Management of Status Epilepticus:

Emergency Department Management Clinical Practice Guideline (CPG)

Protocol approved by:
Divisions of Pediatric Emergency Medicine, Pediatric Neurology and Pharmacy
Date of approval:

cardinalglennon.com
Management of Status Epilepticus Clinical Practice Guideline

Patients should have continuous 1:1 visual monitoring for documentation of seizure activity. After the clonic activity stops, monitor patient for subtle signs of seizure activity including eye deviation, horizontal jerk nystagmus, head deviation, posturing of extremities, or subtle clonic activity of isolated extremities.

Time 0 minutes: Time at presentation to ED

**All Children**

- Stabilize patient (ABCs)
- Vitals and Continuous Monitoring (HR, O2, BP, RR)
- Obtain IV Access
- Finger stick blood glucose: If glucose low:
  - <1 month of age: 4ml/kg D10 bolus + Dextrose IVF
  - <1 yr of age: 5ml/kg D10 bolus + Dextrose IVF
  - Adult (11x of alcoholism): 100mg IV Thiamine

- Other labs: CBC, BMP, Mg, Phos, Calcium
- Toxicology Screen (Urine drug screen and additional testing as indicated)
- Obtain history for possible noncompliance
- Obtain ALL prescribed antiepileptic drug levels

Treat for:
- Na < 130 mEq/L
- Ca < 7 mg/dl
- Mg < 1.5 mg/dl
- Glu: <40 in neonate, and <60 child

Time 5 minutes:

Choose one of the Following:

- IV Lorazepam\(^1,4\) (0.1mg/kg/dose) (Max 4mg/dose) once
  
  Or

- Intramuscular midazolam\(^2\) (0.2 mg/kg for <13kg) (5mg for < 13kg-40kg) (10mg for >40kg)
  
  Or

- Intranasal midazolam (5mg/ml concentration) 0.2-0.3 mg/kg once (Max 10mg/dose)
  
  Or

- Rectal diazepam\(^2,7\) (please refer to dosing chart in reference section)

Time 10 minutes\(^5,6\):

- Monitor airway, consider intubation if impending airway compromise
- Repeat benzodiazepine\(^2\) dose x1* only and choose one of the following:

Less Than 1 Month of Age:
- IV Phenobarbital 20 mg/kg over 10 min

Greater Than 1 Month of Age:
**IV Fosphenytoin 20 mg/kg over 10 min (Max 1500mg PE/dose)
  
  Or

- IV Levetiracetam (Keppra)\(^9\) 60 mg/kg once (Max 3000mg)

*Use caution in patients who have already received two total doses of benzodiazepines, including those during pre-hospital care
**Use with caution in patients with established cardiac arrhythmia or congenital heart disease
Time 20 minutes:
- Monitor airway, consider intubation if impending airway compromise (see “intubated child” if intubated)
- **Page Neurology**

Greater Than 1 Month of Age:
- Repeat IV Fosphenytoin 10 mg/kg over 5 min (or give 20mg/kg if using for the first time)
  - And
- Consider intubation at this time

Less Than 1 Month of Age:
- Continuous EEG
- If neonate has received a total of 40mg/kg of IV Phenobarbital then chose from below:
  - IV Fosphenytoin 20mg/kg once
  - Or
  - Levetiracetam (Keppra)® 60mg/kg once

Time 30 minutes:
- Strongly consider intubation if starting a versed drip
- Intubation of neonate may be delayed if airway is not compromised

Greater Than 1 Month of Age:
- Rapid sequence intubation
- IV Midazolam infusion:
  - Bolus 0.15-0.3 mg/kg q5 min till seizure cessation (max 2mg/kg)
  - Maintenance 0.1 mg/kg/hr
  - Titrate rate by 0.1mg/kg q15 minutes
  - Continuous EEG

Less Than 1 Month of Age:
- Rapid sequence intubation (use short acting paralytic)
- IV Midazolam infusion:
  - Bolus 0.15-0.3 mg/kg q5 min till seizure cessation (max 2mg/kg)
  - Maintenance 0.1 mg/kg/hr
  - Titrate rate by 0.1mg/kg q15 minutes
  - Continuous EEG

Consider:
- Pyridoxine® 100mg slow IV push (monitors must be in place)

Other considerations:
**Diagnostic testing:**
1. **Infection:**
   - Obtain Blood Cultures/HSV PCR
   - Urinalysis
   - Lumbar puncture
   - Antibiotics including Acyclovir
   - Use antipyretics
2. **Intracranial process:**
   - U/S head in neonate (best yield with open fontanelle)
   - MRI brain without contrast
   - CT head if MRI cannot be obtained
3. **Medication Non-compliance**
   - Follow anti-epileptic drug levels

**If partial response to pyridoxine, repeat 100mg IV push till Max of 500mg**
Special Considerations:
Treatment of Electrolyte Imbalance:

**Hypoglycemia:**

**Less Than 1 Month of Age:**
Treat for Glucose < 40 mg/dl
- Give 4 ml/kg of IV D10, plus start continuous Dextrose IVF infusion

**Greater Than 1 Month of Age:**
Treat for Glucose < 60 mg/dl
- 5 ml/kg of IV D10W (100 mg/ml) (0.5g/kg) Or
- 2 ml/kg of IV D25W (250 mg/ml)(0.5g/kg)

For Adults (defined age 16 and up) and History of Alcoholism: give 100mg Thiamine IV 50 ml prior to administration of glucose

If no IV access and child is greater than 2 years of age, may try Oral Therapy with 10-20 grams of glucose gel.

**Hyponatremia: (all age groups)**

Treat for Na < 130: give 3% NaCl 2-4 ml/kg IV x 1; may repeat x 1

**Hypomagnesemia: (all age groups)**

Treat for Mg < 1.5 mg/dl: Give magnesium sulfate 25-50 mg/kg IV over 20 minutes (maximum 2000 mg)

**Hypocalcemia: (all age groups)**

Treat for Ca < 7 mg/dl: given 10% Calcium gluconate (100 mg/kg diluted 1:1 with D5W (given over 5-10 minutes)

Rectal diazepam dosing chart:

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>2 - 5 Years</th>
<th>6 - 11 years</th>
<th>12+ Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 10</td>
<td>0.5 mg/kg</td>
<td>0.3 mg/kg</td>
<td>0.2 mg/kg</td>
</tr>
<tr>
<td>11 to 15</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>16 to 20</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>21 to 25</td>
<td>12.5</td>
<td>12.5</td>
<td>15</td>
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<tr>
<td>26 to 30</td>
<td>15</td>
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<tr>
<td>31 to 35</td>
<td>17.5</td>
<td>17.5</td>
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<td>36 to 44</td>
<td>20</td>
<td>20</td>
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References:


