

CRITICAL CARE ORDER SET

Acute Stroke

ICU management of acute ischemic stroke, ICH, and SAH. Blood-pressure targets diverge sharply by stroke type and reperfusion status — confirm the diagnosis and what was given before choosing a BP goal. Document last-known-well, run frequent neuro checks, and adapt every threshold to your stroke protocol and the individual patient.

PATIENT	MRN	LAST KNOWN WELL	NIHSS
ALLERGIES	TPA / TNK / EVT	ORDERING CLINICIAN	ATTENDING

01 Admission & level of care

LOCATION / SERVICE

- ☐ Admit to: **Neurocritical Care / Medical ICU**
- ☐ Level of care: intensive care, continuous cardiac and neurologic monitoring

DIAGNOSIS — SELECT AS APPROPRIATE

- ☐ **Acute ischemic stroke**, [territory / vessel if known]
- ☐ **Intracerebral hemorrhage**, [location]
- ☐ **Subarachnoid hemorrhage**, [aneurysm if known]

02**Eligibility & time windows** (ischemic stroke)

LKW Document **time of last known well:** _____ (date / time). Every window below is measured from LKW.

IV THROMBOLYSIS ELIGIBILITY

- ☐ Standard window (alteplase or tenecteplase) — within **4.5 h** of LKW in eligible patients
- ☐ Extended-window / advanced-imaging based — selected patients (wake-up or **4.5–9 h**) on CT/MR perfusion or DWI–FLAIR mismatch, per protocol

MECHANICAL THROMBECTOMY ELIGIBILITY

- ☐ Anterior circulation LVO — **0–6 h**: eligible with disabling deficit and appropriate imaging
- ☐ Anterior circulation LVO — **6–24 h**: selected with favorable perfusion/core mismatch + good collaterals (DAWN / DEFUSE-3-type)
- ☐ Posterior circulation (basilar / vertebral LVO) — typically considered up to **24 h** depending on imaging and status

ORDER TEXT “Patient evaluated for IV thrombolysis and thrombectomy in ED; decision: [given / not given / not eligible]; LKW: ___; window: [0–4.5 h / 4.5–9 h / 6–24 h] from LKW.”

03**Monitoring & nursing****NEUROLOGIC**

- ☐ Neuro checks (GCS, pupils, motor, speech, gaze, visual fields) — **q1 h** × 24 h, then **q2–4 h** if stable
- ☐ NIHSS — on admission, then at **1, 2, 24 h** after thrombolysis and PRN deterioration; otherwise ≥ once per shift

CARDIOPULMONARY

- ☐ Vital signs — **q15 min** × 2 h → **q30 min** × 6 h → **q1 h** × 24 h → **q4 h** if stable
- ☐ Continuous ECG and pulse oximetry
- ☐ Strict I/O (hourly if unstable); daily weight

POSITIONING, GLUCOSE & TEMPERATURE

- ☐ Head of bed **30°** (unless hemodynamic reason to deviate); neutral neck, no jugular compression
- ☐ POC glucose on admission, then **q1–2 h** on insulin infusion, otherwise **q4–6 h**
- ☐ Temperature **q4 h**; notify provider for $T \geq 38.0^{\circ}\text{C}$

04 Airway, breathing, circulation

AIRWAY / RESPIRATORY

- ☐ $\text{SpO}_2 \geq 94\%$ — oxygen via nasal cannula / mask titrated to goal
- ☐ Intubation criteria — inability to protect airway, hypoxemia, hypercapnia, refractory distress, or coma

If intubated

- ☐ Ventilator: AC mode per unit protocol; PaCO_2 **35–45 mmHg** (avoid prophylactic hyperventilation except herniation rescue)
- ☐ Avoid excessive PEEP in large infarcts / ICH if it worsens ICP or CPP

HEMODYNAMICS

- ☐ Arterial line — if post-thrombolysis / post-thrombectomy, titratable antihypertensives, or large stroke / ICH
- ☐ Central line — if vasopressors required or poor peripheral access

05 Blood pressure targets & IV agents

CRITICAL The BP target depends entirely on stroke type and reperfusion status. **Confirm which scenario applies (A / B / C)** before choosing a goal.

A • Ischemic — no thrombolysis / thrombectomy

GOAL **Permissive hypertension** — treat only if SBP > 220 or DBP > 120; reduce $\leq 15\%$ over first 24 h.

- ☐ **Labetalol 10–20 mg IV** over 1–2 min, may repeat $\times 1$; if needed infusion **2–10 mg/min**

- ☐ **Nicardipine** start 5 mg/h, ↑ 2.5 mg/h q5–15 min, max 15 mg/h
- ☐ **Clevidipine** start 1–2 mg/h, double q90 s, usual 1–16 mg/h
- ☐ Hypotension — maintain MAP ≥ 65 mmHg; norepinephrine start 0.02–0.05 mcg/kg/min

B · Ischemic — with IV thrombolysis

GOAL Before / during infusion SBP < 185, DBP < 110; for 24 h after SBP < 180, DBP < 105.

- ☐ **Labetalol** 10–20 mg IV over 1–2 min, may repeat once; if persistent infusion 2–8 mg/min
- ☐ Nicardipine or clevidipine (doses as in A)
- ☐ Avoid nitroprusside / nitroglycerin if possible (ICP concern)

THROMBOLYTIC DOSING — FOR RECONCILIATION (USUALLY GIVEN IN ED)

- ☐ **Alteplase** 0.9 mg/kg IV (max 90) — 10% bolus over 1 min, 90% over 60 min
- ☐ **Tenecteplase** 0.25 mg/kg IV (max 25) — single bolus

POST-THROMBOLYSIS NURSING

- ☐ No antiplatelets / anticoagulants for 24 h
- ☐ Avoid invasive procedures (A-line, NGT, Foley, central line) for 24 h if feasible
- ☐ Emergent CT head for acute decline, new severe headache, BP spike, nausea/vomiting, or change in LOC

C · Intracerebral hemorrhage (and many SAH protocols)

GOAL Typical SBP 140–160 mmHg (avoid SBP < 120 unless specific indication).

- ☐ Nicardipine 5–15 mg/h IV
- ☐ Clevidipine 1–21 mg/h IV
- ☐ Labetalol 10–20 mg IV q10 min PRN, or infusion 2–8 mg/min

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Mechanical thrombectomy & post-procedure care

POST-THROMBECTOMY ICU ORDERS

- ☐ Document vessel(s) treated, TICI score, groin puncture / removal times, complications

- ☐ Neuro checks — q15 min × 2 h → q30 min × 6 h → q1 h × 16 h
- ☐ Groin site checks — same schedule for first 6 h, then q4 h
- ☐ Bed rest with affected leg straight — 4–6 h after sheath removal
- ☐ BP goal — commonly SBP 120–160 mmHg after successful reperfusion (confirm with interventionalist)

IMAGING

- ☐ Noncontrast CT head or MRI brain within 24 h; immediately if neurological decline

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Antithrombotic / anticoagulation

A • Ischemic stroke, no thrombolysis

- ☐ Aspirin 160–325 mg PO/PR once now, then 81 mg PO daily
- ☐ DAPT in minor stroke / TIA per protocol — clopidogrel 300–600 mg PO load, then 75 mg PO daily (21–90 days)

B • After IV thrombolysis

- ☐ Hold antiplatelets and anticoagulants for 24 h post-thrombolysis
- ☐ Noncontrast CT head at 24 h post-tPA / tenecteplase
- ☐ If CT shows no hemorrhage — start aspirin 160–325 mg PO once, then 81 mg PO daily

C • VTE prophylaxis

- ☐ SCDs to both legs, continuous while in bed
- ☐ Ischemic — start ≥ 24 h after onset and ≥ 24 h after thrombolysis with stable imaging: enoxaparin 40 mg SC daily (30 mg if CrCl < 30) or heparin 5,000 units SC q8–12h
- ☐ ICH — typically 24–48 h after onset once repeat CT stable and neurosurgery agrees; same prophylactic dosing

D • Chronic anticoagulation

- ☐ Hold home anticoagulant [drug / dose] until cleared by neurology / neurosurgery

- ☐ Re-initiation timing (3–14 days post-ischemic; later after ICH) documented in progress note

08 Glucose management

TARGET 140–180 mg/dL — avoid hypoglycemia.

HYPERGLYCEMIA (PERSISTENT > 180 MG/DL)

- ☐ Insulin infusion per ICU protocol (nurse-driven algorithm), OR basal + correctional SC — glargine 0.2–0.3 units/kg/day + rapid-acting AC & HS sliding scale

HYPOGLYCEMIA (< 70 MG/DL)

- ☐ If able to take PO — 15 g oral carbohydrate
- ☐ If NPO / altered — dextrose 50% 25 mL IV push, repeat as needed; consider D5 / D10 infusion for recurrence

09 Temperature management

- ☐ Treat $T \geq 38.0^{\circ}\text{C}$ — acetaminophen 650–1000 mg PO/PR q6h PRN (max 3–4 g/day; lower in liver disease / elderly)
- ☐ Persistent fever — workup: blood cultures, urine culture, chest x-ray; consider empiric antibiotics if infection suspected

NOTE No routine therapeutic hypothermia for stroke outside trials.

10 Fluids, electrolytes, ICP / edema

MAINTENANCE FLUIDS & SODIUM

- ☐ 0.9% NaCl 75–100 mL/h (adjust for volume status, cardiac / renal function)
- ☐ Avoid hypotonic fluids and excess free water in patients at risk for increased ICP
- ☐ Large hemispheric infarct / ICH — target Na^+ 140–145 mEq/L (or higher with hyperosmolar therapy)

Hyperosmolar therapy – PRN elevated ICP / herniation

- ☐ **3% NaCl** 30–50 mL/h IV continuous; titrate to Na^+ 145–155 mEq/L and ICP/CPP goals; BMP q4–6h
- ☐ **Mannitol 20%** 0.25–1 g/kg IV over 20 min PRN herniation; ensure hemodynamic stability and adequate renal function

If EVD / ICP monitor

- ☐ ICP goal < 20–22 mmHg; CPP goal 60–70 mmHg
- ☐ Specify EVD drainage mode (continuous vs intermittent), level, and CSF sampling schedule

11 Seizure prophylaxis & treatment

NO ROUTINE Ischemic stroke — **no prophylactic AEDs** unless seizures occur or high-risk cortical involvement and neurology recommends.

ICH / CORTICAL INVOLVEMENT (MANY CENTERS)

- ☐ **Levetiracetam** 1000 mg IV/PO load, then 500–1000 mg q12h for 3–7 days (per protocol)

ACUTE SEIZURE

- ☐ **Lorazepam** 2–4 mg IV over 2 min, may repeat q5 min (total up to ~0.1 mg/kg)
- ☐ Follow with AED load — levetiracetam 20–60 mg/kg IV OR fosphenytoin 20 mg PE/kg IV

12 Sedation, analgesia, delirium

ANALGESIA

- ☐ Acetaminophen as above; stronger pain — fentanyl 25–50 mcg IV q1–2h PRN, or 25–200 mcg/h infusion

LIGHT Prefer **light sedation** for neuro assessments — target **RASS –1 to 0** unless ICP crisis demands deeper sedation. Daily sedation interruption if feasible.

SEDATION IF INTUBATED

- ☐ Propofol 5–80 mcg/kg/min IV (start 5–10, titrate)
- ☐ OR dexmedetomidine 0.2–1.4 mcg/kg/h IV (avoid large bolus)

13 Swallowing, nutrition, GI prophylaxis

NPO NPO on admission until swallow evaluation — SLP swallow eval within 24 h.

ENTERAL NUTRITION

- ☐ If swallowing unsafe — place NGT / OGT or post-pyloric tube; start tube feeds within 24–48 h if poor oral intake expected

STRESS ULCER PROPHYLAXIS (IF VENTILATED / HIGH RISK)

- ☐ Pantoprazole 40 mg IV/PO daily, or famotidine 20 mg IV/PO q12h (adjust for renal function)

BOWEL REGIMEN

- ☐ Docusate 100 mg PO/NG BID; senna 8.6–17.2 mg qHS; bisacodyl 10 mg PR daily PRN no BM in 48–72 h

14 Infection prophylaxis & line / catheter care

- ☐ Foley catheter only if necessary; daily reassessment — remove when no longer indicated
- ☐ Central / arterial lines — maximal barrier precautions for insertion; daily assessment for necessity
- ☐ Oral care with chlorhexidine for intubated patients

15 Rehabilitation & disposition

CONSULTS

- ☐ Physical therapy — mobilize within 24–48 h if stable
- ☐ Occupational therapy

☐ Speech therapy — language, cognition (beyond swallow)

☐ Social work / case management — rehab vs SNF vs home planning

16 Laboratory & imaging

BASELINE

☐ CBC with diff, BMP, LFTs

☐ PT/INR, aPTT

☐ Lipid panel, HbA1c

☐ Troponin; type & screen (esp. ICH / possible surgery)

DAILY

☐ CBC, BMP, Mg, phosphate; others as indicated (LFTs on high-dose statin, CK if rhabdo risk)

NEUROIMAGING

☐ Ischemic — mandatory CT head / MRI at **24 h** after thrombolysis / thrombectomy; emergent noncontrast CT for any decline

☐ ICH — repeat CT head within **6–24 h** per protocol, or urgently for worsening exam

☐ Vascular imaging — CTA / MRA head and neck, carotid ultrasound as indicated

17 Secondary prevention

START WHEN Begin once the acute phase is stabilized and swallow is cleared.

☐ High-intensity statin — atorvastatin **40–80 mg PO qHS** or rosuvastatin **20–40 mg PO qHS**

☐ Long-term BP management — start / titrate ACEi/ARB, thiazide, CCB once out of permissive-hypertension window

☐ Diabetes control — adjust outpatient regimen guided by HbA1c and comorbidities

Not a substitute for clinical judgement. Verify doses, allergies, renal/hepatic function, and contraindications. Adapt all agents, BP targets, and time windows to your institutional stroke protocol and the individual patient.

Spreading knowledge

Improving outcomes