores towards greater improvement in the EVT group (median mRS 4 vs. 5, common OR=1.51; 95% CI 1.20 to 1.89).<br><br>At 90 days, a significant higher percentage of patients in the EVT group were functionally independent (20.3% vs. 7.0%; RR=2.97, 95% CI 1.60 to 5.51).<br><br>79.8% of patients in the EVT group were successfully reperfused.<br><br>At 24 hours, there was no significant difference between groups in the percentage of patients that achieved early neurological improvement (11.5% vs. |

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| | | was 19, median ASPECTS value was 4, and the median infarct-core volume was 80 ml. | | depression, social participation, and cognitive aspects)<br><br>**Safety outcomes:** Symptomatic ICH within 24 hours, 90-day all cause mortality and early neurological worsening (increase of ≥4 NIHSS) within 24 hours | 7.6%; RR=1.47, 95% CI 0.76 to 2.87).<br><br>In-hospital mortality was similar between groups (23.6% vs. 25.3%).<br><br>Median QoL scores were significantly better for patients in the EVT group for the mobility, depression and social domains.<br><br>There was no significant difference between groups in the sICH (0.6% vs. 1.1%; RR=0.49, 95% CI 0.04 to 5.36).<br><br>The risk of early neurological worsening was significantly higher in the EVT group (24.7% vs. 15.5%, RR=1.59, 95% CI 1.03 to 2.45).<br><br>**2024 (one-year outcomes)**<br><br>Data for the primary outcome were available for 329 (93%) of participants.<br><br>The distribution of mRS scores at 1-year follow-up favoured thrombectomy (median mRS score 5 vs. 6,<br><br>Wilcoxon-Mann Whitney probability of superiority=0·59, 95% CI 0·53–0·64; generalised OR=1·43, 95% CI 1·14–1·78).<br><br>The NNT for one patient to see a ≥1-point improvement in functional outcome on mRS score with endovascular thrombectomy at 1-year follow-up was 6. |
| **Yoshimura et al. 2022**<br><br>**Japan**<br><br>**RCT**<br>***Recovery by Endovascular Salvage for Cerebral Ultra-acute Embolism*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☒ | 203 patients ≥18 years, recruited from 41 centres with acute, sizable, large vessel occlusion stroke (ASPECTs score of 3-5) and NIHSS score of ≥6 and a premorbid mRS score of 0-1. Mean age was 76 years, 56% were men. Median baseline NIHSS score was 22. | Patients were randomized (1:1) to receive endovascular therapy (EVT) with medical care or medical care alone within 6 hours after they were last known to be well or within 24 hours if there was no early change on fluid-attenuated inversion recovery images. Alteplase (0.6 mg per kilogram of body | **Primary outcome:**<br><br>mRS score of 0-3 at 90 days<br><br>**Secondary outcomes:**<br><br>mRS score of 0-1 and 0-2 at 90 days, ordinal shift analysis of mRS scores at 90 days, improvement of ≥8 points in NIHSS | 94 patients in each group were included in the per-protocol analysis.<br><br>27% of patients in both groups received alteplase.<br><br>A significantly higher percentage of patients in the EVT group had a mRS score of 0-3 at 90 days (31% vs. 12.7%, RR=2.43, 95% CI 1.35–4.37). There were no significant differences between groups in the percentage of patients with mRS scores of 0-1 or 0-2 at 90 days (14.0% vs. 6.9% and 5.0% vs. 2.9%, respectively). |

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| ***Japan Large IscheMIc core Trial (RESCUE-Japan LIMIT*** | | 25% of patients had a previous stroke. | weight) was used when appropriate in both groups. | score at 48 hours<br>**Safety outcomes:**<br>sICH at 48 hours, any ICH at 48 hours, death within 90 days | There was a positive shift in the ordinal analysis of mRS scores favouring the EVT group (common OR=2.42, 95% CI 1.46–4.01).<br>Significantly more patients in the EVT group experienced neurological improvement at 48 hours (31.0% vs. 8.8%, RR=3.51, 95% CI 1.76–7.00).<br>There were no significant differences between groups for any of the safety outcomes with one exception. The risk of any ICH was significantly higher in the EVT group (58.0% vs. 31.4%, RR=1.85, 95% CI 1.33–2.58). |
| *Systematic reviews & meta-analysis* | | | | | |
| **AlMajali et al. 2024**<br><br>**USA**<br><br>**Systematic review & meta-analysis** | There were some concerns with the overall risk of bias (in none of the trials were the patients blinded, and some data were missing) | 6 RCTs including 1,886 patients with acute ischemic large core vessel occlusions (ASPECTs ≤5) on NCCT and/or estimated ischemic core ≥50 mL on CT-perfusion/MR diffusion. Trials included TENSION, TESLA, SELECT2, ANGEL ASPECT, RESCUE-Japan LIMIT and LASTE. | All trials compared endovascular thrombectomy (EVT) vs. best medical management +/- intravenous thrombolysis. | **Primary outcome:**<br>Shift in the distribution of 90-day mRS scores<br><br>**Secondary outcomes:**<br>Functional independence at 90 days (mRS score 0–2), independent ambulation (mRS score 0–3) at 90 days, 90-day mortality, and symptomatic intracranial hemorrhage (sICH) | The distribution of mRS scores at day 90 favoured the EVT group (OR=1.49, 95% CI, 1.24–1.79). GRADE: high certainty<br>A higher percentage of patients in the EVT group were functionally independent at 90 days (19.5% vs. 7.5%, RR=2.49, 95% CI 1.92– 3.24) and were independent ambulators at 90 days (36.5% vs. 19.9%, RR=1.91, 95% CI 1.51–2.43). GRADE: high certainty for both outcomes.<br>The risk of sICH was significantly higher in the EVT group (5.5% vs. 3.2%, RR=1.71, 95% CI 1.09–2.66). GRADE: moderate certainty<br>The risk of 90-day mortality was not reduced significantly with EVT (31.5% vs. 36.8%, RR=0.86, 95% CI 0.72–1.02). GRADE: high certainty<br>In multiple subgroup analyses, the benefit of EVT was positive across age (<70 vs. ≥70 years), location (ICA or MCA+ICA vs. MCA), time window (<6 vs. ≥6 hours), NIHSS (≤6 vs. >6 hours), ASPECTs (<3 vs. ≥3), ischemic core volume (<70 vs. ≥70 mL), stroke etiology (large artery atherosclerosis vs. cardioembolic vs. undetermined) and thrombolysis (yes vs. no). |

## Intra-arterial Thrombolysis Following EVT

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| **Jin et al. 2025**<br><br>**China**<br><br>**RCT**<br>***Intra-Arterial Alteplase for Acute Ischaemic Stroke After Mechanical Thrombectomy (PEARL)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 324 patients recruited from 28 sites, with an LVO stroke in the anterior circulation, presenting within 24 hours of when they were last known to be well, and had successful thrombectomy resulting in an eTICI 2b50-3 score, and a baseline NIHSS score of 6–25. | Patients were randomized to receive intra-arterial alteplase (0.225 mg/kg; maximum dose, 20 mg)) or to best medical management (control group). | **Primary outcome:**<br>mRS score of 0-1 at 90 days<br><br>**Secondary outcomes:**<br>mRS score of 0-2 at 90 days, shift in distribution of mRS scores at 90 days, NIHSS 0-1 or decrease ≥10 at 36 hours, and European Quality of Life 5-Dimension 5-Level (EQ-5D-5L) at 90 days<br><br>**Safety outcomes:**<br>symptomatic intracerebral hemorrhage (sICH) and any ICH at 36 hours, 90-day mortality | Preliminary results presented at ISC 2025<br><br>A significantly higher percentage of patients in the intra-arterial alteplase group achieved the primary outcome (44.8% vs 30.2%; RR=1.45, 95% CI 1.08-1.96).<br><br>There were no differences between the groups in the percentage of patients that experienced sICH within 36 hours (4.3% vs 5.0%), any intracranial hemorrhage within 36 hours (32.9% vs 26.9%), or death at 90 days (17.1% vs 11.3%). |
| **Miao et al. 2025**<br><br>**China**<br><br>**RCT**<br>***Intra-arterial Recombinant Human TNK Tissue-type Plasminogen Activator (rhTNK-tPA) Thrombolysis for Acute Large Vascular Occlusion After Successful Mechanical Thrombectomy*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 256 patients recruited from 19 centres with anterior circulation LVO stroke presenting within 24 hours of time last known well, who achieved near complete or complete reperfusion (eTICI 3) reperfusion by endovascular thrombectomy (EVT), ASPECTS ≥6, prestroke mRS 0–1 who had not received intravenous thrombolysis prior to the procedure with a baseline NIHSS score ≥2. Mean age was 76.1 years, 44.1% were women. | Patients are randomized to receive recombinant human tenecteplase tissue-type plasminogen activator (rhTNK-tPA) at a dose of 0.125 mg/kg, (max 12.5mg) or best medical management | **Primary outcome:**<br>Excellent outcome (mRS score of 0-1) at 90 days<br><br>**Secondary outcomes:**<br>mRS score of 0-2 at 90 days, shift in distribution of mRS scores at 90 days, NIHSS 0-1 or decrease ≥10 at 36 hours, and European Quality of Life 5-Dimension 5-Level (EQ-5D-5L) at 90 days<br><br>**Safety outcomes:**<br>90-day mortality, symptomatic intracerebral hemorrhage | A significantly higher percentage of patients in the rhTNK-tPA group achieved the primary outcome (40.5% vs. 26.4%; RR=1.44, 95% CI 1.06-1.95).<br><br>In subgroup analysis of the primary outcome, there was a significant interaction for serum glucose. Patients with a glucose ≥100 mg/dL were more likely to have an excellent outcome compared with those with a glucose <100 mg/dL. (RR= 1.82, 95% CI 1.35-2.46 vs. RR=0.59, 95% CI 0.25-1.40, p for interaction=0.02).<br><br>There were no significant differences between groups for any of the secondary outcomes.<br><br>There were no differences between the groups in the percentage of patients that experienced sICH within 48 hours (5.6% vs 6.2%), any intracranial hemorrhage within 48 hours (24.6% vs 27.9%), or death at 90 days (21.4% vs 21.7%). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| ***Recanalization (ANGEL-TNK)*** | | Median baseline NIHSS score was 15. Median ASPECTS 7. | | (sICH) at 48 hours | |
| **Hu et al. 2025**<br><br>**China**<br><br>**RCT**<br>**Intra-arterial TNK Following Endovascular Thrombectomy in Patients With Large Vessel Occlusion of Posterior Circulation *(ATTENTION-IA)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 208 patients with moderate to severe stroke with NIHSS score ≥6 due to occlusions in the basilar artery, vertebral artery (in isolation or with concomitant basilar occlusion), or P1 segment of the posterior cerebral artery within 24 hours from onset. Mean age was 66 years, 75% were men. | Patients were randomized 1:1 to receive tenecteplase following successful recanalisation (grade 2b50-3 on the extended thrombolysis in cerebral infarction scale) or standard care (EVT only).<br><br>The dose of tenecteplase was 0.0625 mg/kg (maximum dose 6.25 mg) administered proximal to the residual thrombus (if still present) or distal to the origin of the main pontine perforator branches over 15 seconds. | **Primary outcome:**<br>Freedom from disability (mRS 0 or 1) at 90 days after randomisation<br><br>**Secondary outcomes:**<br>Symptomatic intracranial hemorrhage (sICH) within 36 hours and all cause mortality at 90 days | The primary outcome occurred in 36 patients (34.6%) in the tenecteplase group and 27 (26.0%) in the control group (adj HR=1.36, 95% CI 0.92 to 2.02).<br><br>sICH occurred in 8 patients (8.3%) in the tenecteplase group and 3 (3.1%) in the control group (adj HR=3.09, 95% CI 0.78 to 12.20).<br><br>90-day mortality occurred in 29 patients (27.9%) in the tenecteplase group and 28 (26.9%) in the control group (adj HR=1.13, 95% CI 0.73 to 1.74). |
| **Liu et al. 2025**<br><br>**China**<br><br>**RCT**<br>***Adjunctive Intra-Arterial Urokinase After Successful Endovascular Thrombectomy in Patients with Large Vessel Occlusion Stroke (POST-UK)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 535 patients recruited from 35 hospitals in China, with proximal intracranial large vessel occlusion presenting within 24 hours of time last known well, who achieved near complete or complete reperfusion by endovascular thrombectomy (EVT) and did not receive intravenous thrombolysis prior to the procedure, with a baseline NIHSS score ≤25. Median age was 69 years, 58.2% were men. Baseline NIHSS was 15. Median baseline ASPECTs was 8. | Patients were randomized (1:1) to receive intra-arterial urokinase group (a single dose of intra-arterial 100,000 IU urokinase injected in the initial target territory) or no intra-arterial thrombolysis (control group) | **Primary outcome:**<br>mRS score of 0-1 at 90 days<br>**Secondary outcomes:**<br>mRS score of 0-2 at 90 days, shift in distribution of mRS scores at 90 days, change in the NIHSS score from baseline to 5 to 7 days or discharge and European Quality of Life 5-Dimension 5-Level (EQ-5D-5L) at 90 days<br>**Safety outcomes:**<br>90-day mortality, symptomatic intracerebral hemorrhage (sICH) at 48 hours | The percentage of patients who achieved the primary outcome was 45.1% in the intra-arterial urokinase group and 40.2% in the control group (adjusted RR=1.13, 95% CI 0.94-1.36).<br><br>The percentage of patients with an mRS score of 0-2 at 90 days was 53.8% in the intra-arterial urokinase group and 40.2% in the control group (adjusted RR=1.04, 95% CI 0.89-1.20).<br><br>Mortality at 90 days was 18.4% in the intra-arterial urokinase group and 17.3% in the control group (adjusted HR=1.06, 95% CI 0.71-1.59).<br><br>The incidence of sICH was 4.1% in both groups (adjusted RR=1.05, 95% CI, 0.45-2.44).<br><br>There were no significant differences between group for the other secondary outcomes. |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| **Huang et al. 2025**<br><br>**China**<br><br>**RCT**<br>***The Adjunctive Intra-arterial Tenecteplase Following NearComplete to Complete Reperfusion for Large Vessel Occlusion Stroke (POST-TNK)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 541 patients recruited from 34 centres with stroke due to proximal intracranial large vessel occlusion within 24 hours of the time they were last known to be well, with an eTICI score of 2c to 3 after EVT, without prior intravenous thrombolysis and an NIHSS score ≤25. Median age was 69 years, 59.1% were men. Baseline HIHSS was 15. Median baseline ASPECTs was 8. | Patients were randomized (1:1) to receive intra-arterial tenecteplase (0.0625 mg/kg) or no intra-arterial thrombolysis (control group). | **Primary outcome:**<br>mRS score of 0-1 at 90 days<br><br>**Secondary outcomes:**<br>mRS score of 0 to 2 at 90 days, change in NIHSS score from baseline at 5-7 days or discharge and European Quality of Life 5-Dimension 5-Level (EQ-5D-5L) at 90 days<br><br>**Safety outcomes:**<br>90-day mortality, symptomatic intracerebral hemorrhage (sICH) at 48 hours | The percentage of patients who achieved the primary outcome was 49.1% in the intra-arterial tenecteplase group and 44.1% in the control group (adjusted RR=1.15, 95% CI 0.97-1.36).<br><br>Mortality at 90 days was 16.0% in the intra-arterial tenecteplase group and 19.3% in the control group (adjusted HR=0.75, 95% CI 0.50-1.13).<br><br>The percentage of patients with an mRS score of 0-2 at 90 days was 61.3% in the intra-arterial tenecteplase group and 58.9% in the control group (adjusted win ratio=1.06, 95% CI 0.93-1.21).<br><br>The incidence of sICH was 6.3% in the intra-arterial tenecteplase group and 4.4% in the control group (adjusted RR=1.43, 95% CI 0.68-2.99).<br><br>There were no significant differences between groups for any of the secondary outcomes. |
| **Renú et al. 2022**<br><br>**Spain**<br><br>**RCT**<br>***CHemical OptImization of Cerebral Embolectomy in Patients with Acute Stroke Treated With Mechanical Thrombectomy (CHOICE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☑<br>Assessor ☑<br><br>ITT: ☑ | 121 patients (1,825 planned), recruited from 7 sites with large vessel occlusion treated with thrombectomy within 24 hours after stroke onset. Median age was 73, 54% were men. Median NIHSS score was 14. | Patients were randomized to receive intra-arterial alteplase (0.225 mg/kg; maximum dose, 22.5 mg) infused over 15 to 30 minutes (n=61) or placebo (n=52) | **Primary outcome:**<br>mRS score of 0-1 at 90 days<br><br>**Secondary outcomes:**<br>Improved angiographic eTICI score, distribution of mRS scores at 90 days, Barthel Index score of 95-100 at 90 days, EuroQol Group 5-Dimension 3-Level Self-Report Questionnaire at 90 days<br><br>Safety outcomes:<br>symptomatic intracranial hemorrhage (sICH) within 24 hours, 90-day mortality | The trial was terminated early due to slow enrollment because of the COVID-19 pandemic and the inability to maintain placebo availability.<br><br>The percentage of patients who achieved the primary outcome was 59.0% in the alteplase group and 40.4% in the placebo group (adjusted risk difference=18.4%; 95% CI 0.3%-36.4%, p=.047).<br><br>The percentage of patients with sICH within 24 hours was 0% in the alteplase group and 3.8% in the placebo group (risk difference= −3.8%, 95% CI −13.2% to 2.5%).<br><br>90-day mortality was 8% in the alteplase group and 15% in the placebo group (risk difference= −7.2%, 95% CI −19.2% to 4.8%).<br><br>There were no significant differences between groups for any of the secondary outcomes. |

## Sex Differences in EVT Outcomes

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| **Abdalkader et al. 2024**<br><br>**USA**<br><br>**Retrospective study** | NA | 1,932 patients (1,055 women and 877 men) who underwent endovascular thrombectomy following anterior circulation stroke in the late window (6-24 hours of symptom onset), from 66 sites in 10 countries, from January 2014 to May 2022. | The outcomes of men vs. women were compared. Multivariable and inverse probability of treatment weighting methods were used. | **Primary outcome:** Ordinal shift analysis of mRS scores at 3 months<br><br>**Secondary outcomes:** Excellent outcome (mRS 0-1) at 90 days, Functional independence (mR 0-2) at 90 days (FI), return of Rankin (RoR) to prestroke baseline, FI or RoR<br><br>**Safety outcomes:** Symptomatic intracranial hemorrhage (sICH), and mortality at 90 days | Women were significantly older (median age 77 vs. 69 years, p<0.0001).<br><br>Baseline NIHSS score was 16 for both sexes.<br><br>More women than men had hypertension and atrial fibrillation at baseline (74.4% vs. 68.5%, p=0.004 and 39.5% vs. 28.6%, p<0.0001, respectively).<br><br>In fully adjusted models, there were no significant differences between the sexes. Compared with men, the OR for the primary outcome was 0.98 (95% CI 0.79–1.21).<br><br>For the secondary and safety outcomes, the ORs (95% CIs): Excellent outcome 0.98 (0.74–1.31)<br><br>FI 0.93 (0.74–1.17)<br><br>RoR 1.04 (0.84–1.28)<br><br>FI or RoR 0.98 (0.78–1.22)<br><br>sICH 1.16 (0.80–1.67)<br><br>Mortality 0.98 (0.80–1.19) |
| **Kobeissi et al. 2023**<br><br>**USA**<br><br>**Systematic review & meta-analysis** | All studies were assessed as low risk of bias using the Newcastle Ottawa Scale | 10 studies including 10,209 patients treated with endovascular thrombectomy for acute ischemic stroke. | The outcomes of men vs. women were compared within each study and the results were pooled, using fixed or random effects models, as appropriate (based on heterogeneity level) | **Primary outcome:** mRS score 0-2 at 90 days<br><br>**Secondary outcomes:** mRS 0-1, symptomatic intracranial hemorrhage (sICH), thrombolysis in cerebral infarction (TICI) score 2b-3, and mortality | Women were significantly older than men by a mean of 5.67 years. Mean baseline NIHSS and ASPECTs were similar between the sexes. The prevalences of atrial fibrillation and hypertension were significantly lower in men. Men had higher prevalences of diabetes, hyperlipidemia and were more likely to be smokers.<br><br>There was no significant difference between the sexes in the primary outcome (OR= 1.16, 95% CI 0.87-1.56).<br><br>There were no significant differences between the sexes for any of the secondary outcomes.<br><br>mRS 0-1: OR=1.21, 95% CI 0.93-1.56<br><br>TICI 2b-3: OR=1.19, 95% CI 0.85-1.67 |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| | | | | | sICH: OR= 0.89, 95% CI 0.74-1.08<br><br>Mortality: OR= 0.88, 95% CI 0.74- 1.05<br><br>Men had higher odds of mRS scores of 0-1 and 0-2 when 1-2 outlier studies (with high heterogeneity) were removed. |
| **Casetta et al. 2022**<br><br>**Italy**<br><br>**Retrospective study**<br>***The Italian Registry of Endovascular Thrombectomy in Acute Stroke (IRETAS)*** | NA | 3,422 patients included in the IRETAs database who had undergone endovascular thrombectomy treatment since 2011. | The outcomes of women vs. men were compared in the original cohort (1621 men and 1801 women) and in a propensity-matched cohort of 1,150 men and women.<br><br>Analyses were adjusted for adjust for age, history of hypertension, diabetes, dyslipidemia, atrial fibrillation (AF), smoking status, NIHSS and ASPECTS score at entry, stroke etiology according to the TOAST definition, site of occlusion, type of treatment, onset to groin puncture and onset to final recanalization time. | **Primary outcomes:** Functional independence (mRS 0-2) at 90 days, death, symptomatic ICH at 24 hours, and TICI 2b–3 | In the whole cohort, women were significantly younger than men (72.4 vs. 68.7 years), were more likely to have a history of hypertension (66% vs. 58.6%), and AF (41.7% vs. 28.6%). Men were more likely to have diabetes (17.4% vs. 13.7%), dyslipidemia (25.3% vs. 21.7%) and to be ever smokers (24.9% vs. 10.0).<br><br>Time metrics (terms onset to groin puncture time and onset to revascularization/end of the procedure time) were similar for men and women. Median baseline NIHSS at admission was the same (median 17). M1 occlusion was more frequent in women (69.0% vs. 60.5%). The proportion of patients who underwent combined treatment (i.v. thrombolysis followed by thrombectomy) was similar between the two groups (51.5% vs. 49.8%).<br><br>In the matched cohort, mean age was 70 years.<br><br>In both the whole cohort and matched-pair cohort, the odds of functional independence given EVT treatment were significantly higher in women (OR= 1.19, 95% CI 1.02–1.38 and OR=1.25, 95% CI 1.04-1.51, respectively).<br><br>Women were less likely to die in the whole cohort (OR=0.75, 95% CI 0.62–0.90), but not in the matched-pair cohort (OR=0.81, 95% CI 0.63–1.02).<br><br>The odds of TICI 2b–3 were significantly higher in women (OR=1.18, 95% CI 1.03–1.38) in the whole cohort analysis, but not in pair-matched analysis (OR=1.19, 95% CI 0.92–1.36).<br><br>The odds of sICH were not significantly lower in women in either analysis. |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| | | | | | In subgroup analysis, women who received combined treatment had significantly better outcomes than men (higher odds of functional independence, full recanalization and lower odds of death). |
| **Bala et al. 2022**<br><br>**Canada**<br><br>**Retrospective studies** | NA | 608 patients included in the SOLSTICE (Selection of Late-Window Stroke for Thrombectomy by Imaging Collateral Extent) Consortium who had suffered a large vessel occlusion and undergone EVT between 6 and 24 hours. | Differences in outcomes between men (n=301) and women (n=307) were compared. | **Primary outcomes:** Independence at 90 days (mRS score of ≤2) and ordinal shift in mRS scores<br><br>**Secondary outcomes:** Successful reperfusion, 90-day mortality and symptomatic intracranial hemorrhage (sICH | Mean age of women was significantly higher in women (72 vs. 68 years, p=0.02).<br><br>Baseline NIHSS score was 15 in women vs. 16 in men (p=0.35).<br><br>The frequency of tandem occlusions was significantly lower in women (14% vs. 22.9%, p=0.005).<br><br>There were no differences between the groups in mean process times (e,g, time from onset to ED door). There were no significant differences between groups in imaging type received, ASPECTS score, occlusion site, baseline perfusion volume, favorable collateral profile or favorable perfusion profile.<br><br>43.5% of women were independent at 90 days compared with 46.4% of men (p=0.48).<br><br>There were no significant differences between groups on any of the secondary outcomes.<br><br>There was a significant interaction between sex and age for 90-day mortality (P for interaction=0.003) and sICH (P for interaction=0.017), with men having an increased likelihood of sICH and death with advancing age compared with women. The effect was strongest for age > 80 years. |
| **Chalos et al. 2019**<br><br>**The Netherlands**<br><br>**Pooled analysis** | See details for each trial presented elsewhere | Data from 7 RCTs (MR CLEAN, ESCAPE, EXTEND-IA, SWIFT PRIME, REVASCAT, THRACE, and PISTE), were included. | The outcomes of men (n=929) vs. women (n=833) who received EVT vs. medical management, were compared.<br><br>Analyses were adjusted for age, baseline NIHSS, time from onset to randomization, diabetes, prior stroke, | **Primary outcome:** mRS score at 90 days<br><br>**Secondary outcomes:** Excellent functional outcome (mRS 0–1) and functional independence (mRS, 0–2) at 90 days, NIHSS | Women were significantly older (70 vs. 66 years), smoked less often (30% vs. 44%), and had higher collateral grade (grade 3: 46% vs. 35%).<br><br>When treatment groups were combined (EVT + medical management), there were no significant differences between men and women for any of the outcomes. |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| | | | occlusion location, intravenous tPA use, and collateral grade | score at 24 hours, mortality, symptomatic ICH | The median mRS score at 90 days for both men and women in the EVT group at 90 days was 3.<br><br>Among both men and women in the EVT group, 48% achieved functional independence, while 30% of women and 29% of men achieved an excellent outcome.<br><br>In ordinal shift analysis of mRS scores at 90 days, the effect of EVT was similar in women (adjusted common OR=2.13, 95% CI 1.47–3.07) and men (adjusted common OR=2.16, 95% CI, 1.59–2.96). P for interaction of 0.926.<br><br>For all other outcomes, the results for men and women in EVT and medical management groups, were similar). |

## EVT for Posterior Circulation/Basilar Artery Stroke

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| *Clinical Trials & RCTs* | | | | | |
| **Tao et al. 2022**<br><br>**China**<br><br>**RCT**<br>***Endovascular Treatment for Acute Basilar Artery Occlusion – a Multicenter Randomized Clinical Trial (ATTENTION)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT:☑ | 342 adult patients (planned) who sustained a basilar artery occlusion within the previous 12 hours and had a baseline NIHSS score of ≥10. Mean age was 66 years, 68% were men. Median baseline NIHSS score was 24. | Patients were randomised 2:1 to receive best medical management (BMM) + additional endovascular thrombectomy (EVT) vs. BMM alone.<br><br>32% of patients received intravenous thrombolysis. All patients received antiplatelet drugs, anticoagulation, or their combinations, as appropriate.<br><br>EVT procedures could include mechanical | **Primary outcome:** Favourable functional outcome (mRS score 0-3) at 90 days<br><br>**Secondary outcomes:** Excellent functional outcome (mRS score 0-2) at 90 days, mRS ordinal shift analysis at 90 days, NIHSS score at 24-72 hours and at 5-7 days or discharge, EQ5D-5L and Barthel index scores at 90 days. | The risk of the primary outcome was significantly higher in the EVT group (46.0% vs 22.8%; adjusted relative risk (adj RR) = 2.06, 95% CI 1.46 to 2.91, NNT=4)<br><br>The risk of an excellent outcome was significantly higher in the EVT group (33.2% vs 10.5%: adj RR=<br><br>3.2, 95% CI 1.8 to 5.4, NNT=4.4).<br><br>The risk of 90-day mortality was significantly lower in the EVT group (36.7% vs 55.3%: adj RR= 0.7,<br><br>95% CI 0.5 to 0.8, NNT=5.4).<br><br>The distribution of mRS scores at 90 days favoured the EVT group (median mRS score 4 vs.6, common OR=2.87, 95% CI 1.84 to 4.47). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| | | | thrombectomy, intra-arterial thrombolysis, balloon angioplasty, stent implantation, or any combination of above procedure | **Safety outcomes:** Symptomatic ICH + deterioration of 4 points or more on the NIHSS from baseline, or from the lowest NIHSS value between baseline and 24 hours, or death within 90 days | The percentage of patients with a BI score of 95-100 was significantly higher in the EVT group (34% vs. 13%, RR=2.60, 95% CI 1.60 to 4.21).<br><br>The risk of symptomatic ICH defined using the SITS-MOST criteria was significantly higher in the EVT group (5.3% vs 0%, NNT=19). |
| **Jovin et al. 2022**<br><br>**China**<br><br>**RCT**<br>***Basilar Artery Occlusion Chinese Endovascular Trial (BAOCHE)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT:☑ | 217 patients aged 18-80 years, with posterior circulation acute ischemic stroke who can be randomized within 6-24 hours from symptom onset/last seen well, confirmed through CTA, MRA or angiogram. Baseline NIHSS score ≥6, and premorbid mRS score of <2. Median age was 65 years, 73% were men. The median NIHSS score was 20, and the median PC-ASPECTS was 8. | Patients were randomised 1:1 to receive best medical management (BMM) + additional mechanical thrombectomy (MT) vs. BMM alone.<br><br>Thrombolysis was used in 14% of the patients in the thrombectomy group vs. 21% in the control group. | **Primary outcome:** Favorable outcome (mRS 0-3) at 90 days<br><br>**Secondary outcomes:** Dramatic early favorable response (NIHSS of 0–2 or improvement ≥8 points) at 24 hours, dichotomized mRS score (0–2 vs. 3–6 and 0-4 vs.5-6) at 90 days, ordinal mRS shift analysis at 90 days, Barthel Index (BI) at 90 days, NIHSS at 90 days, MoCA at 90 days, EuroQol/ EQ-5D and SF-36 at 3 months, 6 months and 12 months<br><br>**Safety outcomes:** Mortality at 90 days, symptomatic intracranial hemorrhage (SICH) at 24 hours. | Enrollment was halted early due to the superiority of thrombectomy.<br><br>The odds of a favourable outcome were significantly higher in the thrombectomy group (46% vs. 24%, adjusted OR=1.81, 95% CI 1.26 to 2.60). NNT=4.5.<br><br>The distribution of mRS scores at 90 days favoured the EVT group (common OR=2.64, 95% CI 1.54 to 4.50).<br><br>A significantly higher percentage of patients in the EVT group had a mRS score of 0-2 at 90 days (39% vs. 14%, 2.75, 95% CI 1.65 to 4.56).<br><br>90-day mortality was 30.9% in the MT group vs. 42.1% in the BMM group (RR=0.73, 95% CI 0.51-1.05).<br><br>The percentage of patients with a BI score of 95-100 was significantly higher in the EVT group (36% vs. 18%, RR=2.20, 95% CI 1.16 to 4.17).<br><br>SICH was not significantly higher in the MT group using either SITS-MOST or ECASS II criteria (5.9% vs. 1.1% and 8.8% vs. 2.2%, respectively). |
| **Tao et al. 2022**<br><br>**China**<br><br>**Registry data**<br>***Endovascular*** | NA | 2,134 adults aged ≥18 years, recruited from 48 comprehensive stroke centres with basilar artery occlusion sustained within the previous 24 | Patients were assigned 2:1 to receive best medical management (BMM, n=1,672) + mechanical thrombectomy (MT) vs. BMM only (n=462). BMM included | **Primary outcome:** Favourable functional outcome (mRS score 0-3) at 90 days<br><br>**Secondary outcomes:** | The primary outcome occurred more frequently in the EVT group (40.4% vs. 28.5%, adjusted RR=1.42, 95% CI, 1.19–1.65: absolute risk difference, 11.8%, 95% CI, 6.9–16.7. The interaction term for NIHSS was significant. The risk of the primary outcome was higher in persons with NIHSS |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| ***treatment for acute Basilar Artery Occlusion – A multicenter randomized controlled trial (ATTENTION)*** | | hours and an NIHSS score of ≥12 at the time of imaging. Median age was 65 years, 67.7% were men. Median baseline NIHSS score was 21. | intravenous t-PA, antiplatelet drugs, anticoagulation, or combinations of these treatments | Excellent functional outcome (mRS score 0-2) at 90 days, mRS ordinal shift analysis at 90 days, NIHSS score at 24-72 hours and at 5-7 days or discharge, EQ5D-5L and Barthel index scores at 90 days.<br><br>**Safety outcomes:** Symptomatic ICH + deterioration of 4 points or more on the NIHSS from baseline, or from the lowest NIHSS value between baseline and 24 hours, or death within 90 days | score ≥10 (vs. <10).<br><br>Significantly more people in the EVT group had an excellent outcome (33.8% vs 23.1%; adjusted RR=1.45, 95% CI, 1.17–1.73; absolute risk difference, 10.4%, 95% CI, 5.6–15.1%).<br><br>The ordinal shift in mRS scores favoured the EVT group (adjusted common OR=1.58, 95% CI, 1.27–1.96).<br><br>Similar results were reported in the propensity-matched analyses.<br><br>Mortality was significantly lower in the EVT group (adjusted RR=0.78, 95% CI, 0.69–0.88; absolute risk difference, −10.3%, 95% CI, −15.8 to −4.9).<br><br>The risk of sICH was significantly higher in the EVT group (5.2% vs. 0.9%, adjusted RR=7.77, 95% CI, 2.56–23.59; absolute risk difference, 4.5%, 95% CI, 3.2–5.8). |
| **Langezaal et al. 2021**<br><br>**The Netherlands**<br><br>**RCT**<br>***Basilar Artery International Cooperation Study (BASICS)*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ | 300 patients, aged <85 years, recruited from 23 centres in 7 countries with CTA or MRA confirmed basilar occlusion and a NIHSS score of ≥10. Criteria was relaxed 4 years into the trial to allow older patients and those with less severe strokes to participate. Mean age was 68 years, 34.5% were women. Mean NIHSS score was 22. | Patients were randomised 1:1 to receive best medical management (BMM) + additional mechanical thrombectomy (MT) vs. BMM alone. MT was initiated within 6 hours from estimated time of event. | **Primary outcome:** Favorable outcome (mRS 0-3) at 90 days<br><br>**Secondary outcomes:** Excellent outcome (mRS 0-2) at 90 days, mRS score at 90 days and 1 year, EQ-5D at 90 days and 1 year, improved early response to treatment as determined by a reduction in NIHSS by 5 points or more at 24 hours, Symptomatic intracranial hemorrhage (sICH), 90-day mortality | Intravenous thrombolysis was used in 78.6% of the patients in the endovascular group and in 79.5% of those in the medical group.<br><br>Endovascular treatment was initiated at a median of 4.4 hours after stroke onset.<br><br>A favorable functional outcome occurred in 68 of 154 patients (44.2%) in the endovascular group and 55 of 146 patients (37.7%) in the BMM group (RR=1.18; 95% CI, 0.92 to 1.50). There was no significant difference between groups in the percentage of patients who experienced an excellent outcome (35.1% [MT] vs. 30.1% [BMM], RR=1.17, 95% CI 0.87 to 1.57).<br><br>The distribution of mRS scores at 90 days did not differ between groups.<br><br>sICH occurred in 4.5% of the patients after endovascular therapy and in 0.7% of those after medical therapy (RR=6.9;95% CI, 0.9 to 53.0); |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | | | | mortality at 90 days was 38.3% and 43.2%, respectively (RR=0.87; 95% CI, 0.68 to 1.12).<br><br>There were no significant differences between groups on any of the other secondary outcomes. |
| **Yang et al. 2020**<br><br>**China**<br><br>**Prospective study**<br>***EVT for Acute Basilar Artery Occlusion Study (BASILAR)*** | NA | 829 consecutive patients with acute radiologically confirmed BAO admitted to 47 comprehensive stroke centers across 15 provinces in China between January 2014 and May 2019. Median age was 65 years, 74% were men. Median NIHSS score was 27. | Patients were divided into groups and received standard medical treatment (SMT) plus EVT (n=182) or SMT alone (n=647). SMT could include IVT with rt-PA or urokinase, antiplatelet drugs, systematic anticoagulation, or combinations of these medical treatments. | **Primary outcomes:**<br>Shift in mRS scores at 90 days<br><br>**Secondary outcomes:**<br>Favourable outcome at 90 days (mRS 0-3), sICH, 90-day mortality | 644 patients (77.7%) had severe deficits; 185 patients (22.3%) had mild to moderate deficits.<br><br>The odds of a favourable shift in mRS scores at 90 days were significantly higher in the EVT group (common OR=3.08, 95% CI 2.09-4.55, p <.001).<br><br>The odds of a favourable outcome were significantly higher in the EVT group (32% vs. 9.3%, adj OR= 4.70, 95% CI, 2.53-8.75; p < 0.001; NNT for 1 additional patient to be able to walk unassisted was 4.4).<br><br>90-day mortality was significantly higher in the SMT group (71.4% vs. 46.2%; adj OR= 2.93, 95% CI 1.95-4.40, p<0.001).<br><br>7.1% of patients in the EVT group had a sICH vs. 0.5% in the SMT group.<br><br>In 1:1 propensity score matching analysis including 167 patients, the results for primary and secondary outcomes were similar. |
| **Liu et al. 2020**<br><br>**China**<br><br>**RCT**<br>***Basilar Artery Occlusion Endovascular Intervention versus Standard Medical Treatment (BEST)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 131 adult patients presenting within 8 hours of vertebrobasilar occlusion to 28 centres in China from April 27, 2015, and Sept 27, 2017. Median age was 62 years in the intervention group and 68 years in the control group. 73% of the intervention group were men vs. 80% in the control group. Baseline NIHSS scores were 32 in the intervention group | Patients were randomized (1:1) to receive endovascular therapy + standard medical therapy (intervention group) or standard medical therapy alone (control group). | **Primary outcome:**<br>Favourable outcome (mRS 0-3) at 90 days<br><br>**Secondary outcomes:**<br>Functional independence (mRS 0-2) at 90 days, 90-day mortality, sICH | The trial was terminated early due to excessive crossovers (77 patients of 65 randomized to the intervention group received the intervention while 54 of 66 patient allocated to the control group received standard treatment) and low enrollment (the number of patients planned was 344).<br><br>In ITT analysis, the percentage of patients with a favourable outcome was not significantly higher in the intervention group (42% vs.32%; adjusted [age and baseline NIHSS] OR=1·74, 95% CI 0·81–3·74, p=0.23). Similarly, the percentage of patients who were functionally independent was not significantly higher in the intervention group (33% vs. 28%, adj OR=1·40, 95% CI 0·64−3·10, p=0.48), nor was the |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | and 26 in the control group. | | | ordinal shift in mRS scores favouring lower scores (adj OR=1·36, 95% CI 0·72−2·55).<br><br>In both the per protocol and as treated analyses, the percentage of patients with a favourable outcome was significantly higher in the intervention group (44% vs. 25%, adj OR=2·90, 95% CI 1·20−7·03 and 43 vs. 27%, adj OR=3·02, 95% CI 1·31−7·00, respectively).<br><br>In both the per protocol and as treated analyses, the percentage of patients who were functionally independent was significantly higher in the intervention group.<br><br>There were no significant differences between groups in the odds of 90-day mortality (33% vs. 38%, OR=0·80, 95% CI 0·37–1·64, p=0·54) or the percentage of patients with sICH (8% vs. 0%, p=0.08).<br><br>There was a significant interaction (p<0.01) between treatment and site of occlusion, whereby patients with vertebral artery infarcts had significantly lower odds of a favourable outcome with standard medical treatment alone (OR=0.04, 95% CI 0.01-0.88, n=12) and patients with basilar artery occlusion had significantly higher odds of a favourable outcome with intervention treatment (OR=2.13, 95% CI 1.00-4.56, n=119). |
| *Systematic Reviews* | | | | | |
| **Katsanos et al. 2021**<br><br>**Canada**<br><br>**Systematic review** | Risk of bias in 1 RCT was low and could not be assessed adequately in the other due to lack of access to the full text publication. | 5 studies (two RCTs, including BEST and BASILAR and 3 observational cohorts) including a total of 1,098 patients. | Trials compared EVT vs. best medical management (BMM) | **Primary outcome:**<br>mRS score ≤3 points at 3 months<br><br>**Secondary outcomes:**<br>mRS score ≤2 points at 3 months, all-cause mortality at 3 months, ordinal shift analysis of mRS scores at 3 months, symptomatic intracranial | The was no significant difference between groups in the primary outcome (RR= 0.97, 95% CI: 0.64-1.47). The certainty of the evidence was very low. There was heterogeneity such that the direction of the effect was different for observational studies and RCT, favouring EVT in RCTs and BMM in observational studies, although in neither case was statistical significance reached.<br><br>There were no significant differences between groups for the proportion of patients with mRS scores of 0-2 at 3 months, all-cause mortality or |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | | | hemorrhage (sICH) in follow-up neuroimaging. | functional outcome (shift analysis), with significant heterogeneity.<br><br>The risk of sICH was significantly higher in the EVT group (RR=5.42, 95%CI: 2.74-10.71). |

## EVT for Medium and Distal Vessel Occlusion

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **NCT05030142**<br><br>**RCT**<br>***Evaluation of Mechanical Thrombectomy in Acute Ischemic Stroke Related to a Distal Arterial Occlusion (DISCOUNT)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 152 patients (526 planned) with isolated medium vessel occlusion (i.e. an occlusion of the co-/non-dominant M2, the M3/M4 segment of the MCA, the A1/A2/A3 segment of the ACA or the P1/P2/P3 segment of the PCA) confirmed by CT or MRI angiography, with an NIHSS score ≥4, who could be randomized within 6 -24 hours of last seen well. | Patients were randomised 1:1 to undergo endovascular thrombectomy (EVT) + best medical management or best medical management only. | **Primary outcome:**<br>Good clinical outcome (mRS 0-2) at 90 days<br><br>**Secondary outcomes:**<br>Excellent clinical outcome (mRS 0-1) at 90 days, symptomatic intracranial hemorrhage sICH) at 90 days, 90-day mortality | Preliminary results presented at the ISC 2025.<br><br>The primary outcome occurred in 45/75 patient (60%) in the EVT group vs. 59/77 (77%) in the usual care group. The odds of the primary outcome were significantly lower in the EVT group (adjusted OR=0.42, 95% CI 0.2-0.88).<br><br>sICH occurred in 12% of the patients in the EVT group vs. 6% in the usual care group. |
| **Goyal et al 2025**<br><br>**Canada**<br><br>**RCT**<br>***EndovaSCular TreAtment to imProve outcomEs for Medium Vessel Occlusions (ESCAPE-MeVO Trial)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 530 patients recruited from 58 sites in 5 countries with acute ischemic stroke due to medium-vessel occlusion, NIHSS score > 5 and who presented within 12 hours from the time that they were last known to be well and who had favorable baseline CTA or MRA. Median age was 75 years, 54% were men. | Patients were randomised 1:1 to undergo endovascular thrombectomy (EVT) + best medical management or best medical management only.<br><br>58.4% of patients received intravenous thrombolysis. | **Primary outcome:**<br>Excellent outcome (mRS 0-1) at 90 days<br><br>**Secondary outcomes:**<br>mRS 0-2 at 90 days, 90-day mortality, Barthel Index (BI) ≥95 at 90 days, EuroQol Group 5-Dimension, serious adverse events | Occlusions were located in the M2 segment of the proximal MCA (23.3%), M2 segment of the distal MCA (20.3%) and the M3 segment of MCA (41.4%).<br><br>The median mRS score at 90 days was 2 in both groups. The likelihood of the primary outcome was not significantly higher in the EVT group (adjusted common RR=0.95, 95% CI 0.79 to 1.15).<br><br>The likelihood of an mRS score of 0 -2 at 90 days was not significantly higher in the EVT group (adjusted RR=0.92, 95% CI 0.80 to 1.05).<br><br>90-day mortality was significantly higher in the EVT group (13.3% vs. 8.4%, HR=1.82, 95% CI 1.06 to |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| | | Median baseline NIHSS score was 8. | | | 3.12).<br><br>The likelihood of a BI score ≥95 was significantly lower in the EVT group (adjusted RR=0.81, 95% CI 0.71 to 0.93).<br><br>The incidence of serious adverse events was higher in the EVT group (33.9% [in 87 patients]) than in the usual-care group (25.7% [in 70 patients]). |
| **Psychogios et al. 2025**<br><br>**Switzerland**<br><br>**RCT**<br>***EnDovascular Therapy Plus Best Medical Treatment (BMT) Versus BMT Alone for Medlum VeSsel Occlusion sTroke (DISTAL)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 543 patients with an isolated occlusion of medium or distal vessels (occlusion of the nondominant or codominant M2 segment of the middle cerebral artery [MCA]; the M3 or M4 segment of the MCA; the A1, A2, or A3 segment of the anterior cerebral artery; or the P1, P2, or P3 segment of the posterior cerebral artery), and were last seen well 6-24 hours previously. Median age was 77 years. 56% were men. Median baseline NIHSS score was 8. | Patients were randomised to undergo endovascular thrombectomy (EVT) + best medical management or best medical management only.<br><br>65.4% of patients received intravenous thrombolysis. | **Primary outcome:**<br>mRS score at 90 days<br><br>**Secondary outcomes:**<br>Excellent outcome (mRS <2) at 90 days, change in NIHSS score at 24 hours, EuroQol Group 5-Dimension, Montreal Cognitive Assessment<br><br>**Safety outcomes:**<br>90-day all cause mortality, symptomatic intracranial hemorrhage (sICH) within 24 hrs, serious adverse events | Occlusions were located in the M2 (44.0%), M3 (26.9%), M1 (13.4%), P2 (13.4%), and P1 5.5%) segments.<br><br>Median time from last seen to be well and randomization was ≤4 hours for all patients. 63.0% of patients presented within 6 hours of last seen well.<br><br>There was no significant difference between groups in the distribution of mRS scores at 90 days (Median mRS score was 2 vs. 2; common OR= 0.90; 95% CI 0.67 to 1.22).<br><br>There was no significant difference between groups for any of the secondary outcomes. 90-day mortality was 15.5% in the EVT group vs. 14.0% in the medical management group. 34.7% of patients in the EVT group had an excellent outcome vs. 37.5% in the best medical management group. sICH occurred in 5.9% of patients in the EVT group vs. 2.6% in the best medical management group. There were 114 adverse events in the EVT group vs. 88 in the medical management group. |

## Bridging Therapy

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| *Clinical Trials Using Intravenous Alteplase prior to EVT* | | | | | |
| **Mitchell et al. 2022**<br><br>**Australia**<br><br>**RCT**<br>***Direct Endovascular Clot Retrieval Versus Standard Bridging Thrombolysis with Endovascular Clot Retrieval (DIRECT-SAFE)*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ | 295 patients (780 planned), recruited from 25 hospitals ≥18 years of age, with small to moderate early ischemic changes on non-contrast CT and occlusion of the intracranial internal carotid artery, MCA artery (M1 or M2), or basilar artery confirmed by vascular imaging (CTA or MRA), who could receive intravenous thrombolytic within 4.5 hours of stroke onset. Median age was 69 years, 43% were women. Median NIHSS score was 15. Median ASPECTs score was 10. | Patients were randomized to receive mechanical thrombectomy only or mechanical thrombectomy plus intravenous alteplase (83%) or tenecteplase (17%). Endovascular thrombectomy had to commence within 90 min of randomisation. | **Primary outcome:** mRS score 0-2 at 90 days (the lower boundary of the 95% CI for the primary outcome was set at –0·10)<br><br>**Secondary outcomes:** mRS 0-1 at 90 days, all-cause mortality at 90 days, early neurological improvement successful reperfusion (mTICI 2b-3), symptomatic ICH | Recruitment was halted early on the recommendation of the DSMB.<br><br>In the ITT analysis, 55% of patients in the direct thrombectomy group and 61% of patients in the bridging therapy group achieved the primary outcome (risk difference –0·051, 95% CI –0·160 to 0·059; adjusted OR= 0·75, 95% CI 0·45 to 1·24), p=0·19 for non-inferiority; p=0·26 for superiority of bridging therapy. In subgroup analysis, region was found to be the only significant effect modifier, with Asian patients more likely to achieve the primary outcome when treated with bridging (57% vs. 34%, adjusted OR=0·42, 95% CI 0·21–0·86).<br><br>42% of patients in the direct thrombectomy group and 48% of patients in the bridging therapy group had a mRS score of 0-1 at 90 days (adjusted OR=0·76, 95% CI 0·46 to 1·24).<br><br>60% of patients in the direct thrombectomy group and 68% of patients in the bridging therapy group had early neurological recovery (adjusted OR=0·73, 95% CI 0·45 to 1·18).<br><br>There were no significant between groups in the distribution of mRS scores at 90 days (common OR=0·85, 95% CI 0·56–1·27).<br><br>Reperfusion was successful in 89% of patients in both groups.<br><br>90-day mortality was 15% in the thrombectomy only group vs.16% of patients in the bridging group (adjusted OR=0·92, 95% CI 0·46 to 1·84).<br><br>Symptomatic ICH occurred in 1% of patients in each group |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Fischer et al. 2022**<br><br>**Germany**<br><br>**RCT**<br>***Bridging Thrombolysis Versus Direct Mechanical Thrombectomy in Acute Ischemic Stroke (SWIFT DIRECT)*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ | 423 adult patients, recruited from 42 centres who were eligible for thrombolysis +/- endovascular therapy with NIHSS score of ≥ 5 and < 30 and ASPECTS ≥ 4, with occlusion of the intracranial internal carotid artery (ICA), the M1 segment of the middle cerebral artery (MCA), or both confirmed by baseline CT or MR imaging who could receive alteplase within 4.5 hours after stroke symptom onset and could undergo thrombectomy within 75 minutes of randomization. Median age was 72 years, 51% were women. Median NIHSS score was 17. | Patients were randomized 1:1 to treatment with mechanical thrombectomy or treatment with intravenous alteplase (0.9 mg/kg) followed by mechanical thrombectomy. | **Primary outcome:**<br>mRS score of 0-2 at 90 days<br>(the lower boundary of the 95% CI for the primary outcome was set at –0·12%)<br><br>**Secondary outcomes:**<br>90-day mortality, ordinal shift analysis of mRS scores at 90 days, 24-hour NIHSS scores, successful reperfusion (mTICI 2b-3), symptomatic ICH at 24 hours. | 57% of patients in the thrombectomy alone group achieved the primary outcome compared with 65% of patients assigned to intravenous alteplase plus thrombectomy (adjusted risk difference −7·3%, 95% CI −16·6 to 2·1, lower limit of one-sided 95% CI −15·1%, crossing the non-inferiority margin of −12%). In subgroup analysis, age was found to be the only significant effect modifier, with patients younger than 70 years more likely to achieve the primary outcome when treated with thrombectomy plus thrombolysis (84% vs. 65%, risk difference -18.9, 95% CI -32.2% to -5.7%).<br><br>90-day mortality was 11% in the thrombectomy only group vs. 9% of patients in the thrombectomy plus alteplase group (risk difference 2·3%, 95% CI −3·2 to 7·8).<br><br>Mean change in NIHSS score at 24 hours was -9 in the thrombectomy only group vs. -10 in the thrombectomy plus alteplase group (mean difference 0·92, 95% CI −0·59 to 2·42).<br><br>There were no significant between groups in the distribution of mRS scores at 90 days (common OR=0·75, 95% CI 0·53–1·06).<br><br>Successful reperfusion was less common in patients assigned to thrombectomy alone (91% vs. 96%, risk difference −5·1%, 95% CI −10·2 to 0·0, p=0·047).<br><br>Symptomatic ICH occurred in 2% of patients in the thrombectomy only group vs. 3% of patients in the thrombectomy plus alteplase group (risk difference −1·0%, 95% CI −4·8 to 2·7).<br><br>The risk of serious adverse events was similar between groups (28% vs. 26%). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **LeCouffe et al. 2021**<br><br>**The Netherlands**<br><br>**RCT**<br>***Multicenter Randomized Clinical Trial of Endovascular Treatment for Acute Ischemic Stroke in the Netherlands)–NO IV***<br>***(MR CLEAN–NO IV)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☑<br>Assessor ☑<br><br>ITT: ☒ | 539 patients admitted to one of 20 hospitals with ischemic stroke who were eligible to receive intravenous alteplase and EVT. Median age was approximately 70 years, 57% were men. Median baseline NIHSS score was 16. | Patients were randomized (1:1) to receive EVT alone or intravenous alteplase followed by EVT (the standard of care). The specified noninferiority margin of the lower boundary of the 95% confidence interval of the common odds ratio was 0.8. | **Primary outcome:**<br>Shift in mRS score at 90 days, analyzed for superiority and then for noninferiority<br><br>**Safety outcomes:**<br>Death from any cause and symptomatic intracerebral hemorrhage (ICH) were the main safety end points. | The median mRS score in the EVT group was 3 and 2 in the alteplase plus EVT group. The adjusted common OR was 0.84 (95% CI 0.62 to 1.15; p=0.28), which showed neither superiority nor noninferiority of EVT alone.<br><br>Mortality was 20.5% in the EVT group vs. 15.8% in the alteplase plus EVT group (adjusted OR=1.39; 95% CI, 0.84 to 2.30).<br><br>Symptomatic ICH occurred in 5.9% in the EVT group vs. 5.3% in the alteplase plus EVT groups (adjusted OR=1.30; 95% CI, 0.60 to 2.81). |
| **Suzuki et al. 2021**<br><br>**Japan**<br><br>**RCT**<br>***The Direct Mechanical Thrombectomy in Acute LVO Stroke (SKIP)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 204 patients aged 18-85 years with acute ischemic stroke due to LVO, recruited from 23 hospital from January 1, 2017, to July 31, 2019. Median age was 74 years, 62.7% were men. Median NIHSS was 18. | Patients were randomized (1:1) to undergo mechanical thrombectomy alone or combined intravenous thrombolysis with alteplase (0.6-mg/kg dose) plus mechanical thrombectomy. | **Primary outcome:**<br>Favourable outcome (mRS score 0-2) at 90 days, analyzed for non-inferiority at a margin of 0.74.<br><br>**Secondary outcomes:**<br>Shift in mRS scores at 90 days, mortality at 90 days, successful reperfusion defined as an eTICI score of 2b to 3, recanalization, defined as modified Mori scale score of 2 to 3.<br><br>**Safety outcomes:**<br>Any ICH and symptomatic ICH | Favorable outcome occurred in 60 patients in the mechanical thrombectomy alone group and 59 patients in the combined intravenous thrombolysis plus mechanical thrombectomy group. There was no significant between-group difference (Diff=2.1%, 1-sided 97.5% CI, −11.4% to ∞; OR=1.09, 1-sided 97.5% CI, 0.63 to ∞, p = .18 for noninferiority).<br><br>Mechanical thrombectomy alone was not associated with a favorable shift in the distribution of the mRS score at 90 days (OR=0.97, 1-sided 97.5% CI, 0.60 to ∞; noninferiority p = .27).<br><br>There were no significant differences between groups for mortality (8 vs. 9) or successful reperfusion after mechanical thrombectomy (90.1% vs. 93.2%).<br><br>The frequency of any ICH was significantly higher in the mechanical thrombectomy plus alteplase group (55.5% vs. 33.7%), but there was no significant difference in sICH (7.9% vs. 11.7%) at 36 hours, using the NINDs criteria. |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Zi et al. 2021**<br><br>**China**<br><br>**RCT**<br>***Direct Endovascular Thrombectomy vs Combined IVT and Endovascular Thrombectomy for Patients with Acute Large Vessel Occlusion in the Anterior Circulation (DEVT)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 234 patients (970 planned), aged ≥ 18 years with an acute ischemic stroke, eligible for IV alteplase treatment within 4.5 hours of onset, and with an occlusion of the intracranial ICA or the first segment of the MCA, recruited from 33 sites from May 20, 2018, to May 2, 2020). Median age 70 years, 56.4% were men. Median NIHSS score was 16. | Patients were randomized (1:1) to undergo endovascular thrombectomy alone or combined IV alteplase (0.9 mg/kg dose) and endovascular thrombectomy. | **Primary outcome:** Functional independence (mRS score 0-2) at 90 days, analyzed for non-inferiority. The lower margin of the 97.5% CI limit was set at 10%.<br><br>**Secondary outcomes:** Shift in mRS scores at 90 days, excellent functional outcome (mRS 0-1), successful reperfusion defined as an eTICI score of 2b to 3, recanalization, defined as modified Arterial Occlusive Lesion score of 2 or 3 and EQ-5D-5L at 90 days.<br><br>**Safety outcomes:** sICH within 48 hours, 90-day mortality, procedure-associated complications | The trial was terminated early due to efficacy, when endovascular thrombectomy alone was shown to be noninferior.<br><br>54.3% of patients in the endovascular thrombectomy alone group achieved functional independence vs. 46.6% in the combined treatment group (difference= 7.7%; 1-sided 97.5% CI, −5.1% to ∞; p = .003 for noninferiority).<br><br>There were no significant differences between groups for any of the secondary or safety outcomes. |
| **Yang et al. 2021**<br><br>**China**<br><br>**RCT**<br>***Direct Intraarterial Thrombectomy in Order to Revascularize Acute Ischemic Stroke Patients with Large*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 656 adult patients recruited from 41 sites with acute ischemic stroke from large-vessel occlusion in the anterior circulation, without pre-existing disability (mRS <2). Median age was 69, 56% were men. Median NIHSS score was 17. | Patients were randomized (1:1) to undergo endovascular thrombectomy using a stent retriever as the primary device, alone or endovascular thrombectomy preceded by intravenous alteplase at 0.9 mg per kilogram of body weight, administered within 4.5 hours after symptom onset (combination-therapy group). | **Primary outcome:** mRS score at 90 days, analyzed for non-inferiority at a margin of 0.8 of the lower limit of the 95% CI.<br><br>**Secondary outcomes:** Death within 90 days, successful reperfusion before thrombectomy, NIHSS score at 24 hours and at 5 to 7 days | There was no significant difference between groups in the median mRS score at 90 days (3 vs.3, common OR=1.07, 95% CI 0.81 to 1.40).<br><br>There were no significant differences between groups in the proportions of patients with mRS scores of 0-1, 0-2, 0-3, 0-4, or 0-5.<br><br>There were no significant differences between groups in the median NIHSS score at 24 hours (12 vs. 12) or at 5-7 days (8 vs. 8).<br><br>There were no significant differences between groups in the percentage of patients with eTICI score of 2b, 2c, or 3, assessed on final angiogram (79.4% |

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| ***Vessel Occlusion Efficiently in Chinese Tertiary Hospitals: A Multicenter Randomized Clinical Trial (DIRECT-MT)*** | | | | (or at hospital discharge)<br><br>**Safety outcomes:** All hemorrhages and symptomatic intracranial hemorrhages | vs. 84.5%), or the percentage of patients with recanalization at 24–72 hours (85.1% vs. 89.1%)<br><br>There were no significant differences between groups on any of the safety outcomes, or adverse reactions. |
| *Observation Studies Using Intravenous t-PA* | | | | | |
| **Smith et al. 2022**<br><br>**Canada**<br><br>**Retrospective studies** | NA | 15,832 patients admitted to 555 hospitals in the US from February 1, 2019, to June 30, 2020, treated with EVT for acute ischemic stroke (onset within the previous 6 hours). Median age was 72.0 years, 50.1% were women. Baseline median NIHSS score was 16. | The outcomes of patients treated with (n=10,548) and without (n=5,284) intravenous alteplase, were compared. | **Primary outcomes:** Discharge destination, independent ambulation at discharge, mRS score at discharge, hospital mortality, cerebral reperfusion according to modified Thrombolysis in Cerebral Infarction grade (TICI), and sICH. | Patients treated with alteplase were younger (median 70 vs. 74 years), less likely to have a history of atrial fibrillation (25% vs. 51%), to have a history of previous stroke or TIA (16.8% vs. 31.8%) or prior heart failure (12.3% vs. 18.3%).<br><br>The risk of in-hospital mortality was significantly lower in the alteplase group (11.1% vs. 13.9%; adj OR=0.83, 95% CI 0.77-0.89).<br><br>Significantly more patients in the alteplase group were discharged home (34.4%. vs. 27.5%; adj OR=1.29, 95% CI 1.23-1.36), could ambulate independently at discharge (38.7% vs.30.4%; adj OR=1.33, 95% CI 1.26-1.40), had a mRS score of 0-2 (28.5% vs. 20.7%; adj OR=1.36, 95% CI 1.29-1.44) and were more likely to have TICI reperfusion grades ≥2b (90.9% vs. 88.0%; adj OR=1.39, 95% CI 1.28-1.50).<br><br>Significantly more patients in the alteplase group had sICH (6.5% vs. 5.3%). |
| *Tenecteplase* | | | | | |
| **Qiu et al. 2025**<br><br>**China**<br><br>**RCT**<br>***Endovascular*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑ | 550 patients recruited from 39 hospitals with acute ischemic stroke due to LVO who presented within 4.5 hours after symptoms | Patients were randomized to receive thrombolysis with 0.25 mg/kg tenecteplase followed by EVT or EVT only. | **Primary outcome:** Functional independence (mRS 0-2) at 90 days<br><br>**Secondary outcomes**: | The primary outcome occurred more frequently in the EVT + tenecteplase group (52.9% vs. 44.1%, RR=1.20, 95% CI 1.01 to 1.43, adjusted RR=1.18, 95% CI 1.01–1.39).<br><br>The percentage of patients with successful reperfusion before EVT was significantly higher in |

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| ***Treatment With Versus Without Intravenous rhTNK-tPA in Stroke BRIDGE-TNK*** | ITT: ☑ | onset. Median age was 70 years, 58% were men. Median ASPECTs was 8. Median NIHSS score was 16. | | Successful reperfusion before and after thrombectomy.<br><br>**Safety outcomes:** sICH within 48 hours and death within 90 days. | the EVT + tenecteplase group (6.1% vs. 1.1%; RR=5.19, 95% CI 1.51–17.84).<br><br>The percentage of patients with successful reperfusion after EVT was similar in both groups (91.4% vs. 94.1%, RR= 0.97, 95% CI 0.92–1.02).<br><br>The percentage of patients who died within 90 days was similar (22.3% vs. 19.9%, HR=1.17, 95% CI 0.81–1.69).<br><br>The percentage of patients with sICH within 48 hours was similar (8.5% vs. 6.7%, RR=1.35, 95% CI 0.74–2.44). |
| *Systematic Reviews of Bridging with intravenous thrombolysis prior to EVT* | | | | | |
| **Majoie et al. 2023**<br><br>**The Netherlands**<br><br>**Patient-level meta-analysis** | The risk of bias was generally low | 6 RCTs (DIRECT-MT, DEVT, SKIP, MR CLEAN-NO IV, SWIFT DIRECT, and DIRECT-SAFE, including 2,334 participants. Mean age was 71 years, 55% were men. Median baseline NIHSS score was 16. Median ASPECTs was 9. | The outcomes of 1,153 patients who received EVT alone were compared with 1,160 patients who received intravenous thrombolysis + EVT. Alteplase was the most commonly used thrombolytic agent. 25 patients received tenecteplase and a single patient received urokinase.<br><br>The non-inferiority margin for the primary outcome was set at of 0·82. Non-inferiority would be concluded if the lower bound of the 95% CI (two-sided) around the adjusted common OR for ordinal mRS shift analysis was > 0·82. | **Primary outcome:** Ordinal mRS at 90 days<br><br>**Secondary outcomes:** Dichotomized mRS scores (e.g., 0-2) at 90 days, NIHSS score at 3–7 days, early recanalization, successful reperfusion, and near-complete reperfusion<br><br>**Safety outcomes:** symptomatic intracranial hemorrhage (sICH), mortality | The median mRS score at 90 days was 3 in the EVT group vs. 2 in the EVT + thrombolysis group (adjusted common OR= 0·89 (0·76 to 1·04; p=0·14). For an average patient, the estimated difference in probability of reaching functional independence at 90 days (mRS 0-2) when omitting intravenous thrombolysis was –2·5% (95% CI –6·5% to 1·0%). Non-inferiority of EVT alone was not established. In subgroup analysis, there was a treatment effect interaction for time from onset to random assignment to a treatment group, whereby the benefit of the addition of thrombolysis was lost after 112 minutes.<br><br>Compared with EVT + thrombolysis, the odds of mRS 0-1, 0-2 and 0-3 were not significantly lower at 90 days for patients who received EVT only.<br><br>Median NIHSS score at 3-7 days was 5 in both groups (β= 0·10, 95% CI −0·01 to 0·20).<br><br>The odds of early recanalization were significantly lower in the EVT only group (1.7% vs. 4.0%, adjusted OR=0·41, 95% CI 0·18 to 0·92).<br><br>The odds of achieving a final eTICI score 2b–3 were significantly lower in the EVT only group (adjusted OR=0·62, 95% CI 0·45 to 0·86).<br><br>The odds of any ICH were significantly higher in the |

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| | | | | | EVT + thrombolysis group (36% vs. 31.5%, adjusted OR=0·82, 95% CI 0·68–0·99), but not sICH (5.4% vs. 4.3%, adjusted OR= 0·73, 95% CI 0·46–1·14). |
| **Wang et al. 2021**<br><br>**China**<br><br>**Systematic review & meta-analysis** | All studies except one had a low risk of bias in at least 4/6 domains using the Quality in Prognostic Studies tool | 30 studies including 7,191 patients admitted to hospital following admission for acute ischemic stroke, eligible for EVT for LVO. | Studies compared pretreatment bridging with intravenous thrombolysis before EVT with direct EVT | **Primary outcomes:** Functional independence (mRS 0-2) at 90 days, 90-day mortality, successful recanalization (modified Thrombolysis in Cerebral Ischemia score 2b-3) after procedure, symptomatic ICH | The odds of functional independence were significantly higher in the bridging group (OR=1.43 95% CI 1.28–1.61).<br><br>The odds of 90-day mortality were significantly lower in the bridging group (OR=0.67, 95% CI 0.60–0.75).<br><br>The odds of successful recanalization were significantly higher in the bridging group (OR=1.23, 95% CI 1.07–1.42).<br><br>The odds of sICH were not significantly higher in the bridging group (OR=1.01, 95% CI 0.86–1.19).<br><br>The results were similar for all outcomes when using propensity matching and when restricted to persons with anterior circulation strokes. |

## Anesthetic Management for EVT

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| *Clinical Trials* | | | | | |
| **Chen et al. 2025**<br><br>**USA**<br><br>**RCT**<br>***SEdation Versus General Anesthesia for Endovascular Therapy in Acute Ischemic Stroke (SEGA)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 260 adult patients aged 18-80 years, (planned) with large intracranial vessel occlusion to be treated with EVT, NIHSS of 6-30. Time of from stroke symptom onset of last seen normal to start of EVT (defined as groin puncture) ≤ 16 hours. | Patients will be randomized 1:1 to receive general anesthesia or conscious sedation.<br>The protocol does not specify a combination of drugs that must be used for either group | **Primary outcome:**<br>mRS score at 90 days<br><br>**Secondary outcomes:**<br>mRS 0-2 at 90 days, recanalization, NIHSS at 24-36 hours, mortality, EQ-5D at 90 days, sICH, in-hospital mortality | Preliminary results were presented at the Society of Vascular and Interventional Neurology (SVIN) annual meeting (16–18 November 2023, Miami, USA).<br><br>General anaesthesia was associated with a significantly higher likelihood of functional independence measured by mRS at 90 days (OR=1.22).<br><br>A higher percentage of patients experienced mRS scores of 0–1 (30% vs. 28%) and 0–2 (47% vs. 39%). |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
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| **Chabanne et al. 2023**<br><br>**France**<br><br>**RCT**<br>***Anesthesia Management in Endovascular Therapy for Ischemic Stroke (AMETIS)*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ (modified) | 332 patients (planned), recruited from 10 centres with acute anterior circulation ischemic stroke with indication to receive endovascular thrombectomy. Mean age was 72 years, 51% were women. Median baseline NIHSS was 16. 48% of patients received thrombolysis treatment. | Patients were randomized 1:1 to receive general anesthesia or conscious sedation.<br><br>In both groups a SBP between 140 and 180 mmHg was maintained and $SpO_2$ maintained between 94 and 98%. | **Primary outcome:**<br>Functional independence (mRS 0-2) at 90 days and absence of major periprocedural complications within 7 days<br><br>**Secondary outcomes:**<br>Procedure-related serious adverse events, pneumonia, MI, cardiogenic pulmonary edema, progression to malignant stroke, median ordinal mRS score at 90 days, 7 and 90-day mortality and clinically important results | The primary composite outcome occurred in 28.2% of patients in the general anesthesia group vs. 36.2% in the conscious sedation group (RR=1.29, 95% CI 0.91-1.82).<br><br>There were no significant differences between groups except for a higher frequency of hypotension in the general anesthesia group (87.4% vs. 44.9%, RR=0.51, 95% CI 0.42-0.63).<br><br>10.9% of conscious sedation patients converted to general anesthesia.<br><br>In subgroup analysis, no interactions were found for the primary outcome, except for age, whereby persons >70 years did better with conscious sedation compared with those ≤70 years. |
| **Goldhoorn et al. 2020**<br><br>**The Netherlands**<br><br>**Mr CLEAN Registry** | NA | 1,376 patients included in the Mr CLEAN registry from March 16, 2014, until June 15, 2016. | The outcomes of patients who received local anesthesia only (LA, n=821), general anesthesia (GA, n=381), or conscious sedation (CS, n=174), were compared, adjusting for age, sex, prestroke mRS score, baseline NIHSS score, collaterals, and time from onset to arrival at intervention center | **Primary outcome:**<br>Shift in mRS scores at 90 days<br><br>**Secondary outcomes:**<br>Good functional recovery (mRS score 0-2 at 90 days), successful reperfusion (eTICI score ≥2B), sICH, ischemic stroke progression (decline in NIHSS score ≥4), pneumonia, and mortality at 90 days. | Compared with LA, both GA and CS were associated with worse outcomes (adjusted common ORs of 0.75; 95% CI 0.58–0.97 and 0.45; 95% CI 0.33–0.62, respectively).<br><br>The odds of a good functional outcome were significantly lower for CS patients compared with LA patients (OR=0.35, 95% CI 0.23–0.54).<br><br>The odds of stroke progression and pneumonia were significantly increased in CS patients compared with LA patients (OR= 1.82, 95% CI 1.10–3.02 and OR=2.23, 95% CI 1.44–3.48, respectively).<br><br>The odds of mortality were significantly increased in both GA and CS patients compared with LA (OR= 1.39, 95% CI 1.00 to 1.93 and OR= 1.96, 95% CI, respectively).<br><br>CS was associated with worse outcomes compared with GA (shift in mRS [common OR=0.60, 95% CI 0.42–0.87], good functional outcome [OR= 0.44, 95% CI 0.27–0.71], and increased odds of pneumonia [OR= 2.51, 95% CI 1.50–4.20]) |

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| **Sun et al. 2020**<br><br>**China**<br><br>**Pilot RCT**<br>***Choice of ANesthesia for EndoVAScular Treatment of Acute Ischemic Stroke (CANVAS) trial*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ (modified) | 40 patients ≥18 years, recruited from a single site who were eligible for endovascular treatment and if stroke occurred ≤6 hours from the onset of symptoms and who were previously functionally independent (mRS 0 to 2). Patients with GCS score <8 were excluded. Median age was 65 years, 65% were men. 10% of patients received t-PA. | Patients were randomized to undergo the thrombectomy procedure using general anesthesia (GA, n=20) or conscious sedation (CS, n=20) | **Primary outcomes:** Recruitment, conversion from CS to GA<br><br>**Secondary outcomes:** mRS score at 90 days, favourable outcome (mRS 0-2) at 90 days, NIHSS score at 7 days, successful perfusion (mTICI 2b-3), 90-day mortality | 4 patients were converted to GA.<br><br>There were no significant differences between groups in mean mRS scores at 90 days (2.4 vs. 3.1), or in the percentage of patients with a favourable outcome (55% vs. 50%).<br><br>Successful reperfusion was higher in the GA group (95% vs. 65%; p=0.048).<br><br>Mean NIHSS scores at 7 days did not differ significantly between groups (8.9 vs. 10.6).<br><br>There were no deaths at 90 days in the GA group and 2 in the CS group. |
| **Simonsen et al. 2018**<br><br>**Denmark**<br><br>***General or Local Anesthesia in Intra Arterial Therapy (GOLIATH)*** | Concealed Allocation: ☑<br><br>Blinding: Patient ☒ Assessor ☑<br><br>ITT: ☑ | 128 patients ≥18 years, recruited from a single site who were eligible for endovascular treatment, and in whom groin puncture could be performed within 6 hours from symptom onset or time from last seen well. A DWI MRI scan was required to establish baseline infarct volume. Patients with infarct volumes >70 mL, were excluded. Mean age was 71.4 years, 51.6% were men. Median NIHSS score was 18. | Patients were randomized to undergo the thrombectomy procedure using general anesthesia (GA, n=65) or conscious sedation (CS, n=63) | **Primary outcome:** Infarct growth<br><br>**Secondary outcomes:** mRS at 90 days, successful reperfusion (mTICI 2b-3), 24-hour NIHSS and | 75% of patients were treated with i.v t-PA, and 13%, with intra-arterial t-PA.<br><br>Baseline median infarct volumes were similar between groups (GA 10.5 vs. CS 13.3 mL, p=0.26). Final median infarct volume was significantly smaller in the GA group (22.3 vs. 38.0 mL, p=0.04).<br><br>Median infarct growth was 8.2 mL in the GA group and 19.4 in the CS group (p=0.10).<br><br>A significantly higher proportion of patients in the GA group experienced successful reperfusion (76.9% vs. 60.3%, p=0.04).<br><br>Median 24-hour NIHSS score was 6 in the GA group and 10 in the SC group (p=0.19).<br><br>There was a shift towards lower mRS scores at 90 days associated with GA (OR=1.91, 95% CI 1.03-3.56).<br><br>There were no significant differences between groups in process times, with one exception. The median time from arrival at the neurointerventional suite to groin puncture was significantly longer in the GA group (24 vs. 15 min, p<0.001). |

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| | | | | | 6.2% of patients in the GA group type 2 parenchymal hemorrhage vs. 4.8 in the CS group.<br><br>90-day mortality did not differ significantly between groups (GA 7.7% vs CS 12.7%, p=0.35). |
| **Löwhagen Hendén et al. 2017**<br><br>**Sweden**<br><br>**RCT**<br>***AnStroke Trial (Anesthesia During Stroke)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 90 patients ≥18 years, who were eligible for endovascular treatment within 8 hours of ischemic stroke onset. Median age was 72 years, 54% were men. Median NIHSS score was 18. | Patients were randomized 1:1 to undergo the thrombectomy procedure using general anesthesia (GA) or conscious sedation (CS) | **Primary outcomes:**<br>mRS score at 90 days, early neurological improvement<br><br>**Secondary outcome:**<br>Good outcome (mRS 0-2 at 90 days) | 77% of patients received IV rt-PA.<br><br>Successful recanalization was achieved in 91% of patients.<br><br>There were no differences between groups in any of the procedural time intervals.<br><br>Median mRS score at 90 days was similar between groups (3 vs. 3, p=0.51)<br><br>There were no significant differences between groups in the proportion of patients with a good outcome at 3 months (42% vs. 40%, p=1.00), or in the distribution of mRS scores at 90 days (p=0.64).<br><br>The NIHSS score shifts at 24 hours, day 3,and hospital discharge, as well as cerebral infarction volume at day 3, ASPECTS at day 3, hospital mortality, and incidence of a new stroke at 3 months, were similar for both groups.<br><br>There were no differences between groups in complications. |
| **Schönenberger et al. 2016**<br><br>**Germany**<br><br>**RCT**<br>***Sedation vs Intubation for Endovascular Stroke Treatment (SIESTA)*** | Concealed Allocation: ☑<br><br>Blinding:<br>Patient ☒<br>Assessor ☑<br><br>ITT: ☑ | 150 patients, admitted to a single institution with a severe ischemic stroke (NIHSS ≥10), appropriate for mechanical thrombectomy. Mean age was 71.5 years, 60% were men. Mean baseline NIHSS sore was 17. | Patients were randomized to undergo the thrombectomy procedure using general anesthesia (GA, n=77) or conscious sedation (CS, n=73) | **Primary outcome:**<br>Early neurological improvement (change in NIHSS score between admission and 24 hours)<br><br>**Secondary outcomes:**<br>47 pre-specified clinical, logistical, feasibility, complications and safety outcomes | At 24 hours post treatment, the mean NIHSS score decreased from 16.8 to 13.6 in the GA group, and from 17.2 to 13.6 in the CS group. The mean difference in decline (adjusted for baseline NIHSS) between the groups was not significant (−0.4, 95% CI, −3.4 to 2.7; p=0.82).<br><br>Of 5 clinical outcomes, one was associated with a significant difference between groups. A significantly higher percentage of patients in the GA group had a good outcome (mRS 0-2) at 3 months (37% vs. 18.2%, p=0.01).<br><br>Of 7 logistical outcomes, two were associated with significant differences between groups. Mean door- |

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| | | | | | to-arterial puncture time and mean duration of procedure time was significantly shorter for patients in the CS group.<br><br>There were no differences between groups in any complications before or during the procedure. |
| *Systematic Reviews & Meta-analyses* | | | | | |
| **Tosello et al. 2022**<br><br>**Brazil**<br><br>**Cochrane review** | The overall risk of bias was high in 4 trials, unclear in 2 trials and low in one trial. | 7 RCTs including 982 participants. Mean age was 71.2, years, 56.8% were men. About 72% received IV r-tPA before EVT. Mean NIHSS score was 16.1. | All participants were randomized to receive general anesthesia (GA) vs. non-GA (local anaesthesia, conscious sedation anaesthesia or monitored anaesthesia care). | **Primary outcomes:** Functional outcome at the end of scheduled follow-up, neurological impairment<br><br>**Secondary outcomes:** Stroke-related mortality, intracranial hemorrhage, target artery revascularisation status | *Early outcomes*<br><br>There was no significant difference between groups in NIHSS scores at 48 hours (MD= –0.29, 95% CI –1.18 to 0.59; 7 studies, 982 participants; low-certainty evidence)<br><br>The risk of stroke-related mortality was not reduced significantly with GA (RR= 0.98, 95% CI 0.52 to 1.84; 3 studies, 330 participants; low-certainty evidence),<br><br>The risk of all intracranial haemorrhages was not reduced significantly with GA (RR 0.92, 95% CI 0.65 to 1.29; 5 studies, 693 participants; low-certainty evidence)<br><br>GA was associated with significantly better likelihood of artery revascularisation (RR=1.10, 95% CI 1.02-1.18; 7 studies, 982 participants; moderate-certainty evidence)<br><br>GA was associated with a decreased risk of adverse events (RR=0.21, 95% CI 0.05-0.79; 2 studies, 229 participants; low-certainty evidence).<br><br>*Long-term outcomes*<br><br>The likelihood of having a good functional outcome (mRS ≤2) at 90 days was not significantly greater in the GA group (RR=1.21, 95% CI 0.93 to 1.58; 4 studies, 625 participants; low-certainty evidence).<br><br>The risk of stroke-related mortality was not reduced significantly with GA (RR= 0.88, 95% CI 0.64 to 1.22; 6 studies, 843 participants; low-certainty evidence), |

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| **Campbell et al. 2021**<br><br>**New Zealand** | The risk of bias was assessed as low in all 4 trials | 4 RCTs including SIESTA, AnSTROKE, GOLIATH and CANVAS (pilot) (n=408). Mean patient age ranged from 63.5 to 72.5 years, 56.6% were men. Mean baseline NIHSS from 13.5 to 18.5. | All participants were randomized to receive general anesthesia (GA) vs. conscious sedation (CS) during thrombectomy | **Primary outcomes:** Successful recanalization (TICI score of 2b to 3) and good functional outcome (mRS 0-2) at 3 months.<br><br>**Safety outcomes:** Intracerebral hemorrhage and 3-month mortality. | The odds of successful recanalization and good functional outcome were significantly higher in the GA group (OR=2.14, 95% CI 1.26-3.62, p=0.005 and OR=1.71, 95% CI: 1.13-2.59; P=0.01, respectively).<br><br>For every 7.9 patients receiving GA, one more achieved good functional outcome compared with those receiving CS.<br><br>There were no significant differences between groups in intracerebral hemorrhage (OR: 0.61, 95% CI: 0.20- 1.85; P=0.38) or 3-month mortality (OR: 0.62, 95% CI: 0.33-1.17; P=0.14). |
| **Schönenberger et al. 2019**<br><br>**Germany** | The risk of bias was assessed as low in all 3 trials | 3 single centre RCTs (SIESTA, AnSTROKE and GOLIATH), including adult participants with acute ischemic stroke in anterior circulation with baseline NIHSS scores of ≥10. Details of all trials described below. | All participants were randomized to receive general anesthesia vs. procedural sedation during thrombectomy | **Primary outcome:** Ordinal shift in distribution of mRS scores at 3 months<br><br>**Secondary outcomes:** There were 15 secondary outcomes including 4 clinical, 2 imaging, 9 care process outcomes, and 5 adverse events. | General anesthesia (GA) was associated with a more favorable shift in mRS scores at 3 months (common OR=1.58, 95% CI 1.09 to 2.29, p=0 .02).<br><br>GA was also associated with higher odds of patients with mRS scores of 0-2 and 0-3, at 3 months (OR=2.16, 95% CI 1.31 to 3.54 and OR=1.73, 95% CI 1.06 to 2.82, respectively). The odds of successful reperfusion (mTICI score of 2b or 3) were significantly higher in the GA group (OR=1.84, 95% CI 1.12 to 3.01)<br>GA was not associated with decreased mortality, infarct growth or early neurological improvement.<br><br>The risk of hypotension (<20% from baseline) was significantly higher in the GA group (OR=4.3, 95% CI 2.6 to 7.1) as was the risk of BP variability (>180 or <120 mm Hg; OR=2.4, 95% CI 1.5 to 3.9).<br><br>21 patients converted from procedural sedation to GA. |
| **Campbell et al. 2018 HERMES Collaborators**<br><br>**International** | As per each included trial | 7 RCTs (n=1,764 patients), including MR CLEAN, ESCAPE, EXTEND-IA, SWIFT PRIME, REVASCAT, PISTE and THRACE. The mean age of patients | The method of anesthesia for those patients undergoing mechanical thrombectomy was identified. The outcomes of patients who received general anesthesia (GA, | **Primary outcome:** mRS score at 90 days<br><br>**Secondary outcomes:** Proportion of patients with mRS score of 0-2 and 0-1 at 90 days, early | Patients who received GA were significantly younger (63.8 vs. 66.3 years, p=0.015), had a significantly lower median baseline ASPECTS score (7 vs. 8, p=0.0005), and were randomized sooner (179 vs. 184 min, p=0.04).<br><br>The outcomes of all patients who received thrombectomy, regardless of method of anesthesia |

| Study/Type | Quality Rating | Sample Description | Method | Outcomes | Key Findings and Recommendations |
|---|---|---|---|---|---|
| **Patient-level meta-analysis** | | who were randomized to the mechanical thrombectomy group was 65.5 years, 53% were men. Median NIHSS score was 17. | n=236) were compared with patients who received non-GA methods (n=561). | neurological improvement (reduction of NIHSS score ≥8 points at 24 hours, or NIHSS score of 0-1), 90-day mortality, symptomatic ICH | were better than those who received standard care.<br><br>The odds of improved outcome using non-GA versus GA were significantly greater in ordinal analysis of the mRS, after adjustment for baseline prognostic factors (common OR=1.53 95% CI 1.14–2.04, p=0·0044). For every 100 patients treated under GA versus no GA, 18 patients would have worse functional outcome, including 10 who would not achieve functional independence.<br><br>The odds of achieving a mRS score of 0-1 and 0-2, and in early neurological improvement were significantly higher for non-GA patients.<br><br>The odds of 90-day mortality or sICH were not increased significantly in the non-GA group.<br><br>The proportions of patients with successful reperfusion (≥50%) did not differ between groups (75% vs. 76%).<br><br>Mean stroke onset to reperfusion time was similar between groups (GA 302 min vs. non-GA 288 min, p=0.57). |

**Abbreviations**

| | | |
|---|---|---|
| ASPECTS: Alberta Stroke Program Early CT Score | CA: concealed allocation | CI: confidence interval |
| HR: hazard ratio | LVO: large vessel occlusion | ITT: intention-to-treat |
| NA: not assessed | NIHSS: National Stroke Institutes of Health Stroke Scale | NOS: Newcastle–Ottawa Quality Scale |
| OR: odds ratio | QALY: quality-adjusted life year | RR: relative risk |
| TICI: thrombolysis in Cerebral Infarction | | |

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