Potassium & CKD: How to manage potassium long term

Carolyn Feibig, MS, RD, LD, CCTD
Housekeeping

- All attendees will be on ‘mute’ throughout the duration of the webinar.
- The chat box has been disabled.
- If you have questions for the speaker or for the AKF team:
  - Please type it into the Q&A box in your control panel.
  - We will answer questions out loud during the Q&A portion of the presentation.
Thanks to our speaker!

Carolyn Feibig, MS, RD, LD, CCTD

- Heart and Lung Transplant Dietitian with the Inova Health System
- Previously worked as Kidney Transplant Dietitian at the George Washington University Hospital
- Found her passion for renal nutrition when her nephew was born with only one working kidney
- Volunteers with the American Kidney Fund, American Association of Kidney Patients the National Kidney Foundation
Objectives

- What is potassium and why is it important?
- Why do people with kidney dysfunction have problems with high potassium?
- What happens if it is too high?
- Old school vs New school – what’s the difference?
  - How potassium binders can help you control potassium long-term
  - How to use food labels to track potassium in your diet
  - Tips for sticking to your potassium management plan
Introduction
Potassium

- A mineral/electrolyte required for many essential body functions:
  - Intercellular fluid status
  - Blood pressure
  - Helps with muscle contraction
    - Including your heart
Potassium

• An eating pattern high in potassium usually includes many vegetables, fruits, whole grains and legumes
  – Wide variety of vitamins and minerals
  – Fiber (insoluble and soluble)

• High potassium ‘diets’ are considered the most healthful
  – DASH
  – Mediterranean
Benefits of potassium-rich eating

- Lowers blood pressure
- Decreases risk of stroke
- Improves cholesterol
- Decreases risk of other cardiovascular events
- Improves blood sugar

- Promotes kidney health
- Improves gut function
- Helps maintain a healthy weight
- Improves quality of life
Chronic kidney disease (CKD) and potassium

- **Nephron** - the part of your kidney that “cleans” your blood
  - The **nephron** regulates how much potassium, sodium, water, and other essential components remain in our blood or excreted through urine
High potassium (hyperkalemia)

• Potassium is main component that controls muscle function – including your heart
  – Too high potassium can cause serious cardiac events

• Some reasons for high potassium:
  – Medicines (ACE inhibitors, and others)
  – Chronic kidney disease (later stages)
  – Constipation
CKD and potassium

- Leading cause of death for people with advanced stages of CKD is a cardiac event

- Hypothesis:
  - Many in the medical community believe the dialysis diet recommendations - high animal protein, but lower in vegetables, fruits, legumes and whole grains - may play a part in these cardiac events.
CKD and potassium (old school)

- Limit intake of daily potassium
- High serum (blood) potassium =
  - Cardiac dysfunction
  - Cardiac event
- Dialysis =
  - Removal of some of the extra potassium
  - Increased protein needs
CKD and potassium (old school)

- Whole grains = \[\text{phos & potassium}\]
- Beans = \[\text{phos & potassium}\]
- Vegetables = \[\text{potassium}\]
- Fruits = \[\text{potassium}\]
- Protein = animal protein is important
CKD and potassium (old school)

- People on dialysis need more protein
  - Focus on animal proteins
    - Complete proteins
    - High in potassium
    - An egg is the gold standard (still)
- Avoid plant sources of protein
  - Whole grains, legumes
## CKD and Potassium (Old School)

<table>
<thead>
<tr>
<th>Item</th>
<th>Serving size</th>
<th>Protein</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steak (sirloin)</td>
<td>3 oz</td>
<td>26</td>
<td>323</td>
</tr>
<tr>
<td>Chicken (breast meat)</td>
<td>3.5 oz</td>
<td>29</td>
<td>240</td>
</tr>
<tr>
<td>Egg (large)</td>
<td>1</td>
<td>6</td>
<td>66</td>
</tr>
<tr>
<td>Fish (salmon)</td>
<td>3 oz</td>
<td>19</td>
<td>326</td>
</tr>
<tr>
<td>Black beans</td>
<td>½ cup</td>
<td>7</td>
<td>370</td>
</tr>
<tr>
<td>Great Northern beans</td>
<td>½ cup</td>
<td>10</td>
<td>460</td>
</tr>
<tr>
<td>Barley (cooked)</td>
<td>½ cup</td>
<td>12</td>
<td>416</td>
</tr>
<tr>
<td>Oatmeal (cooked)</td>
<td>¾ cup</td>
<td>4</td>
<td>122</td>
</tr>
</tbody>
</table>
### CKD and Potassium (old school)

<table>
<thead>
<tr>
<th>Item</th>
<th>Serving size</th>
<th>Protein</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steak (sirloin)</td>
<td>9 oz (3x)</td>
<td>78</td>
<td>969</td>
</tr>
<tr>
<td>Chicken (breast meat)</td>
<td>9 oz (2.6x)</td>
<td>75</td>
<td>624</td>
</tr>
<tr>
<td>Egg (large)</td>
<td>2 (2x)</td>
<td>12</td>
<td>132</td>
</tr>
<tr>
<td>Fish (salmon)</td>
<td>3 oz</td>
<td>19</td>
<td>326</td>
</tr>
<tr>
<td>Black beans</td>
<td>¾ cup (1.25x)</td>
<td>8.75</td>
<td>462</td>
</tr>
<tr>
<td>Great Northern beans</td>
<td>¾ cup (1.25x)</td>
<td>12.5</td>
<td>575</td>
</tr>
<tr>
<td>Barley (cooked)</td>
<td>¾ cup (1.25x)</td>
<td>15</td>
<td>520</td>
</tr>
<tr>
<td>Oatmeal (cooked)</td>
<td>¾ cup</td>
<td>4</td>
<td>122</td>
</tr>
</tbody>
</table>
Out with the OLD and in with the NEW
CKD and potassium (new school)

- Individualized care / recommendations
- Not as protein focused (still important)
- Missing nutrients with the ‘old school’ diet
- What foods raise potassium
- New way of treating
- Quality of life
Advances in medication are playing a MAJOR role in managing potassium levels!
## Medications – Potassium binders

<table>
<thead>
<tr>
<th>Medication</th>
<th>FDA approved</th>
<th>How it works</th>
<th>How fast does it work</th>
<th>Pill burden</th>
<th>Side effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Polystyrene Sulfonate</td>
<td>June 1958</td>
<td>Binds to K, Mag and Ca in the GI tract</td>
<td>Hours to days</td>
<td>1 teaspoon - up to 4x/day</td>
<td>Diarrhea, long term use: intestinal necrosis</td>
</tr>
<tr>
<td>Sodium zirconium cyclosilicate</td>
<td>May 2018</td>
<td>Exchanges potassium for a H &amp; Na across the GI tract</td>
<td>1 hour</td>
<td>Initial 10g daily 5g every other day to 15g daily</td>
<td>Potential: swelling, mild/moderate low K</td>
</tr>
<tr>
<td>(Powder - mixed in water)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patiromer</td>
<td>October 2015</td>
<td>Exchanges K for Ca in the colon and binds mag</td>
<td>7 hours</td>
<td>8.4g daily</td>
<td>Constipation/diarrhea, abdominal discomfort, low K and/or Mag</td>
</tr>
</tbody>
</table>
CKD and potassium (new school)

- Over generalization of foods can make figuring out what to eat difficult
  - Food choices become extremely limited or, at least, confusing
    - For example:
      - Salad
      - Spinach
      - Tomatoes
- People want more plant forward options
CKD and potassium (new school)

- Whole grains, vegetables, fruits & beans provide:
  - Fiber
  - Vitamins
  - Minerals
  - Antioxidants
  - Cardio protective qualities
  - GI regularity
CKD and potassium (new school)

- Whole grains = \(\uparrow\) phos & potassium

New studies show only about 50% of the potassium in plant sources is able to be absorbed!

Whereas, most of the potassium in animal products is absorbed.

- Fruits = \(\uparrow\) potassium

- Protein = Plant & animal protein are important
Quality of life improves with a more open eating pattern
Heart health improves by adding:
  – Fresh/frozen vegetables and fruits
  – Whole grains
  – Plant proteins
    ▪ Foods with carbohydrates help put the potassium INTO the cell
GI regularity improves
  – Added fiber
Lower phosphorus binder needs
Daily potassium

• It is important to know your potassium numbers.
• A good way is to track how much potassium you are eating.
  • In a meal
  • Packaged food
  • Snacks
  • Use a recipe that lists the amount of potassium per serving
  • Read the nutrition label

• Keep a journal of your daily potassium intake and share it with your healthcare team.
## CKD and potassium

### Know your potassium numbers

<table>
<thead>
<tr>
<th>Level</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>less than (&lt;) 3.5</td>
</tr>
<tr>
<td>Safe</td>
<td>3.5 – 5.0</td>
</tr>
<tr>
<td>Caution</td>
<td>5.1 -5.5</td>
</tr>
<tr>
<td>High</td>
<td>5.6 – 5.9</td>
</tr>
<tr>
<td>Very High</td>
<td>more than (&gt;)6.0</td>
</tr>
</tbody>
</table>
Spring Asparagus Farro Salad

Ingredients

¾ cup farro, quick cooking
¾ pound (342 grams) asparagus, sliced into 1-inch pieces
½ pound (227 grams) frozen peas
¼ cup mint, chopped
1 medium lemon, grated rind
1 ½ medium lemons, freshly squeezed
¼ cup olive oil
½ cup parmesan cheese, grated

Instructions

1. Cook the farro per the package directions (about 10 minutes). Drain and set aside to cool.
2. Heat a quart of water in a medium saucepan and bring to boil.
3. Cook the asparagus in the water for 3 minutes. Add the peas for 30 seconds.
4. Drain asparagus and peas.
5. Transfer to a medium serving bowl. Cool and add cooked farro.
6. Add the mint and grated lemon rind. Mix well.
7. Combine lemon juice and oil in a measuring cup. Whisk to combine.
8. Pour over the salad and toss to mix well.
9. Sprinkle the parmesan cheese over the top and serve.

Cooking Tip

Be sure to prepare the salad just before eating to retain the bright green colors of the asparagus and peas. Refrigeration will fade their color and make them less appetizing.

Recipe Contributed by FamilyCook Productions
Kidney Kitchen

Fish Cardillo

Ingredients

- 1 pound red snapper
- 4 teaspoons corn oil
- ¼ cup flour
- 1 large onion, sliced
- 3 or 4 medium-sized tomatoes, chopped
- ½ cup water
- ½ cup egg whites, beaten
- Dash ground black pepper
- 15 stalks green onions, chopped

Instructions

1. Clean fish very well. Remove scales and gills and wash thoroughly. Drain and set aside.
2. Slice the raw fish into six pieces.
3. Heat oil in a frying pan over medium heat.
4. Place the flour into a bowl or plastic bag. Place the raw fish in the flour and cover the outside of each fish piece with flour.
5. Sauté fish until golden brown. Set aside on top of a paper towel.
7. Add the beaten egg whites and fish. Cover, and let simmer for 5 to 10 minutes.
8. Season with black pepper, and sprinkle with chopped green onions. Serve warm.

Cooking Tip

Recipe Contributed by the National Heart, Lung, Blood Institute; Healthy Heart, Healthy Family Manual for the Filipino Community
How many calories per serving. If you eat 2 servings (1-1/3 cups), you will consume 460 calories.

How many mg of Potassium (K) per serving.

2 servings (1-1/3 cups) 470 mg K
OR
½ serving (1/3 cup) 118 mg K

The ingredient list is where you will find potassium and phosphorus additives.

All nutrition values are based on the RECOMMENDED serving size.
Work with your healthcare team

• When trying a new lifestyle, **talk with your healthcare team**!
• Talk to your doctor about potassium binders.
• Talk with your dietitian about adding more vegetables, whole grains and beans.
• Know your potassium numbers.
• Use trusted sources like AKF’s Kidney Kitchen — [www.kidneyfund.org/kitchen](http://www.kidneyfund.org/kitchen)
Questions?

Please submit your questions for the speaker using the Q&A feature.
Thank you!

We are grateful to AstraZeneca for its support of the Beyond Bananas campaign and this webinar.

To learn more about our next webinar, visit: KidneyFund.org/webinars.