

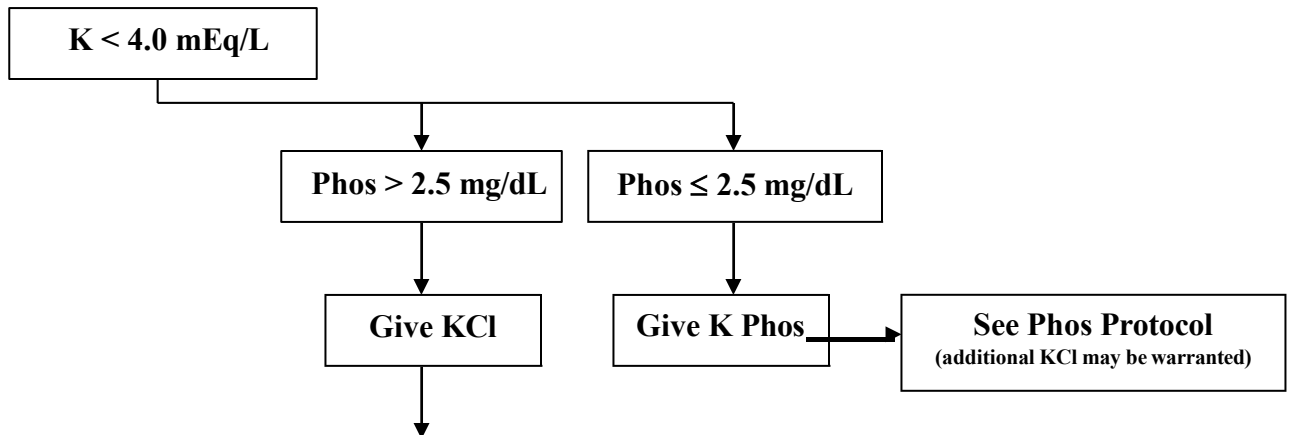
**EMERGENCY  
GENERAL SURGERY**

**Guidelines for Electrolyte Replacement**

**EXCLUSIONS:** Patients with the following: hemodialysis/peritoneal dialysis, acute kidney injury (AKI), creatinine clearance <30mL/min, chronic adrenal insufficiency, electrical burns, rhabdomyolysis, DKA, crush injury, hypothermia, or have active transfer orders out of the ICU/Step Down Unit

**Potassium Replacement**

**\*\* Always look at phosphorus level to determine appropriate potassium product \*\***



<u>Serum K+</u>	<u>Replace With</u>	<u>Recheck Level</u>
3.3-3.9 mEq/L	40 meq KCl PO/PT/IV (enteral route preferred)	with next AM labs
3.0-3.2 mEq/L	20 meq KCl PO/PT/IV X 3 doses (IV route preferred)	immediately and with next AM labs
2.6-2.9 mEq/L	80 meq KCl IV and NHO	immediately and with next AM labs
< 2.6 mEq/L	100 meq KCl IV and NHO	immediately and with next AM labs

**\*\*\* Consider PO/PT replacement if GI tract available \*\*\***

- If central line present and continuous cardiac monitoring, infuse at **20 mEq/hr** (max = 40 mEq/hr); If peripheral access only, infuse at **10 mEq/hr**.
- Serum potassium may be expected to increase by ~0.25 mEq/L for each 20 mEq IV KCl infused.

## Magnesium Replacement

<u>Serum Magnesium</u>	<u>Replace With</u>
1.3 – 1.9 mg/dL	4 grams IV over 4h;recheck Mg level with next AM labs
$\leq 1.2$ mg/dL	8 grams IV over 8h;recheck Mg level 6 hours after replacement

### IV Administration:

- Magnesium replacement will be one-time doses.
- All doses will be comprised of the appropriate number of 4 g/100mL premixed piggybacks. Infuse at a rate of 1 gm per hour.

### Oral Administration:

- \*\* Elemental magnesium (supplied as magnesium oxide) or Milk of Magnesia may be initiated; however, oral magnesium is poorly absorbed and diarrhea may be a limiting factor. Separate order must be entered into EPIC for oral replacement.

## Phosphorus Replacement

\*\* Always look at phosphorus level to determine appropriate potassium product \*\*

<u>Product</u>	<u>Phosphate</u>	<u>Potassium</u>	<u>Sodium</u>
<b>K-Phos Neutral Tablet</b>	250 mg (8 mmol)	1.1 mEq	13 mEq
<b>K Phos Injection (per mL)</b>	3 mmol	4.4 mEq	
<b>Na Phos Injection (per mL)</b>	3 mmol		4 mEq

<u>Serum Phos</u>	<u>Replace With</u>	<u>Repeat Level</u>	<u>meq K if K Phos</u>
<b>2-2.5 mg/dL</b>	<b>15 mmol</b> KPhos or NaPhos -or- K-Phos Neutral 2 tabs PO/PT q4h x 3(Enteral route preferred)	with next AMlabs	~22 meq (~11 meq/hr based on 2h infusion)
<b>1.6-1.9 mg/dL</b>	<b>30 mmol</b> KPhos or NaPhos -or- K-Phos Neutral 2 tabs PO/PT q4h x 4 (IV route preferred)	with next AMlabs	~44 meq (~11 meq/hr based on 4h infusion)
<b>&lt;1.6 mg/dL</b>	<b>45 mmol</b> KPhos or NaPhos	6h after replacemen t	~66 meq (~11 meq/hr based on 6h infusion)

- Always look at potassium level to determine appropriate IV phosphorus product: use **K Phos if K < 4.0 mEq/L** and **Na Phos if K ≥ 4.0 mEq/L**.
- For IV replacement: Pharmacy will dilute in 250-300mL NS. Infuse over 2-6 hours.

# Calcium Replacement

Calcium replacement based upon $ICa^{++}$ levels		
Ionized Calcium	Replace With	Recheck Level
3.5-3.9 mg/dL	4 g Calcium Gluconate	With next AM Labs
3.0-3.4 mg/dL	6 g Calcium Gluconate	4 Hours After Replacement
2.5-2.9 mg/dL	8 g Calcium Gluconate	4 Hours After Replacement
< 2.5 mg/dL	10 g Ca Gluconate AND <b>NHO</b>	4 Hours After Replacement
<b>Infuse 2 gm per hour</b>		

## References:

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2. Critical Care, ed. T.R. *Civetta JM, Kirby P*. Vol. 1. 1997, Philadelphia: Lippincott-Raven. 23.63.
3. *Panello JE, Delloyer RP*, Critical Care Medicine 2<sup>nd</sup> Edition 2002; St. Louis: Mosby, Inc. 11694. *Polderman, et al*. CCM 2000 June; 28(6) 2022-2025
4. *Polderman et al*. J. Neurology 2001 May; 94(5): 697-70

### **Authors:**

Brad Dennis, MD  
LeAnne Atchison, PharmD  
Jennifer Beavers, PharmD  
Jade Flynn, PharmD, BCPS

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