

Module 9

Nutrition and Fluids for People on Dialysis



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Please Note

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Congratulations, you've finished the quiz! Here are the correct answers so you can see how you did:

Module 9 – Kidney Quiz Answers

1) b	5) b	9) c
2) b	6) b	10) c
3) a	7) a	11) a
4) c	8) c	



Food! It's a vital part of our culture and our traditions. Meals are something we look forward to each day. Food is love, comfort, and memories. We all have favorite foods and things we don't like, foods we learned to like over time, and foods we used to eat but don't eat any more. We may love to cook or never set foot in a kitchen. But any way we look at it, food is a big part of life.

A chronic illness like kidney failure can change what you can eat and drink. These changes can be hard to understand—and hard to make! As one patient said, *“From what I have read, we are supposed to buy something to eat, throw it*



in the trash, and eat the box that it came in—everything else is bad for us.”

Can I Use This Module If My Kidneys Still Work?

This module can help you learn how to plan meals for peritoneal dialysis (PD) or standard in-center hemodialysis (HD)—with or without diabetes. Other types of dialysis, like daily or nocturnal HD, may let you have a near-normal diet.

If you have an early stage of chronic kidney disease (CKD), talk to your doctor about what to eat—and what to avoid. He or she may refer you to a dietitian, who can help you with a meal plan. This meal plan might include:

- **Protein control.** Focus on plant based proteins like beans, seeds, nuts, and legumes. Studies show that these choices put less strain on your kidneys. Aim for 2-3 ounces, three times a day if your doctor agrees.
- **More fluids.** Your doctor may want you to drink plenty of fluids to help flush out wastes. If you have kidney stones, drinking more water is vital.
- **Phosphorus limits.** You cannot avoid all foods with phosphorus, but it is good to learn about how to eat less.

- **Less salt.** If your blood pressure is high, your doctor may want you to eat less salt to help your kidneys last longer.
- **Taking phosphate binders.** Having too much phosphorus can harm your bones. You may be asked to take phosphate binders. These drugs keep extra phosphorus out of your blood by binding with it and removing it in your stool.
- **More fiber.** Fiber can help slow the rate of CKD.

Your doctor and a renal (kidney) dietitian can help you plan. If you don't have a dietitian, your doctor may be able to refer you to one.

If you want to learn more about what your meal plans might be like when you are on dialysis, keep reading! We'll help you understand what to eat more of and what to eat less of if you choose PD or standard in-center HD.





Don't worry—we can help! In this module, we'll try to make it clearer for you. Stick with us, and we'll teach you about food and drinks...and give you practical tips to make your life easier. At the end of this module, we'll give you 2 weeks of sample menus to help you plan.

Our goal is to show you how you can take charge of your food and fluids. If you do, you can feel better, improve your lab results, and have a better quality of life.

Here's a sneak preview of what we'll cover:

- Nutrition basics
- Getting the right amounts of key nutrients
- Planning meals and eating out
- Tips for lifestyle changes

So, let's get started.

Your Dietitian

You are not alone in your meal planning. Each dialysis clinic has a registered dietitian. S/he will review your blood tests and help you:

- Sort out your best food options.
- Learn how your food choices affect your blood test results.
- Plan meals that fit in your favorite foods.
- Figure out what to eat in restaurants.

“Take care of your body. It's the only place you have to live.”

~ Jim Rohn



Medicare pays for most dialysis and makes the rules clinics must follow. Each dialysis clinic must have a licensed renal dietitian on staff. Ask your doctor or nurse about setting up a time with the dietitian.

To learn more about the dietitian's role, read Module 3—*Working With Your Health Care Team*.

“Real” Weight vs. Fluid Weight

How much do you “really” weigh? When your kidneys don't work, the number on the scale does not tell the full story. Some of what you see is fluid weight. But, you can gain or lose “real” weight (muscle and/or fat), too. And, it can be hard to tell which is which. If it is hard to breathe or your hands, feet, or face swell up—you probably have too much fluid. Or, you may not even notice that you have extra fluid weight. If your appetite is good and you are eating more or working out, it may be “real” weight. How you feel is a clue you can share with your doctor and care team to find your “dry weight” or “target weight”—your weight with no extra water.



Calories, Calories, Calories

Calories are a measure of the energy in a food. We use food as fuel to give us energy, and we burn energy when we move, talk—even sleep! If we eat more calories than we burn, we may gain weight. If we eat fewer calories than we burn, we may lose weight.

How many calories do you need in a day? It depends on how active you are. Studies have shown that most people need between 30 and 35 calories per day for each kilogram of body weight (2.2 lbs). If you don't move much, are very overweight, or are over age 60, you may need fewer calories to keep the same body weight.

If you are *under* age 60, use this formula to find out how many calories you may need in a day:

$$\frac{\text{Weight in pounds}}{2.2} \times 35 = \text{_____ calories}$$

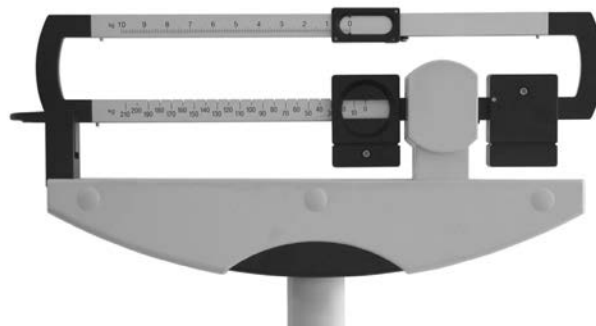
If you are 60 years old or over, use this formula to find out how many calories you may need in a day:

$$\frac{\text{Weight in pounds}}{2.2} \times 30 = \text{_____ calories}$$

How many calories do you eat and drink in a day? The best way to find out is to keep track. Keep a diary of every bite of food you eat for a few days, or use a phone app, like Carb Manager. Bring it to your dietitian, so s/he can see what you like and eat now.

Gaining weight

Peritoneal dialysis (PD) can cause weight gain. The dextrose (sugar) in PD fluid adds 200 to 600 “empty” calories per day. You'll stay healthier if



you make the rest of your calories count. And if you have diabetes, your meds or doses may need to change because of the sugar in the PD fluid.

On standard in-center hemodialysis (HD), you may not have an appetite at first. After a few weeks, it should come back. If it doesn't, you may not be getting enough dialysis. (To learn more read Module 10—*Getting Adequate Dialysis*.) If you have diabetes, keep a close eye on your blood sugar. Your meds may need to change. On other forms of HD, such as daily or nocturnal, you may have more of an appetite and gain weight.

If you *need* to gain weight, or, you struggle with a poor appetite here are some tips. Your dietitian can help you think of others. Choose the ones that you think may work for you:

- ☐ Eat six small meals a day.
- ☐ Try protein foods cold—like a chicken sandwich.





- ❑ Choose high calorie foods, like meats and casseroles or peanut butter.
- ❑ Cook foods in a way that adds calories, like sautéing in olive oil.
- ❑ Eat in a calm, relaxed atmosphere. Use a pretty plate or a colorful garnish so food is more appealing.
- ❑ Drink fluids with calories, instead of water, plain tea, or coffee.
- ❑ Use tasteless protein powders or drinks to get more protein. (Protein drinks count as part of a fluid limit.)
- ❑ Eat bland foods—like a turkey sandwich or pasta salad.
- ❑ Choose foods that are easy to chew, like meat-loaf or omelets, rather than steak.
- ❑ Add calories to foods I eat with olive oil, mayonnaise, peanut butter, low-salt salad dressings, sour cream, or butter. If I don't have diabetes, I can use jelly, honey, syrup, or non-dairy whipped topping. (Most people have to avoid high-calorie treats like these.)
- ❑ Avoid foods with strong smells. Leave the room when food is cooked if smells bother me.
- ❑ Drink fluids after my meal, so they don't fill me up.

- ❑ Talk to my doctor about drugs to boost my appetite.
- ❑ Exercise to increase my appetite.
- ❑ Get more dialysis, so my body has fewer toxins.



Losing weight

If you need to lose weight, perhaps to get a kidney transplant, there are many ways to do it. Talk with your dietitian about what has and has not worked for you. S/he can help you find a way to reach your goal and stay healthy at the same time. In the meantime, here are some tips to reduce calories. Which ones do you want to try?

- ❑ Cut back on breads, chips, and crackers. If I stick to one serving, I can still have my treat, and save lots of calories.
- ❑ A small treat can head off a big binge. If you have diabetes, test to find out what foods make your blood sugar go up.
- ❑ Order salad dressing on the side. Dip my fork in the dressing, then spear a lettuce leaf to save 3 to 5 teaspoons of fat.
- ❑ Chill gravies, sauces, and soups, then skim off the fat—or use a fat separating ladle.
- ❑ Buy lean cuts of meat to roast, broil, or grill.
- ❑ Choose fruit for a tasty dessert with bonus fiber for gut health.
- ❑ Plan for dessert once or twice a week, and look forward to it!

We Eat with Our Eyes First

Each meal you eat is important! Arrange food on the plate so it looks pretty. Use good dishes if you have some. Take a moment to appreciate the farmer who grew your food.





- ❑ Bake onion rings, chicken, and fish instead of frying them. Try butter-flavored cooking spray to add fried flavor.
- ❑ Poach chicken or fish in water or homemade low-salt broth.
- ❑ Don't skip meals.
- ❑ Avoid creamed, fried, scalloped, au gratin, or battered vegetables. Roast them in the oven with a spoonful of olive oil and some lemon juice, vinegar, or Mrs. Dash®. You can steam them, too.
- ❑ Drink water instead of juice, sweet tea, or soda (within my limits).

What's a Carbohydrate?

Carbohydrates (“carbs”) are starches that turn into sugar in your body. Sugar is a fuel your cells use for energy.

Not all carbs are the same, and they're not all used in the same way in your body. Complex carbs can be good choices. Foods with **complex carbs** have vitamins, minerals, and some fiber (all of which are good for you). These foods include:

- Whole grain breads, pastas, cereals, and rice
- Fruits and vegetables

Simple carbs are sugars:

- White or brown sugar (sucrose)
- Honey or syrups
- Fruit sugar (fructose)
- Milk sugar (lactose)



Diabetes and carbs

If you have diabetes, the glycemic index or glycemic load are ways to tell how much a carb food might raise your blood sugar. In general, carbs with lots of fiber, like oatmeal, are less likely to raise blood sugar. Others, like pasta, rice, corn, and white bread, tend to raise your blood sugar. To keep your blood sugar stable, eat about the same amount of food at about the same time each day. Test your blood sugar to see how foods affect you.

Many dietitians prefer to have you count carbs. Food labels must list carbs. Your dietitian will help you learn what you need to know to get the right amount of carbs in your meal plan.

Giving Yourself Insulin on PD

If you are on PD and use regular insulin, you may be able to add the drug to your PD bags. Ask your doctor about how to adjust your dose. Your PD nurse can show you how to inject the bags. Other types of insulin cannot be given in PD bags. **With icodextrin PD fluid (Extraneal®), you may need a new blood sugar meter and test strips.** Ask your pharmacist.





Some Fats Are Good

Fats get a lot of bad press. But our bodies need fat to make hormones and produce energy. Fat protects our organs from injury. It helps us keep a constant body temperature. We need fat to absorb some vitamins. In fact, most of our brains—and every cell membrane in our bodies are made of fat.

People on dialysis are at a higher risk of heart disease. And with diabetes, this risk is even higher. This means that choosing *heart-healthy fats* is even more important for you than it is for everyone else.

All fats are not equal. Studies have found that the best fats for health are found in vegetables, nuts, seeds, and fish. These “*monounsaturated*” or “*polyunsaturated*” fats tend to be liquid at room temperature. “Saturated” fat is solid at room temperature. Experts suggest that you keep these to no more than 10% of your calories. Too much butter, lard or bacon grease, or beef fat can raise your cholesterol.

Which of these unsaturated fats do you think you might add to your meal plan?

- ❑ Olive oil (good on salads)
- ❑ Canola oil—good for frying
- ❑ Sesame oil—highly flavored and good in stir fries

- ❑ Walnut or avocado oil—good in salad dressings
- ❑ Fatty fish—salmon, tuna, herring
- ❑ Safflower or sunflower oil
- ❑ Seeds, nuts, and nut butters

I’m a Vegetarian

Eating in a way that is in sync with your beliefs can be good for your body as well. You will need patience as you learn how to adjust your diet. Your dietitian can help you to safely tailor your meals. The goal is for you to enjoy what you eat and meet your nutrient needs. The more dialysis you get, the fewer limits you will have on what you can eat and drink. This is something you may want to think about.



Here is what one vegetarian patient says:

“Since I will not eat red meat no matter what, I made the choice to fix two meals each noon and evening. Often that means adding some broiled red meat to my husband’s plate with small portions of the vegetable (with or without soy/tofu entree) that I have. When I fix fish for myself he uses that for his protein, and when I fix poultry for him I may eat a bite or two of it.” ~ Sam



Eat Real Food



We really are what we eat. We make each cell in our body out of the nutrients in our food! In U.S. grocery stores, fresh foods, like fruits and vegetables, dairy, and meat, tend to be around the outside of the store. These do not tend to have ingredient labels: a peach is a peach. When you cook and eat real, fresh foods like these, you have control over what you put into your body. Don't know how to cook? There are lots of great, free cooking lesson videos on TV or YouTube. Just look for "How to cook _____."

The middle of the store has food in boxes or jars or cans or foil packets. These are "processed" foods that tend to have long lists of ingredients. The fewer ingredients on a label, the closer a food is to "real." Low-salt natural peanut butter may only list "Peanuts." Or, frozen berries may only list "strawberries." These may be good choices for you. Frozen foods tend to have less salt than canned ones.

Any food with a long list of chemicals is one you need to look at very closely. Processed foods may keep for months. But, they have additives that make them last so long—and these may be harmful to your health. So, if you do choose a processed food, be sure to read the label:

- Choose foods with few (1-10) ingredients.
- Meat should NOT have an ingredient list. Some stores carry meat that has added potassium, and you need to know this.
- Look at the serving size and sodium amount.
- Avoid foods with "potassium" or "phosphate" in them, or the word broth.

If you like to garden, you might want to try to grow some of your own fruits and vegetables. Even a sunny balcony or window can let you grow fresh herbs that can help your food taste better.

"Don't eat anything your great-great grandmother wouldn't recognize as food. There are a great many food-like items in the supermarket your ancestors wouldn't recognize as food...stay away from these." ~ Michael Pollan





What's the Beef with Protein?

Your body needs protein to build and repair muscles, bones, hair, and skin. Your cells, organs, and muscles are protein, made of building blocks called amino acids. Your body can make some amino acids, but not all of them. You get the ones you can't make by eating protein foods. Have some protein at each meal. Your body can only use so much at a time.

You may hear talk of "high quality" or "high biological value" protein vs. "low quality" or "low biological value" protein. High quality protein sources have more of the essential amino acids, that we cannot make.



Using Protein Supplements

If you need more protein, check with your dietitian. Many high-protein foods are also high in phosphorus. Your dietitian will help you fine-tune your food choices and your binder. Some protein powders are safe for you to use. Your dietitian may suggest whey protein. You can add the powder to regular *or* sugar-free foods like:

- Pudding or cream pie fillings
- Applesauce
- Shakes, fruit juice, or milk
- Low-sodium soups

Mix 1-2 scoops with a bit of water to make a paste to add to foods. Here are three recipes to try:

Power Shake

For 1 serving (17 grams protein), blend:

- 1 cup **unfortified** vanilla almond milk
- 1 scoop protein powder (10 grams of protein/scoop)
- 1 tablespoon cashew butter

Fruity Frozen Dessert

For five, 4 oz servings (9.6 grams protein each), blend:

- ½ cup protein powder
- ½ teaspoon vanilla
- ½ cup hot water
- ½ cup drained, canned peaches

Divide into five small paper cups and freeze.

Fruit Smoothie

For 2 servings (11 grams protein each), blend:

- ½ cup fresh or frozen (regular or unsweetened) whole strawberries
- 1 cup **unfortified** vanilla almond milk
- 4 teaspoons sugar or sugar substitute
- 2 scoops protein powder





Some forms of “high quality” protein are:

- Beef, pork, and lamb
- Chicken, turkey, and other birds
- Fish, shrimp, and other seafood
- Eggs
- Soy (e.g., tofu, tempeh, and edamame)

Some forms of “low quality” protein are:

- Nuts
- Dry beans and peas
- Some grains (e.g., buckwheat, enriched cornmeal, quinoa, brown rice, and dark rye)

Most healthy Americans eat more protein than their bodies really need. But many people with kidney failure lose their desire for protein foods. PD can cause some protein loss through the membrane. And standard in-center HD causes your body to break down protein faster than usual. So, you may need to make an effort to get enough protein.

If you don’t eat enough protein—and you lose protein from dialysis—your body will start to use the protein in your muscles for fuel. This can cause muscle wasting over time. Muscle wasting leads to:

- Severe fatigue
- Loss of mental alertness
- A higher risk of infections
- Weight loss
- Shorter lifespan

Your monthly lab tests are another way to know if you’re getting enough protein. *Serum albumin* is a test that measures protein in your blood. Strive for a level greater than **4 grams per deciliter (4.0 g/dL)**.

Research has shown that albumin levels greater than 4.0 g/dL are linked with longer life for people on dialysis. Albumin levels lower than 4.0 g/dL are linked with a higher risk of death.

To learn more about blood tests, read Module 7 —*Understanding Kidney Lab Tests*.

Protein Snacks for Dialysis

VidaFuel snacks were made by a renal dietitian. Sweet or savory chips, crisps, and pretzels have added protein. But, they limit potassium and sodium and have no added phosphorus, so they are guilt-free.

www.vida-fuel.com





Getting the Right Amount of Sodium

Your body needs sodium for healthy nerves and to balance fluids. Less than 1,000 milligrams (mg) of sodium per day is needed to do these tasks. But most of us take in more than five times that!



Salt is the most common source of sodium in our foods. It's a common additive in processed foods and helps preserve them. As much as 75% of the sodium we eat comes from salt added to foods by manufacturers before we even use a salt shaker.

Diets high in sodium put you at risk for high blood pressure, heart disease, and stroke. If you have diabetes, you have an even higher risk of these health problems. Eating less salt—and more fruits, veggies, and whole grains—will help you reduce those risks and stay healthier.

Sodium acts like a magnet to attract fluid. It makes you thirsty, and it holds extra fluid in your body like a sponge. Many people on dialysis struggle with thirst—and learning to eat less salt can help a lot.

"I started having a problem a year before dialysis. My body was hanging on to sodium, which made me very thirsty, and I had problems with edema. I'm now on dialysis and watch my sodium very closely, and it helps a lot. I cook

simply made foods from scratch, so I control what I put in my mouth. It's surprising the amount of hidden sodium in processed foods! This is a short list of things that have been banned from my pantry: buttermilk baking mix, canned soups, dry soup mixes, any mix that ends in 'Helper,' tomato and vegetable juices, and snack foods such as chips and pretzels with salt."

A diet high in sodium may also cause headaches and make you feel sluggish. If you do **PD**, you may be able to have up to **3,000 mg/day** of sodium. Ask your doctor and dietitian to be sure.

Surprising Sources of High Sodium

Some things we don't even think of as "salty" can have high amounts of sodium. Here are a few you may not have thought of:

Food	Sodium	Serving Size
Grape Nuts cereal	560 mg	1 cup
2% fat cottage cheese	746 mg	1 cup
Pancakes from dry mix	576 mg	3 pancakes
Alka Seltzer®	480 mg	1 tablet





Standard in-center HD does not remove all of the extra fluid that is inside of and between your cells. So, you will need a limit of just **1,200 to 2,000 mg/day**. **Daily and nocturnal HD** allow fewer limits.

Your doctor and dietitian will help you to learn how much sodium you can have each day.

The good news is, most people get used to eating less salt in a few weeks—and say that food tastes better without it. You can taste the *real* flavor of the food, not just the salty taste.

Here are some ideas for eating less sodium. Choose the ones that look like they might work for you:

- ❑ **Read all food labels!** Packaged foods must list how much sodium is in each serving. Some foods don't taste salty—but have a lot of sodium. A low-sodium product has less than 140 mg per serving. Choose a cereal that has less than 280 mg of sodium per serving.

Monounsaturated Fat 1g	
Cholesterol 0mg	
Sodium 250mg	
Potassium 5mg	
Total Carbohydrate 15g	10%
Dietary Fiber <1g	
Sugars 1g	

- ❑ **Limit processed foods.** Some common ones are frozen dinners, canned foods, seasoning packets, hard cheeses, pickles and olives, hot dogs, and other deli meats.
- ❑ **Avoid salt substitutes.** Most use potassium. (See the next section on potassium.)
- ❑ **Read drug labels.** Some have lots of sodium.

Fresh Meats May Have Added Potassium or Phosphorus

Watch out! Some fresh meats have been “enhanced” by injecting them with fluid that may have potassium or phosphorus. Meat processors do not have to tell you *what* they have added—but they do have to tell you if *something* has been added. Read the label and look for the words “broth” or “phosphate.”

Protein 2g	
Vitamin D 0mcg	0%
Calcium 13mg	0%
Iron 0.93mg	6%
Potassium 48mg	0%
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	
INGREDIENTS: UNBLEACHED ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMINE MONONITRATE (VITAMIN B1), RIBOFLAVIN (VITAMIN B2), FOLIC ACID), GRAHAM FLOUR (WHOLE GRAIN WHEAT FLOUR), SUGAR, CANOLA OIL, HONEY, LEAVENING (BAKING SODA AND/OR <u>CALCIUM PHOSPHATE</u>), SALT, SOY LECITHIN, ARTIFICIAL FLAVOR.	
CONTAINS: WHEAT, SOY.	

- ❑ **Use salt-free herbs and spices to flavor food.** Rub the herbs in my hands to release more flavor, and increase the amounts I use. Garlic powder (not garlic salt) works very well.
- ❑ **Cook without salt.** One teaspoon of salt has 2,130 mg of sodium!
- ❑ **Use vinegar, lemon juice, onion, garlic, and peppers to flavor my food instead of salt.**
- ❑ **Add my own ideas:**





Demineralize Foods

You can remove minerals like sodium and potassium from some foods! A soak in cold or boiling water (based on the food) can make a big difference. These foods spoil faster, so be sure to use them or chill them quickly. Ask your dietitian for tips, or Google “how to demineralize ___” to learn how.



Potassium: Key to Feeling Good and a Healthy Heart

In your body, potassium helps your nerves “talk” to your muscles. Your heart is a muscle! Too much or too little potassium can make your heart skip beats—or even stop.

Your monthly lab tests will check your potassium levels. Track your lab results. Work with your dietitian to adjust your food choices, if you need to.

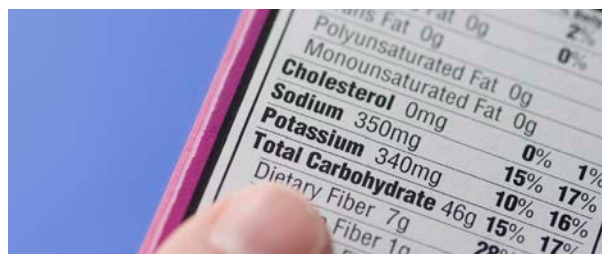
In fresh foods, potassium comes mainly from fruits and vegetables. It is also found in nuts, dried beans, dairy products, and meats. Your body uses what it needs and healthy kidneys remove the rest. Since your kidneys are not working well, extra potassium can build up in your body.

You may have a potassium limit. On **PD** you may aim for **3,000 to 4,000 mg/day**. (On PD you do daily exchanges and may even need to eat *more* foods with potassium.) In-center **HD** may allow about **2,000 mg/day**. **Daily or nocturnal HD** may allow even more. Ask your dietitian and your doctor how much potassium *you* can have each day.

Your lab tests will tell you if you are on track. For most people on dialysis, potassium should be 3.5 to 5.5 mEq/L. If your labs are good, then you know you’re doing okay. If your potassium is high, write down what you’re eating for a week, so you can sit down with your dietitian and figure out how you can do better.

To learn more about lab tests and signs of too much or too little potassium, read Module 7—*Understanding Kidney Lab Tests*.

Food labels can tell you a lot about what’s in your food. The law requires packaged food labels to list calories, fat, sodium, carbs, and protein. Some nutrients must be listed, too, like vitamins A and C, calcium, and iron.



By 2021, all food labels will have to tell you how much potassium is in a food. This change will be a big help. In the meantime, it can be hard information to find.

How can you balance all of these nutrients and sort out what to eat and what not to? Your dietitian can help. There are three ways for you to learn. Which one you choose will depend on what you want to know—and how much work you are willing to do to learn it.

- 1 Your dietitian can give you **a list of common foods**. These may be foods to eat, foods to avoid, or both. We’ll give you some lists at the end of this module, too. If the foods on these lists are the ones you like to eat, this may be all the help you need.



Finding Food Values

At the end of this module, we'll list some resources, like the Bowes & Church food value book and an app. Also, many chain restaurants share their menu details online.

- 2 You can **look up or ask for the values** of foods you love that are not on the lists. This way, you can make good choices. You may find that a slice or two of pizza is a treat you can fit into your meal plan.
- 3 You can **design your own plan**. Look up foods in a food value book or an app and make a daily chart. This can help you feel more in control—and lets you eat foods that are not on the lists. Looking up foods takes a lot of time at first, but you'll start to learn which foods to enjoy in small amounts and which ones you can safely eat more of. If you make your own plan, ask your dietitian to look it over to be sure you haven't missed anything.

On the next pages are sample meal plans created with a food value book. We'll give you a blank meal planning grid at the end of this module, so you can create your own. (Please note that “g” stands for grams, “mg” stands for milligrams, and “oz” stands for ounces.) Each fruit

and vegetable has potassium. But, the amount can change a lot, depending on how a food is prepared. We'll give you a chart of fruits and vegetables and their food values at the end of this module.

These grids can help you a lot—IF you watch out for serving sizes. A small bag of chips may have 110 calories per serving. But one bag can be THREE servings! Eating three servings can turn a low potassium treat into a high risk mistake!

Serving sizes work the other way, too. If a food that you love is high in potassium, you may still be able to enjoy it. Just eat a *small* serving. You may want to try out some new foods—and make some new favorites. As one patient said:

“After 17 years of hemodialysis, I know the diet inside and out. For me, it was vital to learn how to fit my favorite foods into my diet. I feel it is safer to do this than to cut them out, feel deprived, and risk going on a binge. I looked up the food value of what I eat in a day. This lets me have foods I love that are high in potassium or sodium. I use recipes with less of the high items, and change what I eat the rest of the day to fit in my treat. This way, I feel less restricted and different from those I eat with.”



You can make a PD or standard in-center HD diet work for you if you make educated trade-offs. Your dietitian can help you learn how.

“Don't think of any food as 'off limits.' Pizza with cheese is not off limits. It just means you may have smaller amounts. And you will need to calculate your potassium intake for the rest of the day according to your daily allotment.”





It's not 'cheating'—it's being aware of your limits and knowing how much you can 'afford' safely."

Watching what you eat is not the only factor in good potassium control. You need good dialysis, too. If

your dose of treatment is not in the target range, potassium may build up in your blood. To learn more, read Module 10—*Getting Adequate Dialysis*.

Sample Meal Planning Grid for PD

Breakfast	Protein	Sodium	Potassium	Phosphorus	Fluid
Omelet with 1 whole egg + 2 egg whites with ½ cup mushrooms and 2 tbsp cream cheese	16.4 g	268 mg	322 mg	120 mg	—
1 slice whole wheat toast with a pat of butter	5 g	112 mg	69 mg	100 mg	—
½ cup raspberries + ½ cup blueberries	1.3 g	—	150 mg	27 mg	—
12 oz coffee, brewed	.6 g	8 mg	174 mg	11 mg	12 oz
Lunch	Protein	Sodium	Potassium	Phosphorus	Fluid
Tuna Salad	—	—	—	—	—
3 oz canned tuna	20 g	210 mg	176 mg	130 mg	—
1 tbsp mayonnaise	.1 g	88 mg	3 mg	25 mg	—
1 cup looseleaf lettuce	.8 g	16 mg	110 mg	16 mg	—
1 sliced medium tomato	—	6 mg	150 mg	15 mg	—
2 tbsp Italian dressing	0 g	18 mg	10 mg	1 mg	1 oz
1 cup cherries (no pits)	.3 g	5 mg	268 mg	32 mg	1 oz
16 oz water	—	—	—	—	16 oz
Dinner	Protein	Sodium	Potassium	Phosphorus	Fluid
2 chicken thighs with skin, roasted	64 g	202 mg	748 mg	270 mg	—
¾ cup green beans	1.2 g	4.5 mg	156 mg	30 mg	—
½ cup cabbage, onion, sweet pepper medley	1 g	52 mg	208 mg	29 mg	—
½ cup diced cantaloupe	2.2 g	12 mg	208 mg	12 mg	—
16 oz water	—	—	—	—	16 oz
Total	112.9 g	1001.5 mg	2980 mg	807 mg	49 oz
Recommended	90 g+	2000 mg	3000-4000 mg	800 mg	Maintain balance

Source: Bowes & Church's *Food Values of Portions Commonly Used* (19th Edition) by Jean A. T. Pennington and Judith Spungen, 2010.



Module 9 – Nutrition and Fluids

Sample Meal Planning Grid for Standard In-center HD

Breakfast	Protein	Sodium	Potassium	Phosphorus	Fluid
Scrambled eggs (1 whole egg + 2 egg whites)	13.2 g	180 mg	203 mg	115 mg	—
Blueberry muffin (2 oz)	3.7 g	251 mg	70 mg	83 mg	—
½ cup fresh strawberries	0.5 g	0.5 mg	110 mg	17.5 mg	—
12 oz coffee, brewed	—	5 mg	116 mg	7 mg	12 oz
Lunch	Protein	Sodium	Potassium	Phosphorus	Fluid
<i>Turkey sandwich:</i>					
1.4 oz turkey	7 g	426 mg	126 mg	68 mg	—
2 slices tomato (⅓ tomato)	—	1 mg	49 mg	5 mg	—
Lettuce (¼ cup iceberg)	—	1 mg	20 mg	3 mg	—
½ tbsp Kraft® Mayo Light	—	60 mg	4 mg	5 mg	—
2 slices whole wheat bread	7.2 g	264 mg	138 mg	104 mg	—
2.6 cup cheese popcorn	2.6 g	249 mg	73 mg	101 mg	—
¾ cup peaches, canned in juice	1.2 g	7.5 mg	240 mg	31.5 mg	—
8 oz grape juice	—	13 mg	263 mg	35 mg	8 oz
Dinner	Protein	Sodium	Potassium	Phosphorus	Fluid
4 oz baked Atlantic cod	25 g	88 mg	276 mg	156 mg	—
4 spears of asparagus	—	1.2 mg	128 mg	34 mg	—
1 cup lettuce salad (iceberg)	—	6 mg	78 mg	11 mg	—
1 tbsp sweet and sour salad dressing	—	33 mg	5 mg	—	—
Cherry pie (⅛ pie)	—	308 mg	101 mg	36 mg	—
12 oz water	—	—	—	—	12 oz
Total	62.3 g	1890 mg	2000 mg	821 mg	32 oz
Recommended	50 g+	1200-2000 mg	2000 mg	800-1200 mg	32 oz

Source: Bowes & Church's *Food Values of Portions Commonly Used* (19th Edition) by Jean A. T. Pennington and Judith Spungen, 2010.





What Is Phosphorus?

Phosphorus, a common mineral in the body, is found in protein foods like meat, dairy, nuts, and dried beans and peas. Chocolate has a lot as well. **We absorb the least phosphorus from plant foods, more from dairy and meat—and the most from food additives.** (Cola drinks, cereals, and most processed foods have added phosphate.) This is why it is so vital to read food labels and to choose fresh foods and cook from scratch.

The job of phosphorus is to help your body use energy, and to build strong bones and teeth. Extra phosphorus is removed by healthy kidneys. When your kidneys don't work, phosphorus can build up in your body. This will cause severe itching for some people—and can harden your arteries and cause heart damage.

Bone disease can also be a long-term problem of some types of dialysis. Loss of calcium from the bones makes them weak and frail. Bone pain can occur. When calcium and phosphorus are out of balance, the parathyroid glands in your neck make too much parathyroid hormone (PTH).

Too much PTH causes even more calcium to be pulled out of your bones—it's a vicious cycle.

But bone disease does not have to happen.

If you keep your calcium and phosphorus levels in the safe range, the cycle won't start, and your arteries, heart, bones, and whole body can stay healthy. To learn more, read Module 16—*Long-term Effects of Dialysis*.

Ask your dietitian about what your bone mineral blood tests and PTH levels should be. Each lab is a little different. The normal ranges for a person on dialysis are something like this:



- **Calcium:** 8.4 to 9.5 mg/dL
- **Phosphorus:** 3.5 to 5.5 mg/dL
- **Intact PTH:** 150 to 300 pg/mL

How can you keep your calcium and phosphorus in the safe range? There are three tools you can use.

1. **Get a kidney transplant or do longer HD treatments.** Either of these will remove much more phosphorus and can help balance your bone minerals. Phosphorus takes time to remove from the blood during HD. Eight-hour long nocturnal HD treatments do such a good job that some people need to take phosphate supplements!

Antacids

Calcium-based antacids, like Tums® can be used as phosphate binders. These are low cost. But, the extra calcium can raise the risk that you will get calcification in your blood vessels. Other antacids are not safe for you. Some have aluminum or magnesium. These metals can build up to toxic levels when your kidneys can't get rid of them. **Always read labels!** Ask your doctor, pharmacist, dietitian, or nurse BEFORE you take ANY over-the-counter drug.



2. Avoid processed foods. You absorb 100% of phosphate from food additives. So, avoid cola drinks and processed foods that come in a box, can, jar, or bag with ingredients that include “Phos” (or “Fos” in Spanish).

Phosphorus is found in many foods you may like that can be good for you. Meats. Dairy. Nuts. Dried beans and peas. Chocolate. Foods like these can give you protein and healthy fats and fiber. (We will talk about fiber next.)

We now know that phosphorus that naturally occurs in foods is poorly absorbed. In fact, you may absorb just 70% of the phosphate in meats, and 40% from plant foods, like nuts or beans.

This means you can eat more of some of these foods without a risk to your bone (or blood vessel) health.

Choose fresh foods, and cook from scratch. We’ll give you a chart of the phosphorus, sodium, and potassium in foods at the end of this module that you can use as a resource.

Starfruit Can be Deadly to People on Dialysis

Starfruit (or carambola), looks pretty in a fruit salad. But, it has a nerve toxin that healthy kidneys remove. When your kidneys don’t work, this toxin can stay in your body. It can cause confusion—and even death. So, enjoy how the star slices look—but don’t eat them!



3. Take phosphate binders as prescribed.

If you do standard in-center HD, you will need to take drugs like PhosLo®, Renagel®, Fosrenol®, Renvela®, Auryxia®, and Velporo® each time you eat. These “binders” work like a magnet to capture phosphate in your gut and remove it in your stool. *They only work when they are in your gut at the same time that food is*—so take them *while you eat*. You will need fewer pills with a small snack and more with a meal. If you do PD or short daily HD, you may or may not need binders. With nocturnal HD, you should not need them at all.





Don't Get Flooded by Fluids

A fluid is any drink—or even **food**—that is liquid at room temperature. Soup is a fluid. So are ice cream and popsicles. Cereal milk. Gelatin. Gravy. Even watermelon has enough water that it's best not to eat too much.

Why do fluids matter on dialysis? Kidneys that don't work well can't remove all of the fluid you take in, so it builds up in between treatments. This can cause symptoms like:

- Swelling in your face, hands, and feet called *edema* (eh-dee'-ma)
- Headaches and low energy
- Trouble breathing from fluid in your lungs
- Heart damage from stretching your heart with too much fluid—or from removing it too quickly
- High blood pressure that can lead to a stroke

But PD or standard in-center HD can't do all of the fluid removal—you have to help, too. Some people on PD and most on standard in-center HD have some type of fluid limit. Daily and nocturnal HD remove much more fluid. Using

How Do I Know If I Have Edema?

Edema (eh-dee'-ma) is fluid build-up in the body. If you have edema, you may notice that your shoes or your rings don't fit. Your eyesight may change. It may be harder to breathe (some people have mistaken fluid in the lungs for asthma). If you have a lot of extra fluid, your ankles or legs may even dent when you press on them with a finger. This is called "pitting edema."

those treatments may mean that you don't need a fluid limit. How much fluid you can have each day will depend on how much urine you make.

PD and fluids

Most people on PD have some kidney function left. They still make some urine. Over time, this "residual" kidney function tends to drop. The more urine you make, the more you can drink. So, on PD, your urine output will be measured to be sure you get enough dialysis. If your kidney function drops, you may need more PD—and/or less fluids.

Do your exchanges as prescribed, and watch your dwell times. You can reabsorb the PD fluid if you dwell too long. Watch for signs of edema, and tell your PD nurse, doctor, or dietitian if:

- You have fluid build-up.
- Your weight goes up a lot very quickly.
- You are using more 4.25 strength solution bags than you did before.
- You have headaches.

To learn about getting enough PD, read Module 10—*Getting Adequate Dialysis*.



HD and fluids

Fluid limits will make standard in-center HD much easier on you. You'll have fewer painful muscle cramps and may feel less "washed out" after a treatment. Your care team will tell you how much fluid you may have each day.

Water is heavy! A liter of water weighs one kilo (2.2 lbs). A pint (16 oz) weighs a pound. With no kidney function, your fluid limit on standard in-center HD will be about 1 liter per day, or just under 32 oz. Between treatments, you would be able to drink 2 liters and gain 2 kilos, or 4.4 lbs. Weigh yourself at the same time each day, wearing the same clothes, to know if you are on track. When you make some urine—or do daily or nocturnal HD—you will be able to drink more fluids.

Here are some easy, proven ways to limit fluids and deal with thirst, without drinking too much. Which ones do you want to try?

- ☐ Drink only when I am thirsty, and just enough to quench my thirst.
- ☐ Drink from small cups or glasses.
- ☐ Eat a piece of cold or frozen fruit.
- ☐ Eat soups or cereal with a fork instead of a spoon to save fluids.
- ☐ A little ice can quench thirst more than the same amount of liquid. I'll freeze regular or diet ginger ale or apple juice into slushes or popsicles.

- ☐ Rinse my mouth with cold water or swish mouthwash and spit it out.
- ☐ Suck on a piece of hard candy, an ice cube, a lemon wedge, frozen grapes, or chew sugar-free gum to stimulate saliva.
- ☐ Suck on a peppermint candy, which will help quench my thirst *and* keep my breath fresh!
- ☐ Check with my doctor or pharmacist to see if any of my meds cause thirst or dry mouth.
- ☐ Spread out my fluids evenly throughout the day. Each day, fill a jar with the water equal to my daily fluid limit. Each time I drink, I'll pour that amount out of the jar. I'll be able to see how much I have left.
- ☐ If I am gaining too much weight, I'll measure all my fluids for a day or two so I'll know just how much I have been drinking.
- ☐ Avoid high-sodium or very sweet foods.

How Much Vitamin C Is Too Much?

On dialysis, too much vitamin C can harm you. Vitamin C breaks down into a crystal called *oxalate*. Healthy kidneys remove oxalate, but dialysis does not do this as well. So, oxalate can build up—and cause bone and joint pain. This is why you need to **limit vitamin C pills to 75-90 mg/day**; the amount in kidney vitamins. With daily or nocturnal HD, you may be able to have more vitamin C. These treatments remove twice as much or more oxalate as PD or standard in-center HD.





Which Vitamins Do I Need?

On dialysis, vitamin needs can change. Dialysis “washes out” some vitamins. Others may build up in your body to unsafe levels.

Your doctor may prescribe a vitamin. Check with him or her before you take ANY over-the-counter products. (This includes folk remedies.)

What is Fiber?

Fiber, or “roughage” is the part of plant foods that your gut cannot break down. It passes out of your body through your colon. And, on its way there, fiber can help to:

- Combat constipation
- Reduce your risk of colon and other cancers
- Help control your blood sugar
- Keep you feeling full longer after a meal
- Lower your cholesterol



There are two types of fiber, and both are good for you:

1. Soluble. Some foods have a type of fiber that can dissolve in water. Oats, peas and beans, apples, citrus fruits, carrots, and barley have some soluble fiber. Or, your doctor may prescribe a product with psyllium husks—a type of soluble fiber.



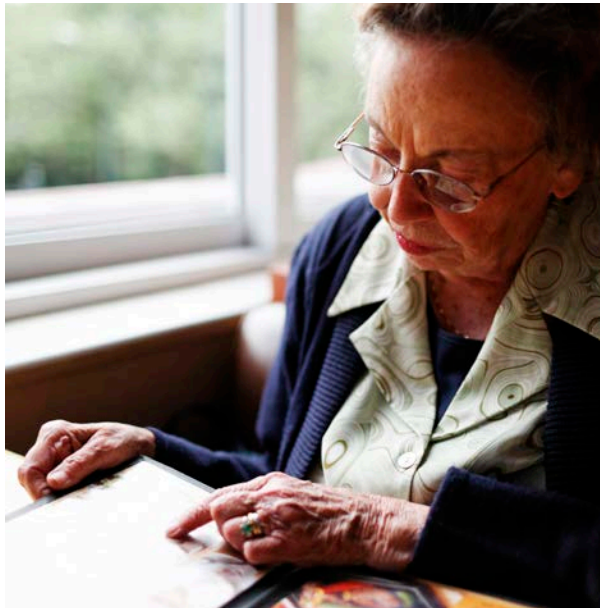
2. Insoluble. Whole wheat grains and brans, nuts, beans, and some vegetables, like green beans and cauliflower, have fiber that does not dissolve. This type of fiber helps food move through your colon, and can help constipation.

Foods that have fiber also tend to contain phosphorus. Remember, we now know that you only absorb about 40% of the phosphate from plants. Fiber is another reason why it’s best to eat real foods and cook from scratch. Most processed foods do not have much fiber.

Meal Planning/Dining Out

You can eat at restaurants and still stick with your meal plan—it just takes some thought. Restaurant food is often salty and in large portions.

When you go to a restaurant, ask for what you want! It’s okay for you to say that you don’t want added sugar or salt. If you crave Chinese, ask them to leave out soy sauce and MSG (a flavor enhancer with sodium in it). Ask for dressings or sauces on the side. Restaurants get more repeat customers if they make you happy.



These days, many restaurants have “heart-healthy” or “low fat” menu choices. These may have less salt. You still need to be alert to foods that are extra-high in potassium, like beans, avocados, oranges, bananas and plantains, dried fruits (figs, raisins, and currants), and chocolate. Talk with your dietitian about the right amount of these foods for you. (Very often, “low fat” foods have more sugar, and “low salt” foods have more fat. Salt, sugar, and fat add flavor.)

Before you order, ask the waiter how the food is prepared. Be aware of foods that include salt, soy sauce, tamari, MSG, etc., because these will make you more thirsty. If the food is made fresh for each order, they can leave these out.

Most restaurants will let you swap a food you can't eat for one you can have. So, you might see a chicken dish with potatoes. If there is corn or green beans or eggplant on the menu, you can ask for one of those instead.

It's wise to avoid these high sodium foods in restaurants:

- Soups
- Brined or marinated items
- Cream sauces and gravies
- Soy sauce and ketchup
- Salad dressings
- Deep fried foods
- Salt-cured meats (cold cuts, sausage, bacon, etc.)
- All salt (sea salt, garlic salt, etc.)

Good choices include:

- Salads
- Oil and vinegar or lemon juice
- Vegetables (low to moderate potassium)
- Fruits (low to moderate potassium)
- Whole grain breads
- Grilled or baked foods

Remember your binders! Some people keep spare binders in the glove box of their car, in a purse, and in their pocket, just in case.

Fast Food Hazards

Did you know that just one fast food fried chicken breast may have 1,190 mg of sodium? It may have lots of added phosphate, too. A fast food fish sandwich may have 1,330 mg of sodium. And a small cheeseburger at some fast food restaurants may have 750 mg of sodium. No wonder they super-size the drinks! Fast food is meant to be fast—not always healthful. Most fast food restaurants now post their menus on their websites. You can ask or look up the sodium levels and make good choices.





Plan Ahead for Potlucks

When you dine at a friend's home or a potluck, bring something you know you can eat. Explain that you have a complex diet that would be a challenge to cook for. Then, you can take tastes of other foods, without starving or risking your health.

The key to dining out on a dialysis meal plan is to be prepared. But once in a while, we all have a splurge. Watch your fluid and potassium so you don't end up in the ER! Then, just try to forgive yourself and get back on track.

In just a moment, we'll show you your Personal Plan. Be sure to look at the **Resources** section when you're done! You'll find cookbooks, food guides, and links to other sites.

Before we go to your Personal Plan though, let's take a quick look at some strategies for change.

Strategies for Lifestyle Changes

What we eat and when has to do with our culture, families, habits, stress, etc. How long it will take you to apply what we've covered will depend on what is going on in your own life.

What challenges do you need to overcome to succeed?

Think of one person on your health care team and one person in your personal life who could help you. Write their names here:

Health care team member:

Friend or family member:

Consider your options

One of the main goals of this module is to help you learn what choices you have about your food and fluids. You can look at this information in two ways:

- 1 You can feel cheated, restricted, and victimized by your kidney disease.
- or -
- 2 You can look at your food choices as a chance to feel better, have a higher quality of life, and do more of what you enjoy.

Same picture—different ways of looking at it. It's all how you choose to see your options.

Plan ahead

A very practical way to bring about the change you want is learning to plan ahead.

- **Plan out what your meals are going to be** (daily or weekly).
- **Make a shopping list and stick to it** (this will save you money, too).
- **Think through how you will prepare the meals.**
- **Decide where you will eat**—home, restaurant, picnic, someone else's home, etc.

Once you get into the habit of planning meals, it will seem natural to keep it up. A small investment of time and effort brings a great return. A crock pot, air fryer, or electric pressure cooker may help you cook with less effort.



Keep a nutrition and health journal

Keeping a journal—or using an app—will help you keep track of how you feel, based on what you eat. You can track questions, and what you learn, too.

Use a notebook or app to track:

- **Daily food and drink intake.** Portion sizes. How the foods were made. Copy pages of the planning charts at the end of this module and use them to help you.



- **Your notes about dialysis, exercise, and meal planning.** Include what you've learned from your own reading about CKD and nutrition, etc.
- **Your weight,** at the same time each day, wearing the same clothes.
- **Symptoms you want to mention to your doctor** (e.g., itchy skin may mean too much phosphorus).
- **Questions about food choices,** cooking, etc. to ask your dietitian.

Keep your goal in mind: To stay healthy

Keeping healthy means more than just following doctor's orders. The meal planning ideas we've covered must become *yours*! That means you need to follow through. If you do, it will help to keep you on track as you seek to live well with your kidney disease. For extra help, read Module 4—*Following Your Treatment Plan*, and Module 5—*Coping with Kidney Disease*.

It's time to wrap up this module on nutrition and fluids for people with kidney failure. But before we do, we want to give you a personal plan to help you get a start on some of the most important ideas in this module. Put it where it will remind you of your goals.





Personal Plan for _____

Nutrition and Fluids for People on Dialysis

If I learn how to take charge of my food and fluids, I can feel better, improve my lab results, and have a better quality of life.

Nutrition Basics: Calories

A measure of the energy in a food.

To help myself **gain or lose weight**, I plan to:

Nutrition Basics: Carbs

Starches that turn into sugar in my body and give me energy. Found in sugars, grain products, fruits, and vegetables. If I have diabetes, I need to talk with my dietitian about carb choices that won't make my blood sugar go up too quickly.

Nutrition Basics: Fats

My brain and cell membranes are mostly made of fat. Fat gives me energy and helps me absorb some vitamins. To keep my heart healthy, I will try to use more unsaturated fats, which are liquid at room temperature, such as:

Nutrition Basics: Protein

Needed for healthy muscles, bones, teeth, and hair. At my monthly lab tests, my albumin level should be greater than 4.0 g/dL.

Getting the Right Amount of Sodium

My body needs sodium (found in salt) for healthy nerves and to balance fluid levels. But a high-salt diet may put me at risk for high blood pressure, heart disease, and stroke. Eating less

sodium will help me to be less thirsty and may make standard in-center HD more comfortable. When I start eating less sodium, in a few weeks I'll get used to it and food will taste better! Fresh or dried salt-free herbs can help.

Here are my ideas for eating less sodium:

Potassium: Key to Feeling Good and a Healthy Heart

In my body, potassium helps my nerves "talk" to my muscles, including my heart. Too much or too little potassium can make my heart skip beats—or even stop! My potassium level should be 3.5 to 5.5 mEq/L for my monthly blood tests.

The best way I can check my potassium intake is to:

- Ask my dietitian at each monthly lab test what my level is.
- Choose *fresh* meats and poultry and small servings of high potassium fruits and vegetables.
- Avoid processed foods.

In general, I will choose low and moderate options, and watch portion sizes for others. I may be able to remove some potassium by soaking or boiling foods. This can make them safer for me. The more dialysis I get, the more potassium I can have.



Personal Plan for _____ (continued)

What Is Phosphorus?

Phosphorus helps my body use energy, and builds strong bones and teeth. But too much hardens my arteries, harms my heart, and weakens my bones. If I keep my calcium and phosphorus levels in the safe range, the cycle won't start, and my heart and bones can stay healthy. Safe ranges for my blood tests may be:

- Calcium: 8.4 to 9.5 mg/dL
- Phosphorus: 3.5 to 5.5 mg/dL
- Calcium-phosphorus product: less than 55
- Intact PTH: 150 to 300 pg/mL

I can keep my phosphorus in the safe range by taking my phosphate binders within 5 to 10 minutes of all meals and snacks, and by choosing lower phosphorus foods. I may need to limit my daily phosphorus intake to about 800 to 1,000 mg/day. The more dialysis I get, the more phosphorus I can have.

Phosphorus in Foods

Meat: Higher Phosphorus

- Beef roasts, steaks, ribs 3 oz (136-231 mg)
- Beef liver, pan-fried, 3 oz (412 mg)
- Chicken breast, roasted, ½ breast (210 mg)
- Crab 3 oz, cooked (109-240 mg)
- Cod 3 oz, baked (117-190 mg)
- Pork chops, ribs, roasts, 3 oz (166-242 mg)
- Turkey breast, roasted, 3 oz (178 mg)

Meat: Lower Phosphorus

- Bacon, 1 oz (40 mg – watch the sodium)
- Beef tongue 3 oz (123 mg)
- Beef tripe 3 oz (56 mg)
- Canned tuna 3 oz (130 mg - watch the sodium)
- Chicken thigh, 1 leg (91-108 mg)
- Egg (96 mg per egg)
- Ground beef 3 oz patty (165 mg)
- Shrimp 3 oz, cooked (116 mg)

Dairy: Higher Phosphorus

- Hot chocolate (with milk) 8 oz (262 mg)
- Eggnog 8 oz (277 mg)
- Cultured buttermilk, reduced fat 8 oz (201 mg)
- Chocolate milk 8 oz (252 mg)
- Swiss cheese 1 oz (159 mg)
- Cheddar cheese 1 oz (143 mg)

Dairy: Lower Phosphorus

- Unenriched almond milk 4 oz (50 mg)
- 1% fat milk 4 oz (116 mg)
- 2% fat milk 4 oz (138 mg)
- Whole milk 4 oz (111 mg)
- Unenriched rice milk 4 oz (29 mg)
- Mozzarella 1 oz (115 mg)
- Goat cheese 1 oz (105 mg)
- Cream cheese 2 tbsp (32 mg)





Personal Plan for _____ (continued)

Don't Get Flooded by Fluids

Part of the job of dialysis is to take off extra fluids. This is vital because if I have too much fluid, I may have:

- Headaches and low energy
- Swelling in my face, hands, and feet (edema)
- Trouble breathing from fluid in my lungs
- Heart damage from stretching my heart with too much fluid
- High blood pressure that can lead to a stroke

If I am on PD, I will ask my doctor about checking my kidney function to be sure I am getting enough PD. If my kidney function drops, I may need more PD—and/or less fluids. I will be alert for signs of edema and tell my PD nurse or doctor if I:

- Have fluid build-up
- Notice a lot of sudden weight gain
- Use more 4.25 strength PD fluid than I did before
- Have headaches

Which Vitamins Do I Need?

Dialysis changes my need for vitamins. (I should not take more than 75-90 mg/day of vitamin C, for example.) I will check with my doctor before taking any over-the-counter supplements. My doctor will prescribe a kidney friendly vitamin for me.

Meal Planning and Eating Out

To plan meals that I can look forward to, I can:

- ① Mix and match foods from the lists I get in this module or from my dietitian.

- ② Look up favorite foods to see how I can add them into my healthy meal.
- ③ Look up the foods I want to eat and make charts so I can have custom menus that work for me.

I can also use the daily meal planning grid (page 9-30) and food value charts (pages 9-31 to 9-34) to see if I want to try to put my own meal plans together.

When I plan to eat out at a restaurant, I will:

- Ask the restaurant for what I need.
- Ask the server about ingredients and how the food is made.
- Avoid high sodium and high potassium choices.
- Avoid soups, brined or marinated foods, and cream sauces.
- Bring my phosphate binders with me.

I will try to avoid fast foods. When I go to a fast food restaurant, I will try to limit my sodium.

Strategies for Lifestyle Changes

I will try to see my food and fluid choices as chances to feel better and improve my quality of life.

- I will plan ahead for meals by making a shopping list and thinking about how I will prepare my foods.
- I will think about keeping a nutrition and health journal.
- I will take charge of my food and fluid plan.



Daily Meal Planning Grid

Breakfast	Protein	Sodium	Potassium	Phosphorus	Fluid
Lunch	Protein	Sodium	Potassium	Phosphorus	Fluid
Dinner	Protein	Sodium	Potassium	Phosphorus	Fluid
Total					
Recommended	___ g	___ mg	___ mg	___ mg	___ oz





Food Value Chart: Vegetables & Legumes

(Note: Each symbol (■) = about 60 mg)

Vegetable	Serving	Sodium	Potassium	Phosphorus
Acorn squash (mashed)	½ cup	■	■■■■■	■
Alfalfa sprouts	1 cup	■	■	■
Artichokes (fresh)	1	■■	■■■■■■■	■
Arugula	½ cup	■	■	■
Asparagus (fresh, cooked)	6 stalks	■	■■■	■
Avocado (raw, sliced)	1 cup	■	■■■■■■■■■■■	■
Baked beans (homemade)	1 cup	■■■■■■■■■	■■■■■■■■■	■■■
Bamboo shoots (canned)	1 cup	■	■■	■
Beet greens (fresh)	½ cup	■	■■	■
Beets (fresh sliced, cooked)	½ cup	■	■■■	■
Bell pepper (yellow, raw)	1 large	■	■■■■■■■	■
Black beans (boiled)	1 cup	■	■■■■■■■■■	■■■
Blackeyed peas (canned)	1 cup	■■■■■■■■■■■	■■■■■■■	■■
Broccoli (florets, raw)	1 cup	■	■■■	■
Brussel sprouts (boiled)	½ cup	■	■■■	■
Butternut squash (mashed)	½ cup	■	■■■	■
Cabbage, green (boiled, shredded)	½ cup	■	■■	■
Cabbage, red (boiled, shredded)	½ cup	■	■■■	■
Carrot (raw)	1, 7.5"	■	■■■	■
Carrot (cooked, sliced)	½ cup	■	■■■	■
Cauliflower (cooked)	1 cup	■	■■■	■
Cauliflower (raw)	1 cup	■	■■■■■	■
Celery (raw)	1 stalk	■	■■	■
Chickpeas (canned)	1 cup	■■■■■■■■■■■	■■■■■■■	■■■
Chili peppers, green (canned)	½ cup	■■■■■■■■■	■■■	■
Chili peppers, green (raw)	1 pepper	■	■■■	■
Collard greens (cooked)	1 cup	■	■■■	■
Corn (canned)	½ cup	■■■	■■	■
Corn (frozen)	½ cup	■	■■■	■
Corn (cream style, canned)	½ cup	■■■■■	■■■	■
Edamame (soybeans) (raw)	½ cup	■	■■■■■■■■■■■	■■■
Eggplant (cooked)	½ cup	■	■	■
Falafel (1, 2 ¼" diameter patty)	1 patty	■	■■	■
Garbanzo beans (canned)	1 cup	■■■■■■■■■■■	■■■■■■■	■■■
Great northern beans (canned)	1 cup	■	■■■■■■■■■	■■■
Green onions	½ cup	■	■■	■
Green beans (fresh, cooked)	1 cup	■	■■■	■
Green beans (canned)	½ cup	■■■	■	■
Hearts of palm (canned)	½ cup	■■■■■	■■	■



Module 9 – Nutrition and Fluids

Food Value Chart: Vegetables & Legumes (*continued*)

Vegetable	Serving	Sodium	Potassium	Phosphorus
Hominy (canned)	1 cup	■■■■■	■	■
Hummus	1 tbsp	■	■	■
Kale (cooked)	½ cup	■	■■	■
Kidney beans (canned)	1 cup	■■■■■■■■■■	■■■■■■■■■■	■■■
Leeks (cooked)	1 leek	■	■■	■
Lentils (cooked)	1 cup	■	■■■■■■■■■■	■■■■
Mushrooms (canned)	½ cup	■■■■■	■■	■
Mushrooms (common white, raw)	½ cup	■	■■	■
Mustard greens (cooked)	½ cup	■	■■	■
Nopales (cooked)	1 cup	■	■■■■■	■
Okra (cooked)	8 pods	■	■■	■
Onions (raw)	½ cup	■	■■■	■
Peas (canned)	½ cup	■■■■	■■	■
Peas (frozen)	½ cup	■	■■	■
Pinto beans (canned)	1 cup	■■■■■■■■■■	■■■■■■■■■■	■■■
Potato (baked, with skin)	1 medium	■	■■■■■■■■■■	■■
Potato (baked, no skin)	1 medium	■	■■■■■■■■■■	■■
Potatoes (mashed, homemade)	½ cup	■■■■■	■■■■■	■
Pumpkin (canned)	½ cup	■	■■■■	■
Radish (red, raw, sliced)	½ cup	■	■■	■
Refried beans (canned)	1 cup	■■■■■■■■■■ ■■■■■■■■	■■■■■■■■■■	■■■
Romaine lettuce	1 cup	■	■■	■
Sauerkraut (canned)	¼ cup	■■■■	■	■
Shitake mushrooms (cooked)	4	■	■	■
Spaghetti squash (cooked)	1 cup	■	■■■	■
Spinach (canned)	½ cup	■	■■■■■	■
Spinach (fresh)	½ cup	■	■■	■
Summer squash (cooked, sliced)	½ cup	■	■■■	■
Summer squash (raw, sliced)	½ cup	■	■■	■
Sweet potato (baked, with skin)	1 medium	■	■■■■■■■■	■
Sweet potato (mashed, homemade)	½ cup	■	■■■■■	■
Swiss chard (cooked)	½ cup	■■■	■■■■■■■■	■
Tempeh (cooked)	3.5 oz	■	■■■■■■■■	■■■
Tofu (raw, regular)	3 oz	■	■■	■■
Tofu (raw, firm)	3 oz	■	■■■■	■■
Tomatillo (raw)	1 medium	■	■	■
Tomato (red, raw)	1	■	■■	■
Water chestnuts (canned, sliced)	½ cup	■	■	■
Zucchini (cooked)	½ cup	■	■■■■	■
Zucchini (raw)	½ cup	■	■■	■





Food Value Chart: Fruits

(Note: Each symbol (■) = about 60 mg)

Fruit	Serving	Sodium	Potassium	Phosphorus
Apple (fresh)	1	■	■■	■
Applesauce (unsweetened)	½ cup	■	■■	■
Apricot (fresh)	1	■	■■	■
Apricot (halves, canned in light syrup)	½ cup	■	■■■	■
Banana (fresh)	1 medium	■	■■■■■■■	■
Blackberries (fresh)	½ cup	■	■■	■
Blueberries (fresh or frozen)	1 cup	■	■■	■
Cantaloupe (fresh)	1 cup	■	■■■■■■■	■
Casaba melon (fresh)	1 cup	■	■■■■■	■
Cherries, sour (fresh)	1 cup	■	■■■	■
Cherries, sour (canned in water)	½ cup	■	■■	■
Cherries, sweet (fresh)	1 cup	■	■■■■	■
Cherries, sweet (canned in water)	½ cup	■	■■■	■
Cranberry sauce (jellied, canned)	½" slice	■	■	■
Currants (dried)	½ cup	■	■■■■■■■■■	■■
Dates (dried)	8	■	■■■■■■■	■
Figs (dried)	1 fig	■	■■	■
Fruit cocktail (canned in water)	½ cup	■	■■	■
Grapefruit (fresh)	½ medium	■	■■■	■
Grapes (fresh, seedless)	1 cup	■	■■■■■	■
Honeydew melon (fresh)	1 cup	■	■■■■■■■	■
Kiwi (fresh)	1 medium	■	■■■■	■
Lemon (fresh)	1 medium	■	■	■



Food Value Chart: Fruits (*continued*)

Fruit	Serving	Sodium	Potassium	Phosphorus
Lime (fresh)	1 medium	■	■	■
Mandarin oranges (canned in light syrup)	½ cup	■	■■	■
Mango (fresh)	1 medium	■	■■■■■	■
Nectarine (fresh)	1 medium	■	■■■■■	■
Orange, navel (fresh)	1 medium	■	■■■■■	■
Papaya (fresh)	1 medium	■	■■■■■■■■■■■	■
Passion fruit (fresh)	1 medium	■	■	■
Peach (fresh)	1 medium	■	■■■	■
Peaches (canned in water)	1 cup	■	■■■■■	■
Pear (fresh)	1 medium	■	■■■	■
Pears (halves, canned in water)	1 cup	■	■■■	■
Pineapple (fresh)	1 cup	■	■■■	■
Pineapple (canned in juice)	1 cup	■	■■■■■	■
Plantain (cooked, slices)	1 cup	■	■■■■■■■■■■■	■
Plum (fresh)	1 medium	■	■■■	■
Prickly pear (fresh)	1 medium	■	■■■■■	■
Prunes (dried)	2 prunes	■	■■■	■
Raisins (seeded)	½ cup	■	■■■■■■■■■■■	■
Raspberries (fresh)	1 cup	■	■■■	■
Strawberries (fresh or frozen)	1 cup	■	■■■■■	■
Tangerine (fresh)	1 medium	■	■■■	■
Watermelon (fresh)	1 cup	■	■■■	■

Source: Bowes & Church's *Food Values of Portions Commonly Used* (19th Edition) by Jean A. T. Pennington and Judith Spungen, 2010.





Sample Meal Plan – Lower Potassium

Day 1



Breakfast

- 2 eggs
- 2 whole wheat English muffin halves
- 1 slice all-natural Canadian Bacon
- 1 small apple
- 6 oz diet cranberry juice

Morning Snack

- 1 cup Rice Chex®
- 1 oz almonds
- 1 oz raisins
- 4 oz water

Lunch

- Hamburger on whole wheat bun
- ½ cup Crunchy Quinoa Salad*
- ½ cup fresh blueberries
- 3 cups unsalted popcorn
- 10 oz water



Dinner

- 3 oz all-natural Roasted Turkey Breast
- ½ cup Fall Harvest Orzo Salad*
- 3 oz Mediterranean Green Beans*
- 1 Herbed Biscuit*
- 6 oz unsweetened tea



Snack

- ½ cup fresh-sliced strawberries
- 1 oz dark chocolate
- 4 oz water

*Recipes on pages 9-36, 9-37, 9-38, and 9-39.



Crunchy Quinoa Salad

This crunchy, colorful quinoa salad combines the nutty flavor of protein-packed quinoa with tomatoes, cucumbers, green onions, fresh mint, and parsley. Spoon the salad onto Bibb lettuce leaf “cups” for even more cool crunch.

Serves 8 (1 serving = ½ cup)



Ingredients

- 1 cup quinoa, rinsed
- 2 cups water
- 5 cherry tomatoes, diced
- ½ cup cucumbers, seeded and diced
- 3 green onions, chopped
- ¼ cup fresh mint, chopped
- ½ cup flat leaf parsley, chopped
- 2 tablespoons fresh lemon juice
- 1 tablespoon grated lemon rind (zest)
- 4 tablespoons olive oil
- ¼ cup parmesan cheese, grated
- ½ head Boston or Bibb lettuce, separated into cups

Nutrition Per Serving

Calories	158 cal
Total Fat	9 g
Saturated Fat	2 g
Trans Fat	0 g
Cholesterol	2 mg
Sodium	46 mg

Carbohydrates	16 g
Protein	5 g
Phosphorus	129 mg
Potassium	237 mg
Dietary Fiber	2.3 g
Calcium	61 mg

Directions

1. Rinse quinoa under cold running water until clear, then drain well.
2. Place quinoa in a pan over medium-high heat and toast for 2 minutes, stirring frequently. Add 2 cups of water and bring to a boil. Reduce heat to low, cover pan and simmer for 8–10 minutes. Let cook and fluff with a fork.
3. Combine the tomatoes, cucumbers, and onions with the herbs, lemon juice, zest, and olive oil. Add the cooled quinoa to the mixture.
4. Spoon the mixture into lettuce cups, then sprinkle Parmesan cheese on top.

Recipe provided by Fresenius Kidney Care.

Contributed by: Vicky G., Chicago, Illinois.





Fall Harvest Orzo Salad

Fall for the flavor! Diced apples, dried cranberries, almonds, pepper, basil and blue cheese make this orzo salad sweet, savory and hearty.

Serves 8 (1 serving = ½ cup)



Ingredients

- 4 cups cooked orzo, chilled (about 1⅔ cups dried orzo)
- 1 cup dried cranberries
- 2 cups fresh apples, diced
- ¼ cup extra-virgin olive oil
- ¼ cup fresh lemon juice
- ½ teaspoon freshly ground black pepper
- 2 tablespoons fresh basil, chopped
- ½ cup crumbled blue cheese
- ¼ cup blanched almonds, chopped

Nutrition Per Serving

Calories	289 cal	Carbohydrates	41 g
Total Fat	12 g	Protein	6 g
Saturated Fat	3 g	Phosphorus	94 mg
Trans Fat	0 g	Potassium	127 mg
Cholesterol	6 mg	Dietary Fiber	3 g
Sodium	100 mg	Calcium	65 mg

Directions

1. In a medium-size bowl, add all the ingredients except blue cheese and almonds, gently combining until well incorporated.
2. Transfer the mixture to a serving dish, sprinkle with the crumbled blue cheese and almonds and serve.

Recipe provided by Fresenius Kidney Care.



Mediterranean Green Beans

Simply delicious. Freshly cooked green beans in a dressing of olive oil, fresh minced garlic, lemon juice, and ground pepper.

Serves 4 (1 serving = 1 cup)



Ingredients

- 1 pound fresh green beans, trimmed to 1 to 2-inch pieces
- ¾ cup water
- 2½ teaspoons olive oil
- 3 fresh garlic cloves, minced
- 3 tablespoons fresh lemon juice
- ⅛ teaspoon ground black pepper

Nutrition Per Serving

Calories	71 cal	Carbohydrates	10 g
Total Fat	3 g	Protein	2 g
Saturated Fat	0 g	Phosphorus	37 mg
Trans Fat	0 g	Potassium	186 mg
Cholesterol	0 mg	Dietary Fiber	3.7 g
Sodium	2 mg	Calcium	55 mg

Directions

1. Bring water to a boil in large, nonstick skillet; add beans, cook 3 minutes; then drain and set aside.
2. Heat skillet over medium-high heat and add oil; add garlic and beans; sauté for 1 minute.
3. Add juice and pepper and sauté 1 minute longer.

TIP: Use lemon juice instead of salt to bring out the flavors in food.

Recipe provided by Fresenius Kidney Care.

Contributed by: Michelle Suddath, Dietitian. Originally published in Renal Culinary Gourmet Cookbook.





Homemade Herbed Biscuits

Craving some kidney-friendly biscuits? We've got the recipe. Herbs, flour and some milk are all you need for these moist and savory biscuits—full of fresh-out-of-the-oven goodness.

Serves 12 (1 serving = 1 biscuit)



Ingredients

- 1¾ cups all-purpose flour
- 1 teaspoon cream of tartar
- ½ teaspoon baking soda
- ¼ cup mayonnaise
- ⅔ cup skim milk
- 3 tablespoons chives or any other herb, fresh or dry to taste
- nonstick cooking spray

Nutrition Per Serving

Calories	109 cal	Carbohydrates	15 g
Total Fat	4 g	Protein	3 g
Saturated Fat	1 g	Phosphorus	34 mg
Trans Fat	0 g	Potassium	85 mg
Cholesterol	2 mg	Dietary Fiber	1 g
Sodium	88 mg	Calcium	21 mg

Directions

1. Preheat oven to 400° F. Next, spray cookie sheet with nonstick cooking spray.
2. In a large bowl, mix flour, cream of tartar and baking soda. Then mix in mayonnaise with a fork until the mixture resembles coarse cornmeal.
3. In a small bowl, combine milk and herbs, and add to the flour mixture. Stir until combined.
4. Place heaping tablespoons on the cookie sheet. Bake for 10 minutes.
5. Refrigerate until ready to use.

Recipe provided by Fresenius Kidney Care.

Contributed by: Robin Diaz-Grady, Orland Park, Illinois.



Sample Meal Plan – Lower Potassium

Day 2



Breakfast

- 1 cup cooked whole grain oats with sliced almonds (1 oz) and pears (1 large)
- ½ cup unsalted cottage cheese
- 8 oz unsweetened tea



Lunch

- Jalapeño Lime Turkey Burger with Smoked Mozzarella*
- 10 onion rings
- ½ cup steamed cauliflower
- Apple slices, 1 medium
- 8 oz diet ginger ale



Dinner

- Herb Crusted Pork Loin*
- 1 cup wild rice
- 4-5 spears of asparagus
- 10 oz diet ginger ale
- 4 sheets cinnamon graham crackers
- 1 tablespoon peanut butter

Snack

- ½ cup unsalted pretzels
- 3 tablespoons hummus
- 4 oz water

*Recipes on pages 9-41 and 9-42.





Jalapeño Lime Turkey Burger with Smoked Mozzarella

Topped with smoked mozzarella cheese, these juicy grilled turkey burgers are filled with bold flavor from tangy lime zest—and jalapeños for a hint of heat.

Serves 8 (1 serving = 1 burger)

Ingredients

- 2 tablespoons jalapeño,* finely diced
- juice of 2 limes and zest** of 1 lime
- 1 tablespoon freshly ground black pepper
- 1 tablespoon French's® Worcestershire sauce, reduced sodium
- 2 pounds ground turkey
- 4 tablespoons extra virgin olive oil
- 8 slices of mozzarella cheese with skim milk
- 8 hamburger buns, toasted

Nutrition Per Serving

Calories	407 cal	Carbohydrates	20 g
Total Fat	22 g	Protein	32 g
Saturated Fat	7 g	Phosphorus	399 mg
Trans Fat	0 g	Potassium	378 mg
Cholesterol	94 mg	Dietary Fiber	0.9 g
Sodium	435 mg	Calcium	273 mg

Directions

1. In a medium-sized bowl, combine the first 5 ingredients plus 2 tablespoons of olive oil. Form 8 equal-sized turkey burger patties and lightly brush them with 2 tablespoons of olive oil.
2. In a large nonstick sauté pan over medium-high heat, heat half of the canola oil on medium-high (a George Foreman® grill may also be used).
3. Cook the burgers for 5–7 minutes per side, flipping once or until an internal temperature of 165°F is reached with an instant-read thermometer.
4. Top each burger with about 2 tablespoons of cheese and melt in a toaster oven or an oven set to broil.
5. Serve each turkey burger on a toasted bun. (If using a George Foreman® grill, once cooked, unplug the grill and add cheese to the burger. Leave the grill open and allow the cheese to slightly melt.)

***Tip:** When you cut up jalapeño peppers, wear plastic or rubber gloves and do not touch your face. Or, wash your hands well with soap and water before you touch your face or eyes.

****Tip:** To zest, move a grating tool (e.g., zester, peeler, box grater) slowly back and forth across the peel. Use only the green layer of the peel and not the bitter, white pith.

Recipe provided by Fresenius Kidney Care.





Herb Crusted Pork Loin

Fennel, caraway, dill, and anise seeds coat this pork roast for a juicy, aromatic, and flavor-packed dish.

Serves 14 (1 serving = 4 oz)



Ingredients

- 1 boneless pork loin roast (3½ pounds)
- 2 tablespoons soy sauce, low sodium
- 2 tablespoons anise seed
- 2 tablespoons fennel seed
- 2 tablespoons caraway seed
- 2 tablespoons dill seed

Nutrition Per Serving

Calories	224 cal	Carbohydrates	2 g
Total Fat	13 g	Protein	24 g
Saturated Fat	5 g	Phosphorus	225 mg
Trans Fat	0 g	Potassium	405 mg
Cholesterol	70 mg	Dietary Fiber	1.0 g
Sodium	134 mg	Calcium	53 mg

Directions

1. Rub soy sauce over the roast until it's coated all over.
2. In a 13" x 10" x 1" baking pan, stir together the anise seed, fennel, caraway and dill seed. Roll pork roast in seeds to coat evenly. Wrap meat in foil; refrigerate for at least 2 hours or overnight.
3. Preheat oven to 325°F and remove foil. Place meat fat side up on the rack in an open shallow roasting pan. Insert meat thermometer so the tip is in the center of the thickest part.
4. Roast pork loin in baking pan for 35–40 minutes per pound. Meat thermometer should register 145°F when roast is done. Let rest 3 minutes. Slice to serve.

Recipe provided by Fresenius Kidney Care.

Contributed by: Barbara, Waltham, Massachusetts.





Sample Meal Plan – Lower Potassium

Day 3



Breakfast

- 2 soft or hard boiled eggs
- 2 slices whole wheat toast
- 2 tablespoons almond butter
- 6 oz diet cranberry juice



Lunch

- Egg Fried Rice*
- Asian pear
- 6 oz unsweetened tea



Dinner

- Hawaiian Style Slow Cooked Pulled Pork*
- Whole wheat bun
- Sautéed Collard Greens*
- 1 ear corn on the cob
- 12 oz Sprite Zero
- 5 oz strawberry Greek yogurt
- ½ cup Oats & Honey granola

Snack

- 1 small box of raisins
- ½ cup unsalted pretzels
- 6 oz water

*Recipes on pages 9-44, 9-45, and 9-46.



Egg Fried Rice

A delicious, easy-to-make Asian-inspired dish for those who are always on the go. This egg fried rice recipe combines scrambled eggs, rice, green onions, peas, and bean sprouts for a filling and satisfying meal that's perfect for vegetarians.

Serves 10 (1 serving = ½ cup)



Ingredients

- 2 teaspoons dark sesame oil
- 2 eggs
- 2 egg whites
- 1 tablespoon canola oil
- 1 cup bean sprouts
- 1/3 cup green onions, chopped
- 4 cups cooked rice, cold
- 1 cup frozen peas, thawed
- 1/4 teaspoon ground black pepper

Nutrition Per Serving

Calories	137 cal
Total Fat	4 g
Saturated Fat	1 g
Trans Fat	0 g
Cholesterol	37 mg
Sodium	38 mg

Carbohydrates	21 g
Protein	5 g
Phosphorus	67 mg
Potassium	89 mg
Dietary Fiber	1.3 g
Calcium	20 mg

Directions

1. Combine the sesame oil, eggs, and egg whites in a small bowl. Stir well and set aside.
2. Heat canola oil in a large nonstick skillet over medium-high heat.
3. Add egg mixture and stir-fry until done.
4. Add bean sprouts and green onions. Stir-fry for 2 minutes.
5. Add rice and peas. Continue to stir-fry until heated thoroughly.
6. Season with black pepper and serve immediately.

Recipe provided by Fresenius Kidney Care.

Contributed by: Murray Randall, Berwyn, Illinois.

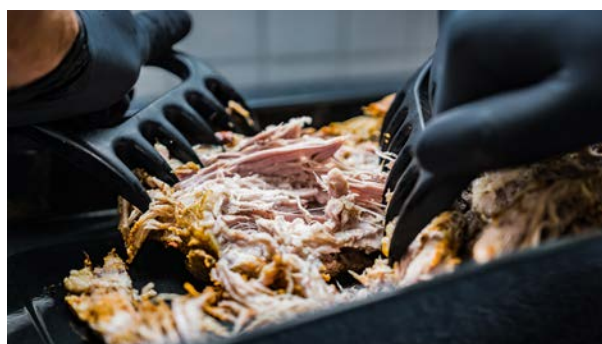




Hawaiian Style Slow Cooked Pulled Pork

Say “aloha” to this Hawaiian style pulled pork recipe. Smoky and succulent, it can be served over rice, added to soup, or used as a high-protein addition to scrambled eggs for breakfast.

Serves 16 (1 serving = 4 oz)



Ingredients

- 4 pounds pork roast
- ½ teaspoon ground black pepper
- ½ teaspoon paprika
- 1 teaspoon onion powder
- ½ teaspoon garlic powder
- 2 tablespoons liquid smoke
- Optional garnish: (pickled red onions or radishes) 1 red onion or 4 radishes, ⅓ cup white vinegar and ¼ teaspoon of sugar

Nutrition Per Serving

Calories	285 cal	Carbohydrates	1 g
Total Fat	21 g	Protein	20 g
Saturated Fat	7 g	Phosphorus	230 mg
Trans Fat	0 g	Potassium	380 mg
Cholesterol	83 mg	Dietary Fiber	0 g
Sodium	54 mg	Calcium	9 mg

Directions

1. Combine black pepper, paprika, onion powder, and garlic powder in a small bowl.
2. Rub the seasoning blend on all sides of the pork. Place pork into a slow-cooker or a crock-pot. Sprinkle with liquid smoke.
3. Add enough water to the slow-cooker or crock-pot to measure ¼–½” deep. Cook on high for 4–5 hours.
4. Remove pork from cooking liquid and shred meat using two forks.
5. Optional: Garnish with sliced pickled red onions or radishes.

Tip: For quick pickled red onions or radishes, marinate one sliced red onion or 4 sliced radishes in a mixture of ⅓ cup of white vinegar and a ¼ teaspoon of sugar for 1 hour. Drain and use as a garnish.

Note: Shredded or pulled pork can be used in a variety of ways. Serve it over rice, add it to soup, or create a high-protein breakfast by adding it to scrambled eggs.

Recipe provided by Fresenius Kidney Care.

Contributed by: Lori Fijiura, Aiea, Hawaii.



Sautéed Collard Greens

A Southern staple and favorite, this quick collard greens recipe is a flavorful and healthy veggie side dish for lunch or dinner.

Serves 6 (1 serving = $\frac{1}{6}$ portion)



Ingredients

- 8 cups fresh collard greens, chopped and blanched
- 2 tablespoons olive oil
- 1 tablespoon butter, unsalted
- $\frac{1}{4}$ cup onions, finely diced
- 1 tablespoon fresh garlic, chopped
- 1 teaspoon crushed red pepper flakes
- 1 teaspoon ground black pepper
- 1 tablespoon vinegar (optional)

Nutrition Per Serving

Calories	79 cal	Carbohydrates	4 g
Total Fat	7 g	Protein	2 g
Saturated Fat	2 g	Phosphorus	18 mg
Trans Fat	0 g	Potassium	129 mg
Cholesterol	5 mg	Dietary Fiber	2.2 g
Sodium	9 mg	Calcium	118 mg

Directions

1. Blanch the collard greens by putting them into a pot of boiling water for 30 seconds.
2. Strain the boiling water off and quickly transfer the greens to a large bowl of ice water. Let cool, then strain and dry the greens and set them aside.
3. In a large sauté pan on medium-high heat, melt the butter and oil together. Add onions and garlic, and cook until slightly browned, about 4–6 minutes. Add collard greens and black and red pepper, then cook for 5–8 minutes on high heat, stirring constantly.
4. Remove from heat, add vinegar, if desired, and stir.

Recipe provided by Fresenius Kidney Care.





Sample Meal Plan – Lower Potassium

Day 4



Breakfast

- 2 Southwest Baked Egg Breakfast Cups*
- 1 cup fresh strawberries
- 2 slices whole wheat toast and jam
- 6 oz unsweetened tea



Lunch

- Herb-Roasted Chicken Breasts*
- Whole wheat bun
- ½ cup Cool and Crispy Cucumber Salad*
- ½ cup raspberries (fresh/fresh-frozen)
- 10 oz water



Dinner

- Pesto-Crusted Catfish*
- 1 cup grits
- 1 cup sugar snap peas
- 10 oz diet ginger ale
- 1 medium apple, sliced
- 3 tablespoons all-natural peanut butter

Snack

- ½ cup unsalted pretzels
- 4 oz water

*Recipes on pages 9-48, 9-49, 9-50 and 9-51.



Southwest Baked Egg Breakfast Cups

Wake your taste buds up with these baked breakfast egg cups filled with savory rice, eggs, green chilies, pimentos, and cheddar cheese. A yummy way to start any morning.

Serves 12 (1 serving = 1 egg cup or 2.5 oz)



Ingredients

- 3 cups rice, cooked
- 4 oz cheddar cheese, shredded
- 4 oz green chilies, diced
- 2 oz pimentos, drained and diced
- ½ cup skim milk
- 2 eggs, beaten
- ½ teaspoon ground cumin
- ½ teaspoon black pepper
- nonstick cooking spray

Nutrition Per Serving

Calories	109 cal
Total Fat	4 g
Saturated Fat	2 g
Trans Fat	0 g
Cholesterol	41 mg
Sodium	79 mg

Carbohydrates	13 g
Protein	5 g
Phosphorus	91 mg
Potassium	82 mg
Dietary Fiber	0.5 g
Calcium	91 mg

Directions

1. In a large bowl, combine rice, 2 oz of cheese, chilies, pimentos, milk, eggs, cumin, and pepper.
2. Spray muffin cups with nonstick cooking spray.
3. Spoon mixture evenly into 12 muffin cups. Sprinkle top of each cup with the remaining 2 oz of shredded cheese.
4. Bake at 400°F for 15 minutes or until set.

Recipe provided by Fresenius Kidney Care.

Contributed by: Melissa Chodorowski, Markham, Illinois. Originally published in Renal Culinary Gourmet Cookbook.





Herb-Roasted Chicken Breasts

Marinating overnight with seasoning and olive oil makes for a tender, moist, herb-roasted chicken breast every time in this easy dish. Simple never tasted so good!

Serves 4 (1 serving = 4 oz)

Ingredients

- 1 pound boneless, skinless chicken breasts
- 1 medium onion
- 1–2 garlic cloves



- 2 tablespoons Mrs. Dash® Garlic and Herb Seasoning Blend
- 1 teaspoon ground black pepper
- ¼ cup olive oil

Nutrition Per Serving

Calories	270 cal
Total Fat	17 g
Saturated Fat	3 g
Trans Fat	0 g
Cholesterol	83 mg
Sodium	53 mg

Carbohydrates	3 g
Protein	26 g
Phosphorus	252 mg
Potassium	491 mg
Dietary Fiber	0.6 g
Calcium	17 mg

Directions

Marinating:

1. Chop onion and garlic and place in a bowl. Add Mrs. Dash Seasoning, ground pepper, and olive oil.
2. Add chicken breasts to the marinade, cover it, then refrigerate for at least 4 hours or overnight.

Baking:

1. Preheat the oven to 350°F.
2. Cover a baking sheet with foil, place the marinated chicken breasts on the pan.
3. Pour the remaining marinade over the chicken and bake at 350°F for 20 minutes.
4. Broil an additional 5 minutes for browning.

Recipe provided by Fresenius Kidney Care.

Contributed by: Imani Franklin, Holland, Illinois.



Cool and Crispy Cucumber Salad

Cool, crispy, and easy. Mix sliced cucumbers with sodium-free Italian dressing and fresh ground black pepper, chill, and enjoy!

Serves 4 (1 serving = ½ cup)



Ingredients

- 2 cups fresh cucumber (sliced into ¼-inch slices, peeling is optional)
- 2 tablespoons Italian or Caesar salad dressing
- Fresh ground black pepper to taste

Nutrition Per Serving

Calories	27 cal	Carbohydrates	3 g
Total Fat	2 g	Protein	0 g
Saturated Fat	0 g	Phosphorus	14 mg
Trans Fat	0 g	Potassium	90 mg
Cholesterol	0 mg	Dietary Fiber	0 g
Sodium	74 mg	Calcium	12 mg

Directions

1. In medium-size bowl with lid, combine cucumbers and salad dressing.
2. Cover with lid, shake to coat.
3. Sprinkle with ground black pepper. Refrigerate.
4. Best served cold.

Recipe provided by Fresenius Kidney Care.

Contributed by: Tracey Neeley, Registered Dietitian, Fresenius Medical Care, Augusta, Georgia.





Pesto-Crusted Catfish

Love catfish, but craving some crunch? Cook it up in a coating of pesto sauce mixed with flaky panko bread crumbs, mozzarella, onion, and spices!

Serves 6 (1 serving = 5 oz)



Ingredients

- 2 pounds catfish (boned and filleted)
6 (5 oz each)
- 4 teaspoons pesto
- $\frac{3}{4}$ cup panko bread crumbs
- $\frac{1}{2}$ cup mozzarella cheese
- 2 tablespoons olive oil

Chef McCargo's Signature Seasoning Blend:

- 1 teaspoon garlic powder
- 1 teaspoon onion powder
- $\frac{1}{2}$ teaspoon dried oregano
- $\frac{1}{2}$ teaspoon red pepper flakes
- $\frac{1}{2}$ teaspoon black pepper

Nutrition Per Serving

Calories	312 cal
Total Fat	16 g
Saturated Fat	3 g
Trans Fat	0 g
Cholesterol	83 mg
Sodium	272 mg

Carbohydrates	15 g
Protein	26 g
Phosphorus	417 mg
Potassium	576 mg
Dietary Fiber	0.8 g
Calcium	80 mg

Directions

Preheat oven to 400°F.

1. Mix all the seasonings in small bowl and begin to sprinkle even amounts on both sides of fish.
2. Spread equal amounts of pesto (1 teaspoon each) on topside of filets and set aside.
3. In medium bowl, mix cheese, oil and bread crumbs and dredge pesto side of fish in mixture until well coated.
4. Grease or spray baking sheet tray liberally with oil and lay fish pesto side up on sheet tray leaving space between filets.
5. Bake for 15–20 minutes at 400°F or until desired brownness on bottom rack.
6. Let rest for 10 minutes after cooking and removing from tray to prevent fish from breaking.

TIPS: Make an extra serving of Chef McCargo's signature seasoning blend and use it to spice up your other dishes. For another twist on this tasty recipe, substitute chicken or turkey for catfish.

Recipe provided by Fresenius Kidney Care.



Sample Meal Plan – Lower Potassium

Day 5



Breakfast

- 8 oz strawberry Greek yogurt
- ½ cup Oats & Honey Granola
- ½ cup fresh strawberries
- 6 oz diet cranberry juice



Dinner

- Bourbon Glazed Skirt Steak*
- 1 cup wild rice
- 1 cup Zucchini Sauté*
- 1 whole wheat roll
- 10 oz unsweetened tea
- 1 cup grapes
- ½ cup animal crackers



Lunch

- 2 small whole wheat tortillas as wraps
- 4 oz Herb-Roasted chicken (leftover Herb-Roasted Chicken from Day 4)
- Lettuce and Caesar salad dressing
- 1 large peach
- 10 oz diet ginger ale

Snack

- 8 whole wheat crackers
- 3 tablespoons hummus
- 4 oz water

*Recipes on pages 9-53 and 9-54.





Bourbon Glazed Skirt Steak

Tired of the same old steak? Get your glaze on with Chef McCargo! Mix bourbon, dark brown sugar, Dijon mustard, butter, and spices to add mouth-watering flavor.

Serves 8 (1 serving = 3 oz)



Ingredients

Bourbon Glaze:

- ¼ cup diced shallots
- 3 tablespoons unsalted butter, chilled and cubed
- 1 cup bourbon
- ¼ cup dark brown sugar
- 2 tablespoons Dijon mustard
- 1 tablespoon black pepper

Skirt Steak:

- 2 tablespoons grape seed oil
- ½ teaspoon dried oregano
- ½ teaspoon smoked paprika
- 1 teaspoon black pepper
- 1 tablespoon red wine vinegar
- 2 pounds skirt steak

Nutrition Per Serving

Calories	409 cal
Total Fat	22 g
Saturated Fat	8 g
Trans Fat	1 g
Cholesterol	93 mg
Sodium	152 mg

Carbohydrates	8 g
Protein	24 g
Phosphorus	171 mg
Potassium	283 mg
Dietary Fiber	0.5 g
Calcium	22 mg

Recipe provided by Fresenius Kidney Care.

Directions

Bourbon Glaze:

1. In small saucepan on medium-high heat, brown shallots in 1 tablespoon butter.
2. Reduce heat to low, remove pan from stove, add bourbon and then place saucepan back on stove.
3. Cook for 10–15 minutes, or until reduced by about one third.
4. Add brown sugar, mustard, and black pepper and stir until bubbly.
5. Turn off heat and stir in the remaining 2 tablespoons of cold, cubed butter, stirring until mixed.

Skirt Steak:

1. Mix first 5 ingredients in gallon-size sealable storage bag, add steaks and shake well.
2. Allow steaks to marinate in bag at room temperature for 30–45 minutes.
3. Remove steaks from bag, grill for 15–20 minutes each side, then remove and let rest for 10 minutes.
4. Slice and serve with a drizzle of sauce; or leave whole and brush with glaze and put in preheated broiler for 4–6 minutes, or until desired look.

Optional Serving Suggestion: Bourbon Glazed Skirt Steak Sandwich - Serves 6 (1 serving = 4-inch sandwich)

Directions: Add sliced steak to a toasted baguette roll, then top with gorgonzola cheese, caramelized onions, and sautéed mushrooms for a great-tasting steak sandwich.



Zucchini Sauté

No need to settle for soggy, bland veggies. For your next meal, serve up zucchini sautéed in grated Parmesan cheese and a medley of fresh basil, thyme, and tarragon.

Serves 6 (1 serving = ½ cup)



Ingredients

- 3-4 medium-size fresh zucchini, sliced (about 4 cups)
- 1 cup whole milk
- ½ cup flour
- ¼ cup grated Parmesan cheese
- ½ teaspoon fresh basil
- ½ teaspoon fresh thyme
- ½ teaspoon fresh tarragon
- 2 tablespoons vegetable oil
- Pepper to taste

Nutrition Per Serving

Calories	130 cal
Total Fat	7 g
Saturated Fat	2 g
Trans Fat	0 g
Cholesterol	7 mg
Sodium	75 mg

Carbohydrates	12 g
Protein	4 g
Phosphorus	98 mg
Potassium	266 mg
Dietary Fiber	1 g
Calcium	97 mg

Directions

1. Put zucchini in milk to soak.
2. Mix flour, Parmesan cheese, and pepper in a bowl; add the herbs.
3. Heat vegetable oil in a large skillet.
4. Dip zucchini in cheese and herb mixture.
5. Sauté. Serve hot.

Reprinted with permission from Everyday Eating: A Cookbook for the Dialysis Patient and Family, Illinois Council on Renal Nutrition, National Kidney Foundation of Illinois, Inc.





Sample Meal Plan – Lower Potassium

Day 6



Breakfast

- 2 scrambled eggs
- 1 whole wheat bagel
- 1 small banana (6")
- 6 oz unsweetened tea



Lunch

- 1 cup Tex-Mex Quinoa & Black Bean Bowl*
- ½ cup applesauce
- ½ cup animal crackers
- 8 oz water



Dinner

- 4 oz grilled salmon
- Spaghetti & Asparagus Carbonara*
- 1 whole wheat dinner roll
- 10 oz diet ginger ale
- 1 Sweet & Nutty Protein Bar*

Snack

- 3 cups unsalted popcorn
- 6 oz water

*Recipes on pages 9-56, 9-57, and 9-58.



Tex-Mex Quinoa & Black Bean Bowl

Makes 4 servings

Ingredients

- 4 cups Quinoa, cooked
- 2 cups black beans, canned, low sodium
- 1 cup salsa
- ½ cup regular sour cream, cultured
- 4 tablespoons green onion, fresh, tops
- 1 cup regular cheddar cheese, shredded
- 2 cups Lettuce, iceberg, fresh, shredded



Nutrition Per Serving

Calories	518 cal	Carbohydrates	67 g
Total Fat	18 g	Protein	24 g
Saturated Fat	8 g	Phosphorus	587 mg
Trans Fat	1 g	Potassium	976 mg
Cholesterol	42 mg	Dietary Fiber	15 g
Sodium	830 mg	Calcium	327 mg

Directions

1. Rinse quinoa under cold running water until clear, then drain well.
2. Place quinoa in a pan over medium-high heat and toast for 2 minutes, stirring. Add 2 cups of water and bring to a boil. Reduce heat to low, cover pan, and simmer for 8–10 minutes. Fluff with a fork.
3. Drain, rinse, and heat black beans.
4. Layer 1 cup of quinoa into each bowl.
5. Add ½ cup of black beans to each bowl.
6. Add ½ cup of lettuce to each bowl.
7. Top each bowl with ¼ cup salsa, ¼ cup cheese, 2 tablespoons sour cream, and 1 tablespoon green onions.
8. Serve and enjoy!

Recipe created by Rebecca Hubbard, RDN, CSR, LDN for FKC's 7-day Meal Plan. Not shareable beyond MEI's Kidney School unless written permission granted. Please contact: jennifer.parker@fmc-na.com





Spaghetti and Asparagus Carbonara

Quick and easy to make, this savory pasta dish makes a delicious and satisfying meal. Add chicken or salmon for extra protein.

Serves 6 (1 serving = 1 cup)

Ingredients

- 2 teaspoons canola oil
- 1 cup fresh onions, diced
- 1 large egg, beaten
- 1 cup light cream
- ¼ cup low-sodium chicken stock
- 3 cups cooked spiral noodle pasta, cooked al dente (about 1½ cups raw)
- 2 cups fresh asparagus, chopped (about 1" long pieces)
- 1 teaspoon freshly cracked coarse black pepper
- ½ cup fresh scallions, chopped
- 3 tablespoons bacon bits (meatless)
- 3 tablespoons shredded Parmesan cheese



Nutrition Per Serving

Calories	245 cal	Carbohydrates	27 g
Total Fat	12 g	Protein	9 g
Saturated Fat	5 g	Phosphorus	157 mg
Trans Fat	0 g	Potassium	303 mg
Cholesterol	57 mg	Dietary Fiber	5 g
Sodium	159 mg	Calcium	105 mg

Directions

1. In a large nonstick sauté pan, over medium-high heat, heat the oil and sauté the onions until lightly browned.
2. Meanwhile, in a small bowl, whisk the egg and the cream until thoroughly mixed.
3. Lower the heat to medium and pour the cream mixture into the onions, stirring constantly with a wooden spoon until it starts to thicken, about 4–6 minutes.
4. Add the stock, pasta, asparagus, and black pepper and continue to stir for an additional 3–4 minutes or until warmed through.
5. Turn off the heat and pour the carbonara into a serving dish. Top with scallions, bacon bits and cheese and serve.

Recipe provided by Fresenius Kidney Care.



Sweet & Nutty Protein Bars

Soft and chewy, these easy-to-make protein bars are high-protein snacks thanks to a blend of almonds, oats, flaxseeds, and peanut butter. Yum!

Serves 12 (1 serving = 2 oz bar)



Ingredients

- 2½ cups rolled oats, toasted
- ½ cup almonds
- ½ cup flaxseeds
- ½ cup peanut butter
- 1 cup dried cherries, blueberries or Craisins®
- ½ cup honey

Nutrition Per Serving

Calories	283 cal
Total Fat	13 g
Saturated Fat	2 g
Trans Fat	0 g
Cholesterol	0 mg
Sodium	49 mg

Carbohydrates	39 g
Protein	7 g
Phosphorus	177 mg
Potassium	258 mg
Dietary Fiber	5.8 g
Calcium	51 mg

Directions

1. Toast the oats by placing rolled oats on a baking sheet in a 350°F oven for 10 minutes or until golden brown.
2. Mix all ingredients together until well-mixed.
3. Press the protein mix down into a lightly greased 9" x 9" pan. Wrap and refrigerate for at least one hour or overnight.
4. Cut protein bars into desired squares then serve.

Recipe provided by Fresenius Kidney Care.





Sample Meal Plan – Lower Potassium

Day 7



Breakfast

- 2 slices multi grain toast
- 3 tablespoons peanut butter
- ½ cup pineapple
- 6 oz diet cranberry juice



Lunch

- Pita pocket
- Leftover Bourbon Glazed Skirt Steak
(Uses left-over skirt steak from Dinner on Day 5)
- ½ cup strawberries
- 6 oz water



Dinner

- Crunchy Lemon Herbed Chicken*
- 1 cup sweet potatoes
- 1 cup broccoli
- 1 whole wheat dinner roll
- 10 oz diet ginger ale
- ½ cup animal crackers

Snack

- 1 large tangerine
- 3 sheets of Melba toast
- 4 oz water

*Recipe on page 9-60.



Crunchy Lemon Herbed Chicken

Lemon, oregano, basil, and thyme make this chicken dish irresistible. Panko bread crumbs add crunch.

Serves 4 (1 serving = 3 oz portion)

Ingredients

- 6 (2 oz each) chicken tenders
- 4 tablespoons unsalted butter, chilled
- ½ cup panko bread crumbs
- ¼ cup of lemon juice, plus zest of 1 lemon
- 1 egg yolk
- 1 tablespoon fresh oregano, chopped
- 1 tablespoon fresh basil, chopped
- 1 tablespoon fresh thyme, chopped
- 3 tablespoons water (1 tablespoon for the egg wash, 2 tablespoons for finishing the sauce)



Nutrition Per Serving

Calories	277 cal
Total Fat	16 g
Saturated Fat	8 g
Trans Fat	0 g
Cholesterol	139 mg
Sodium	141 mg

Carbohydrates	12 g
Protein	22 g
Phosphorus	226 mg
Potassium	347 mg
Dietary Fiber	0.9 g
Calcium	50 mg

Directions

1. Preheat 2 tablespoons of butter on medium-low heat.
2. Add zest of 1 lemon and half the herbs to bread crumbs, save the rest for lemon sauce.
3. Beat egg yolk with 1 tablespoon water.
4. Place chicken tenders between 2 pieces of plastic wrap and beat with small groove side of mallet until thin, but not ripped.
5. Dip chicken in egg wash mixture, then in herbed bread crumb mixture until coated. Set them aside.
6. Preheat 2 tablespoons of butter on medium heat.
7. Place breaded chicken in sauté pan.
8. Cook chicken, approximately 2–3 minutes each side.
9. Remove chicken and place on baking sheet to rest. In same pan, add remaining herbs and lemon juice, then heat until simmering.
10. Turn off heat; add remaining 2 tablespoons of butter to the sauce, stir vigorously.
11. Slice the chicken.
12. Place sliced chicken on a plate, pour the sauce over the top and add garnishes.

TIP: Use diced red bell peppers, lemon slices, parsley, or finely diced shallots and scallions to add color and garnish to your final dish.

Recipe provided by Fresenius Kidney Care.





Sample Meal Plan – Flexible Potassium

Day 1



Breakfast

- 2 fried eggs
- 1 whole wheat English Muffin
- 1 slice all-natural Canadian bacon
- 1 sliced plum
- 6 oz diet cranberry juice

Morning Snack

- 1 cup Rice Chex[®]
- 1 oz almonds
- 1 oz raisins
- 4 oz water

Lunch

- Hamburger on whole wheat bun, with 2 slices avocado, 1 slice tomato
- ½ cup Crunchy Quinoa Salad*
- ½ cup watermelon
- 3 cups unsalted popcorn
- 10 oz water



Dinner

- 3 oz all-natural Roasted Turkey Breast
- ½ cup Fall Harvest Orzo Salad*
- 3 oz Crunchy Green Bean Casserole*
- 1 Herbed Biscuit*
- 6 oz unsweetened tea



Evening Snack

- ½ cup fresh-sliced strawberries
- 1 oz dark chocolate
- 4 oz water

*Recipes on pages 9-37, 9-38, and 9-39.



Sample Meal Plan – Flexible Potassium

Day 2



Breakfast

- 2 slices multi grain toast
- 3 tablespoons peanut butter
- 1 cup diced cantaloupe
- 6 oz diet cranberry juice



Lunch

- Pita pocket
- Bourbon Glazed Skirt Steak*
- 1 nectarine
- 10 oz water



Dinner

- Crunchy Lemon Herbed Chicken*
- 1 cup sweet potatoes
- 1 cup broccoli
- 1 whole wheat dinner roll
- 10 oz diet ginger ale
- ½ cup animal crackers

Snack

- 1 large tangerine
- 2 sheets of Melba toast

*Recipes on pages 9-53 and 9-60.





Sample Meal Plan – Flexible Potassium

Day 3



Breakfast

- 2 Southwest Baked Egg Breakfast Cups*
- 1 medium banana
- 2 slices whole wheat toast and jam
- 6 oz unsweetened tea



Lunch

- Leftover Crunchy Lemon Herbed Chicken*
- Whole wheat bun
- 15 baked French fries
- ½ cup Cool and Crispy Cucumber Salad*
- 10 oz water



Dinner

- Pesto-Crusted Catfish*
- ½ cup lima beans
- 1 serving Mashed Carrots & Ginger*
- 10 oz diet ginger ale
- 2 sheets cinnamon graham crackers
- 3 tablespoons all-natural peanut butter

Snack

- ½ cup unsalted pretzels
- 4 oz water

*Recipes on pages 9-48, 9-50, 9-51, 9-60, and 9-64.



Mashed Carrots & Ginger

Add color and flavor to your table with this holiday-favorite side dish. Mashed carrots are spiced with ginger, honey, black pepper, and a touch of vanilla extract. A vibrant and velvety dish that couldn't be more simple—or delicious.

Serves 3 (1 serving = $\frac{1}{3}$ of the recipe)



Ingredients

- 2 cups baby carrots
- $\frac{1}{2}$ teaspoon fresh ginger, chopped
- $\frac{1}{2}$ teaspoon honey
- $\frac{1}{2}$ teaspoon black pepper
- $\frac{1}{2}$ teaspoon vanilla extract
- Optional garnish: 1 tablespoon fresh chives, chopped

Nutrition Per Serving

Calories	30 cal	Carbohydrates	7 g
Total Fat	0 g	Protein	1 g
Saturated Fat	0 g	Phosphorus	21 mg
Trans Fat	0 g	Potassium	174 mg
Cholesterol	0 mg	Dietary Fiber	2 g
Sodium	55 mg	Calcium	25 mg

Directions

1. Boil or steam carrots on high heat until carrots are very tender. Lower heat to low and mash carrots with a potato masher.
2. Add remaining ingredients (ginger, honey, pepper, and vanilla extract) and stir until well-mixed.
3. Serves 3 (1 serving = $\frac{1}{3}$ of the recipe).

Optional: Garnish with chopped chives and serve.

Tip: For smoother mashed carrots, use a food processor or blender.

Recipe provided by Fresenius Kidney Care.





Sample Meal Plan – Flexible Potassium

Day 4



Breakfast

- 8 oz strawberry Greek yogurt
- ½ cup Oats & Honey Granola
- ½ cup fresh strawberries
- 6 oz diet cranberry juice



Lunch

- 2 small whole wheat tortillas for wrap
- Leftover Crunchy Lemon Herbed Chicken from Dinner on Day 2*
- Lettuce and Caesar salad dressing
- 3 slices tomatoes
- 1 large peach
- 10 oz diet ginger ale



Dinner

- Bourbon Glazed Skirt Steak*
- 1 cup roasted potatoes
- 1 serving Zucchini Sauté*
- 1 whole wheat dinner roll
- 10 oz unsweetened tea
- 1 cup grapes
- ½ cup animal crackers

Snack

- 8 whole wheat crackers
- 3 tablespoons hummus
- 4 oz water

*Recipes on pages 9-49, 9-53, and 9-54.



Sample Meal Plan – Flexible Potassium

Day 5



Breakfast

- 2 fried eggs
- 3 tablespoons sautéed mushrooms
- 2 slices of whole wheat toast
- 2 tablespoons of almond butter
- 6 oz diet cranberry juice



Lunch

- Egg Fried Rice*
- 1 small chicken breast (skinless)
- 1 cup diced honeydew melon
- 10 oz unsweetened tea



Dinner

- Hawaiian Style Slow Cooked Pulled Pork*
- Whole wheat bun
- Sautéed Collard Greens*
- 1 cup mashed potatoes
- 10 oz Sprite Zero®
- 5 oz strawberry Greek yogurt
- ½ cup Oats & Honey granola

Snack

- 1 small box of raisins
- ½ cup unsalted pretzels
- 4 oz water

*Recipes on pages 9-44, 9-45, and 9-46.





Sample Meal Plan – Flexible Potassium

Day 6



Breakfast

- 1 cup cooked whole grain oats
- 1 oz sliced almonds
- 1 large peach
- ½ cup unsalted cottage cheese
- 6 oz unsweetened tea



Lunch

- Jalapeño Lime Turkey Burger with Smoked Mozzarella*
- 3 slices avocado
- 10 onion rings
- 10 oz diet ginger ale



Dinner

- Herb Crusted Pork Loin*
- 1 medium baked potato
- 2 tablespoons sour cream
- Chives
- 4-5 spears of asparagus
- 5 “hint of salt” crackers
- 10 oz diet ginger ale
- 4 sheets cinnamon graham crackers
- 1 tablespoon all-natural peanut butter

Snack

- ½ cup unsalted pretzels
- 3 tablespoons hummus
- 4 oz water

*Recipes on pages 9-41 and 9-42.



Sample Meal Plan – Flexible Potassium

Day 7



Breakfast

- 2 scrambled eggs
- 1 whole wheat bagel
- 1 medium banana (7")
- 6 oz unsweetened tea



Lunch

- 1 cup Tex-Mex Quinoa and Black Bean Bowl*
- ¼ cup diced tomatoes
- ½ cup applesauce
- 10 oz water



Dinner

- 4 oz grilled salmon
- Spaghetti & Asparagus Carbonara*
- 1 whole wheat dinner roll
- 10 oz diet ginger ale
- ½ cup animal crackers

Snack

- 1 cup Rice Chex®
- 1 oz almonds
- 1 oz raisins
- 4 oz water

*Recipes on pages 9-56 and 9-57.





Take the Kidney Quiz!

You'll see how much you're learning if you take our quick kidney quiz. It's just 11 questions. How about it? *(Answers are on page 9-3.)*

1. **If you don't get enough dialysis, you may notice:**
 - a) Hives
 - b) Loss of appetite
 - c) Blurry vision
 - d) Weight loss
2. **Which of these are carbohydrates?**
 - a) Eggs, shrimp, chicken
 - b) Bread, vegetables, fruit
 - c) Olive oil, butter, lard
 - d) Beef, pork, turkey
3. **Which of the following is a good source of protein?**
 - a) Chicken
 - b) Apples
 - c) Oatmeal
 - d) Oyster crackers
4. **A good way to tell if you are getting enough protein is:**
 - a) You are losing weight
 - b) Your hematocrit is greater than 33%
 - c) Your albumin level is greater than 4.0 g/dL
 - d) You crave eggs
5. **When you are on dialysis, too much potassium in your diet can:**
 - a) Loosen your teeth
 - b) Stop your heart
 - c) Cause bone disease
 - d) Change your eyesight
6. **Renal bone disease occurs when too much phosphorus in the blood pulls what mineral from the bone?**
 - a) Zinc
 - b) Calcium
 - c) Iron
 - d) Potassium
7. **Sodium (salt) is limited in the standard in-center HD diet because:**
 - a) Salt makes you thirsty, and may raise your stroke and heart disease risk
 - b) Salt makes you forgetful
 - c) Salt makes you eat too much protein
 - d) Salt makes you sleepy
8. **You can help keep your phosphorus in the safe range with low phosphorus foods, binders, or what else?**
 - a) Exercising until you sweat
 - b) Getting plenty of sleep
 - c) Nocturnal hemodialysis
 - d) Chewing on ice chips
9. **Which type of foods might make your phosphorus level go up the most?**
 - a) Fresh chicken
 - b) Black beans
 - c) Muffin from a boxed mix
 - d) Nuts
10. **If you want to eat a food that is high in potassium, phosphorus, and/or sodium, which of these is a good idea:**
 - a) Find a substitute that you don't like much
 - b) Declare a cheat day
 - c) Eat a small serving as an occasional treat
 - d) Avoid the food all the time
11. **On dialysis, too much fluid can cause:**
 - a) Swelling, trouble breathing, heart damage, headaches, and high blood pressure
 - b) Headaches, itchy skin, hair loss, and hearing problems
 - c) Sinus problems, bad breath, ringing in the ears, and body odor
 - d) Weight loss, slurred speech, and uncontrolled sneezing



Resources

The sources below may help you learn more about nutrition and kidney disease.

PLEASE NOTE: The non-profit Medical Education Institute does not endorse these resources. We believe you are the best person to choose what will meet your needs. Please check with your library, bookstore, or the internet to find these items.

Kidney disease cookbooks and recipes:

- 1 ***Positive Beginnings: The Dialysis Breakfast Cookbook (Dialysis with Comfort, Book 1)***. Recipes for breakfast and brunch include sodium, potassium, and phosphorus. 2014, by Mrs. Mathea A. Ford, RD/LD. On Amazon at: https://smile.amazon.com/Positive-Beginnings-Dialysis-Breakfast-Cookbook/dp/069227958X/ref=sr_1_8?ie=UTF8&qid=1521214493&sr=8-8&keywords=dialysis+cookbook
- 2 ***Kidney Cooking: A Family Cookbook for Kidney Patients***. Updated in 2013. Recipes for main dishes, sides, sauces, desserts, beverages, and special occasions. Nutrition lists include sodium, potassium, and phosphorus. Free PDF from the NKF of Georgia: https://www.kidney.org/sites/default/files/docs/kidney_cookbook_lr.pdf
- 3 ***Multiple free dialysis cookbook downloads*** - <https://www.davita.com/cookbook>. Find up-to-date cookbooks for each season, breakfast, holidays, game day, slow cookers, restaurant favorites, and more. NOTE: You must register on the site to download, so you may get many emails.

Food value and nutrition guides:

- 1 ***Bowes & Church's Food Values of Portions Commonly Used (19th Ed.)***, by Jean A. T. Pennington, PhD, RD and Judith Spungen (Lippincott Williams & Wilkins, 2010, ISBN-13: 978-0781781343)
This classic guide to nutrition has been around since 1937. It tells you the nutritional value of foods and lists more than 8,500 common foods.
- 2 ***Food Data Central***, by the USDA. This database lets you look for calcium, phosphorus, thiamine, B vitamins, etc. Lists are in alphabetical order or by the nutrient content from highest to lowest. Visit <http://ndb.nal.usda.gov/>.





Websites and apps:

- 1 **Carb Manager**. This app lets you track MUCH more than carbs. Look up foods and find phosphorus, potassium, sodium, protein, etc. Enter your own recipes and see their nutrients per serving. Snap a photo of a food or scan its label to learn more. Track sleep and exercise, too. Free in the Apple and Android app stores, or the paid version has more features. <https://www.carbmanager.com> or in the App stores.
- 2 The **DaVita Diet Helper** will let you plan meals for a day or a week on any type of dialysis. Easy and powerful—and free at www.davita.com/diethelper.
- 3 **Fresenius Kidney Care** has lots of dialysis recipes from celebrity chef Aaron McCargo. <https://www.freseniuskidneycare.com/eating-well/recipes/breakfasts>
- 4 **MedHelp Express** - potassium guide, phosphorus guide, and a Middle Eastern cookbook. http://www.medhelpexpress.com/search.php?search_query=kidney&x=37&y=13
- 5 The **National Kidney Foundation** has diet and nutrition info at http://www.kidney.org/atoz/atozTopic_Nutrition-Diet.cfm, including the Kidney Kitchen with recipes for diabetic, CKD, and dialysis diets.

Other resources:

- 1 **Help, I Need Dialysis!** by Dori Schatell, MS, and Dr. John Agar (Medical Education Institute, 2012, http://www.lifeoptions.org/help_book, ISBN-13: 978-1937886004) Easy to read, fully referenced book covers the lifestyle impact of each type of dialysis—including diet and fluid limits.
- 2 **AAKP Nutrition Counter: A Reference for the Kidney Patient**, by the American Association of Kidney Patients (AAKP). If you would like more information, call (800) 749-2257 or download a copy from their website at <https://aakp.org/product/download-aakp-nutrition-counter-reference-kidney-patient-electronic-download/>.
- 3 **Eat Right to Feel Right on Hemodialysis**, by the National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC). If you would like more information, please call toll-free (800) 891-5390, e-mail nkudic@info.niddk.nih.gov, or visit their website at kidney.niddk.nih.gov/kudiseases/pubs/eatright/index.htm. (Also available in Spanish.)