

# Nutrition and Chronic Kidney Disease (Stages 1–4)

Are You Getting What You Need?



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™) develops guidelines that help your doctor and health care team make important decisions about your medical treatment? The information in this booklet is based on the NKF-KDOQI recommended guidelines for anemia.

### Stages of Chronic Kidney Disease

There are five stages of chronic 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.



## **Why is good nutrition important for people with kidney disease?**

Making healthy food choices is important to us all, but it is even more important if you have chronic kidney disease (CKD). Why? Good nutrition gives you energy to:

- do your daily tasks
- prevent infection
- build muscle
- help maintain a healthy weight
- keep your kidney disease from getting worse.

## **Will I need to change my diet if I have kidney disease?**

There is no one eating plan that is right for everyone with kidney disease. What you can or cannot eat will change over time, depending on how much kidney function you have and other factors, like having diabetes, for example. Your doctor can refer you to a dietitian with special training who can teach you how to choose foods that are right for you.

## **What are the basics of good nutrition?**

A healthy eating plan gives you the right amount of:

- protein
- calories
- vitamins
- minerals.

You will need to choose foods that give you the right amounts of protein, calories, vitamins and minerals each day. This will help to keep you healthy and fit. It may also help to keep your kidney disease from getting worse.

## TIP

If you need help finding a dietitian who specializes in kidney disease, you can ask your doctor for a referral or contact the American Dietetic Association at 800.877.1600 ([www.eatright.org](http://www.eatright.org))

## Why do I need protein?

Protein is an important nutrient. Your body needs protein to help build muscle, repair tissue and fight infection. But if you have kidney disease, you may need to closely monitor the protein you eat to prevent protein wastes from building up in your blood. This can help your kidneys work longer. Your doctor will tell you if you need to limit how much protein you eat



each day. Decisions are based on stage of kidney disease, the status of nutrition, muscle mass, and other factors. It is important that your protein intake is not too low, either. Let the experts help you.

You get protein from:

- red meats (beef, veal, lamb)
- pork
- poultry (chicken and turkey)
- fish and other seafood
- eggs
- vegetables and grains.\*

Your dietitian can help you learn how to maintain good nutrition, eat the right amount of protein and help your kidneys too.

#### TIP

There are two kinds of proteins. "Higher quality" proteins are found in animal products like meat, poultry, fish and eggs. They are the easiest proteins for your body to use. "Lower quality" proteins are found in vegetables and grains. A well-balanced diet for kidney patients should include both kinds of proteins every day.

\*This food list is not complete.

## How many calories do I need?

Every person is different. Calories are like fuel—they provide your body with the energy you need to live. They are important because they:

- help you stay at a healthy body weight
- give you energy to do your daily tasks and remain active
- help your body use the protein in food to build muscles and tissues. (Without enough calories, your body will "waste" protein to provide you with energy instead of using protein to build your muscles and tissues.)

It is important to plan meals that give you enough calories each day. Otherwise, your body may not have the energy you need to stay healthy. Your dietitian can help you do this. Some people may be advised to eat more calories. They may need to eat extra sweets like sugar, jam, jelly, hard candy, honey and syrup. Other good sources of calories come from fats such as soft (tub) margarine and oils like canola or olive oil.

## How do I get enough vitamins and minerals?

Do you know how most people get enough vitamins and minerals to stay healthy? By eating a wide variety of foods each day. However, if you have kidney disease, you may need to limit some foods that would normally give you important vitamins and minerals. If so, you may need to take special vitamins or minerals instead. Other tips:

- Take only the vitamins and minerals your doctor recommends, because some vitamins and minerals may be harmful to people with CKD.
- Check with your doctor before taking any herbal supplements or medicines you can buy without a doctor's prescription. Some may be harmful to people with kidney disease.

Your doctor and dietitian will tell you which are good choices for you.

## How will I know if I am getting enough calories and nutrients?

Your doctor will give you blood tests and urine tests. These will help show whether or not you are getting enough nutrients. You may also be asked to keep a food diary. Additionally, your dietitian may interview you to find out about the foods you eat. To learn more about the tests your doctor and dietitian will use to check your nutrition, see page 25.

### TIPS

- Ask your doctor or dietitian which tests will be used to check your nutritional health.
- Discuss the results of the tests with your doctor or dietitian.

## What if I don't want to eat or don't like my food choices?

As a person with CKD, it may be difficult to get enough nutrients from food, especially if you are on a limited-protein diet. Many people with kidney disease also find it hard to eat enough calories each day. Nutritional supplements can help you get the calories

and nutrients you need. Ask your dietitian if they are right for you. Supplements can come in the form of liquid drinks, shakes, juices, bars, soups, cookies, puddings and more. Many supplements are available, but some nutritional supplements are made just for people with kidney disease, diabetes or kidney failure. Some examples of supplements suitable for people with **kidney disease** are:

- Renalcal®
- Suplena® with Carb Steady®.\*

If you have been taking a supplement for people with diabetes, speak with your doctor about whether you should continue taking it. Examples of these are:

- Boost® Glucose Control Beverage
- Glucerna® shakes, cereals or bars
- Nutren® Glytrol™
- Re/Gen® Reduced Sugar formula
- Resource® No Sugar Added Health Shake®.\*

## TIP

If you have diabetes and chronic kidney disease (CKD), ask your dietitian how to get the right amount of calories and keep your blood sugar in control. Adding sweet, high-caloric foods to your meals may not be a good choice for you.

An example of a supplement for a person with diabetes and kidney disease is:

- Suplena with Carb Steady®.

Ask your doctor about which **dietary supplements** that supply extra calories, protein and nutrients would be best. Examples are:

- Boost Plus® Drinks, Boost Smoothie® or Boost® High-Protein Drinks
- Carnation® Instant Breakfast® Drinks
- Carnation® Instant Breakfast® VHC
- Enlive® Drinks
- Ensure® Shakes (Ensure Fiber, Ensure High-Calcium, Ensure Plus)
- Resource Breeze®.\*

Check with your doctor or dietitian before taking any supplement.

\*This list does not contain all available products.



## **How will I know if I need a nutritional supplement?**

Your doctor and dietitian will tell you if you need to take nutritional supplements. Use only the supplements recommended by your doctor or dietitian. Remember, not all people with kidney disease have the same dietary needs. Depending on what you eat, you may need less protein, but someone else might need extra protein. Or you may need extra calories, but someone else might need fewer calories. Your dietitian will help you choose the right supplements for you.

## Will I need to control any other nutrients?

You may need to balance fluids and other important nutrients too.

They are:

- sodium
- phosphorus
- calcium
- potassium.

## Sodium

Sodium is a mineral found in most foods. It is also found in table salt.

Sodium affects blood pressure and water balance in your body.

Healthy kidneys can regulate sodium in your body. But if your kidneys do not work well, sodium and fluid build up in your body.

This can cause high blood pressure and other problems like swelling of your ankles, fingers or eyes.

Your doctor or dietitian will tell you whether you need to limit sodium.

You can limit sodium by avoiding table salt and foods such as:

- seasonings like soy sauce, sea salt, teriyaki sauce, garlic salt or onion salt

- most canned foods and frozen dinners (unless they say "low sodium")
- processed meats like ham, bacon, hot dogs, sausage and deli meats
- salted snack foods like chips and crackers
- canned or dehydrated soups (like packaged noodle soup)
- most restaurant foods, take-out foods and fast foods.\*

Your dietitian can teach you how to choose foods that are lower in sodium. Learning how to read food labels can help you choose foods with less sodium.

#### TIPS

- Do NOT use salt substitutes unless approved by your doctor.
- Try fresh or dried herbs and spices instead of table salt to enhance the flavor of foods. When you limit salt, you may have to use more herbs and spices to get more flavor. Also, try adding a dash of hot pepper sauce or a squeeze of lemon juice for flavor.

## Phosphorus

People with CKD may need to closely monitor phosphorus in foods, especially if their kidney disease is advanced. Phosphorus is a mineral found in many 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
- bran breads and bran cereals.\*

Eating high-phosphorus foods can raise the level of phosphorus in your blood. Your kidneys may not be able to remove all of this extra phosphorus. What happens when phosphorus builds up in your blood? Your blood calcium levels drop and calcium is pulled from the bones. Over time, your bones will become weak and break easily. A high level of phosphorus

\*This food list is not complete.



in your blood may also cause calcium to build up in your blood vessels, heart, joints, muscles and skin where it does not belong. This may cause serious problems such as:

- damage to the heart and other organs
- poor blood circulation
- bone pain
- skin ulcers.

To keep phosphorus at safe levels in your blood, you may need to limit phosphorus-rich foods. You may also need to take a type of medicine called a *phosphate binder*. These binders are taken with your meals and snacks. Your doctor will tell you if you need to limit high-phosphorus foods or take phosphorus binders.

## TIP

Using non-dairy creamers and recommended milk substitutes in place of milk is one way to lower the amount of phosphorus in your diet.

## Calcium

Calcium is a mineral that is important for building strong bones. However, foods that are good sources of calcium are often also high in phosphorus. The best way to prevent loss of calcium from your bones is to limit high-phosphorus foods. You may also need to take phosphate binders and avoid eating calcium-fortified foods. Your doctor may have you take a special form of vitamin D as well to help keep calcium and phosphorus levels in balance and to prevent bone disease. **Do not take over-the-counter vitamin D or calcium supplements unless recommended by your kidney doctor.**

## Potassium

Potassium is another important mineral found in most foods.

Potassium helps your muscles and heart work properly. Large amounts of potassium are found in:

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

Too much or too little potassium in the blood can be dangerous. Some people with kidney disease need more potassium; others need less. How much you need depends on how well your kidneys are working. It also depends on whether or not you are taking any medicine that changes the level of potassium in your blood. Blood tests will show how you are doing.

\*This food list is not complete.

## TIPS

How do you know if your potassium is normal? A simple blood test can check your potassium level. If it is not normal, you may need to take:

- potassium supplements
- special medicine to help get rid of too much potassium.

Take only the supplements your doctor recommends. Your dietitian can help you plan a diet that will give you the right amount of potassium.

## Fluid

Most people with kidney disease do not need to limit the amount of fluids they drink if they are in the earlier stages of kidney disease. [If you do not know your stage of kidney disease, ask your doctor or contact the National Kidney Foundation for additional information (800.622.9010).]

If your kidney disease gets worse, your doctor will let you know if you need to limit fluids and how much fluid is okay for you each day. You also want to avoid dehydration, so let the experts help you plan.

## TIPS

- Learn to read food labels so you know what you are eating. Reading labels can help you shop for foods with lower sodium and to check for “added” nutrients that may not be best for you.
- Herbs, spices, table wine and special vinegar can be used instead of salt to make your food flavorful. Try purchasing or growing fresh herbs. Try adding a dash of hot pepper sauce or a squeeze of lemon juice for flavor. Ask your dietitian for a list of herbs and spices that blend with different types of foods.
- Non-dairy creamers can be used in place of milk in cereals, coffee and many sauces. This is a good way to lower the amount of phosphorus in your diet.

## What if I have diabetes?

You may need to make a few changes in your diet if you have diabetes and kidney disease. If your doctor says that you should eat less protein, your diet may need to include more carbohydrates or high-quality fats to give you enough calories. Work with your dietitian to make

a meal plan that is right for you. Ask your doctor how often to test your blood sugar level. Try to keep your levels under control. Your dosage of insulin or other medications may need to change if your kidney disease gets worse. Contact your doctor if your blood sugar levels are too high or too low.

### **What if I'm a vegetarian?**

Most vegetarian diets are not rich in higher quality protein. But eating a variety of foods and getting enough calories can help. Without enough calories, your body will break down the protein you eat to create energy instead. If protein is broken down, more waste products have to be removed by your kidneys. Ask about ways to check that



the amount of protein you are eating is right for you. Talk with your dietitian about the best sources of vegetable protein with lower amounts of potassium and phosphorus. Your doctor or dietitian can check your blood to make sure you are getting the right amount of protein and calories.

## What if I need help planning meals?

Your doctor can refer you to a registered dietitian with special training in kidney disease. This dietitian can:

- help you choose foods that will give you the right nutrients in the right amounts
- explain why the diet changes you need to make are important
- answer your questions.

### TIP

Help from a dietitian is very important for people with kidney disease. You may be eligible for reimbursement for nutrition counseling with a dietitian under Medicare or under your health insurance plan.

(See [www.medicare.gov](http://www.medicare.gov).)

## Where can I get more information?

You can speak to your doctor or other members of your health care team, or you can call the National Kidney Foundation for information (800.622.9010). To learn more about kidney disease, you may also want to read some of the free publications from the National Kidney Foundation:

### Brochures:

- *About Chronic Kidney Disease: A Guide for Patients and their Families* (English 11-50-0160; Spanish 11-50-0166)
- *Diabetes and Chronic Kidney Disease (Stages 1–4)* (English 11-10-0209; Spanish 11-10-0240)
- *Dining Out with Confidence: A Guide for Kidney Patients* (11-10-0405)
- *GFR (Glomerular Filtration Rate): A Key to Understanding How Well Your Kidneys Are Working* (11-10-1813)

- *Staying Fit with Kidney Disease* (11-10-0502)
- *Your Kidneys: Master Chemists of the Body* (11-10-0103).

## **Fact Sheets:**

Fact sheets can be found online at: [www.kidney.org/atoz/](http://www.kidney.org/atoz/)

- *How to Increase Calories in Your CKD Diet*
- *Phosphorus and Your CKD Diet*
- *Potassium and Your CKD Diet*
- *Sodium and Your CKD Diet: How to Spice Up Your Cooking*
- *Vitamins and Minerals in Kidney Disease.*

For further information, contact the National Kidney Foundation toll-free: 800.622.9010 or visit our Web site at [www.kidney.org](http://www.kidney.org). Also, for our local Affiliates and Divisions visit [www.kidney.org/about/offices.cfm](http://www.kidney.org/about/offices.cfm)

## How is my nutritional health checked?

You will be checked regularly by your doctor and dietitian to make sure you are getting good nutrition. Some tests are:

### ■ Physical Nutrition Exam

Your dietitian may give you an exam to check your body for signs of nutrition problems. This exam is called a *Subjective Global Assessment* (SGA). Your dietitian asks you questions about your food intake and looks at the fat and muscle stores in your body. The dietitian notes:

- 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.

### ■ Dietary Interviews and Food Diaries

Your dietitian will ask about what you eat. You might also be asked to keep a diary of everything you eat each day. Your dietitian wants to see if you are eating the right amount of protein, calories, vitamins and minerals.

*Continued*

## ■ Serum Albumin

Albumin is a type of protein in your blood. It is checked by a blood test. If your albumin level is too low, it may mean you are not eating enough protein or calories. Or, it may mean that albumin is being lost in the urine, in which case eating more protein won't help. If your albumin level continues to be low, you have a greater chance of getting an infection, not healing properly, not feeling well, and being hospitalized. Your doctor or dietitian will tell you if you need extra protein.

## ■ nPNA (normalized protein equivalent of nitrogen appearance)

Your nPNA estimates how much protein you are eating. It helps your doctor and dietitian check to see if you are eating the right amount of protein. The nPNA result comes from urine and blood tests.



## How can I be my own best advocate?

To strengthen and unify the voices of all people affected by CKD, the National Kidney Foundation established an organization called **"People Like Us."**

Who has joined **"People Like Us"**? This growing movement includes individuals with CKD, transplant recipients, donors, family members and others who are learning about and taking action on issues that affect their health. Through **"People Like Us,"** those who care about kidney diseases have new power. Together, they can use their voice in the public policy process. They can join in decision-making about the best treatment options for "people like us."

To join in the efforts of this strong and effective patient advocacy organization, please visit **www.nkfpeoplelikeus.org** or call us at 800.622.9010. You can also e-mail us at **peoplelikeus@kidney.org**



**National Kidney  
Foundation\***

**PEOPLE LIKE US**



### TIP

If you have questions or are unsure about anything, write down your questions before you go to your doctor or nutritionist. Once you are there, it is easy to forget what you wanted to talk about. Make sure you ask what each test result means and what your options are. You need to understand the treatment plan. It is your health, so never feel uncomfortable about asking anything. Make sure you are involved in the decision-making process for your health.

## Questions to ask:

- Do I need to limit how much protein I eat?  
 Yes                       No

If I do, how many grams of protein should I eat?

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- How many calories do I need?
- How many ounces of fluid are best for me?

- Is my potassium level too high or too low?  
 Yes                       No

- Do I need a nutritional supplement?  
 Yes                       No

If I do, which one is best for me?

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- Should I take vitamins?  
\_\_\_ Yes                      \_\_\_ No

If I should, which ones should I take?

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Other questions:

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## Notes

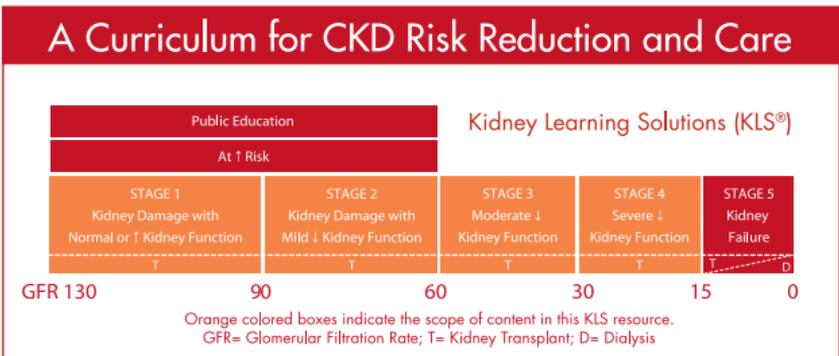
# National Kidney Foundation

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 screenings 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®**

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