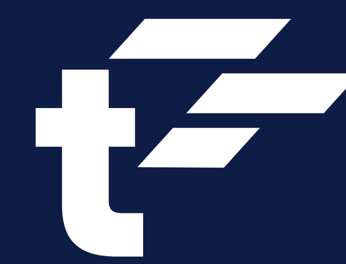
# Pediatric Status Epilepticus Algorithm

*in children over 1 month of age



## Recognition of Status Epilepticus

An unresponsive patient with either one of the following has convulsive status epilepticus:

- Seizure >5 min and/or ongoing seizure on presentation to EMS/ED
- 2 or more seizures without full recovery of consciousness between seizures

## Initial Management

- Initiate ABCs, cardiorespiratory and BP monitoring
- $O_2$ 10-15 L/min via non-rebreather mask
- Prioritize giving the first dose of benzodiazepine as early as possible, followed by checking blood glucose
- Monitor for respiratory depression, hypotension, arrhythmias
- Give acetaminophen 15 mg/kg/dose (MAX 650 mg) PR if febrile
- **Consider other investigations**
  - o Electrolytes, blood gas, calcium, CBC, serum glucose
  - o Other: anticonvulsant drug levels, LFTs, blood & urine culture

**Phase 1 5-15 min**

### Prehospital

1. Give Midazolam IM/intranasal (IN) (see dosing table).
2. Check blood glucose:
   If blood glucose <3.3 mmol/L (<60 mg/dL): Treat with D25W 2 mL/kg/dose IV (MAX 100 mL/dose) **OR** D10W 5 mL/kg/dose IV (MAX 250 mL/dose).
3. If still seizing after 5 minutes, give Midazolam second dose. MAX cumulative dose 10 mg in prehospital setting.

### Emergency Department (ED)

1. Give benzodiazepine if two doses not already given prior to ED arrival (see dosing table).
2. Check blood glucose if not already done. Treat hypoglycemia as above. Reassess blood glucose in 5 minutes.
3. Give second benzodiazepine dose for ongoing seizures 5 minutes after first dose. When IV/IO access available, switch to IV/IO route.

**CAUTION: Do not give more than 2 doses of benzodiazepines.**

### First Line Agents

| **No IV/IO** | |
|---|---|
| Midazolam IM or IN | ≤13 kg: 0.2 mg/kg/dose<br>13-40 kg: 5 mg/dose<br>>40 kg: 10 mg/dose<br>MAX 10 mg/dose |
| **IV/IO** | |
| Lorazepam IV/IO | 0.1 mg/kg/dose<br>MAX 4 mg/dose |
| Midazolam IV/IO | 0.1 mg/kg/dose<br>MAX 10 mg/dose |

**Phase 2 15-20 min**

**! Reassess ABCs, monitor for respiratory depression. If still seizing give one of these second-line agents:**

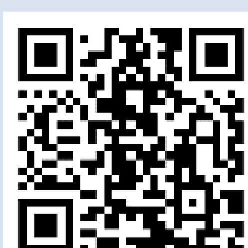
| Drug | Dose | Age | Comments/Cautions |
|---|---|---|---|
| Levetiracetam | 60 mg/kg/dose IV/IO (MAX 3000 mg/dose)<br>Infuse over 5 minutes | Any age | ↓ side effects/drug interactions, low risk of psychosis |
| Fosphenytoin | 20 mg phenytoin equivalent (PE)/kg/dose IV/IO/IM (MAX 1000 mg PE/dose)<br>Infuse over 10 minutes | Any age | ↓ BP, ↓ HR, arrhythmia; avoid in toxicologic seizures; choose alternate drug if on phenytoin at home or consider partial loading dose of 10 mg PE/kg/dose |
| Valproic Acid | 40 mg/kg/dose IV/IO (MAX 3000 mg/dose)<br>Infuse over 10 minutes | ≥2 years | In Canada, only available via Health Canada Special Access Program; caution in patients with liver dysfunction, mitochondrial disease, urea disorder, thrombocytopenia or unexpected developmental delay |
| Phenytoin | 20 mg/kg/dose IV/IO (MAX 1000 mg/dose)<br>**Infuse over 20 minutes** | Any age | ↓ BP, ↓ HR, arrhythmia; avoid in toxicologic seizures; choose alternate drug if on phenytoin at home or consider partial loading dose of 10 mg kg/dose; use only if Fosphenytoin not available |
| Phenobarbital | 20 mg/kg/dose IV/IO (MAX 1000 mg/dose)<br>**Infuse over 20 minutes** | **<6 mos** | Respiratory depression, especially in combination with benzodiazepines |

**! Reassess ABCs, monitor for respiratory depression. If still seizing:**

**Administer alternative second line agent (e.g., if fosphenytoin given, use levetiracetam)**

## Pediatric Referral Centre Discussion:

- Need for intubation vs. bag-mask ventilation; hypercapnia is common and resolves with seizurecessation and non-invasive respiratory support
- Additional work up including full septic work up, use of antibiotics/antivirals, brain imaging
- Persistent altered LOC possibly related to non-convulsive status epilepticus or severe underlyingbrain disorder
- Third line agent: infusion of midazolam, pentobarbital, propofol OR ketamine



***Scan or click the QR code to learn more, to see a list of key references, and development team members.***

*__Disclaimer:__ The purpose of this document is to provide emergency healthcare professionals an approach to the assessment and management of Pediatric Status Epilepticus. The TREKK Network is not liable for any damages, claims, liabilities, costs or oblications arising from the use of this document, including loss or damages arising from any claims made by a third party.* ***This resource was originally produced by the TREKK content development team, in collaboration with the EMSC Innovation and Improvement Centre***

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