**Status Epilepticus**

Status epilepticus (SE) is a **medical emergency** that is associated with significant morbidity and mortality.

### Types of Status Epilepticus

<table>
<thead>
<tr>
<th>Convulsive Status</th>
<th>Non-Convulsive Status</th>
<th>Focal Status</th>
<th>Absence Status</th>
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</thead>
<tbody>
<tr>
<td>≥ 5 minutes of continuous convulsive seizure OR ≥ 2 discrete seizures without return to baseline OR repeated seizures for ≥ 30 minutes.</td>
<td>≥ 10 minutes of continuous seizure OR ≥ 30 total minutes of ictal EEG activity in any given hour. These patients are at risk for convulsive status.</td>
<td>Focal epileptic seizure that lasts ≥ 30 minutes OR repeated focal epileptic seizures (≥ 30 minutes) with incomplete recovery between seizures.</td>
<td>Prolonged, generalized absence seizure that usually last for hours to days. Cardinal symptom is altered level of consciousness.</td>
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*Convulsive status is the most common type of status epilepticus (SE). > 50% of SE episodes occur in children with no prior seizure history.*

### Common Etiologies of Status Epilepticus

<table>
<thead>
<tr>
<th>Acute Symptomatic (17-52%)</th>
<th>Remote (16-39%)</th>
<th>Other</th>
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<tbody>
<tr>
<td>CNS infection</td>
<td>Hemorrhage</td>
<td>Perinatal hypoxic-ischemic encephalopathy</td>
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<tr>
<td>Metabolic (hypoglycemia, hyperglycemia, hyponatremia, hypocalcemia)</td>
<td>Non-compliance with AEDs</td>
<td>Cerebral dysgenesis</td>
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<tr>
<td>Stroke</td>
<td>Overdose</td>
<td>Cerebral dysgenesis</td>
</tr>
<tr>
<td>Toxins</td>
<td>Progressive neurodegenerative disorders</td>
<td>Epilepsy</td>
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<tr>
<td></td>
<td>Cerebral migrational disorders</td>
<td>Idiopathic (5-19%)</td>
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<td></td>
<td></td>
<td>Prolonged febrile convulsions (23-30%)</td>
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<td>Trauma</td>
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</tbody>
</table>

### History

- **Seizure history:** pre-ictal, ictal, and post-ictal phases. Ask about duration, focal symptoms, provoking events, and use of anti-convulsant medications.

- **Past medical history:** previous seizures or history of epilepsy or other neurological disorders.

- **Family history:** seizures or epilepsy.

- **Illness symptoms:** fever, nausea, vomiting, diarrhea, rash.

- **Trauma, accidental and non-accidental injury**

- **Medications (AED)**

- **Toxins**

### Investigations

- **Glucose**
- **CBC with differential**
- **Electrolytes**
- **Ca²⁺, Mg²⁺, P**
- **Liver function tests**
- **Toxicology screen**
- **Anticonvulsant level**
- **Electroencephalogram (EEG)**
- **Head CT or MRI**
- **Urine, blood, CSF cultures**

### Management of Status Epilepticus in Hospital

**GOAL:** stop the seizure and prevent brain injury. Then determine the underlying cause.

#### 1st Line Therapy – 10 minutes

- **AIRWAY support**
- **BREATHING – assess breathing, 100% O₂, monitor O₂ saturation**
- **CIRCULATION – BP, pulse**
- **Establish IV ACCESS**
- **Rapid GLUCOSE test**
- Position the child on their side to prevent aspiration.

#### 2nd Line Therapy – 20 minutes

- **NO IV ACCESS**
  - **Lorazepam BUC or PR; Midazolam BUC, IN, or IM; Diazepam PR**
  - **Monitor; follow-up investigations**
  - **Repeat x1 within 5 minutes or switch to IV route**
  - **If still seizing after 5 minutes**

- **IV ESTABLISHED**
  - **Lorazepam IV; Midazolam IV; Diazepam IV**
  - **Monitor; follow-up investigations**
  - **Repeat x1 within 5 minutes**
  - **If still seizing after 10 minutes**

#### 2nd Line Treatment Options

- **Phenytoin IV, IM; Fosphenytoin IV, IM; Phenobarbital IV; Valproic acid IV; Levetiracetam IV**

#### By 35-45 minutes

- **REFRACTORY STATUS EPILEPTICUS:** unresponsive to 2 different anticonvulsant medications (eg. benzodiazepine and phenytoin)
- **Consult PICU and Peds Neurology teams for consideration of rapid sequence intubation and midazolam continuous infusion. Monitor ABCs continuously.**

*Note: this algorithm applies only to infants and children. Management differs for neonates.*

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