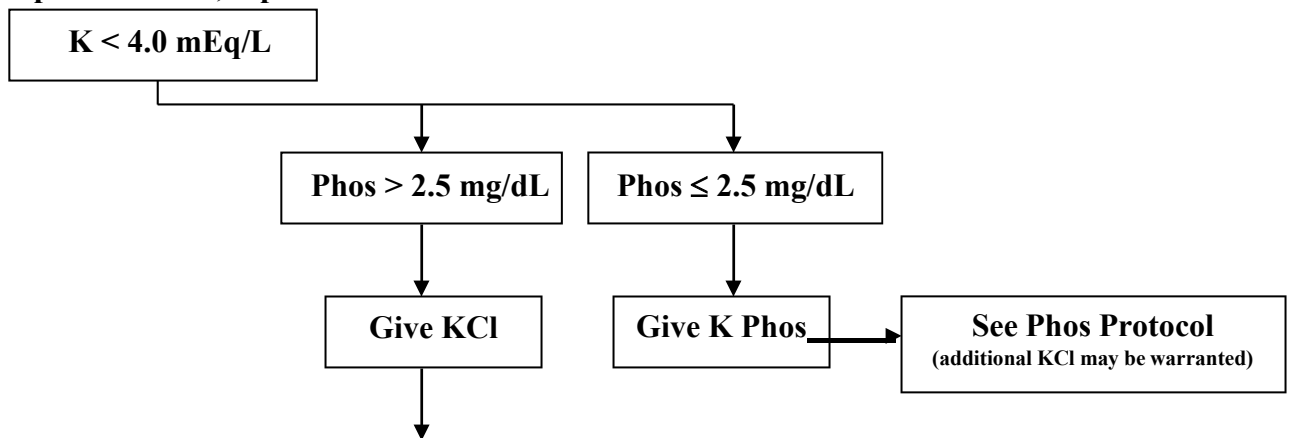


## Guidelines for Electrolyte Replacement

EXCLUSIONS: Patients with the following: actual weight less than 40kg hemodialysis/peritoneal dialysis, acute kidney injury (AKI), creatinine clearance <30mL/min, chronic adrenal insufficiency, electrical burns, rhabdomyolysis, DKA, crush injury, hypothermia, tumor lysis syndrome, or have active transfer orders out of the ICU/Step Down Unit

### Potassium Replacement

**\*\* Assess phosphorus level to determine appropriate potassium product. If no recent phosphorous level, replace with KCl.\*\***



<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  And consider empiric magnesium 4gm IV x1	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 20mEq 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
≤ 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 (if available) 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 ( <u>Enteral route preferred</u> )	with next AM labs	~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 AM labs	~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 replacement	~66 meq (~11 meq/hr based on 6h infusion)

- Always look at potassium level to determine appropriate 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 2-6hours.

## Calcium Replacement

Calcium replacement based upon $\text{ICa}^{++}$ 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:

1. *Zaloga GP, K.R., Bernards WC, Layons AJ*, Fluids and Electrolytes.
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

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