**Status Epilepticus Algorithm**

**INCLUSION**
- Patients with one continuous seizure lasting ≥ 5 min
- Patients with multiple, intermittent seizures lasting ≥ 5 min between which the patient does not regain consciousness

**EXCLUSION**
- For patients with readily accessible individualized seizure plans, please defer to patient-specific plan

**NEONATES ≤28 DAYS**
- Treat with benzodiazepine and administer Phenobarbital 20mg/kg as 2nd medication (see Table 3).

**KEY POINT**
The care team’s ability to stop a patient’s seizure/seizures depends on timely administration of medications. The longer the seizure, the more treatment-resistant it becomes.

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**Patient Seizure Starts**
(*RN documents start time*)
1. Assess ABCs (See Table 1)
2. Obtain Patient Temp x 1
3. Call Local RN Helper
4. Notify Primary Service Provider

---

**0 min**
- RN Helper Arrives
  - Obtain Labs:
    - BMP, CBC & iCa
    - Glucose via iStat or Accuchek
    - PPN drug levels
    - Report glucose aloud to team

---

**Bedside or Primary RN**
- **Patient Seizure Starts**
  - Assess ABCs
  - Monitor CBC, WBC, platelet, PE
  - Monitor temperature
  - Monitor glucose
  - Monitor liver enzymes
  - Monitor INR

---

**Primary Service Provider (MD/APN)**
- **Provider Arrives**
  - Assess patient
  - Order labs per order set

---

**TEAM QUESTION**
Does the patient have IV access?

**NO**
- **Continue to Monitor ABCs**
- **TEAM QUESTION**
  - Does the seizure continue? Has the patient had multiple seizures without regaining consciousness?

**YES**
- **Continue to Monitor ABCs**
- **TEAM QUESTION**
  - Does the seizure continue? Has the patient had multiple seizures without regaining consciousness?

---

**NEONATES ≤28 DAYS**
- Treat with benzodiazepine and administer Phenobarbital 20mg/kg as 2nd medication (see Table 3).

---

**TEAM QUESTION**
Does the seizure continue? Has the patient had multiple seizures without regaining consciousness?

**YES**
- **Continue to Monitor ABCs**
  - **TEAM QUESTION**
    - Does the seizure continue? Has the patient had multiple seizures without regaining consciousness?

---

**Further Discussion** (varies by location)
- Acute Care Patients: Call CAT
- ED Patients: Call PICU
- ICU Patients: Further On-Unit Discussion

---

**Review Resulted STAT Labs**
- See Table 4 for diagnostic studies & treat primary cause

---

**TEAM DISCUSSION**
In collaboration with Neurology, determine plan for patient care. See page 2 for considerations after 30 minute mark.

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This clinical care guideline is meant as a guide for the healthcare provider, does not establish a standard of care in legal matters, and is not a substitute for medical judgment which should be applied based upon the individual circumstances and clinical condition of the patient.
### TABLE 1: ABC Assessment

- Provide oxygen to maintain SO₂ >92%
- Cycle blood pressure cuff every 3 minutes, administer NS bolus if hypotensive
- Monitor heart rate

### TABLE 2: Alternatives to Fosphenytoin

If Fosphenytoin is contraindicated, can administer:

- Levitaracetam 60mg/kg (max 4500mg/dose)
  - OR
- Phenobarbital 20mg/kg

### TABLE 3: Neonates <28 days

- Consult Neurology
- Preferred 2ⁿᵈ medication at 10 minutes is Phenobarbital 20mg/kg
- Discuss 3ʳᵈ medication choice/dose with Neurology
- In partnership with Neurology, expedite order of MR Ventricle DWI/ADC/GRE

### TABLE 4: Studies for SE without Identified Etiology

**Initial Studies:**
- Serum electrolytes & glucose
- Complete blood count
- Antiepileptic drug levels (if applicable)
- Lumbar puncture:
  - Consider if febrile or concern for CNS infection
  - Obtain cell count, glucose, protein and culture
- Imaging Studies:
  - MR Ventricle with DWI and GRE or CT Head

**Additional/Expanded Studies to Consider (for unusual presentation, refractory seizures):**
- CSF: meningoencephalitis panel, viral studies, lactate, autoimmune encephalitis panel
- Metabolic studies: lactate, pyruvate, acylcarnitine profile, serum amino acids, urine organic acids
- Blood and urine cultures
- Expanded CNS imaging (once seizures controlled):
  - Full MRI Brain
  - Vascular imaging (MRA/CTA, MR venogram)
  - MR Spectroscopy

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**Status Epilepticus Algorithm**

<table>
<thead>
<tr>
<th>Considerations for after 30 min: Overview of Treatment of Refractory Status Epilepticus</th>
</tr>
</thead>
<tbody>
<tr>
<td>If seizures continue despite appropriate doses of a benzodiazepine and a loading dose of another anticonvulsant, the patient is in refractory SE.</td>
</tr>
<tr>
<td><strong>Key management principles include:</strong></td>
</tr>
<tr>
<td>• Advance drug dosing quickly</td>
</tr>
<tr>
<td>• Use bolus doses to initiate therapy</td>
</tr>
<tr>
<td>• Use physiologic management (BP, oxygenation, CO₂, temperature) and attention to metabolic stressors to attenuate secondary injury</td>
</tr>
<tr>
<td>• If possible identify and treat the underlying cause</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial Steps:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• If not already done, call CAT for patients outside of the ER or ICU</td>
</tr>
<tr>
<td>• Patients are likely to require intubation. Anticipate the need for pressors as therapy is escalated (consider a-line, central line).</td>
</tr>
<tr>
<td>• Video-EEG monitoring should be initiated for all patients in refractory SE</td>
</tr>
<tr>
<td>• Emergently consult neurology if not already done</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Line Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Midazolam</strong></td>
</tr>
<tr>
<td>• Load with 100-200mcg/kg</td>
</tr>
<tr>
<td>• Continuous infusion starting at 100mcg/kg/h</td>
</tr>
<tr>
<td>• Increase dose every 15 minutes by 50mcg/kg/h until electrographic seizure control achieved</td>
</tr>
<tr>
<td>• Max dose 600-800mcg/kg/h</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Line Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pentobarbital</strong></td>
</tr>
<tr>
<td>• Load with 6-8mg/kg IV</td>
</tr>
<tr>
<td>• DO NOT use if hypotension cannot be controlled</td>
</tr>
<tr>
<td>• Start maintenance 1-4mg/kg/h</td>
</tr>
<tr>
<td>• Titrate to burst suppression on EEG</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Further steps for super-refractory SE, or if pentobarbital contraindicated</th>
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</thead>
<tbody>
<tr>
<td><strong>Possible medication choices include:</strong></td>
</tr>
<tr>
<td>• Topiramate (enteral loading dose)</td>
</tr>
<tr>
<td>• Ketamine</td>
</tr>
<tr>
<td>• Ketogenic diet</td>
</tr>
</tbody>
</table>
Status Epilepticus Algorithm

Evidence


Raspall-Chaure M, Chin RF, Neville BG, Scott RC. Outcome of paediatric convulsive status epilepticus: a systematic review. Lancet Neurol 2006; 5:769-779


Treatment of convulsive status epilepticus. Recommendations of the Epilepsy Foundation of America's Working Group on status epilepticus. JAMA 1993; 270:854-859