

THE IMPORTANCE OF RENAL NUTRITION

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Objectives

At the end of the presentation the participants will be able to:

- ▣ recognize key words/situations that should be communicated to the RN or RD.
- ▣ learn the component of the renal diet
- ▣ identify foods that are high in phosphorus, potassium and fluids.
- ▣ know complications of high phosphorus, high potassium, high fluid and sodium intake; and low protein intake.

Renal Diet Goals

- Achieve optimal nutritional status
- Prevent protein-calorie malnutrition
- Maintain fluid & electrolyte balance
- Prevent/manage renal bone disease
- Enable patient to eat a palatable, acceptable diet to fit his or her lifestyle, as much as possible

Importance of nutrition in dialysis.

- Nutrition plays a huge role in the life of a dialysis patient.
 - ▣ It can prevent complications and improve quality of life or it can exacerbate complications and increase risk of mortality and morbidity
- Protein, Potassium, Sodium, Phosphorus, Calcium and Fluids
- **This diet is individualized, it takes in consideration patient's medical conditions, nutritional status, food preferences and nutritional needs!**

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Components of the Renal Diet

Albumin/protein status

□ Albumin

- Not a great indicator of nutrition status
- Affected by inflammation, fluid status, liver disease, infection
- Goal serum albumin 3.5-4.0 mg/dL with ideal being 4.0 mg/dl

Albumin

- Necessary to make and repair cells
- Essential for growth and maintenance of body tissue
- Provides energy
- Essential to maintain osmotic pressure and fluid balance in blood
- Complications of low albumin levels
 - ▣ Increased morbidity and mortality risk
 - ▣ Longer length of stay when hospitalized

Protein loss

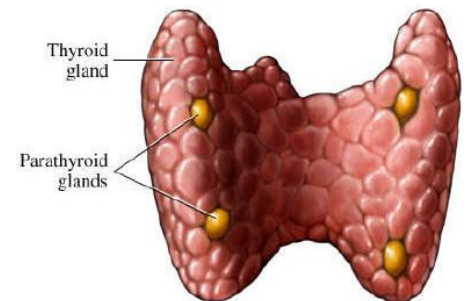
- Protein is lost during dialysis
- Important to consume enough protein to compensate protein losses.

Bone Mineral Metabolism

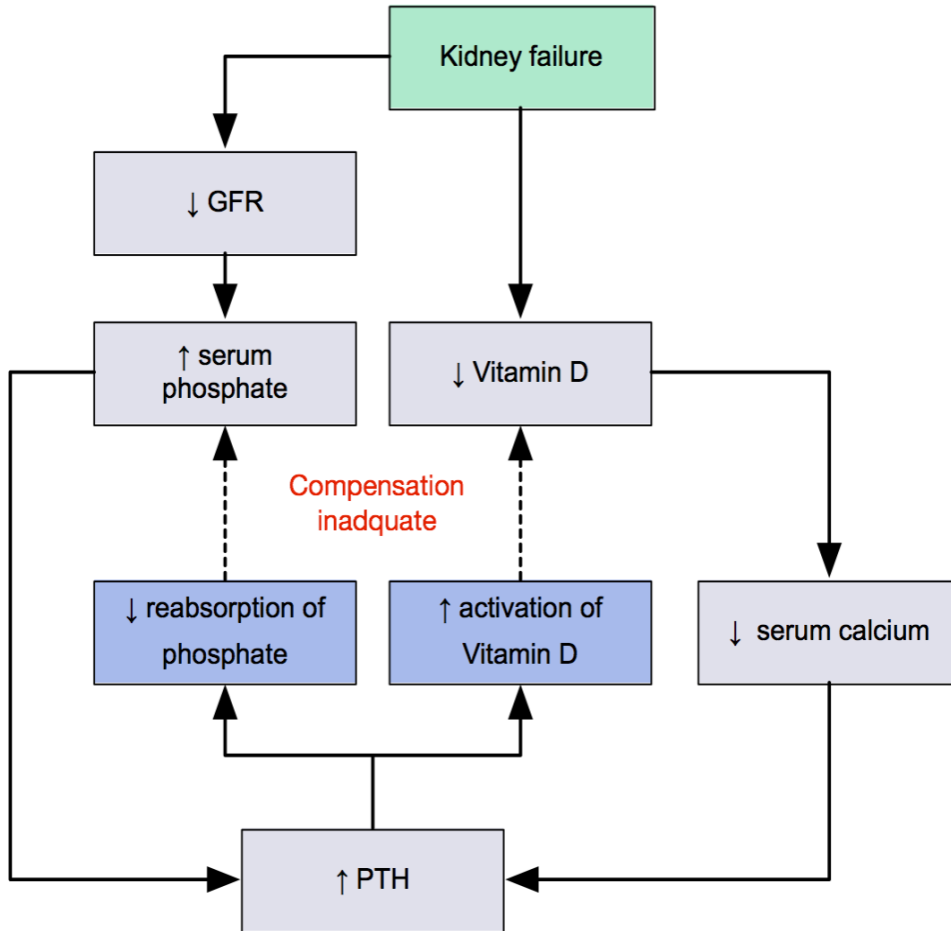
- Regulated by Calcium, Phosphorus and Vitamin D (active) serum levels.
- All of this plays a huge role in the bone management (formation and resorption)
 - ▣ Poor activation of Vitamin D
 - ▣ ↓ blood calcium levels
 - ▣ ↑ phosphorus serum levels

Secondary Hyperthyroidism

- Disease characterized by high levels of parathyroid hormone and low blood calcium levels.
- The glands become over active trying to maintain balance of calcium and phosphorus in the body.
- Therapy:
 - ▣ Calcimimetics & Vitamin D analogues to suppress PTH and avoid glands to overgrow.
 - ▣ Parathyroidectomy



Bone Mineral Metabolism



Main factor that affects or stimulates the PTH:

Poor Vitamin D activation by the kidneys, which decrease calcium absorption in the gut.
This stimulates PTH to release: - Calcium & phosphorus from the bone.
- Increase calcium and phosphorus absorption in the gut

Dietary phosphorus and calcium

- Fast foods and processed meals
- Dialysis removes some phosphorus from the blood
- Diet and phosphorus binders.
- Patient with ↑ phosphorus levels:
 - ▣ patient is eating foods high in phosphorus
 - ▣ the amount of binders per meal is not enough to cover the meal
 - ▣ patient is not taking binders.

High Phosphorus foods



High phosphorus, high protein



Phosphorus in fast foods



539 mg



305 mg



258 mg



477 mg

Dietary Potassium

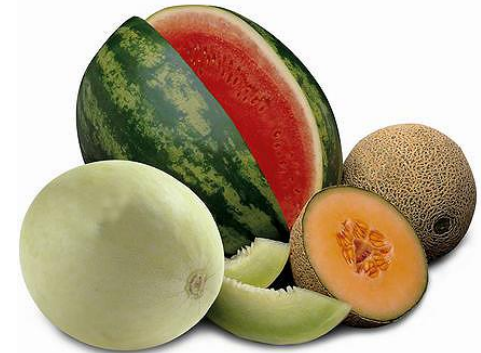
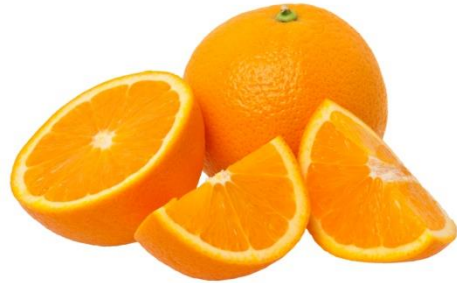
Fruits and Vegetables potassium content

- Most of the vegetables and fruits that are high in potassium, are known to be healthy which confuses the patient. A lot of patients feel they cannot eat anything and they become frustrated.
- AVOID: bananas, avocado, dried fruits, oranges and orange juice and potatoes.

Risk of high potassium

- Complications of high potassium serum levels:
 - ▣ *Tachycardia*
 - ▣ *Bradycardia*
 - ▣ *Cardiac arrest (>7 meq/L)*
 - ▣ *Metabolic acidosis*
 - ▣ *Decreased peristalsis*

High Potassium



Low Potassium



Sodium

- Controls blood pressure and blood volume.
- Found in salt and many processed foods
- High sodium intakes increase thirst, leading to large fluid gains
 - ▣ Fluid overload, pulmonary edema, CHF
- Low sodium diet
 - ▣ Lowers thirst, extracellular fluid volume, weight gains and blood pressure.

High Sodium



Fluids

- Fluid intake
 - 1,000- 2,000 mL/day
 - Depends on patient's urine output
 - Calculated by RD
- Goal IDWG $<5\%$ of dry weight

What count as fluids?



Ultra Filtration Rate

- CMS new guideline
 - ▣ Goal remove < 13 ml/hr/kg to prevent heart complications due to rapid fluid removal (myocardial ischemia and stunning).
- Recent studies show that mortality risk increase dramatically once UFR is > 10 ml/hr/kg
- 2016- added to ESRD Core Survey Data Worksheet

UFR

UF GOAL	weight in kg	tx time in hours	UFR in ml/hr/kg
3000	75	4	10
3000	75	3.75	10.66667
3000	75	3.5	11.42857
3000	75	3	13.33333
4000	75	4	13.33333
4000	75	3.75	14.22222
4000	75	3.5	15.2381
4500	75	3.25	18.46154
5000	75	3.5	19.04762

UF GOAL	weight in kg	tx time in hours	UFR in ml/hr/kg
1000	90	4.25	2.614379
1500	90	4.25	3.921569
2000	90	4.25	5.228758
2500	90	4.25	6.535948
3000	90	4.25	7.843137
3500	90	4.25	9.150327
4000	90	4.25	10.45752
4500	90	4.25	11.76471
5000	90	4.25	13.0719
5500	90	4.25	14.37908
6000	90	4.25	15.68627

2000	50	4	10
2000	50	3.75	10.66667
2000	50	3.5	11.42857
2000	50	3.25	12.30769
2000	50	3	13.33333
3000	50	4	15
3000	50	3.75	16
3000	50	3.5	17.14286
3000	50	3	20
4000	50	4	20
4000	50	3.75	21.33333
4000	50	3.5	22.85714
4500	50	3.25	27.69231
5000	50	3.5	28.57143

Technicians:

- Spend more time with the patient
- Create rapport and a trust relationship
- Should take advantage of it.
- Patients usually trust technicians because they don't feel judge, or they feel they are not going to get in trouble.

Patients usually tell technicians:

- What they did during the weekend
- Plans for the weekend, holiday
- Expecting family or visitors
- What they ate the day before
- Poor appetite or poor oral intake
- GI disturbances
(diarrhea/vomiting/nausea/constipation)

Summary

- Adherence with renal diet is extremely important in dialysis patients
- Better adherence with dietary recommendations, less complications and less mortality risk
- Really care about your patient, educate him/her
- Communicate with your RD or RN



Questions?