

M13: Neonatal Fluid and Glucose Management

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Introduction

Neonatal fluid and glucose management may involve a wide range of requirements, from general maintenance all the way to complete electrolyte replacement. The neonatal renal system does not reliably regulate electrolytes until sometime after the first 24 hours of life. During that time, fluid maintenance is primarily based on glucose replacement to meet the high metabolic demands of the neonate.

Essentials

- Neonatal blood glucose levels can be corrected with feeding, oral glucose, intramuscular glucagon, or intravenous dextrose.
 - Attempt to correct blood glucose using oral glucose first; be cautious with volumes and protect the airway to the maximal extent possible; rub small amounts of glucose gel on oral mucosa
 - If the neonate is asymptomatic: a blood glucose > 2.6 mmol/L requires ad lib feeds; if the blood glucose is 1.8-2.6 mmol/L, then a prescribed volume of feed every 2 hours is required
 - If the neonate is symptomatic or has a blood glucose < 1.8 mmol/l, an IV is required and an infusion of dextrose initiated; the normal starting solution is D10W at a rate of 3 ml/kg/hr if asymptomatic and 4 ml/kg/hr if symptomatic, with an additional consideration of a 2 ml/kg D10W bolus
 - Once a neonate maxes out on fluid/dextrose volumes, the next step is to administer glucagon, 0.5 mg IM/SC
- Maintenance fluids for the first 24 hours should be D10W and after 24 hours D10W with NaCl (20 mmol/L)
 - DOL 0 – 60-80 ml/kg/day
 - DOL 1 – 80-100 ml/kg/day
 - DOL 2 – 100-120 ml/kg/day
 - DOL 3 – 120-140 ml/kg/day
 - DOL 4 – 140-150 ml/kg/day
 - DOL 5 – 150 ml/kg/day

General Information

- Out-of-hospital fluid management of the neonate should focus on glucose intake. D10W should be the fluid of choice. The fluid to use in a poor perfusion state is D10W with slow boluses of normal saline (10 ml/kg).
- In general, the out-of-hospital neonate should only receive intravenous fluid if there are signs of poor perfusion or a symptomatic blood glucose level.

Interventions

First Responder

- Provide reassurance to parent(s) / carer(s)
- Maintain thermal stability
- Provide supplemental oxygen as required
 - → [A07: Oxygen Administration](#)
 - Manual airway maneuvers
- Positive pressure ventilation via bag-valve mask
 - → [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:

- Ongoing care as dictated by NRP
 - [→ M09: Neonatal Resuscitation](#)
- Consider oral glucose
 - [Oral 40% Glucose Gel](#)
- Convey to the nearest hospital

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

- Correct documented 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
 - [→ PR12: Intraosseous Cannulation](#)

