Pediatric Status Epilepticus Algorithm

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 arrival to ED
- 2 or more seizures without full recovery of consciousness between seizures

Pre-Hospital Care

- If one dose of benzodiazepine given, repeat dose x 1 and prepare 2nd line agent
- If multiple doses of benzodiazepines given, move directly to 2nd line agent

Initial Management

- Initiate ABCs, cardiorespiratory and BP monitoring
- O_2 10-15 L/min non-rebreather mask
- Establish IV lines x 2 (NS)
- Rapid bedside glucose
  - If less than 3 mmol/L, give 5 mL/kg D10W IV push, then start D10W infusion @ 5 mL/kg/hr (MAX 250 mL/hr). Recheck glucose in 5 min.

- Monitor for respiratory depression, hypotension, arrhythmias
- Give acetaminophen 15 mg/kg/dose (MAX 650 mg) PR if febrile

- **Consider other investigations:**
  - Electrolytes, blood gas, calcium, CBC, serum glucose
  - Other: anticonvulsant drug levels, LFTs, blood & urine culture

From arrival in ED with ongoing seizure

5 min

First Line Agents: Benzodiazepines

If IV access, give 1st dose of:
- **Lorazepam 0.1 mg/kg (MAX 4 mg) IV over 2 min OR** one of:
  - Midazolam IV 0.1 mg/kg (MAX 10 mg) IV over 2 min
  - Diazepam 0.2 mg/kg (MAX 10 mg) IV over 3 min

If no IV access, give 1st dose of:
- **Midazolam IM 0.15 mg/kg (MAX 10 mg) (preferred) OR** one of:
  - Midazolam intranasal 0.2 mg/kg (MAX 10 mg: 1 mL/nostril of 5mg/mL solution)
  - Midazolam buccal 0.5 mg/kg (MAX 10 mg)
  - Diazepam rectal 0.5 mg/kg (MAX 20 mg)

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

10 min

Repeat dose of First Line Agent (as above)
- Obtain intraosseous (IO) access if failed IV attempts x 2 and persistent seizure
- Prepare second line agent

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

15 min

Second Line Agents:

Give one of:
- **Fosphenytoin (20 mg PE*/kg in NS, MAX 1000 mg PE*) IV/IO over 10 min OR**
- **Levetiracetam 60 mg/kg/dose (MAX 3000 mg) IV/IO over 15 min OR**
- Phenytoin (20 mg/kg in NS, MAX 1000 mg) IV/IO over 20 min OR
- Phenobarbital (20 mg/kg in NS, MAX 1000 mg) IV/IO over 20 min
- Prepare third line agent

*PE = Phenytoin Equivalents

Alert Pediatric Referral Centre

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

30 min

Third Line Agents:

Administer alternative anticonvulsant from second line agent used. (Eg. if fosphenytoin/ phenytoin given, use levetiracetam or phenobarbital)

CAUTION!

- Do not give more than 2 doses of benzodiazepines
- Benzodiazepines and phenobarbital may cause respiratory depression, especially if given rapidly
- Phenytoin and fosphenytoin may cause arrhythmias and/or hypotension

TO CONSIDER:

- Phenobarbital or levetiracetam are more effective in infants less than or equal to 6 months
- Avoid phenytoin/ fosphenytoin in intoxicated patients
- If patient is currently on phenytoin give partial loading dose of phenytoin (10 mg/kg) or fosphenytoin (10 mg PE*/kg)

Pediatric Referral Centre Discussion

CONSIDERATION OF:
- Need for intubation vs. bag-mask ventilation; hypercapnia is common, will resolve with seizure cessation and non-invasive respiratory support
- Additional workup including full septic workup, use of antibiotics/antivirals, brain imaging
- Persistent altered LOC possibly related to non-convulsive status epilepticus or severe underlying brain disorder
- Other anticonvulsants (eg. midazolam infusion, valproic acid, pyridoxine)

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