University Health System

Pediatric Electrolyte Replacement Infusion Guidelines

Electrolyte	Dosage (IV)*	Maximum Concentration	Infusion Duration	Monitoring	Comments
Potassium Chloride (KCl)**	Neonates and Children: 0.5-1 mEq/kg/dose Max 30 mEq/dose Adolescents: 10-20 mEq/dose Max 40 mEq/dose **NOTE**: Limit to patients who are NPO *and* have not responded to potassium in maintenance IV fluids	Peripheral : 80 mEq/L = 1mEq/12.5 ml = 0.08 mEq/mL (Neonates 40 mEq/L) Central : 200 mEq/L = 1mEq/5 ml = 0.2 mEq/mL (Neonates 80 mEq/L)	Neonates: 0.5-1 mEq/kg/hr Children 0.3-0.5 mEq/kg/hr; Max rate 1 mEq/kg/hr or 10 mEq/hr (whichever is lower); for Cardiac Surgery patients: Max rate = 20 mEq/hr Adolescents: Each dose over ≥2-3 hrs. Max 40 mEq/hr for *symptomatic* hypokalemia with K+ ≤2.5 mEq/L. PTU: infusion of *total* dose must be ≥2 hrs	Telemetry*** monitoring required if infusion rates >0.25 mEq/kg/hr OR >20 mEq/hr. Monitor: Serum K+ (4 hrs after end of infusion), Glucose, Cl-, pH, UOP, SCr, BUN	Preferably infused thru CVC. Confirm patency. *If peripheral line, run concurrently with maintenance IV fluids via separate large volume infusion pump to decrease concentration.* Monitor q30-60 min for pain at injection site; phlebitis, infiltration. Double check w/ another RN.
Potassium Phosphate (KPO_4)	Neonates: 0.5-1 mmol/kg/dose Children: 0.08-0.36 mmol/kg/dose Adolescents: 0.15-0.3 mmol/kg/dose	Peripheral: 0.05 mmol/ml Central: 0.12 mmol/ml	Children: Over 6 hours Adolescents: Over 3-4 hours Max Rate: 0.06 mmol/kg/hr PTU: infusions must be ≥ 4 hrs	Telemetry*** monitoring required if infusion rate of PO_4 >0.17 mmol/kg/hr Monitor: Serum K+, Na+, Ca++, PO_4, SCr, BUN, UOP	DO NOT infuse with Calcium containing IVFs. *If peripheral line, may run concurrently with compatible maintenance IV fluids via separate large volume infusion pump to decrease concentration.* Double check w/ another RN.
Calcium Gluconate**	Neonates and Children: 100 mg/kg/dose (Max 3g/dose) Adolescents: usu. 500-1000 mg/dose (Max 3 g/dose)	50 mg/ml	Max 50 mg/min. Usually over at least 1 hour: ≤ 120-240 mg/kg/hr. Emergent dose may be given over 5-10 minutes; may repeat in 6 hours. PTU: infusions must be ≥2 hr	Monitor HR, EKG. PTU – place child on telemetry during infusion. Serum Ca++ (ionized preferred), Mg++, PO_4	Use large vein - preferably CVC. Do not use scalp veins or small hand veins. Incompatible with fluids containing Phosphate or Sodium Bicarbonate.

PLEASE NOTE: *Doses should be individualized to patient's requirements. Please use clinical judgment when making treatment decisions. While every effort has been made to ensure the accuracy of information provided in these guidelines, the user assumes all responsibility for their use.*

Approved by Pediatric CMT (1/13) and P&T Committee (7/13)

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Calcium Chloride** (CaCl only allowed in PTU if Calcium Gluconate unavailable and IV calcium required)	Neonates: CaGluconate preferred. CaCl 35-70 mg/kg/dose Children: 10-20 mg/kg/dose q4-6h Adolescents: 500-1000 mg/dose	10 mg/ml	PTU: Infusions must be ≥2 hr	Monitor HR, EKG. PTU – place child on telemetry during infusion. Serum Ca++ (ionized preferred), Mg++, PO_4	Central line required unless Code Blue. Incompatible with fluids containing Phosphate or Sodium Bicarbonate.
Magnesium Sulfate (MgSO4)	Neonates: 25-50 mg/kg/dose q 8-12hr Children: 25-50 mg/kg/dose q 4-6hr (Max 2g/dose) Adolescents: 1-2 g/dose	Usual: 60 mg/ml Max: 200 mg/ml	Over 2-4 hours Max: 125 mg/kg/hr PTU: infusions must be ≥4hrs	RR, BP, UOP, serum Magnesium, DTRs	Up to 200 mg/kg/dose have been used in children. Up to 12 g/day in divided doses have been used in adults. Ensure IV patency. If giving both Mg++ and K+, infuse the Mg++ first.

**Intended for intermittent dosing of deficient electrolytes requiring IV replacement. These doses DO NOT reflect recommended daily electrolyte maintenance requirements.*

*** If **infiltration,** elevate extremity above heart, use warm compress, and notify the physician in charge immediately.*

**** **Telemetry monitoring** must be ordered by physician as dictated by infusion rates.*

References:

1. Taketomo, C.K., Hodding, J.H., & Kraus, D.M. (2010). Pediatric Dosage Handbook. 17th Ed.
2. Phelps, SJ, Hak, EB, & Crill, CM. (2010). *Pediatric Injectable Drugs – The Teddy Bear Book*, 9th Edition.
3. Young, TE & Mangum B. *NeoFax* 2011.

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