Acute Ischemic Stroke Pharmacotherapy Checklist

modified August 2025

Use this checklist to help you keep pharmacotherapy of acute ischemic stroke patients on track from admission to discharge, and prevent readmission.

Goal	Suggested Approach
Get the correct dose of IV alteplase to qualifying patients fast (within 45 to 60 minutes).[1]	☐ Use your institutional checklist for patient selection.[6] ○ **In general**, patients for whom IV alteplase's benefit outweighs risk are those who present within 4.5 hours, **without**: risks for brain or spinal bleeding, coagulopathy, recent trauma or surgery, aortic arch dissection, extensive regions of clear hypoattenuation on CT, endocarditis, recent gastrointestinal cancer or bleeding.[1] ○ IV alteplase is recommended for adults with mild-but-disabling to severe stroke symptoms, ≤3 hours from symptom onset.[1] ○ IV alteplase is recommended for adults in the three to 4.5 hour post-symptom-onset window who are ≤80 years of age without a history of both diabetes and prior stroke, NIHSS score ≤25, not taking oral anticoagulants, and without involvement of more than one third of the MCA territory.[1] • In this timeframe, IV alteplase is safe and can be effective for patients >80 years of age and is reasonable in patients with both diabetes and prior stroke or mild disabling stroke. Benefit in NIHSS score >25 is uncertain.[1] ○ Consider IV alteplase for patients who awaken with stroke symptoms even if their last known "normal" was >4.5 hours ago who have a DW-MRI lesion smaller than one-third of the MCA territory and no visible signal change on FLAIR.[1] ○ Emerging evidence suggests that alteplase given 4.5 to 24 hours post-stroke can increase the chance of functional independence per mRS (NNT ~8) (but with increased risk of symptomatic ICH [NNH ~30]) in patients with salvageable brain tissue on imaging but refuse or cannot undergo mechanical thrombectomy [Evidence level B-1].[18] ○ IV alteplase administration in stroke mimics is probably recommended over waiting for additional diagnostic studies because risk of symptomatic ICH is low in this situation.[1] ○ Give IV alteplase to eligible patients even if thrombectomy is considered (e.g., adult with occlusion of internal carotid or M1; NIHSS score ≥6; prestroke mRS score 0 to 1; and ASPECTS ≥6, in whom treatment can be started within 6 hours of onset). Certain patients may benefit from thrombectomy up to 24 hours after symptom onset.[1] ☐ Check blood glucose before administering alteplase (hypoglycemia can be the cause of stroke-like symptoms).[1] ☐ Obtain patient weight for accurate dosing.[2] ☐ Ensure blood pressure is not severely elevated.[1] ○ Blood pressure should be lowered safely to <185/110 mmHg and stable before starting IV alteplase.[1] ○ During and for 24 hours post-alteplase, maintain blood pressure ≤180/105 mmHg.[1] ☐ Calculate the correct IV alteplase dose. ○ Alteplase IV: 0.9 mg/kg (max 90 mg), with 10% given as a bolus over one minute, and the rest infused over 59 minutes.[1]

Continued…

Goal	Suggested Approach
IV alteplase, continued	☐ Recommend a smart pump to deliver the IV alteplase bolus and infusion.[7]
Consider alternatives to IV alteplase.	☐ Consider **IV tenecteplase** over IV alteplase in patients without contraindications to IV fibrinolysis who are also eligible for mechanical thrombectomy.[1] o There is more overall evidence for alteplase. Long duration of action and fibrin specificity allows tenecteplase to be given as a single bolus (consider 0.25 mg/kg [max 25 mg]) over five seconds instead of a one-hour infusion like IV alteplase.[1,4,19] o Likely more cost-effective than alteplase.[12] o In the EXTEND-IA TNK trial (large, open-label study), early reperfusion was achieved in 22% of patients with tenecteplase vs 10% of those who received alteplase within 4.5 hours of symptom onset (p=0.002 for noninferiority; p = 0.03 for superiority) [Evidence level B-1].[4] o Tenecteplase and alteplase seem to provide similar neurologic and functional outcomes (per mRS) and mortality, with a similar rate of ICH [Evidence level B-2].[11] o If patients refuse or cannot undergo mechanical thrombectomy, emerging evidence suggests that tenecteplase given 4.5 to 24 hours post-stroke increases the odds of functional independence per mRS without increasing ICH risk [Evidence level B-2].[17] Selection criteria needs further delineation. ☐ Consider **intra-arterial (IA) alteplase** (off-label use) o Can be used even if IV alteplase has been given.[16] o Requires timely cerebral angiography and experienced interventionalist (i.e., stroke center).[1] o Mechanical thrombectomy with stent retrievers is recommended over IA thrombolysis first-line.[1] o Reasonable to use for salvage therapy to achieve mTICI 2b/3 angiographic results.[1] o Use within six hours of stroke onset in carefully selected patients with contraindications to IV alteplase might be considered, but benefit/risk unknown.[1] o In one clinical trial (MR CLEAN), exclusion criteria were arterial blood pressure >185/110 mmHg, glucose <50 or >400 mg/dL, cerebral infarction in the distribution of the affected occluded artery in the prior six weeks, history of intracerebral hemorrhage, severe head trauma in the prior four weeks, platelets <90 x 10^9/L, aPTT >50, or INR >1.7, prior administration of IV alteplase in a patient with contraindications, or an IV alteplase dose of >90 mg or >0.9 mg/kg.[16] o Dose is not established.[15] Dose per interventionalist.[15] Median dose was 20 mg in the MR CLEAN registry.[15] In the MR CLEAN clinical trial, a maximum permitted dose of IA alteplase was 90 mg, or 30 mg if the patient had also received IV alteplase.[16] In the phase IIb CHOICE trial, intra-arterial alteplase was administered **after** successful reperfusion using thrombectomy, at a dose of 0.225 mg/kg (max 22.5 mg) infused over 15 to 30 minutes.[14]

Goal	Suggested Approach
Achieve blood pressure goals.	☐ Carefully reduce and maintain blood pressure to ≤185/110 mmHg before IV thrombolysis.[1] o Consider labetalol 10 to 20 mg IV over 1 to 2 min, repeated once **OR** nicardipine 5 mg/hr IV, titrated by 2.5 mg/hr every 5 to 15 min (max 15 mg/hr) **OR** clevidipine 1 to 2 mg/hr, titrated by doubling dose every 2 to 5 min (max 21 mg/hr).[1] o Hydralazine, enalaprilat, or other agents can be considered.[1] ☐ During and after reperfusion therapy (for 24 hours post-thrombolysis), maintain blood pressure ≤180/105 mmHg.[1] o Check blood pressure every 15 min for the first 2 hours of thrombolysis, then every 30 min for 6 hours, then every hour for 16 hours.[1] Increase monitoring frequency if systolic is >180 mmHg or diastolic is >105 mmHg.[1] o If SBP >180-230 or DBP >105-120 mmHg, consider labetalol 10 mg bolus followed by 2 to 8 mg/min infusion, or nicardipine or clevidipine as above. If blood pressure is not controlled or diastolic >140 mmHg, consider sodium nitroprusside.[1] ☐ For patients not receiving IV thrombolysis or endovascular therapy with blood pressure ≥220/120 mmHg, consider a blood pressure reduction of 15% within 24 hours.[1] ☐ Start/restart antihypertensive 72 hours after symptom onset if blood pressure is above goal and patient is neurologically stable.[3] o See our infographics, *Treatment of Hypertension* and *Hypertension Goals in Adults* for antihypertensive options and blood pressure goals. ☐ If patient is hypotensive, increase blood pressure to support organ function (e.g., with crystalloids or colloids).[1]
Manage blood glucose.	☐ Check glucose before thrombolysis.[1] o Treat glucose <60 mg/dL.[1]
Treat body temperature >38ºC.	☐ Administer an antipyretic.[1]
Manage thrombolysis complications. *Continued…*	**Angioedema** ☐ Discontinue thrombolytic and ACEI.[1] ☐ Give methylprednisolone 125 mg IV.[1] ☐ Give diphenhydramine 50 mg IV.[1] ☐ Give famotidine 20 mg IV.[1] ☐ For persistent angioedema, give epinephrine 1 mg/mL (0.1%) 0.3 mL subcutaneously or via nebulizer (0.5 mL).[1] ☐ Consider medications used to treat hereditary angioedema: icatibant (*Firazyr*) 30 mg subcutaneous injection in abdomen repeated every 6 hours if needed (max 3 injections in 24 hours) or C1 esterase inhibitor (e.g., *Berinert* 20 IU/kg IV x 1).[1]

Goal	Suggested Approach
Manage thrombolysis complications, continued	**Intracranial bleed within 24 hours of thrombolysis (based on alteplase recommendations)** In addition to appropriate labs, imaging, and supportive care: ☐ Stop thrombolytic. Bleeding reversal options: ☐ Cryoprecipitate (factor VIII source) 10 units over 10 to 30 min. Give additional dose if fibrinogen <150 mg/dL.[1] ◦ Expect onset in 1 hr, peak in 12 hours[1]. ☐ Tranexamic acid 1,000 mg IV over 10 min OR aminocaproic acid 4 to 5 g over 1 hr. Repeat until bleeding controlled. o Expect peak in 3 hours.[1]
Start an antiplatelet.	☐ Start aspirin 160 to 300 mg daily within 24 to 48 hours of stroke onset.[1] o Generally, wait 24 hours after thrombolysis is given to start aspirin, but consider comorbidities.[1] ☐ In patients with minor stroke who do not receive thrombolysis, consider aspirin plus clopidogrel for 21 days, starting within 24 hours of stroke onset.[1] o See our chart, *Antiplatelets for Recurrent Ischemic Stroke*, for risk/benefit information and dosing.
Prevent deep venous thrombosis.	☐ In immobile stroke patients, use intermittent pneumatic compression (plus aspirin and hydration) to reduce the risk of deep venous thrombosis.[1] o The benefit of low-dose subcutaneous heparin or low-molecular-weight heparin in this population is unclear.[1] o If you do not give prophylaxis, document why (by day 2 of admission) to meet quality measures (US).[5]
Identify and treat depression.	☐ Screen post-stroke patients for depression, or ensure this is done at follow-up.[1] ☐ Treat depression if identified.[1] o For **screening**, consider use a brief tool such as the PHQ-9 or PHQ-2 (the first two questions of the PHQ-9) (https://www.apa.org/depression-guideline/patient-health-questionnaire.pdf).[8,9,13] o If depression is diagnosed, treatment is the same as for the general population.[13] Consider an SSRI due to evidence in stroke patients and tolerability in older adults.[10]
Optimize lipid-lowering therapy.	☐ For help, see our FAQs, *Cholesterol Guidelines (United States)* or *Canadian Dyslipidemia Recommendations*.
Help patient stop smoking.	☐ See our chart, *Smoking Cessation Drug Therapy*, for options.

Goal	Suggested Approach
Quickly identify and respond to in-hospital stroke.	☐ Participate in the in-hospital stroke response team (this can be the same stroke team that responds to stroke patients that arrive in the emergency department).[6] o If a pharmacist is not part of the stroke response team, have a policy that the charge nurse will contact the pharmacy to inform them that a patient is being assessed for possible stroke.[6] ☐ Participate in mock stroke alerts.[6] ☐ Educate pharmacy staff on the signs and symptoms of stroke, and activation of the stroke alert.[6] ☐ Have a policy that the stroke response team sends thrombolytic orders to the pharmacy STAT.[6] ☐ Consider use of a runner to deliver the thrombolytic.[6] ☐ Advocate for use of shorter-acting sedatives to allow for frequent neurological evaluation to promote rapid identification of stroke symptoms.[6]

Abbreviations: ASPECTS = Alberta Stroke Programme Early CT Score; ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; CT = computed tomography; DBP = diastolic blood pressure; DW-MRI = diffusion-weighted magnetic resonance imaging; FLAIR = fluid attenuated inversion recovery; IA = intra-arterial; ICH = intracranial hemorrhage; IV = intravenous; M1 = middle cerebral artery segment 1; mRS = modified Rankin Scale; NIHSS = National Institutes of Health Stroke Score; PHQ = Patient Health Questionnaire; SBP = systolic blood pressure; SSRI = selective serotonin reuptake inhibitor; TIA = transient ischemic attack.

Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

Levels of Evidence

In accordance with our goal of providing Evidence-Based information, we are citing the **LEVEL OF EVIDENCE** for the clinical recommendations we publish.

Level	Definition	Study Quality
A	Good-quality patient-oriented evidence.*	1. High-quality randomized controlled trial (RCT) 2. Systematic review (SR)/Meta-analysis of RCTs with consistent findings 3. All-or-none study
B	Inconsistent or limited-quality patient-oriented evidence.*	1. Lower-quality RCT 2. SR/Meta-analysis with low-quality clinical trials or of studies with inconsistent findings 3. Cohort study 4. Case control study
C	Consensus; usual practice; expert opinion; disease-oriented evidence (e.g., physiologic or surrogate endpoints); case series for studies of diagnosis, treatment, prevention, or screening.	

***Outcomes that matter to patients** (e.g., morbidity, mortality, symptom improvement, quality of life).

[Adapted from Ebell MH, Siwek J, Weiss BD, et al. Strength of Recommendation Taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature. Am Fam Physician 2004;69:548-56. https://www.aafp.org/pubs/afp/issues/2004/0201/p548.html.]

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