

# Nutrition and Hemodialysis



National Kidney  
Foundation®

[www.kidney.org](http://www.kidney.org)

**LOVE YOUR  
KIDNEYS™**

## National Kidney Foundation's Kidney Disease Outcomes Quality Initiative

Did you know that the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (NKF-KDOQI)<sup>™</sup> has guidelines that help your doctor and healthcare team make important decisions about your medical treatment? The information in this booklet is based on the NKF-KDOQI recommended guidelines.

### What is your stage of kidney disease?

There are five stages of kidney disease. They are shown in the table below. Your doctor determines your stage of kidney disease based on the presence of kidney damage and your glomerular filtration rate (GFR), which is a measure of your level of kidney function. Your treatment is based on your stage of kidney disease. Speak to your doctor if you have any questions about your stage of kidney disease or your treatment.

### Stages of Kidney Disease

Stage	Description	Glomerular Filtration Rate (GFR)*
1	Kidney damage (e.g., protein in the urine) with normal GFR	90 or above
2	Kidney damage with mild decrease in GFR	60 to 89
3	Moderate decrease in GFR	30 to 59
4	Severe reduction in GFR	15 to 29
5	Kidney failure	Less than 15

\*Your GFR number tells your doctor how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.

# Table of Contents

Nutrition and Hemodialysis . . . . . 4

Getting the Right Amount of Calories . . . . . 5

Working With Your Dietitian . . . . . 6

Getting the Right Amount of Protein . . . . . 8

Other Important Nutrients in Your Diet . . . . . 9

Handling Special Diet Needs . . . . . 16

How Your Nutritional Health is Checked . . . . . 16

Where Can You Get More Information? . . . . . 20

## Nutrition and Hemodialysis

If you are receiving hemodialysis treatments, your diet is an important part of your overall care. This booklet will tell you about some things that are important to your diet including:

- getting the right amount of calories and protein
- staying at a healthy body weight
- important nutrients in your diet
  - sodium and fluids
  - phosphorus and calcium
  - potassium
  - vitamins and minerals
- handling special diet needs
  - diabetes
  - vegetarian diets
- how your nutritional health is checked
- other resources that can help you.

This booklet has been written for adults who are receiving hemodialysis treatments. The information is based on recommendations developed by the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative to help your healthcare team provide the best care for you.

Visit [www.kidney.org/store](http://www.kidney.org/store) or call 800.622.9010 to find out more about our resources on nutrition and peritoneal dialysis, nutrition and kidney transplant and nutrition and chronic kidney disease.

## Getting the Right Amount of Calories

Getting the right amount of calories is important to your overall health and helps to give you energy to do the activities you enjoy. Calories come from all the foods you eat, and are important because they:

- give your body energy
- help you stay at a healthy body weight
- help your body use protein for building muscles and tissues.



The registered dietitian at your dialysis center will help you plan your meals to get the right amount of calories each day. The amount of calories recommended for you will depend on your individual needs. Eating the right amount of calories each day will keep you from losing weight. If you are losing weight, your dietitian may ask you to add extra sweets like sugar, jelly, jam, hard candy, honey or syrup. Other good sources of calories are fats like soft (tub) margarine, and oils like canola or olive oil. If you have diabetes, speak to your dietitian about how to safely add calories to your diet.

## **Working With Your Dietitian**

You may feel a bit confused by all the new information about your kidney disease and its treatment. You probably have many questions about your diet. Help is available to you. The staff at your dialysis center includes a registered dietitian with special training in diets for people with kidney disease. This dietitian can answer your questions about your diet and help you plan your meals to get the right foods in the right amounts.

### **Steps to Take:**

- Speak to the registered dietitian at your dialysis center.
- Ask your dietitian to help you plan meals with the right amount of calories.
- Keep a diary of what you eat each day. Show this to your dietitian on a regular basis.



- Ask your doctor and dietitian what your ideal body weight should be.
- Weigh yourself each day in the morning.
- If you are losing too much weight, ask your dietitian how to add extra calories to your diet.
- If you are slowly gaining too much weight, ask for suggestions on safely reducing your daily calorie intake and increasing your activity level.
- If you gain weight rapidly, speak to your doctor and dietitian. A sudden increase in weight, along with swelling, shortness of breath and a rise in your blood pressure may be a sign that you have too much fluid in your body.

## Getting the Right Amount of Protein

Before you started dialysis, you may have been on a low-protein diet to limit the amount of waste products in your blood. Now that you have begun dialysis, your diet will include more protein. Getting the right amount of protein is important to your overall health and how well you feel. Your body needs the right amount of protein for:

- building muscles
- repairing tissue
- fighting infections.





Protein-rich foods include:

- fresh meats
- poultry (chicken and turkey)
- fish and other seafood
- eggs or egg whites
- small servings of dairy products.

Some of these protein-rich foods may also contain a lot of phosphorus, a mineral you may need to control in your diet. Your dietitian will help you plan the right amount of each protein source for good health and strength. (For more information about phosphorus, see page 12.)

### Steps to Take:

- Ask your dietitian how much protein you need to eat each day.
- Show your daily food diary to your dietitian, and ask if you are eating the right amount of protein.

## Other Important Nutrients in Your Diet:

### *Sodium and Fluids*

Sodium is a mineral found naturally in foods. It is found in large amounts in table salt and in foods that have added table salt such as:

- seasonings like soy sauce, teriyaki sauce and garlic or onion salt
- most canned foods and some frozen dinners

- processed meats like ham, bacon, sausage and cold cuts
- salted snack foods like chips and crackers
- canned or dehydrated soups (like packaged noodle soup)
- most restaurant and take-out foods.



Eating too much sodium can make you thirsty and cause your body to hold onto more fluid. The extra sodium and fluid can cause:

- swelling or puffiness around eyes, hands or feet
- fluid weight gain
- shortness of breath
- a rise in blood pressure
- more work for your heart.

Follow your recommended sodium allowance, but give yourself time to adjust to the flavor of less salt on foods. Learn to flavor your foods with herbs and spices instead of table salt. Do NOT use salt substitutes containing potassium unless approved by your doctor.

Your doctor or dietitian will help you determine the right amount of fluid to drink each day. A sudden increase in weight, along with swelling, shortness of breath or a rise in your blood pressure may be signs that you are drinking too many fluids. Tell your dialysis care team if you are having any of these problems. Check your weight at the beginning of each treatment. Ask your dietitian for creative ways to cut down on the amount of fluid you are drinking.

#### TIP

To cut down on sodium, try using fresh or dried herbs and spices instead of salt to enhance the flavor of your foods. Also, try adding a dash of hot pepper sauce or a squeeze of lemon for flavor.

### ***What is Fluid?***

Fluid is any food or beverage that is liquid at room temperature. Some examples are:

- ice
- beverages like coffee, tea, sodas, juices and water
- frozen desserts such as ice cream, sherbet or popsicles
- gelatin
- gravy and soups.

## **Phosphorus and Calcium**

**Phosphorus** is a mineral found in all foods. Large amounts of phosphorus are found in:

- dairy products such as milk, cheese, yogurt, ice cream and pudding
- nuts and peanut butter
- dried beans and peas such as kidney beans, split peas and lentils
- beverages such as cocoa, beer and dark cola drinks.



Phosphorus additives are in processed meats such as chicken nuggets and hot dogs, refrigerated bakery products and some beverages.

Eating foods high in phosphorus will raise the amount of phosphorus in your blood. Dialysis cannot remove all of this phosphorus. When phosphorus builds up in your blood, calcium is pulled from the bones. Over time, your bones will become weak and break easily. A high level of phosphorus in your blood may also cause calcium phosphorus crystals to build up in your joints, muscles, skin, blood vessels and heart.

These deposits may cause serious problems such as bone pain, damage to the heart and other organs, poor blood circulation and skin ulcers.

To keep blood phosphorus at safe levels, you will need to limit phosphorus-rich foods, and you may need to take a type of medicine called a phosphate binder. These binders are taken with your meals and snacks.

#### TIP

Using non-dairy creamers and recommended milk substitutes in place of milk is a good way to lower the amount of phosphorus in your diet. Read nutrition labels to look for the word phosphorus or a shortened "phos" in the ingredients of processed foods.

**Calcium** is a mineral that is important for building strong bones. However, foods that are good sources of calcium are also high in phosphorus. The best ways to prevent loss of calcium from your bones are to follow a diet that limits high-phosphorus foods and to take phosphate binders. Your doctor may also prescribe a special form of vitamin D to help keep calcium and phosphorus levels in balance and to prevent bone disease. Do not take over-the-counter vitamin D unless recommended by your kidney doctor.

## **Potassium**

Potassium is another important mineral found in food. Potassium helps your muscles and heart work properly. Too much or too little potassium in the blood can be dangerous. With hemodialysis, you will probably need to limit your intake of high-potassium foods. The level of potassium in your blood will be checked every month, and your dietitian will help you plan a diet that will give you the right amount of potassium. Large amounts of potassium are found in:

- certain fruits and vegetables (like bananas, melons, oranges, potatoes, tomatoes and some juices)
- milk and yogurt
- dried beans and peas
- most salt substitutes
- protein-rich foods such as meat, poultry, pork and fish.

## **Vitamins and Minerals**

Eating a wide variety of foods gives your body the vitamins and minerals it needs each day. In addition to a good diet, your doctor may order special vitamin and mineral supplements. Kidney disease and dialysis change the amounts of vitamins and minerals your body needs. Also, your special diet may limit some food groups that would normally provide important

vitamins and minerals. Take only those supplements ordered by your kidney doctor since certain vitamins and minerals can be harmful if you are on dialysis. Also, check with your doctor before using any herbal remedies, as some of these may be harmful for people with kidney disease.



## Handling Special Diet Needs

### ■ *Diabetes and Your Special Diet*

You may need to make only a few changes in your diabetic diet to fit your needs on hemodialysis. You may need to drink less milk and eat less potassium-rich fruits and vegetables. Your dietitian will help develop a meal plan especially for you.

### ■ *Vegetarian Diets (Plant-based Diets)*

Most vegetarian diets are not rich in protein. Eating enough calories is an important way to use these smaller amounts of protein for important jobs like building muscle, healing wounds and fighting infections. Talk with your dietitian about the best choices of vegetarian protein with lower amounts of potassium and phosphorus. Also, monitor your blood protein (albumin) levels closely with your dietitian to make sure you are getting the right amount of calories and protein.

## How Your Nutritional Health is Checked

There are several different ways for your doctor and dietitian to determine if you are eating the right amount of calories or protein. The following sections explain these tests and methods. If your results are not what they should be, ask how to improve them.

### ■ *Dietary Interviews and Food Diaries*

Your dietitian will speak to you at times about your diet. The dietitian may also ask you to keep a record of what you eat each day. If you are not eating the



right amount of protein, calories and other nutrients, your dietitian will give you ideas about food choices that will help to improve your diet.

■ *Lab Tests for Protein Balance:*

□ Serum Albumin

Albumin is a type of protein found in your blood. Your albumin level will be checked by a blood test each month. If your level is too low, it may mean you are not eating enough protein or calories. If your serum albumin level continues to be low, you have a greater chance of getting infections, being hospitalized or generally not feeling well.

□ nPNA (normalized protein nitrogen appearance)

This is another way to determine if you are not eating the right amount of protein. The nPNA result comes from lab studies that include a urine collection and blood work. Your nPNA helps to check the protein balance in your body.

□ Physical Nutrition Exam

Your dietitian may use a method called **Subjective Global Assessment (SGA)** to check your body for signs of nutrition problems. This involves asking you questions about your food intake and looking at the fat and muscle stored in your body.

The dietitian will consider:

- changes in your weight
  - changes in the tissues around your face, arms, hands, shoulders and legs
  - your food intake
  - your activity and energy levels
  - problems that might interfere with eating.
- *Other Tests That Tell About Your Nutritional Health:*
- Amount of Dialysis You Receive

Every month, tests will be used to determine if you are getting the right amount of dialysis to keep you in good health. Blood is tested at the beginning and the end of one of your dialysis treatments. You may also be asked for a urine sample. This information will provide a way to measure dialysis, called **Kt/V** (pronounced “kay tee over vee”) and **urea reduction ratio (URR)**. A low Kt/V (or a low URR) may mean that you are not getting enough dialysis. Low amounts of dialysis can keep you from feeling, sleeping or eating well. To keep your Kt/V and URR levels as high as possible, it is very important to come to all of your treatment sessions and stay for the full treatment time as ordered by your doctor.

## □ Serum Creatinine

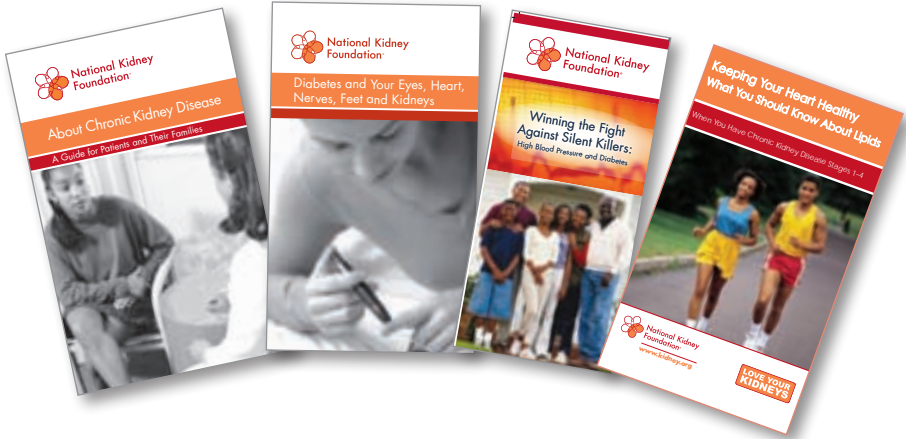
Creatinine ("cre-at-i-nine") is a waste product in your blood that comes from the normal function of your muscles. Your creatinine level may rise as your kidney function falls. Creatinine levels can be lowered during dialysis and by any remaining kidney function. Creatinine can also be lowered by not eating enough calories and protein, as well as by weight loss. If your creatinine level is decreasing, ask your doctor or dietitian whether this change is related to your diet, your dialysis or your kidney function.

### Steps to Take:

- Ask your doctor and dietitian which tests will be used to check your nutritional health.
- Ask for a copy of the *Dialysis Report Card* and track your results.
- If your numbers are not what they should be, ask your doctor and dietitian how you can improve them.



## Where Can You Get More Information?



If you have questions, speak with your healthcare team. They know you and can answer questions about you.

If you want to read more about kidney disease, the National Kidney Foundation has more than 50 other publications that cover many subjects such as:

- CKD risk factors like hypertension and diabetes
- Complications of chronic kidney disease such as cardiovascular disease, anemia or bone problems
- Nutrition for CKD patients with information about carbohydrates, protein, sodium, phosphorus and potassium

- Treating kidney disease early
- Treating kidney failure with transplantation or dialysis.

There are two ways to learn about the many free resources available to you:

- Call the National Kidney Foundation at 800.622.9010.
- Visit the National Kidney Foundation website ([www.kidney.org/store](http://www.kidney.org/store)).

(All publications are free, but there is a limit of five per person.)

Becoming an educated patient is very important to being healthy!



## Notes

## Notes

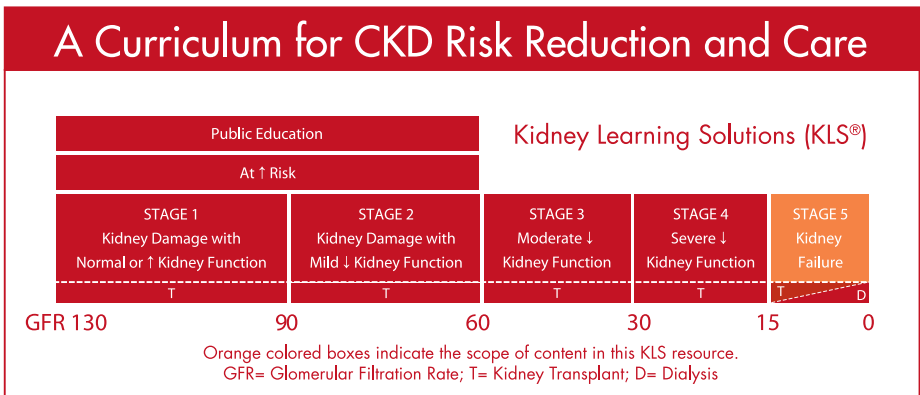
# National Kidney Foundation

The National Kidney Foundation (NKF) is dedicated to preventing kidney diseases, improving the health and well-being of individuals and families affected by these diseases and increasing the availability of all organs for transplantation.

With local offices nationwide, the NKF provides early detection testing and other vital patient and community services. The Foundation conducts extensive public and professional education, advocates for patients through legislative action, promotes organ donation and supports kidney research to identify new treatments.

In 2009 NKF launched a groundbreaking multifaceted collaborative initiative to **“END THE WAIT!”** for a kidney transplant in the United States in 10 years by using proven strategies to eliminate barriers to donation and institute best practices across the country.

The NKF relies on individual and corporate donations, foundation and government grants, membership and special events to support its range of programs, services and initiatives.



National Kidney Foundation  
30 East 33rd Street  
New York, NY 10016  
800.622.9010

[www.kidney.org](http://www.kidney.org)

