

CRITICAL CARE ORDER SET

Status Epilepticus

ICU management of adult status epilepticus. Run a time-driven ladder — a benzodiazepine now, an IV antiseizure load without waiting, then continuous anesthetic for refractory seizures — while stabilizing the airway and hunting the cause in parallel. Doses assume a ~70-kg adult; adapt to weight, renal/hepatic function, and your protocol.

PATIENT -----	MRN -----	WEIGHT (KG) -----	SEIZURE ONSET TIME -----
ALLERGIES -----	HOME ASMS -----	ORDERING CLINICIAN -----	ATTENDING -----

01 Initial stabilization

CLOCK Time the seizure. Give a **benzodiazepine now** (Section 3) while you secure ABCs — do not defer first-line therapy to finish the workup.

AIRWAY / BREATHING — OXYGEN

☐ Oxygen via nasal cannula or nonrebreather mask; titrate to $SpO_2 \geq 94\%$

AIRWAY PROTECTION — IF PERSISTENT CONVULSIONS, IMPAIRED GAG, HYPOXIA, GCS ≤ 8 , OR NEED FOR CONTINUOUS IV ANESTHETIC

☐ NPO now; head of bed 30° if not contraindicated; suction at bedside

Rapid sequence intubation (RSI)

TYPICAL EXAMPLE — MODIFY PER PATIENT

☐ Induction — **etomidate 0.3 mg/kg IV** once (alt: propofol 1–2 mg/kg IV)

- ☐ Paralytic — **rocuronium 1–1.2 mg/kg IV** once (alt: succinylcholine **1–1.5 mg/kg IV** — avoid if hyperkalemia risk)

NOTE Prefer short-acting paralytics — prolonged neuromuscular blockade masks ongoing seizures. Get continuous EEG on early if paralyzed.

CIRCULATION

- ☐ Two large-bore peripheral IVs (or central line if needed)
- ☐ **0.9% NaCl 500–1000 mL IV** bolus over 30–60 min as needed for hypotension

CONTINUOUS MONITORING

- ☐ Continuous cardiac monitor
- ☐ Continuous pulse oximetry
- ☐ Noninvasive BP **q5 min** until stable, then **q15 min**
- ☐ Capnography if intubated — continuous

02 Monitoring & investigations

NEUROLOGIC

- ☐ Neuro checks **q1 h** (or more frequently until stable)
- ☐ **Continuous EEG** — for persistent altered mental status after apparent clinical control, or suspected nonconvulsive status

LABORATORY — STAT, REPEAT AS INDICATED

- ☐ POC glucose now, then per ICU protocol
- ☐ CBC with differential
- ☐ CMP + Ca, Mg, phosphate
- ☐ ABG (or VBG if appropriate)
- ☐ ASM levels (phenytoin, valproate, levetiracetam, etc.) if on chronic therapy
- ☐ Serum lactate
- ☐ Creatine kinase (CK)
- ☐ Serum osmolality if toxic alcohols suspected
- ☐ β -hCG (childbearing potential)
- ☐ Toxicology screen (urine $\pm$ serum) as indicated
- ☐ Blood cultures if infection suspected
- ☐ Ammonia, LFTs, PT/INR + aPTT, TSH as indicated

IMAGING

- ☐ **Noncontrast head CT** — new-onset seizure, trauma, focal deficit, prolonged AMS, or concern for structural lesion
- ☐ MRI brain ($\pm$ contrast) when stable / per neurology

03 Emergent therapy (0–5 min) — benzodiazepine

DOSE Assume ~70-kg adult; use weight-based dosing. Give an **adequate** first dose — underdosing benzodiazepines is the most common error.

FIRST-LINE — IV LORAZEPAM

- ☐ **Lorazepam 0.1 mg/kg IV** (max 4 mg/dose), slow IV push over 2 min — may repeat once after 5 min if seizures persist

IF NO IV ACCESS — MIDAZOLAM

- ☐ **Midazolam 0.2 mg/kg IM** (max 10 mg) once
- ☐ **Midazolam 0.2 mg/kg IN or buccal** (max 10 mg) once

ALTERNATIVE — IV DIAZEPAM (IF LORAZEPAM UNAVAILABLE)

- ☐ **Diazepam 0.15–0.2 mg/kg IV** (max 10 mg) over 2 min — may repeat once after 5 min

MONITORING / SAFETY

- ☐ Continuous SpO₂ and cardiorespiratory monitoring
- ☐ Hold benzodiazepine if RR < 8/min or significant hypotension without airway secured

04 Urgent control therapy (within 20–30 min)

DON'T WAIT Begin an IV antiseizure load **immediately after** the benzodiazepine — do not wait to see if the seizure stops. Choose one agent below.

A • Levetiracetam — common ICU choice

- ☐ **Load 60 mg/kg IV** (usual max 4,500 mg) once, over 10–15 min — full load even in renal impairment

- ☐ **Maintenance 1,000–1,500 mg IV q12h**, adjust for renal function

B • Fosphenytoin — alternative

- ☐ **Load 20 mg PE/kg IV** (max 1,500 mg PE) once, up to **150 mg PE/min** — cardiac monitoring required
- ☐ **Maintenance 4–6 mg PE/kg/day** divided q8–12h; adjust for albumin, renal/hepatic function, check levels

CAUTION Avoid in phenytoin allergy, significant conduction disease without pacemaker, or hypotension.

C • Valproate — alternative / adjunct

- ☐ **Load 20–40 mg/kg IV** (commonly 30–40) once, at **3–6 mg/kg/min**
- ☐ **Maintenance 10–20 mg/kg/day IV** divided q8–12h, titrate to effect and levels

AVOID Pregnancy, significant hepatic dysfunction, known mitochondrial disorders, severe thrombocytopenia.

05 Refractory status epilepticus

DEFINE Failure of an adequate benzodiazepine + one IV antiseizure load — seizures persisting ≥ 30–60 min or recurring without return to baseline.

A • ESCALATE TO CONTINUOUS IV ANESTHETIC WITH INTUBATION

- ☐ Endotracheal intubation and mechanical ventilation
- ☐ Arterial line for continuous BP (strongly considered)
- ☐ ICU level of care with continuous EEG monitoring

5.1 • Midazolam infusion — common first anesthetic

- ☐ **Bolus 0.2 mg/kg IV** once (may repeat 0.1–0.2 mg/kg q5 min up to ~2 mg/kg total)
- ☐ **Infusion start 0.05–0.2 mg/kg/h**; ↑ by 0.05–0.1 mg/kg/h q5–15 min to EEG seizure suppression (often burst-suppression); typical max **2 mg/kg/h**

HEMODYNAMIC SUPPORT

- ☐ Norepinephrine infusion PRN to maintain **MAP** $\geq$ **65 mmHg**; central access if high-dose pressors

5.2 • Propofol infusion — alternative or add-on

- ☐ **Bolus** **1–2 mg/kg IV** once
- ☐ **Infusion** start **20–50 mcg/kg/min**; $\uparrow$ by **10–20** q**5–10 min**; common range **30–200 mcg/kg/min**
- ☐ Serum triglycerides q**48–72h** if prolonged; CK, lactate, ABG per protocol

PRIS High-dose / prolonged use — watch for propofol infusion syndrome (metabolic acidosis, rhabdomyolysis, cardiac dysfunction, hypertriglyceridemia).

5.3 • Other options — with neurology / neurocritical care input

- ☐ **Pentobarbital** (super-refractory SE) — bolus **5–15 mg/kg IV** (often divided), infusion **0.5–5 mg/kg/h** to burst-suppression; requires intubation, ventilation, pressors, cEEG
- ☐ **Ketamine** infusion (protocol-driven adjunct) — e.g., bolus **1–3 mg/kg**, infusion **1–5 mg/kg/h**

06 Adjunctive & supportive care

GLUCOSE

- ☐ If glucose $<$ **60 mg/dL** — **dextrose 50% 25 g IV** (50 mL); recheck in 15 min
- ☐ **Thiamine 100 mg IV** once before glucose if malnutrition / alcoholism suspected

ELECTROLYTES

- ☐ Correct Na, K, Mg, Ca, phosphate per ICU protocol
- ☐ If $\text{Mg}^{2+} < 1.5 \text{ mg/dL}$ with seizures — **magnesium sulfate 2 g IV** over 10–20 min

TEMPERATURE

- ☐ Acetaminophen **650–1000 mg PO/NG/IV q6h** PRN for $T > 38.0^\circ\text{C}$ (max 4 g/day; adjust in liver disease); cooling measures as needed

DVT & STRESS-ULCER PROPHYLAXIS

- ☐ **Enoxaparin 40 mg SC daily** ($\text{CrCl} > 30$, no major bleeding risk) or heparin **5,000 units SC q8–12h**

- ☐ Pantoprazole 40 mg IV/PO daily (or equivalent PPI / H₂-blocker per protocol)

RHABDOMYOLYSIS / RENAL PROTECTION

- ☐ Monitor CK, creatinine, urine output
- ☐ IV fluids to target urine output **0.5–1 mL/kg/h** unless contraindicated

07

Long-term regimen & de-escalation

WITH NEURO Coordinate the continuation regimen and weaning plan with neurology.

CONTINUATION ANTISEIZURE MEDICATION

- ☐ Continue maintenance ASM — levetiracetam, valproate, phenytoin/fosphenytoin, lacosamide, or others per neurology
- ☐ Convert to enteral route (NG/OG/PEG) when appropriate

WEANING OF SEDATIVE INFUSIONS

- ☐ After **≥ 24 h** seizure-free on EEG (local practice varies), gradually reduce anesthetic infusions while continuing maintenance ASMs and EEG monitoring

08

Etiology workup & cause-directed orders

PARALLEL Add cause-directed orders by suspected etiology while controlling seizures.

Meningitis / encephalitis

- ☐ Lumbar puncture — opening pressure, cell count, protein, glucose, Gram stain, culture, viral PCR
- ☐ Empiric antimicrobials per age/risk (e.g., ceftriaxone + vancomycin ± ampicillin); acyclovir for suspected HSV

Structural lesion / stroke

- ☐ CTA head and neck, MRI brain, neurosurgery / stroke team consult

Toxic / metabolic

- ☐ Specific antidotes / corrections — dialysis for certain toxins, NaHCO_3 for TCA, high-dose benzodiazepines + pyridoxine for INH

Chronic ASM nonadherence

- ☐ Restart home regimen after verifying doses and interactions

EDUCATIONAL USE ONLY

Not a substitute for clinical judgement. Verify doses, allergies, renal/hepatic function, and contraindications. Adapt all agents and thresholds to your institutional protocols, formulary, and the individual patient.

Spreading knowledge

Improving outcomes