# Seizure & Status Epilepticus (SE) – ED/Inpatient/ICU Clinical Practice Guideline
## For Patients > 2months old

Status Epilepticus defined as: (i) continuous clinical and/or electrographic seizure activity >5 minutes
(ii) recurrent seizure activity without return to baseline in between seizures

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| Time of Seizure | Medications | Interventions |
|---|---|---|

**0-10 min**

**Stage I**
*Impending SE*

**No IV Access**

**Midazolam Intranasal**
0.2 mg/kg
*Max single dose 10mg*
*Max volume 1mL per nostril*
**OR**
**Diazepam Per Rectum**
≤5yo and ≥5kg: 0.5mg/kg
6-11yo: 0.3mg/kg
≥12yo: 0.2mg/kg
*Max single dose 20mg*
**OR**
**Midazolam IM**
0.2 mg/kg
*Max single dose 10mg*

**IV Access**

**Lorazepam IV (Preferred)**
0.1mg/kg;
slow IV push
*Max single dose 4mg*
**OR**
**Diazepam IV**
0.2mg/kg dose slow IV push
*Max single dose 10mg*

***If patient already received Stage I at home or EMS, proceed to Stage II recommendations***

- Stabilize patient (airway, breathing, circulation, neurologic exam)
- Time seizure from its onset, monitor vital signs
- Assess oxygenation, give oxygen via nasal canula/ mask, consider intubation if needed
- Initiate cardiac and respiratory monitoring
- Obtain IV access
- If appropriate collect:
  - CMP, CBC with diff, toxicology screen, AED trough levels
- Collect finger stick blood glucose
  If glucose <60mg/dl, administer 5mL/kg D10W IV

Seizure resolved within 5 min?

**YES** →
- Monitor for return to baseline level of consciousness.
- If *new onset* seizure refer to new onset seizure guideline
- If known seizure disorder contact neurologist as needed
- If does not return to baseline consider admission
- If recurrent seizures: Continue with algorithm at stage II

NO

*Give additional dose of any agent listed in Stage I while preparing second-line agent.*

**10-30 min**

**Stage II**
*Established SE*

**Second-Line Medication:**

- **Levetiracetam** IV 60mg/kg x1 dose
  *Max single dose 4500mg*; Infuse over 15 minutes

Seizure Resolved →

**Criteria to transport from UC to the ED:**
- Stage I medication did not resolve seizure
- Patient not at baseline mental status
- Respiratory depression and/or concern for airway
- Onset of new symptoms

**If patient in ED or Inpatient:**
- Consult Neurology/Consider EEG (Inpatient)
- Consider admission to Inpatient or ICU

**If seizure not resolved, proceed to Alternative Second-Line medications**

**Call Neurology and prepare order for alternative second-line agent**

**Administer Alternative Second-Line Medication**

- **Fosphenytoin** IV; 20mg PE/kg x1 dose
  *Max 1500mg PE/dose*; Infuse over 7-10 minutes
  *[Do not use in patients with known SCN1a/Dravet Syndrome]*

**Adjunct Second-Line options:**
*Consider in cases of medication shortage or if patient already on adjunct medication:*
- **Valproic acid:** IV, 40mg/kg x 1 dose (only in patients known to take as home medication) *Max single dose 3000mg*, infuse over 20 min
- **Phenobarbital:** IV, 20mg/kg x1 dose; *Max single dose 1000mg*; Infuse over 20 minutes
- **Lacosamide:** IV, 10 mg/kg x1 dose (max single dose 200-400mg); infuse over 30 min

Seizure resolved

**YES** →
- If new onset seizure, refer to new onset seizure guideline
- If established patient, follow up with PCP/ Epileptologist/Neurologist
- Consider admission

**NO**

**30-60 min**

**Stage III**
*Refractory SE*

***Third-Line Medication***

***Midazolam IV infusion:**
- Bolus: 0.2 mg/kg (Max single dose 10 mg)
- Start continuous infusion at 0.1 mg/kg/hr.
- Re-bolus every 5 minutes until clinical seizures stop
- Increase drip rate in increments of 0.05-0.1 mg/kg/ hr (Max dose 2 mg/kg/hr) in consultation with neurology

- *Manage per Neurology
- Contact ICU for admission
- Mechanical ventilation
- +/- vasopressors
- Individualized etiologic work-up
- Consider continuous EEG monitoring

**Adjunct Third-Line Medication Option:**

**Pentobarbital IV infusion:**
5-10 mg/kg load over 1 hour, then begin infusion at 1mg/kg/hr

**>24 hours**
**Stage IV**
*Super Refractory SE*

**If seizure persists or recurs after 24 hours of Continuous Infusion therapy, consider Epileptologist consult**

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