Diet
DOES
make a
difference

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What Do Renal Dietitians Do?

- Assess nutritional status
- Develop a “Plan of Care” for each patient with appropriate interventions and recommendations
- Provide nutrition education and counseling
- Interpret blood test results – these are reviewed with patients and caregivers
- Manage Mineral and Bone Disorder
- Serve on Health Care Team
Nutritional Outcomes

- Achieve & maintain optimal nutritional status
- Manage co-existing conditions / problems
- Enhance quality of life and outcomes
- Prevent complications
Optimal Nutritional Status

- Appetite & intakes are appropriate
- Adequate protein & fat stores
- Stable / desirable dry weight
<table>
<thead>
<tr>
<th>Medical Nutrition Therapy</th>
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<tbody>
<tr>
<td>Calories</td>
</tr>
<tr>
<td>Protein</td>
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<tr>
<td>Fluids</td>
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<tr>
<td>Sodium</td>
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<td>Potassium</td>
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<td>Phosphorus</td>
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<td>Calcium</td>
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<td>Vitamins</td>
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...AND HERE'S YOUR LIST OF THINGS NOT TO EAT.
Calorie Requirements

- Based on actual or adjusted BW
- Adjusted based on the patients need to maintain, decrease, or increase BW as desired or required for transplant
- Individualized for carbohydrate, fat & cholesterol recommendations
- Adequate calories are needed for protein sparing
Protein

Essential for growth, maintenance, preventing infection and anemia

Important for wound healing and repair
Inadequate Protein Intake

- Muscle wasting
- Lack of energy
- Edema
- Weight loss
- Poor wound healing
- Low or declining albumin

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Protein Requirements

1.2 to 1.5 gm/kg Adjusted Body Weight per day

- 50% to 60% high biological value
- Increased needs in catabolic states
Supplements

- **Protein Powder**
  - ProCel, Beneprotein

- **Liquid Protein**
  - Pro-Stat, ProSource, LiquaCel, ProMod

- **Liquid Nutritional**
  - Ensure, Boost

- **Calorie Dense**
  - Ensure Plus, Boost Plus

- **Renal Specific**
  - Nepro, Novasource Renal, ReGen
Sodium

Helps regulate body fluid volume and balance

Limiting sodium helps to prevent:

• Excessive thirst
• Fluid retention
• Elevated blood pressure
Sodium Allowance

1.5 to 3.0 gm (1500 to 3000 mg)/day – (may be higher for):

- Patients with residual renal function
- Patients on PD
- Patients on short daily dialysis
STOP

You Are Eating Too Much Salt!

Do You:
- Eat out several times per week?
- Buy food that is canned, boxed, bagged, bottled, or jarred?
- Eat too few fruits and veggies (less than 1 pound per day)?
- Avoid cooking meals yourself?

5 Not So Shaky Facts:
- Over 77% of the salt you eat comes from eating out and processed foods
- Less than 10% comes from a salt shaker
- You should not eat more than 1,500 mg of sodium per day
- Most people eat more than 3,000 mg of sodium every day
- Excess salt/sodium intake can lead to heart disease, stroke and other illnesses

Most sodium comes from processed and restaurant foods
Thank God! WATER! Now I know how a dialysis patient feels.
Fluids

Fluid accumulates in the body between dialysis treatments aka Interdialytic weight gain

Goal

< 3 to 5% of EDW or < 4 Kg
Excessive Fluid can cause:

- Edema
- Shortness of breath
- Hypertension
- Congestive heart failure
Fluid Allowance

1.0 to 1.5 liters per day

- Includes all foods liquid at room temperature
The Solo "Cup"

- Beer: 12 ounces
- Wine: 5 ounces
- Liquor: 1 ounce
Potassium

- Mineral required for muscle contraction and nerve function

Goal:
Maintain levels between 3.5 and 5.5 mEq/L
High Potassium

Muscle weakness

Numbness & tingling of extremities

Changes in pulse rate

Hyperkalemia
Potassium Allowance

2.0 to 3.0 gm (2000 to 3000 mg) per day

Based on lab values

Allowed more if residual renal function or on peritoneal dialysis
Foods High in Potassium
WHAT REALLY BUGS ME IS—I'M ALLOWED TO HAVE JUST ONE!
Phosphorus

- Mineral widely available in many foods
- 85-90% found in bones & teeth
- Vital to energy production and storage

Goal:

- Maintain levels between 3.0 and 5.5 mg/dL
Phosphorus Allowance

Phosphorus in common foods:

- ½ cup milk = ~100 mg
- 1 ounce cheese = 100 – 290 mg
- ½ cup beans (pinto, lima) = 125 mg
- 3 ounces meat = 195 mg
- 1 ounce nuts = 120 mg
- 2 tablespoons peanut butter = 120 mg

Intake goal
800 – 1000 mg / day
Foods High in Phosphorus

- Processed meats (e.g., hot dogs, bologna)
- Dairy (e.g., milk, cheese, yogurt, ice cream, pudding)
- Dried beans/peas (e.g., kidney beans, split peas, lentils), nuts, peanut butter, whole-grain breads
- Chocolate
- Dark colas, hot chocolate
Hyperphosphatemia

Symptoms of elevated phosphorus levels or hyperphosphatemia

- Itching
- Bone damage
- Increased risk for soft tissue calcification (including heart and blood vessels)
Calcium

• Mineral needed for:
  • healthy bones
  • muscle contraction & relaxation
  • proper nerve functioning

Goal:

• Maintain level between 8.4 – 10.2 mg/dL
Calcium Allowance

- 2000 mg/day

Sources to limit:
- Dairy products (milk, cheese, yogurt, ice cream)
- Fortified foods
- Medications
Calcium

Hypercalcemia

- Increased risk for heart disease
- Increased risk for calcification of soft tissue
- Confusion (when very high)

Hypocalcemia (rare)

- Muscle spasms
- Numbness
- Confusion
- Seizures (when very low)
Mineral and Bone Disorder (MBD) Management

Involved:
- Controlling Parathyroid Hormone (PTH) levels
- Medications, diet, treatment
- Maintaining Calcium and Phosphorus balance
MILK
DOES A
BODY
GOOD!

OH YEAH?
WHOSE BODY?
MBD Management

Additional Therapies:

• Phosphate Binders
  • PhosLo®, Tums®, Calcium Acetate
  • Renvela®, Fosrenol®

• Vitamin D therapy
  • IV: Hectorol®, Calcitriol, Zemplar®
  • Oral: Rocaltrol, Hectorol®, Zemplar®, Calcitriol

• Calcimimetics
  • Sensipar®
Vitamins

- **Water soluble**
  - Supplemented due to diet restrictions and dialysis losses

- **Fat soluble**
  - Not removed by dialysis, therefore supplementation not recommended
# Nutrition and Renal-Related Laboratory Measures

<table>
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<tr>
<th></th>
<th>Healthy</th>
<th>Stage 5 CKD</th>
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</thead>
<tbody>
<tr>
<td><strong>BUN mg/dL</strong></td>
<td>&lt; 25</td>
<td>50 – 100</td>
</tr>
<tr>
<td><strong>Creatinine mg/dL</strong></td>
<td>&lt; 1.6</td>
<td>10 – 18</td>
</tr>
<tr>
<td><strong>Albumin g/dL</strong></td>
<td>&gt; 4.0</td>
<td>≥ 4.0</td>
</tr>
<tr>
<td><strong>Hb g/dL</strong></td>
<td>14 – 18</td>
<td>10 – 12</td>
</tr>
<tr>
<td><strong>Iron Saturation %</strong></td>
<td>&gt; 25</td>
<td>20 – 50</td>
</tr>
<tr>
<td><strong>Ferritin ng/ml</strong></td>
<td>12 – 300</td>
<td>&gt;=200</td>
</tr>
<tr>
<td><strong>Potassium mEq/l</strong></td>
<td>3.5 – 5.0</td>
<td>3.5 – 5.5</td>
</tr>
<tr>
<td><strong>Corrected Calcium mg/dL</strong></td>
<td>8.5 – 10.2</td>
<td>8.4 – 10.2</td>
</tr>
<tr>
<td><strong>Phosphorus mg/dL</strong></td>
<td>2.5 – 4.5</td>
<td>3.0 – 5.5</td>
</tr>
<tr>
<td><strong>Intact PTH pg/ml</strong></td>
<td>&lt; 100</td>
<td>150 – 600</td>
</tr>
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</table>
Lunch at the Transplant Clinic

I take the Cardizem to control my blood pressure, the Neoril and Prednisone so I won't reject my kidney transplant, the Lasix so I won't swell up, the Fosamax to increase my bone density, the Tylenol for my arthritis and the Nephrovite for my daily vitamin. And I have to tell you Susan, I am so happy I don't have to take Tums with every meal anymore!
Questions?