

Hemodialysis



**National Kidney
Foundation®**

Making Lives Better



Healthy kidneys clean your blood and remove extra fluid in the form of urine. They also make substances that keep your body healthy. Dialysis replaces some of these functions when your kidneys no longer work. There are two different types of dialysis— hemodialysis and peritoneal dialysis. This brochure is about hemodialysis. For more information on peritoneal dialysis, see the National Kidney Foundation’s brochure *Peritoneal Dialysis*.

When is dialysis needed?

You need dialysis if your kidneys no longer remove enough wastes and fluid from your blood to keep you healthy. This usually happens when you have only 10 to 15 percent of your kidney function left. You may have symptoms such as nausea, vomiting, swelling and fatigue. However, even if you don’t have these symptoms yet, you can still have a high level of wastes in your blood that may be toxic to your body. Your doctor is the best person to tell you when you should start dialysis.

What does hemodialysis do exactly?

Like healthy kidneys, dialysis keeps your body healthy. Dialysis does the following:

- ❖ **Removes waste, salt and extra water** to prevent them from building up in your blood.
- ❖ Keeps a **safe level of certain chemicals** in your blood.
- ❖ Helps to control **blood pressure**.

How does hemodialysis work?

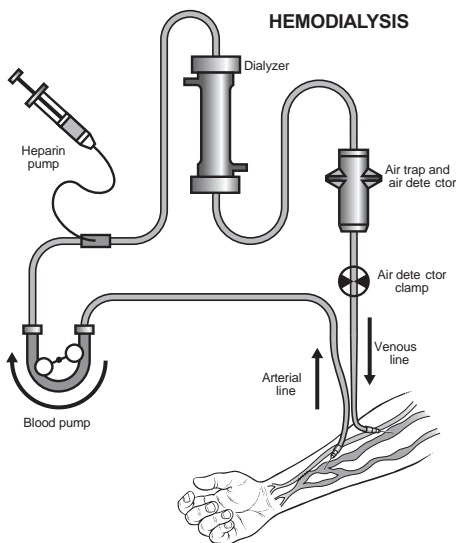
In hemodialysis, a dialysis machine and a special filter called an artificial kidney, or a **dialyzer**, are used to clean your blood. To get your blood into the dialyzer, the doctor needs to make an **access**, or entrance, into your blood vessels. This is done with minor surgery, usually to your arm.

You will be referred to a special surgeon for placement of your access. This should be done within a year before you may need to start dialysis. There are three different types of access—a **fistula**, a **graft** and a **catheter**.

A fistula is made by joining an artery to a nearby vein under your skin to make a bigger blood vessel. This type of access is preferred because it has fewer complications and lasts longer.

Sometimes, your blood vessels are not suitable for a fistula. The doctor may then use a soft plastic tube to join an artery and a vein under your skin. This is called a graft. After the fistula or graft is healed, and dialysis is needed, two needles are placed, one in the artery side and one in the vein side of your fistula or graft. The needles are connected to plastic tubes that carry your blood to the dialyzer where it is cleaned and then returned to you.

The third type of access, called a catheter, can be inserted into a large vein in your neck or chest. This type of access is generally used for a short period of time, but sometimes, it may be used as a permanent access. This type of access can be connected directly to the dialysis tubes, and needles are not used.



How does the dialyzer clean my blood?

The dialyzer, or filter, has **two parts**, one for your **blood** and one for a washing fluid called **dialysate**. A thin membrane separates these two parts. Blood cells, protein and other important things remain in your blood because they are too big to pass through the membrane. Smaller waste products in the blood, such as urea, creatinine, potassium and extra fluid pass through the membrane and are washed away. The size of certain substances in your blood determines if they can be removed. Water, urea and creatinine are small enough to be filtered out. Protein and blood cells are not. Changes in the dialysate fluid can be made for your special needs.

Where is hemodialysis done?

Hemodialysis can be done in a **hospital**, in a **dialysis center** that is not part of a hospital, or **at home**. You and your doctor will decide which place is best, based on your medical condition, and your wishes.

How long will each hemodialysis treatment last?

Hemodialysis treatments usually last about four hours, and they are done three times a week. The time you need for each dialysis depends on:

- ❖ How much your own kidneys are working
- ❖ How much fluid weight you gain between treatments
- ❖ How much you weigh
- ❖ How much waste you have in your blood
- ❖ The type of artificial kidney used by your treatment center.

Your doctor will give you a prescription that tells you how much treatment you need. Studies have shown that getting the right amount of dialysis **improves your overall health**, keeps you out of the hospital and **enables you to live longer**. Your dialysis care team will monitor your treatment with monthly lab tests to ensure you are getting the right amount of dialysis. One of the measures your dialysis care team may use is called **urea reduction ratio (URR)**. Another measure is called **Kt/V** (pro-nounced kay tee over vee). Ask your dialysis care team what measure they use and what your number is. To ensure that you are getting enough dialysis:

- ❖ Your Kt/V should be at least 1.2 or
- ❖ Your URR should be at least 65 percent.

If your number is not at this level, ask your dialysis care team what can be done to achieve the right amount of dialysis. You can help to ensure that you are meeting your treatment goals by:



- ❖ Keeping all your scheduled dialysis appointments
- ❖ Arriving on time for your treatment
- ❖ Staying on the machine for the full time.

Can I have hemodialysis at home?

Possibly. Many patients have their hemodialysis treatments at home. If you and your doctor decide that this is a good choice for your treatment, **you and a dialysis care partner will be trained** in how to do hemodialysis at home. Your dialysis partner will usually be a family member or a friend. Home hemodialysis allows you to schedule your treatments to suit your needs. Your home must have enough space for the equipment and enough water, drainage and electric power to operate the dialysis machine and water purification unit. Medicare covers 80 percent of the cost of home hemodialysis for most patients, just as they do for dialysis in a hospital or other treatment center. However, Medicare will not cover the cost of a home health aide if you have no one else who can be a care partner for you.

Can dialysis cure my kidney disease?

In some cases of sudden or **acute kidney failure**, dialysis may only be needed for a short time until the kidneys get better. However, when chronic kidney disease progresses to kidney failure over time, your kidneys do not get better and you will need dialysis for the rest of your life unless you are able to receive a kidney transplant. (See National Kidney Foundation brochure *Kidney Transplant: A New Lease on Life*.)

Will I be uncomfortable on hemodialysis?

When you begin hemodialysis, the needles put in your fistula or graft may be uncomfortable. Most patients get used to this in time. Your dialysis care team will make sure you are as comfortable as possible during your treatment. Symptoms like cramps, headaches, nausea or dizziness are not common, but if you do have any of them, ask your dialysis care team if any of the following steps could help you:

- ❖ Slow down your fluid removal, which could increase your dialysis time.
- ❖ Increase the amount of sodium in your dialysate.
- ❖ Check your high blood pressure medications.
- ❖ Adjust your dry weight, or target weight.
- ❖ Cool the dialysate a little.
- ❖ Use a special medication to help prevent low blood pressure during dialysis.

You can help yourself by **following your diet and fluid allowances**. The need to remove too much fluid during dialysis is one of the things that may make you feel uncomfortable during your treatment.

How will I pay for my dialysis?

Dialysis is expensive. However, the federal government's **Medicare program** pays 80 percent of all dialysis costs for most patients. Private health insurance or state medical aid may also help with the costs.

Will dialysis change my lifestyle?

You and your family will need time to get used to dialysis and your treatment schedule. The **social worker** at your center will be available to provide counseling to help you and your family adjust to the changes in your lifestyle caused by your illness.

Once you get used to your treatment, you should feel a lot better. In fact, you may feel more like doing the activities you enjoyed before your kidney disease developed. **Medications** are available to **treat your anemia** and keep your **bones healthy** so you will feel stronger and less tired.

I have heard I might have to reuse my dialyzer each treatment. Is this safe?

Before you reuse your dialyzer, your dialysis center cleans it according to careful guidelines. If done properly, reuse is generally safe. Before each treatment, your **dialyzer must be tested** to make sure it is still working well. If your dialyzer no longer works well, it should be discarded and you should be given a new one. Ask your dialysis care team if they have tested your dialyzer and if it still works well.

If you do not wish to reuse your dialyzer, your center may be willing to provide you with a new dialyzer for each treatment. Ask about the center's policy on reuse.



Will I have to change my diet when I start hemodialysis?

Yes. Your diet will be different from the one you followed before starting dialysis. Your **dietitian** will help you plan what you can eat and drink. (See National Kidney Foundation brochure *Getting the Most From Your Treatment: What You Need to Know About Nutrition and Hemodialysis*.)

Can dialysis patients travel?

Yes. Dialysis centers are located in every part of the United States and in many foreign countries. Before you travel, you must make an appointment for dialysis treatments at another center. The staff at your center may be able to help you arrange this appointment. (See National Kidney Foundation brochure *Travel Tips: A Guide for Kidney Patients and Their Families*.)

Can dialysis patients continue to work?

Yes. Many dialysis patients continue to work or return to work after they have gotten used to dialysis. If your job has a lot of physical labor (heavy lifting, digging, etc.), you may need to change your duties. (See National Kidney Foundation brochure, *Working With Kidney Disease: Rehabilitation and Employment.*)

What can I do to improve my quality of life?

You can do many things to improve your overall health and how well you do on your treatment. Here are some tips that can help you:

- ❖ **Know the important numbers** that tell how much dialysis you receive. These include your KtV and URR. Keep a record of your numbers and talk to your dialysis care team if they are not as good as they should be. You may obtain a copy of the Dialysis Report Card by contacting the National Kidney Foundation.
- ❖ **Keep all your dialysis appointments.** Arrive on time and stay for the full time prescribed for you.
- ❖ **Avoid too much weight gain** between treatments. This will increase your blood pressure and require excess fluid removal during dialysis, which is a cause of cramps and other symptoms.
- ❖ **Speak to your dialysis care team** if you have cramps or other problems during your treatments. Ask them about changes that can be made to make you more comfortable.
- ❖ **Follow your special diet.** If you are having problems, ask your dietitian for recipe suggestions to make your meals taste better.
- ❖ **Take all your medications** just as they are prescribed for you.

- ❖ **Ask your doctor about an exercise program** that is right for you. Exercising on a regular basis can make you feel stronger.
- ❖ **Learn all you can about your treatment.** Speak to your dialysis care team if you have any questions at all. They are there to help you do well on your treatment.
- ❖ **Get back into your life.** Dialysis should just be a means to keep you well enough to do the things you want in your life.

What help is available to me and my family?

Contact your local National Kidney Foundation affiliate for information about resources available in your community and a complete listing of educational materials. You may also call the National toll-free number (800) 622-9010 for more information.

You may be interested in becoming a **member of NKF's Patient and Family Council**. For more information about the benefits of membership and to receive an application, call or write to the National Kidney Foundation. Membership in the council is free.



More than 20 million Americans have some form of kidney or urologic disease. Millions more are at risk. The National Kidney Foundation, a major voluntary health organization, seeks to prevent kidney and urinary tract diseases, improve the health and well-being of individuals and families affected by these diseases, and increase the availability of all organs for transplantation. Through its 51 affiliates nationwide, the foundation conducts programs in research, professional education, patient and community services, public education and organ donation. The work of the National Kidney Foundation is funded by public donations.

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