

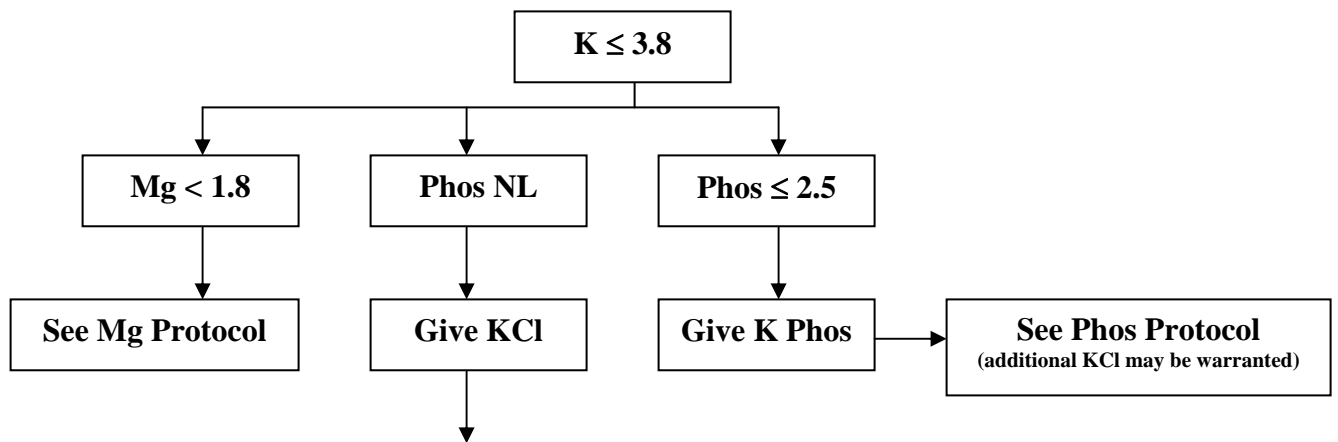
# Potassium Replacement

**SURGICAL CRITICAL CARE**  
**Electrolyte Replacement Practice Management Guideline**

**ALL patients with renal or adrenal insufficiency are excluded from any electrolyte replacement protocol**

**Exclusions: Crush Injuries, Rhabdomyolysis, DKA, Electrical Burns, HF Burns**

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



<u>Serum K+</u>	<u>Replace With</u>	<u>Recheck Level</u>
3.3-3.8 meq/L	40 meq KCl PO/PT/IV	immediately after replacement
3.0-3.2 meq/L	60 meq KCl PO/PT/IV	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.

# Phosphorus Replacement

**SURGICAL CRITICAL CARE  
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electrolyte replacement protocol**

**Exclusions: Rhabdomyolysis, DKA**

<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>20 mmol</b> KPhos or NaPhos -or- K-Phos Neutral 2 tabs PO/PT q4h x 3	with next AM labs	~30 meq (~7 meq/hr based on 4h 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	with next AM labs	~44 meq (~11 meq/hr based on 4h infusion)
<b>&lt;1.6 mg/dL</b>	<b>40 mmol</b> KPhos or NaPhos	6h after replacement	~60 meq (~15 meq/hr based on 4h infusion)

- Pharmacy will no longer accept verbal phosphorus replacement orders. ALL orders must be entered into Wiz/HEO.
- Always look at potassium level to determine appropriate IV phosphorus product: use **K Phos if K < 3.8** and **Na Phos if K ≥ 3.8**.
- For IV replacement: Pharmacy will dilute in 250mL NS or D5W. Infuse over 4-6 hours.
- For PO/PT replacement: Neutra-Phos / Neutra-Phos K packets are no longer manufactured. K-Phos Neutral tablet is the formulary alternative.

# Magnesium Replacement

**SURGICAL CRITICAL CARE  
Electrolyte Replacement Practice Management Guideline**

**ALL patients with renal or adrenal insufficiency are excluded from any electrolyte replacement protocol**

<u>Serum Magnesium</u>	<u>Replace With</u>
1.6 – 1.8 mg/dL	4 grams IV over 4h -or- Magnesium oxide 250mg PO BID -or- MOM 5mL PT TID
1.0 – 1.5 mg/dL	6 grams IV over 6h
< 1.0 mg/dL	8 grams IV over 8h

### **IV Administration:**

- Magnesium replacement will now be one-time doses.
- All doses will be comprised of the appropriate number of 2g/50mL premixed piggybacks.

### **Oral Administration:**

- Applies to patients with magnesium level > 1.5 mg/dL who are asymptomatic and able to tolerate PO or PT meds.
- \*\* Elemental magnesium (supplied as magnesium oxide) or Milk of Magnesia may be initiated; however, diarrhea may be a limiting factor. Separate order must be entered into Wiz/HEO for oral replacement.

# Calcium Replacement

## SURGICAL CRITICAL CARE Electrolyte Replacement Practice Management Guideline

**ALL patients with renal or adrenal insufficiency are excluded from any electrolyte replacement protocol**

### **Exclusions: Digoxin therapy, Head Injury**

- For every 1 g/dL decrease of serum albumin less than 4.0 g/dL, add 0.8 mg/dL to total serum calcium level to correct value (normal serum calcium level at VUMC 8.5 - 10.5 mg/dL)
- IV replacement should be with calcium chloride (272 mg elemental calcium/1 gm CaCl<sub>2</sub>) if a central access is present; if not, use calcium gluconate (94 mg elemental calcium/1 gm calcium gluconate)
- Mix one amp (1 g) CaCl<sub>2</sub> or two amps (2 g) calcium gluconate in 100 cc NS and infuse over one hour.

#### **Causes of Hypocalcemia**

- sepsis
- renal failure
- acute pancreatitis
- severe hypomagnesemia
- hypoparathyroidism
- Vitamin D deficiency

#### **Symptoms of Hypocalcemia**

- tetany
- peripheral or perioral parathesias
- carpal spasm
- siezure
- bronchospasm or laryngospasm
- Chevostek's sign
- Trousseau's sign

## Is patient symptomatic?

NO		
Ionized Calcium	Replace With	Recheck Level
3.5-3.9 mg/dL	2g CaCl <sub>2</sub>	With next AM Labs
3.0-3.4 mg/dL	3g CaCl <sub>2</sub>	4 Hours After Replacement
2.5-2.9 mg/dL	4g CaCl <sub>2</sub>	4 Hours After Replacement
< 2.5 mg/dL	5 g CaCl <sub>2</sub> <b>NHO</b>	4 Hours After Replacement
<b>Chronic Therapy</b> <ul style="list-style-type: none"> <li>• Calcium Carbonate : initially 1-2 g po TID and then taper to 0.5-1.0 g TID</li> <li>• Vit. D to be ordered by MD if needed</li> </ul>		

YES
Calcium Chloride or Calcium gluconate 1 g over 30 min
If symptoms persist calcium infusion 1-2 mg 1 kg 1 hr

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