



What Diabetes Educators need to know about the Kidney Disease diet

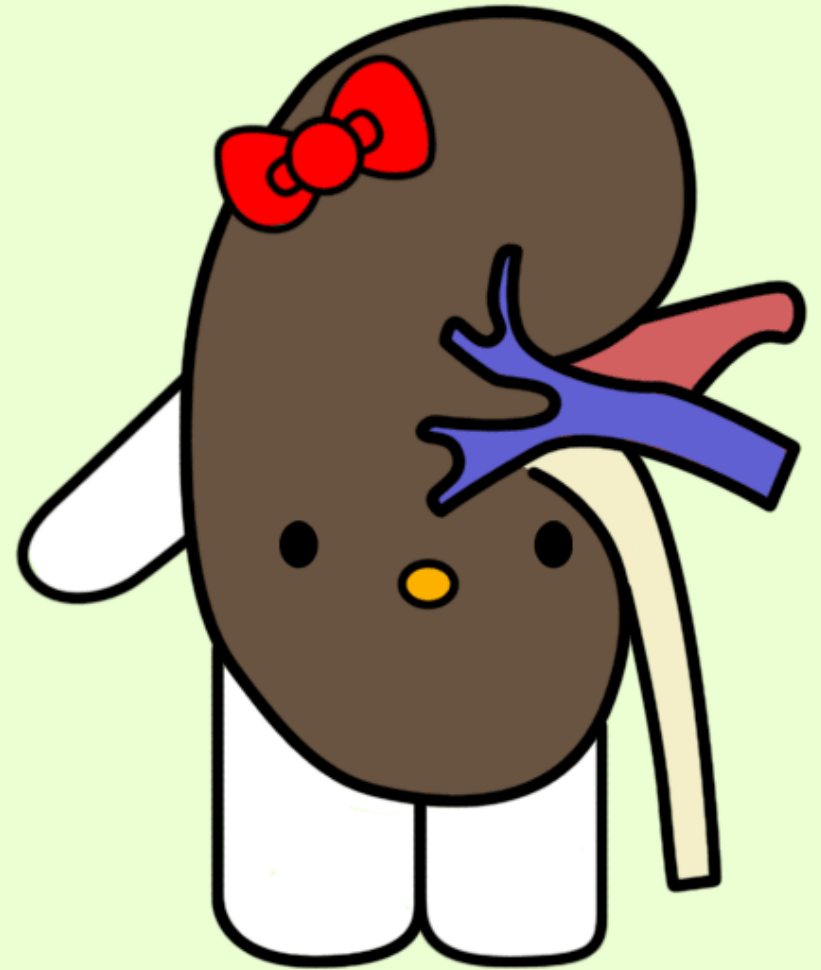
Jenny Smith, MA, RD, CDE
Northwest Kidney Centers, Seattle
March 2015



5 Functions of the Kidneys



1. Filter wastes
2. Filter potassium
3. Filter phosphorus/
activate vitamin D
4. Sodium/fluid balance
5. Erythropoietin



Hello Kidney



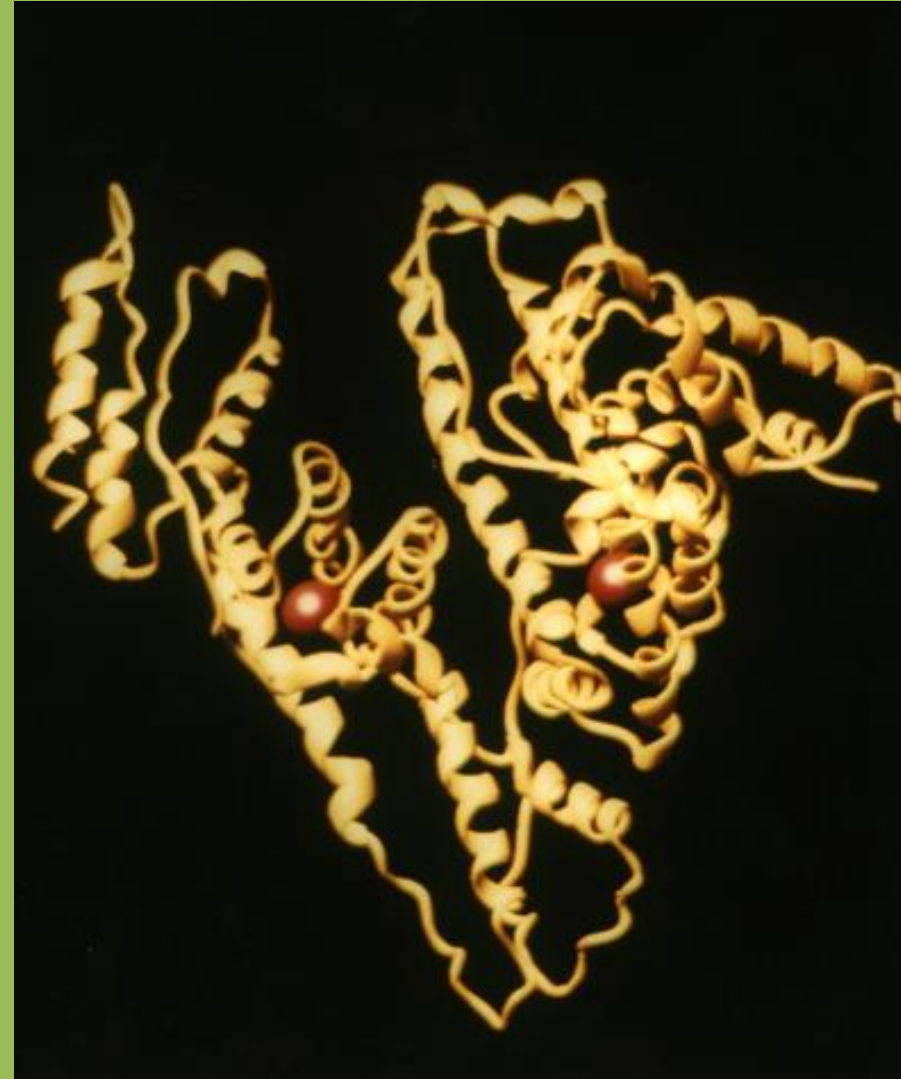
Urea (Measured as BUN)

- Sent out in urine
- From protein breakdown
- Buildup causes uremia
 - Nausea, vomiting, diarrhea, fatigue, confusion, low appetite
 - Dialysis normal 50-100
- Pre-Dialysis
 - Targeted protein 0.7g/kg
- Acute
 - Check with MD
- Hemodialysis
 - Protein goals 1-1.2g/kg
- Peritoneal Dialysis
 - Protein goals 1.2-1.5g/kg





- Albumin
 - Goal > 4.0
 - Good measure?
 - Best measure we have
 - (not pre-albumin)
 - Indicator of mortality risk
 - <2.5 (Lowrie and Lew, 1990)



Filter Potassium



- Found mostly in fruits and vegetables
- Salt substitutes
- Dairy (and supplements)
- Serum potassium range
 - Normal 3.5-5.5
 - Dialysis 3-6
 - Generally 9=death
 - Things that cause high: diet, skipping dialysis, blood sugars, meds, transfusions, constipation
 - Things that cause low: vomiting, diarrhea, diuretics, anorexia

Filter Phosphorus



- Limit high phosphorus foods:
 - dairy, bran, beans, nuts=1 serving/day
 - ***Processed foods
- Take phosphorus binders
 - Tums, Phoslo, Renvela, Fosrenol
 - *Phoslyra, Velphoro, Keryx
- Normal range 2.5-4.8
- Dialysis range 3-6
- Low $PO_4 < 1$ =death
- High can cause itching, calcification and calciphylaxis



Sodium/Fluid Balance

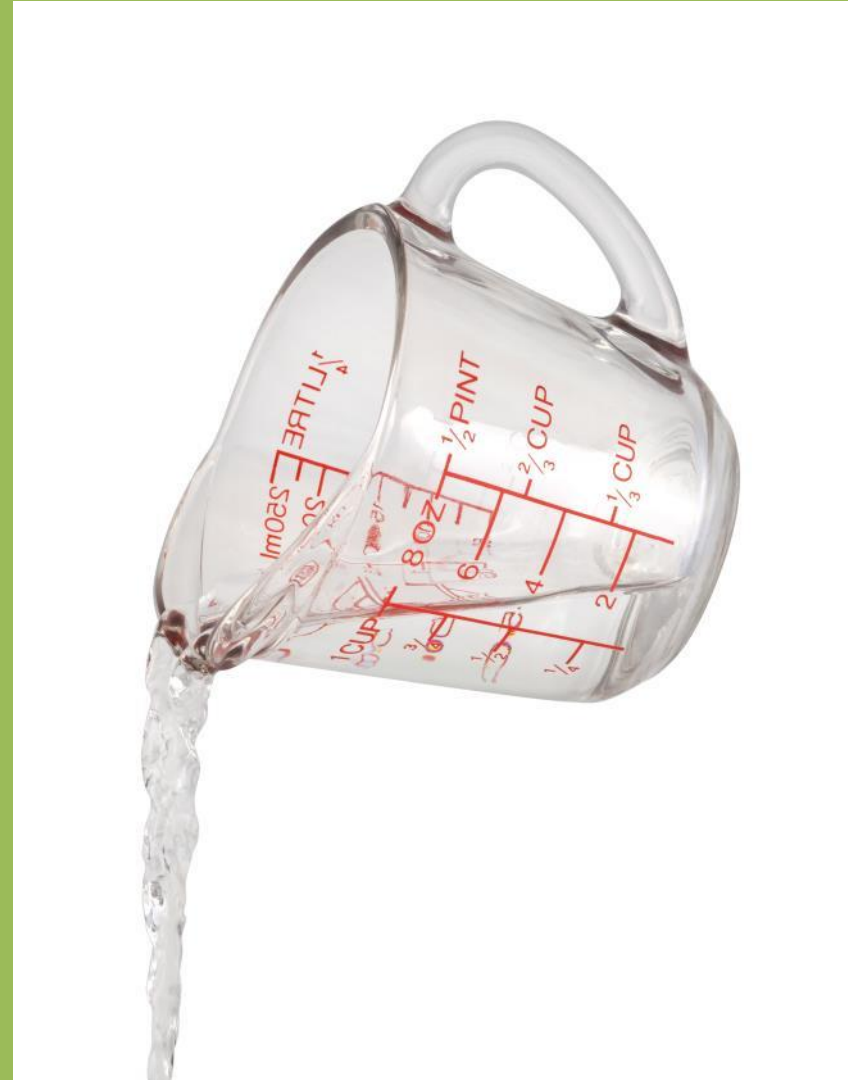


- Kidney balances salt and water volumes via urine output
- Regulation of blood pressure
- High salt diet=thirst and fluid retention making dialysis fluid removal harder
- Is 1500mg a goal?
 - Is the goal just...less

Nutritional Assessment of Fluids



- Fluid goal:
 - 3 cups/day + urine output
- Fluid gains and dry weight
 - Urine output?
 - Weight gains between dialysis runs is the most common indicator of fluid retention
 - BP is the other indicator
 - Normal <4% of body weight in kg



Erythropoietin and A1c



- Hormone made in the kidney
- Stimulates bone marrow to make red blood cells
- Too low=anemia
- Measured by Hgb
 - Normal Hgb=12-17.5
 - Dialysis Normal- 10-12
 - Why=Funding
- Use of EPO
- Need for extra iron to fuel new RBCs (IV Iron)
- How accurate is A1c when pt is infused with new blood cells frequently?



Additional Dietary Issues

- PD diet different from HD diet
- Gout
- Amyloidosis – treated by chemo
- Dialysis has it's own gastroparesis
- Fatigue from dialysis and meal preparation
- IV fluids in the hospital
- Nepro or other renal formulas not recommended as tube feeding
- Constipation issues
- Floristor not recommended as probiotic – yeast based that can infect catheter!
- Star fruit contains a neurotoxin
- Low carb diet fits with renal and DM restrictions
- Low blood sugars on dialysis treatment
 - - ½ of normal insulin sometimes on dialysis days



PD tips for the Diabetes Educator

- Peritoneal Dialysis- Fluid exchange for waste removal instead of using blood.
- Fluid contain dextrose
- Weight gain
- Need additional insulin
- Not recommended that you add insulin to the bag- more risk of infection
- Term: Exchanges. Typical 4 exchanges per day or night time cycling. Varying amount of fluids that is individualized according to patient. Two different types of insulin needs. Short acting during the day or something with a peak with the night time cycling. I've seen orders for N insulin or something with a peak.



PD tips for the Diabetes Educator cont

- Patients get varying amount of fluid. Also different concentrations of glucose.
 - Yellow -1.5 % dextrose solution
 - Green - 2.5 % dextrose solution
 - Red -4.5% dextrose solution
- There is one type called Icor (iso-osmolar glucose-free solution) that uses Maltose which is a bigger molecule and does not pass into the blood. Less weight gain and less impact on blood sugars
- There is a software program called **PD ADEQUEST** that does adequacy analysis for PD that includes g of glucose absorbed per day. Our facility does this quarterly as part of general dialysis quality, but some additional data if blood sugars out of control.



What I Wish I Knew Then...

- Protein in diet recommendation difference for early stages of CKD vs dialysis
- Teach patient about renal related labs. The kidney can work until 90% is gone so whatever you can save will prolong need for dialysis and transplant.
- Learn more about the stages of CKD
- 50% of dialysis patients are DM
- A majority of DM patients will have declining kidney function even with good control!
- Over 90% of patients with kidney disease will die – usually of cardiac issue- before they ever go to dialysis
- Weight, blood pressure and salt intake are VERY important
- Encourage patients to attend education sessions about transplant, dialysis choices and chronic kidney disease. The earlier the better to save function.
- You can get worked up for transplant while your kidney is still functioning and be farther up on the list when it completely fails. It is not uncommon for a good candidate to get a transplant prior to dialysis!

Lets put this to use



- Diet recall example
- Write your own diet for yesterday
- Work with a teammate to decide what is K, Po4, Pro, Na, Fluid
- What would you modify? What would you not?

