



Kidney Failure

EAT RIGHT TO FEEL RIGHT on Hemodialysis



U.S. Department
of Health and
Human Services



NATIONAL INSTITUTES OF HEALTH
National Kidney and Urologic Diseases
Information Clearinghouse

Kidney Failure

EAT RIGHT TO FEEL RIGHT

on Hemodialysis



NATIONAL INSTITUTES OF HEALTH
National Institute of Diabetes and Digestive and Kidney Diseases



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How to use this booklet

When you start hemodialysis, you must make many changes in your life. Watching the foods you eat will make you healthier. This book will help you choose the right foods.

Use this booklet with a dietitian to help you learn how to eat right to feel right on hemodialysis. Read one section at a time. Then go through the exercise with your dietitian.

Once you have completed every exercise, keep this book to remind yourself of foods you can eat and foods you need to avoid.

My dietitian's name is

Phone

How does food affect my hemodialysis?

Food gives you energy and helps your body repair itself. Food is broken down in your stomach and intestines. Your blood picks up nutrients from the digested food and carries them to all your body cells. These cells take nutrients from your blood and put waste products back into the bloodstream. When your kidneys were healthy, they worked around the clock to remove wastes from your blood. The wastes left your body when you urinated. Other wastes are removed in bowel movements.



Talk to a dietitian to learn how to eat right on hemodialysis.

Now your kidneys have stopped working. Hemodialysis removes wastes from your blood. But between sessions, wastes can build up in your blood and make you sick. You can reduce the amount of wastes by watching what you eat and drink. A good meal plan can improve your dialysis and your health.

Your clinic has a dietitian to help you plan meals. A dietitian specializes in food and nutrition. A dietitian with special training in care for kidney health is called a renal dietitian.

What do I need to know about fluids?

You already know you need to watch how much you drink. Any food that is liquid at room temperature also contains water. These foods include soup, Jell-O, and ice cream. Many fruits and vegetables contain lots of water, too. They include melons, grapes, apples, oranges, tomatoes, lettuce, and celery. All these foods add to your fluid intake.

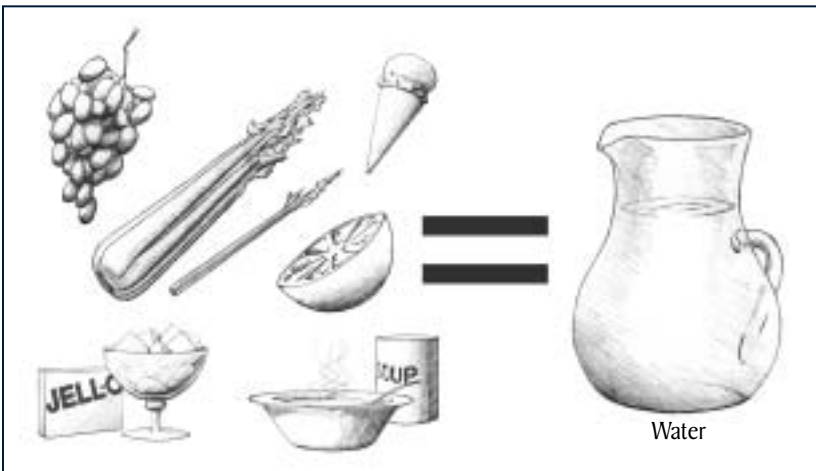
Fluid can build up between dialysis sessions, causing swelling and weight gain. The extra fluid affects your blood pressure and can make your heart work harder. You could get serious heart trouble from overloading your system with fluid.

Control your thirst

You can keep your fluids down by drinking from smaller cups or glasses. Freeze juice in an ice cube tray and eat it like a popsicle. (Remember to count the popsicle in your fluid allowance!) The dietitian will be able to give you other tips for managing your thirst.

Your *dry weight* is your weight after a dialysis session when all of the extra fluid in your body has been removed. If you let too much fluid build up between sessions, it is harder to get down to your proper dry weight. Your dry weight may change over a period of 3 to 6 weeks. Talk to your doctor regularly about what your dry weight should be.

My dry weight should be _____.



Many foods contain water.

Talk to a dietitian

Even though you are on hemodialysis, your kidneys may still be able to remove some fluid. Or your kidneys may not remove any fluid at all. That is why every patient has a different daily allowance for fluid. Talk to your dietitian about how much fluid you can have each day.

I can have _____ ounces of fluid each day.

Plan 1 day of fluid servings:

I can have _____ ounce(s) of _____
with breakfast.

I can have _____ ounce(s) of _____
in the morning.

I can have _____ ounce(s) of _____
with lunch.

I can have _____ ounce(s) of _____
in the afternoon.

I can have _____ ounce(s) of _____
with supper.

I can have _____ ounce(s) of _____
in the evening.

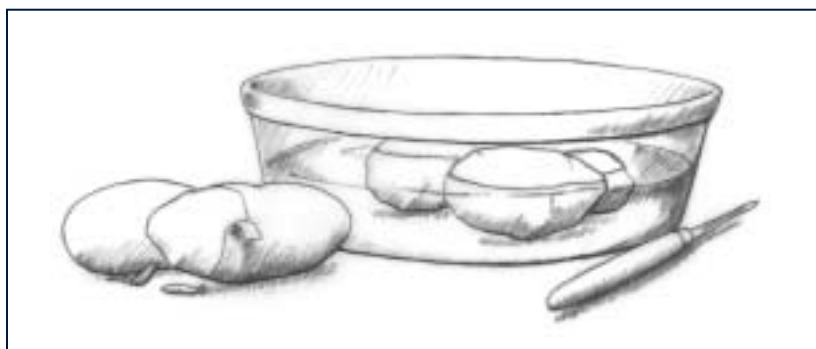
TOTAL _____ ounces (should equal the allowance
written above)



Be careful to keep track of your fluids and other foods.

What do I need to know about potassium?

Potassium is a mineral found in many foods, especially milk, fruits, and vegetables. It affects how steadily your heart beats. Healthy kidneys keep the right amount of potassium in the blood to keep the heart beating at a steady pace. Potassium levels can rise between dialysis sessions and affect your heart-beat. Eating too much potassium can be very dangerous to your heart. It may even cause death.



You can remove some potassium from potatoes by soaking them in water.

To control potassium levels in your blood, avoid foods like avocados, bananas, kiwis, and dried fruit, which are very high in potassium. Also, eat smaller portions of other high-potassium foods. For example, eat half a pear instead of a whole pear. Eat only very small portions of oranges and melons.

Dialyzing potatoes and other vegetables

You can remove some of the potassium from potatoes and other vegetables by peeling them, then soaking them in a large amount of water for several hours. Drain and rinse before cooking. Your dietitian will give you more specific information about the potassium content of foods.

Talk to a dietitian

Make a food plan that reduces the potassium in your diet. Start by circling the high-potassium foods (below) that you now eat. A dietitian can help you add other foods to the list.

High-Potassium foods:

apricots	kiwi fruit	potatoes
avocados	lima beans	prune juice
bananas	melons	prunes
beets	milk	raisins
brussel sprouts	nectarines	sardines
cantaloupe	orange juice	spinach
clams	oranges	tomatoes
dates	peanuts	winter squash
figs	pears (fresh)	yogurt

Others: _____

Changes:

Talk to a dietitian about foods you can eat instead of high-potassium foods.

Instead of _____, I will eat _____.

Instead of _____, I will eat _____.

Instead of _____, I will eat _____.

Instead of _____, I will eat _____.

What do I need to know about phosphorus?

Phosphorus is a mineral found in many foods. If you have too much phosphorus in your blood, it pulls calcium from your bones. Losing calcium will make your bones weak and likely to break. Also, too much phosphorus may make your skin itch. Foods like milk and cheese, dried beans, peas, colas, nuts, and peanut butter are high in phosphorus. Usually, people on dialysis are limited to 1/2 cup of milk per day. The renal dietitian will give you more specific information regarding phosphorus.

You probably will need to take a phosphate binder like Renagel, PhosLo, Tums, or calcium carbonate to control the phosphorus in your blood between dialysis sessions. These medications act like sponges to soak up, or bind, phosphorus while it is in the stomach. Because it is bound, the phosphorus does not get into the blood. Instead, it is passed out of the body in the stool.

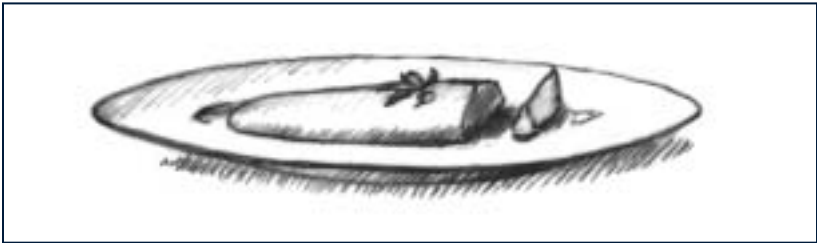


Taking a phosphate binder helps control phosphorus in your blood.

What do I need to know about protein?

Before you were on dialysis, your doctor may have told you to follow a low-protein diet. Being on dialysis changes this. Most people on dialysis are encouraged to eat as much high-quality protein as they can. The better nourished you are, the healthier you will be. You will also have greater resistance to infection and recover from surgery more quickly.

Protein helps you keep muscle and repair tissue. In your body, protein breaks down into a waste product called urea. If urea builds up in your blood, you can become very sick. Some sources of protein produce less waste than others. These are called high-quality proteins. High-quality proteins come from meat, fish, poultry, and eggs (especially egg whites). Getting most of your protein from these sources can reduce the amount of urea in your blood.



Poultry and fish, like broiled flounder, are a good source of high-quality protein.

Talk to a dietitian

Meat, fish, and chicken are good sources of protein. Talk to a dietitian about the meats you eat.

I will eat _____ servings of meat each day. A regular serving size is 3 ounces. This is about the size of the palm of your hand or a deck of cards.

Try to choose lean (low-fat) meats that are also low in phosphorus. If you are a vegetarian, ask about other ways to get your protein.

Low-fat milk is a good source of protein. But milk is high in phosphorus and potassium. And milk adds to your fluid intake. Talk to a dietitian to see if milk fits into your food plan.

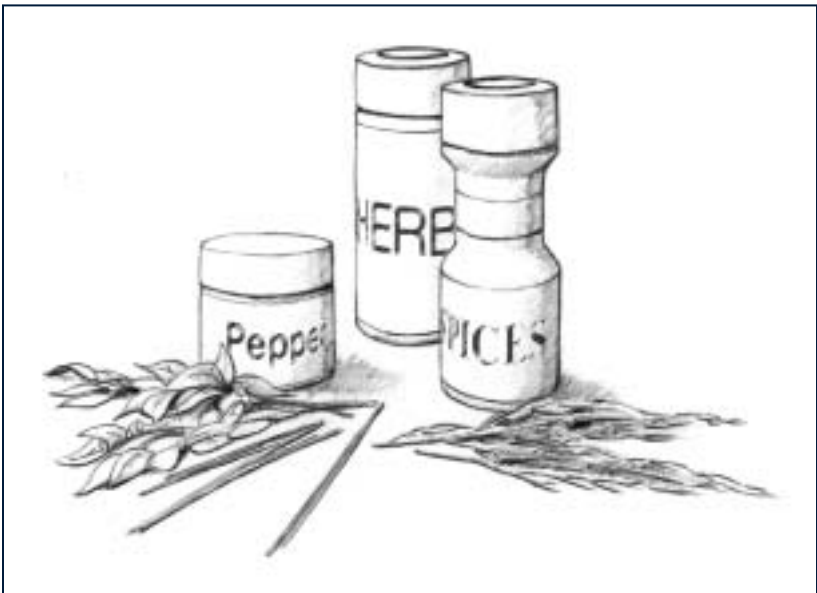
I (will) (will not) drink milk. I will drink _____ cup(s) of milk a day.

What do I need to know about sodium?

Sodium is found in salt and other foods. Most canned foods and frozen dinners contain large amounts of sodium. Too much sodium makes you thirsty. But, if you drink more fluid, your heart has to work harder to pump the fluid through your body. Over time, this can cause high blood pressure and congestive heart failure.

Try to eat fresh foods that are naturally low in sodium. Look for products labeled *low sodium*.

Do not use salt substitutes because they contain potassium. Talk to a dietitian about spices you can use to flavor your food. The dietitian can help you find spice blends without sodium or potassium.



Find new ways to spice up your food.

Talk to a dietitian

Talk to a dietitian about spices and other healthy foods you can use to flavor your diet. List them on the lines below.

Spice: _____

Spice: _____

Spice: _____

Food: _____

Food: _____

What do I need to know about calories?

Calories provide energy for your body. If your doctor recommends it, you may need to cut down on the calories you eat. A dietitian can help you plan ways to cut calories in the best possible way.

But some people on dialysis need to gain weight. You may need to find ways to add calories to your diet. Vegetable oils—like olive oil, canola oil, and safflower oil—are good sources of calories. Use them generously on breads, rice, and noodles.

Butter and margarines are rich in calories. But these fatty foods can also clog your arteries. Use them less often. Soft margarine that comes in tubs is better than stick margarine. Vegetable oils are the healthiest way to add fat to your diet if you need to gain weight.

Hard candy, sugar, honey, jam, and jelly provide calories and energy without clogging arteries or adding other things that

your body does not need. *If you have diabetes, be very careful about eating sweets. A dietitian's guidance is very important for people with diabetes.*



If you need to get extra calories, vegetable oils like these are a good choice.

Should I take vitamins and minerals?

Vitamins and minerals may be missing from your diet because you have to avoid so many foods. Your doctor may prescribe a vitamin and mineral supplement like Nephrocaps.

Warning: Do not take vitamins that you can buy off the store shelf. They may contain vitamins or minerals that are harmful to you.



Take only the vitamins your doctor prescribes.



Resources

Books

Bowes and Church's Food Values of Portions Commonly Used. Seventeenth Edition. Jean A.T. Pennington. J.P. Lippincott Co. 1997. ISBN: 0-397-55435-4.

The Complete Book of Food Counts. Fourth Edition. Corinne T. Netzer. Dell Publishing Co. 1997. ISBN: 0-440-22110-2.

Brochures

Nutrition and Hemodialysis.
National Kidney Foundation
30 East 33rd Street
New York, NY 10016
Phone: 1-800-622-9010 or (212) 889-2210

How to Increase Calories in Your Renal Diet.
National Kidney Foundation
30 East 33rd Street
New York, NY 10016
Phone: 1-800-622-9010 or (212) 889-2210

Charts and posters

Kidney HELPER Phosphorus Guide. (Chart or poster).
Kidney HELPER Potassium Guide. (Chart or poster).
Available from Consumer MedHelp
94 New Salem Street, Suite 104
Wakefield, MA 01880-1906
Phone: 1-800-556-7117 or (781) 246-7700
Fax: (781) 246-3086
Email: info@consumermedhelp.com
Internet: www.consumermedhelp.com

Picture Renal Diet. (Poster)

Available from University Hospital, Food and Nutrition
Services

619 South 19th Street

Birmingham, AL 35233

Phone: (205) 934-8055

Cookbooks

These cookbooks provide recipes for people on dialysis:

The Renal Gourmet. Mardy Peters.

ISBN: 0-9641730-0-X

Emenar Inc.

320 Charmille Lane

Wood Dale, IL 60191

Phone: 1-800-445-5653

Southwest Cookbook for People on Dialysis.

Developed by the El Paso Chapter Council on Renal Nutrition
and the National Kidney Foundation of Texas, Inc.

Published by a grant from Amgen Inc. Available from the
National Kidney Foundation of Texas

13500 Midway Road, Suite 101

Dallas, TX 75244

Phone: (972) 934-8057

Creative Cooking for Renal Diets

Cleveland Clinic Foundation

ISBN: 0-941511-00-6

Senay Publishing

P.O. Box 397

Chesterland, OH 44026

Phone: (440) 256-4435

Creative Cooking for Renal Diabetic Diets

Cleveland Clinic Foundation

ISBN: 0-941511-01-4

Senay Publishing

P.O. Box 397

Chesterland, OH 44026

Phone: (440) 256-4435

Computer Information

The American Association of Kidney Patients provides an online sodium-potassium-phosphorus counter at aakp.org/na-k-pho.htm on the Internet.

The National Kidney Foundation offers many fact sheets for patients with kidney disease at www.kidney.org on the Internet.

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About the Kidney Failure Series

You and your doctor will work together to choose a treatment that's best for you. The booklets and fact sheets of the NIDDK Kidney Failure Series can help you learn about the specific issues you will face.

Booklets

- *Kidney Failure: Choosing a Treatment That's Right for You*
- *Treatment Methods for Kidney Failure: Hemodialysis*
- *Treatment Methods for Kidney Failure: Peritoneal Dialysis*
- *Treatment Methods for Kidney Failure: Transplantation*
- *Eat Right To Feel Right on Hemodialysis*
- *Kidney Failure Glossary*

Fact Sheets

- *Vascular Access for Hemodialysis*
- *Hemodialysis Dose and Adequacy*
- *Peritoneal Dialysis Dose and Adequacy*
- *Amyloidosis and Kidney Disease*
- *Anemia in Kidney Disease and Dialysis*
- *Renal Osteodystrophy*
- *Financial Help for Treatment of Kidney Failure*

Learning as much as you can about your treatment will help make you an important member of your health care team.

NIDDK will develop additional materials for this series as needed. Please address any comments about this series and requests for copies to the National Kidney and Urologic Diseases Information Clearinghouse. This series is also on the NIDDK website at www.kidney.niddk.nih.gov.



National Kidney and Urologic Diseases Information Clearinghouse

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The National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health under the U.S. Department of Health and Human Services. Established in 1987, the clearinghouse provides information about diseases of the kidneys and urologic system to people with kidney and urologic disorders and to their families, health care professionals, and the public. NKUDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about kidney and urologic diseases.

Publications produced by the clearinghouse are carefully reviewed by both NIDDK scientists and outside experts.

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This booklet is also available at www.kidney.niddk.nih.gov.



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National Institutes of Health



National Institute of Diabetes and Digestive and Kidney Diseases
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April 2003

NutriGenie Kidney Disease Nutrition for Windows

This program is based on U.S. Surgeon General's and National Institutes of Health's guidelines for kidney disease dietary management.

Proper nutrition can help patients feel better, prevent complications and slow the disease progression. NutriGenie Kidney Disease Nutrition serves the specific needs of ESRD patients and allows them to conveniently monitor the protein, phosphorus, sodium, potassium, calcium and fluid contents of their diet.

The program has the sophisticated [NutriGenie technology](#) and unique USDA Food Pyramid analysis. It is an essential tool for any health professionals and a perfect companion to The MAYO CLINIC Renal Diet Cookbook.

Renal diet advice from the National Institute of Diabetes and Digestive and Kidney Diseases:

When choosing foods, you should remember to:

- Eat balanced amounts of foods high in protein such as meat and chicken. Animal protein is better used by your body than the protein found in vegetables and grains.
- Watch the amount of potassium you eat. Potassium is a mineral found in salt substitutes, some fruits, vegetables, milk, chocolate, and nuts. Too much or too little potassium can be harmful to your heart.
- Limit how much you drink. Fluids build up quickly in your body when your kidneys aren't working. Too much fluid makes your tissues swell. It also can cause high blood pressure and heart trouble.
- Avoid salt. Salty foods make you thirsty and cause your body to hold water.
- Limit foods such as milk, cheese, nuts, dried beans, and soft drinks. These foods contain the mineral phosphorus. Too much phosphorus in your blood causes calcium to be pulled from your bones. Calcium helps keep bones strong and healthy. To prevent bone problems, your doctor may give you special medicines. You must take these medicines every day as directed.

NutriGenie renal diet software allows users to monitor the intakes of all of the above critical components in their diet: protein, potassium, water, sodium, phosphorus, calcium. Many renal care and research centers use NutriGenie renal diet software. A small sample is listed below:



Central Connecticut Dialysis Center,
377 Research Parkway • Meriden, CT 06450



DIALYSIS CENTER OF LINCOLN, INC.
"Hope for the Future and Strength for Today"

7910 "O" Street, Lincoln, NE 68510

Renal Care Group

526 3rd Street
Clarksdale, MS 38614



University Dialysis Clinic
1777 Stockton Blvd., Suite 100
Sacramento, CA 95816-7089

HATTIESBURG CLINIC DIALYSIS UNITS

6071 U.S. Highway 49, Suite 102
Forrest General Medical Plaza Building
Hattiesburg, MS 39401

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EDWIN JAMES RESEARCH FACILITY
P.O. BOX 9037, GRAND FORKS, NORTH DAKOTA 58202-9037

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- **Database:** 8,000 items plus user's own food database.
- **Analyses:** RDA, calories, protein, carbohydrate, total fat, calcium, phosphorus, sodium, potassium, water, USDA Food Pyramid.
- **Features:** weight log, diet history, blood pressure log, cholesterol profiler, weight control planner, body mass index, caloric need and caloric expenditure calculators, target heart rate calculator, caloric and nutrient distribution analyzer, search and sort capabilities, NutriGenie auto menu generator.
- **Other:** This package includes [Omega-3 Counter](#) at no extra charge.
- **Resources:** [latest publications about kidney diseases, nutrition, etc. and related websites](#)
- **Price:** \$89



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