Dialysis

Dialysis and how it works
Dialysis is the medical term for removing the wastes and extra fluid from your blood that your kidneys can no longer remove themselves.

Dialysis gets rid of extra fluid and wastes through a semipermeable membrane. A semipermeable membrane is a thin surface with tiny holes that lets small particles (like waste products and excess fluid) pass through, but keeps large particles (like blood cells) back. Blood vessels are on one side of the membrane and a special fluid called dialysate is on the other. Dialysate is made up of many of the chemicals we already have in our bodies. The waste products in your blood flow through the membrane and into the dialysate.

For most people, either form of dialysis will work well. There may be medical reasons why one therapy is better for you than another. It's not uncommon for a person to start with one form of treatment and later change to another form of treatment.

Two Kinds of Dialysis
Peritoneal dialysis (PD) – blood is cleaned inside the body.

Peritoneal dialysis or PD cleans your blood and removes extra fluids using one of your body’s own membranes, the peritoneal membrane, as the filter. The peritoneal membrane is the lining that surrounds the peritoneum or abdominal cavity, which contains your stomach, spleen, liver and intestines.

PD solution is a place in the peritoneum. The peritoneal membrane filters waste and fluids from your blood into the solution. The solution containing the wastes is drained from your peritoneum after several hours and replaced with fresh solution. This is called an exchange. A nurse experienced in PD will train you to perform peritoneal dialysis in the dialysis unit as an outpatient. Most people can learn to do PD within a few days. If you have concerns or problems, the nurse and doctor are never more than a phone call away. You will probably need to visit your clinic each month.

PD Supplies
Your doctor will write a prescription for the dialysis supplies you need. Your nurse will help you learn to order them. The supplies are delivered to your house. The driver of the van carries the supplies into your house and helps you organize them. You will need a place in your home to store 25-30 boxes
Removing PD solution containing wastes and excess fluids from the peritoneum (drain) and replacing it with fresh PD solution (fill) is called an exchange. An exchange takes 20-30 minutes. After you fill the peritoneum with fresh PD solution, you leave this solution in the peritoneal cavity for four hours or more (dwell).

**Peritoneal Dialysis Catheter**
A small, soft tube called a catheter is put through the wall of your abdomen into the peritoneal cavity. The catheter is called an access because it provides a way to get PD solution into your peritoneum. Solution flows in and out of the peritoneal cavity through the catheter. Placing the catheter requires minor outpatient surgery.

The opening for the catheter should heal for a few weeks before starting dialysis. The catheter is usually not painful and stays in place throughout your time on PD.
The catheter is usually placed about 1 inch below and to the side of the navel. It is about ¼-inch in diameter. Only 4-6 inches of it are outside of your body. You and your doctor can plan where to place the catheter so that it is comfortable and hidden by clothing.

Two types of Peritoneal Dialysis
- Continuous Ambulatory Peritoneal Dialysis (CAPD)
- Automated Peritoneal Dialysis (APD)

How will PD affect your lifestyle?
Most people enjoy the flexibility and independence that they have with PD. Your dietician can help you manage your diet. It is very important to follow the meal plan recommended by your dietician in order to avoid malnutrition. Also, poor diet can cause depression, tiredness, and a lower quality of life.

You can do most sports and exercise after checking with your doctor. To travel, you pack your CAPD supplies in a suitcase. If you use APD, you can pack along your cycler, or you can switch to CAPD while you are traveling. If you go on a long trip or travel to a foreign country, the dialysis company can ship supplies to your destination ahead of time.

People on PD can lead normal lives. It is easy to adjust the treatment schedule according to your work, school, or travel plans because you are in charge of your own treatment.

Possible complications of PD
Peritonitis
The major complication of PD is an infection of the peritoneal membrane called peritonitis. The best way to keep from getting an infection is to wash your hands and to perform your exchanges exactly as instructed. You will be taught to recognize the early signs of infection. Peritonitis is treated with antibiotics, which usually can be taken at home.
Exit-Site Infection
The area around your catheter can also become infected. This area, called the exit-site, should be cleaned daily. You will learn how to care for your exit site during PD training. Exit-site infections are treated with antibiotics.

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<tr>
<th>Peritoneal Dialysis</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td></td>
<td>A flexible lifestyle and independence</td>
<td>Need to schedule exchanges into your daily routine, seven days a week</td>
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<td></td>
<td>Clinic visits about once a month</td>
<td>Requires a permanent catheter, outside the body</td>
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<td></td>
<td>Doesn’t use needles</td>
<td>Runs some risk of infection</td>
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<td>Provides continuous therapy, which is more like your natural kidneys</td>
<td>May gain weight/have a larger waistline</td>
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<td></td>
<td>Don’t have to travel to dialysis unit for treatment</td>
<td>Very large people may need extra therapy</td>
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<td></td>
<td>Easy to do your therapy while you travel</td>
<td>Need storage space in your home for supplies</td>
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<tr>
<td></td>
<td>Can do therapy while sleeping (APD)</td>
<td>Need space in your bedroom for equipment (APD)</td>
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Hemodialysis (HD) – blood is filtered outside the body.

Hemodialysis removes wastes and excess fluid OUTSIDE your body. During a hemodialysis treatment, blood is removed from your body and pumped by a machine through a DIALYZER. The dialyzer is the semipermeable membrane that cleans your blood.

While having your treatment, you sit or lie next to a hemodialysis machine. A nurse or technician puts two needles into a vein in your forearm called an ACCESS. One needle is connected to tubing, which takes your blood out of your body to be cleaned. The blood goes back into your body through tubing attached to the other needle. There is about one cup of blood outside your body at any time. All your blood is filtered through the dialyzer several times. At the end of treatment, all the blood is back in your body.

Putting the needles into your arm can cause a little discomfort. Dialysis does not hurt, although some people do feel nauseated or dizzy during parts of the treatment. Mostly, hemodialysis is a quiet time. During treatments, most people keep busy doing things like watching TV, reading or talking.

Most people need hemodialysis three times a week. Each treatment lasts about four hours. You will be weighed before and after each treatment to make sure extra fluid is removed.

Most of the time, hemodialysis treatments are done IN-CENTER, which means they take place in a special clinic called a dialysis unit. Appointments must be scheduled in advance.

**HOME HEMODIALYSIS** is another way to do hemodialysis. It frees you from the dialysis center schedule, but it requires a strong commitment from a partner who must be present during all dialysis treatments. You will need to have a machine and supplies in your home.
Hemodialysis access
To place an access, to get your blood, a surgeon will perform an operation to strengthen one of your veins or to put a soft tube inside your arm or thigh.

FISTULA- The surgical linking of an artery to a vein, providing access to blood vessels.

GRAFT- A tube surgically placed under the skin linking an artery to a vein.

If possible, the surgeon will attach a vein and an artery together to form a FISTULA. This is the best possible type of access. If your veins are small or weak, the surgeon inserts a GRAFT instead. This is a soft tube connected to an artery on one end and a vein on the other. Blood runs through the graft. Both a fistula and a graft are underneath the skin. The surgery needed to place an access is done in the hospital and may require an overnight stay. A permanent access can take up to a few months to heal properly.

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

- Check your access every day to be sure that blood is flowing through it. You can do this by placing your fingers lightly over the access to feel the pulse.
- Don’t put pressure on the access; it can cause clotting.
- Don’t sleep on the access arm.
- Don’t hold a child or anything heavy with the arm that has the access.
- Don’t wear jewelry or tight clothing over the access.
- Don’t let anyone draw blood or take your blood pressure in the arm with your access.

How will hemodialysis affect your lifestyle?
You might enjoy having four days a week when you do not have to worry about dialyzing. You will probably be able to travel if you make arrangements in advance to dialyze at another clinic (center). You can exercise and do most sports after checking with your doctor.

You will probably have to limit your intake of salt, foods rich in potassium, dairy products and fluids.

It is also very important to follow the meal plan recommended by your dietitian in order to avoid malnutrition. Poor diet can cause depression, tiredness, and a lower quality of life.

Since your body will hold on to fluids until you have your next dialysis treatment, you will gain fluid weight between sessions.

Possible complications of HD
Blood clots
The major complication of hemodialysis is BLOOD CLOTS, clumps of blood that block the fistula or graft. A clot must be removed or it can permanently block the access. If an access blocked, you may need to use a temporary catheter.

Hypotension
During a hemodialysis session, it is normal for your body to lose fluid and salt, which can cause HYPOTENSION, low blood pressure. You may feel light-headed, sweaty or nauseated. You may also develop leg cramps or headaches during dialysis or at other times.

Your doctor should be able to solve some of these problems by adjusting your dialysis. Following your diet and restricting fluids may also help.

Infection
The access may become infected. To avoid INFECTION, the skin over the access must be cleaned before the needles are put in, and needle wounds that have not healed must be protected.

The signs of infection are:
- Redness at the access site
- Fever
- Chills
If you have any of these signs, you should report them immediately.
### In-Center Hemodialysis

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>■ Nurses and technicians perform treatment for you</td>
<td>■ Travel to center three times a week on a fixed schedule</td>
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<tr>
<td>■ Regular contact with other hemodialysis patients and staff</td>
<td>■ Permanent access required, usually in your arm</td>
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<tr>
<td>■ Usually three treatments per week; four days off</td>
<td>■ Insertion of two needles for each treatment</td>
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<td>■ No equipment/supplies kept at home</td>
<td>■ Restricted diet/limited fluid intake</td>
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<td>■ Medical help is available quickly in an emergency</td>
<td>■ Runs some risk of infection</td>
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<td></td>
<td>■ Possible discomfort like headache, nausea, leg cramps, tiredness</td>
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### Kidney Transplantation

**How will a transplant affect your lifestyle?**

After your transplant, you will have very few dietary restrictions. However, it is still important to eat a healthy, well-balanced diet. With your doctor’s approval, you'll be able to participate in most sports and can travel freely.

Although you may be feeling fine with your kidney transplant, it is still very important to continue to visit your doctor regularly and take your medications as prescribed.

### Transplantation

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>■ Is closest to having your own kidneys</td>
<td>■ Stress of waiting for a match</td>
</tr>
<tr>
<td>■ No dialysis treatments required once kidneys start working</td>
<td>■ Risks associated with major surgery</td>
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<tr>
<td>■ Longer life than with dialysis</td>
<td>■ Risk of rejection – your transplant may not last a lifetime</td>
</tr>
<tr>
<td>■ Fewer fluid and diet restrictions</td>
<td>■ Daily medications required – which can cause side effects</td>
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<tr>
<td>■ Feel healthier and have more energy</td>
<td>■ Susceptibility to infection</td>
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<tr>
<td>■ Work full-time without worrying about a dialysis schedule</td>
<td>■ Possible changes in your appearance due to medication side effects</td>
</tr>
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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 of this booklet.

Financial Assistance
Financial Assistance is available to patients with an identified need, including uninsured patients and patients who are insured but can’t afford their deductible and co-insurance. We can determine if you qualify for Financial Assistance based on your income, expenses and assets. Please call the phone number on your bill or contact a Financial Counselor at 800-466-9670 for a Financial Assistance application.

If you don’t have insurance
In the event you don’t have insurance you will be asked for a deposit prior to receiving services. A bill will be sent shortly after services are rendered requesting payment of the balance due. If you are unable to pay the entire amount, or wish to make payment arrangements, please contact the Froedtert Hospital Patient Financial Services Department at the phone number on your bill.

Froedtert Hospital serves the community by providing medical care to all patients regardless of their ability to pay. If you are without health insurance, a Froedtert Financial counselor can help you find out if you are eligible for available programs including GAMP, Medicaid, and the Froedtert Financial Assistance Program. You can reach a Financial Counselor at 800-466-9670.
Resources

Web sites

American Association of Kidney Patients (AAKP)
1-800-749-2257
www.aakp.org

American Kidney Fund (AKF)
1-800-638-8299
www.kidneyfund.org

National Kidney Foundation (NKF)
1-800-622-9010
www.kidney.org

Social Security Administration (SSA)
1-800-772-1213
www.ssa.gov

Medicare
1-800-MEDICARE or 1-800-633-4227
www.medicare.gov

Support Groups

Brookfield
Meets twice a year
Peritoneal dialysis focused
Nancy Poremski 262-548-4076

Milwaukee
Meets monthly every 3rd Wednesday 6PM – 8 PM
Froedtert Hospital
9200 W. Wisconsin Ave Conference A & B
Heart & Lung Transplantation Focused
Claudia Kornacki 414-805-2839

Polycystic Kidney Disease
This support group provides a forum for patients, family and friends to come together to learn more about polycystic kidney disease and share personal stories.
Meets the first Tuesday of every month
Community Conference Room 2
Community Conference Center, 8700 Watertown Plank Road
6:30 to 8:00 p.m.
Next meeting(s): April 3; May 1