Bon Secours Richmond
Pharmacy and Therapeutics Committees
Potassium Chloride Infusions Policy Update for Adults
6/2007

Recommendations:

Small Volume Infusion		
	Peripheral Line	**Central Line**
Recommended Infusion Rate	10 meq/hour	10 meq/hour
Maximum Infusion Rate **Cardiac Monitoring Required**	20 meq/hour	20 meq/hour 40 meq/hour*
Recommended Concentration	10 meq/100 ml	10 meq/50 ml
Maximum concentration	0.2 meq/ml 10 meq /50 ml 20 meq /100 ml	0.4 meq/ml 20 meq/50 ml

*If potassium < 3 meq/liter and the patient is symptomatic 40 meq/hour may be administered to intensive care patients. Hourly serum potassium determinations should be drawn to avoid severe hyperkalemia and/or cardiac arrest.
Symptoms of hypokalemia include: fatigue, malaise, generalized muscle weakness, respiratory failure, paralysis; EKG changes include T wave flattening or inversion, U waves, or ST segment depression, and arrhythmia's.

Small volume infusions of Potassium chloride are available from the pharmacy in premixed bags of:
10 meq/100 ml (Preferred peripheral concentration)
10 meq/50 ml (Preferred central concentration)
20 meq/100 ml (Cardiac monitoring required, peripheral or central use)
20 meq/50 ml (Cardiac monitoring required and central line)

Large Volume Infusion		
	Peripheral Line	**Central Line**
Maximum concentration large volume solution	0.04 meq/ml 40 meq/L	0.08 meq/ml 80 meq/L
TPN Maximum Concentration	40 meq/l	80 meq/l

Recommended maximum dose should not usually exceed 10 meq/hour or 200 meq for a 24 hour period if the serum potassium level is greater than 2.5 meq/liter per product package insert

Background:

- All potassium infusions must be administered via an infusion pump.
- Potassium is never administered IV push or undiluted from a vial.
- The oral route of administration should be used when feasible except in cases of life-threatening hypokalemia.
- As a general rule, in patients with normal renal function, 10 meq or potassium will increase serum potassium by 0.1 meq/l although studies have demonstrated changes from 0.1-0.3 meq/l. Magnesium levels should be checked and corrected if low concomitantly with the potassium.
- Peak serum levels occur at the end of the infusion and stabilize 15 minutes post infusion.
- Total body content of potassium is approximately 3500 meq (35-45 meq/kg) of which 90% is intracellular.

Serum Potassium (meq/l)	Total Body Deficit (Assuming Normal pH) meq
3	200
2.5	300
2	400
1	400+

- For every 0.1 increase in serum pH, serum potassium will fall by approximately 0.6 and vise versa.
- Patients must be on continuous EKG monitoring if receiving > 10 meq/hour of potassium. Potassium replacement therapy should be guided primarily by serial electrocardiograms. Plasma potassium levels are not necessarily indicative of tissue potassium levels.
- Concentrations of 0.3 meq/ml and higher should be exclusively administered via central route per product insert.
- The premixed small volume infusions should be given over 1 hour. Premixed bags are available from the manufacturer in 30 meq/100ml and 40 meq/100 ml. Pharmacy does not carry these.
- Current product information recommends whenever possible use central line infusion rather than peripheral line, Literature suggests the use of a central line with highly concentrated infusions (30 meq/100 ml, 40 meq/100 ml, 20 meq/50 ml) or with an infusion rate greater than 10 meq/hour. Total dose over 24 hours should not exceed 200 meq. If potassium < 2 meq/liter, can use as much as 400 meq administered over 24 hours.[1]
- PREMIXED POTASSIUM CHLORIDE INFUSIONS WILL BE STOCKED IN PYXIS STATIONS.
  - In 1998 the Joint Commission suggests that health care organizations not make concentrated potassium chloride available outside of the pharmacy.
  - There are numerous reports in the literature that illustrate the severe consequences of improper use of potassium injection. All the cases have one common factor or root cause: Potassium chloride injection concentrate was kept in medication stock in patient care areas.
- Symptoms of hypokalemia include: fatigue, malaise, generalized muscle weakness, respiratory failure, paralysis; EKG changes include T wave flattening or inversion, U waves, or ST segment depression, and arrhythmia's.

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