SUNY Downstate Health Sciences University
University Hospital of Brooklyn

CONVULSIVE STATUS EPILEPTICUS (CSE) ADULT TREATMENT GUIDELINE

Please Note: The guideline is based on published literature and a joint consensus opinion by the Departments of Neurology and Pharmacy. This document should not supersede clinical judgment as patient-specific scenarios may warrant deviation from guideline recommendations.

PHARMACOLOGIC ANTICONVULSANT THERAPY

1st Line (seizures ongoing for >5 minutes)
If IV access available:
Lorazepam 4 mg IVP x 1
- If seizure uncontrolled within 5 min, repeat 4 mg IVP x 1

If no IV access available:
Midazolam 10 mg IM x 1

IF SEIZURE PERSISTS*
*2nd line agents may be skipped in toxin-induced causes of CSE

2nd Line (10-30 min): agents may be used in combination
Fosphenytoin 20 mg PE/kg IVPB (max rate 150 mg/min) or
Phenytoin 20 mg/kg IVPB (max rate 50 mg/min)
- Fosphenytoin preferred, but use phenytoin if drug shortage

Levetiracetam 60 mg/kg IVPB over 15 min (max 4,500 mg)
Valproic Acid 40 mg/kg IVPB over 15 min (max 3,000 mg)
Phenobarbital 20 mg/kg (max rate 100 mg/min)
Lacosamide 400 mg IVPB over 15 min

If seizures persist:
(fos)Phenytoin *or* Phenobarbital: may administer additional 5-10 mg/kg x 1 (each 1 mg/kg is expected to increase level by approximately 1 mcg/mL)
Valproic Acid: may administer additional 10-20 mg/kg x1

IF SEIZURE PERSISTS*
*Start continuous EEG monitoring

3rd Line (30-60 min) for *refractory* status epilepticus
Midazolam (intubation required): load 0.2 mg/kg IV (max 10 mg), may repeat q5min per MD evaluation (total max 100 mg)
- Continuous Infusion: 0.1-2 mg/kg/hr (max 200 mg/hr)

Propofol (intubation required): load 2 mg/kg IV (max 200 mg), may request q5min per MD evaluation (total max 1000 mg)
- Continuous Infusion: 30-100 mcg/kg/min

*Propofol infusion syndrome: lactic acidosis, rhabdomyolysis, acute liver failure, ventricular arrhythmias particularly with doses >70 mcg/kg/min for >48 hours, risk higher with concomitant corticosteroids and catecholamines

Ketamine (dose adjusted per MD order ONLY)
- Consider as 3rd line agent if previous response to ketamine
- Load 1.5 mg/kg IV over 3-5 min, may repeat q5min per MD evaluation (max load 4.5 mg/kg over 10 min)
- Continuous Infusion: 0.9-10 mg/kg/hr

IF SEIZURE PERSISTS*
*Intubate and transfer to ICU/Neuro Stepdown (if not already performed)

4th Line (>72 hours) for *super refractory* status epilepticus
Ketamine (dose adjusted per MD order ONLY): see above box
Pentobarbital (dose adjusted per MD order ONLY)
- Load 5 mg/kg IV (max rate 50 mg/min), may repeat q5min per MD evaluation up to 3 doses until burst suppression or seizure cessation (max single loading dose 15 mg/kg)
- Continuous Infusion: 1-10 mg/kg/hr

CONCURRENT MANAGEMENT & MONITORING

- Airway, Breathing, Circulation
- Vital signs (continuous monitoring): HR, BP, O_2, EKG
- Obtain IV access (≥2 IV's)
- Blood glucose check: if <70 mg/dL, then administer **Thiamine** 100 mg IVPB x 1, then **D50W** 25 g IVP x 1
- Labs: CBC, Comprehensive metabolic panel, ABG, tox screens (blood & urine), blood cultures (if febrile), AED levels (if PMH of epilepsy), HCG (females)

Check post-load level in 4 hours for (fos)Phenytoin, Valproic Acid, and Phenobarbital.
Continue maintenance anticonvulsants and adjust doses to target therapeutic levels:

Usual Maintenance Dose	Therapeutic Level
(fos)Phenytoin 100 mg q8h	15-20 mcg/mL (total)* 1-2 mcg/mL (free)**
Levetiracetam 1000-2000 mg q12h	25-60 mcg/mL** (true range unknown)
Valproic Acid 15-30 mg/kg q12h	70-120 mcg/mL
Phenobarbital 0.5-2 mg/kg q12h	20-40 mcg/mL
Lacosamide 200-300 mg q12h***	Unknown

*Total phenytoin level should be corrected for albumin & renal function
**Send-out level
***Higher doses of lacosamide warrant q12h EKG monitoring

Ketamine Monitoring: vital signs q15min x 4 at initiation or with each dose change, then q2hr
- Notify MD if: HR>100 beats/min, RR <12 breaths/min, apnea after rapid IV push, O_2 sat <93%, SBP <90 or >180 mmHg, emergence reactions (hallucinations, unexplained agitation), laryngospasm, increased secretions/salivations

Pentobarbital Monitoring: all organ function (including bowel function), hemodynamics, serum potassium

Titration or weaning of infusions for CSE should be performed under MD direction, in conjunction with cEEG results and input from Neurology and Pharmacy.

REFERENCES

1. Brophy GM, Bell R, Claassen J, et al. Guidelines for the evaluation and management of status epilepticus. *Neurocrit Care*. 2012;17:3-23.
2. Claassen J, Riviello JJ Jr, Silbergleit R. Emergency Neurological Life Support: status epilepticus. *Neurocrit Care*. 2015;23:S136-142.
3. Glauser T, Shinnar S, Gloss D, et al. Evidence-based guideline: treatment of convulsive status epilepticus in children and adults: report of the Guideline Committee of the American Epilepsy Society. *Epilepsy Curr*. 2016;16:48-61.

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