

M07: Neonatal Seizures

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Introduction

- Identification of seizures in neonates and children can be difficult. Signs of seizures can include rhythmic lip smacking, blinking, or "bicycling" movement of the legs. Paramedics and EMRs/FRs should manage ongoing seizures while considering reversible causes.
- The primary concern in neonatal seizures is hypoglycemia, which should be identified and corrected with a 2 mL/kg D10W bolus until the blood glucose is > 2.6 mmol/L. If IV access is not within scope of practice or cannot be obtained, glucose gel can be given orally by rubbing on oral mucosa, or glucagon can be given intramuscularly (0.03 mg/kg).
- The preferred first line medication for control of a seizure lasting longer than five minutes, or multiple seizures without improving level of consciousness in between seizures, is a benzodiazepine. Midazolam can be administered via the intranasal (IN), intravenous (IV), or intramuscular (IM) route at dosages of:
 - IN 0.2 mg/kg
 - IV 0.15 mg/kg
 - IM 0.2 mg/kg

Additional Treatment Information

- If intractable seizure despite primary and secondary pharmacological treatment, critical care paramedics may consult with the transport advisor to consider:
 - A loading dose of midazolam 50 mcg/kg followed by an infusion beginning at 120 mcg/kg/hr and titrating to effect
 - A trial of Pyridoxine 50-100 mg over 1-2 minutes

General Information

- Patients requiring multiple sedatives or anti-convulsants have a high probability of requiring an advanced airway intervention and/or hemodynamic instability.

Interventions

First Responder

- Protect the patient from additional harm
- Prevent heat loss
- Provide supplemental oxygen as required
 - → [A07: Oxygen Administration](#)
- Manual airway maneuvers
 - → [B01: Airway Management](#)
 - Most pediatric airways can be effectively managed with proper positioning and an OPA/NPA (as per license level) and BVM without any requirements for further airway interventions. The gold standard for airway management is a self-maintained airway. Bag-valve mask is the preferred technique for airway management in pediatric resuscitation and is reasonable compared with advanced airway interventions (endotracheal intubation or supraglottic airway).

Emergency Medical Responder – All FR interventions, plus:

- Provide on-going care as per neonatal resuscitation guidelines
 - → [M09: Neonatal Resuscitation](#)
- Obtain blood glucose measurement; consider oral glucose

- [Oral 40% Glucose Gel](#)
- Convey urgently to closest facility; consider intercept with additional resources

Primary Care Paramedic – All FR and EMR interventions, plus:

- Consider use of supraglottic airway if unable to oxygenate or ventilate with bag-valve mask
 - [→ PR08: Supraglottic Airway](#)
- Correct hypoglycemia
 - [→ E01: Hypoglycemia and Hyperglycemia](#)
 - [Glucagon](#)

Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:

- Consider need for vascular access based on clinical scenario
 - [→ D03: Vascular Access](#)
- Consider intraosseous access if patient meets weight based guidelines
 - [→ PR12: Intraosseous Cannulation](#)
- Advanced airway intervention if unable to oxygenate or ventilate
- [MIDAZOLam](#) for seizure control

Critical Care Paramedic – All FR, EMR, PCP, and ACP interventions, plus:

- NIV/Invasive ventilation strategies
- Inotropic and vasopressors for hemodynamic instability
- Anti-convulsant agents for long acting effects
- Benzodiazepine infusion
- Vitamins for metabolic derangement
- Electrolyte replacement
- Antibiotic administration
- Central line and arterial line monitoring

Evidence Based Practice

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Pediatric Seizure

Supportive

- [Diazepam-IV](#)
- [Diazepam-PR](#)
- [Lorazepam-IN](#)
- [Lorazepam-IV](#)
- [Lorazepam-PR](#)
- [Midazolam-Buccal](#)
- [Midazolam-IM](#)
- [Midazolam-IN](#)
- [Diazepam-IM](#)
- [Lorazepam-IM](#)

Neutral

Against

- [Midazolam-IV](#)

- [Point of Care Blood Glucose Monitoring](#)

