

## Electrolytes

### Potassium:

Hypokalemia: Keep K > 4.0

Potassium repletion:

**10 meq KCl po/IV** increase serum K by 0.1

Most pharmacists will not let you replete more than 80 meq per order (e.g. **KCl 40 meq po and 40 meq IV**)

Options:

**IV KCl:** burns the veins, consequently takes a long time to administer (not such an issue with central lines)

**Oral KCl** (short acting, **powder**): tastes awful, frequently must mix with orange juice (which also has potassium)

**Oral KCl** (long acting, pill: **K-dur**): Horse pill; difficult to swallow.

*Replete the Mg first, or the potassium won't stick around.*

Hyperkalemia:

For K > **5.0**: If you think this may be a trend, consider Kayexelate 15 to 30 g po x1, may repeat x1 if no bowel movement in 4 hours

For K > **6.0**: Call the lab and make sure the sample wasn't hemolysed (which it probably was). If it's real:

1. Check EKG

2. Temporizing measures:

**D50 1 amp IV x 1** and **Insulin 9 U IV x 1** (intracellular shift)

**Calcium gluconate 1 amp IV x 1** (cardioprotective)

3. They still need to receive Kayexelate (see above)

4. Recheck the potassium. Note that sending blood in a green top tube for a stat Na/K will yield a result faster than an M7, but they can't tell you if your sample was hemolysed.

The surgeons will start an insulin and glucose drip to keep potassium low, but at this point, renal consult should be made aware for potential emergent hemodialysis.

**Magnesium:** Keep Mg > 2.0 (Higher levels may decrease arrhythmia and improve mortality after myocardial infarction, but the data are poor and/or contradictory)

Serum Magnesium only represents a fraction of the body's total stores

You don't get serious untoward effects (i.e. hypotension) with magnesium less than 8.0

Repletion: **MgSO4 4 g IV x 1** (for Mg < 1.4)

**MgSO4 6-8 g IV x 1** (for Mg < 1.0)

Pharmacy will not let you give more than 8 g Mg per run.

**MgOxide** (e.g. **400 mg po bid**) is good for patients with chronically low magnesium, not really used in house for repletion of magnesium levels (remember that high doses cause diarrhea).

**Calcium:** Keep Ca > 8.5 or iCa > 1.0

Ionized calcium is more accurate, and should be used if available

If the ionized calcium is measured anaerobically, you don't have to correct for pH

Corrected Calcium = Serum Calcium - 0.8 x (normal albumin - serum albumin)

(But this doesn't work very well)

Treatment:

In the unit, we usually just give **calcium gluconate 1 amp IV** (1g=4.5 meq Ca) and check a repeat ionized calcium (remember that Ca x PO4 must be less than 70, or there is a theoretic risk of precipitating calcium)

If it's not an emergency, try **calcium carbonate 1300 mg po bid**

**Phosphate:** Keep PO4 > 3.5 (but untoward effects [e.g. rhabdomyolysis] are rare):

**Neutra-Phos** Equal amounts of Na-PO4 and K-PO4 (only PO) or **K-Phos:** K-PO4 (either po or IV)

PO4 2.0-2.5

10-15 mmol Na-PO4 or K-PO4 IV x 1

**OR** 250 mg Neutraphos po q8 x 3

1.0-1.9

15-20mmol Na-PO4 or K-PO4 IV x 1

**OR** 250mg Neutrophos po q6 x 4

< 1.0

20-25 mmol Na-PO4 or K-PO4 IV