

*If you have
any questions
or concerns,
please ask your
healthcare
provider.*

Hemodialysis

The kidneys play an important role in helping the body function. When the kidneys fail, a treatment such as hemodialysis is needed to take the place of the kidneys. Your kidney care team, which includes your physician, physician assistant (PA) and nurse, will help you learn more about this. This brochure will help you understand the following:

- What hemodialysis is and how it can help.
- What to expect.
- Lifestyle changes and how to care for yourself.

Kidney function

The kidneys:

- Remove waste and extra fluid from the blood.
- Regulate certain chemicals (hormones) in the blood.
- Control blood pressure.

When the kidneys do not work well, blood pressure, waste products and fluids in the body can rise to unsafe levels. Examples of waste products include urea and creatinine. These are normal by-products of body functions that the kidneys remove from your blood. Certain chemicals in your blood, such as potassium and phosphorus, may also rise to dangerous levels if your kidneys cannot remove them.

Dialysis is a treatment that takes over some of the work of your kidneys. It removes these wastes and extra fluid so they do not build up in your body. It also helps control your blood pressure.

When to start hemodialysis

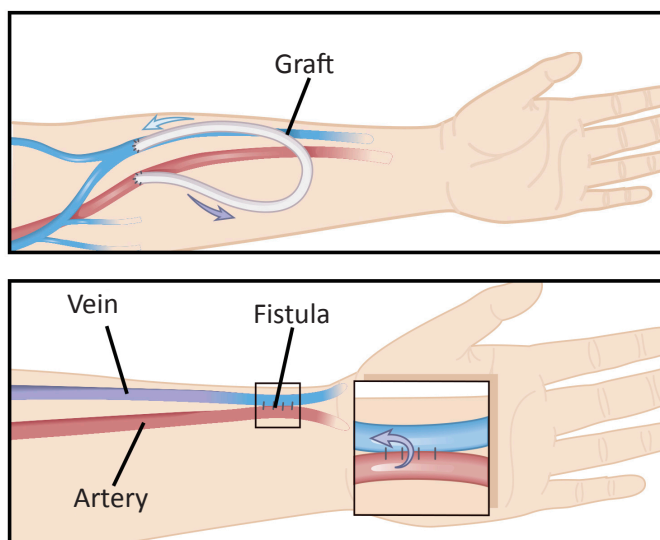
Kidney failure progresses through stages. Your physician or PA will check your blood tests and tell you when you need to consider dialysis. Usually, this occurs when your glomerular filtration rate (GFR) falls below 15. The GFR is estimated from the creatinine blood test. Creatinine is a normal waste product of muscle tissue that the kidneys filter out of the blood and excrete in the urine. A low GFR indicates that the kidney's ability to get rid of creatinine is dropping. Therefore, creatinine is building up in the blood. This is a sign of kidney failure.

Preparing for hemodialysis

Hemodialysis requires access to your blood vessels. For short-term use, a special catheter (soft tube) may be placed in a large neck or chest vein. It is connected to the dialysis machine for treatments. In some cases, these types of catheters may be used for longer periods if other methods to access your blood vessels don't work. However, there are more possible complications with using catheters for dialysis.

For long-term use, either a graft or a fistula are created. A graft is a small, plastic tube that connects an artery and vein together. A fistula joins an artery and vein together to make a bigger blood vessel (see Figure 1).

Figure 1. Graft and fistula



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Both require minor surgery and are usually done in the arm. It may take several weeks or even a few months to heal before using a graft or fistula. If possible, it is best to have this surgery at least 6 months before you need to start dialysis. This ensures the graft or fistula is ready to be used for dialysis when you need it.

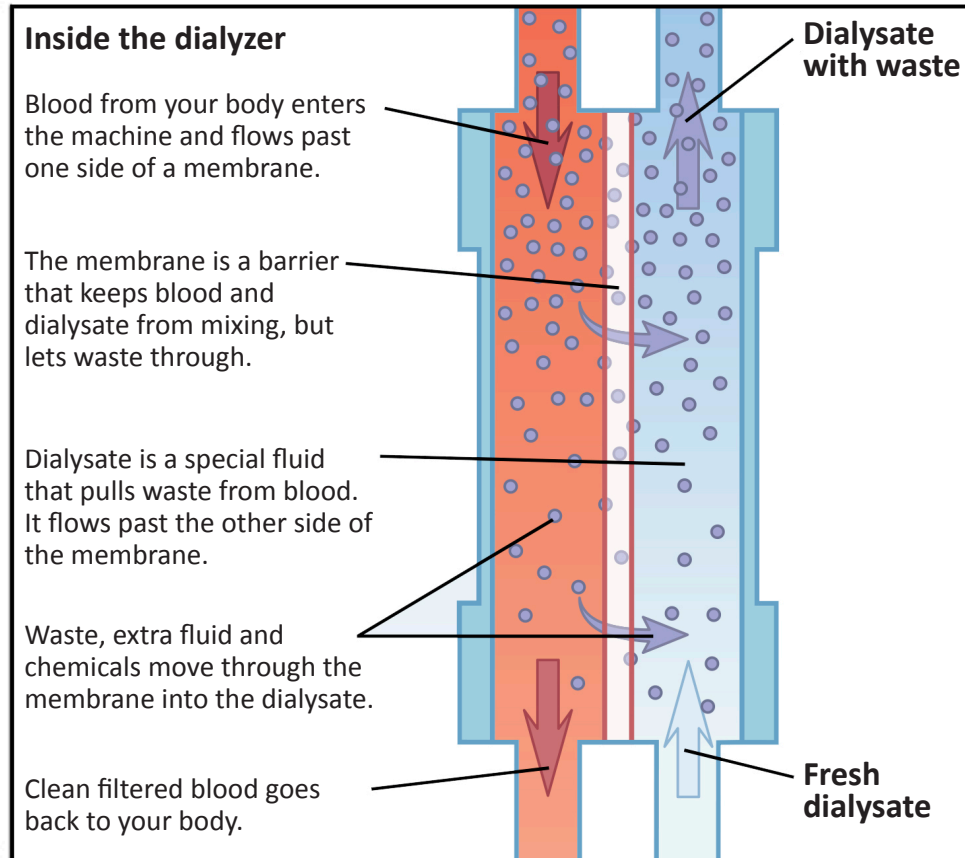
The hemodialysis machine

The hemodialysis machine is sometimes called an artificial kidney. It consists of a filter (dialyzer) that contains a cleansing solution (dialysate).

For hemodialysis, 2 needles are inserted into your fistula or graft to access the blood vessels. One goes into the vein; the other into the artery. Each is connected to tubing that leads to the dialysis machine. Blood from the vein passes into the filter where it circulates on one side of the filter. A membrane in the filter keeps the blood from mixing with the dialysate. The dialysate is on the other side of the filter. As the blood goes through the filter, wastes and fluid are pulled out from your blood. These pass through the membrane where they are discarded in the dialysate. After the blood is filtered, it is returned to you through the second needle in the artery.

The filter is designed to only allow waste and fluid to pass through. Important blood products such as protein and blood cells are not filtered out. The blood is filtered many times during a treatment until it is “clean.” See Figure 2 to see an example of what the dialyzer looks like and how it works to filter the blood.

Figure 2. Inside the dialyzer



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How long and how often

Dialysis treatment has been shown to help:

- Make you feel better.
- Improve your overall well-being.
- Prevent or lessen kidney-related health problems that cause you to be admitted to the hospital.

The amount of dialysis you need depends on how well your kidneys work. Treatments are usually done 3 times per week. Allow at least 4 hours or longer for each treatment.

How much dialysis you need depends on:

- How long it takes to filter the blood. This may vary, depending on how long it takes for fluid and waste to build up between treatments. Your blood tests show how much waste is building up. The higher the blood levels, the longer it may take to filter out the waste products.

- Your weight. You will be weighed at the beginning of each treatment. Weight gain since the last treatment may be a sign of fluid buildup in your blood. The more weight you gain between treatments, the more fluid needs to be removed.
- The type of dialysis machine that is used for your treatment.

If your kidney failure is acute (a sudden onset), or if your kidney failure is temporary, you may only need dialysis for a short time. But when kidney disease gets worse over time, kidney failure may be permanent. In this case, you will need treatment for the rest of your life, unless you can get a transplant.

Where to do hemodialysis

Dialysis can be done while you are a patient in the hospital. After you leave the hospital, dialysis can be done in the following places:

- An outpatient dialysis center within a hospital.
- An independent dialysis center (not part of a hospital).
- Home.

Your healthcare provider can help you choose the best place for your treatments. This may depend on your medical condition, insurance coverage and personal preference.

Home hemodialysis

If home hemodialysis is a good option for you, there are several things you need to consider.

- **A partner.** Both you and your partner must be trained to do dialysis. Your partner can be a family member, friend or home health aide; however, they must be there for you during dialysis. (Note: Medicare will not cover the cost of hiring a partner.)
- **Space.** There must be enough room for the equipment.
- **Water drainage and electric power.** These must be adequate for draining the dialysis machine and for the water cleansing process (purification unit).
- **Insurance/Medicare.** Please contact your insurance provider about your coverage for home dialysis. If you have Medicare, it may cover up to 80% of your home dialysis costs. It is the same as for outpatient hemodialysis. It may also cover costs related to minor plumbing or electrical work that is needed for home hemodialysis.

Medications

Medications are needed to help maintain your health. Most dialysis patients take these.

- **Renal multivitamins.** These are made for those with kidney disease. Other vitamins cannot be used because they contain minerals that can cause serious problems.
- **Anti-hypertensives.** These control high blood pressure.
- **Phosphate binders.** These contain calcium and work like a magnet to pull phosphorus out of your food.
- **Antipruritics.** These help to control itching.

You may also need to take other medications. Know the following information about each medication:

- Name
- Dose—how much to take
- Route—how to take (for example, chew, swallow, dissolve or inject)
- Purpose—why you are taking it
- Side effects—what to watch for and what to report to your physician

Ask your physician or PA before taking any over-the-counter (non-prescription) medicine. Be sure to tell them if you have a new medicine prescribed by another physician. It is important that they know what you are taking.

It is important to avoid:

- **Aspirin**—Because it may increase the risk for bleeding, do not take aspirin unless directed to do so by your physician.
- **Cough and cold medicines**—Many over-the-counter cough and cold medications are dangerous for people on dialysis. Medications such as Nyquil® and Vicks Formula 44® are high in potassium. High potassium levels can lead to death. Other medications may cause your blood pressure to rise to unsafe levels.
- **Laxatives**—Many laxatives contain magnesium, which is difficult to remove from the blood through dialysis. A high magnesium level may cause serious health problems.

Medications used during dialysis

Your physician and PA will decide what medications are needed during dialysis. They may include the following:

- **Heparin** keeps the dialyzer and catheters free of blood clots. **Before each treatment**, tell the nurse if you have any of these symptoms, which may indicate you need less heparin:
 - Bruising
 - Pinpoint red spots
 - Bleeding when you brush your teeth
 - Bleeding from your fistula or graft after you leave the unit
 - A fall since your last treatment
- **Saline** is a fluid that is given during dialysis. It helps keep your blood pressure stable.
- **Erythropoietin (Epo)** is given to treat anemia (low red blood cell count) caused by chronic renal failure.
- **Iron supplements** can be given through the dialysis machine. Iron often is used to treat anemia.
- **Calcijex®** or **Zemplar®** is also given through the dialysis machine. It helps to prevent bone disease, common among kidney patients.

Caring for your fistula or graft

Once you have a fistula or graft placed, follow these important points to help keep it functional.

Do not allow anyone to:

- Draw blood from the fistula or graft arm. (Only the dialysis staff may do this.)
- Take your blood pressure on your fistula or graft arm.
- Do a finger stick for glucose in the fistula or graft arm.
- Insert an IV (into the vein) needle in the fistula or graft arm.

Be sure to:

- Check daily to feel the “thrill” over the fistula or graft. This is a “rushing” feeling when you place your fingers on the fistula/graft. Call your physician or PA right away if you cannot feel it.
- Wash your fistula or graft with an antibacterial soap daily.
- Do not put anything tight on your fistula or graft arm such as a watch, elastic band or tight clothing.
- Avoid activities that might hurt your arm, such as football or basketball.

Call your physician or PA right away if you have any signs of infection, such as redness, swelling, drainage or warmth, at the fistula or graft site.

If you have a neck or chest catheter

Special catheters (tubes) may also be used to access your blood vessels for dialysis. These are usually used until you have a graft or fistula that can be used. They are placed on your neck or chest. The staff will give you detailed information about your type of catheter and how to care for it.

Protecting your kidneys

Even if you need dialysis, you probably still have some kidney function left. Help keep your remaining kidney function and avoid unnecessary problems by following these tips:

- Take blood pressure medicines as prescribed. Keeping your blood pressure under control helps protect your kidneys from further damage.
- Do not take medicines that can cause more kidney damage. These may include certain antibiotics and over-the-counter pain medicines called non-steroidal anti-inflammatory drugs (NSAIDs). NSAIDs include many different medicines, including Ibuprofen (Motrin[®], Advil[®]) and naproxen (Aleve[®], Naprosyn[®]).
- Ask your team if taking water pills (diuretics) will help you. They may help prevent excess buildup of salt and water in your body.
- Keep other medical conditions well controlled, such as diabetes and high blood pressure.

Diet

Your diet may need to change after you start dialysis. Although you may need to limit some foods, it is still important to get the proper nutrition and calories needed to keep as healthy as possible. A dietitian can help you plan a menu and choose the right kinds of foods. Key points include:

- **Follow the salt and fluid guidelines.** Limit your intake of these to what is prescribed for you. Salt intake should be no more than 2,000 mg per day. This is important so that you do not build up too much fluid between dialysis treatments, which can raise your blood pressure or cause other problems. Know that even just taking in more salt alone can still cause too much fluid to build up.
- **Use herbs and spices instead of salt.** Do not add salt to your food at the table or when cooking.
- **Avoid salt substitutes or products containing salt substitutes.** These usually have a lot of potassium, which may be dangerous. Some products labeled low-salt or salt-free may contain salt substitutes.
- **Read food labels.** Check the amount of sodium (salt) and potassium per serving. Choose those that are low.
- **Try not to use canned, processed or frozen foods.** These tend to have more salt, potassium or other ingredients that may affect your health.
- **Eating out.** Ask for meat or fish to be salt free. Ask for gravies, sauces and salad dressings to be served on the side. These often have a lot of salt.
- **Follow potassium and phosphorous guidelines.** Limits may vary and depend on your blood tests. Your physician, nurse or dietitian will talk with you about what foods to avoid.

Lifestyle

It takes time to adjust to the changes that dialysis makes to your life. Once a routine is established and you become used to the dialysis routine, you may feel better. With dialysis and medications, you may feel stronger and less tired. You may even enjoy many of the same activities you did before you had kidney disease.

Regular exercise can help you feel better and make you stronger. To improve the quality of your life, ask what type of exercise program is right for you.

The support of family and friends can make a difference. Continue to do the things you enjoy with loved ones.

Work

It is possible to go back to work after starting on dialysis. Much depends on the physical demands of the job. If you need to do heavy lifting, digging or other types of strenuous physical labor, those duties may need to be changed.

Travel

If you wish to travel, you will need to:

- Locate a dialysis center in the area that you will be traveling to.
- Contact your insurance company to verify coverage at the center.
- Make an appointment at the center several weeks before you travel there.
- Find out what information they will need from you before you arrive.

Resources

Resources are available to help you and your family adjust to the changes and stresses that living with chronic renal failure can bring. Talk with your care team if you wish to get help with any of the following:

- Anxiety and depression
- Concerns about present and future health
- Impact of illness on family relationships
- Lifestyle changes
- Sexual dysfunction

You may also be able to benefit from other services. Some community services help patients and families with specific problems such as the following:

- Transportation to and from the Dialysis Unit
- Financial concerns
- Employment issues
- Out-of-town treatments

Insurance coverage

If you have Medicare, 80% of home or clinic hemodialysis costs may be covered. Other supplemental or private insurance may cover additional costs. If you are eligible for Medicaid, it may also help with some of the costs. Check with your state regarding coverage. A social worker can help you with your insurance options.