

## Peritoneal Dialysis Patient Guide

**Important:** Please refer to the Instructions For Use (IFU) for detailed information on device description, instructions, contraindication warnings and precautions.

# Peritoneal Dialysis patient guide



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# Introduction



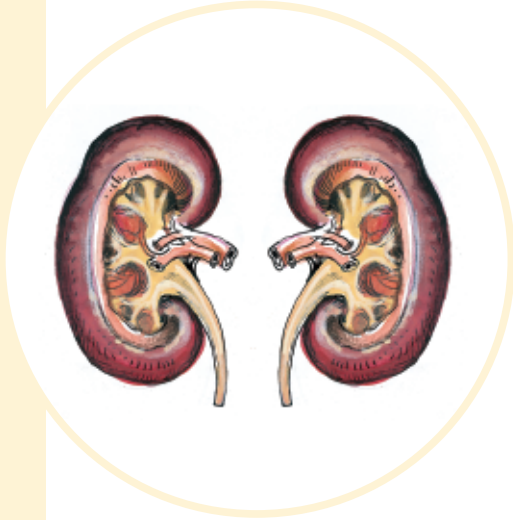
The purpose of this patient guide is to present you with information about peritoneal dialysis (PD). Fresenius Medical Care North America has prepared this manual as an aid to the excellent care offered by your dialysis team which consists of your doctor, nurse, dietitian and social worker.

It will take a firm commitment from you to accept the responsibility of carrying out your prescribed treatment plan exactly as you have been taught. Besides learning how to perform peritoneal dialysis, you will learn how to recognize potential problems and how to respond correctly. Your responsibilities will also include taking your medications and following your diet as instructed.

This guide is just part of your training. Feel free to make notes as you learn about PD. You will also find this to be a helpful resource once you are home. If you have any questions about the information in this manual, please ask your home training nurse.



## Normal Kidney Function



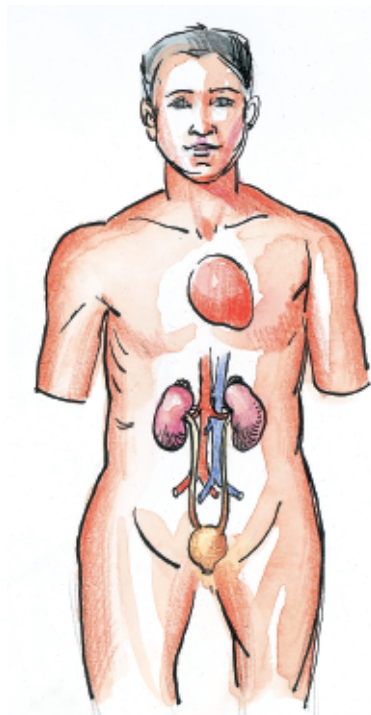
### The Kidneys

The kidneys are two organs that are located in the lower back, one on each side of the spine. They are about the size of a clenched fist. The kidneys have numerous functions that are vital to your well being. Their main function is to rid the body of extra fluid and waste products. Everyone has waste products which result from digestion of food. The kidneys filter these waste products and get rid of harmful waste through urine. The useful products are left in the body.

The kidneys help regulate the body's water balance. They also release hormones which help make red blood cells and control blood pressure. Another important balance that is affected by the kidneys is calcium, phosphorus and vitamin D, which work together to play a key role in bone formation.

Some of the functions of the kidneys are to:

- Remove extra fluid
- Remove waste products
- Restore needed chemicals
- Regulate blood pressure
- Help red blood cell production
- Help with calcium and vitamin balance



# Chronic Kidney Failure (CKF)



As kidney failure begins, the kidneys are not able to clean the blood of waste products. These toxins and excess water collect in the body. A build up of waste products in the blood is called uremia. Some of the symptoms of kidney failure that you might feel include:

- Extreme tiredness
- Nausea and vomiting
- Difficulty sleeping
- Puffiness and swelling of the feet, legs, hands and face
- Shortness of breath
- Bad breath
- High blood pressure

You may experience all or one of these symptoms.

Chronic kidney failure means that the loss of kidney function is permanent. Kidney function may stop quickly or slowly fail after a number of years. End Stage Renal Disease or ESRD occurs when the kidneys have reached the point where they can no longer work well enough to maintain the balances needed for life. This is usually when dialysis must be started.



## Common Causes of Kidney Failure

There are many causes of kidney failure and a few of the most common reasons are listed here:

- Diabetes
- Pylonephritis
- Hypertension
- Polycystic Kidney Disease
- Glomerulonephritis
- Lupus Erythematosus
- Obstruction
- Structural Disorders

**Diabetes** – This causes blood vessel changes in the kidneys (and the whole body). This process occurs over many years. The kidney failure is caused by a thickening and hardening of renal arteries, glomeruli and tubules.

**Glomerulonephritis** – This is the single most common cause of chronic kidney failure. In this disease there is inflammation and destruction of the glomerulus in the kidneys.

**Lupus Erythematosus** – Lupus is a chronic inflammatory disease of the body tissue which causes scarring. The scarring in the kidney leads to kidney failure.

**Obstruction** – This can occur with kidney stones. If urine is not able to drain well and backs up into the kidneys, there can be damage to the kidneys.

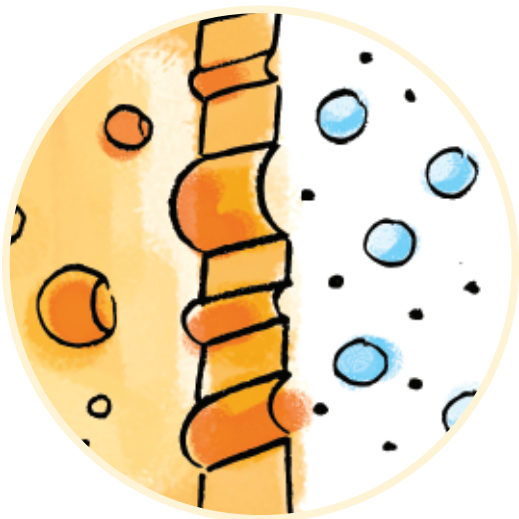
**Polycystic Kidney Disease** – In this condition, the kidneys are full of cysts that slowly enlarge then press against the working parts of the kidney causing damage. This is an inherited condition.

**Pyelonephritis** – This is an infection of the kidneys. Repeated infections may damage the nephrons causing kidney failure.

**Structural disorders** – This is from a defect in the urinary tract. This is usually present at birth. This can cause urine to back up into the kidneys and cause damage.



# Understanding Peritoneal Dialysis



## Basic Principles

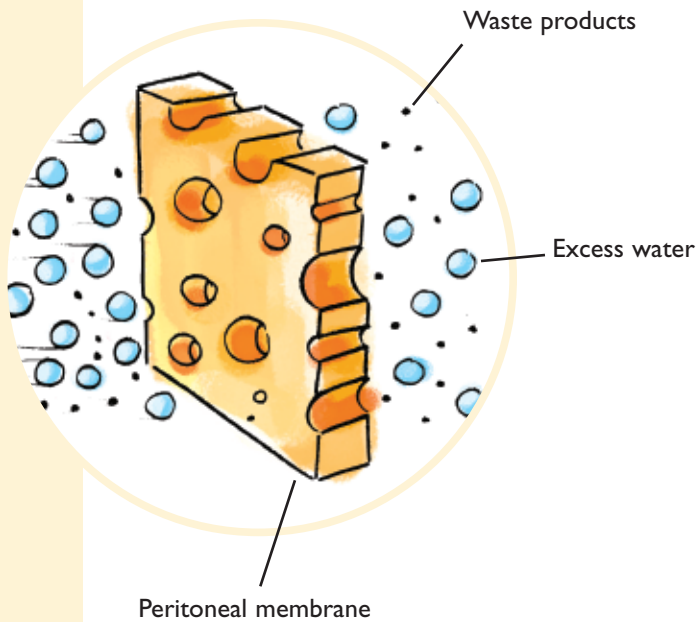
Peritoneal dialysis (PD) is one of several ways to treat kidney failure. PD is close to the natural function of the kidneys. It rids the body of waste products, extra fluid and helps balance chemicals in a slow and gentle way.

In order for dialysis to take place, there must be a membrane with tiny holes (pores) to filter waste products from the blood. This membrane must be semi-permeable, meaning waste products can pass through but the substances that your body needs will not.

Peritoneal dialysis uses the peritoneal membrane as an “artificial kidney.” This membrane—also called the peritoneum—is very thin and lines the abdominal cavity and covers most of the internal organs. The peritoneum acts as the dialyzing membrane.

The peritoneal membrane has many small blood vessels (capillaries). When dialysis solution is put into the peritoneal cavity, waste products and excess fluid pass from the blood to the dialysis solution. The processes that make this happen are osmosis, diffusion and ultrafiltration.

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## Osmosis

Osmosis is the process that allows excess water to be removed from the blood. With osmosis, the body tries to make the water balance on both sides of the membrane. Water will move from an area that has the largest amount of water (least concentrated), to an area that has the smallest amount of water (the most concentrated).

Dialysis solution contains dextrose, a simple sugar. This sugar draws excess fluid from the blood into the dialysis solution. Your blood will usually be less concentrated (have more water and less dextrose) than the dialysis solution. This means that the extra water in your blood will move across your peritoneal membrane into the dialysis solution.

## Diffusion

Waste products and extra chemicals are removed from the blood through a process called diffusion. The dialysis solution has no waste products and contains the proper amount of chemicals. When the solution is put into the peritoneum, the waste products and extra chemicals are drawn from the blood into the solution until they are equal. Once the blood and dialysis solution become equal, no dialysis is taking place.

An example of this is to think of a cup that is divided by a semi-permeable membrane. On one side is water with a large amount of salt (sodium). On the other side is solution that contains little salt. The salt particles on the concentrated side will slowly move to the side that has little salt. When there is the same amount of salt on both sides of the membrane, the movement stops.

## Ultrafiltration

Ultrafiltration means that an extra amount of water was removed. This is done in PD by using dialysis solution with an increased concentration of dextrose, a type of sugar. The more dextrose that is in the dialysis solution, the more water that will be removed from your blood.

Dialysis solution comes in three different strengths:

- 1.5% dextrose
- 2.5% dextrose
- 4.25% dextrose

During training, you will learn when you should use the different strength solutions.

## The Peritoneal Dialysis Exchange



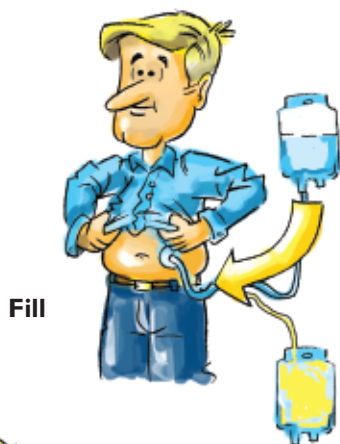
### The PD Catheter

To fill and drain the peritoneal cavity of solution, a soft plastic tube called a catheter is inserted through the abdomen, into the peritoneum and sewn in place. The catheter is placed by a surgeon or nephrologist in the operating room or special treatment room. It is a simple and short process. Once the catheter has been placed, you may have a few days of discomfort where the opening was made.

You will have a large dressing over the site of catheter placement. The dialysis staff or a trained nurse at the doctor's office will perform the first few dressing changes. The catheter is normally rested for a few days to a few weeks before using it for dialysis. This is needed to prevent the dialysis solution from leaking.

The doctor may order your catheter to be flushed during this time. A small amount of solution will be instilled (put through the catheter) into your peritoneal cavity then immediately drained.

Once the catheter is healed, you will be instructed on how to care for the catheter exit site (the skin around your catheter) by your dialysis nurse. He/she will instruct you on general exit site care, bathing, swimming and securing the catheter.

**Drain****Fill****Dwell**

## The PD Exchange

An exchange is the process of draining the peritoneal cavity of old dialysis solution, filling with the new solution, then allowing it to dwell. You are exchanging old dialysis solution with new dialysis solution. Let's take a closer look at the exchange process:

**Drain** – The fluid containing the waste and excess fluid is drained out. This can take approximately 15-20 minutes.

**Fill** – Fresh solution is put into the peritoneal cavity through the catheter. It usually takes 5-10 minutes to fill.

**Dwell** – Dialysis occurs during the dwell time. The fluid will stay in the peritoneal cavity for a set number of hours. Your doctor will decide how many hours the fluid should dwell.

During the first few exchanges you may have a feeling of fullness when you fill. After a while, that feeling will go away and the feeling of fluid in your peritoneal cavity will become routine.

Your doctor will determine how much fluid you will use during each exchange and how many exchanges you will do each day. Your doctor and nurse will help you make a schedule that will suit your needs. You can continue your normal daily activities while you carry the dialysis solution within you. With PD, you can plan your dialysis around your normal routines instead of changing your routine to suit your dialysis.

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## Dialysis Solutions

Dialysis solution is made up of:

- Sterile water
- Chemicals/electrolytes
- Dextrose

There are several different strengths and bag sizes of dialysis solution. Your doctor will decide which type and size is best for you. The most common sizes are:

- 1 liter
- 1.5 liter
- 2 liter
- 2.5 liter
- 3 liters
- 5 liter (for cycling patients)

The solution bag has a dextrose percentage (%) number printed on it. The higher the number, the more dextrose (sugar) there is in the bag and the “stronger” the solution is.

- 1.5% solution has the lowest amount of sugar and is usually used by patients who gain a small amount of fluid weight.
- 2.5% solution is usually used by patients who gain 2-3 pounds of fluid over their dry weight.
- 4.25% solution has the highest amount of sugar and is usually used by patients who gain more than 3 pounds of fluid over their dry weight.

The strength of solution that you use will depend on the amount of extra water that needs to be removed. The greater the amount of extra fluid that needs to be removed from your body, the higher the percent of solution you should use.

The following are examples of what a two liter bag of solution might remove:

- **1.5% dextrose** – removes about 100-300cc of extra fluid
- **2.5% dextrose** – removes about 300-500cc of extra fluid
- **4.25% dextrose** – removes about 600-800cc of extra water

Your doctor and PD nurse will instruct you in the selection of the best dialysis solution for you. This is based on your weight, blood pressure and according to your symptoms and response to the dialysis therapy. Many patients use more than one strength of solution.

Every time you perform a dialysis exchange, you must check the solution bag before using it. You can use the word “SCALE” as a clue to the checks you need to do.

- **S: Strength** – be sure that you have selected the correct strength of dextrose (1.5%, 2.5% or 4.25%)
- **C: Clarity** – the solution should be clear. A slight yellow color is acceptable. There should not be any particles in the bag.
- **A: Amount** – check the bag size to be sure you will receive the amount of fluid that your doctor has ordered.
- **L: Leaks** – wipe off any moisture from the surface of the bag, then squeeze the bag to check for leaks. Do not use if there is a leak in the bag. Report this to your PD nurse.
- **E: Expiration date** – do not use the solution past the expiration date.

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## Types of Peritoneal Dialysis

There are three types of peritoneal dialysis: Continuous Peritoneal Dialysis (CAPD), Continuous Cycling Peritoneal Dialysis (CCPD) and PD Plus dialysis which is a cross between CAPD and CCPD. All of these types of dialysis can be done at home.

## Continuous Ambulatory Peritoneal Dialysis (CAPD)

This type of dialysis is continuous because you have fluid in your peritoneal cavity 24 hours a day, seven days a week. It allows you to move around freely, just as you normally would. CAPD is a type of dialysis that you can do by yourself and doesn't require any machines. It takes approximately 35 minutes to perform a CAPD exchange. Your doctor will prescribe how many exchanges per day you will need to be properly dialyzed. Most patients do 4 to 5 each day. An exchange involves three steps:

- **Drain:** At the end of the dwell time, you will set up a new warmed solution bag and connect to your PD catheter. The dialysate will flow into the drain bag from your peritoneal cavity by gravity. Remember that drained dialysate solution is called effluent. It takes about 20 minutes to drain. When you are performing CAPD on a regular basis you will always drain out the effluent before filling.



- **Fill:** Warmed dialysate solution is connected to the tubing set attached to your peritoneal catheter. The solution flows by gravity through the tubing into your peritoneal cavity. It takes about 10 minutes to fill. You will disconnect your peritoneal catheter from the solution tubing after the fill is complete.
- **Dwell:** When the dialysate solution is in your peritoneal cavity, dialysis takes place. Waste products and excess fluid are pulled from your blood through the peritoneal membrane and into the dialysate. You may continue all normal activity while you dwell. Dwell times vary from 4-6 hours during the day and 8-10 hours at night.

Exchange times can vary somewhat to fit your schedule, especially if you work or go to school. Your PD nurse will help you set a schedule that works best for you. A typical schedule is, 7 am, 12 noon, 5 pm and 10 pm.



### Continuous Cycling Peritoneal Dialysis (CCPD)

This therapy uses a machine called a cycler. While you are sleeping, the cycler does your dialysis exchanges for you. The cycler automatically measures and warms fresh dialysis solution. This solution then flows by gravity through tubing into your peritoneal cavity. After the prescribed amount of dwell time, the used solution drains by gravity into a weigh bag on the cycler. The cycler automatically repeats these exchanges that have been prescribed by your doctor. All of this is done while you sleep. It takes about eight to ten hours to perform CCPD. In the morning, you disconnect from the cycler and go about your normal routine. Most of the time, you will have a small amount of dialysate in your peritoneal cavity during the day. CCPD can be done alone or with a partner. This is a very useful form of dialysis treatment for people who work or go to school. Not everyone is a candidate for CCPD. You and your doctor will decide if this is a modality choice best for you.



## PD Plus Peritoneal Dialysis

PD Plus is a combination of CAPD and CCPD. It requires a cycler that provides automatic dialysis treatments during the night while you sleep and also allows you to do any CAPD exchanges that you may need during the day right from the machine. This therapy is usually performed by patients who need more dialysis than can be covered with CAPD or CCPD alone. Once the machine is set up during the day, you will connect to the cycler tubing and perform a daytime exchange. The machine will drain and fill you automatically, then you will disconnect from the machine. The machine remains ready for any further daytime exchanges or to be connected to you at bedtime. Some patients perform more than one daytime exchange from their cycler.



## Preparing for Peritoneal Dialysis



Whether you are performing CAPD, CCPD or PD Plus, there are basic principles that must be followed.

### Aseptic Technique

Germ and bacteria are found on almost everything. Germs and bacteria are so small you cannot see them. Something that is completely free from germs or bacteria is called sterile or aseptic. The peritoneal cavity is sterile. Your solution bag and the connections of your PD system are also sterile. You must follow all procedures carefully so that germs or bacteria do not get into your peritoneal cavity or your PD system and cause an infection. Everything you do with your catheter, exit site, or during your exchange procedure must be done as cleanly (aseptically) as possible. You must be extremely careful not to contaminate (allow germs in) by touching, dropping, coughing or breathing on these areas. Any dropped supplies must be thrown away. Remember that germs multiply rapidly in warm, moist, dark, "sugary" areas such as your peritoneal cavity. If bacteria enters into your peritoneal cavity, there is a good chance of getting an infection called peritonitis.





## Your Work Area

The area you choose to do your exchanges should be large enough to hold the necessary supplies for your exchange procedure. It needs to be kept clean and uncluttered with good lighting.

Extra supplies should be easy to reach. During the exchange procedure, there should not be any open windows. Turn off air conditioners or fans. Do not do an exchange in a high traffic area. Air movement carries germs in dust particles and can cause a contamination. Pets should not be in the room when you are doing your exchange.

Everyone in the room needs to wear a mask. It's important to avoid distractions. If you are distracted, you may make a mistake and contaminate your PD system. Following the steps of your exchange, as you have been taught by your PD nurse, will help you avoid mistakes.

## Gathering Supplies

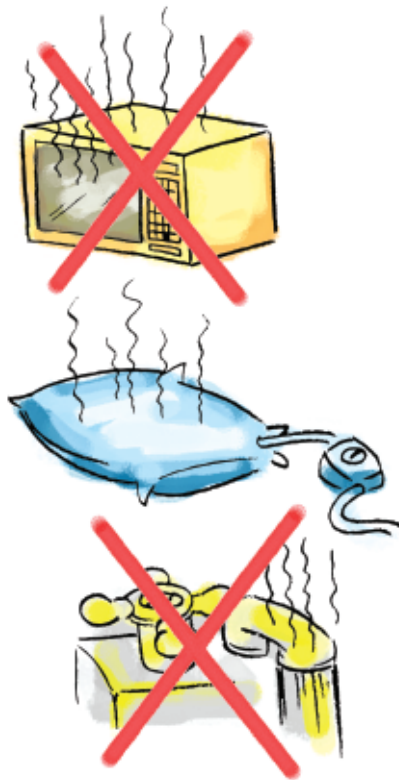
The table that you use to perform your dialysis on must be disinfected in between each exchange. Your PD nurse will instruct you on how to do this. The disinfectant that you will use is part of your dialysis supplies. Gather all the supplies that you will need to perform your exchange. Keep extra supplies nearby. You should not have to interrupt your exchange procedure to get extra supplies. Your PD nurse will supply you with a list of items that you will need to perform your dialysis exchange.

Other supplies that you will need are a:

- Floor scale
- Spring scale
- I.V. pole
- Blood pressure cuff
- Thermometer
- Heating pad to warm the solution

## Warming Dialysate

Each bag of dialysate should be warmed up to body temperature before it is infused into your peritoneal cavity. You will find that warm dialysate feels more comfortable as it fills your peritoneal cavity but there is also another advantage of warmed dialysate – the removal of waste products and extra fluid begins more quickly when the dialysate is already warmed to body temperature before infusing it.



The best way to warm a solution bag is by dry heat, such as a heating pad. You will be provided one with your dialysis supplies. Your PD nurse will instruct you on how to accomplish this in the safest and most effective way. Do not warm the bags in hot water since there may be bacteria in the water. A water droplet in one of the connections could cause peritonitis. Microwave ovens must not be used because they heat unevenly and can overheat the solution. Overheating solution can damage your peritoneum.

## Masking and Hand Washing

Masking is a very important part of aseptic technique. There are germs that normally live in your nose and mouth. If these germs manage to get onto your PD connections, they could travel to your peritoneal cavity and cause peritonitis. Wearing a mask during your exchange procedure helps to prevent those germs from contaminating your PD system.



**REMEMBER: Mask before washing your hands and make sure that the mask covers your nose and mouth.**

You will be taught the best way to wash your hands in order to remove as many germs as possible from between your fingers, under your nails and up to your wrist.

If you touch something that is not clean with your freshly washed hands, such as putting on your mask or scratching an itch, then your hands are no longer clean. They must be washed again. Good hand washing involves a one minute scrub with antibacterial soap from a pump bottle. Dry your hands thoroughly using paper towels. Cloth towels are discouraged unless a clean one is used each time you wash your hands.

**REMEMBER: Wash your hands first before touching your catheter, exit site or PD connections.**



## Adding Medications to the Dialysis Solution

There may be times that you will have to add medication to your dialysis solution. The most common medications used are antibiotics for treating infections, heparin for preventing fibrin formation and regular insulin for better blood sugar control in diabetics.

Adding medications to the dialysis solution is a **STERILE** procedure. Your home training nurse will instruct you on how to perform this procedure. Things to remember when adding medication to the dialysis solution are:

- You must wash your hands and wear a mask during the procedure
- The medication port of the solution bag and the top of the medication bottle must be disinfected before drawing up and injecting the medication
- After injecting, gently shake the solution bag to mix the medication.
- The solution usually must remain in your peritoneal cavity for at least 4 to 6 hours to absorb the medication.

**REMEMBER:** If you do not follow sterile technique while adding medication to the dialysis solution, you could inject bacteria into the bag and cause a peritonitis infection.







## Disposing of PD Effluent and Used Supplies

Your dialysis unit may have a specific procedure for disposing of your used PD supplies. Your training nurse will tell you if there are any city, state, or federal environmental rules that need to be followed.

In most instances, you can follow a few simple steps:

1. Do not throw the full used solution bag in trash.
2. Carefully drain the used solution into the toilet.
3. Try to avoid spilling the used solution.
4. Throw away the empty bag and used tubing in the regular trash.

**REMEMBER:** Check with your PD nurse for any special procedures.

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### Helpful Hints for Performing Your PD Exchange

- The room should be large enough for all the dialysis supplies
- The room should be away from family activity
- The room should be dust free and free from clutter
- The room should have good lighting
- Your table should be wiped with disinfectant before each exchange. Formica, laminate and glass are easy to clean tabletops and will not be damaged by the disinfectant.
- Do not allow pets in the room during your exchanges
- Sit in a comfortable chair when doing CAPD
- Close all doors and windows
- Turn off ceiling fans
- Shut off air conditioning or heater vents
- Gather all your supplies before you start
- If anything falls on the floor, do not use it
- Concentrate on what you are doing

# Your Daily Routine

Once home, you will have a few tasks to do every day, besides your dialysis. They include: your vital signs (blood pressure, weight, pulse and temperature), exit site care and record keeping.

## Vital Signs

Vital signs show how your body is reacting to treatment and how well your body is doing at that particular time. By taking your vital signs every day you will quickly learn what is normal for you. You can often detect changes through vital signs. They will also help you to decide what strength solution you should use. Your nurse will show you how to correctly measure your vital signs.

## Blood Pressure:

Blood pressure (B/P) is the force made by the volume of blood on the blood vessel walls and chambers of the heart. High blood pressure is called hypertension. High blood pressure can occur because of pain, being upset, or the aging process of the blood vessels.

However, fluid overload (too much water in the body) is a very common cause of high blood pressure. Some signs of fluid overload are:

- Headaches
- Swollen ankles, feet, legs, fingers, hands and face (edema)
- Shortness of breath



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Low blood pressure is called hypotension. Dehydration (not enough fluid in the vessels) can cause low blood pressure. If your blood pressure drops, it can be because too much water and sodium were removed. Blood pressure medication can also cause low blood pressure. The signs of low blood pressure are:

- Dizziness – especially when standing quickly
- Blurred vision
- Nausea
- Fainting

For both high blood pressure and low blood pressure you should notify your dialysis unit. A change in strength of dialysis solution may be needed. If you are on blood pressure medication, your doctor may need to change the dose. **DO NOT** change your blood pressure medication without talking with your doctor first.

### **Taking Your Blood Pressure:**

You will be given either a stethoscope and blood pressure cuff or a digital blood pressure monitoring system. When you take your blood pressure, you will have two numbers. They are written like this: 120/80. The first number (or the number on top) is the systolic pressure. This occurs as the heart contracts and pushes blood through the vessels; the heart at work. A normal systolic pressure is about 120mmHg (millimeters of mercury). The other number (or number on bottom) is called the diastolic pressure. The diastolic pressure occurs as the heart relaxes between contractions. A normal diastolic is about 80mmHg.

Your nurse will teach you how to place the cuff and stethoscope or position the digital monitor correctly and give you full instructions on how to monitor and document your blood pressures.

Here are a few things to remember when taking your blood pressure:

- Remove all clothing from your upper arm
- You should be in a sitting position
- Avoid exertion before taking your blood pressure (this can effect the results)
- If possible, measure on the same arm
- If you are on blood pressure medicine, measure at the same time every day (or more often if you are not feeling well)
- When positioning the cuff on your arm, the lower part of the cuff should be about 1” above the elbow
- Once positioned, you should be able to fit 2 fingers between your arm and cuff

With practice, it does become easier. Sometimes blood pressure changes occur over long periods of time. While you may not be able to feel these slow blood pressure changes, they can be seen in your daily blood pressure records. High and low blood pressures cannot be ignored. It is very important to take your blood pressure as advised by your doctor and/or nurse.



## Pulse

The number of times your heart beats in one full minute is your pulse. The normal pulse averages 60-90 beats per minute. Your pulse should be strong and regular. When your heart beats faster, your pulse increases and when your heart beats slower your pulse decreases.

Your pulse rates will increase if you are excited, in pain or have an infection. It will also increase if your dialysis treatment removes too much fluid from your body.

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Your doctor or nurse may instruct you to monitor your pulse daily. Taking your pulse accurately is important. To find your pulse, place your first 3 fingers over your wrist at the base of your thumb. (Do not use your thumb because your thumb has a pulse of its own.) When you feel your pulse, count the number of beats that occur in one full minute. Use the second hand of a clock or watch. Notice if the beats are regular or irregular. Write your pulse in your daily records. If your pulse is below 60 or above 120, notify your doctor or nurse.

### Temperature

Your temperature is an important indicator of infection. Your doctor or nurse may want you to take your temperature on a daily basis.

Normal body temperature is 98.6 degrees Fahrenheit. Dialysis patients can have a lower than normal body temperature. You should become familiar with what is normal for you. You should take your temperature anytime that you feel warm or chilled. A higher than normal temperature can mean an infection or the flu. If you have a rise in temperature along with a cloudy bag of drainage, you should suspect peritonitis and call your doctor or nurse immediately.

You will be given either a glass thermometer or a digital thermometer. No matter which thermometer you use, you must wait ten minutes after smoking or eating before taking your temperature. Place the thermometer under your tongue. A glass thermometer takes about 3 minutes, while a digital thermometer takes about 1 minute. Record your temperature in your daily record sheet.

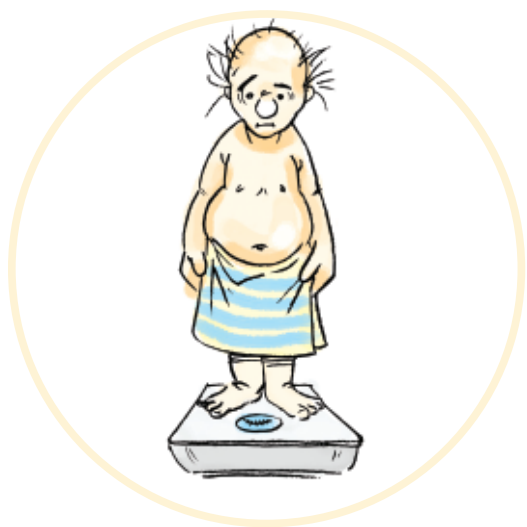
## Weight

You will be hearing a lot about dry weight, or ideal body weight (IBW). Your dry weight is what you weigh when there is no swelling (extra fluid) in your face, hands or feet, your blood pressure is not too high or too low and you feel pretty good. Your doctor will determine your dry weight.

Your daily weight gain (fluid gain) should not be more than 3 pounds or 1.5 kilograms. (Note: body weight gain is very slow. You cannot gain 3 pounds of body fat overnight)

If you gain too much fluid weight, it may be because of extra fluid and sodium in your diet or not enough fluid removal from your dialysis. Rapid weight gain is often a sign of fluid overload. You will see an increase in your blood pressure and weight.

Fluid weight loss may occur if you have vomiting and diarrhea or too much fluid removal from your dialysis. A large fluid weight loss can cause dehydration (too little water in the body). If too much fluid loss occurs, you may have leg cramps, dizziness, general weakness and low blood pressure. If these symptoms continue after using 1.5% solution and having a salty snack such as broth or saltines, you should call your doctor or nurse.



**REMEMBER:** If you are having a hard time controlling your weight, you must notify your doctor or nurse. Keeping yourself at your optimal dry weight is one of the best ways to staying healthy.

Important things to remember when taking your weight:

- Weigh yourself at the same time everyday.
- Wear the same kind of clothing each time you weigh.
- Use the same scale each time you weigh.
- Place the scale on a flat surface, not a carpet.
- Let your doctor or nurse know if you weigh yourself with the peritoneal dialysis fluid in your abdomen.
- Record your weight daily.

# Peritoneal Dialysis patient guide



## Daily Exit Site Care

Your catheter exit site is where the catheter exits from the skin. In most cases, a nurse will be doing your dressing changes and exit site care for the first one to three weeks after your catheter is first placed. After that, you will be responsible for caring for your exit site. You **MUST** do exit site care every one to two days. It is important that you follow the instructions given to you by your nurse. Taking care of your exit site by visually inspecting it and caring for it will help to prevent infection and loss of your catheter.

Some common exit site care instructions are:

- Wash hands before exit site care.
- Carefully remove any old dressings. (Never use scissors in this area)
- Inspect (look at) the exit site for signs of infection.
- Wash the exit site with antibacterial soap from a pump bottle. Use a clean washcloth & rinse well. (Exit site care may be done in the shower)
- Dry the exit site thoroughly.
- The exit site may be left open to the air, or a dressing may be applied for comfort.
- Secure the catheter to the abdomen with an immobilizer or tape.



**Reminders:**

- Inspect the exit site and catheter every day.
- Your exit site should not appear red, swollen, tender or be draining. Call your nurse immediately if you suspect an infection.
- Inspect the catheter and adapter. They should be free from cracks, tears or debris.
- Feel the catheter tunnel and cuff daily. Note swelling or tenderness.
- Secure the catheter to avoid tension or tugging.
- Shower daily.
- Wear clean clothes.
- Never put anything on your exit site such as lotion, powder or vaseline. Your nurse will instruct you if any type of ointment is prescribed for your exit site.
- Do not pick at or remove scabs from the exit site.

Your catheter is your lifeline. Without your catheter you cannot perform your exchanges. Your exit site and catheter tunnel must be free from infections. Infection can result in your catheter being removed. Look at your exit site every day and call your doctor or nurse right away if you think you have an infection. Signs of infection are:

- Redness
- Swelling
- Pain or Tenderness
- Drainage



## Record Keeping

One of your most important jobs as a home patient is record keeping. A complete and thorough record of your treatment is necessary for your doctor and nurse to assess your progress at home. These are required by your dialysis unit and by most insurance companies. Your training nurse will tell you what information you need to keep and will show you how to keep these records properly.

Each day you must record your vital signs as well as the dialysis solution strength for every exchange and any medication you may have added.

### **REMEMBER: It's very important that you:**

- Keep correct records.
- Bring the records with you every time you see the doctor or nurse for a clinic visit.
- Take the records with you if you have to go to the hospital or emergency room.

# Complications

As with any kind of medical treatment, there can be problems while on peritoneal dialysis. Not everyone will have complications with peritoneal dialysis, but we want you to be aware of some of the possible problems that may occur and how to handle them. We have separated them into two categories:

- Infectious Complications
- Non-Infectious Complications

## Infectious Complications

There are three types of infections that can occur while on peritoneal dialysis. They are:

- **Peritonitis** – an infection in the peritoneal cavity
- **Exit site** – an infection in the skin around the exit site of your PD catheter
- **Tunnel** – an infection of the catheter pathway under the skin

These infections can be very serious and can result in catheter removal. That is why early recognition and treatment with the proper amount of antibiotics is absolutely necessary. Most of your training involves ways to prevent and recognize these three types of infections.

Let us look at infectious complications in more detail.



## Peritonitis

Peritonitis occurs when germs or bacteria enter the peritoneal cavity. There are several ways that this can happen:

- If your hands are not washed thoroughly, germs can enter into your tubing and to your peritoneal cavity when you do an exchange.
- If you touch a sterile part of your tubing connections while doing an exchange, even with clean hands, germs can get into your tubing.
- Using supplies that are not sterile. If you think an item is contaminated, do not use it.
- Forgetting to wear your mask. Coughing, sneezing or breathing heavily while doing an exchange can introduce germs into your catheter.

**REMEMBER: Peritonitis can be prevented by following your exchange procedure exactly as you have been taught.**

Sometimes, even though you have done everything exactly as you were taught, germs can still get into your peritoneal cavity and cause peritonitis. For example, this can happen if you have bowel disease or if a woman has a yeast infection. It is very important that you are able to recognize the signs and symptoms of peritonitis so that treatment can start immediately.

Signs of peritonitis are:

- Cloudy effluent
- Abdominal pain
- Nausea or vomiting
- Fever
- Poor drainage

If you experience any of these symptoms, follow the instructions given to you by your training nurse immediately. You will be started on antibiotics right away. The longer you delay in reporting these symptoms the worse you may feel. Peritonitis does not go away without treatment. Antibiotic treatment usually lasts for 10-14 days even though symptoms may disappear.

**REMEMBER: Take your antibiotics for the entire length of time that the doctor has prescribed.**

## **EXIT SITE OR TUNNEL INFECTION**

The catheter exit site can be a source of infection if not kept clean, dry and free of irritation. Part of your daily care routine is to carefully inspect your catheter, exit site and tunnel. By doing this every day, you will notice any changes that could lead to a problem. Signs of infection are redness, swelling, drainage or soreness at the exit site or along the catheter tunnel. If you have any of these symptoms, you must notify your doctor or nurse immediately. A culture will be taken of the area and you will be started on antibiotics. Treatment time will vary depending on the type of bacteria.

Some possible causes of exit site or tunnel infections may be:

- Improper hand washing before performing routine exit site care
- Tugging or pulling at the exit site
- Tight fitting clothes
- Not performing routine exit site care as taught by your nurse

## NON-INFECTIOUS COMPLICATIONS

Some other complications that may occur are problems with:

### Filling

You should feel no pain or discomfort when filling. If you do, it may be from:

- Solution going in too fast. You can lower the I.V. pole (the higher the pole the more force that the solution will go in with) or partially clamp the transfer set to slow the flow of the solution.
- Solution that is too warm or too cold.
- The catheter may be in up against the wall of your peritoneum. Sometimes changing your position may help.
- Peritonitis. Check for signs and symptoms of peritonitis every time you do an exchange.

### Draining

It should take about 20-30 minutes to drain. If it takes longer than that, you may have a problem with:

- Kinks in the tubing – there may be a kink or clamp on the drain line or catheter.
- Fibrin – check for fibrin in the drain bag or catheter. This can clog the catheter.
- Catheter has migrated to an area in the peritoneal cavity – changing position may help.
- Constipation – can cause fluid to get trapped. If you have not had a bowel movement within three days, you need to call your dialysis nurse or doctor.
- Peritonitis can cause an incomplete drain. Check for signs of peritonitis if you have problems draining.

## Blood-Tinged Effluent

Activities such as heavy lifting, vigorous exercise or severe coughing can rupture some of the small blood vessels in your peritoneal membrane. Your effluent will become pink-tinged if this occurs. Also, women may notice pink effluent during their menstrual period. Although bloody effluent is usually not serious, you should always call your doctor or nurse if this occurs.

## Constipation

Constipation can be a problem for peritoneal dialysis patients. It can cause drainage problems, and if it gets severe, peritonitis. Causes of constipation can be from medications, diet restrictions and lack of exercise. To prevent constipation from becoming a problem, try to get a little exercise each day, eat fresh fruit and vegetables as allowed and also include high fiber in your diet. Your doctor may prescribe stool softeners or laxatives if necessary.

**REMEMBER: Do not take any over-the-counter medications before checking with your doctor.**



## Fluid Overload

Before you go home to start peritoneal dialysis, your doctor or nurse will tell you what your “dry” weight should be. This is your weight without extra fluid in your body. There are several signs and symptoms of fluid overload:

- Increase in weight
- Shortness of breath
- Increase in blood pressure
- Swelling of feet, face or hands

If you become fluid overloaded, you will probably need to limit what you drink and use a higher strength solution until the extra fluid is removed. Your nurse and dietitian will instruct you on the amount of liquids that you can drink and help you with selecting the correct percent solution to maintain your dry weight.

## Dehydration

If your body has too little fluid you may notice a:

- Decrease in weight
- Rapid pulse
- Decrease in blood pressure
- May feel light-headed or dizzy especially when standing
- Cramps in hands, feet or legs

Some causes for dehydration are overuse of high dextrose solution, vomiting or diarrhea, or a decrease in fluid intake. You will be instructed by your doctor or nurse to use the lower percent solution, drink extra fluid and/or eat something salty until your weight and blood pressure come back to normal. Your dry weight may also need to be re-evaluated.



## **Shoulder Pain**

Sometimes air can get into your peritoneal cavity while doing an exchange. The air rises and presses on the diaphragm causing referred shoulder pain. It can be painful but usually does not last long. Sometimes the air will be removed when you drain. Lying on your side with your knees to your chest can sometimes displace the air. If the pain persists for longer than 24 hours, call your doctor or nurse.

## **Hernia**

A hernia occurs when there is pressure on a weakened area of the muscle wall in the abdomen or groin area. The peritoneal dialysis solution increases pressure in the abdomen. If you notice a bulging area in your abdomen or groin, call your doctor or nurse immediately. Hernias usually need to be surgically repaired, but you should be able to resume peritoneal dialysis after you have healed.



## Itching

Dialysis patients usually have dry skin which can cause itching. The increased phosphate levels in your blood and/or not getting enough dialysis can lead to itching skin. Also, a change in medications can cause itching. Taking your phosphate binders as prescribed and doing all of your dialysis exchanges may help with the itching. If you are itching after starting a new medication, you will need to call your doctor. Applying lotion to your dry skin can also help. If itching becomes severe, call your doctor or nurse.

**REMEMBER: Never put lotion on or around your catheter exit site unless instructed by your doctor or nurse.**

# Medications



**REMEMBER:** Do not take any medications without first checking with your doctor or PD nurse.

One of the functions of the kidneys is to remove drugs after they have been taken in by the body. This cannot happen in a person with kidney failure. Medications can build up in the blood and reach toxic (dangerous) levels. This includes over-the-counter medications. You should become familiar with your medications, what they are used for and what side effects they may have. Here is a list of some of the more common medications used by peritoneal dialysis patients:

## Phosphate Binders

Phosphate binders are taken with meals to bind with the phosphorus in your food as it passes through the stomach and intestines. The bound phosphorus cannot pass into the blood stream, so it is removed through the stool instead. Phosphate binders must be taken during meals. If phosphate binders are not taken as prescribed by your doctor, your phosphorus will rise.

## Vitamin D

Vitamin D works with calcium to help keep bones strong and healthy by getting calcium into the blood stream from your stomach and intestines. When you have kidney failure, this process is disturbed. Calcium levels decrease and bone disease may result. Your doctor may prescribe extra vitamin D for you to help keep your calcium levels normal.

### Multiple Vitamins

With kidney disease, the body cannot use vitamins efficiently. Some vitamins dissolve in water and some in fat. The water soluble vitamins are B complex and C. These may be washed away during dialysis and need to be replaced. Your doctor may prescribe vitamins and minerals to help your body keep proper balance.

### Stool Softeners/Laxatives

Constipation may be an occasional problem due to phosphate binders, iron preparations or other medications you may be taking. Your kidney disease may also cause your intestines to work slower, which may also cause constipation. High fiber foods such as bran, whole wheat breads, pastas and brown rice can help maintain regular bowel function. If you are still occasionally constipated, your doctor may prescribe a stool softener to be taken on a regular basis to prevent constipation. Severe constipation may need to be treated with a laxative. Only take laxatives as directed by your physician or PD nurse.

### Iron

Iron is an important mineral used in making red blood cells. Without iron, your body cannot make red blood cells even though you may be taking the drug EPOGEN®. So, if your iron level is low, a supplement will be prescribed for you in pill form, as an injection or it may be given by IV infusion at the dialysis clinic. Iron preparations may cause some constipation and will darken your stool.

**REMEMBER: Do not take iron at the same time as phosphate binders. The binders interfere with iron getting into the bloodstream from the stomach.**

## **EPOGEN® or Epo (Epoetin Alpha)**

Erythropoietin (e-rith-ro-poy-e-tin) is a hormone produced in the kidney that stimulates the body to make red blood cells (RBC'S). RBC's carry oxygen and fuel to all parts of the body. If the level of RBC's is too low, you will become anemic. Some of the symptoms of anemia are feeling too tired, feeling cold or having difficulty breathing. The medication EPOGEN® is given by injection either at the clinic or your nurse may teach you how to give it to yourself at home.

## **Heparin**

You may notice strands of stringy substances in your effluent. This substance is called fibrin. Fibrin is a protein material that gels together. A large amount of fibrin can block the flow of solution in your catheter or tubing. An anticoagulant, such as heparin, may need to be injected into your solution bags to prevent fibrin from causing a blockage. Your nurse will teach you the procedure to add medications such as heparin to your solution bags, if necessary.

## **Blood Pressure (BP) or Antihypertensive Medications**

Healthy kidneys help control body fluid levels and blood pressure. A higher than normal blood pressure causes extra strain on your heart. One way to control your blood pressure is to avoid fluid overload. Another way is to take your blood pressure medication. You may already be on medications to control your BP. It will be very important to keep an accurate record of your blood pressure and to take your medication as prescribed.

## **Antibiotics**

Antibiotics are medications that fight infections. Antibiotics may be given as a pill, an injection, by IV infusion or may be injected right into your solution bags. The type of antibiotic depends on the type of infection. Infections such as peritonitis and exit site need antibiotic treatment started immediately. An infection left untreated will be more difficult to cure. That is why it is important to call your doctor or nurse as soon as you suspect that you have any type of infection.

# Nutrition



Your diet will play a big role in how you feel. Because you are on peritoneal dialysis, your blood is being cleansed and ridded of excess fluid every day. You often have more freedom and choices in what you eat. You must, however, continue to follow any special diet that you are already on for other medical reasons such as diabetes. Your renal dietitian will help you understand which foods you can eat and how much will be allowed. You will learn the importance of sodium, potassium, calcium and phosphorus as well as calories and protein. Try not to focus on your limitations. Use this time to try out new foods, recipes and spices.

## Fluids

Fluids come from many sources other than what we drink. Many foods have a high percentage of liquid in them and must be counted as part of your fluid intake. These include such things as ice cream, Jell-O®, puddings, ice, juicy fruits and vegetables. Usually the goal is to take in no more fluids than can be removed by your dialysis. Your doctor, nurse or dietitian will tell you how much fluid that you are allowed.





## Protein

It is important for you to have a well-balanced diet and to eat foods high in protein. Protein is needed for growth, building new muscles and repairing old tissue. However, protein is lost during peritoneal dialysis and it needs to be replaced. If you do not eat enough protein, your body will start to break down its own tissue and you may become malnourished. Meat, chicken, fish, cheese, eggs, milk, peanuts and beans are all good sources of high-quality protein foods. Try to include protein with each meal. Your dietitian will assist you in planning a diet to meet your protein needs.

## Phosphorus

Phosphorus is a mineral that works with calcium to maintain the strength of your bones. When your kidneys fail, they cannot remove excess phosphorus and your blood level of phosphorus goes up. Even dialysis cannot remove all the excess phosphorus. The elevated blood phosphorus causes calcium to be removed from your bones making them weak and easier to break. This is called renal bone disease. To prevent this, your physician may prescribe phosphate binders. This medication is taken when you eat so that it may bind with the phosphorus in food and be removed in your stool. Your doctor may also limit foods high in phosphorus. Unfortunately, foods that are high in phosphorus are also high in protein. Your dietitian will show you how much protein you can eat without getting too much phosphorus.



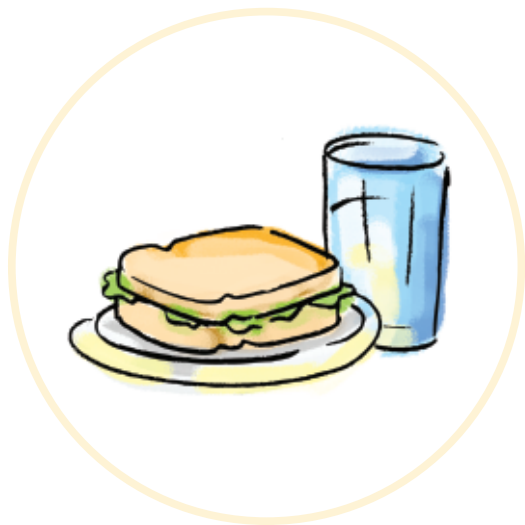
## Calcium

Calcium is needed to maintain strong bones. Calcium also helps to keep nerves and muscles working properly. Because you have kidney disease, the calcium that you take in is not always absorbed into your bloodstream. Therefore, it may be necessary for your doctor to give you a calcium supplement. Your dietitian will also help you to balance your calcium intake.

## Potassium

Potassium is another mineral that is important for proper muscle activity. This means all your muscles, not just the ones in your arms and legs, but also your internal organs such as your heart. Because you have kidney failure, potassium can build up in your blood. Too much potassium can cause muscle weakness and an irregular heartbeat. Dialysis removes most of the potassium in your diet. However, there may be times that you have to limit potassium. Again, your dietitian will help you manage your diet.

**REMEMBER:** Salt substitutes are high in potassium and should not be used.



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## Calories

Calories provide the fuel or energy our bodies need to function. We get calories from food. If you take in more calories than your body needs, you will gain weight. If you take in less, you will lose weight. Some foods that are high in calories are fats (butter, margarine and vegetable oils) and sweets (honey, jams, jellies and hard candy). Your dietitian will help plan your calorie intake to maintain the weight that is right for you.

**REMEMBER:** You will also get calories from the sugar (dextrose) in your dialysis solution.

## Sodium

Sodium (salt) is a mineral that helps regulate fluid in your body tissue. When you eat foods that are salty, it causes you to drink more liquids. So too much sodium can cause you to retain fluid. Your blood pressure may start to increase and you may develop swelling around the hands, feet or eyes. Your dietitian will tell you what limits that you will need. The amount of salt restriction is different for everyone.



# Living With Dialysis

Living with chronic kidney failure means changes in many aspects of your life. Your dialysis clinic has a social worker that is trained to help you and your family cope with changes in your emotions, family and day-to-day life.

How you handle the changes and your feelings about kidney disease and dialysis are important factors in your treatment. Seeing a social worker is an important step in taking care of yourself.

## Social Services

Renal social workers have the education and experience to help patients and their families adjust to chronic illness and its treatment. They are qualified to provide counseling, emotional support and methods for problem solving.

Your renal social worker can also help you solve specific problems involving money, work, transportation and insurance. Sometimes he/she will refer you to resources such as community agencies and help you in making use of those resources.



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### **Topics that patients often ask for help with include:**

- adjustment to dialysis
- personal problems
- insurance, Medicare and financial aid applications
- financial problems
- employment or vocational rehabilitation
- transportation to the dialysis clinic
- travel arrangements
- insurance claims and medical bills
- home care needs

Kidney disease and its treatment will be a permanent part of you and your family's lives. Let your kidney disease and its treatments be a part of your life, not your whole life. Maintaining a normal lifestyle and taking part in social activities (going to the theatre, meetings with friends, sports, etc.) is important to your overall well being.

# Follow Up Care

## Clinic Visits

You will be asked to come into the clinic monthly. During the visit, blood will be drawn to help determine if any changes need to be made in your treatment, diet or medications. Your doctor will review your BUN and Creatinine tests along with PD adequacy tests to determine how well you are being dialyzed. Changes in your medications and/or diet may need to be made depending on the levels of your sodium, potassium, calcium and phosphorus (to name a few). At the clinic, your records from home will be reviewed to check your B/P, pulse, temperature and weight and your exit site will be examined. You may be asked to do an exchange at the clinic so the nurse can review the procedure with you. The dietitian and social worker may visit with you at this time. Please make every effort to keep your scheduled appointments. Bring your records, current list of medications and any questions, problems or suggestions you may have.

**REMEMBER:** You can always call your doctor, nurse, social worker or dietitian if you have any questions or problems between visits.



## Laboratory Tests

As a dialysis patient, you will need to know about certain laboratory tests. You will have your blood drawn once a month during your clinic visit. The results will be reviewed by your PD team and discussed with you.

### Common Blood Tests:

#### Blood Urea Nitrogen (BUN)

Blood Urea Nitrogen (BUN) is a blood test that shows the level of one of the waste products in the blood. It comes from proteins that are broken down in the body. The BUN shows how well you are dialyzed and whether you are getting too much or too little protein in your diet.

#### Creatinine

Creatinine is a waste product in the blood made by the muscles in your body. The amount of creatinine made will depend on how muscular and active you are. Diet does not effect levels of creatinine.

#### Sodium (Salt)

Sodium is a normal body mineral. A rise in sodium will make the body hold on to extra fluid. If the fluid builds up, swelling, high blood pressure and shortness of breath can occur. A drop in sodium can cause dehydration.

The amount of sodium in your body is controlled by the amount of salt in your diet. Patients on PD should keep their salt within normal range.

## Potassium

Potassium level is very important. Normal amounts of potassium are needed for the muscles to work efficiently. The most important muscle is the HEART. A high or low potassium level can cause the heart to beat irregularly and may even make it stop beating. It is important to keep potassium within normal limits by eating the proper foods and by doing your exchanges as prescribed.

## Calcium and Phosphorus

Calcium and phosphorus play a key role in keeping bones healthy. An imbalance of these two minerals in the blood can cause painful mineral deposits in the tissue, muscles, organs and joints. Bones may become weak and break. Deposits in the skin can cause itching.

## Albumin

Albumin is the main protein in the blood. Some albumin is lost through peritoneal dialysis. A diet high in quality protein (meats, fish, chicken and eggs) will help keep the albumin level within normal range.

## Total Protein

Total proteins are the most common compounds in your blood. They all have very important and varied functions such as breaking down toxins, making antibodies, enzymes and hormones. Total proteins also help maintain the acid-base balance in the blood and serve as a source of nutrition for tissues.

## **Hematocrit**

Hematocrit is the percent of red blood cells in your blood. Your red blood cells carry oxygen to all of the cells in your body. Patients with kidney disease will have a low hematocrit due to the low level of erythropoietin. A decrease in the hematocrit number of red blood cells is known as anemia. Your doctor may prescribe EPOGEN<sup>®</sup> or blood transfusions to help raise your hematocrit.

## **Hemoglobin**

Hemoglobin is another lab test done to detect anemia. Hemoglobin is the measurement of the oxygen carrying capacity of red blood cells. Red blood cells supply the body with the oxygen it needs to survive.

## **Iron Levels**

Iron levels need to be kept greater than 20% for red blood cell production. Your doctor will prescribe iron supplements if needed.

## **Parathyroid Hormone Level (PTH)**

PTH measures the activity of the parathyroid gland which helps to regulate the calcium level in the body.

## **Hepatitis Panel**

A Hepatitis panel shows if you have been exposed to a hepatitis virus. Tell your nurse or doctor immediately if you have had hepatitis in the past.



## **Cholesterol**

An elevated cholesterol level is linked with an increased risk of heart disease. When the serum cholesterol is high, your dietitian will help you plan a diet that limits saturated fats and high cholesterol foods.

## **Other Tests:**

### **Cell Count**

A white blood cell count (WBC) of the effluent will be taken when peritonitis is suspected (cloudy bag). WBC's rise when you are fighting an infection. The normal cell count in effluent is less than 20. During peritonitis, the cell count will be over 100.

### **Cultures and Gram Stains**

Cultures and Gram Stains will be taken from the cloudy bag of effluent when peritonitis is suspected. This sample will be sent to the lab to identify the type of bacteria causing the infection.

### **24-Hour Dialysate Collection (Adequacy)**

This test measures how much urea and creatinine (waste products) are cleared from your body.

### **Peritoneal Equilibration Test (PET) or Peritoneal Function Test (PFT)**

These are tests that measure how well your peritoneal membrane removes waste products and fluid.

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## Chest X-Ray

This is done to see if there is fluid in your lungs and to assess the size of your heart.

## Bone Scan

This test is done to detect any changes in the thickness of your bones.

## EKG

This test shows any abnormal heart rates or rhythms.

## B. Lab Value Chart

This Lab Value Chart shows the normal lab values and what is expected in a PD patient.

Name of Lab Test	Normal	PD Patients
BUN	7-25	Less than 100
Creatinine	0.5 - 1.5	Less than 15
Sodium (salt)	135 - 145	135 - 145
Potassium	3.5 - 5.5	3.5 - 5.5
Calcium	8.5 - 10.5	8.5 - 10.5
Phosphorus	2.4 - 5.0	2.4 - 5.5
Albumin	3.4 - 5.6	4.3 - 5.6
Total Protein	6.2 - 8.4	6.2 - 8.4
Blood Sugar	64 - 112	80 - 200
Cholesterol	Less than 200	Less than 200
Triglycerides	30 - 190	30 - 190
Hemoglobin	12 - 15	11 - 12
Hematocrit	37 - 52	30 - 33
Iron Saturation	30% - 40%	Greater than 20%

# Your Dialysis Supplies

Your dialysis prescription is specific to your needs. Your physician completes and signs a prescription listing all the supplies and the amounts necessary for your treatment.

**REMEMBER: Changes in your prescription must be made by your physician.**

## Your Initial Order

Your initial order will be handled by your home training nurse. He or she will contact a customer service representative and order all the supplies that you will need to get started. These will include the solution and tubing used for your exchanges, items used for exit site care, supplies needed to add medication to the solution and any other items you may need such as a blood pressure cuff, stethoscope, IV pole or scale.

Your Customer Service Representative will then contact you to discuss your delivery schedule. Be sure to discuss with your representative any specific requirements that you may have concerning your deliveries, such as the location of your house, where you want your supplies placed in your home, etc. When your initial order arrives, it typically contains enough supplies for four weeks plus a two week safety stock. Safety stock is used if a delivery is delayed due to no one being home, bad weather, or in case your prescription changes. All supplies will be taken to your storage area. Your Customer Service Representative will then contact you two weeks after your first shipment to determine your inventory and assist you in ordering supplies for your next delivery.

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### On Your Delivery Day

On your delivery day, plan to be home or arrange for someone to accept your supplies for you. If you need to make special arrangements for a particular delivery, please tell your Customer Service Representative when he/she calls you for your order.

If a last minute change in your plans forces you to be away at the time of delivery and you are unable to arrange for anyone else to accept your supplies, place a signed note on your front door. Give complete instructions to the driver; for example, supplies may be left in your garage, at a neighbor's home, or on an enclosed porch. The driver will accept your signed note as authorization to leave your supplies. The driver will appreciate your consideration as it will save a second trip to your house and will lessen the possibility that you will run out of supplies before the driver can return.

The driver will place the supplies in your storage area. He/she is not allowed to enter your home unless you or someone you authorize is there to accept delivery and sign for it. The driver will ask you to sign a freight receipt. Do not sign until you are satisfied that:

- The cartons have been placed inside your home at the location you desire.
- Each carton appears free of damage or leaks. The number of cartons delivered equals the number on the freight receipt.

**REMEMBER: Dialysis solution must be kept dry and prevented from freezing or overheating.**

If you are not satisfied, sign the receipt but note the problem clearly on that same receipt. Please notify your Customer Service Representative of the problem immediately, preferably before the driver leaves.

## **Inventory**

Remember that two weeks after every delivery, you will place another supply order with your Customer Service Representative. Supplies are then delivered two weeks after the order is placed.

It will be important for you to keep an inventory of your supplies. Each monthly order will depend on what you have on hand. An accurate inventory will help avoid getting too much of some supplies and not enough of other supplies. Only supplies that are on your prescription can be ordered. If you need additional items, the Customer Service Representative must contact your doctor or nurse to get approval before the items can be delivered.

Fresenius Medical Care North America takes pride in its customer satisfaction. Customer Service Representatives and the delivery personnel have been specially trained to be sensitive to your needs and want to hear your concerns. If you have any issues, please contact your Customer Service Representative and supervisor.

# Commonly Asked Questions About PD

### **How often will I have to come in for check ups?**

As a rule, once a month unless your doctor or nurse instruct you otherwise.

### **Do I need a special place to do my dialysis?**

Yes, this is very important. The room that you choose to do your dialysis in should be clean and free of clutter, have good lighting and have enough room for all the dialysis supplies.

### **Is Peritoneal Dialysis a painful therapy?**

Peritoneal dialysis should not be painful. Occasionally, after the dialysis catheter is inserted, abdominal discomfort may occur during the drainage of fluid from the abdominal cavity; such pain usually disappears in one week. If discomfort continues, adjustments can usually be made to your dialysis exchange. Always report pain or discomfort to your doctor or nurse.

### **How long will I need to undergo this therapy?**

With advanced Chronic Renal Failure, dialysis or kidney transplant is a lifelong therapy.

### **Will my kidneys ever work again?**

No, usually not. It is extremely rare for “chronic” renal failure to resolve.

### **I still make urine, so why do I need to start dialysis now?**

Making urine is only part of what kidneys do. Your kidneys may have limited function - but not enough to maintain life.

### **What will happen if I miss a dialysis treatment?**

Missed treatments allow waste products and extra fluid to build up in your body, which often leads to health problems. This is felt to be very risky.

**How will dialysis affect my family?**

You will need your family for support as you begin dialysis. Your family will need support as well. Roles may change at home and adjustments will need to be made. Your renal healthcare team is ready to answer questions, provide support and offer encouragement.

**Will I still take the same medications once I start dialysis?**

Your nephrologist (kidney doctor) will decide what medications are needed once you begin dialysis. No new medications (over-the-counter or prescriptions from other doctors) should be taken without checking with your nephrologist.

**Will I qualify for Medicare to help pay for the dialysis?**

A social worker from your facility will assist you with Medicare and other sources that might be available to help pay for dialysis.

**Should I cancel my current insurance?**

Do not cancel any insurance policy without discussing your options with your social worker.

**I work and am unsure if I will be able to continue once I start dialysis. Will I qualify for disability?**

Your doctor will evaluate your health and type of work environment to determine if you can continue your job. Many dialysis patients continue to work. Sometimes, hours or duties may need to be decreased. If you are unable to work, your social worker will help you determine what benefits you are entitled to and how to apply.

## Peritoneal Dialysis patient guide

### **Can I remain sexually active once I begin dialysis?**

Yes. You are encouraged to maintain a normal lifestyle. Some patients may experience a decrease in sexual drive. If this becomes a problem for you, talk to your doctor.

### **How often will I need peritoneal dialysis?**

Peritoneal dialysis must be done every day. Your doctor will determine your exact "prescription."

### **How long does a peritoneal dialysis treatment take?**

A CAPD exchange takes about 30 minutes. If you are on a machine at night, the average time is about 8-10 hours, depending on what your doctor prescribes.

### **How long will it take me (or a family member/ caregiver) to learn to do the treatment?**

This varies from patient to patient. The average time is about a week.

### **How will I get the supplies I need for peritoneal dialysis?**

Supplies will be delivered to your home on a regular basis. A nurse will order your first shipment. A customer service representative will call you to set up future deliveries.

### **Can I keep peritoneal dialysis supplies outside?**

Your supplies must be protected from the weather. They must be kept under cover and away from temperature extremes.



**What type of diet will I be on if I am on Peritoneal Dialysis?**

You will need to follow a special diet, but peritoneal dialysis patients have a more liberal diet than hemodialysis patients do. Your dietitian will review your individual needs with you on a regular basis and help you plan your meals.

**Can I take a shower or bath if I choose peritoneal dialysis?**

You may take a shower with a peritoneal dialysis catheter after it heals. Your doctor or nurse will tell you when – usually about 4 weeks. Tub baths are discouraged.

**I have pets; does this mean I can not do peritoneal dialysis?**

You may do peritoneal dialysis if you have pets. However, pets can increase the chance of infection. You should keep pets out of your dialysis area.

**Can I travel on peritoneal dialysis?**

Yes! Keeping an active lifestyle, including travel is encouraged. The ability to travel easily is an advantage of peritoneal dialysis.

**What if I am doing peritoneal dialysis and the power goes off?**

Your home training nurse will give you instructions on how to handle power outages safely. It is a good idea to register with your local utility company as a home dialysis patient. This will enable you to receive priority when power is restored.

**Can I swim if I have a PD catheter?**

Your doctor may allow you to swim once your catheter is healed. Your nurse will give you specific instructions.

## Glossary

### A Guide To The Vocabulary Of Peritoneal Dialysis

<b>Abdomen</b>	The area of the body located between the bottom of the ribs and the top of the hips.
<b>Albumin</b>	A protein found normally in blood.
<b>Anemia</b>	A shortage of red blood cells.
<b>Antibacterial</b>	A substance that decreases the number of bacteria on skin or surfaces.
<b>Antibody</b>	A protein material formed by the body to fight a foreign substance.
<b>Antigen</b>	A foreign substance that causes the body to make antibodies to fight the substance (e.g., virus, bacteria).
<b>Aseptic</b>	Free from germs; sterile.
<b>Bacteria</b>	Germs; microscopic (invisible) organisms that can cause infection.
<b>BUN</b>	Blood Urea Nitrogen; a blood test for measuring the amount of urea in blood; a measurement of renal function.
<b>Calcium</b>	A mineral found in blood; an electrolyte. Used by the body to build bones, teeth and for proper functioning of the heart.

<b>Capillary</b>	Small blood vessel.
<b>CAPD</b>	Continuous Ambulatory Peritoneal Dialysis; daytime treatment modality.
<b>CCPD</b>	Continuous Cycling Peritoneal Dialysis; refers to peritoneal dialysis using a machine.
<b>Carbohydrate</b>	One of the main elements of nutrition. Starches and sugars are carbohydrates.
<b>Catheter</b>	A tube for instilling or removing fluids from the body, often made of silastic or plastic-like material.
<b>Concentration</b>	The amount of an ingredient in a liquid. In peritoneal dialysis, it is the amount of sugar in the solution, shown as a percentage (1.5%, 2.5% and 4.25%)
<b>Contaminate</b>	Expose to germs; unsterile; dirty.
<b>Creatinine</b>	An end-product of muscle metabolism found in blood and urine; a blood test which is a measurement of renal function.
<b>Cycler</b>	The machine used for performing night time exchanges; also used for PD Plus.

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<b>Dehydration</b>	Being dehydrated; not enough fluid in the blood vessels which can be the result of too much fluid removal with dialysis.
<b>Dextrose</b>	A simple sugar; an ingredient of dialysate solution used to remove excess fluid through osmosis.
<b>Diabetes</b>	A disease where the body cannot process carbohydrates which results in high blood glucose levels.
<b>Dialysate</b>	Solution used in peritoneal dialysis. It consists of sterile water, various minerals, electrolytes and sugar (dextrose or glucose).
<b>Dialysis</b>	Cleansing or filtering of the blood using a semi-permeable membrane to remove liquid and chemicals that would normally be removed by the kidneys.
<b>Diastolic Pressure</b>	Occurs as the heart relaxes between contractions; the last number heard when taking a blood pressure; the bottom number on the reading.
<b>Diffusion</b>	Passage of particles through a membrane from an area of greater concentration to an area of lesser concentration.
<b>Disinfectant</b>	A chemical that kills bacteria.

<b>Drain</b>	The stage of peritoneal dialysis where fluid is drained from the peritoneum.
<b>Dry Weight</b>	Body weight without extra fluid.
<b>Dwell Time</b>	The period of time dialysate remains in the peritoneal cavity. Dialysis occurs during this time.
<b>Edema</b>	Extra fluid in body tissue which causes swelling usually in the feet, ankles or hands.
<b>Effluent</b>	Another name for the solution that is drained out of the peritoneal cavity.
<b>Electrolytes</b>	Substances in the body responsible for a variety of functions (bone growth, blood pressure, heartbeat, etc.). They include calcium, sodium, phosphorus, magnesium and potassium.
<b>End Products</b>	Waste products as a result of body functions such as digestion.
<b>Erythropoietin (EPO)</b>	A hormone produced by the kidneys which stimulates the production of red blood cells in the bone marrow. The drug EPOGEN® (EPO) is a synthetic derivative of erythropoietin and works in the same way.
<b>Exit Site</b>	The area where the catheter exits or comes out of the body.

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<b>Fibrin</b>	A white filmy protein sometimes seen in peritoneal drainage (effluent) which can obstruct the flow of solution.
<b>Fill</b>	The stage of peritoneal dialysis where dialysate is put into the peritoneum.
<b>Fluid Overload</b>	Too much fluid in the blood vessels which can cause edema, hypertension and shortness of breath.
<b>Glucose</b>	A simple sugar; an ingredient of dialysate. Also referred to as dextrose.
<b>Glomerulonephritis</b>	Inflammation of the glomerulus, the filtering part of the kidneys.
<b>Gravity</b>	The natural tendency of liquids and solids to fall toward the center of the earth; with peritoneal dialysis, liquids flow through tubing due to gravity.
<b>Hematocrit</b>	A measurement of the percentage of red blood cells in relation to a given amount of blood.
<b>Hemoglobin</b>	The iron-containing part of the red blood cells. Hemoglobin carries oxygen from the lungs to tissues throughout the body.

<b>Heparin</b>	Medication that slows down blood clotting and in peritoneal dialysis, prevents fibrin formation.
<b>Hormone</b>	A chemical produced by a body organ (kidney, thyroid, etc.) and circulated in the blood to perform a specific job, i.e. erythropoietin.
<b>Hyperglycemia</b>	More sugar in the blood than is normal.
<b>Hypoglycemia</b>	Less sugar in the blood than is normal.
<b>Hypertension</b>	High blood pressure.
<b>Hypotension</b>	Low blood pressure.
<b>Infection</b>	The invasion of harmful bacteria into a body part.
<b>Infuse (Instill)</b>	To gradually put in; dialysate is instilled into the peritoneal cavity.
<b>Intravenous (IV)</b>	Inside a vein.
<b>Lupus Erythematosus</b>	A chronic inflammatory disease that involves the body's connective tissue.
<b>Magnesium</b>	An electrolyte involved in heart and nervous system regulation.
<b>Malnutrition</b>	Lack of foods necessary for the body to function properly.

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<b>Membrane</b>	A porous, flexible filter; may be man-made or part of the body such as the peritoneal membrane.
<b>Mineral</b>	An essential body chemical.
<b>Electrolytes</b>	Minerals.
<b>Nephrology</b>	The science that deals with kidneys.
<b>Nephrologist</b>	A doctor who specializes in the science of nephrology (kidney failure).
<b>Nephron</b>	Basic unit of the kidney that normally filters liquids and particles and forms urine; consists of the glomerulus and an attached tubule (small tube).
<b>Obstruction</b>	Blockage.
<b>Osmosis</b>	The movement of liquid across a membrane from an area of lesser solute concentration to an area of greater solute concentration.
<b>Parathyroid</b>	A gland that secretes a hormone to regulate calcium and phosphate levels in blood.
<b>Peritoneal Cavity</b>	The space between the layers of the peritoneal membrane; the abdominal cavity.



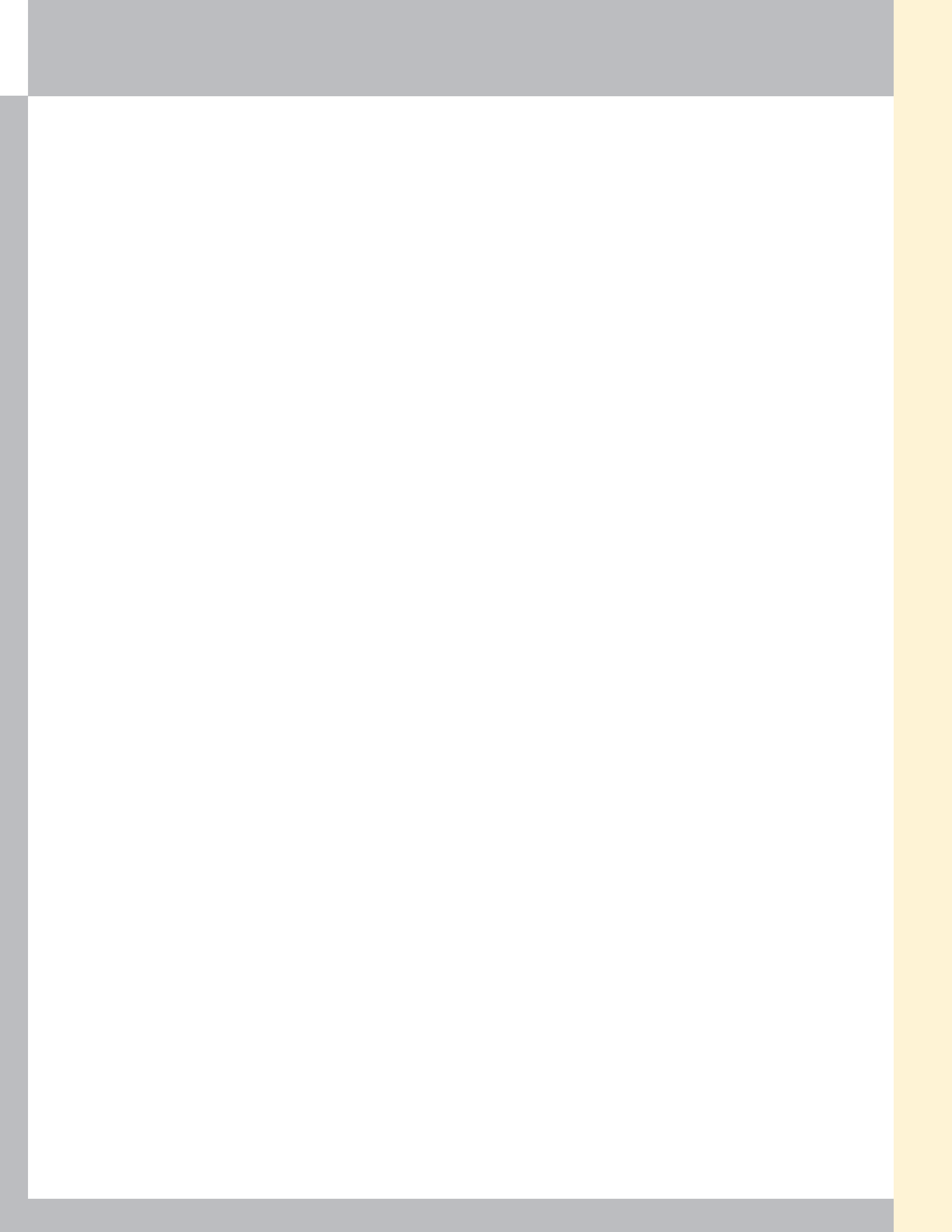
<b>Peritoneal Dialysis</b>	Dialysis using the peritoneal membrane to filter waste products and excess fluid.
<b>Peritoneum</b>	The semi-permeable membrane in the abdomen which consists of two layers: one lining the abdomen and the other covering the organs.
<b>Peritonitis</b>	Infection of the peritoneal membrane.
<b>Phosphorus</b>	An electrolyte that, along with calcium, is involved in bone growth.
<b>Phosphate Binder</b>	A medicine that absorbs phosphate in the stomach and intestines.
<b>Polycystic Kidney Disease</b>	Disease process where kidneys are full of cysts. The cysts enlarge and damage the kidneys.
<b>Pore/porous</b>	Small opening or hole. A membrane, since it has pores, is porous.
<b>Potassium</b>	An electrolyte which regulates muscle activity, including the activity of the heart.
<b>Protein</b>	An essential source of heat and energy for the body, as well as for growth and repair of body tissue.

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<b>Pyelonephritis</b>	An infection of the kidneys. Repeated infections can damage the kidneys.
<b>Renal</b>	Medical term for kidney.
<b>Semi-permeable</b>	A membrane whose pore (hole) size allows passage of some particles, but not others, depending on the particle size.
<b>Sodium</b>	An electrolyte involved in controlling blood pressure and the body's fluid balance. Sodium chloride is salt.
<b>Solution</b>	A liquid containing a number of particles. Dialysate is a solution containing sugar, electrolytes, etc.
<b>Sterile</b>	Free of ALL bacteria.
<b>Sterile Technique</b>	The steps used to prevent contamination; a procedure used to keep an area free for germs.
<b>Symptoms</b>	Evidence of a disease or of a patient's condition.
<b>Systolic Pressure</b>	Occurs as the heart contracts and pushes blood through the blood vessels; it is the first sound you hear through the stethoscope. This is the upper number on the reading.

<b>Tunnel</b>	A passageway through the abdominal wall that contains the catheter.
<b>Urea</b>	A major toxic end-product found in blood and urine. It is the end product of protein break down.
<b>Uremia</b>	The condition that results when waste products cannot be removed by the kidneys.
<b>Vital Signs</b>	The basic signs of life: measurement of blood pressure, pulse and temperature.







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