

**UAMS MEDICAL CENTER
TRAUMA SERVICES MANUAL**

SUBJECT: The **MEGA** Electrolyte Replacement Protocol

REVIEWED: 12/17/2020 | **REVISED:** 4/15/2022

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RECOMMENDATION(S): Drs. Kyle Kalkwarf, Allie Oswalt, and Rebecca Smith

APPROVAL: 12/17/2020

CONCURRENCE(S): Dr. Avi Bhavaraju

EFFECTIVE: 01/01/2021

PURPOSE: To provide guidelines for the nursing-driven management of electrolyte abnormalities and replacement in trauma and emergency general surgery patients based on daily routine morning labs

PROTOCOL: Electrolyte abnormalities will be assessed by nursing staff when morning labs return and will be replaced according to the following guidelines

PATIENTS INCLUDED: All trauma and emergency general surgery patients admitted to H4 and F4 with a **MEGA** Electrolyte Replacement Protocol order

EXCLUSIONS: Patients requiring any of the following:

- Dialysis (iHD) or Renal replacement therapy (CRRT)
- Calculated eGFR or CrCl < 30 mL/min
- Rhabdomyolysis (serum CK >8000 or >5000 and trending up)
- Unable to administer enteral medications

SPECIAL POPULATIONS: Some patient populations may require more aggressive electrolyte replacement than recommended in this protocol. **These patients can still be managed by this nursing-driven protocol, but will likely require additional electrolyte replacement.** These patients should be discussed with the attending and/or clinical pharmacist to determine electrolyte needs.

- Patients at risk for refeeding syndrome (those with prolonged inadequate enteral or parenteral nutrition)
- Patients with thermal and/or inhalation injury
- Patients with DKA/HHS or those on an insulin drip for hyperglycemia
- Patients on high-dose Lasix (40 mg IV BID or higher), Bumex (2 mg IV BID or higher), or continuous diuretic infusions
- Patients on electrolyte replacement at home

ELECTROLYTE REPLACEMENT:

Low Potassium (< 3 mmol/L) and Phosphate (< 1.5 mg/dL)

- When potassium and phosphate are both low, utilizing IV potassium phosphate replacement can decrease the amount of electrolyte replacement products required
- Goal potassium level: 3.8 – 5 mmol/L
- Goal phosphate level: 3 – 4.5 mg/dL

Current Potassium Level	Replacement	Monitoring
2 – 2.9 mmol/L	K Phosphate 30 mmol IV x 1 dose (~44 mEq K) + Neutraphos packs – 2 packs PO/PT BID x 2 days	Recheck Chem10 two hours after end of last infusion
< 2 mmol/L	K Phosphate 30 mmol IV x 2 doses (~88 mEq K) + Neutraphos packs – 2 packs PO/PT TID x 2 days	
PO: By mouth; PT: Per feeding tube (e.g., NGT, OGT, DHT, PEG, etc.)		

These guidelines were prepared by the UAMS Trauma/EGS Service. They are intended to serve only as a guideline based on current review of the medical literature and practice. They are neither policies nor protocols. Their use is at the discretion of the managing physician.

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Potassium

- If IV potassium phosphate is ordered and serum potassium > 3, do not give additional potassium
- Goal level: 3.8 – 5 mmol/L
- If patient is consistently hypokalemic despite appropriate replacement, check magnesium level and replace as indicated in magnesium replacement chart
- Hyperkalemia
 - Serum potassium > 5.5 mmol/L: monitor q2h until level < 5 mmol/L
 - Serum potassium > 6.5 mmol/L: monitor q2h until level < 5 mmol/L and call an attending for further hyperkalemia management

Current Potassium Level	Replacement	Monitoring
3.5 – 3.7 mmol/L	KCl 40 mEq PO/PT x 1 dose	Recheck Chem10 the following day with AM labs
3 – 3.4 mmol/L	KCl 40 mEq PO/PT x 2 doses	
2 – 2.9 mmol/L	KCl 40 mEq IV x 1 dose + KCl 40 mEq PO/PT x 2 doses	
< 2 mmol/L	KCl 40 mEq IV + KCl 40 mEq PO/PT BOTH x 2 doses*	Recheck Chem10 two hours after end of last infusion
*The PO/PT doses should be given at the start of each IV dose (e.g., 1 st PO/PT dose + 1 st IV dose given at the same time; then four hours later, 2 nd PO/PT dose + 2 nd IV dose given at the same time) PO: By mouth; PT: Per feeding tube (e.g., NGT, OGT, DHT, PEG, J tube – if liquid formulation, etc.)		

Phosphate

- Goal level: 3 – 4.5 mg/dL
- IV replacement choice will depend on patient’s potassium level
 - If serum potassium ≤ 3.6 mmol/L, use potassium phosphate
 - If serum potassium > 3.6 mmol/L, use sodium phosphate

Current Phosphate Level	Replacement	Monitoring
2.5 – 3 mg/dL	Neutrphos packs – 2 packs PO/PT BID x 1 day	Recheck level the following day with AM labs
2 – 2.4 mg/dL	Neutrphos packs – 2 packs PO/PT BID x 2 days	
1.5 – 1.9 mg/dL	Neutrphos packs – 2 packs PO/PT TID x 2 days	
1 – 1.4 mg/dL	K or Na Phosphate 30 mmol IV x 1 dose + Neutrphos packs – 2 packs PO/PT BID x 2 days	Recheck Chem10 two hours after end of infusion
< 1 mg/dL	K or Na Phosphate 45 mmol IV x 1 dose + Neutrphos packs – 2 packs PO/PT TID x 2 days	
PO: By mouth; PT: Per feeding tube (e.g., NGT, OGT, DHT, PEG, etc.)		

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Magnesium

- Goal level: 1.7 – 2.2 mg/dL
- Enteral magnesium **not recommended** due to lack of efficacy and high rates of adverse GI effects

Current Magnesium Level	Replacement	Monitoring
1.3 – 1.6 mg/dL	Magnesium sulfate 4 g (32 mEq) IV x 1 dose	Recheck level the following day with AM labs
≤ 1.2 mg/dL	Magnesium sulfate 8 g (64 mEq) IV x 1 dose	Recheck Chem10 two hours after end of infusion

Calcium

- Goal level (ionized): 0.8 – 1.25 mmol/L
- Only **ionized** calcium levels should be replaced; if serum calcium on Renal Chem 10 < 6.5, order ionized calcium and replace as indicated below
- **Calcium replacement exceptions** (where ionized calcium not required and/or calcium chloride should be utilized): patients undergoing massive transfusion protocol (will get calcium gluconate 3 g IV for each cooler used), hyperkalemia treatment, code situations, and those with cardiac dysfunction

Current Calcium Level	Replacement	Monitoring
0.65 – 0.79 mmol/L	Calcium gluconate 2 g IV x 1 dose	Recheck iCa level the following day with AM labs
< 0.65 mmol/L	Calcium gluconate 4 g IV x 1 dose	

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