

# About Dialysis



**THE OHIO STATE UNIVERSITY**

WEXNER MEDICAL CENTER



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**Talk to your doctor or health care team if you have any questions about your care.**

For more health information, go to [wexnermedical.osu.edu/patiented](http://wexnermedical.osu.edu/patiented) or contact the Library for Health Information at 614-293-3707 or [health-info@osu.edu](mailto:health-info@osu.edu).

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For a digital copy of this book, please visit [go.osu.edu/pted3744](https://go.osu.edu/pted3744).

### My Key Contacts

**Dialysis Center:**

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**Pharmacy:**

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**Emergency Contacts:**

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# Dialysis Unit Information for Patients in the Hospital

Our goal is to make your treatment at The Ohio State University Wexner Medical Center Dialysis Unit comfortable. This information will explain how dialysis is done if you are in the hospital.

## About the Dialysis Unit

- We have 3 shifts of treatment on most days: starting between 7:30 a.m. and 8 a.m., starting at noon, and starting at 4 p.m. Plan to be at dialysis treatment for 3 to 4 hours.
  - We ask for your patience if your treatment start or end time is changed. Dialysis treatment start and end times depend on each patient's care needs. Unit activity may sometimes require you to leave or prevent you from coming into the unit.
  - Your treatment schedule and the length of treatment may vary. For example, the first time of dialysis may be 3 to 4 hours starting at 7:30 a.m. The 2nd day may be 2 to 3 hours of treatment starting at noon.
  - Television is available for you to watch during your treatment.
- Before dialysis, daily labs (blood work) are drawn at 5 a.m. Your kidney doctor will review the results with you during your treatment.
  - Your kidney doctor will write orders for your treatment that may include different blood tests, transfusions, antibiotics, or other medicines.
- To protect your health, staff wear gloves, gowns, and masks when providing treatment.
- To protect your privacy, staff do not discuss your care with your family unless you give permission.

## During dialysis

During dialysis, you will be on a heart monitor and your vital signs will be checked often.

- Saline is often used during treatment. Sometimes heparin or citrate will also be used.
- Ice chips are available if you ask for them. You may not eat in the dialysis room.

We have visiting guidelines to make each visit safe and comfortable for all of the patients in our unit. Two visitors may see you at a time for 5 to 10 minutes each hour. We do not have visitors during treatment start or end times.

- Visitors must check in with the charge nurse before entering the unit.
- To protect your health, visitors may need to wear a gown and mask.
- Visitors may not eat or drink in the treatment area.



# My Kidney Care Pledge

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As a person with a loss of kidney function, it is important to protect your health and take care of yourself. Following these promises to yourself will give you the best chance of being healthy and feeling good.

## **I promise to:**

- ☐ Limit my fluids and stay on a low salt diet. I will eat foods that work with my treatment plan.
- ☐ Have dialysis at least 3 times a week to protect my health, without exception. If I need to cancel, I will reschedule my appointment.
- ☐ Check my dialysis access site 3 to 4 times each day to make sure I can feel my pulse and that there are not signs of infection.
- ☐ Know my dialysis treatment care plan (my weight, blood pressure, when to call my doctor about signs of concern, and my diet and fluids plan).
- ☐ Take my medicines as my doctor has prescribed them for me.
- ☐ Know the names of my medicines, how much I am to take, what the medicine will do, and the side effects the medicine may have.
- ☐ Keep a current list of all of my medicines with me at all times.
- ☐ Call my doctor or nurse if I have side effects or problems with my medicines.
- ☐ Limit or avoid alcohol to protect my health.
- ☐ Follow my exercise plan and write down my progress.
- ☐ Talk with my doctor about treatment choices available to me: hemodialysis, peritoneal dialysis, or transplant.

## **I also understand that I have these resources available to me to help me keep my pledge:**

- ☐ I can have transportation provided to and from outpatient dialysis centers.
- ☐ I can have dialysis when I travel away from my dialysis center. Dialysis outpatient centers are in all major cities. Times can be arranged for treatment.
- ☐ I can apply for Medicare funding to cover medical expenses of treatment and monthly costs.
- ☐ I have access to rights under the Americans with Disabilities Act.
- ☐ I can have a living will or power of attorney for my health decisions.

I, \_\_\_\_\_, **pledge to follow these behaviors.**

**Date:** \_\_\_\_\_

# Medicine List

Use this chart to write down all the medicines you take, including the dose, how often, and any special instructions for taking it.

Medicine name	Dose	When do you take it	Any special instruction for taking it

# Your Kidney Care Team

Many people work together to provide care when you have acute or chronic kidney failure. This is a list of people who may be part of your care team. Here is a place to write down names and contact information for both your hospital care and your support network when going home.

<b>Persons you may see often</b>	<b>What they do</b>	<b>Names and numbers</b>
Attending physician	Oversees your treatment and coordinates with other providers while you are in the hospital.	
Kidney doctor	Treats the renal system, also called a nephrologist.	
Transplant nephrologist	Doctor who specializes in kidney transplantation.	
Family doctor	General care doctor. Please share information from your health care team with them.	
Nurse practitioner	An advanced practice nurse who works with physicians to oversee your treatment.	
Dialysis staff (RN)	Carries out your doctor's orders and provides dialysis care.	
Staff nurse (RN)	Plans and oversees care, carries out your doctor's orders, provides care, and teaches you self care.	
Case manager or patient care resource manager (PCRM)	Helps coordinate care for you when you leave the hospital.	

Social worker	Helps with concerns, such as care at home or resource needs.	
Mental health specialist/ counselor	Helps you and your family with concerns of stress, coping, anxiety, depression, and grief.	
Registered dietitian nutritionist (RDN)	Assesses and manages the nutritional needs of patients undergoing dialysis, and provides nutrition education and support.	
Pharmacist	Helps manage and ensure your medicines are safe and effective for you.	

## Types of doctors you may also see

Based on your care needs, you may also see these doctors:

- Urologist: A doctor who specializes in the urinary tract system of men and women, and of male reproductive organs.
- Neurologist: A doctor who specializes in the treatment of nervous system disorders.
- Cardiologist: A doctor who specializes in the care and treatment of the heart.
- Gastroenterologist: A doctor who specializes in the care and treatment of the stomach and digestive system, also called the gastrointestinal tract.
- Dermatologist: A doctor who specializes in the care and treatment of conditions of the skin, hair, and nails.
- Ophthalmologist: A doctor who specializes in the care of the eyes.

# Kidney Disease

When your kidneys no longer remove fluid or waste from your body, kidney or renal failure occurs. This can happen because of kidney disease or damage from injury. There are two types of kidney failure: acute kidney injury (AKI) and chronic kidney disease (CKD).

## About your kidneys

Your kidneys are body organs that are shaped like kidney beans. They are about the size of your fist. Your kidneys lay on either side of your spine toward the back of your abdomen.

Your kidneys work to:

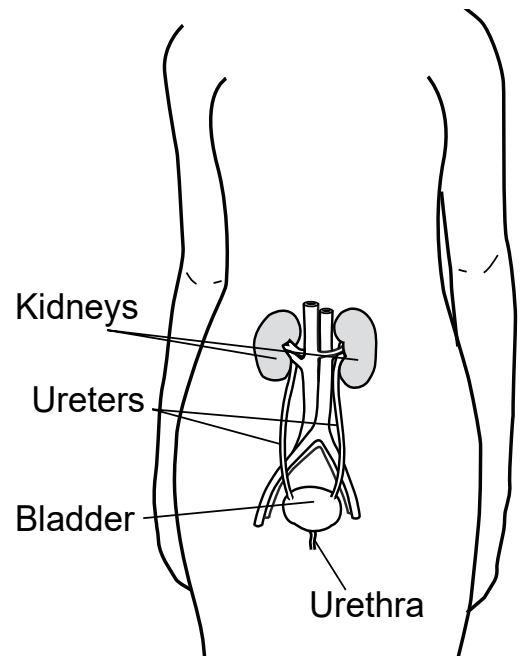
- Get rid of the body's waste products
- Get rid of the body's excess water
- Balance fluid and chemicals needed by the body
- Adjust blood pressure
- Balance hormones that help make red blood cells

## How a normal kidney works

Inside your kidneys are millions of tiny filter units called glomeruli. They separate excess water and waste products from your blood into urine.

A narrow tube, called the ureter, carries the urine from each kidney down to the bladder. Your bladder is a hollow pouch in the lower abdomen that holds the urine.

The urine passes from the bladder out of your body through another tube called the urethra. These tubes and your bladder are the urinary tract system.



## Treating kidney disease

A doctor specializing in kidney disease, called a nephrologist, will help with your treatment. For acute kidney injury, dialysis or other treatment may be needed until the kidneys start working on their own. If the kidneys do not recover, treatment begins for chronic kidney disease.

No matter what type of kidney disease you have, the doctor may want to start tracking a kidney function measure called eGFR, or estimated glomerular filtration rate. When your kidneys are not working well, wastes and fluids build up in your blood. The eGFR is an estimate of the amount of kidney function you have left. Track your baseline eGFR and changes in this score over time. Ask your health care team about what is normal for you.

# Types of kidney problems

## Acute Kidney Injury (AKI)

AKI is a sudden loss of kidney function that happens within hours or days. It can sometimes be stopped when the problem is found and treated. Dialysis may be needed until kidney function returns.

### Some causes of AKI are:

- Serious infections, such as urinary tract infections (UTIs)
- Blockage in the urinary tract
- Antibiotics
- Enlarged prostate
- Severe burns
- Heart surgery
- Blocked blood flow to the kidneys
- Chemical or drug poisoning
- Low blood pressure
- Breakdown of muscle due to injury, called rhabdomyolysis

## Chronic Kidney Disease (CKD)

CKD occurs over a long period of time. Although it cannot be stopped or cured, you and your health care team can work together to slow it down.

### Some causes of CKD are:

- Diabetes
- High blood pressure
- Cystic kidney disease
- Glomerulonephritis, a type of kidney disease that damages the kidneys
- Heart problems, such as heart disease or heart failure
- Arteriosclerosis or hardening of the arteries
- Kidney stones
- Chronic infections, such as pyelonephritis, a kidney infection that often spreads from bacteria in the bladder
- Blockage in the urinary system
- Birth defects
- Collagen diseases, such as:
  - Lupus, a disease where the immune system attacks healthy cells and tissues
  - Scleroderma, abnormal growth of connective tissue in skin or body organs
- Drug abuse or other poisons
- Cancer
- Cirrhosis or scarring of the liver

## When to contact your doctor

If you are being treated for kidney disease, contact your doctor if you have any changes to your condition or if any of these signs get worse:

- Swelling in the hands, face, or feet
- Itching of the skin
- Nausea or vomiting
- Loss of appetite
- Changes in urination
- Headache and confusion
- Feeling short of breath
- Fatigue and weakness

# Treatment Options

There are several types of treatments for chronic kidney failure based on your needs. Talk to your doctor and nurse about questions you may have as you consider your options.

## Dialysis

Dialysis is used to remove wastes, salts, and fluid from the body when normally they would be removed in your urine. Dialysis may be used if your kidney failure is short term or long term (chronic). Treatment may be given 3 to 4 times a week.

### Dialysis Center Treatment

Hemodialysis done at a dialysis center is the treatment chosen most often by patients. Patients visit a kidney dialysis center 3 times each week, often 3 to 4 hours per visit. If your assigned day and time does not work for you, ask if another is available.

### Home Treatment

For home treatment, a dialysis machine is used at home to clean the blood in a few hours or while you sleep at night. There are 3 options for this:

- **Conventional:** This is the same treatment as a dialysis center, but done at home. Dialysis is 3 times a week at home for 3 to 4 hours.
- **Short daily:** Treatment is 5 to 7 times a week at home. Each treatment takes about 2 hours.
- **Nocturnal (at night):** Treatment is 3 or more nights a week at home. Each treatment is 6 to 8 hours at a time while you sleep.

Your training for each option is about 3 to 8 weeks and requires a partner at home to help you.

## Kidney transplant

This is a surgery where a healthy kidney is placed into a patient. In most cases, the person's own kidneys are left in, and the new kidney is placed in the lower abdomen, protected by the pelvis or hip bones.

The new kidney can come from a living donor or a non-living donor. Only one kidney is needed for transplantation since a person can live a normal life with just 1 kidney. Plans for a transplant can begin in the outpatient dialysis center.

Ask your doctor, social worker, or dialysis nurse if a kidney transplant is a good option for you.

## Hospice

It is not possible to live without kidneys or a substitute for their function, such as dialysis. Fluids and toxins can build up in days to weeks and result in death. If you choose not to have any type of dialysis or transplant, you may be referred to hospice for help with end of life planning.

Because many patients feel much better both physically and emotionally after dialysis clears toxins from the body and the brain, we encourage you to have dialysis until you are certain of the choice to request a referral for hospice.

# Learning About Dialysis

The two types of dialysis are hemodialysis and peritoneal. Hemodialysis uses a machine to filter waste and remove extra fluid through an access point in your arm. Peritoneal uses the lining of your belly to filter your blood.

## Hemodialysis

Hemodialysis removes waste and fluids from your blood using a machine. The dialysis machine moves your blood through a tube outside of your body and through a filter that works like an artificial kidney. Your filtered blood is then put back into your body using an access point to your bloodstream.

There are different types and brands of dialysis machines, but they all help to:

- Remove waste products
- Remove excess fluid
- Keep body salts and mineral levels balanced (electrolytes)

### Hemodialysis treatment has 2 main systems:

- Dialysate delivery system, which is the blood cleaning process
- Outside of the body circuit, also called the extracorporeal circuit, which is how your blood is moved between you and the machine

### How Your Blood is Cleaned

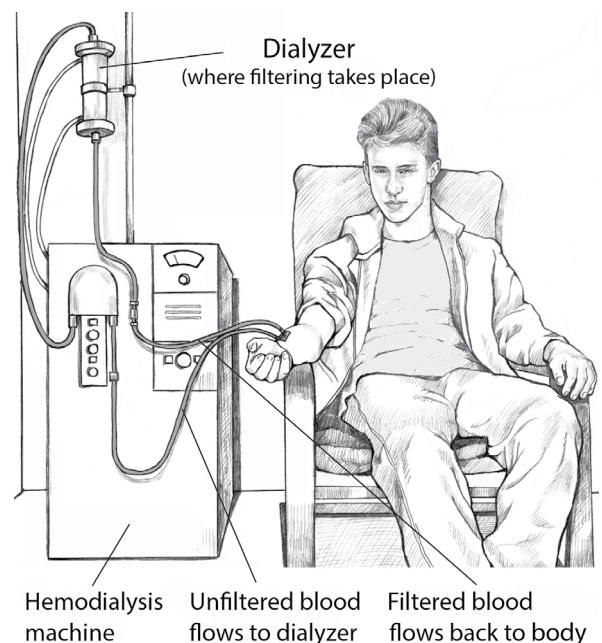
The dialysate fluid delivery system is a mix of water and chemicals that are present in your body and used by your body to clean your blood. The dialysis machine uses an artificial filter, also called a dialyzer, to clean your blood.

The dialyzer has two compartments separated by a membrane that only lets particles of a certain size pass through it. The dialysate fluid is on one side of the membrane, and your blood moves through small tubes that carry the blood on the other side.

The dialysate filter adds or removes the chemicals in your blood until the right balance is reached. For example, urea, creatinine, potassium, and sodium dextrose fluid can pass through the membrane, but red blood cells, albumin, and fat soluble vitamins (A, D, and E) cannot.

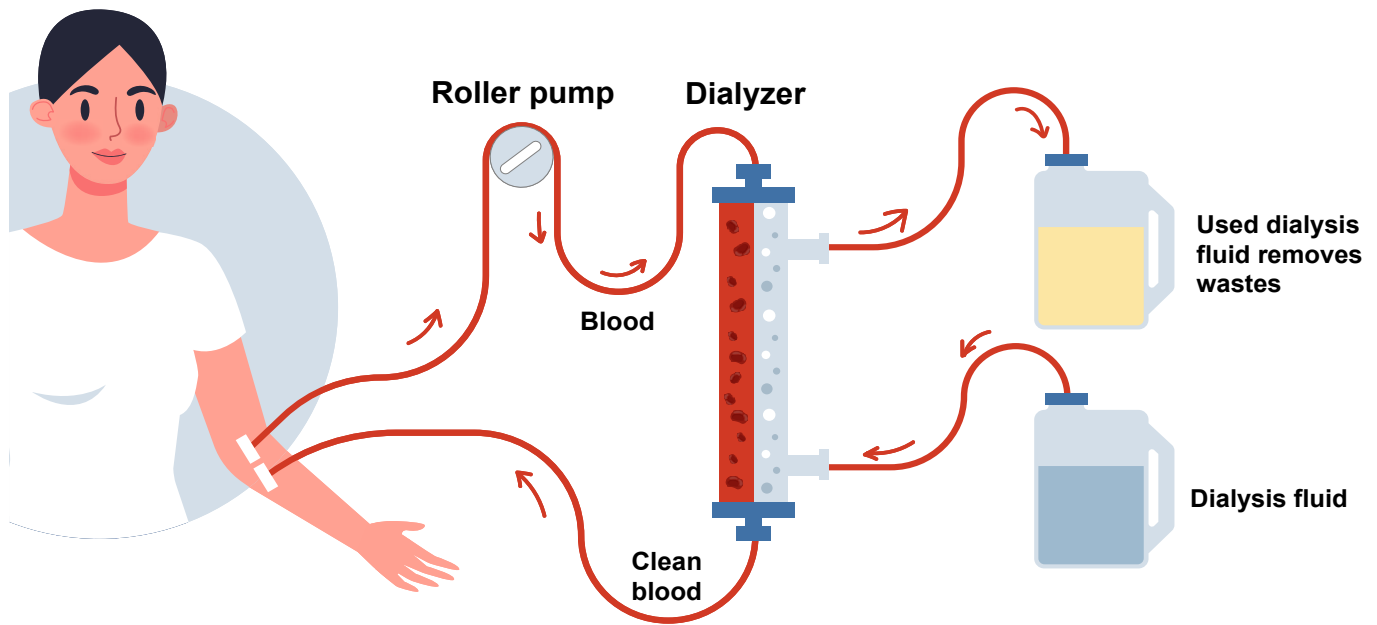
The dialysate fluid has all of the wastes from the blood that passed through the dialyzer, so your blood is clean and balanced. The used fluid with the wastes then goes down the drain.

Your dialysis team monitors your lab values during treatment to know how long you should have dialysis and how much dialysate fluid is needed to get your blood clean.



National Institute of Diabetes and Digestive and Kidney Diseases





## Blood Transport System

The other system is the outside of the body circuit. This set of tubing carries your blood from you to the dialyzer and then back to you. Access to your blood vessels can be done different ways, and this is described in the next section.

Blood from your access point goes to the dialyzer to be filtered through the artery tubing. Blood that has been filtered comes back through the vein tubing to your access point.

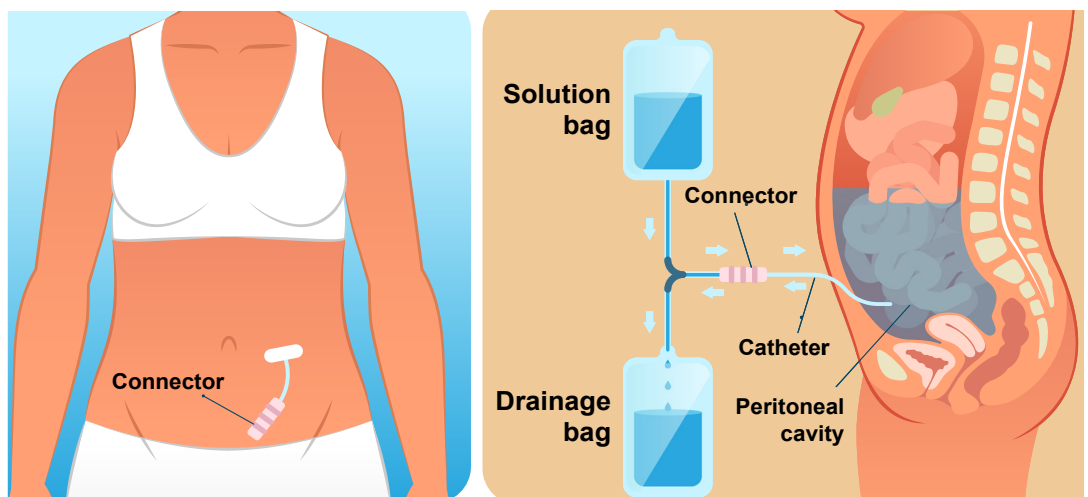
There are special sensors, monitors, and alarms built into the systems that let staff know if there is any problem to make sure treatment goes along safely. You may have some other IV fluids to keep your blood from clotting.

## Peritoneal Dialysis (PD)

During peritoneal dialysis, the blood is cleaned inside your body, instead of outside as with hemodialysis. This type of dialysis uses the lining of your abdomen, or belly, to filter your blood inside your body.

A small length of plastic tubing, called a **catheter**, is placed in your abdomen during surgery. The tissues of your abdominal cavity, called the **peritoneal cavity**, act as the “dialyzer” or filter.

A dialysis solution, which contains a sugar called dextrose, is put into your abdominal cavity. This solution pulls waste products and excess fluid from your blood. The waste and excess fluid then leaves your body when the solution is drained.



This process of filling and draining the abdominal cavity is called an **exchange**, and it takes about 30 to 40 minutes. The amount of time that the solution is in your body is called the **dwell time**. This process can be done at home, at work, or while traveling.

The schedule often calls for 4 exchanges a day with dwell times of 4 to 6 hours. Different types of PD may have different schedules. Your training is done at a hemodialysis center or clinic.

## Types of Peritoneal Dialysis

**Continuous ambulatory peritoneal dialysis (CAPD)** does not need a machine. Gravity is used to fill and empty your abdomen. You can walk around with the fluid in your abdomen. It can be done at home, when you are at work, or while you are traveling. There are 4 to 5 exchanges done a day.



**Automated peritoneal dialysis (APD)** uses a machine called a cycler, which delivers and then drains the cleansing fluid for you. Treatments are usually done at night while you sleep. This is sometimes called continuous cycling peritoneal dialysis (CCPD).



## Access to Your Blood Vessels

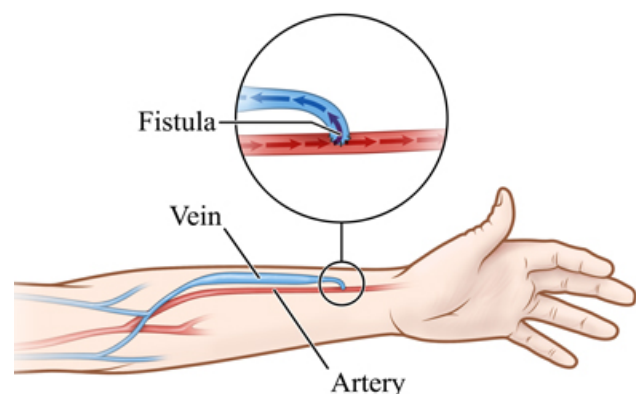
In order for you to have dialysis, a procedure must be done to allow easy access to your blood stream. The different types of access for dialysis are fistula, graft, and catheter.

### Fistula

This access is near your wrist or elbow area and is created by joining an artery to a nearby vein under the skin. By increasing the amount of artery blood that flows through this vein, it gets bigger over time. This is the best access because it has fewer complications and lasts longer.

Often, the fistula is placed in the arm you use less. For example, if you are right handed, then it would be placed in your left arm.

A fistula needs at least 6 weeks to heal before it can be used for dialysis.



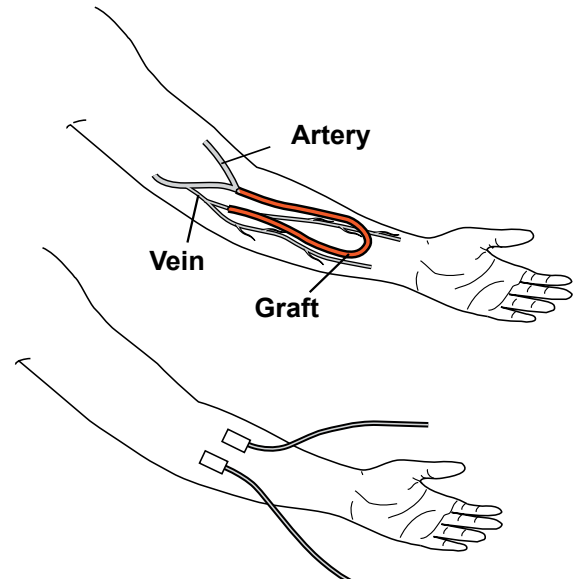
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## Graft

An artery and a vein are connected with a soft plastic tube under the skin, which is called a graft. This access is used when your veins will not work well for a fistula. The graft can be a straight or a U-shaped design.

One end of the graft tube connects to a vein and the other end connects to an artery. Two needles for dialysis will be put into the graft, so blood can be taken out, put through the dialysis machine, cleaned, and returned back through the graft.

A graft needs at least 2 weeks to heal before it can be used for dialysis.

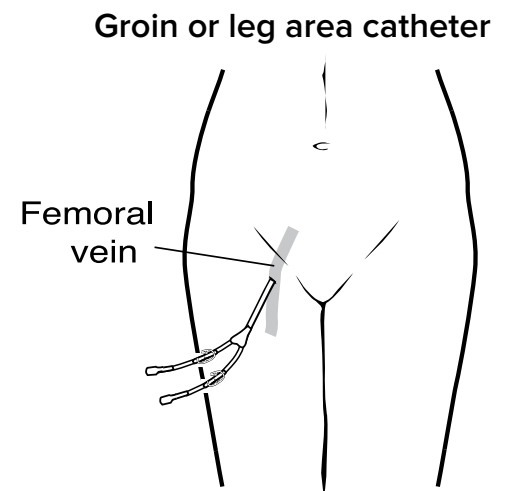
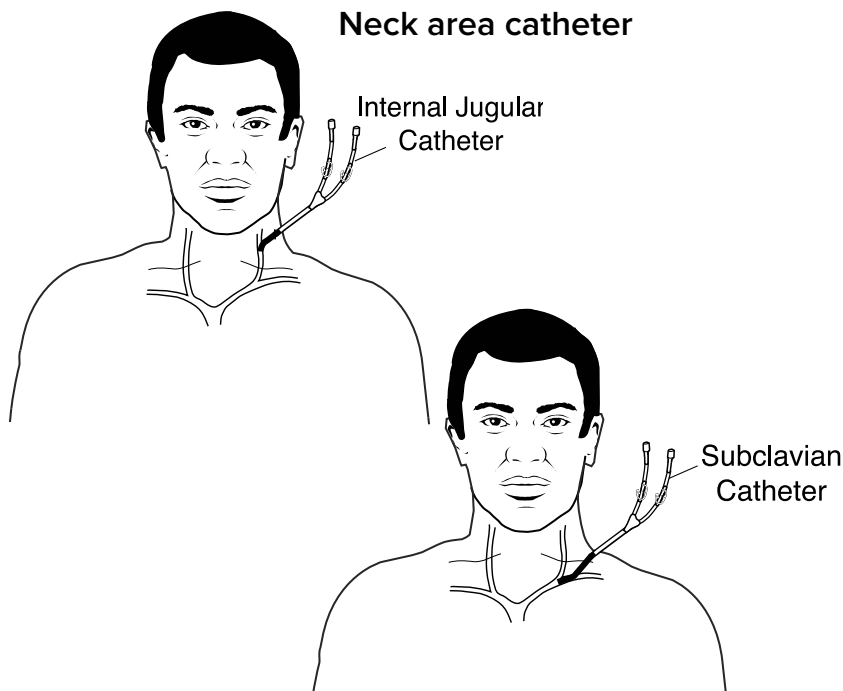


## Catheter

There are 2 kinds of catheters: temporary and permanent.

- **Temporary catheters** are used for a few weeks. They are placed in the neck or in the upper leg or groin area, and are only used until a more permanent access is able to be used.
- **Permanent catheters** are placed in the neck vein or in the upper leg or groin area, and tunneled under the skin, so it is hidden under your clothes. It may be used until an access is created with surgery or may be your only choice of access. You must take good care of your catheter to prevent infection.

Catheters need to be kept clean and dry, so germs do not get into the bloodstream. Keep catheter sites covered and be careful when dressing or undressing to not pull or tug on the catheter.



# Taking Care of Your Graft or Fistula

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## Prevent injury

An injury to your graft can cause heavy bleeding because there is more blood flow through the graft or fistula. Try to avoid any injury to this arm. If you do injure your arm, put a clean bandage over the injured area and apply pressure.

**If this does not stop the bleeding, seek emergency care or call 911.**

## Watch blood flow

You should always be able to feel blood rushing through your graft or fistula. This feeling is called the **thrill**. You will feel a pulse when you place your hand next to the incision. Check the thrill 3 or 4 times each day. If you do not feel this pulse, call your doctor or the dialysis unit.

Any pressure on the blood vessels in your arm can decrease the blood flow in your graft or fistula. Pressure can also cause your blood to clot.

**To protect the blood flow of your graft or fistula:**

- Wear loose fitting clothing or clothing with elastic openings on the arms that are not tight.
- Do not sit, lie, or sleep in a position that restricts the graft or fistula.
- If you wear watches or jewelry on that arm, make sure it is loose on the arm.

## Needle placement and blood draws

To further protect your fistula or graft, the dialysis staff will rotate where they place your needles. It is important to avoid putting the needle in the same place with every treatment.

**Do not let anyone take your blood pressure, start an IV, or draw blood from the arm with the graft or fistula.**

## Care for your incision

When your graft or fistula is placed, you will have a bandage at first. After the first 24 hours, leave the incision open to the air. If you see drainage, cover it lightly with a clean bandage and call the dialysis unit.

Allow the tape, called Steri-Strips, to fall off by itself. This should occur in 7 to 10 days. You may use water and mild soap to gently clean the incision. Gently pat the area dry. Do not rub the area.

Sometimes there is swelling or redness after the graft or fistula is placed. The swelling will improve if the arm is raised on 1 or 2 pillows with your elbow straight, but relaxed. Keep your arm up as much as possible if there is a lot of swelling.

## Prevent infection

During dialysis, use of the access site breaks the skin barrier, which can be a source for infection. The most common infections are pneumonia (an infection in your lungs) and septicemia (an infection in your blood stream). The risk of infection also increases if you have poor circulation or diabetes that is not well controlled.

### **Here are some things that you can do to prevent infection:**

- Wash your hands often with soap and warm water for at least 15 seconds. Use an alcohol-based hand sanitizer if you cannot wash your hands.
- Keep the dressing at your catheter site clean and dry.
- Keep your dialysis appointments. Do not miss dialysis or reduce the time of your treatment. Toxins building up in the blood may infect your heart or the area around your heart (heart sac).
- Talk to your doctor about a vaccine (shot) to help prevent pneumonia.

## Treating infection

### **If you have an infection in your blood:**

- Blood cultures will be drawn to decide the best antibiotic therapy for you.
- Your permanent hemodialysis catheter may be removed. A temporary catheter would be put in and removed with each dialysis treatment until your blood cultures show the infection is gone. This is often 10 days to 2 weeks after antibiotics are started.

### **If you have a cold or pneumonia:**

- If you get a cold, ask your kidney doctor to recommend an over the counter medicine to help with sinus drainage. If the cold gets worse, it may lead to pneumonia. Sometimes your doctor may put you on antibiotics, not to help the cold, but to treat pneumonia.

## When to call a doctor

### **Call your doctor right away if you have any of these signs of infection:**

- Redness
- Swelling
- Drainage or pus at the access site
- Warm to touch
- Temperature greater than 100.5 degrees Fahrenheit or 38 degrees Celsius
- Changes in the thrill
- Color changes
- Numbness, severe pain, or weakness, especially in the hand of the access site
- Severe bleeding – apply pressure and call 911

If you have any questions about infections, please ask your doctor or nurse.

# Having Dialysis at Ohio State for the First Time

You may have questions about preparing for dialysis and what to expect during treatment. This information will help you to understand the process better.

## Preparing for dialysis

Here are some things you can do to get ready for treatment:

- Eat a light meal before coming. You cannot eat in the dialysis room. Ice chips are available.
- Use the bathroom. There are no bathrooms in the dialysis unit.
- Talk with your doctor about medicines. You may be told not to take medicines that lower your blood pressure before dialysis.
- Plan to be in dialysis for 3 to 4 hours the first time. The length of time depends on your treatment. You may want to bring a book, magazine, or personal audio player.

## During your treatment

To help you relax and pass the time, you can:

- **Read or listen** to music or audio books.
- **Watch television**, which we will provide for your enjoyment.
- **Sleep**. Many people sleep during their treatment.
- **Have visitors** up to 10 minutes per hour, with a limit of 2 per patient for privacy and due to limited space. Visits are not allowed while your treatment is starting or ending. Visits may also be limited due to the needs of other patients. Visitors may need to wear a gown and a mask.

**Let your nurse or technician know how you are feeling**, so they can help you to be more comfortable. Common feelings during dialysis include:

- Tired and sleepy
- Dizzy, if your blood pressure goes down
- Cold
- Muscle cramps, as fluid and waste products are removed
- Nausea or feeling sick to your stomach, especially for those new to dialysis

**Each person feels different after dialysis.** Some people feel better as the waste products are taken out of the body, others feel tired and washed out. You may want to plan time for naps in your day.

# Diet Therapy in Dialysis

A special diet is needed for people on dialysis to help prevent the build up of waste products in the blood between treatments. Following a regular diet may cause these waste products to build up to dangerous levels. You need to understand and limit protein, sodium, potassium, phosphorus, and fluids.

## Protein

The body uses protein to help tissues grow and repair. Blood urea nitrogen (BUN) is the waste product produced from the protein we eat. When the kidneys do not work properly, urea builds up in the blood and can cause nausea, vomiting, and weakness. Dialysis treatments remove BUN to help prevent these symptoms, but can remove other proteins our bodies need.

If you do not eat foods high in protein in your diet, it can lead to muscle breakdown. Your dietitian will set your protein needs based on your body weight, height, and method of dialysis. Foods highest in protein are eggs, meat, poultry, fish, dairy foods, soy milk, and tofu.

## Sodium

Sodium is a mineral that is found naturally in almost all foods. Most people eat much more sodium than the body needs. Healthy kidneys will help the extra sodium leave the body in the urine. When the kidneys are not working normally, sodium builds up in the body and may cause high blood pressure, thirst, and fluid build up. The greatest source of sodium in the diet comes from foods that have added salt. Avoid highly processed foods because they are high in sodium like canned soups and vegetables, lunch meat, frozen meals and pizza, restaurant foods, and convenience foods like rice and pasta mixes. Most unprocessed foods, such as fresh and frozen fruits and vegetables, plain meat, and whole grains without added seasonings, are naturally low in sodium and are best for a dialysis diet.

## Potassium

Potassium is a mineral the body needs to help the nerves and muscles work properly and to regulate the heart beat. Healthy kidneys help the body get rid of extra potassium. While your body still needs some potassium, it should be limited because too much potassium can cause the heart to stop or to beat irregularly (heart beat pattern is not normal). Potassium is found naturally in almost all foods. Fruits, vegetables, nuts, seeds, and dried beans, like kidney or pinto, are the greatest sources of potassium. You can still eat these foods, but try to pick low potassium fruits and vegetables, and limit foods that are high in potassium. Many salt substitutes have potassium, and should NOT be used. Other seasonings that contain only herbs and spices are better to use.

## Phosphorus

Phosphorus is another mineral the body needs to keep bones and teeth strong, but too much in the blood can have the opposite effect. When the kidneys do not work normally, phosphorus can build up in the blood and cause bones to weaken. This can be prevented by limiting phosphorus in your diet. You can also take phosphorus binding medicines prescribed by your doctor. Eat the right amount of protein without getting too much phosphorus. Your dietitian can help you determine how much phosphorus is right for you.

# Iron and Phosphorus With Kidney Disease

Kidney disease can cause problems with the growth of new red blood cells, which use iron. Kidney disease can also cause phosphorus to build up in the body, causing other health problems.

Many foods that are high in iron are also high in phosphorus. For people with kidney disease, it is important to get enough iron in your diet while not getting too much phosphorus.

## Getting enough iron

Your doctor may suggest that you take a medicine called epoetin alfa (brand names Epogen, Procrit or Retacrit), darbepoetin alfa (brand name Aranesp) or methoxy polyethylene glycol-epoetin beta (brand name Mircera). These medicines cause your body to make red blood cells. Eating iron-rich foods and taking iron supplements makes this medicine work better.

Iron can cause your stools to be black or tarry-looking. It may also cause constipation or nausea. Tell your doctor if you have these problems.

Iron supplements are best absorbed on an empty stomach, but taking a supplement with a small amount of food can prevent nausea. Iron supplementation comes in many forms, so make sure to talk to your doctor about what may be best for you.

## Here are some tips to help you better tolerate iron supplements

- Calcium binds with iron and prevents it from being absorbed by the body. If you are prescribed both an iron supplement and a calcium-based phosphorus binder, such as calcium acetate (brand names PhosLo and Phoslyra) or calcium carbonate (brand names Os-Cal, Tums, and others), wait at least 1 hour after a meal before taking iron.
- Take your iron supplement with a snack, such as unsalted crackers or toast. Choosing foods high in vitamin C can help increase the absorption of iron in your body. Examples include:
  - ½ cup vitamin C fortified cranberry or orange juice
  - 1 kiwi
  - ½ cup pineapple chunks or pineapple juice
  - ½ cup mandarin oranges
  - ½ cup strawberries
- Choose fruits or fluids within your meal plan and follow your fluid limits.
- Taking iron with coffee, tea, milk, spinach, fiber-containing foods, or eggs can prevent iron from being absorbed. Wait at least 1 hour before or after taking iron to consume these foods.
- Iron can cause constipation, so eat more raw fruits and vegetables within your meal plan. Ask your doctor about taking a laxative or stool softener to help prevent constipation.
- If you need to limit potassium, ask to speak with a dietitian as some fruits and vegetables contain high amounts.



## Limiting phosphorus in your diet

As a general guideline, dialysis patients need to **limit phosphorus to 800 to 1,000 milligrams (mg) a day**. You can control your phosphorus levels by limiting high phosphorus foods in your diet and taking a medicine that binds with phosphorus, such as the calcium-based phosphorus binders discussed above.

### Limit or avoid high phosphorus foods

**Read food labels carefully.** Look for ingredient names with “phos” in them. For example:

- Aluminum **phosphate**
- Dicalcium **phosphate**
- Hexametaphosphate
- **Phosphoric acid**
- Pyrophosphate
- Sodium polyphosphate

### Limit or avoid these high phosphorus foods:

- Milk and milk products
- Dark drinks such as beer, colas, and chocolate milk
- Milk or dark chocolate
- Whole grain breads, cereals, and crackers
- Brown and wild rice
- Nuts, seeds, and nut butters
- Processed meats, such as hot dogs, sausages, bologna, organ meats, and sardines
- Starchy vegetables, such as potatoes, corn, peas, beans, and legumes

### Take medicines that bind with phosphorus as instructed

These medicines are taken with food to prevent phosphorus from being absorbed. Follow your doctor’s instructions for the amount and how often to take the medicine.

- Calcium acetate (brand names PhosLo and Phoslyra)
- Calcium carbonate (brand names Os-Cal, Tums, and others)
- Ferric citrate (brand name Auryxia)
- Lanthanum (brand name Fosrenol)
- Sevelamer (brand names Renagel and Renvela)
- Sucroferric oxyhydroxide (brand name Velphoro)

# Diet for Kidney Disease

When you have kidney disease, you may need to follow a diet low in sodium, potassium, and phosphorus, sometimes called a renal diet or dialysis diet.

Talk to your doctor or dietitian about how many servings from each of the food groups you should eat each day and how to keep your favorite foods in your diet.



## Milk Group

1 serving =  $\frac{1}{2}$  cup, 4 grams protein, 200 milligrams (mg) potassium

- Milk: whole, 2%, 1%, fat-free (skim), buttermilk, chocolate flavored, soy milk
  - Plain yogurt (count the fruit if flavored)
  - Pudding and custard
  - Cream soups
  - Ice cream
  - Cream (coffee cream, Half & Half)
- Aim for fat free or reduced fat options.

## Protein Group

1 serving = 1 ounce (oz) or  $\frac{1}{4}$  cup, 7 grams protein, 120 mg potassium

### Meats (beef, pork, veal, lamb, chicken, turkey, duck, goose, and organ meats)

- Fish, 1 oz
- Tuna or salmon,  $\frac{1}{8}$  cup or 1 oz
- Shrimp or scallops, 4 medium
- Oysters, 4 medium
- Clams, 5 small or 2 large
- Eggs or egg substitute, 1 medium or  $\frac{1}{4}$  cup
- Peanut butter or other nut butters, 2 tablespoons
- Cottage cheese,  $\frac{1}{4}$  cup
- Cheese, 1 oz (only on days of no milk use)
- Beans or peas,  $\frac{1}{2}$  cup
- Tofu,  $\frac{1}{4}$  cup

### Avoid these high salt and processed meats and cheeses:

- Meat or poultry “enhanced” with chicken broth
- Bacon strips, 3 strips = 439 mg of sodium
- Sausage, 2 small links = 250 mg of sodium
- Ham, 3 oz = 1,023 mg of sodium
- Frankfurter/hotdog, 1 = 500 mg of sodium
- Luncheon meat, 1 oz = 370 mg of sodium
- Processed cheese such as Velveeta, 1 oz = 420 mg of sodium
- Canned meats, 1 oz = 250 mg of sodium
- Turkey ham, 1 oz = 316 mg of sodium

## Vegetable Group (Low Potassium)

1 serving = ½ cooked or raw vegetables, 1 cup raw leafy vegetables, 2 grams protein, 200 milligrams or less potassium

- Beans, green or wax
- Beets, canned
- Cabbage, green or red
- Carrots
- Cauliflower
- Celery
- Coleslaw
- Cucumber
- Eggplant
- Escarole
- Greens (mustard or turnip)
- Hominy
- Lettuce, iceberg, escarole
- Onion
- Peas, green
- Rhubarb
- Radishes
- Summer squash or zucchini
- Turnips



## Vegetable Group (High Potassium)

1 serving = ½ cooked or raw vegetables, 1 cup raw leafy vegetables, 2 grams protein, 200 milligrams or more potassium

- Artichokes
- Asparagus
- Avocado
- Bamboo shoots
- Beets, fresh or greens
- Broccoli
- Brussel sprouts
- Corn
- Dried beans and peas
- Mixed vegetables
- Greens, beet, chard, collard, kale, or turnip
- Mushrooms
- Okra
- Parsnips
- Potato, sweet or white (\*unless leached)
- Rutabagas
- Soybeans/edamame
- Spinach
- Tomatoes, fresh, sauce, paste, or puree
- Tomato juice or vegetable juice
- Winter squash, acorn, butternut, or pumpkin
- Yams

**To leach potatoes:** Peel potato and cut into small pieces. Cover completely with water and soak in the refrigerator for at least 4 hours or overnight. Drain and rinse well. Cook in fresh water.

## Fruit Group (Low Potassium)

1 serving = 1/2 cup, 0.5 gram protein, 200 milligrams or less potassium

- Apple, fresh or apple juice
- Applesauce
- Blueberries, blackberries, raspberries, strawberries
- Cherries
- Cranberries or cranberry juice
- Fruit cocktail
- Grapes or grape juice
- Lemon or lime
- Peaches, canned or nectar
- Pears, canned or nectar
- Pineapple, fresh, canned, or juice
- Tangerine
- Watermelon



## Fruit Group (High Potassium)

1 serving = 1/2 cup, unless otherwise noted, 0.5 gram protein, 200 milligrams or more potassium

- Apricot, fresh or dried
- Banana
- Dried fruits, 1/4 cup, apricot, dates, figs, prunes, or raisins
- Grapefruit or grapefruit juice
- Kiwifruit
- Mango
- Melon, cantaloupe or honeydew
- Orange or orange juice
- Papaya
- Peach or nectarine, fresh
- Pear, fresh
- Pomegranate or pomegranate juice
- Prunes or prune juice

## Fat Group

1 serving = varies by food, see below

- Butter or margarine, 1 teaspoon
- Salad dressing, 1 tablespoon
- Gravy, 2 tablespoons
- Cream cheese, 1 tablespoon
- Vegetable oil or shortening, 1 tablespoon
- Sour cream, 2 tablespoons
- Whipped topping, 3 tablespoons
- Low calorie margarine, 1 tablespoon

## Bread, Cereal, and Grain Group

1 serving = varies by food, see below, 3 grams of protein, 50 milligrams potassium

- Bread, 1 slice
- Pita bread pocket, ½
- Bagel, ½
- Biscuit or roll, 1
- Muffin, homemade, 1
- Bun (hamburger or hotdog), ½
- Cereals, cold (such as Cheerios, corn flakes, or puffed rice), 1 cup
- Cereals, hot (such as oatmeal, grits, farina, cream of wheat/rice), ½ cup
- Cake (angel food, white, yellow, pound), 3-inch cube, 1
- Corn bread, homemade, one 2-inch cube
- Cookies (butter, shortbread, sugar wafers), 4
- Cookies (vanilla wafers or animal crackers), 10
- Crackers (unsalted or graham), 4
- Doughnut, 1 small
- Pancakes or waffles, homemade, 4-inch diameter, 1
- Pasta or rice, cooked, ½ cup
- Popcorn (unsalted), 3 cups
- Tortilla, 1



## Limit or Avoid These Foods

(may be high in sodium, potassium, and/or phosphorus)

- Beer
- Bran
- Canned vegetables, unless “No Salt Added”
- Condiments, BBQ sauce, catsup, Chili sauce, soy sauce, steak sauce, Worcestershire sauce
- Chocolate candy, caramels, cocoa
- Coconut, coconut milk, coconut water
- Colas
- Crackers and snacks, unless unsalted
- Licorice, “real” black
- Molasses, blackstrap
- Nuts, seeds
- Pickled foods, olives, pickles, sauerkraut, lunch meats
- Processed and packaged foods, frozen dinners, or fast foods
- Salt, lite salt, salt substitutes, garlic or onion salt, lemon pepper, or poultry seasoning
- Soups, canned or dry
- Star fruit

# Eating Out on a Low Potassium, Low Phosphorus Diet

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## Getting started

If you are limiting the amount of potassium and phosphorus you eat, you can still learn to have a relaxing, enjoyable meal. Some ways to do this include:

- Pick restaurants that serve a variety of foods, so you have more choices.
- Ask questions about how your food or drinks are made.
- Ask for your foods to be made with lower or no salt seasonings, and sauce or gravy on the side.
- Choose broiled or grilled foods instead of foods that are breaded or fried.
- Skip the appetizers unless that will be your main meal.

## Choosing your drink

Think carefully about the drinks you choose for meals. Drinks can have extra calories, and add to your fluid levels for the day. Follow your doctor's instructions for the amount of fluid you may have. Try to drink more water as your foods have more potassium and phosphorus.

### Drinks to choose:

- Water
- Non-cola soft drinks such as Sprite, root beer, ginger ale, or low-sodium club soda
- Lemonade or iced tea
- Coffee
- Apple juice

Check with your doctor if you can drink alcohol.

### Drinks NOT to choose:

- Cola soft drinks
- High potassium fruit juice, such as prune, orange, grapefruit, or tomato juices
- Drinks made with cola or fruit juice
- Milk or drinks made with milk
- Creamy drinks

## Breakfast

Start off your day right with breakfast foods that fit your diet.

### Breakfast foods to choose:

- Toast, biscuits, bagels, English muffins, Danish, pastries, or croissants
- Eggs
- Omelets with low potassium vegetables
- Pancakes, waffles, or French toast
- Hot or cold cereals
- Low potassium fruit or juice
- Use margarine, honey, or jelly spreads
- Use non-dairy creamer with coffee or tea

### Breakfast foods NOT to choose:

- High sodium and cured meats, such as ham, sausage, bacon, Canadian bacon, lox, or smoked fish
- Cheese, hash browns, gravy, high potassium fruits, and juices, such as oranges, tomatoes, or prunes, and whole grain products





## Salad

Salads and salad bars can be a great way to get enough fruits and vegetables in your diet. Choose foods that fit your specific diet.

### Salad foods to choose:

- Vegetables: lettuce, radishes, cauliflower, celery, onions, cucumbers, green peas, beets, or alfalfa sprouts
- Salad toppings: Chinese noodles
- Pre-mixed salads: coleslaw, macaroni salad, or cottage cheese
- Fruits: canned fruit, such as peaches, pears, or fruit cocktail, or fresh fruits, such as grapes, pineapples, or peaches
- Low sodium salad dressings: oil and vinegar mixes, or lemon juice

### Salad food NOT to choose:

- Tomato
- Raw or cooked spinach
- Mushrooms
- Olives
- Pickles/relish
- Bacon bits
- Mushrooms
- Kidney, pinto, black beans, or chickpeas
- Potato salad
- Seeds or nuts
- Croutons
- Dried fruit
- Fruit: Kiwi, melon, oranges, or bananas

## Main meals

Your main meal also has many possible food choices. Make sure that lower salt or no salt seasonings are used and sauces are kept on the side. Some can add too much salt or potassium.

### Appetizers as a main meal to choose:

- Canned fruit cup with low potassium fruits
- Clams, shrimp, or crab meat
- Lower potassium vegetables, such as green beans, cooked carrots, corn, eggplant, kale, peppers, or radish

### Main meal foods to choose:

- Beef: steak, prime rib (with fat removed), or burgers
- Fish
- Chicken
- Pork chops (grilled or broiled)
- Sandwiches with grilled meat
- Vegetable omelets (see Breakfast Foods)

### Appetizers as a main meal NOT to choose:

- Soups
- Potato skins
- Chips
- Crackers
- Squash
- Baked beans
- Beets
- Brussels sprouts
- Tomato products
- Raw carrots

## Main meal foods NOT to choose:

- Casserole-like items
- Battered and fried foods
- Breaded items
- Cured or salted meats
- Foods made with cheese
- Foods covered in sauces or gravies

## Side dishes

Side dishes that come with your meal are often high potassium vegetables or fried items. Talk to your server about replacing choices.

### Side dish foods to choose:

- Rice or noodles, which are lower in potassium
- Vegetables:
  - Green beans
  - Corn
  - Asparagus
  - Eggplant
  - Peas
  - Cooked carrots
  - Cauliflower

### Side dish foods NOT to choose:

- Spinach
- Tomatoes
- Potatoes
- Baked beans
- Winter squash
- Mushrooms
- Sauerkraut
- Any vegetables with sauce or gravy

## Desserts

Allow yourself a treat! If you have diabetes, consider your diet needs for foods that are lower in sugar or sugar-free.

### Dessert foods to choose:

- Sherbet or sorbet
- Plain cakes or cookies
- Fruit and fruit pies with low potassium fruits, such as peach, apple, pineapple, or strawberry
- Jell-O or gelatin

### Dessert foods NOT to choose:

- Ice cream/items with ice cream
- Cheesecake
- Pudding or custard
- Items with chocolate
- Fruit and fruit pies with high potassium fruits (orange, rhubarb, or grapefruit)
- Cream, pumpkin, or pecan pie





# Controlling Your Fluids

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## Daily fluid allowance

You daily fluid allowance is the amount of fluid you can have in 1 day. Drinking too much fluid may cause a build up of fluid in the body. Drinking 2 cups of fluid over what you are allowed can increase your body weight by 1 pound. Weight gain over a 2 to 3 day period could put your health at risk.

You also need to count any food that is liquid at room temperature or that you can pour. All fluids should be measured in a standard 8-ounce, 1 cup, or 240 milliliter (ml) measuring cup.

## Keeping track

Keep a running total for your day, like in a notebook. One way to keep track is to use a pitcher of water. Every morning, pour water into a pitcher that equals your daily fluid allowance. Every time you take a drink, pour the same amount of water out of the pitcher. This includes fluid you drink when taking medicine. Using this method, you will know how much fluid you have left for that day.

### My fluid allowance is:

\_\_\_\_\_ cups or \_\_\_\_\_ liters a day,  
plus the amount I make daily as  
urine.

### These fluids need to be measured and counted in your daily fluid allowance:

- Water, juice, soup, and all hot or cold drinks
- Fruits: 1 cup of fruit =  $\frac{1}{2}$  cup fluid or 120 ml
- Ice: 1 ice cube = 2 tablespoons or 30 milliliters fluid or 1 cup crushed ice =  $\frac{1}{2}$  cup fluid or 120 ml
- Ice cream, sherbet, yogurt, or pudding:  $\frac{1}{2}$  cup =  $\frac{1}{4}$  cup fluid or 60 ml
- Gelatin, such as Jell-O:  $\frac{1}{2}$  cup =  $\frac{1}{2}$  cup fluid or 120 ml
- Popsicles: 1 twin bar =  $\frac{1}{3}$  cup fluid or 40 ml

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## Converting different types of measures

Products you may use are often measured in liters, quarts, cups, or ounces. This can make it hard to know how much liquid you can have. You will need to convert the measures to the same thing. For example:

**2 liters = 2,000 milliliters = 2.11 quarts = 8.45 cups = 67.6 fluid ounces**

**1 liter = 1,000 milliliters = 1.05 quarts = 4.22 cups = 33.8 fluid ounces**

- Liquid less than 1 liter may be written as milliliters or as a fraction of a liter. For example, 500 milliliters (ml) is the same as 0.5 liters (L).
- Liquid medicines may be measured in cubic centimeters (cc). 1 cc is the same amount as 1 milliliter (ml). For example: 5 cc of liquid = 5 ml.

## Fluid conversion table

Use this table to help you convert and measure your fluids.

1 quart	= 32 ounces or 4 cups	= 960 milliliters
2½ cups	= 20 ounces	= 600 milliliters
1 pint	= 16 ounces or 2 cups	= 480 milliliters
1 cup	= 8 ounces	= 240 milliliters
¾ cup	= 6 ounces	= 180 milliliters
⅔ cup	= 5⅓ ounces	= 158 milliliters
½ cup	= 4 ounces	= 120 milliliters
⅓ cup	= 2⅔ ounces	= 79 milliliters
¼ cup	= 2 ounces	= 60 milliliters
1 tablespoon	= ½ ounce	= 15 milliliters
1 teaspoon	= ⅙ ounce	= 5 milliliters

## Tips to control your fluids

- Avoid salty foods to be less thirsty.
- Use small cups and glasses for beverages. Take small sips when drinking.
- Instead of adding ice cubes made with water to your beverage, make ice cubes out of your favorite allowed beverage. You can also use reusable plastic ice cubes you freeze.
- Eat allowed fruits and vegetables ice cold between meals. Fruits and vegetables are very healthy, but follow your treatment plan.
  - If you are on a renal diet, many fruits and vegetables are high in potassium. Eat only allowed amounts of them.
  - If on a heart healthy diet, talk with your doctor about your needs.
  - Fruits and vegetables high in water are watermelon, cantaloupe, grapes, oranges, grapefruit, strawberries, cucumbers, celery, and leafy vegetables like lettuce and spinach.
- Avoid alcoholic beverages unless it is okay for your treatment plan.
- To keep your mouth from getting dry:
  - Sliced lemon wedges can stimulate saliva. Dip lemon in sugar, if that is allowed for your diet, and freeze for a treat.
  - Sour hard candies or chewing gum can moisten your mouth if allowed.
  - Rinse your mouth with water (do not swallow) or rinse with a non-alcohol mouthwash.
- Weigh yourself daily and record it. You should weigh yourself at the same time of day every day and wear the same amount of clothing.
- Use a humidifier in your home to increase humidity. Clean your machine often to reduce germs in the home.

# Adding Flavor to Low Sodium Diets

When cooking, it is easy to add flavor to your foods without adding salt. By not adding salt to your foods, you take in less sodium.

Try adding some of these spices to get great flavor, while staying on your low sodium diet.

## Spices to try instead of salt

Spice	Taste	Use With
Allspice	Variety of spices, cloves, nutmeg, and cinnamon in one	Variety of foods from marinades, to meats, to desserts
Basil	Sweet and strong	Italian dishes, soups, vegetables, and marinades
Bay Leaf	Mild	Seafood, stews, most meats, and vegetables
Black Pepper	Strong and spicy	Any dish to add more spice
Caraway	Sweet and nutty	Breads, salads, cakes, and marinades
Chili Powder	Spicy and hot	Soups, vegetables, chili, and spicy dishes
Cloves	Bittersweet	Fruits or as contrast in stews and spicy food
Dill	Mild and slightly sour	Most meats, vegetables, and dips
Ginger	Strong and peppery	Cakes, meats, vegetables, and Asian cuisine
Mint	Sweet, clean, and refreshing	Fruit salads, rice pilafs, and meat marinades. Can also use in place of basil for pesto.
Nutmeg	Warm and spicy	Baked goods, egg, and cheese dishes
Oregano	Herby	Meats, pastas, soups, and vegetables
Parsley	Mild pepper	Garnish in soups, salads, and sauces
Rosemary	Strong and piney	Meats, stews, and soups
Sage	Strong	Mostly with meats
Thyme	Lemony	Stuffing, stews, and beans
Tarragon	Aromatic and strong	Sauces, salads, and meat marinades

## Other ways to add flavor without salt

### Spice Rubs

A spice rub is a mixture of ground spices and herbs that is applied or “rubbed” onto raw food before being cooked. Dry rubs cost only pennies per serving, but add visual appeal and vivid flavors to food. Try these rubs for beginners:

#### Jamaican jerk rub:

- 2 tablespoons ground cinnamon
- 2 tablespoons dried minced garlic
- 2 tablespoons ground ginger
- 2 tablespoons ground allspice
- 1 tablespoon ground cloves
- 1 teaspoon cayenne pepper

#### Bayou blast rub:

- 2 tablespoons paprika
- 2 tablespoons garlic powder
- 1 tablespoon ground black pepper
- 1 tablespoon onion powder
- 1 tablespoon cayenne pepper
- 1 tablespoon dried oregano
- 1 tablespoon dried thyme

### Salsa

A salsa is a blend (chopped or pureed) of fruits, vegetables, and spices that can be used as a dip, condiment, or cooking sauce for a meal or snack.

#### Mango salsa:

- 2 ripe mangos, peeled, pitted, and coarsely chopped
- 1 small red bell pepper, seeded, deribbed, and coarsely chopped
- 1 small red onion, minced
- ¼ cup chopped fresh cilantro
- 1 medium clove of garlic, minced
- ¼ cup pineapple juice
- 6 tablespoons fresh lime juice
- 1 jalapeno pepper, finely chopped

### Marinades

A marinade is a seasoned liquid that is used to soak cuts of meat, poultry, fish or shellfish. Marinades add flavor and help tenderize meat. One of the most important ingredients in a marinade is an acid. The most common ones used are lemon juice, wine, and vinegars.

#### Orange juice marinade:

1. Place in a double zipper gallon storage bag:
  - 1 cup orange juice
  - 1 teaspoon cinnamon
  - 1 teaspoon cumin
  - 4 servings of meat, poultry, fish, or shellfish
2. Refrigerate for at least 2 hours.
3. Drain and discard marinade.
4. Grill and enjoy!



## Sauces

A sauce is a thick liquid used to add moistness and flavor to a dish. Many store-bought sauces, such as soy sauce and salad dressings, contain high amounts of sodium. Try these alternatives to add flavor to your dishes:

### **Coconut Amino Stir-Fry Sauce:**

- 3 cloves minced garlic
- 3 tbsp rice vinegar
- 3 tbsp coconut aminos
- 1 tbsp honey
- 1 tbsp toasted sesame oil
- 1 tbsp grated ginger (optional)

Add to stir fry once meat is fully cooked and cook until thickened (makes ~4 servings).

### **Balsamic Vinegar Dressing**

- ¼ cup balsamic vinegar
- ¾ cup extra virgin olive oil
- 2 tbsp honey
- 1 tbsp Dijon mustard
- ½ tsp ground black pepper
- 1 garlic clove, minced

Whisk ingredients together and store in a closed jar in the fridge (makes 10 servings, 2 tbsp per serving).

## What about salt substitutes?

If you are following a low potassium diet, do not use salt substitutes because they are high in potassium. Ask a dietitian before using salt substitutes.

# A General Guide for Taking Medicines

Use this guide to help you learn about your medicines to take them safely. Ask your doctor, nurse, or pharmacist for more specific information about each medicine you are taking.

## Keep a list of all of your medicines

Keep an up to date list of all of your medicines with you to share with your doctor and dentist at each visit. Be sure to include:

- Prescription and over the counter medicines
- Vitamins and herbal products, such as St. John's wort, garlic, ginkgo biloba, or vitamin E
- Dietary supplements and homeopathic remedies, such as juices, teas, or other products
- Sample medicines you may have been given by your doctor
- Skin patches, eye drops, inhalers, creams, and ointments
- Medicines delivered by pumps, such as insulin or pain medicine



## Before taking a new medicine, tell your doctor if:

- You are taking any prescription or over the counter medicines, herbal products, vitamins, or other dietary supplements
- You have an allergy or reaction to any medicine, herbal product, food, or other substance
- You are pregnant, plan to become pregnant, or are breastfeeding

## Ask questions to learn about your medicines

Ask questions of your doctor or pharmacist to learn about your medicines and write down the answers so you can refer to them later. Questions you may want to ask:

- What are the generic and brand names of the medicines?
- Why am I taking this medicine and what does it do?
- How much do I take, how often, and at what time?
- Should I take it with food?
- What food, drink, or activities should I avoid while taking this medicine?
- What are the usual side effects and what do I do if they occur?
- What do I do if I forget to take my medicine?



- When should I expect the medicine to start working and how can I tell if it is working?
- Are there any tests I need to have while taking this medicine?
- How long do I need to take it?
- Is it safe to take with other medicines that I am taking?
- Should I stop taking my medicine for any special reasons?

## Use your medicines safely

- Take your prescribed medicines at the right time for the full length of time your doctor ordered, even if you are feeling better.
- Get refills of your medicine 5 to 7 days before your supply is gone, so you don't miss a dose.
- Do not stop taking your medicines without checking with your doctor first.
- If you have any side effects that you did not expect, call your doctor.
- Always read the label before taking any medicine.
- Check the date on the bottle and throw out any medicines that have expired.
- Take over the counter medicines as directed on the label. Ask your pharmacist to help you choose an over the counter medicine.
- Child proof caps are required by law to prevent accidental poisonings. If there are no children in your home, you can ask your pharmacist for an easy open cap. You may need to sign a form.

## Storing medicines

- Keep your medicine tightly capped and in the original bottle. If you use a pill reminder box, put only enough medicine, for the day or week.
- Store your medicines away from heat and direct sunlight. Do not put medicines in the bathroom cabinet because heat and moisture may cause changes in the medicines.
- Store medicines where children and pets cannot get to them.
- Do not store medicines in the refrigerator or freezer unless you are told to do so.
- Outdated medicines or any prescription medicines not used for more than 1 year should be thrown out. Check with your pharmacist about how to safely get rid of them. Do not throw old medicines in the trash can. Watch for community drug take back programs.

## Other precautions

- Do not give your medicines to other people. This can be dangerous, and it is against the law.
- Use only 1 pharmacy, so the pharmacist has a record of all of your medicines.
- Check all of your medicines before leaving the pharmacy. Read the name, strength, and instructions on the bottle. Open each and look at the pills. If anything looks different than you expected, talk to the pharmacist before you leave.
- If you take more medicine than prescribed, call your doctor, pharmacist, or the Poison Control Center at **1-800-222-1222** right away.



# Common Dialysis Medicines

Listed here are common medicines you may take as a dialysis patient. Learn the names of your medicines and the reason why you are taking them.

Talk with your doctor or pharmacist before using over the counter medicines, herbals, supplements, or vitamins. These products may be bad for people with kidney disease or interact with the medicines you are taking.

## Phosphate binders

These medicines bind or attach to phosphorus in the intestine, so it can leave your body when you go to the bathroom. You take this medicine within 30 minutes of having a meal.

- Dialysis does a poor job of phosphorus removal. Taking phosphate binders is the only way to get rid of excess phosphorus from your body.
- Limit foods containing phosphorus to help keep your phosphorus within the target range. Talk to a dietitian for more information.
- High levels of phosphorus in the body can pull calcium out of your bones. This puts you at risk for weak bones that can break more easily.
- High levels of phosphorus can also lead to skin itching or irritation. Talk with your doctor if you have these signs.

## Antihypertensives (blood pressure control)

These medicines keep your blood pressure controlled. Your doctor may also use medicines to reduce fluid retention, which can help to control your blood pressure better.

Some patients are instructed not to take their blood pressure medicines in the morning on the day they have dialysis. Your doctor will give you specific instructions about whether or not to take blood pressure medicine on dialysis days.

## Stool softeners

It is important to avoid constipation and to have regular bowel movements, called staying regular. Take stool softeners as directed by your doctor and tell the dialysis staff if the medicine is not working. If you are on peritoneal dialysis, you may have problems with your exchanges if you have constipation.

- Do not use products containing phosphorus, mineral oil, aluminum, or magnesium.
- Eat high fiber foods as recommended by your dietitian.



## Vitamins and supplements

To keep your body in balance with dialysis treatment, your doctor may prescribe vitamins or supplements.

**Do not substitute your prescription for an over the counter product without talking to your doctor or pharmacist. Check with your doctor or pharmacist for how to take your vitamins and supplements.**

You may be asked to take 1 or more of these:

- **B complex vitamin with folic acid**

Dialysis removes B vitamins and folic acid. Your doctor may prescribe a renal multivitamin tablet that contains these water soluble vitamins. B vitamins and folic acid are important because they play a role in making red blood cells.

- **Calcium supplement**

Calcium supplements prevent calcium loss in the bones. When calcium is taken between meals, it helps increase the calcium in your blood and bones. When calcium is taken with meals, it also helps increase the calcium in your blood and bones, as well as helping to decrease your phosphorus levels. Calcium may interact with other medicines that you take. Talk with your doctor or your pharmacist to be sure you are taking calcium at the right time. Only take calcium if directed to by your doctor.

- **Epoetin**

Healthy kidneys make a chemical called erythropoietin. If you are on dialysis, your erythropoietin levels may be low. This can lead to anemia. Epoetin may be prescribed to you to treat your anemia. It can be given as an injection or during dialysis treatment.

- **Iron supplement**

Iron helps the body make red blood cells, or hemoglobin. Red blood cells are needed to carry oxygen to your organs. Too little iron can lead to a condition called anemia. Iron may be given in a pill form or as an infusion during your dialysis treatment. Iron can interact with medicines that you take. Talk with your doctor or your pharmacist to be sure you are taking iron at the right time.

# Blood Tests for Dialysis

While you are on dialysis, you will have your blood tested often. Knowing these test results will help you keep you as healthy as possible. The tests listed here are the most common. There may be other tests your doctor recommends. Test abbreviations and test results with healthy averages are provided so that you can compare your test results.

## Hematocrit (Hct)

**Healthy dialysis average: 30% to 36%**

Your hematocrit shows the percentage of blood that is made up of red blood cells. If you have signs of a low count, you may be given blood products or a medicine, called an erythropoiesis stimulating agent (ESA), to help produce more red blood cells.

## Hemoglobin (Hgb)

**Healthy dialysis average: 10 to 12 g/dL**

Hemoglobin is a protein in red blood cells that carries oxygen to tissues and carbon dioxide from tissue. Low hemoglobin may mean you have anemia. This is similar to a low hematocrit. If this result is too low, you may look pale, lack energy, feel dizzy, have trouble thinking, and be short of breath. You may be given blood products or a medicine, called an erythropoiesis stimulating agent (ESA), to help produce more red blood cells.

## Iron as measured by Transferrin Saturation

**Healthy dialysis average: 20% to 50% saturation**

Iron is needed to form red blood cells and hemoglobin. Hemoglobin helps to carry oxygen throughout the body. If your result is too low, you may need to start taking iron. Your doctor may order oral or intravenous (IV) iron supplements. Your doctor may also recommend taking iron with vitamin C. This helps your body to absorb the iron.

## Albumin

**Healthy dialysis average: at least 4 g/dL**

Albumin is a protein produced in your liver and related to your nutrition. It keeps the fluid in your body tissues at normal levels. When the levels are too high or low, it can lead to swelling in the arms and legs. You may need to stay in the hospital to correct these levels. A high protein diet is recommended because protein is needed for the body to make enough albumin and because albumin is lost during the process of dialysis. Your doctor may also recommend you take protein supplements.

## Phosphorous (P)

**Healthy dialysis average: 2.5 to 4.5 mg/dL**

Phosphorous is a mineral found in dairy and meat products. When the kidneys are not working correctly, they cannot get rid of extra phosphorous in the body. High phosphorous can take calcium out of bones and make them weak. It also slows down the rate of new bone growth. Most people on dialysis must limit eating high phosphorous foods and take medicines, called phosphate binders. Phosphate binders attach to the phosphate in food and allow the body to get rid of it through the stool. Therefore, phosphate binders need to be taken with meals.

## Calcium (Ca)

**Healthy dialysis average: 8.6 to 10 mg/dL**

Calcium is a mineral that is found in many foods. Bones are made of mostly calcium. Calcium is also needed for the electrical conduction within nerves and muscles. Your calcium and phosphorous levels need to be in balance. If phosphorous is high, your calcium level drops and your parathyroid hormone (PTH) level rises. This causes your body to get more calcium by taking it from your bones, which causes your bones to become weaker. A medicine may help to control the level of PTH and increase the calcium absorbed from your blood to keep your levels normal.

## Blood Urea Nitrogen (BUN)

**Healthy average before dialysis: 20 to 80 mg/dl**

**Healthy average after dialysis: 10 to 20 mg/dl**

Urea nitrogen is a waste product from the breakdown of protein. The value will vary with the amount of protein you eat and your dialysis treatment. After a dialysis treatment, your BUN level is ideally decreased by more than 60%. Your BUN will slowly increase between treatments.

## Creatinine (CR)

**Healthy average before dialysis: 2 to 14 mg/dL**

**Healthy average after dialysis: 1 to 2 mg/dL**

Creatinine is a waste product that occurs from using your muscles. In renal failure, a high level means that waste products are not leaving your body. Keeping your dialysis schedule will keep the level of these waste products from getting higher.

## Bicarbonate (Bicarb or Total CO<sub>2</sub>)

**Healthy dialysis average: 20 to 30 mmol/L**

Bicarbonate tests the amount of total carbon dioxide in the blood. Bicarbonate enters and exits your kidneys to keep your body's electrolytes, such as salt, chlorine, and potassium, in balance. If your levels are too high, you may have swelling in your arms and legs.

## Potassium (K)

**Healthy dialysis average: 3.5 to 5.1 meq/L**

Potassium is an electrolyte that is commonly found in the body. Normal kidneys will get rid of extra potassium in the body. This does not happen when a person has kidney failure. High levels come from eating foods high in potassium. It is very important to limit these foods and to keep the level down. If levels are too high or too low, irregular heart beats and serious heart rhythm problems can occur. Too much potassium can be an emergency and must be treated right away. Your dietitian will help you learn to avoid foods high in potassium.

## Parathyroid Hormone (PTH)

**Healthy dialysis average: 150 to 648 pg/mL**

Parathyroid hormone is important for controlling the amount of calcium in the body. It is part of a cycle that also helps to regulate vitamin D, phosphorus, and magnesium. When calcium is low in the blood, PTH hormone is released to take calcium from your bones. Vitamin D increases in the kidney to increase the absorption of calcium, and PTH speeds up the amount of phosphorous leaving the body. This helps you to have the right balance of phosphorous and calcium. Once calcium levels increase in the blood, PTH decreases. When on dialysis, taking too much calcium from the bones can lead to bone weakness. It is important to work with your dietitian to help you get enough calcium in your diet.

# Living with Kidney Failure

Living with a chronic illness is never easy. You may feel better during the first few treatments of dialysis. You may also feel angry, fearful, or frustrated as the treatments become a routine part of life and your lifestyle changes.

By sharing what has helped other patients with kidney failure, we hope you will be able to meet any crisis, set realistic goals, and live a satisfying life.



## Getting off to a good start

**Learn about your illness** by reading all the information given to you. Ask questions and talk with your doctors, nurses, and social workers.

- **Visit the facility** where you will have your dialysis treatments ahead of time if you are having treatments outside the home.
- **Learn about your treatment options.** Treatment does not cure kidney failure and a treatment option is not always final. In some cases, you may choose not to start a treatment or to stop a treatment. Talk to your health care provider about your options. Discuss what changing treatments will mean to you and if a transplant is an option.
- **Talk about your feelings and needs.** Talk with your family or other patients who have been through similar experiences. Your social worker can provide emotional support and help with problem solving. Counseling may also help you better understand your feelings.
- **Share your experiences with your spiritual leader.** If you have one and feel comfortable doing so, your religious home may be able to provide you and your family with support. Chaplains also serve as members of the care team at Ohio State and are available for support.
- **Understand the costs for treatment and keep good records.** Learn how your treatment and medicines are paid for and get help from your social worker when needed. Keep good records of your treatment costs, insurance statements, and bills.

## Returning to work

- If you plan to return to work, your doctor will discuss any limits you have. Talk with your employer about your condition, so your special needs can be met.
  - The Americans with Disabilities Act prohibits discrimination because of disabilities.
  - Dialysis treatments can be arranged to allow for work or school schedules.
- Some people find it difficult to work and not all jobs can be adjusted to the limits you may have. If you do not return to work, find something you enjoy to fill your time.

## Adapting to life

- Take part in all treatment decisions. Be responsible for your care and needs.
- Know your medicines and why you take them. Take medicines as prescribed. Let your family doctor know if you are having problems.
- Follow your diet and fluid restrictions. Discuss any problems with your dietitian before making changes.
- Ask for help from your health care provider, family, or friends before problems become overwhelming.

## Being good to yourself

Expect physical changes due to kidney failure. You may have changes in your body, weight, energy, and sex drive.

- Enjoy vacations and travel. Make arrangements early and tell your dialysis center, so they can help you find locations for treatment.
  - Give your dialysis center 4 to 6 months to make these arrangements. Other agencies, such as travel agencies and the National Kidney Foundation, may also help you.
  - Find out what Medicare or insurance will cover for treatment inside and outside the United States.
- Expect feelings of anxiety or depression and talk to your family, friends, and health care providers about these feelings. Signs of depression include loss of appetite, sleeping problems, anger, and loss of interest in activities you used to enjoy. If you have any of these signs for more than 2 weeks or if you have thoughts of suicide or of trying to harm yourself or others, call your doctor or 911 right away.
- Learn to be patient with yourself and set realistic goals. This will help your emotional health. Give yourself the needed time to adjust to the lifestyle changes that may occur.
- Find things to do that bring you pleasure. A hobby, volunteer work, or becoming involved in a support group can help you cope.

## Believing in yourself

Living with kidney failure can be challenging. You can meet these challenges by taking charge of your life. Get help from your family, friends, clergy, and health care providers.

You may even want to share what works for you with other patients who have kidney failure.





# Lifestyle Changes While on Dialysis

Most people on dialysis have many changes in their routines and relationships. The dialysis center staff will help you learn how to make the needed changes for your health. Included here are some possible changes you MAY have, but no 2 people respond to dialysis the same way.

## Body changes

Dialysis can sometimes produce changes in your body and in your appearance.

- **Dry skin and brittle hair.** You may need to use a milder soap, shampoo, or skin lotions. Some people have constant itching. If you have itching, talk to your doctor or nurse. They may recommend changes in your diet or certain medicines.
- **Bruises.** You may have a tendency to bruise and need to change how you do certain tasks. Wear gloves when gardening and long sleeves when doing heavy physical work. Your skin may sunburn or tan more easily. Do not stop doing things you enjoy, but be more careful to protect your skin.
- **Dry mouth and bad breath.** When you restrict the amount of fluid you drink, a dry mouth is common. Rinse your mouth with cold mouth wash or water. Chewing gum or sucking on sugar-free candy may help. If you find other ways to deal with a dry mouth, please share them with your nurses and technicians. Your advice will be useful to other patients.

## Weight changes

Dealing with changes in your weight can be hard. Every time you come to dialysis, you will be weighed. Your weight gain is used to decide how much fluid to remove during treatment. Staff will estimate your actual body weight without the extra fluid, called your “dry weight.”

When your kidneys start to put out less fluid than you take in, fluid begins to build up in your body. Medicines will not remove the extra fluid because of your kidney disease. Dialysis can remove most of this extra fluid, but not all of it.

Limiting fluids is hard, but it is your responsibility. Follow your care plan and you will feel better. Try to gain less than 2½ pounds of fluid a day. You may need to drink or eat less than 4 to 5 cups of fluid a day for this to occur. If you can urinate, you may be able to drink more fluid.

You may lose body weight before starting dialysis treatments due to your illness. After you start to feel better, you may have a better appetite and gain weight. It is rare to gain more than 1 to 2 pounds a week of actual body weight.



## Sex drive changes

Changes in your energy level, leisure time, medicines, and stress may also affect your sexual drive and habits. If you have problems or questions, talk to your primary nurse, dialysis staff, or your doctor.

- Sexually active couples should discuss birth control with the doctor. Persons on dialysis can become pregnant or father children.
- Some blood pressure medicines interfere with sexual desire and performance. If you have this problem, talk to your doctor.
- Sexual desire and performance will be most successful if you follow your patterns of energy. You may have greater success when you are rested in the morning, or in the evening the day after dialysis.
- Communication between sexual partners is important. Discuss the changes in your life with your partner. Partners are not mind readers.

## Energy level changes

You may have a decrease in energy before dialysis treatments. Patients on hemodialysis often feel “blah” the evening before dialysis and tired or worn out after dialysis. After several weeks of dialysis, your energy should improve. You will also learn to adjust your activities around your dialysis schedule. Many patients are able to go back to their past activities, including going back to work or doing hobbies.



### Some reasons for feeling tired:

- You may become tired if you have too much fluid or not enough.
- You may have a low blood count (anemia), which adds to being tired.
- You may have problems sleeping, even though you feel tired.

Tell the staff about any problems or changes that you notice. Your doctor may prescribe medicines that can help your tiredness and sleeping problems.

### Things you can do to help yourself:

- Check for patterns in your energy levels and plan activities at your peak energy times.
- Limit your fluids.
- Plan for periods of rest in your schedule. Do not take daytime naps if they keep you from sleeping at night.
- Exercise increases your energy level. Do light exercise 3 times a week, such as walking or cycling.
- Limit lifting to 10 to 15 pounds. This is about the weight of a gallon of milk or a small bag of groceries.





## Activity and time changes

Changes in your schedule and energy level may impact how you spend your time. You may be able to return to work or you may need to make changes to it. You may be able to continue your usual activities or you may want to try new activities to fill your day. Ideas to adapt your activities include:

- If you work, talk with your employer about your options for flexible schedules, full-time or part-time work, working from home, changing job responsibilities, or use of sick or disability leave.
- Find activities you enjoy. Volunteer or find a hobby.
- Reduce stress by focusing on what you can do, not what you cannot do. Most activities can be adjusted to your needs.
- Break down activities into steps so that you can see progress and not get frustrated.
- Ask family, friends, or support groups to do activities with you.



## How to be successful while on dialysis

Follow your diet and fluid restrictions to reduce fluid build up. This will help you to feel better between treatments.

- Talk with your doctor about your hormone levels and medicines you may need to keep your body in balance. For example, your kidneys regulate the hormone erythropoietin (e-re-throw-po-e-tin). This hormone is needed for producing red blood cells and vitamin D. Other hormones regulated by your kidneys control your blood pressure and the salt (electrolyte) balance in your body.
- Dialysis treatments take time and a commitment from you. Think of dialysis treatments as a part-time job. You need to do it to pay for improved health and to do the activities you enjoy.

Life can still be very satisfying and wonderful with end stage renal disease (ESRD). Remember, you have spent your life coping with big and small changes. Have confidence in your ability to adapt and talk with family, friends, and the dialysis staff for more support.

# Tips from Social Workers

A social worker will be working closely with you while you are in the hospital during the acute and chronic phases of **end stage renal disease (ESRD)**. Social workers in the hospital can help you with many issues:

- Adjusting to dialysis
- Advance directives
- Transportation and travel resources
- Financial and personal problems
- Receiving home care or nursing facility care

You will also be assigned a social worker at your permanent dialysis center once you are discharged from the hospital.

## Getting started with a dialysis center

Each patient will meet with a social worker while they are in the hospital to discuss starting dialysis at an outpatient hemodialysis unit. The social worker will make arrangements for you to receive dialysis at a local outpatient dialysis unit.

Every effort will be made to get you placed in a unit closest to where you live and at a time you prefer. Because there is a great demand for dialysis chairs in the community, you may not get your first choice right away. You may be asked to have dialysis at another unit until a chair becomes available at the site you prefer. Dialysis center options are also based on the locations that your nephrologist visits and on your type of insurance coverage.

## Transportation options

Transportation is a concern for most people on dialysis. While resources vary by areas, some options do exist. Your social worker can help you look at your options, including:

- If you qualify for Medicaid, you may be eligible for a cab, ambulette, or ambulance transportation.
- If you are over 60 years old and a Franklin County resident, Senior Options may be able to assist with cab or ambulette transportation.
- Source Point of Delaware County (formerly Senior Choices) provides medical transportation for medical appointments for those 60 years of age or older in Delaware County.
- COTA Mainstream provides van transportation to those who qualify. A social worker or other health care provider can assist you in the application process.

Medicare does not pay for any form of transportation unless the patient is not able to walk without assistance and is in a skilled nursing facility. Typically, Medicare will not pay for ambulance transportation from a private residence to an outpatient dialysis facility.

Talk with family, friends, co-workers, and church members for assistance. Dialysis centers do not provide transportation. However, in some cases, patients may qualify for limited ambulance coverage to and from a dialysis facility if it is considered medically necessary.

## Advance Directives

Advance Directives are legal documents that spell out a person's wishes regarding future health care. Having an Advance Directive, such as a Living Will or Healthcare Power of Attorney, lets everyone know what to do if you become unable to communicate your wishes. Your social worker can explain more about this and assist you with completing the forms. **This is not a “do not resuscitate” (DNR) order.**

If you decide not to complete an Advance Directive, your doctor will contact the people listed below to make health care decisions for you if you can no longer do so:

- Your guardian
- Your spouse
- An adult child
- Your parents
- An adult sibling

You can cancel or change any Advance Directives at any time. Simply destroy the old one and complete a new form. Tell everyone and give a current copy to all involved, including your doctor. The dialysis unit should have a copy of the Advance Directive with your chart. Have a copy with you for each admission to a hospital.

## Insurance coverage issues

Your social worker is your best resource in sorting through the complicated insurance issues with ESRD. They can help you find resources.

### Commercial Insurance

If you have insurance now, understand what the coverage is for the treatment you need. If you do not have coverage, plan costs vary widely. Talk with your social worker about insurance options and available support to help with the cost.

### Medicare

ESRD patients who meet Social Security criteria are eligible for Medicare. There are no age restrictions, but you must have worked and paid into Social Security, as determined by Medicare regulations. If you do not meet the work history requirements, you may qualify under your spouse's benefits.

- Part A covers 80% of inpatient hospital care, skilled nursing home care, skilled home care, and hospice. There is a deductible you must meet each benefit period.
- Part B covers 80% of outpatient dialysis services, doctor's visits, outpatient therapy, X-rays, monthly labs, and CAPD (continuous ambulatory peritoneal dialysis) supplies. Part B is optional and has a monthly premium.
- Part D is prescription drug plans that add coverage to the original Medicare plan. Your costs will vary depending on your financial situation and which plan you select.

## If I already have medical insurance, why do I need Medicare?

In order to ensure full insurance coverage, you should sign up for Medicare. Your social worker at your outpatient dialysis unit is available to discuss with you Medicare coverage and how to apply.

ESRD is a chronic, lifelong disease. It may interfere with your ability to maintain full-time employment and health insurance benefits. In addition, after 30 months of treatment your employer will require you to have Medicare coverage if you are eligible.

## Medicaid

Medicaid is a medical assistance program based on financial need and disability. An application for this program can be completed at your local Ohio Department of Job and Family Services. If you qualify for this program, you will receive assistance with any insurance co-payments, medicines, and transportation.

## Social Security Disability Income (SSDI)

If you are under 65 years of age and have enough work credits in Social Security, you may qualify for SSDI benefits. All dialysis patients qualify for SSDI if they have worked in the past 5 years. You will need to contact your local Social Security office and apply for these benefits. You can call 1-800-772-1213 to locate your local office or visit <https://www.ssa.gov>.

## Supplemental Security Income (SSI)

SSI is an income replacement program for low-income disabled people. Contact your local Social Security office to apply for benefits and determine eligibility. Call 1-800-772-1213 to locate your local office.

## Other Kinds of Health Insurance

- **Employee or Retiree Coverage from an Employer:** This type of insurance is sometimes offered to employees and retirees of a company where they do or did work. Generally, these plans have better rates than if you buy one on your own.
- **Medigap Insurance:** This is an insurance policy that fills in the gaps of Medicare. You must have Medicare to buy a Medigap policy. Generally, these policies are only available to people over 65. Some policies are available to people under the age of 65 with ESRD, but may cost you more money. Contact the Ohio Senior Health Insurance Program (OSHIP) at 1-800-688-1578 to inquire about purchasing a Medigap policy. You can also contact the Ohio Department of Insurance Consumer Hotline at 1-800-686-1526.
- **Medicare Advantage Plans:** Medicare Advantage Plans include health plan options that are part of the Medicare program. You usually get all your Medicare covered health care through that plan, including drug coverage. Examples are HMOs, PPOs, private fee for service plans, and Medicare special needs plans.
- **Veterans Administration Benefits:** If you are a veteran, the U.S. Department of Veteran Affairs can help you pay for ESRD treatment. Call 1-800-827-1000 to verify benefits.

## Helpful resources

These organizations may be able to assist you with material and educational resources:

- **National Kidney Foundation** (Central Ohio Branch)  
2800 Corporate Exchange Drive, Suite 260, Columbus, OH 43231  
614-882-6184 or 1-800-242-2133  
[www.nkfofohio.org](http://www.nkfofohio.org)
- **American Kidney Fund**  
11921 Rockville Pike, Suite 300, Rockville, MD 20852  
1-800-638-8299  
[www.kidneyfund.org](http://www.kidneyfund.org)
- **End Stage Renal Disease Network of the Ohio River Valley**  
3201 Enterprise Parkway, Suite 210, Beachwood, OH 44122  
216-593-0001  
[www.esrd.ipro.org](http://www.esrd.ipro.org)
- **American Association of Kidney Patients**  
14440 Bruce B. Downs Blvd., Tampa, FL 33613  
1-800-749-2257  
[www.aakp.org](http://www.aakp.org)
- **Medicare**  
1-800-MEDICARE (1-800-633-4227)  
[www.medicare.gov](http://www.medicare.gov)

There are also newsletters and magazines available at the dialysis centers that you and your family may find helpful.

# Planning for Emergencies

If an emergency prevents you from getting to your dialysis center, such as a storm or flood, you need to be prepared to miss treatments until you can get to a dialysis center. Take steps to prepare before an emergency happens.

## Key things to have ready

- Wear a medical bracelet or necklace to alert medical personnel to your special needs. Check with your doctor, dialysis center, pharmacy, or the National Kidney Foundation for information.
- Keep a copy of your medical information at home and at work, including:
  - Your name, address, phone number, emergency contact, insurance numbers, and any allergies you have.
  - Your dialysis center's name, address, and phone number.
  - Your doctor's information, including the phone number.
  - Dialysis prescription and vascular access information.
  - Treatment update: Update your treatment plan every 3 months, including how your treatment is run, duration of blood flow rate, heparin use, frequency, dialysate type, and medicines given.
- Keep a current list of medicines. Update the list when your medicines change.
- Keep at least 1 or 2 weeks worth of medicines as an emergency supply. Check the expiration dates and replace them when needed.
- Ask a friend or relative in another area to be your contact person. If you lose phone service, your contact person may be able to notify police or emergency medical services for you.



## For continuous ambulatory peritoneal dialysis (CAPD)

- If you use an ultraviolet device, keep the battery charged at all times. Your battery pack should last for 3 days.
- Keep a 5 to 7 day supply of peritoneal dialysis supplies at home. Check expiration dates and replace as needed or every 6 months.
- If you know how to do CAPD manually, switch to this method.

## For automated peritoneal dialysis (APD)

- Consider buying a gas powered generator that makes 110 AC alternating current to run your cyclor. The generator should be used outside. Keep windows closed to stop gas fumes from coming inside.

- If you have a car, you can run your cycler from your car's accessory socket or cigarette lighter (if your car has one). Use a 12 volt DC with a 110 volt AC inverter. You can buy the inverter at most electronic stores. Make sure there is good ventilation when running the car to avoid carbon monoxide (CO) poisoning. CO is a gas that has no color and no odor. **Never let your car run inside a closed garage.**

## Emergency supplies

Here is a list of other emergency supplies you may need. Keep them together in a safe place:

- Battery powered AM/FM radio with extra batteries
- Flashlights with extra batteries
- First aid kit
- Fire extinguisher
- Emergency phone list, including police, fire, ambulance (911 in most areas), poison control, Red Cross, hospitals in the area, and local services (like plumber, electrician, transport company, and phone repair)
- Supply of food with a long shelf life (check “expires by” dates from time to time and replace as needed)
- Paper plates and cups, plastic utensils, and a can opener you operate by hand



## Staying on your diet and fluid restrictions

If you cannot make it to your dialysis center, you will increase your chances of surviving longer by following these restrictions **AT ALL TIMES**:

- You must eat, but pick foods wisely and limit fluid intake.
- Limit protein to half of your recommended amount.
- Limit fluids to half your recommended intake.
- Limit foods containing large amounts of hidden liquid, like cooked cereals, pasta, fruits, vegetables, and pudding.
- Do not eat foods that are liquid at room temperature, like Jell-O, ice cream, sherbet, and ice.
- Use salt free foods whenever possible. They will cause less thirst.
- Do not eat any foods with high potassium content. Be more careful than before in your choice and amount of fruits and vegetables.
- If you have diabetes, have a few high calorie foods, like sugar, honey, or juice for low blood sugar reactions.
- Know the symptoms of high potassium and take medicine as ordered to lower potassium.
- Make arrangements for dialysis as soon as possible after the emergency is over.



## Create your emergency meal plan

Use your meal planning information to draft an emergency meal plan. Work with your dietitian for food suggestions and to look over your plan.

- **If you have diabetes**, avoid high sugar foods. Try for low sugar options. If you start going “too low,” eat some sugar or hard candies.
- Remember your daily fluid limit: \_\_\_\_\_
- **Limit phosphorus** to 800 to 1,000 milligrams (mg) a day.
- **Limit potassium**. A potassium restricted diet is often 2,000 milligrams (mg) or less per day.

## Day 1

Meal	Foods/Drinks	More items/notes
<b>Breakfast</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Morning Snack</b> Time ____	• _____ • _____ • _____	
<b>Lunch</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Afternoon Snack</b> Time ____	• _____ • _____ • _____	
<b>Dinner</b> Time ____	• _____ • _____ • _____ • _____ • _____	
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## Shopping List

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## Day 2

Meal	Foods/Drinks	More items/notes
<b>Breakfast</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Morning Snack</b> Time ____	• _____ • _____ • _____	
<b>Lunch</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Afternoon Snack</b> Time ____	• _____ • _____ • _____	
<b>Dinner</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Evening Snack</b> Time ____	• _____ • _____ • _____	

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**Notes:** \_\_\_\_\_

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## Day 3

Meal	Foods/Drinks	More items/notes
<b>Breakfast</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Morning Snack</b> Time ____	• _____ • _____ • _____	
<b>Lunch</b> Time ____	• _____ • _____ • _____ • _____ • _____	
<b>Afternoon Snack</b> Time ____	• _____ • _____ • _____	
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<b>Evening Snack</b> Time ____	• _____ • _____ • _____	

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## Notes

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