

Status Epilepticus (SE): Pragmatic Emergency Management (Adults & Children)

Definition

- Continuous seizure activity ≥ 5 minutes, or
- Recurrent seizures without recovery of consciousness between episodes.
- Treat as SE at **5 minutes**—do not wait.

Initial Stabilization (0–5 min)

Step	Action
Airway	Position, suction, consider airway adjuncts
Breathing	High-flow O ₂ , monitor SpO ₂
Circulation	Cardiac monitor, BP, IV/IO access
Glucose	Immediate bedside glucose
Labs	FBC, U&E, Ca, Mg, LFTs, VBG/ABG, anticonvulsant levels if relevant, toxicology as indicated
Correct reversible causes	Hypoglycemia, electrolyte disturbance, intoxication, withdrawal
History	Epilepsy, medications, adherence, recent illness, trauma, pregnancy

Specific Corrections

Hypoglycemia

- Adults: 25 g dextrose IV (e.g., 50 mL D50W or equivalent)
- Children: D10W 2–5 mL/kg IV

Suspected alcohol-related malnutrition

- Thiamine before or with glucose in adults.

First-Line Therapy (5–10 min)

Benzodiazepines

Adults

Drug	Dose
Lorazepam IV	0.1 mg/kg (max 4 mg), may repeat once
Diazepam IV	0.15–0.2 mg/kg (max 10 mg)
Midazolam IM	10 mg (>40 kg), 5 mg (13–40 kg)

Children

Drug	Dose
Lorazepam IV	0.1 mg/kg (max 4 mg)
Diazepam IV	0.15–0.2 mg/kg (max 10 mg)
Midazolam buccal/intranasal	0.2 mg/kg
Diazepam PR	0.5 mg/kg

Key point: Do not give repeated benzodiazepine doses indefinitely. If seizure persists after adequate initial therapy, move promptly to second-line treatment.

Established Status Epilepticus (10–20 min)

Give ONE second-line antiseizure medication

Current evidence supports similar efficacy among these agents.

Drug	Adult Dose	Pediatric Dose
Levetiracetam	60 mg/kg (max 4.5 g) IV	40–60 mg/kg IV
Valproate	40 mg/kg (max 3 g) IV	20–40 mg/kg IV
Fosphenytoin	20 mg PE/kg IV	20 mg PE/kg IV

Practical selection

Situation	Preferred Agent
Unknown cause/general use	Levetiracetam
Known generalized epilepsy	Valproate
Significant liver disease	Levetiracetam
Mitochondrial disease	Avoid valproate
Significant cardiac disease	Avoid phenytoin/fosphenytoin if possible

Refractory Status Epilepticus (20–40 min)

Failure of benzodiazepine + adequate second-line drug

ICU involvement immediately

Action	Notes
Intubation	Usually required
Continuous EEG	As early as possible
Vasopressors	Often needed with anesthetics

Continuous anesthetic options

Agent	Loading Dose	Infusion
Midazolam	0.2 mg/kg	0.05–2 mg/kg/hr
Propofol (adults)	1–2 mg/kg	20–200 mcg/kg/min
Ketamine	1–3 mg/kg	1–10 mg/kg/hr

Additional therapies

- Phenobarbital 20 mg/kg
- Lacosamide 200–400 mg IV (adults)
- Further antiseizure agents guided by neurology

Super-Refractory Status Epilepticus (>24 h despite anesthesia)

Consider with neurology/ICU:

- Ketamine infusion
- Pentobarbital/thiopentone coma
- Immunotherapy (autoimmune encephalitis)
- Ketogenic diet
- Epilepsy surgery evaluation
- Neuromodulation in selected cases

Simultaneous Etiologic Work-Up

Cause	Investigations
CNS infection	LP (after stabilization), cultures
Stroke	Urgent CT ± MRI
Intracranial hemorrhage	CT brain
Toxicologic	Drug screen, medication review
Metabolic	Electrolytes, Ca, Mg, glucose
Autoimmune encephalitis	MRI, CSF, antibodies
Pregnancy	β-hCG, evaluate for eclampsia

Special Situations

Eclampsia

- Magnesium sulfate is treatment of choice.
- Do not rely solely on standard antiepileptic drugs.

Isoniazid Toxicity

- Pyridoxine (vitamin B6) IV.

Local Anesthetic Toxicity

- Lipid emulsion therapy.

Febrile Status Epilepticus (Children)

- Same acute seizure algorithm.
- Search for infectious source.
- LP only when clinically indicated.

Practical ED Flowchart

Time	Action
0 min	ABCs, O ₂ , IV/IO, glucose
5 min	Benzodiazepine
10 min	Repeat benzodiazepine once if needed
10–20 min	Levetiracetam 60 mg/kg IV (or valproate/fosphenytoin)
20–30 min	Call ICU/neurology, prepare airway
30–40 min	Intubate, continuous anesthetic infusion, EEG
Ongoing	Identify and treat underlying cause

High-Yield Pearls

- **Time is brain:** initiate treatment at 5 minutes.
- **One adequate benzodiazepine strategy, then escalate.**
- **Levetiracetam 60 mg/kg IV (max 4.5 g)** is increasingly favored because of ease of use and safety.
- Persistent altered consciousness after convulsions may represent **non-convulsive status epilepticus**—obtain EEG early.
- Always search aggressively for the underlying cause; seizure termination alone is not definitive management.
- In children, establish **IO access early** if IV access is delayed.