

# When Kidneys Fail

straight talk about your options

## options



THIRD EDITION

## What Kidneys Do

Kidneys act like a 24-hour cleaning crew for your blood. They filter out waste products. They get rid of excess water. They balance chemicals in your blood such as potassium and sodium. They remove excess acid. They also produce a hormone to help the bone marrow make red blood cells. Most people have two kidneys, each the size of a fist. These are located on either side of the backbone, just above the small of the back. Each day, the kidneys produce about 200 quarts of fluid and reabsorb all but 1-2 quarts, which come out as urine.

## When Kidneys Fail

Just one kidney, working at 20% capacity, can keep a person healthy. Below that level, you begin to feel tired or weak, and lose your appetite. This is because toxic wastes start to build up in the blood. Fluid collects, causing tissue swelling, lung congestion and high blood pressure. To stay healthy, a method is needed to replace lost kidney function.

## What are my Treatment Options?

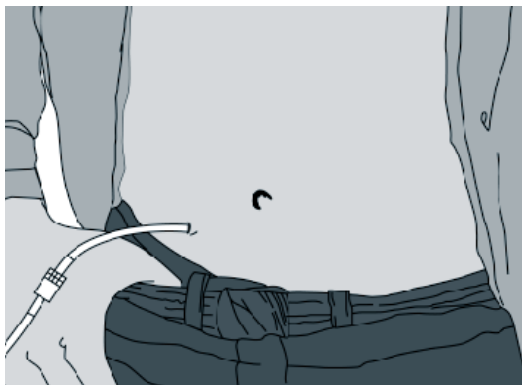
Several treatment options are available for people with kidney failure, sometimes called End Stage Renal Disease or ESRD. Care options include kidney dialysis, kidney transplantation, and the non-treatment choice.

## Peritoneal Dialysis

This form of dialysis occurs inside the body. It uses your peritoneal membrane (the lining of your abdomen) as the filter. For this treatment, a small, soft tube called a catheter is surgically placed through the wall of the abdomen into the peritoneal cavity.

*"If I must be on dialysis I'm glad I have choices. CAPD allows me to lead as normal a life as possible."*

Kevin Howard  
Chicago, IL



Special dialysis solution will flow into the peritoneal cavity through the catheter. During the dwell phase (that is when the solution remains in the abdomen for a period of time) waste products and excess fluids pass from the blood. They move through the peritoneal membrane, into the dialysis solution. Later, this is drained out of the peritoneal cavity. Peritoneal dialysis can be performed by hand, which is called CAPD, or by using a machine, which is called APD.

## **Continuous Ambulatory Peritoneal Dialysis (CAPD)**

allows gravity to draw dialysis solution into and out of the peritoneal cavity, using a system of tubing and bags.

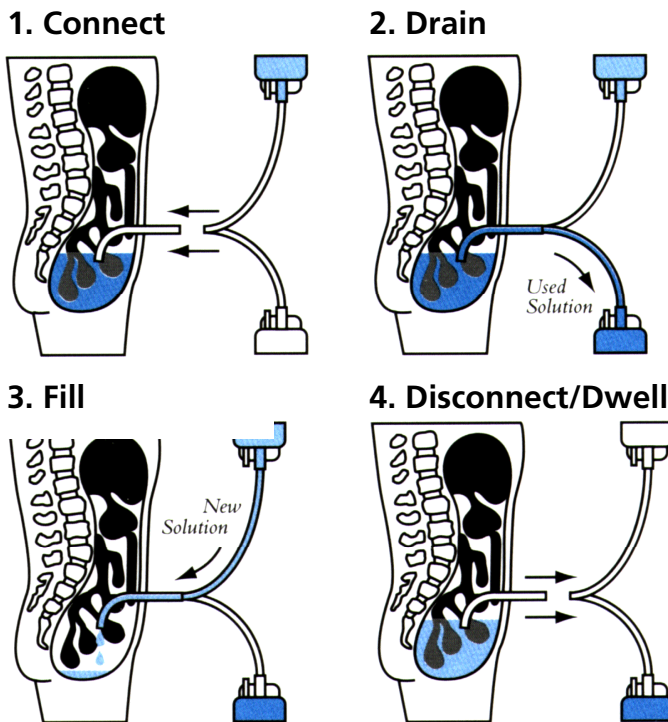
With CAPD, you connect tubing and a bag of sterile dialysis solution to your peritoneal catheter. Using a pole, the bag is raised to shoulder level or higher resulting in the flow of the solution into the peritoneum. Once the bag of solution has emptied into your peritoneum, the tubing and bags are thrown away.

It is during the dwell phase, when the fluid remains in your peritoneal cavity, that the actual dialysis or filtering of waste and fluid occurs. With no connection to the tubing or bags during the dwell, you are free to enjoy your daily activities, while your peritoneum acts as the filter in the removal of waste and fluid from your bloodstream.

After a number of hours, another CAPD exchange is done with the attachment of new tubing and bags. It is in the empty bag, which is placed below the level of the abdomen, that the waste-filled fluid is drained out of the peritoneum. Once the drainage of fluid from the peritoneum is complete, the fresh dialysate solution flows again into the peritoneal cavity allowing for the continuous removal of wastes and fluid that CAPD therapy provides.

## CAPD Exchange

*Removing old solution and replacing it with new solution.*

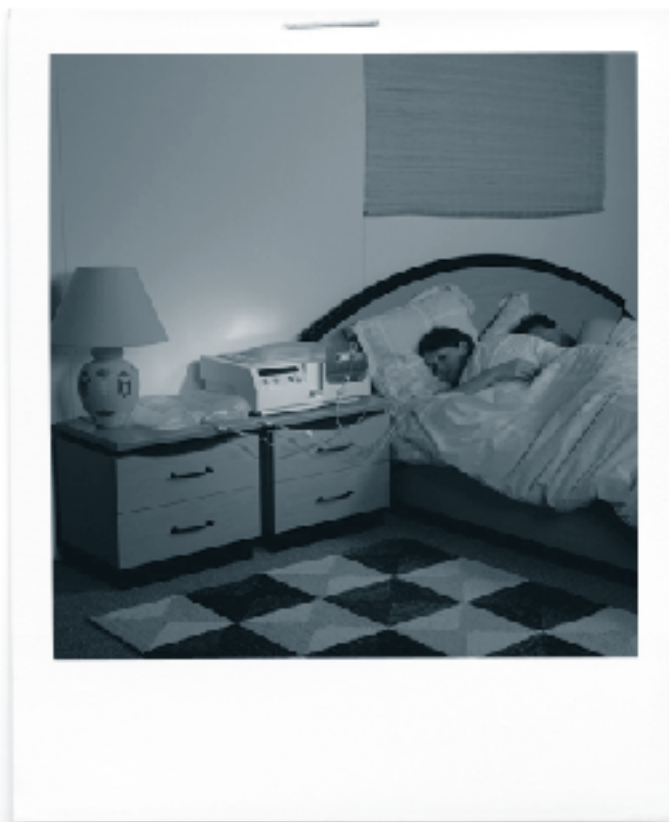


1. Connect the tubing set to the catheter.
  2. Drain out the used solution.
  3. Fill with the new solution
  4. Disconnect the tubing set from the catheter.
  5. Throw away the used solution, disposable tubing and bags.
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The number of exchanges per day, and length of time per exchange, varies by person. Usually, CAPD is performed four times a day. Each solution exchange lasts about one-half hour. Assist devices help people who have problems seeing or who have problems using their hands, to do CAPD.

The second type of peritoneal dialysis - **Automated Peritoneal Dialysis (APD)** - involves a machine called a cycler. You attach the tubing and solution bags to the cycler. Before going to sleep, you connect the tubing to your peritoneal catheter. During the night, the machine performs the dialysis based on the prescribed number of exchanges needed.

For extra therapy, dialysis solution remains in the peritoneal cavity during the day. The peritoneal cavity of most adults can comfortably hold about two to three quarts of fluid.



## Peritoneal Dialysis

### Advantages

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a flexible lifestyle and independence

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few diet restrictions

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usually visit clinic once /month

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doesn't require needles

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provides better blood pressure control

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provides continuous therapy which is gentler and more like your natural kidneys

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don't have to travel to dialysis unit for treatment

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easy to take your therapy while traveling

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therapy occurs while sleeping (APD)

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### Disadvantages

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need to schedule exchanges into your daily routine, 7 days/week

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requires a permanent, external catheter

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runs some risk of infection

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may gain weight/have larger waist line

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very large people may need extra therapy

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need storage space in your home for supplies

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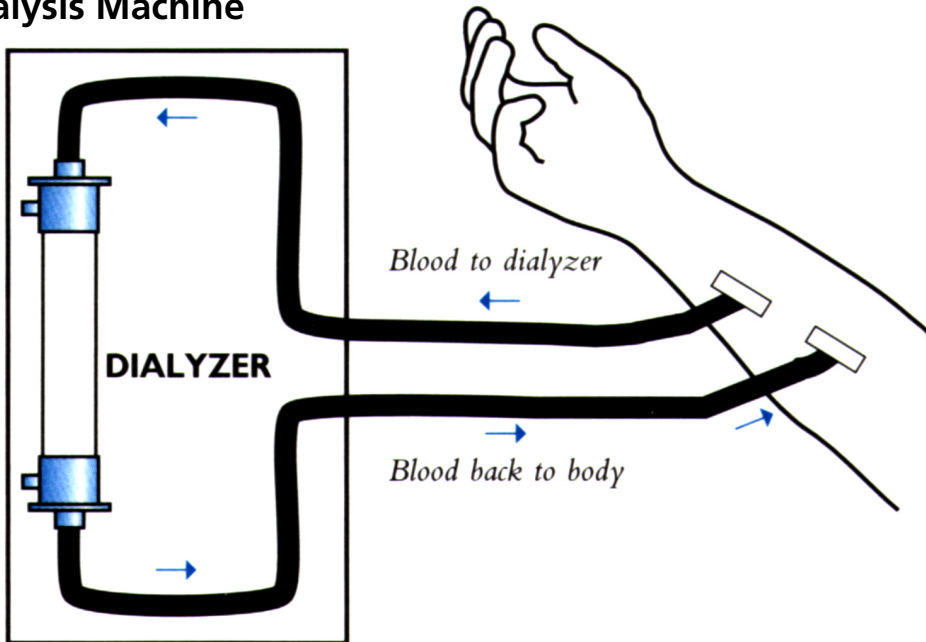
need space in your bedroom for equipment (APD)

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# Hemodialysis

## A dialyzer acts as an artificial kidney

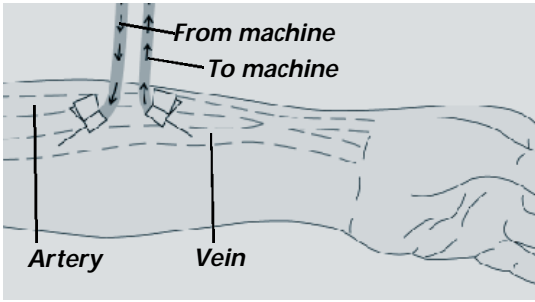
### Dialysis Machine



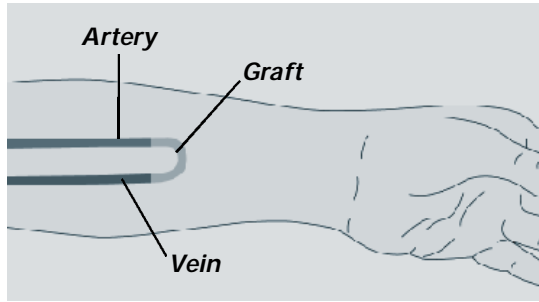
Hemodialysis cleans your blood by taking it outside your body. During a hemodialysis treatment, blood is removed from your body and pumped through a filter called a dialyzer. Only a small amount of blood is outside of the body at any given time.

An access is needed prior to treatment and is the way in which you get connected to the dialyzer.

A permanent access is surgically created in your arm or thigh. If possible, the procedure is done several weeks in advance of the start of hemodialysis therapy. There are two types of permanent accesses:



A **fistula** is the surgical linking of an artery to a vein, providing access to blood vessels.



A **graft** is a tube surgically placed under the skin linking an artery to a vein.

If you need hemodialysis before a permanent access is in place, or ready for use, the doctor will create a temporary access. This is done by placing a special tube called a catheter into a large blood vessel in the neck, or in the leg.

A hemodialysis treatment involves placing two needles through the skin into the fistula or graft. The needles are then attached to tubing that connects to the artificial kidney or dialyzer. One needle withdraws blood for cleansing, while the other needle returns filtered blood to the body.

A pump on the dialyzer machine pushes blood from the first needle to the artificial kidney. Blood passes on one side of the filter. Solution pumped through the machine passes on the other side. This solution draws excess fluid and waste out of the blood. It is the pores in the filter that allow the smaller molecules of waste to leave through the semi-permeable membrane of the dialyzer. Larger molecules and blood cells cannot pass through the filter and therefore are returned through the second needle to the body.

The average person receives three treatments per week. Each treatment lasts three to four hours. There are two options for hemodialysis: (1) in-center or clinic hemodialysis, and (2) home hemodialysis.

*"I like hemodialysis because it is convenient for me. I can dialyze in the evening after work"*

Theodore Ellis  
Chicago, IL

## In-Center Hemodialysis

### Advantages

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Trained professionals perform treatment for you

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Maintain regular contact with other dialysis patients and staff  
3 treatments/week, 4 days off

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No equipment or supplies kept at home

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Medical help is available quickly in an emergency

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### Disadvantages

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Travel to center 3 times/week on a fixed schedule

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Permanent access required, usually in your arm

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Insertion of 2 needles for treatment

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Restricted diet/limited fluid intake

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Possible discomfort like headache, nausea, leg cramps, tiredness

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## Home Hemodialysis

### Advantages

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Same person always helps you

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More control over times to dialyze

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No travel to a clinic for treatment

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### Disadvantages

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Must have a trained partner to help you

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You need to be trained

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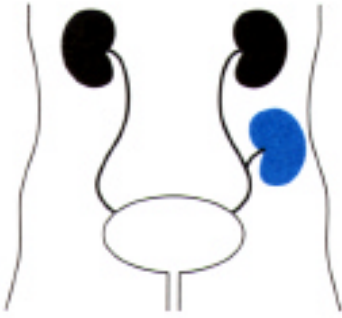
Need room for storage of equipment and supplies

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Need to call paramedic for help in an emergency

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## Transplantation



For transplantation, an operation is done. A healthy donated kidney is placed deep under your skin near your hip bone. In some cases, the non-working kidneys may be removed to control infection or high blood pressure.

Transplantation is the most "natural" solution to kidney failure. However, the National Kidney Foundation believes that only about 50% of dialysis patients meet the physical requirements for a transplant, or choose this treatment option.

The wait for a healthy kidney can be as short as a few weeks, or as long as two years or more. This depends on kidney availability, and the blood type and tissue match with the donor.

Transplanted kidneys come from two sources: (1) living donors-family members make the closest tissue matches, or (2) cadaver donors- people who decide to donate their organs when they die.

*"After 12 years of dialysis, my transplant is now offering me the greatest freedom I have ever known."*

Lori James  
Glendale, CA

## Kidney Transplantation

### Advantages

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feels closest to having your own kidneys

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no dialysis treatments required

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allows maintenance of a more normal schedule with less clinic visits

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fewer fluid and diet restrictions

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feel healthier and have more energy

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ability to work full-time without the worry about a dialysis schedule

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### Disadvantages

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the stress of waiting for a match

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risks associated with major surgery

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risk of rejection - your transplant may not last a lifetime

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daily medications required - which can cause possible side effects

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more susceptibility to illness

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possible changes in your appearance

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## Asking the right questions

It's your body. It's your life. When it comes to choosing a treatment, ask questions. Get all the information you need to make an informed decision.

Here are some questions to ask your doctor or renal team:

1. Whom can I talk to in order to learn more about dialysis treatment options?
2. Will I be able to continue my normal activities once I start dialysis, such as working, driving, traveling, exercising, etc?
3. When do you recommend that I start dialysis?
4. When should I have my access placed? Is it painful? How will I care for it?
5. Where is the closest dialysis center located? Who can arrange for me to visit the dialysis center?
6. Will I feel better when I start dialysis treatments?
7. Should I change my diet when I start dialysis?
8. Am I a kidney transplant candidate? How can I get on a list for a transplant?
9. Can I change to a different form of treatment once I've started dialysis?
10. Who can arrange for me to talk to another dialysis patient?

## **Stick with the “basics”**

Since dialysis can replace only part of kidney function, listed below is some treatment “basics” that can help you to enjoy a better quality of life and reduce treatment side effects.

1. Watching the type/amount of foods you eat
2. Watching what/how much you drink
3. Monitoring medications
4. Adherence to your dialysis schedule

Sticking with the “basics” may help you to enjoy a better quality of life and reduce treatment side effects. You can still enjoy your friends and family. You can still be active. You can still engage in the many hobbies, work and activities you did before starting dialysis.

## **Who pays for treatment?**

For most people, treatment is paid for by Medicare, private insurance, health maintenance organizations (HMOs), state medical assistance programs, state renal programs and supplemental local programs. Ask your social worker about which programs apply to you. Or, contact any of the patient associations listed on the back.

## Read all about it...

This brochure briefly explains kidney failure and your treatment options. To learn more, ask your doctor and renal care team members for information about dialysis. You can also contact such groups as:

### **American Association of Kidney Patients (AAKP)**

1-800-749-2257

<http://www.aakp.org>

This patient membership group provides education and support programs for the kidney patient.

### **American Kidney Foundation (AKF)**

1-800-638-8229

<http://www.akfinc.org>

This group serves as a financial resource for kidney dialysis and transplant patients who need help.

### **National Kidney Foundation (NKF)**

1-800-622-9010

<http://www.kidney.org>

This national voluntary health agency is dedicated to wiping out kidney and urological disease, and providing programs and services to patients and their families.

### **Social Security Administration (SSA)**

1-800-772-1213 to find the nearest Social security office

<http://www.ssa.gov>

### **Medicare**

1-800-MEDICARE or 1-800-633-4227

<http://www.medicare.gov>

### **[www.kidneydirections.com](http://www.kidneydirections.com)**

An online educational resource

*"The A.A.K.P. believes strongly that a patient who has the opportunity to learn about his or her treatment options is the best able to make informed decisions regarding healthcare."*

American Association of Kidney Patients

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