

# CHOICE OF RENAL REPLACEMENT THERAPY

Adopted from NKUDIC

## Introduction

Your kidneys filter wastes from your blood and regulate other functions of your body. When your kidneys fail, you need treatment to replace the work your kidneys normally perform.

. You may choose to forgo treatment. Your choices include **hemodialysis**, which requires a machine used to filter your blood outside your body; **peritoneal dialysis**, which uses the lining of your belly to filter your blood inside the body; and **kidney transplantation**, in which a new kidney is placed in your body. Each treatment has advantages and disadvantages. Your choice of treatment will have a big impact on your day-to-day lifestyle, such as being able to keep a job if you are working.

## When Your Kidneys Fail

Healthy kidneys clean your blood by removing excess fluid, minerals, and wastes. They also make hormones that keep your bones strong and your blood healthy. When your kidneys fail, harmful wastes build up in your body, your blood pressure may rise, and your body may retain excess fluid and not make enough red blood cells. When this happens, you need treatment to replace the work of your failed kidneys.

## Treatment Choice: Hemodialysis

### Purpose

Hemodialysis cleans and filters your blood using a machine to temporarily rid your body of harmful wastes, extra salt, and extra water. Hemodialysis helps control blood pressure and helps your body keep the proper balance of important chemicals such as potassium, sodium, calcium, and bicarbonate. Dialysis can replace part of the function of your kidneys. Diet, medications, and fluid limits are often needed as well. Your diet, fluids, and the number of medications you need will depend on which treatment you choose.

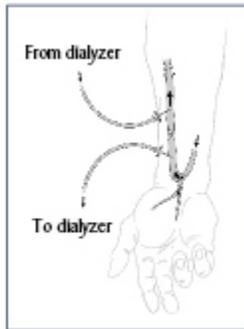
### How Hemodialysis Works

Hemodialysis uses a special filter called a dialyzer that functions as an artificial kidney to clean your blood. The dialyzer is a canister connected to the hemodialysis machine.

During treatment, your blood travels through tubes into the dialyzer, which filters out wastes, extra

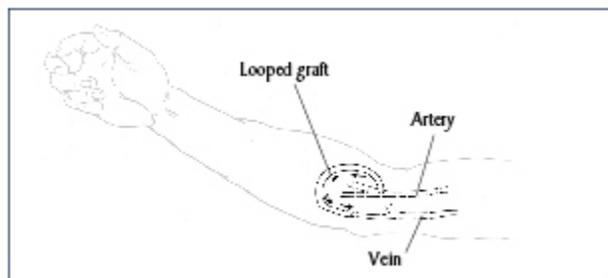
salt, and extra water. Then the cleaned blood flows through another set of tubes back into your body. The hemodialysis machine monitors blood flow and removes wastes from the dialyzer. Hemodialysis is usually done three times a week. Each treatment lasts from 3 to 5 or more hours. During treatment, you can read, write, sleep, talk, or watch TV.

## Getting Ready



Arteriovenous fistula. Several months before your first hemodialysis treatment, an access to your bloodstream will need to be created. You may need to stay overnight in the hospital, but many patients have their access created on an outpatient basis. This access provides an efficient way for blood to be carried from your body to the dialyzer and back without causing discomfort. The two main types of access are a fistula and a graft.

- A surgeon makes a fistula by using your own blood vessels; an artery is connected directly to a vein, usually in your forearm. The increased blood flow makes the vein grow larger and stronger so it can be used for repeated needle insertions. This kind of access is the preferred type. It may take several weeks to be ready for use.
- A graft connects an artery to a vein by using a synthetic tube. It doesn't need to develop as a fistula does, so it can be used sooner after placement. But a graft is more likely to have problems with infection and clotting.



Graft.



Catheter for temporary access.

Before dialysis, needles are placed into the access to draw out the blood.

If your kidney disease has progressed quickly, you may not have time to get a permanent vascular access before you start hemodialysis treatments. You may need to use a catheter—a small, soft tube inserted into a vein in your neck, chest, or leg near the groin—as a temporary access. Some people use a catheter for long-term access as well. Catheters that will be needed for more than about 3 weeks are designed to be placed under the skin to increase comfort and reduce complications.

## Who Performs Hemodialysis

Hemodialysis is most often done **in a dialysis center** by patient care technicians who are supervised by nurses. If you choose in-center treatment, you will have a fixed time slot three times per week on Monday-Wednesday-Friday or Tuesday-Thursday-Saturday.

You can choose to learn how to do your own **hemodialysis treatments at home**. When you are the only patient, it is possible to do longer or more frequent dialysis, which comes closer to replacing the steady work healthy kidneys do. Daily home hemodialysis (DHHD) is done 5 to 7 days per week for 2 to 3 hours at a time, and you set the schedule. If your health plan will pay for more than three treatments, you might do the short treatments in the mornings or in the evenings. Nocturnal home hemodialysis (NHHD) is done 3 to 6 nights per week while you sleep. Either DHHD or NHHD will allow a more normal diet and fluids, with fewer blood pressure and other medications. Most programs want people doing hemodialysis at home to have a trained partner in the home while they do treatments. Learning to do home hemodialysis is like learning to drive a car—it takes a few weeks and is scary at first, but then it becomes routine. The dialysis center provides the machine and training, plus 24-hour support if you have a question or problem. New machines for home dialysis are smaller and easier to use than in-center ones.

## Possible Complications

Vascular access problems are the most common reason for hospitalization among people on hemodialysis. Common problems include infection, blockage from clotting, and poor blood flow. These problems can keep your treatments from working. You may need to undergo repeated surgeries in order to get a properly functioning access.

Other problems can be caused by rapid changes in your body's water and chemical balance during treatment. Muscle cramps and hypotension—a sudden drop in blood pressure—are two common side effects. Hypotension can make you feel weak, dizzy, or sick to your stomach..

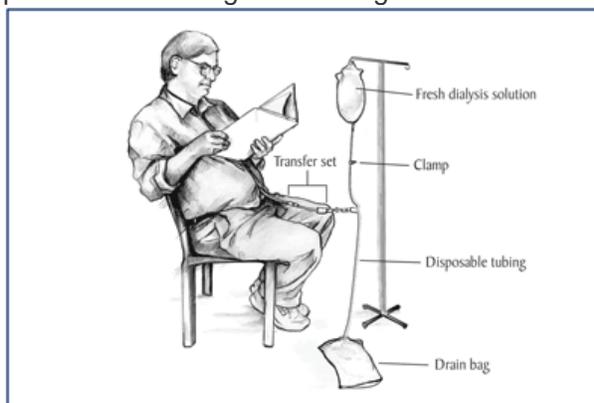
## Treatment Choice: Peritoneal Dialysis

### Purpose

Peritoneal dialysis is another procedure that removes wastes, chemicals, and extra water from your body. This type of dialysis uses the lining of your abdomen, or belly, to filter your blood. This lining is called the peritoneal membrane and acts as the artificial kidney.

### How Peritoneal Dialysis Works

A mixture of minerals and sugar dissolved in water, called dialysis solution, travels through a catheter into your belly. The sugar—called dextrose—draws wastes, chemicals, and extra water from the tiny blood vessels in your peritoneal membrane into the dialysis solution. After several hours, the used solution is drained from your abdomen through the tube, taking the wastes from your blood with it. Then your abdomen is refilled with fresh dialysis solution, and the cycle is repeated. The process of draining and refilling is called an exchange.



## Getting Ready

Before your first treatment, a surgeon places a catheter into your abdomen or chest. The catheter tends to work better if there is adequate time-usually from 10 days to 2 or 3 weeks-for the insertion site to heal. Planning your dialysis access can improve treatment success. This catheter stays there permanently to help transport the dialysis solution to and from your abdomen.

CCPD uses a machine called a cycler to fill and empty your abdomen three to five times during the night while you sleep. In the morning, you begin one exchange with a dwell time that lasts the entire day

Both types of peritoneal dialysis are usually performed by the patient without help from a partner. CAPD is a form of self-treatment that needs no machine. However, with CCPD, you need a machine to drain and refill your abdomen.

## Possible Complications

The most common problem with peritoneal dialysis is peritonitis, a serious abdominal infection. This infection can occur if the opening where the catheter enters your body becomes infected or if contamination occurs as the catheter is connected or disconnected from the bags. Infection is less common in presteral catheters, which are placed in the chest. Peritonitis requires antibiotic treatment by your doctor. To avoid peritonitis, you must be careful to follow procedures exactly and learn to recognize the early signs of peritonitis, which include fever, unusual color or cloudiness of the used fluid, and redness or pain around the catheter. Report these signs to your doctor or nurse immediately so that peritonitis can be treated quickly to avoid additional problems.

## Treatment Choice: Kidney Transplantation

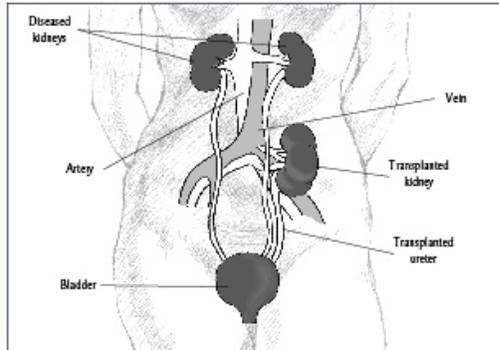
### Purpose

Kidney transplantation surgically places a healthy kidney from another person into your body. The donated kidney does enough of the work that your two failed kidneys used to do to keep you healthy and symptom free.

### How Kidney Transplantation Works

A surgeon places the new kidney inside your lower abdomen and connects the artery and vein of the new kidney to your artery and vein. Your blood flows through the donated kidney, which makes

urine, just like your own kidneys did when they were healthy. The new kidney may start working right away or may take up to a few weeks to make urine. Unless your own kidneys are causing infection or high blood pressure, they are left in place.



Kidney transplantation.

## Getting Ready

The transplantation process has many steps. First, talk with your doctor because transplantation isn't for everyone. You could have a condition that would make transplantation dangerous or unlikely to succeed.

You may receive a kidney from a deceased donor—a person who has recently died—or from a living donor. A living donor may be related or unrelated—usually a spouse or a friend. If you don't have a living donor, you're placed on a waiting list for a deceased donor kidney. The wait for a deceased donor kidney can be several years.

## The Time Kidney Transplantation Takes

How long you'll have to wait for a kidney varies. Because there aren't enough deceased donors for every person who needs a transplant, you must be placed on a waiting list. However, if a voluntary donor gives you a kidney, the transplant can be scheduled as soon as you're both ready. Avoiding the long wait is a major advantage of living donation.

The surgery takes 3 to 4 hours. The usual hospital stay is about a week. After you leave the hospital, you'll have regular follow-up visits.

In a living donation, the donor will probably stay in the hospital about the same amount of time. However, a new technique for removing a kidney for donation uses a smaller incision and may make it possible for the donor to leave the hospital in 2 to 3 days.

Between 85 and 90 percent of transplants from deceased donors are working 1 year after surgery. Transplants from living relatives often work better than transplants from unrelated or deceased donors because they're usually a closer match.

## **Possible Complications**

Transplantation is the closest thing to a cure. But no matter how good the match, your body may reject your new kidney. A common cause of rejection is not taking medication as prescribed.

Your doctor will give you medicines called immunosuppressants to help prevent your body's immune system from attacking the kidney, a process called rejection. You'll need to take immunosuppressants every day for as long as the transplanted kidney is functioning. Sometimes, however, even these medicines can't stop your body from rejecting the new kidney. If this happens, you'll go back to some form of dialysis and possibly wait for another transplant. Immunosuppressants weaken your immune system, which can lead to infections..

Immunosuppressants work by diminishing the ability of immune cells to function. In some patients, over long periods of time, this diminished immunity can increase the risk of developing cancer. Some immunosuppressants can cause cataracts, diabetes, extra stomach acid, high blood pressure, and bone disease. When used over time, these drugs may also cause liver or kidney damage in a few patients..

## **Treatment Choice: Refusing or Withdrawing from Treatment**

For many people, dialysis and transplantation not only extend life but also improve quality of life. For others who have serious ailments in addition to kidney failure, dialysis may seem a burden that only prolongs suffering. You have the right to refuse or withdraw from dialysis. You may want to speak with your spouse, family, religious counselor, or social worker as you make this decision.

## **Paying for Treatment of Kidney Failure**

Treatment for kidney failure is expensive, but Medicare and Medicaid pay much of the cost, usually up to 80 percent. Often, private insurance or state programs pay the rest.