### Pre-hospital management – Convulsive seizure lasting longer than 5 minutes

- **Note:** Early pharmacological intervention improves outcome. Medications (single dose) are recommended for seizures lasting longer than 5 minutes.

#### Medications

<table>
<thead>
<tr>
<th>Meds</th>
<th>Route</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>IM</td>
<td>0.2 mg/kg (maximum 10 mg)</td>
</tr>
<tr>
<td></td>
<td>Intranasal</td>
<td>0.2 mg/kg (maximum 5 mg/nostril)</td>
</tr>
<tr>
<td></td>
<td>Buccal</td>
<td>0.5 mg/kg (maximum 10 mg)</td>
</tr>
<tr>
<td>OR</td>
<td>Lorazepam</td>
<td>Buccal</td>
</tr>
<tr>
<td>OR</td>
<td>Diazepam</td>
<td>Per-rectum (PR)</td>
</tr>
</tbody>
</table>

*Preferred choice*

### In-hospital management of convulsive status epilepticus

**A** = Support airway

**B** = 100% oxygen, assess breathing, O₂ saturation monitor

**C** = Cardiorespiratory monitor, check pulse / blood pressure

**Establish intravenous (IV) access:** Two IV lines if possible

**Investigations:** Rapid glucose test, critical labs

**Ongoing monitoring:** for respiratory depression, hypotension, arrhythmias

Place patient in a safe position, do not restrain.

Bolus 0.5 g/kg glucose (as dextrose solution) if glucose is ≤ 2.6 mmol/L

Consult specialty services when there are signs of respiratory or hemodynamic instability.

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### First line medication:

<table>
<thead>
<tr>
<th>Meds</th>
<th>IV available</th>
<th>No IV access</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>0.1 mg/kg IV (maximum 5 mg) (given over 30 to 60 seconds)</td>
<td>No IV access: IM</td>
<td>0.2 mg/kg (maximum 10 mg)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intranasal: 0.2 mg/kg (maximum 5 mg/nostril)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buccal: 0.5 mg/kg (maximum 10 mg)</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Lorazepam</td>
<td>0.1 mg/kg IV (maximum 4 mg) (given over 30 to 60 seconds)</td>
<td>No IV access: Buccal</td>
</tr>
<tr>
<td>OR</td>
<td>Diazepam</td>
<td>0.3 mg/kg IV (maximum 5 mg if &lt; 5 yrs) (maximum 10 mg if ≥ 5 yrs)</td>
<td>No IV access: PR</td>
</tr>
</tbody>
</table>

*Preferred choice*

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Still seizing after 5 minutes?

- No: Monitor, investigate
- Yes: Repeat first-line medication once, 5 minutes after first dose is given.
  - If IV access is available, then switch to IV route.

If ≥ 2 doses of first-line medications have been given (including pre-hospital medications), and the seizure persists for more than 5 minutes after the last dose of benzodiazepine, then proceed to **second-line** medications.

Consider intraosseous (IO) access if no IV line yet
Second line medication: §

- **Fosphenytoin IM or IV**
  20 mg PE/kg (maximum 1000 mg PE). If using IV route, give medication over 5 to 10 minutes, mixed in normal saline (NS) or Dextrose 5% (DSW).

- **Phenytoin IV**
  20 mg/kg (maximum 1000 mg), given over 20 minutes, mixed in NS.

- **Phenobarbital IV**
  20 mg/kg (maximum 1000 mg), given over 20 minutes, mixed in NS or D5W.

- **Levetiracetam IV**
  60 mg/kg (maximum 3000 mg), given over 5 to 10 minutes, mixed in NS or D5W.

- **Valproic acid IV** *
  30 mg/kg (maximum 3000 mg), given over 5 minutes, mixed in NS or D5W.
  Give extra 10 mg/kg dose if ineffective after 10 minutes (not exceeding maximum dose).

### Still seizing?

- **No**
  Monitor, investigate.

- **Yes**
  - Consult specialty services (PICU, Neurology)
  - Prepare for advanced airway support (medication-assisted intubation) and administration of anesthetic medications.

If the patient has received **only 1 second-line** medication, and the seizure **persists for 5 minutes after** that medication has been administered:

- Give a different second-line medication
- **Warning:** Do not combine phenytoin and fosphenytoin

Consider giving a dose of pyridoxine in children younger than 18 months of age.

- Dose: 100 mg IV

If the patient has already received ≥ 2 **second-line** medications:

- Continue on to next step.

### Refractory status epilepticus

- Consult specialty services (PICU, Neurology)
- Prepare for advanced airway support (medication-assisted intubation) and administration of anesthetic medications.

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§ Choice of second-line medications: There is insufficient evidence to recommend a specific second-line medication.

** PE:** Refers to “Phenytoin Equivalents”. 1 mg Phenytoin = 1 mg PE.

** IV formulation of valproic acid is only available through Health Canada’s “Special Access Programme”. Valproic acid should not be used in cases of known or suspected mitochondrial disease.”

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**Source:** Emergency management of the paediatric patient with convulsive status epilepticus, Acute Care Committee, February 1, 2021. Available at [www.cps.ca](http://www.cps.ca)