STAGE
5

Nutrition and Transplant

NATIONAL KIDNEY
FOUNDATION®

Stages of chronic kidney disease

There are 5 stages of kidney disease as shown in the table below. Your healthcare provider will tell you the stage of kidney disease, based on how well your kidneys are working and your estimated glomerular filtration rate (eGFR). The eGFR number comes from a lab test that measures the amount of blood your kidneys are filtering each minute. As CKD gets worse, the eGFR number goes down.

STAGES OF KIDNEY DISEASE

STAGE	DESCRIPTION	ESTIMATED GLOMERULAR FILTRATION RATE (eGFR)	KIDNEY FUNCTION
1	Kidney damage (e.g., protein in the urine) with **normal** kidney function	90 or above	90–100%
2	Kidney damage with **mild loss** of kidney function	60 to 89	60–89%
3a	**Mild to moderate** loss of kidney function	45 to 59	45–59%
3b	**Moderate to severe** loss of kidney function	30 to 44	30–44%
4	**Severe loss** of kidney function	15 to 29	15–29%
5	Kidney **failure**	Less than 15	Less than 15%

Contents

Introduction

If you have recently had an organ transplant, you are probably wondering if your diet will be different from the one you followed before your transplant. This brochure describes diet changes you may need to make in order to feel your best. You can get additional help in planning your diet from your doctor and a registered dietitian nutritionist.

Do I need to be on a special diet?

Yes. After an organ transplant, your diet still plays a big role. If you were on dialysis and had a kidney transplant, you may find that this diet is easier to follow than the one you were on for your dialysis.

What about my cholesterol and triglyceride levels?

Fat (cholesterol or triglyceride) levels in your blood may be high. High levels of cholesterol and triglyceride can cause heart disease. The following steps can lower the fat and cholesterol in your blood:

- Lose weight if you are over a desirable weight level.
- Limit alcoholic beverages.
- Limit egg yolks to three or four a week.
- Limit all types of fats and oils.
- Use lean meats, poultry or fish.
- Use nonfat dairy products.
- Use salad dressing sparingly, or use fat-free salad dressing.
- Avoid frying foods.
- Avoid shortening, butter or stick margarine.
- Use only small amounts of oils, tub margarine or regular mayonnaise. Avoid those that describe the first ingredient as “hydrogenated” or “partially hydrogenated.”
- Replace high-fat desserts like ice cream, pie, cake or cookies with fruit or other nonfat desserts.

Tip

A healthy diet plan such as the Mediterranean diet may help control your blood levels of cholesterol and triglycerides. Ask your dietitian about the best food choices for your individual needs.

What about foods high in carbohydrates?

You should know some important facts about carbohydrate foods:

- Carbohydrates come from sugars and starches.
- They provide fuel and energy for your body.
- When you take steroid medicine, it is difficult for your body to use extra carbohydrates. This can lead to high blood sugar levels and may cause diabetes.

For these reasons, you may need to have fewer "simple" carbo-hydrates in your diet. Simple carbohydrates include sugar, sweets and soda. "Complex" carbohydrates, such as pasta, bread, unsweetened cereal and grains, should be included in your daily diet.

Do I still need to follow a low-salt diet?

Most transplant recipients still need to restrict salt, although it varies with each person. Transplant medicines, especially steroids, may cause your body to retain fluid. Salt makes this problem worse, increasing fluid retention and raising blood pressure. Controlling blood pressure is very important to your transplant. Your doctor will decide how much sodium is best for you.

If you are told to limit your sodium or salt intake, here are some common high-sodium foods:

- table or seasoning salts
- salty seasonings like soy sauce or teriyaki
- cured meats like ham, bacon and sausage
- lunch meats like salami and bologna
- canned, dehydrated or ramen noodle soup
- commercially frozen main dishes or meals
- condiments like pickles

What about protein?

Protein is important for the following reasons:

- It builds and repairs muscles and tissues.
- It helps you heal after surgery.

Your protein intake will need to be higher than normal right after your transplant to help build up the muscle tissue that will be broken down by the large doses of steroids. Later, you can return to moderate amounts of protein.

Protein-rich foods include:

- meat, poultry and fish
- milk, yogurt and cheese
- eggs
- dried or cooked beans and peas

What about potassium?

As long as your transplant is working well, you should be able to take in normal amounts of potassium from your food. However, some transplant medicines can increase your blood level of potassium, while other medicines you need to take will decrease it. If your blood level of potassium is too high or too low, your doctor may recommend some changes in your dietary potassium. If so, your registered dietitian nutritionist (RDN) will be able to guide you. Some foods high in potassium are:

- oranges
- bananas
- avocados
- tomato sauce
- potatoes (white or sweet)
- milk and yogurt
- salt substitutes

Are calcium and phosphorus a problem?

You may need to pay close attention to your calcium and phosphorus levels. If you have been ill for a period of time, your body probably lacks the balance of calcium and phosphorus needed for healthy bones, especially if you had kidney disease. Whether you have received a heart, liver, lung or kidney transplant, you are at risk for bone loss.

In the months after your transplant, your doctor will check for possible bone loss and talk to you about the best way to keep your bones as healthy as possible. In the meantime, every adult needs about two servings a day from the dairy group (milk, cheese and yogurt).

Unless your doctor or dietitian has told you not to use these foods, try to include them in your meals. Your doctor may decide you need more calcium and phosphorus than this allows and may have you take a supplement. Do not start any supplements on your own, however, as this could affect your transplant.

Will any of my medicines affect my diet?

Yes. Your diet will be affected by the use of necessary medicines given to prevent rejection of your transplant. List your transplant medicines here and talk to your doctor and dietitian about how they may affect your diet.

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Anti-rejection medicines may change the way your body works in the following ways:

STEROIDS (PREDNISONE)

The most common effects of taking steroids are increases in your:

- appetite, causing unwanted weight gain
- level of blood fats like cholesterol or triglyceride
- blood sugar levels
- sodium (salt) and fluid retention
- breakdown of muscle and bone

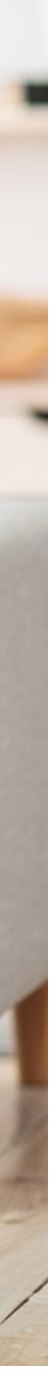
These effects are greater when steroid dosages are high.

What are common side effects?

The most common possible effects of other important transplant medicines are increases in your:

- level of blood fats like cholesterol or triglyceride
- blood sugar levels
- blood pressure

Changes in potassium, magnesium and phosphorus levels are also common. These levels may return to normal as the doctor carefully lowers the amount of medicine you need to prevent rejection of your transplant.



Will I gain weight?

Many people have a better appetite after they get a transplant, and they gain unwanted weight. Weigh yourself often. Avoid high-calorie foods, such as fatty foods, sweets, pastries and other foods rich in fat or sugar. You can help control your calories by eating:

- raw vegetables and fruits
- lean meat, skinned poultry and fish
- nonfat dairy products
- sugar-free beverages or water

Controlling your weight will help to keep you from developing problems, such as heart disease, diabetes and high blood pressure. If you gain unwanted weight, you will need to increase your physical activity and follow a low-calorie diet. Ask your doctor to refer you to a registered dietitian nutritionist to plan low-calorie meals and snacks.

It is very important that you establish an exercise and activity plan. In addition to controlling your weight, regular physical activity helps to:

- strengthen your heart muscle
- give you better form and appearance
- improve your endurance
- keep your bones healthy

Make sure you set up an exercise program with your doctor's advice and get started with it as soon as you are permitted.

What if I have diabetes?

After a transplant, your new diet may be higher in protein and lower in simple carbohydrates due to the effects of steroids and other medicines. Work with your doctor and a registered dietitian nutritionist to keep your diet and blood sugar in good control.

Is there anything else I should know?

Yes. You may be surprised or alarmed to be on a special diet for a short while after your transplant. For example, a kidney transplant may sometimes be slow in getting started, so the doctor will have you follow a kidney diet for a while. This usually is needed for only a short time. Or, you may be asked to drink a lot of water (something you were told to stay away from in the past).

Your doctor and dietitian will guide you through these changes if they happen. Just remember, if your doctor tells you to change what you eat or drink, it is very important for your health and the health of your transplant that you do so.

Where can I 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 NKF Cares Patient Help Line toll free at **855.NKF.CARES** (855.653.2273).
- Visit the National Kidney Foundation website at **kidney.org/store**.

Becoming an educated patient is very important to being healthy!

Setting a standard for care

The National Kidney Foundation, through its *Kidney Disease Outcomes Quality Initiative* (KDOQI®), defines stages of kidney disease and offers guidelines that help your healthcare professional and healthcare team make important decisions about your medical treatment.

The information in this booklet is based on those recommended guidelines.

The information contained in this publication is based on current data and expert guidance available at the time of publication. The information is intended to help patients become aware of their disease and its management. This publication is not intended to set out a preferred standard of care and should not be construed as one. Neither should the information be interpreted as prescribing an exclusive course of management. Patients should always consult with their healthcare professional regarding decisions about their individual plan of care.

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Fueled by passion and urgency, the National Kidney Foundation (NKF) is a lifeline for all people affected by kidney disease. As pioneers of scientific research and innovation, we focus on the whole patient through the lens of kidney health. Relentless in our work, we enhance lives through action, education, and accelerating change.

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