

Nutrition for Kidney Disease

You will need to follow a special diet while your kidneys are not working as they should. This guide contains specific diet and nutrition information to help you.

Diet and Kidney Disease

A healthy kidney filters out waste products from the blood. When your kidneys are not working well, you may need to limit certain foods to prevent the build-up of waste products. This guide will help you learn how to eat to control the amount of waste products that you produce. This may help your kidneys stay healthier and slow the progression of kidney disease.

Protein

Your body needs a diet with enough protein to maintain and grow body tissue. When you eat large amounts of protein, more waste products can build up in your blood and may harm your kidneys. So, you may need to limit the amount of protein in your diet.

Your dietitian will decide the amount of protein that you should have each day to meet your body's needs. Meat, poultry, fish, eggs, and dairy products contain large amounts of high-quality protein. Protein from plants such as nuts, beans, soy, and seeds are not as high quality of protein, but may be easier for your kidneys to handle. You should include small amounts of protein in each meal. Breads, cereals and vegetables also have small amounts of protein.

Your Daily Protein Needs

The table below shows the amount of protein you should eat each day. This includes protein from meat, milk, and starch food groups.

Height	Grams protein per day	Ounces/ Servings per day
5'2" or less	38-50	4-5
5'3" – 5'7"	42-56	5-6
5'8" – 5'11"	47-62	6-7
6'0" – 6'4"	52-70	7

*These are not exact numbers and may vary based on your health condition.

Protein Serving Sizes

Each of these is equal to one choice or serving and contains about **7 grams of protein**:

- 1 oz. beef, lamb, pork, poultry or fish
- ¼ cup salmon, tuna, crab, poultry, fish, lobster, or clams
- ¼ cup cottage cheese
- 1 oz. or 5 medium shrimp
- 1 egg or ¼ cup egg substitute
- *2 Tbsp. Peanut butter
- *1 oz or ¼ cup of nuts
- 4 oz. tofu, 1 oz tempeh
- *½ cup cooked dried beans, peas, lentils, and soybeans (edamame)
- *1 oz natural cheese (Swiss, Cheddar, etc)

*Choices higher in phosphorus and/or potassium.

Milk

Milk is a protein source. You may need to limit it to <1 or up to 3 servings daily depending on your potassium and phosphorus levels.

Milk Serving Sizes

Each of these milk choices contains **8 grams of protein:**

- 1 cup milk
- 1 cup regular yogurt
- ¾ cup custard
- 2-3 oz or ½ carton of Greek yogurt
- 1 cup cream (milk-based) soup
- ½ cup ice cream
- 1 cup milk-based pudding
- 2.5 cups non-dairy substitute* (make sure non-dairy substitute does not contain phosphorus additives)

Vegetarian Diets

Many new studies have shown that eating a vegetarian-type diet that includes plant-based proteins like nuts and beans may help your kidneys stay healthier. A vegetarian diet requires balance because foods like nuts and beans have more potassium. If you want to eat more vegetarian foods, please talk to a dietitian.

Starch

Starches are important to watch if you have diabetes. If you keep your diabetes under good control it can help keep your kidneys healthier. Whole grains should make up at least half of your starches. Whole grains often have a little more potassium and phosphorus than white grains, so you may need to watch the amounts you eat. Aim for about 1-4 carbohydrate (starch) choices per meal depending on your diabetes and calorie needs.

Starch Serving Size

Each of these is equal to one starch choice.

One choice contains 15 grams of carbohydrate and about **2-4 grams of protein:**

- Biscuit (2")
- 1 dinner roll
- 1 slice bread
- ½ cup cooked cereal
- ½ hamburger bun
- ¾ cup dry cereal
- 1 muffin
- ¼ cup Grape-Nuts cereal
- 2 pancakes (4")
- 3 graham crackers (2 ½" sq.)
- 6 saltines
- 2 ½ Tbsp. Flour
- ½ cup rice/grains, cooked
- ½ cup pasta, cooked
- ½ English muffin
- 3 cups popcorn
- ½ cup potatoes
- ½ bagel
- ½ pita (6")
- 1 flour tortilla (7")
- 2 breadsticks, 4" long x ½"

Fruits and Vegetables

Because fruits and vegetables have little protein, you can use them freely in a low protein diet. They add vitamins, calories, fiber and flavor to your meals. They contain many nutrients that keep your heart, blood vessels, and kidneys healthy.

Try to eat at least 5 servings of vegetables and fruits daily. Some fruits and vegetables are big sources of potassium and you may need to limit them. These are listed in the potassium section below.

Sodium and Fluid

Limit your diet to moderate amounts of sodium and fluid. The goal of sodium and fluid control is to lessen fluid weight gain and keep your blood pressure under control.

Fluid

Fluid intake will vary depending on your type and stage of kidney disease, but you may need to limit it. Fluids include water, soups, drinks, and any foods that are liquid at room temperature. This includes ice cream, sherbet, popsicles jello, and soup.

Food	Portion Size	Fluid Content (fl oz)
Ice cream	½ cup	3 fl oz
Sherbet	½ cup	4 fl oz
Jello, plain Jello with fruit or vegetables	½ cup	2 fl oz
Popsicle	1 twin bar	2 fl oz
Yogurt	4oz	3 fl oz

Sodium

Keep your sodium intake to around 2000-2400 milligrams per day or less. To limit your sodium intake:

- Do not use salt at the table.
- Use only half the amount of salt (or less) normally used in recipes and in cooking.
- Read food labels.
- Avoid foods high in sodium as listed.

High sodium meats:

- Bacon
- Canadian bacon
- Corned beef
- Hot dogs
- Smoked fish
- Luncheon meats
- Smoked sausage
- Bratwurst
- Ham

- Herring, sardines
- Canned meat entrees
- Canned tuna

High sodium cheeses:

- Camembert
- Cheese spreads
- Roquefort
- Processed cheese (Velveeta, American)
- Gorgonzola
- Party dips

Convenience and processed foods:

- Breads and rolls with salt toppings
- Frozen dinners
- Oriental foods
- Pot pies
- Packaged entrees, rice
- Potato and noodle mixes
- Potato chips
- Tomato juice
- Canned tomatoes, sauce, paste
- Sauerkraut
- Bouillon cubes
- Gravy, sauce mixes
- Pickles, olives, relish
- Salted snack crackers
- Pretzels
- Soups, canned, frozen or dehydrated

Seasonings that contain sodium:

- Celery salt
- Chili salt
- Garlic salt
- Lemon pepper
- Horseradish
- Onion salt
- Soy sauce
- Lite salt
- Meat sauces
- Meat tenderizers
- Monosodium glutamate (MSG)
- Seasoned salt

Condiments (use in moderation):

- Peanut butter
- Ketchup
- Store-bought salad dressing
- Seasoned vinegar
- Bottled sauces: such as soy, fish, oyster, barbeque, Worcestershire sauce

Sodium-Free Substitutes

Try these spices and herbs to cut the salt but not the flavor:

- Spike Salt Free[®]
- Herbal Bouquet[®]
- Mrs. Dash[®] (all kinds)
- Durkee Smart Seasons[®]
- Lawry's Seasoned Pepper[®]
- Dried horseradish
- Onion powder
- Garlic powder
- Fresh garlic
- Scallions, onions, shallots
- Fresh, dried herbs
- Pepper (white, red, black)
- Pleasoning Mini-Mini Salt[®]
- Tabasco sauce
- Veg-it[®]

Phosphorus

You may also need to control your phosphorus intake through diet and medicines. If phosphorus builds up in the blood it can cause weak and brittle bones and itchy skin. Over time, your heart and blood vessels can become damaged.

To control phosphorus levels, you must take phosphorus-binding medicines at the proper time. Take Tums[®] (calcium carbonate), Phoslo[®], Fosrenol[®], Renvela[®], Auryxia[®], or Renagel[®] with meals as directed by your doctor.

High phosphorus dairy products:

- Milk
- Cheeses
- Yogurt
- Custard and pudding
- Ice cream and milk
- Casseroles with cheese

High phosphorus protein foods:

- Meat
- Poultry and fish
- Eggs
- Organ meats
- Dried beans and peas
- Nuts, seeds and peanut butter
- Soybeans and tofu
- Lentils
- Salmon and sardines

High phosphorus whole grain foods:

- Bran products
- Oatmeal
- Whole grain breads and cornbread
- Wheat germ

High phosphorus drinks:

- Cola
- Diet cola
- Dr. Pepper[®]
- Cherry cola

Low phosphorus drinks:

- Ginger ale
- Grape soda
- Root beer
- Slice[®]
- Club soda
- Sprite[®]/7 Up[®]
- Orange soda (except Nehi[®])

Phosphorus Additives

Many packaged food products and fast foods now contain phosphorus additives.

Phosphorus additives in food are absorbed nearly 100% into your blood, whereas the phosphorus in more natural foods like meats, beans, and nuts are only absorbed 20-60%. Because of this, you should avoid foods with phosphorus additives if you are trying to limit phosphorus.

Phosphorus additives can be found on the food label in the ingredients list as words that contain “phos,” such as phosphoric acid, hexametaphosphate, or tricalcium phosphate. Always read the ingredients list of packaged foods for “phos” foods and try to avoid them.

Potassium

Some people with kidney disease may need to limit their potassium intake. In fact, some medicines (i.e. lisinopril or enalapril) may be prescribed to help preserve kidney function but may have a side effect that causes high potassium levels. Your doctor or dietitian will tell you if your potassium level is too high or too low. You can control some of your potassium level by watching how much potassium you eat.

High Potassium Foods

The foods that contain the most potassium are the foods high in protein (dairy products, nuts, beans, and meats), and fruits and vegetables. You should avoid most salt substitutes since they also contain potassium. Be sure to check the labels on “low sodium” or “low salt” foods and avoid those that use potassium salts like “potassium chloride.” If your potassium is high, try to choose mostly low potassium foods.

Low Potassium Foods

These foods have less than 150 milligrams potassium (or 4 milliequivalents) per choice. Serving sizes are ½ cup cooked or 1 cup raw unless otherwise noted.

Fruits:

- Apple juice
- Applesauce
- Apple, med, w/o skin
- Apricots, canned
- Blackberries
- Blueberries
- Boysenberries
- Cranberries
- Cranberry sauce
- Cranberry juice
- Figs, canned
- Fruit cocktail, canned
- Gooseberries
- Grapes, canned or fresh
- Lemon, 1 medium
- Lime, 1 medium
- Nectars: peach, pear, or apricot
- Mandarin oranges
- Peaches and pears, canned
- Pear, fresh, 1 medium
- Pineapple, raw or canned
- Plums, canned
- Raspberries
- Rhubarb
- Strawberries
- Tangerine

Vegetables:

- Bamboo shoots, canned
- Bean sprouts
- Beans, green or wax
- Broccoli, fresh or boiled
- Cabbage
- Cauliflower
- Celery, 1 stalk, fresh
- Cucumber
- Eggplant

- Greens, raw, cooked: collard, dandelion, kale, mustard, turnip
- Hominy
- Leeks
- Lettuce: cos, romaine, iceberg, leaf, endive, watercress
- Mushrooms, raw
- Onion: green, red, yellow, white
- Pease, green
- Peppers, sweet or hot

Medium Potassium Group

Limit these foods to 1-2 per day if trying to limit potassium. These foods have 150-250 milligrams of potassium (4-6.5 milliequivalents) per choice. Serving sizes are ½ cup cooked or 1 cup raw unless otherwise noted.

Fruits

- Apple-1 medium with skin
- Apricots, fresh—2 medium
- Casaba, cubed
- Cherries—15 fresh or canned
- Figs, fresh—2 medium
- Grape juice, canned
- Grapefruit—1/2 medium
- Orange, 1 medium
- Orange juice: frozen, concentrate
- Peach, fresh—1 medium
- Pineapple juice
- Plums, fresh—2 medium
- Watermelon, 1 cup, cubed

Vegetables

- Asparagus, frozen, cooked
- Artichoke hearts, boiled
- Brussels sprouts
- Carrots
- Cauliflower
- Corn, canned or 1 small ear
- Garbanzo beans
- Greens, frozen, cooked: kale, turnip
- Mixed vegetables

- Okra
- Peas, green
- Potatoes, double-cooked (see below)
- Summer squash: yellow, crookneck, white scallop

Double Cooking Potatoes

This process will help lower the potassium in potatoes.

1. Wash and peel the potato.
2. Slice into thin slices.
3. Place the sliced potato in room temperature water. Use two times the amount of water to the amount of potato.
4. Bring to a boil.
5. Drain the water and add two times the amount of water to the amount of potatoes of fresh room temperature water.
6. Boil again.

High Potassium Group

Limit these to less than one serving per day if you need to limit potassium. These foods have more than 250 milligrams potassium (more than 6.5 milliequivalents) per choice. Serving sizes are ½ cup cooked or 1 cup raw unless otherwise noted.

Fruits

- Avocado-1/2 fruit
- Banana-1/2 medium
- Cantaloupe, ¼ medium
- Dried fruits: apricots, dates, figs, prunes, raisins
- Kiwi fruit, 1 medium
- Mango, 1 medium
- Nectarine, 1 medium
- Prune Juice
- Tangelo

Vegetables

- Artichoke, 1 medium
- Asparagus, raw, cooked
- Beets, beet greens
- Dried beans and peas: kidney, lima, navy, pinto, black eyed peas, split peas
- Kohlrabi
- Okra, raw, cooked
- Potato: baked, boiled or fried and unsoaked
- Pumpkin
- Rutabaga, cooked
- Spinach
- Sweet potato or yams
- Tomato, fresh or canned
- Unsalted tomato juice
- Unsalted vegetable juice
- Winter squash: acorn, butternut, Hubbard

Calories

The calories that you eat should be enough to keep a proper body weight. If your weight is below what is “normal” for you, try adding extra foods to your meals from the list below. These foods provide calories but are mostly free of protein, potassium, sodium, and phosphorus.

Fats

- 1 tsp margarine, butter, shortenings
- 1 tsp mayo, cooking oils
- 1 Tbsp salad dressings
- 1/3 of an avocado*
- 2 Tbsp sour cream or liquid cream
- 1 Tbsp powdered creamer
- ¼ cup whipped topping
- 1.5 oz. non-dairy milk substitute
- 2 Tbsp peanut butter or ¼ cup nuts*

*Nuts and avocados are a good source of healthy fat but are higher in potassium.

Sweets

- 1 tablespoon honey and jellies
- 1 tablespoon sugar
- 5 lifesavers
- ½ oz. jelly beans
- ½ oz hard candy
- ½ oz. gum drops
- 2-3 marshmallows (large)
- 1 tablespoon syrup (corn or maple)

Drinks

- Limeade
- Lemonade
- Cranberry juice
- Sorbet, Italian ice
- Apple juice
- Popsicles

Food Labels

Sodium

Sodium content in food is labeled in milligrams (mg) per serving of that food.

The Percent Daily Value listed on food labels is another way to assess sodium content. It is the percent of 2400 mg of sodium (the recommended daily intake) contained in one serving of this food.

Protein

Protein content contained in a food is labeled grams (g) per serving of that food.

Potassium and Phosphorus

Potassium and phosphorus, by law, do not need to be included on the label. Even if there is no number for potassium the food most likely still has potassium in it. Look at the ingredient list. Ingredients are listed in order of most to least in quantity.

Nutrition Facts		
Serving Size ½ Cup (114 g)		
Serving per container 4		
Amount per serving		
Calories	90	
Calories from fat	30	
% Daily Value		
Total fat	3 g	5%
Saturated fat	0 g	0%
Cholesterol	0 mg	0%
Sodium	300 mg	13%
Potassium	400mg	10%
Total Carbohydrates	13 g	4%
Dietary Fiber	3 g	12%
Sugars	3 g	
Protein	3 g	

Amount of food in one serving

Amount of sodium in one serving

Amount of protein in one serving

% of 2400 mg sodium contained in one serving

The Vegetarian Diet for Kidney Disease: Preserving Kidney Function With Plant-based Eating by Joan Brookhyser Hogan

The Gourmet Renal Nutrition Cookbook by Sharon Stall, RD, MPH

Cooking the Renal Way by Council on Renal Nutrition of Oregon

The Renal Gourmet by Mardy Peters-A Kidney Patient

Websites

- www.ikidney.com
- www.Davita.com
- www.culinarykidneycooks.com
- www.kidney.org
- www.kidneydirections.com/us/recipe/index.htm

Who to Call

If you are a UW Health patient and have more questions, please contact UW Health at one of the phone numbers listed below. You can also visit our website at www.uwhealth.org/nutrition

Resources

There are many cookbooks designed for people with kidney failure. These may help you add variety to your diet.

Books

Renal Diet Cookbook: The Low Sodium, Low Potassium, Healthy Kidney Cookbook, by Susan Zogheib

Creative Kidney Cooking for the Whole Family, by Rebekah Engum, CreativeKidneyCooking.com

Nutrition clinics for UW Hospital and Clinics (UWHC) and American Family Children’s Hospital (AFCH) can be reached at: **(608) 890-5500.**

Nutrition clinics for UW Medical Foundation (UWMF) can be reached at: **(608) 287-2770**

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person’s health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 12/2021 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#320