Medical Nutrition Therapy Diet – Renal with Hemodialysis

1. Purpose
   a. Nutrition Indicators

   The patient is a 26 year old female of Pima Indian decent, Enez Joaquin. Mrs. Joaquin has Stage 5 Chronic Kidney Disease and is beginning hemodialysis.

   b. Criteria to Assign the Diet

   • Higher protein intake is needed for patients receiving maintenance dialysis to replace amino acids lost during treatment
   • Sodium and fluid are restricted as a need to control blood pressure and maintain fluid balance.
   • Potassium is limited when serum potassium is elevated to prevent related cardiac events.

   c. Rationale for Diet

   There is no cure for chronic kidney disease. Untreated, it usually worsens to end-stage renal disease. Lifelong treatment, including hemodialysis and dietary intervention, may control the symptoms of chronic kidney disease.

2. Population
   a. Overview

   • Chronic kidney disease is a permanent, progressive loss of kidney function characterized by a decline in glomerular filtration rate.
     o Kidneys remove wastes from your body, regulate body water and other blood chemicals (Na, K, P, Ca), release hormones that help regulate blood pressure, promote strong bones, and make RBC’s.
     o When your kidneys fail, harmful wastes build up in your body, your blood pressure may rise, and your body may retain excess fluid or not make enough red blood cells.

   b. Disease Process

   • Diabetes and hypertension are the most common causes of chronic kidney disease.
   • The National Kidney Foundation Kidney Disease Outcome Quality Initiative classifies CKD into five stages based on level of glomerular filtration.

   c. Biochemical and Nutrient Needs
• Higher protein intake is needed for patients receiving maintenance dialysis to replace amino acids lost during treatment
• Sodium and fluid are restricted as a need to control blood pressure and maintain fluid balance.
• Potassium is limited when serum potassium is elevated to prevent related cardiac events.

3. General Guidelines
   a. Nutrition Rx

   • Renal diet with appropriate intake of sodium, fluid, potassium, phosphorus, and protein.
     o Protein = 8-10 oz. or 3-4 servings
       ▪ 0.5 grams per pound of body weight per day
     o Low potassium fruits = 2-3 servings
       ▪ Limit or avoid: orange juice, kiwis, nectarines, prunes, raisins/dried fruit, bananas, melons
     o Low potassium vegetables = 2-3 servings
       ▪ Limit or avoid: potatoes, tomatoes, winter squash, pumpkin, asparagus, avocado, beets, beet greens, cooked spinach, parsnips, and rutabaga
       ▪ Potassium intake = 1,500-2,000 mg
     o Limit sodium to less than 2,000 mg per day
     o Limit phosphorus intake by limiting animal and plant protein sources including milk, legumes, beef, and cheese.
       ▪ ½ cup milk or ½ cup yogurt or 1 oz. cheese daily
       ▪ Phosphorus intake = 500-1,200 mg
     o Limit fluid intake to about 4 cups of total fluid per day! This includes fluid from foods AND beverages!
       ▪ Depending on output, this number can be increased to compensate. For example, if an individual produces one cup of urine, they may consume four cups PLUS one cup of fluid.

   b. Adequacy of Nutrition Rx

   The renal diet for patients on hemodialysis will meet all the recommended intake levels for nutrients, vitamins, and minerals. It will help improve the patient’s hemodialysis treatment and overall health.

   c. Goals

   • Goal 1: Provide nutrition education on appropriate phosphorus intake and low phosphorus foods (see handouts)
   • Goal 2: Provide nutrition education on appropriate protein intake and appropriate protein foods (see handouts)
d. Does it Meet DRI

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>DRI (26 y.o. female)</th>
<th>Renal Intake (hemodialysis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>46 grams/day</td>
<td>~ 63 grams/day</td>
</tr>
<tr>
<td>Sodium</td>
<td>1,500 mg/day</td>
<td>&lt; 2,000 mg/day</td>
</tr>
<tr>
<td>Potassium</td>
<td>580 mg/day</td>
<td>1,500-2,000 mg/day</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>700 mg/day</td>
<td>500-1,200 mg/day</td>
</tr>
<tr>
<td>Fluid</td>
<td>2.7 liters/day</td>
<td>~ 4 cups + output</td>
</tr>
</tbody>
</table>

4. Education Material

a. Nutrition Therapy *(see attached handouts for diet instruction and information about phosphorus)*

b. Ideas for Compliance

Many people find it hard to adjust to a renal diet for hemodialysis because they have a hard time decreasing normal fluid intake or have to cut out a lot of their favorite foods. As a dietitian it is important to help patients adjust their favorite foods so they are appropriate for their new diet. Attached are several “renal” variations to popular foods.

For individuals who have a hard time decreasing their normal fluid intake or keeping fluid intake low, attached you will find a handout with helpful “thirst quenching” tips!

5. Sample Menu

a. Foods Recommended

- Beef, egg replacements, eggs, fish, lamb, pork, poultry, shellfish, veal, wild game
- Low potassium fruits and vegetables
  - Apples, blueberries, cranberries, grapes, lemons, limes, peaches, pineapples, plums, raspberries, strawberries, watermelon, cabbage, carrots, cauliflower, corn, cucumber, eggplant, green beans, lettuce, mushrooms, onions
- Bread, cereal, and grain choices
  - Breads and rolls, bagels, English muffin, tortillas, pita, low sodium dry cereals, pasta, rice, crackers, popcorn, pretzels, tortilla chips

b. Foods to Avoid/Limit

- High potassium fruits and vegetables
  - Apricots, bananas, honeydew, kiwi, nectarines, oranges, prunes, raisins, avocado, Brussels sprouts, potatoes, pumpkin, spinach, sweet potatoes, tomatoes, winter squash
- Dairy and high phosphorus foods
- Cake, cheese, cooked beans and peas, cottage cheese, ice cream, milk, nut butters, nuts, tofu, vegetarian meat replacements, yogurt, whole wheat cereals
- High sodium foods
- Whole wheat products

c. Example of a meal plan

<table>
<thead>
<tr>
<th>Meal</th>
<th>Menu</th>
</tr>
</thead>
</table>
| Breakfast     | ½ cup cranberry juice  
1 egg  
2 slices toast with 2 tsp. jelly  
1 cup coffee |
| Lunch         | Turkey sandwich: 2 slices bread, 3 oz. sliced turkey, 1 lettuce leaf, 2 tsp. mayonnaise  
½ cup cucumber salad with 1 Tb. oil and vinegar dressing  
1 medium apple  
1 cup lemonade |
| Evening Meal  | 3 oz. broiled fish  
½ cup rice  
½ cup green beans  
1 cup lettuce salad with 1 Tb. oil and vinegar dressing  
1 dinner roll with 2 tsp. margarine  
½ cup canned peaches  
1 cup iced tea |
| Snack         | 1 slice pound cake  
½ cup orange Jell-O |

6. Websites
   a. Organizations with Websites
      - www.davita.com – DaVita Kidney and Dialysis

   b. Government Websites

7. References


Dialysis Friendly Recipes

APPETIZERS & SNACKS

Brie and Cranberry Chutney

Diet types:
CKD non-dialysis  Dialysis  Diabetes

Recipe submitted by DaVita dietitian Jennifer from Virginia.

Portions: 10  Serving size: 3/4 ounce Brie, 2 teaspoons chutney and 3 low-sodium crackers

Ingredients
- one 12-ounce bag fresh cranberries
- 1/3 cup water
- 1/2 cup sugar or substitute 1/2 cup Splenda® granular
- 1/2 cup brown sugar or substitute 1/4 cup Splenda® brown sugar blend
- 1 teaspoon dry mustard
- 1 teaspoon cloves
- 1 teaspoon cinnamon
- 1 teaspoon nutmeg
- 1 teaspoon allspice
- one 8-ounce wheel of Brie cheese
- 30 low-sodium crackers

Preparation
1. Preheat oven to 350° F. Wash and drain fresh cranberries.
2. In a large skillet, heat water on medium for 5 minutes and add fresh cranberries. Heat for no more than 5 minutes, just until the cranberries start to burst.
3. Add white and brown sugar (or Splenda).
4. Add spices and stir gently.
5. Remove from heat. Let chutney cool.
6. Remove Brie from the wrapper. Leaving a half-inch border of rind on top of the wheel, cut out a circle and lift out rind from the center to expose the Brie inside.
7. Place Brie on a baking sheet and heat in oven just until the cheese is soft to the touch and the top is slightly melted.
8. Remove Brie from oven and place on a platter.
9. Pour warm chutney over Brie and serve with a variety of low-sodium crackers.

Renal and renal diabetic food choices
- 1 meat
- 1/2 fruit, low potassium
- 1 starch
- 1 high-calorie
- 1 fat

Carbohydrate choices
2

Helpful hints
- Low-sodium crackers are recommended to help keep sodium low.
- Splenda substitutions reduce carbohydrate to 19 grams per serving, 1
carbohydrate choice.

- Cranberry Chutney can be prepared and refrigerated for three days prior to serving.
- Cranberry Chutney is a delicious side dish with turkey, pork or lamb, or spread it on a turkey sandwich for a yummy flavor.
**APETIZERS & SNACKS**

**Chicken Nuggets with Honey Mustard Dipping Sauce**

**Diet types:**
- CKD non-dialysis
- Dialysis
- Diabetes

Recipe submitted by the DaVita dietitian team.

** Portions:** 12  **Serving size:** 3 nuggets, plus 1 tablespoon sauce

**Ingredients**
- 1 tablespoon mustard
- 1/2 cup mayonnaise
- 1/3 cup honey
- 2 teaspoons Worcestershire sauce
- 1 egg, beaten
- 2 tablespoons liquid nondairy creamer
- 3 cups finely crushed low-sodium cornflakes
- 1 pound boneless chicken breast, cut into 36 bite-sized pieces
- nonstick cooking spray

**Preparation**

1. Stir mustard, mayonnaise, honey and Worcestershire sauce together in a small bowl. Chill sauce until nuggets are cooked, then serve as a dipping sauce.
2. Preheat oven to 400° F.
3. Combine egg and nondairy creamer in a small bowl. Crush cornflakes and pour crumbs into a large zip-lock bag.
4. Dip chicken pieces in egg mixture then shake in zip-lock bag to coat with cornflake crumbs.
5. Bake nuggets on a baking sheet sprayed with nonstick cooking spray for 15 minutes or until done.

**Renal and renal diabetic food choices**

- 1 meat
- 1/2 starch
- 1/2 high calorie
- 1 fat

**Carbohydrate choices**

1

**Helpful hints**

- Serve nuggets on a tray with decorated toothpicks for a festive look.
- Try a variety of dipping sauces, such as: barbeque sauce, curry sauce, fruit spreads or low-sodium salad dressing.
- Three pieces is an appetizer portion. For a meal, increase portion to 6 to 9 nuggets.
**Renal-safe Macaroni and Cheese**

**Diet types:**
- CKD non-dialysis
- Dialysis
- Diabetes

Recipe created by DaVita patient, Deborah, submitted by DaVita dietitian Terri from California.

**Portions:** 4  **Serving size:** 1/2 cup

**Ingredients**
- 2 cups elbow, shell or bowtie pasta
- one 5-ounce jar Kraft® Pimento Cheese spread made with cream cheese
- one 4-ounce can Ortega® diced green chilies (rinsed and drained)
- pepper to taste, if desired

**Preparation**
1. Cook noodles in boiling water without salt or butter until the noodles are al dente.
2. Drain noodles. While noodles are hot, add the pimento cheese spread and chilies.
3. Stir until the cheese spread is melted into the noodles.
4. Serve hot. Add pepper at the table for taste, if desired.

**Renal and renal diabetic food choices**
- 1 starch
- 1 fat
- 1/2 milk

**Carbohydrate choices**

2

**Helpful hints**
- For a higher protein variation, add browned and drained ground beef (dialysis only).
- Most cheese spreads are very high in sodium and phosphorus. The pimento spread in this recipe is made with cream cheese instead of processed cheese. (Look for the Philadelphia® brand cream cheese logo on the label). This is what keeps the sodium and phosphorus content low enough for a renal diet. Avoid bottled or canned spreads made with processed cheese.

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