

# Nutrition and Kidney Failure (Stage 5)

Are You Getting What You Need?



National Kidney  
Foundation®

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

[www.treatmentok.com](http://www.treatmentok.com)

**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?**

Eating healthy is important to us all, but it is even more important if you have kidney failure. Why? Good nutrition gives you energy to:

- do your daily tasks
- prevent infection
- build and maintain muscle
- help maintain a healthy weight.

## **Will I need to change what I eat if I have kidney failure?**

There is no one eating plan that is right for everyone with kidney failure. The foods and supplements that are recommended for you depend on many factors and may change

over time. Your doctor can refer you to a dietitian with special training who can teach you how to choose foods and supplements that are right for you.

#### TIP

If you need help finding a dietitian who specializes in chronic kidney disease (CKD), 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)).

## 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 make choices that give you the right amounts of protein, calories, vitamins and minerals each day. This will help you stay healthy.

## Why do I need protein?

Protein is an important nutrient. Your body needs protein to help build muscle, repair tissue and fight infection. Before you started dialysis, a limited-protein diet may have been recommended. The goal then was to prevent wastes from building up in your blood. Now that you have begun dialysis, your diet may include more protein.

Getting the right amount of protein is important to your overall health and how well you feel. You get protein from:

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

Some of these high-protein foods may also contain a lot of phosphorus. Foods low in phosphorus might be right for you. Your dietitian can help you plan how much protein you

\*This food list is not complete.

need to eat each day. (For more information on phosphorus, see page 15.)

#### 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.

## How many calories do I need?

Everyone 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.)

If you are not getting enough calories from your diet, you may need to eat extra sweets like sugar, jam, jelly, hard candy, honey and syrup, unless you also have diabetes. Other good sources of calories come from fats such as soft (tub) margarine and oils like canola or olive oil. 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.

#### TIPS

- If you have diabetes and kidney failure, ask your dietitian how to get the right amount of calories and keep your blood sugar in control.
- If you are on peritoneal dialysis, you may have difficulty eating enough protein and calories. When you first begin peritoneal dialysis, the dialysis solutions may give you a sense of fullness in your stomach. Many people on peritoneal dialysis find that eating smaller meals five or six times a day is a good strategy. This can provide the nutrients you need.



## **How can I get enough vitamins and minerals?**

Do you know how most people get enough vitamins and minerals to stay healthy? They eat a wide variety of foods each day. However, kidney disease and dialysis change the amount of vitamins and minerals your body needs. Also, your special diet may limit some food choices that would normally give you important vitamins and minerals.



If so, you may need to take special vitamins or minerals instead. Be sure to:

- Take only the vitamins and minerals your doctor recommends, because some vitamins and minerals may be harmful to people with kidney failure.
- 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.

### **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 you are getting enough nutrients. Your dietitian may also interview you to find out about the foods you eat. You may also be asked to keep a food diary. To learn more about the tests your doctor and dietitian will use to check your nutrition, see page 26.



## **What should I do if I am not getting enough nutrients?**

As a person with kidney failure, 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. They may have a poor appetite. Nutritional supplements can help you get the calories and nutrients you need. 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 diabetes and/or kidney failure.

Some examples of supplements suitable for people on **dialysis** are:

- Magnacal Renal®
- Nepro® with Carb Steady™
- Novasource® Renal
- Re/Gen®
- Renalcal®.\*

If you were taking a supplement for people with diabetes before you were on dialysis, you should check with your doctor about continuing it when you are on dialysis. Examples of these are:

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

There are many examples of protein-only supplements. Some examples are:

- ProMod®
- ProSource®

\*This list does not contain all available products.

- ProStat® RC (Renal Care)
- Resource® Beneprotein®
- Unjury®.\*

Discuss with your doctor or dietitian which are most suitable for you. Do not take any supplements without their advice.

### **What if I am not hungry?**

It is important to get good nutrition even when you don't have an appetite. You still need calories, nutrients and protein. Get help from your dietitian. You may be told to try a nutritional drink or you may be given other ideas.

Remember, not all people with kidney failure have the same dietary needs. Depending on what you eat and whether or not you are on dialysis therapy, 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.

\*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 essential minerals and electrolytes as:

- sodium
- phosphorus
- calcium
- potassium.



## Sodium

Sodium is a mineral found in most foods. It affects blood pressure and water balance in your body. Healthy kidneys 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 if you need to limit sodium.

Sodium is found in large amounts in table salt and in foods that have added salt 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. **Do NOT use salt substitutes containing potassium unless approved by your doctor.**

#### TIP

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

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

\*This food list is not complete.

- 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 levels of phosphorus in your blood. Dialysis cannot remove all of this extra phosphorus. What happens when phosphorus builds up in your blood? Your blood calcium level drops and calcium is pulled out of the bones. Over time, your bones can become weak and break easily. A high level of phosphorus in your blood may also cause calcium to build up in your blood vessels, heart, joints, muscles and skin where it doesn't belong. This may cause serious problems, such as:

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

\*This food list is not complete.



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

Do not take vitamin D or calcium supplements on your own, unless they are recommended by your kidney doctor.

## 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 also have you take 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 or calcium supplements unless recommended by your kidney doctor.

### 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.
- 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.



## 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. Not everyone needs the same amount of potassium in their food. Some people on dialysis need more potassium; others need less. Each person is different. How much you need depends on many factors, including whether you are taking any medicine that changes the

\*This food list is not complete.

level of potassium in your blood. Your dialysis team may make adjustments to help you.

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

### TIP

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:

- work with your dietitian on it
- take a special medicine to help get rid of too much potassium.

## Fluid

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

- ice
- beverages like coffee, tea, sodas, juices and water
- frozen desserts like ice cream, sherbet or popsicles
- gelatin
- gravy and soup.\*

\*This food list is not complete.

If you have kidney failure, you may need to limit how much fluid you drink each day. Your doctor or dietitian will help you plan the right amount of fluid to drink each day. You may be drinking too much fluid if you have:

- a sudden increase in weight
- swelling or puffiness around the eyes, hands or feet
- shortness of breath
- a rise in blood pressure.

Tell your dialysis care team if you are having any of these problems.

Weigh yourself at the beginning of each treatment. The amount of weight you gain between one dialysis treatment and the next tells you how much fluid you are drinking. The dialysis staff will let you know if you are gaining too much fluid weight. Ask your dietitian for creative ways to cut down on the amount of fluid you are drinking.

#### TIPS

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



## Are you on peritoneal dialysis?

Some people on peritoneal dialysis may gain unwanted weight over time. This happens because the dialysis fluid used for exchanges contains a sugar called **dextrose**. Solutions that contain more dextrose help to remove extra fluid from your blood. However, dextrose contains calories, which can lead to unwanted weight gain. And if you have diabetes, the extra sugar from your dialysis solution can cause your blood sugar to rise. What can you do to help prevent unwanted weight gain or high blood sugar?

- Ask the dietitian at your dialysis center for help planning meals that will prevent extra weight gain and high blood sugar.
- If you've been told to limit sodium and fluid, be sure to follow these instructions carefully. This can help prevent the need for higher sugar solutions in your dialysis fluid.
- Ask your doctor if you need to change your medications to help control blood sugar.

## What if I have diabetes?

You may need to make a few changes in your diet if you have kidney failure. For example, you may need to:

- drink less milk
- eat fewer potassium-rich fruits and vegetables
- eat more protein
- eat fewer carbohydrates (desserts, breads, rice, tortillas, pasta and similar foods).

Work with your dietitian to make a meal plan that is right for you. Ask your doctor how to test your blood sugar level. Check your levels often and try to keep them under control. With kidney failure, your dosage of insulin or other medications may need to change. 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. 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 build up in your blood. Dialysis cannot remove all of these waste products. 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))



## 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.

### ■ 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 is dialysis treatment monitored?

You need the right amount of dialysis each month to stay healthy. Without enough dialysis, you may not feel well, sleep well or eat well. How does your doctor know if you are getting enough dialysis? If you are on hemodialysis, your blood is tested at the beginning and at the end of one of your treatments.

This information provides a way to measure dialysis and is 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. 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.

If you are on peritoneal dialysis (PD), Kt/V is measured from a blood test, a 24-hour collection of urine and a 24-hour collection of the bag exchange fluid. To

keep your Kt/V at an optimal level, it is important to follow your PD treatment as directed.

### TIPS

- Ask your doctor and dietitian which tests will be used to check your nutritional health.
- Ask for a copy of the Dialysis Lab Log or your lab report. Track your results.
- If your numbers are not as they should be, ask your doctor and dietitian how you can improve them.

## How can I be my own best advocate?

To strengthen and unify the voices of all people affected by chronic kidney disease (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  
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**PEOPLE LIKE US**

## Where can I get more information?

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

### Brochures:

- *Diabetes and Chronic Kidney Disease (Stage 5)* (English 11-10-0238; Spanish 11-10-0243)
- *Dining Out with Confidence: A Guide for Kidney Patients* (11-10-0405)
- *Hemodialysis: What You Need to Know* (English 11-50-0214; Spanish 11-50-0219)
- *Living Well on Dialysis: A Cookbook for Patients and Their Families* (01-10-0420)
- *Managing Anemia When You Are on Dialysis* (English 11-50-0217; Spanish 11-50-0223)
- *Nutrition and Hemodialysis* (11-50-0136)
- *People Like Us: Good Nutrition* (English 01-40-3032; Spanish 01-40-3064)

- *Take Steps to Keep Your Bones Healthy and Strong: For People with Chronic Kidney Disease (Stage 5)* (11-10-0228)
- *Travel Tips for Kidney Patients* (Booklet) (11-10-0513).

## **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.*

To obtain a copy of these free publications or information about other National Kidney Foundation resources, contact your local National Kidney Foundation affiliate, or call the national toll-free number, 800.622.9010. Also, visit the website of the National Kidney Foundation's Kidney Learning System at **[www.kidney.org/KLS](http://www.kidney.org/KLS)**





### Questions to ask:

- How many grams of protein should I eat?
- How many calories do I need?
- How many ounces of fluid are best for me?
- Do I need a nutritional supplement?  
\_\_\_\_\_Yes      \_\_\_\_\_ No
- If I do, which one is best for me?

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- Do I need to eat foods low in phosphorus?

\_\_\_ Yes

\_\_\_ No

- Is my level of potassium too high or too low for me?

\_\_\_ Yes

\_\_\_ No

- 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

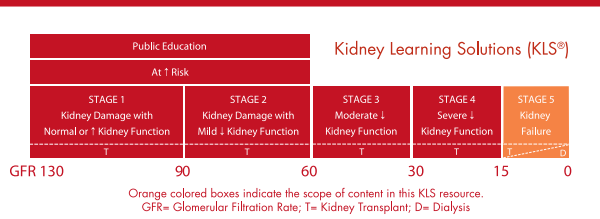
The National Kidney Foundation (NKF) is dedicated to preventing kidney diseases, improving the health and well-being of individuals and families affected by these diseases and increasing the availability of all organs for transplantation.

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.

## A Curriculum for CKD Risk Reduction and Care



**National Kidney Foundation®**

**Kidney Learning Solutions™**

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

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



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