Proper Formulas for a Hemodialysis Patient on Tube Feeding

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Dialysis

Nutrition concerns: adequate protein and calorie, sodium/fluid balance, phosphorus and calcium, potassium, vitamins and minerals.

Medical Nutrition Therapy goals:

Prevent deficiency and maintain good nutrition status; control edema and electrolyte imbalance; prevent renal osteodystrophy

Hemodialysis Nutrient Needs

Protein	83.5-125.3g (1-1.5 g/kg for adult on hemodialysis, dry wt)
Potassium	2000-3000 mg
Phosphorus	1200 mg; 1-2 servings of dairy products/day
Sodium	2-3 gm/day
Fluid	1000 cc or urine output+750 cc
Renal Vitamins	Nephrocap, Nephplex, Nephron-FA, Renal Caps, Diatyx

Patient Background

Mr. K - 79 y.o. Japanese American male on dialysis >1 yr, previously on peritoneal dialysis, now on hemodialysis at the Special Care Unit

- Diagnose : end-stage renal disease, diabetes, coronary artery disease status post coronary artery bypass grafting, stage II Decub, severe pharyngeal dysphagia
- Total tube feeding via gastrojejunostomy (GJ) tube, discharged on formula *Novasource Renal*
- Relevant Meds: erythropoietin (EPO), Vitamin D_3, Miralax

  not on renal multivitamin or phosphate binders
- Social History: residing at nursing home with supportive wife

Nutrition Assessment

- Body weight
  - Dry wt: 83.5 kg BMI = 26
  - Ideal BW: 63-82 kg Wt change: -11.5 kg (12%) in 4 mon
- Energy needs: Harris-Benedict equation + 20% (stress) = 1886 kcal
- Subjective Global Assessment = 23, moderately-severely malnourished
- Fluid gain: -3.5 to 7 kg (avg 1.4 kg)
  [*fluid gain between each dialysis run should be between 1-2 kg]
- Constantly clogged J port of GJ tube

Monthly Lab Results

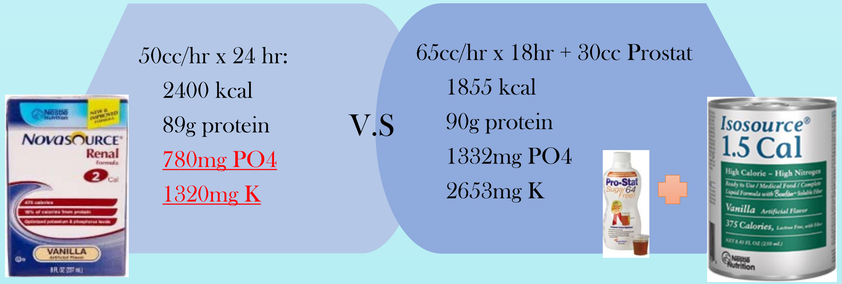
	April	March	February	Goal
Pre-dialysis BUN (mg/dl)	57	83		50-100
Post-dialysis BUN (mg/dl)	15	25		4-20
Albumin (g/L)	3.3	3.7	2.6	Above 4.0
Potassium (mmol/L)	5.8	4.4	4.2	3.5-5.5
Phosphorus (mg/dL)	5.0	3.6	5.2	3.5-5.5

Diagnosis (PES)

Inadequate K and PO4 intake r/t inappropriate use of renal tube feeding formula Novasource Renal which is low in K and PO4 AEB calculated intake from tube feeding less than requirements for K and PO4 and patient's PO4 dropped from 5.2 to 3.6 since starting on tube feeding.

Interventions

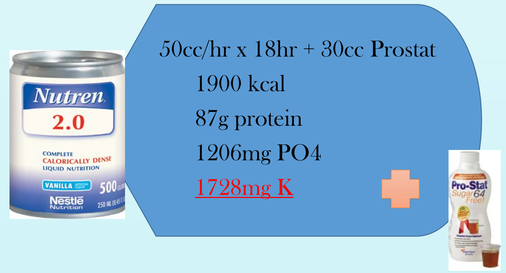
- Low albumin
  - Likely due to recent hospitalization, infection and surgeries
  - Increased protein needs for hemodialysis and wound healing
- Tube feeding formula appropriateness
  - Change tube feeding formula from Novasource Renal to Isosource 1.5 to provide adequate K and PO4 as recommended



Interventions (cont'd)

- Tube feeding total volume:

  <fluid overload prevention vs. tube clogging prevention>
  - Normal tube feeding flushes goal for renal is 30-60cc at start, stop and med pass to prevent fluid overload
  - Pt's fluid gain was reasonable, thus recommend to increase flushes to 60cc-100cc to prevent clogging
    *since then, no issue with tube clogging
  - 1 week later, noted edema in pt's arm and ankles, change tube feeding formula to more concentrated Nutren 2.0



- Elevated K at 5.8 on a 2K dialysate bath
  - Expected to be stable with total tube feeding, if continues elevating, will considering changing to 1K bath
  - Nutren 2.0 only provides 1728mg K, expect it may help bring down K levels

[*K bath concentration – "Rule of 7's: the pt's K plus the dialysate bath K should equal approximately 7; the low limit for K in the blood is 3.5]

Plan

- Per Speech Language Pathologist consultation, maintain tube feeding to meet pt's nutritional needs while assisting him to strengthen oral motor skill and improve swallow
- Continue monitoring tube feeding tolerance, fluid status, tube patency, weight stabilization and wound healing
- Reassess diet labs in mid-May

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