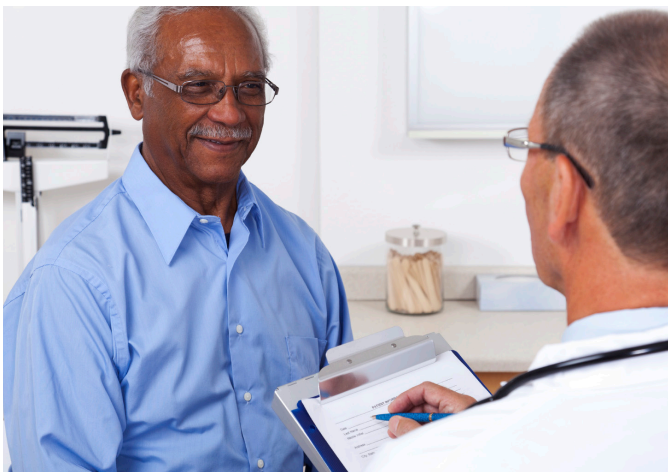
UNDERSTANDING YOUR PERITONEAL DIALYSIS OPTIONS



AAKP
American Association of Kidney Patients
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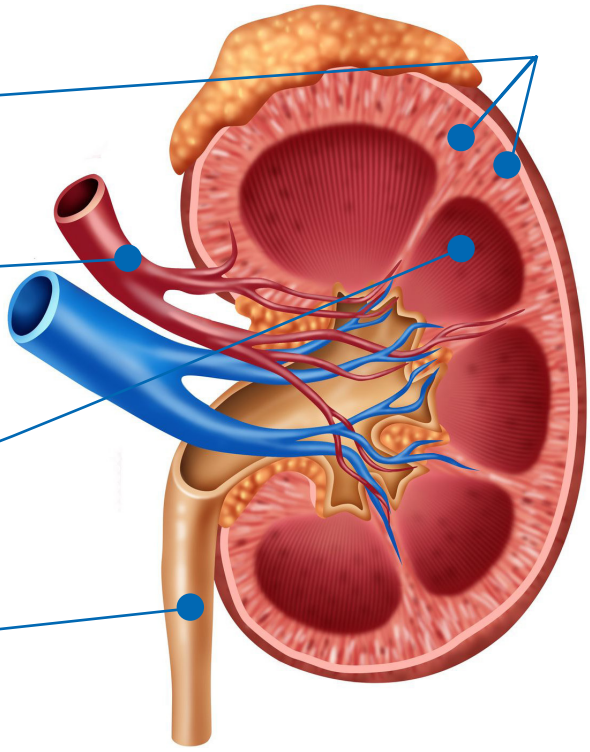
HOW THE KIDNEYS WORK

Inside each nephron, a special blood vessel called a glomerulus works like a strainer to keep blood cells and needed substances in while letting extra fluid and wastes out.

Blood enters the kidney here, through the renal artery.

Each kidney contains about one million nephrons - tiny filtering centers that clean the blood.

Drop by drop, urine is produced and travels to the bladder through this tube, called a ureter.



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The kidneys are two bean-shaped organs, each about the size of a fist. They are located just below the rib cage, one on each side of the spine. To locate your kidneys, put your hands on your hips, and then slide your hands up until you can feel your ribs. Now if you put your thumbs on your back, you will know where your kidneys are. You can't feel them, but they are there.

WHAT DO THE KIDNEYS DO?

- Regulate your blood pressure
- Make red blood cells
- Keep your bones strong
- Make urine
- Remove waste and extra fluid

The kidneys filter about 120 to 150 quarts of blood each day to produce about 4 to 8 cups of urine. The urine is made-up of waste and other fluids you consumed.

When your kidney function starts to fail, harmful toxins build up in your body, your blood pressure may rise, you may not be able to get rid of excess salt and water, and and your body may not make enough red blood cells. When this happens, you need treatment to replace the work of your failing kidneys. The two types of treatment for kidney failure are **dialysis** or **transplantation**.

There are two types of dialysis options: Hemodialysis and Peritoneal Dialysis. This brochure is focusing on peritoneal dialysis (PD). There are two different types of PD. This brochure will describe the strength and weakness of each. AAKP hopes the brochure will help you understand more about the different kinds of dialysis options. After learning about your dialysis options, you can help your doctor decide what therapy is right for you.

HOW DOES PD WORK?

PD is one of the available treatment options to remove waste products and extra fluid from the blood when the kidneys are no longer working properly. PD uses your own peritoneum – a natural membrane that covers the abdominal organs and lines the abdominal wall. This membrane acts as a filter. The peritoneum is a porous or sponge-like membrane that allows toxins and fluid to be filtered from the blood.

In order to perform PD, a surgeon will need to create a dialysis **access** to the **peritoneal cavity**. A dialysis access is an entranceway into your abdomen that lies beneath your skin and is easy to use. To create an access, the doctor will insert a small, soft tube, known as a catheter. The

catheter is usually about 12 inches long and as wide as a pencil. This procedure is usually done in an outpatient center. The surgeon will give you a medicine to numb the skin where the catheter is placed and medicines to relax you.

During your procedure, a catheter is placed through the abdominal wall and into the peritoneal cavity. The catheter will travel from the peritoneal cavity under the skin (the tunnel) to a place where it comes out of the body. The place where the catheter comes out of the body is called the **exit site**. It will take about two to three weeks for the exit site to heal, but you will be able to walk around normally after your surgery. The only thing to be aware of is that you will need to keep the dressing dry and undisturbed. Sponge baths are okay but no showers or baths until you see your PD nurse, usually one week after your surgery.

A portion of the catheter remains outside the abdomen and under your clothing. When the dialysis is performed the catheter is used to connect to the dialysis fluid bags (dialy(**dialysate**). Your PD nurse will teach you a simple routine for cleaning and taking care of the catheter exit site. Daily care of the exit site is critical to prevent infections.

When receiving a PD treatment, dialysate will flow into the peritoneal cavity through the catheter. The solution will remain in the cavity for several hours. During this time, waste products and excess fluid pass from the blood into the peritoneal cavity. After the complete dwell time (period the dialysis solution is in your abdomen), the solution will be drained from the cavity. You will then fill the cavity with fresh solution and the process begins again. The process is called an exchange.

There is potential for infection with any surgical or invasive procedure; therefore, you will need to follow proper techniques for performing your treatments. Different types of PD have different schedules of exchanges. Some PD treatments are done during the day while others can be done overnight during sleep. Your doctor will prescribe how many exchanges you will do each day, as well as the amount and type of dialysis fluid you will use. It is important to follow your PD prescription and do all of the exchanges as instructed.

Storage space is needed at home for PD supplies. Delivery of solution bags is typically scheduled once each month. These supplies must be stored in a clean, dry area.

TYPES OF PERITONEAL DIALYSIS

Since you don't have to go to a dialysis center for treatment, PD gives you more control. You can do treatments at home, at work or on vacation. This independence makes it especially important to work closely with your healthcare team: your nephrologist, dialysis nurse, dietitian, and social worker. The most important member(s) of your healthcare team is you and your support team.

CONTINUOUS AMBULATORY PERITONEAL DIALYSIS (CAPD)

CAPD does not require a machine. It can be done in most places that are clean and well lit. The only equipment you need is a bag full of dialysate fluid and the plastic tubing that comes attached to the bag. A mask is strongly recommended to prevent the risk of infection. As the word ambulatory suggests, you can walk around with the dialysis solution in your abdomen. CAPD is performed manually and can be done almost anywhere.

With CAPD, dialysis takes place 24 hours a day, seven days a week. The peritoneal membrane acts as a filter, removing toxins and excess fluid from the blood. The toxins and excess fluid cross the membrane into the dialysis solution. They are removed from the body when the dialysis solution is drained during an exchange into a pre-attached drainage bag.

CAPD requires that you have dialysis solution in your abdomen. The amount of dialysate will vary depending on your specific needs. **Exchanges** are usually performed every four to six hours during the day. After a specified time, the solution, which now contains toxins, is drained into the drainage bag. You then repeat the cycle with a fresh bag of solution.

An exchange of dialysis fluid in CAPD is simple. You will be able to do it yourself once you have been trained by a specialized CAPD nurse. This training usually takes one to two weeks.

The solution bag is hung on an IV pole, using gravity to allow dialysate to flow into the peritoneal cavity. First, empty the abdomen of the old fluid, then add fresh solution. Once you have filled your peritoneal cavity with the clean dialysate solution, you can detach the tubing and empty the used dialysate into the toilet. The clean fluid then sits in the peritoneal cavity until your next exchange. During this time, you are free to go about your regular activities. Each exchange takes about 30 minutes to complete. Your doctor will prescribe the

PROS	POTENTIAL CHALLENGES
• Can be done in many locations, making it easier to travel and work. • Unlike home hemodialysis, a partner is not required. • No needles. • Flexible schedule and increased independence. • Fewer fluid and diet restrictions than hemodialysis. • No machine is necessary. • Often provides better blood pressure control. • Prolongs remaining kidney function.	• Treatments are usually performed four times per day. • Not all dialysis facilities offer CAPD (You have the right to request a transfer to a doctor/facility that prescribes CAPD). • Your abdomen is always full of fluid, which may increase the size of your waist. • The dialysate is glucose-based and insulin requirements will change in diabetics. Some patients gain weight. • Requires the insertion of a permanent catheter. • Procedures must be closely followed to reduce the risk of infection in the peritoneal cavity or at the exit site. • Storage space needed in your home for supplies.

number of exchanges you'll need, typically three exchanges during the day and one evening exchange. A usual prescription will have you performing exchanges when you wake, at lunchtime, at dinnertime and at bedtime.

CONTINUOUS CYCLING PERITONEAL DIALYSIS (CCPD)

Sometimes called automated peritoneal dialysis (APD), this treatment is done at home with your catheter connected to the cycler machine.

CCPD is a simple procedure. The machine automatically controls the timing of exchanges, drains the used solution, and fills the peritoneal cavity with new solution. This machine is designed and prescribed to be used at night while you sleep. The machines are easy to operate and have built-in safety devices. CCPD machines are portable and about the size of a small suitcase. They can be used wherever there is a grounded electrical supply.

PROS	POTENTIAL CHALLENGES
• Flexible schedule and increased independence. • Unlike home hemodialysis, a partner is not required. • Usually done while you sleep, freeing up daytime requirements. • Fewer fluid and diet restrictions than hemodialysis (done three times a week). • No needles. • You can easily travel with your cycler and have supplies shipped to your destination, or you can switch to capd when you're traveling. • Often provides better blood pressure control. • Prolongs remaining kidney function.	• A machine is needed. • You may have to do an extra exchange during the day. • You may be awakened during the night by the cycler machine's noises. • Requires the insertion of a permanent catheter. • Not all dialysis facilities offer CCPD (You have the right to request a transfer to a doctor/facility that prescribes CCPD). • The dialysate is glucose-based and insulin requirements will change in diabetics. Some patients gain weight. • Procedures must be closely followed to reduce the risk of infection in the peritoneal cavity or at the exit site. • Storage space needed in your home for supplies.

The type of PD you choose will depend on the schedule of exchanges you would like to follow, as well as other medical factors particular to you. You may start with one type of PD and switch to another, or a combination of automated and manual exchanges may work best for you. Work with your healthcare team to find the best schedule and techniques to meet your lifestyle and health needs. Your doctor will look at your body size, lifestyle, lab tests, and your ability to do the dialysis steps. Both types of PD are continuous, meaning you receive around-the-clock treatment, usually with PD fluid is in your abdomen 24 hours a day, seven days a week – similar to the way healthy kidneys work.

Patients on either type of PD are relatively independent and can manage their own care at home. However, PD is not always trouble free. The following are some things to consider when making a treatment choice.

TRAINING FOR HOME

You will receive one-on-one or small-group training to give you

the skills you need to perform the right dialysis treatment. The training nurse will develop a plan just for you and it will usually take 5 days to a few weeks. There's no need to be afraid of going "solo". Your nurse will be there every step of the way to make sure you do things right.

HOW WILL HAVING A CATHETER AFFECT MY DAILY LIFE?

Swimming and Tub Baths: Because your exit site needs to stay clean and dry, swimming in public pools, freshwater lakes and rivers, and taking tub baths at home can lead to problems, including infection of the skin surrounding your catheter. Showering is preferred if you are on PD. Swimming in the ocean or private pools is usually no problem. For people who don't want to give up tub baths, the surgeon can place an extended PD catheter that exits the skin of the upper chest instead of the abdomen. Talk to your kidney doctor about your concerns if this might affect your decision to do PD or not.

Responsibility: Some patients get tired of doing dialysis every day. If this is a problem, talk to your PD nurse who may be able to help you incorporate more flexibility into your routine, change the prescription to reduce burden, or consider a "holiday from PD" using hemodialysis.

Body Image: Some PD patients find it difficult to accept a permanent PD catheter. They worry the catheter may affect their sexual activity and their relationship with their partner. PD nurses and social workers can help with tips on how to disguise the PD catheter. PD also tends to stretch the abdomen, giving it a rounded appearance. Keeping fit and doing exercises will help.

Fluid Overload: When there is too much fluid in the body, it can cause a sudden increase in body weight, swollen ankles and/or shortness of breath. Generally, dialysis patients need to restrict their fluid intake to prevent fluid overload. PD patients, however, may have more flexible fluid allowances than other treatment options.

Discomfort: PD is NOT painful. After the catheter is inserted and the area is healed, it is pain free. You may feel a new sensation when the fluid begins to flow into or out of your peritoneal cavity during an exchange. This is normal. But after a little while, you should not even notice this or

HOW WILL HAVING A CATHETER AFFECT MY DAILY LIFE?

the extra fluid in your abdomen. Your body, too, will quickly adjust to the exchange and easily hold the extra fluid.

However, some PD patients find having dialysis fluid in their abdomen uncomfortable. They feel full, bloated or experience back pain. This can usually be addressed by modifying your treatment prescription, something your PD nurse and kidney doctor can help you with.

Peritonitis: This is an infection of the peritoneum, usually caused by bacteria entering through or around the catheter. This can happen when patients touch the open ends of the connections between the bag of dialysis fluid and the catheter. Sometimes, contamination around the catheter at the exit site can lead to peritonitis. Peritonitis is greatly reduced by following correct dialysis techniques every time. On average, patients can expect to get less than one episode of peritonitis every two years. Some patients never get one. Peritonitis is easy to recognize because it makes your dialysis fluid cloudy. Some patients may also experience abdominal pain and fever. Most germs and infections can be treated with antibiotics, but some are very hard to treat. Immediate medical attention is necessary. For more information on peritonitis, please speak with your physician.

Pets: Many of us love our animals, especially dogs and cats. Animals are okay, as long as the treatment and storage areas are kept clean and separate from your pets. Your PD nurse will often be willing to visit your home to see if there are any problems with your pet arrangements before you start PD training.

In evaluating the different PD options, please keep in mind:

1. **EVERY PATIENT IS UNIQUE.**
2. **EVERYONE WILL HAVE DIFFERENT OUTCOMES AND EXPERIENCES WITH TREATMENTS.**
3. **NOT ALL TREATMENT TYPES MAY BE AVAILABLE IN YOUR AREA.**
4. **SOME TREATMENT TYPES MAY NOT BE AN OPTION FOR YOU.**

We hope you found this brochure helpful in explaining your PD options. Remember to talk with your physician if you have additional questions.

Self-Assessment Tool

If you think peritoneal dialysis (PD) may be a good treatment option for you, take a look at the questions below. Your answers to these questions can help your physician assess how PD may fit your health and lifestyle needs.

1. Do you work outside of the home? If you do, PD may be an ideal option since you are able to maintain your normal work balance with minimal interruption from your therapy.
2. Do you live in a rural area making traveling to a dialysis center difficult? PD may be appropriate for you since it gives you the freedom to dialyze and manage your disease primarily from home.
3. Do you have impaired vision? Since you are managing your own treatments, you may need assist devices or family support to allow you to perform PD at home.
4. Is your hand strength or dexterity impaired? If you live alone, you will need to see if assist devices can allow you to perform PD at home.
5. If you are diabetic, is your diabetes well-controlled? Many diabetic patients do very well on PD, but it is important that you work with your physician to find the best treatment for you.
6. Do you have adequate storage space for dialysis supplies? Each month, you will have many boxes (approximately 30-40) that will be stored. The supply company can sometimes deliver more frequently if space is limited.
7. Have you had multiple abdominal surgeries? Some people with major abdominal surgeries or scarring of the peritoneal membrane may not be good candidates for PD.
8. Will you and a possible support person be able to devote time for proper training? A support person is not required, but may prove to be very helpful in administering treatment.
9. Do you have a phone? This is essential for contact between the patient and a designated nearby dialysis unit, as well as ordering supplies.
10. Do you think you would be comfortable accepting the responsibilities associated with PD? With the independence PD offers, it also requires responsibility on the patient's part.

Now that you have answered these questions, take them to your physician and discuss whether PD may be right for you.

Glossary

Adequacy: A term that refers to how well your dialysis is working. To measure adequacy, tests are carried out to see if enough fluid and waste products are being removed from your blood.

Catheter: A tube inserted through the skin into a blood vessel or cavity to draw out body fluid or infuse fluid. In peritoneal dialysis a catheter is used to infuse dialysis solution into the abdominal cavity and drain it out again.

Cycler: A mechanical device that performs peritoneal dialysis solution exchanges in regular cycles.

Dialysis: The process of cleaning waste from the blood artificially when the kidneys are no longer to do so. There are two forms of dialysis: hemodialysis and peritoneal dialysis.

Dialysis Access: The point on the body where a needle or catheter is inserted.

Dialysis Solution: A cleansing liquid used in the two major forms of dialysis, hemodialysis and peritoneal dialysis. Dialysis solution contains dextrose (a sugar) and other chemicals similar to those in the body. Dextrose draws wastes and extra fluid from the body into the dialysis solution.

Dwell Time: The time needed for the dialysis solution to remain in the body during each cycle.

Exchange: The draining of used dialysis solution from the abdomen, followed by refilling with fresh solution.

Peritoneal Cavity: The space around your internal organs inside the lower abdomen.

Peritoneal Dialysis: A form of dialysis that uses the lining of your abdomen, called the peritoneal membrane, as a filter to remove waste products from your body.

Peritoneal Membrane: The layer of tissue that lines your abdominal cavity. A membrane can act as a filter, allowing some particles to pass from one part of the body to another while not allowing others to pass. The peritoneal membrane is used as a filter during peritoneal dialysis.

Peritoneum: The lining of the peritoneal cavity.

Peritonitis: Inflammation of the peritoneal membrane, usually caused infection.

Urea: A toxin the body makes when protein is broken down. Levels of urea in the blood are a measure of how well the dialysis treatment is working.

Uremia: When toxins that are normally removed by the kidneys build up in the blood, leading to symptoms such as poor appetite, nausea, vomiting, fatigue and inability to concentrate.

NOTES

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Rev. 1.17