

## INFORMATION

### DIALYSIS FAQ ON DIALYSIS

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What is dialysis?

Dialysis is a life-saving process that artificially replaces the functions of the kidney.

There are two types of dialysis: hemodialysis and peritoneal dialysis.

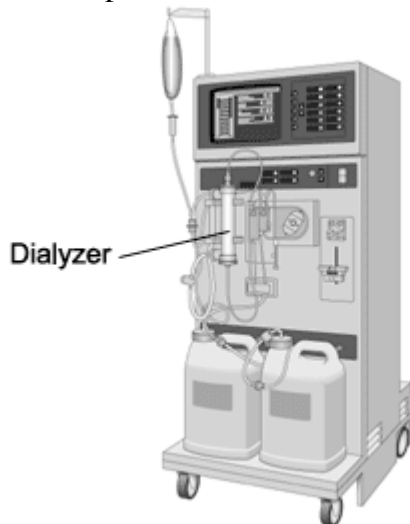
Hemodialysis involves removing blood from the body and **filtering it in an artificial kidney (dialysis machine)**.

The patient is connected by a **tube to the dialysis machine**, which continuously draws blood out, cleanses it and removes excess fluid and then returns the blood back to the patient.

Hemodialysis must be performed for **3 to 4 hours** at least three times a week. It is usually performed at a dialysis center, though home dialysis is also possible.

*Peritoneal Dialysis* is internal or in-body dialysis. Peritoneal dialysis entails use of a blood-cleansing solution called "dialysate" that is introduced into the peritoneal cavity, the region of the abdomen that is lined by the peritoneum. While in the peritoneal cavity, the dialysate works to extract toxins and excess fluid from the blood. After a period of time, the solution is then drained from the body cavity. Peritoneal dialysis may be done during the day or at night.

Continuous ambulatory peritoneal dialysis (CAPD) is the name given to this procedure when it is performed at five-hour intervals four times a day during waking hours.



When is dialysis needed?

You need dialysis if your kidneys no longer remove enough wastes and fluid from your blood to keep you healthy. This usually happens when you have only 10 to 15 percent of your kidney function left. You may have symptoms such as nausea, vomiting, swelling

and fatigue. However, even if you don't have these symptoms yet, you can still have a high level of wastes in your blood that may be toxic to your body. Your doctor is the best person to tell you when you should start dialysis

Where is dialysis done?

Dialysis can be done in a hospital, in a dialysis centre that is not part of a hospital, or at home.

Are there different types of dialysis?

Yes, there are two types of dialysis - hemodialysis and peritoneal dialysis.

How are you attached to the dialysis machine?

You can be attached to the dialysis machine in different ways. The most common method of providing permanent access to the bloodstream for hemodialysis is an internal fistula in your arm. This involves having an artery and a vein connected surgically. When they are joined, the stronger blood flow from the artery causes the vein to become larger. Needles can be inserted in the enlarged vein to connect you to the dialysis machine.

Another way to provide access to the bloodstream is to insert an internal graft. In this procedure an artery is surgically connected to a vein with a short piece of special tubing placed under the skin. Needles can be inserted in this graft.

Sometimes, when it is necessary to gain access to the bloodstream quickly, or when the veins in the arms are too small to provide enough blood for hemodialysis, a central venous catheter is used. A soft tube is surgically inserted into a large vein in the neck or near the collarbone. This method is usually temporary until a permanent access site is ready.

How long do hemodialysis treatments last?

The time needed for your dialysis depends on:

- ▣ how well your kidneys work
- ▣ how much fluid weight you gain between treatments
- ▣ how much waste you have in your body
- ▣ how big you are
- ▣ the type of artificial kidney used

Usually, each hemodialysis treatment lasts about four hours and is done three times per week.

A type of hemodialysis called high-flux dialysis may take less time. You can speak to your doctor to see if this is an appropriate treatment for you.

What is peritoneal dialysis and how does it work?

In this type of dialysis, your blood is cleaned inside your body. The doctor will do surgery to place a plastic tube called a catheter into your abdomen (belly) to make an access. During the treatment, your abdominal area (called the peritoneal cavity) is slowly

filled with dialysate through the catheter. The blood stays in the arteries and veins that line your peritoneal cavity. Extra fluid and waste products are drawn out of your blood and into the dialysate. There are two major kinds of peritoneal dialysis.

What are the different kinds of peritoneal dialysis and how do they work?

There are several kinds of peritoneal dialysis but two major ones are: Continuous Ambulatory Peritoneal Dialysis (CAPD) and Continuous Cycling Peritoneal Dialysis (CCPD).

Continuous Ambulatory Peritoneal Dialysis (CAPD) is the only type of peritoneal dialysis that is done without machines. You do this yourself, usually four or five times a day at home and/or at work. You put a bag of dialysate (about two liters) into your peritoneal cavity through the catheter.

The dialysate stays there for about four or five hours before it is drained back into the bag and thrown away. This is called an exchange. You use a new bag of dialysate each time you do an exchange. While the dialysate is in your peritoneal cavity, you can go about your usual activities at work, at school or at home.

Continuous Cycling Peritoneal Dialysis (CCPD) usually is done at home using a special machine called a cycler. This is similar to CAPD except that a number of cycles (exchanges) occur. Each cycle usually lasts 1-1/2 hours and exchanges are done throughout the night while you sleep.

Will dialysis help cure the kidney disease?

No. Dialysis does some of the work of healthy kidneys, but it does not cure your kidney disease. You will need to have dialysis treatments for your whole life unless you are able to get a kidney transplant.

Is dialysis uncomfortable?

You may have some discomfort when the needles are put into your fistula or graft, but most patients have no other problems. The dialysis treatment itself is painless. However, some patients may have a drop in their blood pressure. If this happens, you may feel sick to your stomach, vomit, have a headache or cramps. With frequent treatments, those problems usually go away.

What changes are needed for hemodialysis?

You will need to plan your week around your hemodialysis schedule. You may have to take time off work or school before you start hemodialysis and when the treatments begin. However, once your health is more stable, you should be able to return to your normal activities. Depending on your energy level, you may have to make some adjustments in your work situation or limit your activities.

How long can you stay on dialysis while waiting for a transplant?

I have had some patients who have been on dialysis for more than 25 years. There is no upper limit.

However, a recent study has shown pretty convincingly that survival is better when patients get a transplant. In my opinion, anyone on dialysis who is in generally good health should be eager to get a kidney transplant

How can I volunteer for the Kidney Foundation?

The Kidney Foundation uses volunteer help for our special events. For more information on how you can help, kindly get in touch with our office at 03-79549048/49. We will require taking down your name and contacting number that will enable us to get in touch with you whenever we organize a project. It must be clearly understood that most of our functions and project are organized during the weekend and holidays.

Is there any risk involved in dialysis?

Many of the risks and side effects associated with dialysis are a combined result of both the treatment and the poor physical condition of the ESRD patient. Dialysis patients should always report side effects to their healthcare provider such as:

Anemia

Hematocrit (Hct) levels, a measure of red blood cells, are typically low in ESRD patients. This deficiency is caused by a lack of the hormone erythropoietin, which is normally produced by the kidneys. The problem is elevated in hemodialysis patients, who may incur blood loss during hemodialysis treatments. Epoetin alfa, or EPO, a hormone therapy, and intravenous or oral iron supplements are used to manage anemia in dialysis patients.

Cramps, nausea, vomiting, and headaches

Some hemodialysis patients experience cramps and flu-like symptoms during treatment. These can be caused by a number of factors, including the type of dialysate used, composition of the dialyzer membrane, water quality in the dialysis unit, and the ultrafiltration rate of the treatment. Adjustment of the dialysis prescription often helps alleviate many symptoms.

Hypotension

Because of the stress placed on the cardiovascular system with regular hemodialysis treatments, patients are at risk for hypotension, a sudden drop in blood pressure. This can often be controlled by medication and adjustment of the patients' dialysis prescription.

## Infection

Both hemodialysis and peritoneal dialysis patients are at risk for infection. Hemodialysis patients should keep their access sites clean and watch for signs of redness and warmth that could indicate infection. Peritoneal dialysis patients must follow the same precautions with their catheter. Peritonitis, an infection of the peritoneum, causes flu-like symptoms and can disrupt dialysis treatments if not caught early.

## Infectious diseases

Because there is a great deal of blood exposure involved in dialysis treatment, a slight risk of contracting hepatitis B and hepatitis C exists. The hepatitis B vaccination is recommended for most hemodialysis patients. As of 1997, there has only been one documented case of HIV being transmitted in a United States dialysis unit to a staff member, and no documented cases of HIV ever being transmitted between dialysis patients in Malaysia. The strict standard of infection control practiced in modern hemodialysis units makes the chance of contracting one of these diseases very small.

What causes intense "itching" in dialysis patients and how can it be relieved?

The renal itch affects 50-90% of patients undergoing dialysis. Symptoms may start before, at the time of the start of dialysis, or many months thereafter. It may be localized or rather generalized. The mechanisms underlying itching are poorly understood, but may be high levels of calcium, phosphorus or parathyroid hormone, dry skin, allergic reactions mostly to sterilizing agents used for dialysis, too much vitamin A or iron deficiency. The cornerstone of therapy is regular, intensive, efficient dialysis. This translates into 4-5 hours of dialysis three times per week. This would be particularly important in your case, if you still had some residual kidney function until one of your kidneys was removed. There are many treatment options and you should seek the advice from your Nephrologist what measure would suit you best. And as hope springs eternal: In up to 20% of symptomatic patients itching disappears spontaneously and it would be definitely gone after a successful renal transplantation

Is dialysis expensive?

Yes. Dialysis costs a lot of money. However, the federal government pays 80 percent of all dialysis costs for most patients through its dialysis centre in the government hospitals. The government also subsidizes part of the dialysis treatment at various NGO dialysis centers such as the National Kidney Foundation dialysis centers.

Do dialysis patients feel normal?

Many patients live normal lives except for the time needed for treatments. Dialysis usually makes you feel better because it helps many of the problems caused by kidney failure. You and your family will need time to get used to dialysis.

Do dialysis patients have to control their diets?

Yes. You may be on a special diet. You may not be able to eat everything you like, and

you may need to limit how much you drink. Your diet may vary according to the type of dialysis.

Can dialysis Patients travel?

Yes. Dialysis centers are located in most parts of Malaysia and in many foreign countries. The treatment is standardized. You must make an appointment for dialysis treatments at another center before you go. The staff at your center may help you make the appointment.

Can dialysis patients continue to work?

Many dialysis patients can go back to work after they have gotten used to dialysis. If your job has a lot of physical labor (heavy lifting, digging, etc.), you may need to get a different job.

How does hemodialysis work?

In hemodialysis, a dialysis machine and a special filter called an artificial kidney, or a dialyzer, are used to clean your blood. To get your blood into the dialyzer, the doctor needs to make an access, or entrance, into your blood vessels. This is done with minor surgery, usually to your arm.

How does the dialyzer clean my blood?

The dialyzer, or filter, has two parts, one for your blood and one for a washing fluid called dialysate. A thin membrane separates these two parts. Blood cells, protein and other important things remain in your blood because they are too big to pass through the membrane. Smaller waste products in the blood, such as urea, creatinine, potassium and extra fluid pass through the membrane and are washed away.

How long will each hemodialysis treatment last?

Hemodialysis treatments usually last about four hours, and they are done three times a week.

Your doctor will give you a prescription that tells you how much treatment you need. Studies have shown that getting the right amount of dialysis improves your overall health, keeps you out of the hospital and enables you to live longer. Your dialysis care team will monitor your treatment with monthly lab tests to ensure you are getting the right amount of dialysis. One of the measures your dialysis care team may use is called urea reduction ratio (URR). Another measure is called Kt/V (pronounced kay tee over vee). Ask your dialysis care team what measure they use and what your number is. To ensure that you are getting enough dialysis:

- your Kt/V should be at least 1.2 or
- your URR should be at least 65 percent.

Will I be uncomfortable on hemodialysis?

When you begin hemodialysis, the needles put in your fistula or graft may be uncomfortable. Most patients get used to this in time. Your dialysis care team will make sure you are as comfortable as possible during your treatment. Symptoms like cramps, headaches, nausea or dizziness are not common, but if you do have any of them, ask your dialysis care team if any of the following steps could help you:

- ▣ Slow down your fluid removal, which could increase your dialysis time.
- ▣ Increase the amount of sodium in your dialysate.
- ▣ Check your high blood pressure medications.
- ▣ Adjust your dry weight, or target weight.
- ▣ Cool the dialysate a little.
- ▣ Use a special medication to help prevent low blood pressure during dialysis.

You can help yourself by following your diet and fluid allowances. The need to remove too much fluid during dialysis is one of the things that may make you feel uncomfortable during your treatment.

Is being on dialysis that bad? People say it is horrible.

I have had some patients who work full time in addition to having time to dialyze themselves three times a week. One of my friends is a doctor and another a radiation physicist. People on dialysis can do quite well. On the other hand, it is troublesome to do dialysis three times a week. Some patients have real problems with the dialysis treatments. We feel having normal kidneys is best of all. If you have kidney failure, a transplant is next best. Dialysis can be fine and is better than being dead.

I have heard I might have to reuse my dialyzer each treatment. Is this safe?

Before you reuse your dialyzer, your dialysis center cleans it according to careful guidelines. If done properly, reuse is generally safe. Before each treatment, your dialyzer must be tested to make sure it is still working well. If your dialyzer no longer works well, it should be discarded and you should be given a new one. Ask your dialysis care team if they have tested your dialyzer and if it still works well.

If you do not wish to reuse your dialyzer, your center may be willing to provide you with a new dialyzer for each treatment. Ask about the center's policy on reuse.

What should I do if I have a complaint about my dialysis center?

Any problems you run into in the dialysis center should be taken up the chain of command. If you can't work out the problem with the person involved, you can talk to the Charge Nurse, then the Director of Nursing, and then the Administrator. Of course, your doctor should also know about any difficulty you are having. If you are still not satisfied, you should contact the ESRD Network for your area or the state health inspector.

Can I change to a different dialysis center?

You are free to choose the dialysis center that best meets your needs. You do need to keep in mind that your nephrologist may not see patients at all the centers in your area, so

changing centers may mean changing doctors. Does kidney disease run in families? The leading causes of kidney failure are diabetes and high blood pressure, which often run in families. The only common cause of kidney failure that is directly passed down from your parents is PKD (Polycystic Kidney Disease). PKD is a disease in which cysts (pouches of fluid) form in the kidneys. More cysts grow and they get bigger as time goes on, eventually leading to kidney failure. .

I recently started dialysis and I'm feeling depressed. Is this "normal"?

It is not unusual to grieve the loss of kidney function. Realizing that your body doesn't work like it once did is very hard for most people to accept. This can cause some people to feel helpless or dependent on their medical care. As with any serious medical condition, you may also face changes in appetite or sexual desire.

In time, patients, their friends and family learn to adapt to a new lifestyle. This may mean some major changes. It is important to keep in mind that you are facing challenges that have been overcome by many others. The social worker at your center has been professionally trained to help you deal with both the day-to-day and emotional parts of your illness.

## Hemodialysis Access

### How Your Access Works?

A hemodialysis access, or vascular access, is a way to reach the blood for hemodialysis. The access allows blood to travel through soft tubes to the dialysis machine where it is cleaned as it passes through a special filter, called a dialyzer. An access is placed by a minor surgery. As a hemodialysis patient, your access is one of the following:

A fistula, an access made by joining an artery and vein in your arm.

A graft, an access made by using a piece of soft tube to join an artery and vein in your arm.

A catheter, a soft tube that is placed in a large vein, usually in your neck.

If your access is a fistula or graft, your nurse or technician will place two needles into the access at the beginning of each treatment. These needles are connected to soft tubes that go to the dialysis machine. Your blood goes to the machine through one of the tubes, gets cleaned in the dialyzer, and returns to you through the other tube. If your access is a catheter, it can be connected directly to the dialysis tubes without the use of needles.

A fistula should be considered the first choice for your access because it generally lasts longer and has fewer problems such as infections and clotting. However, some patients may not be able to receive a fistula because their blood vessels are not strong enough. A graft is considered the second choice for an access. Catheters are generally used as a temporary access, but sometimes they are permanent. Sometimes, it may be possible to switch to a fistula from another type of access. If you do not have a fistula, ask your dialysis care team if a switch would be possible for you.

## Caring For Your Access

Whether your access is a fistula, graft or catheter, you should make sure to take good care of it. Your dialysis care team will teach you the steps of good access care. The chart



below gives you some general tips about everyday access care and how to prevent problems.

### Fistula or Graft

- Wash with an antibacterial soap each day, and always before dialysis. Do not scratch your skin or pick scab.
- Check for redness, a feeling of excess warmth or the beginning of a pimple on any area of your access.
- Ask your dialysis care team to rotate the needles when you have your dialysis treatment.

### Catheter

- Keep catheter dressing clean and dry.
- Make sure the area of the access is cleaned and the dressing is changed by your care team at each dialysis session.
- Keep an emergency dressing kit at home in case you need to change your dressing between treatments.
- Never open your catheter to the air.

### Keeping Your Access Working

- Your dialysis care team will check your access often to make sure it is working well. An access that is not working well can decrease the amount of dialysis you receive. Your dialysis care team will teach you how to check your fistula or graft at home each day. Here are some tips you should follow to help keep a fistula or graft working longer:
  - Check the blood flow several times each day by feeling for a vibration, also called a pulse or thrill. If you do not feel this, or if there is a change, call your doctor or your dialysis center.
  - Do not wear tight clothes or jewelry on your access arm.
  - Do not carry anything heavy or do anything that would put pressure on the access.
  - Do not sleep with your head on the arm that has your access.
  - Do not let anyone use a blood pressure cuff on your access arm.
  - Do not let anyone draw blood from your access arm.
  - Do not be afraid to ask your dialysis care team to rotate needle sites.
  - Apply only gentle pressure to the access site after the needle is removed. Too much pressure will stop the flow of blood through the access.
  - If you have breakthrough bleeding after you have dialysis, apply gentle pressure to the needle site with a clean towel or gauze pad. If the bleeding does not stop in 30 minutes, call your doctor or your dialysis center.

### If Access Problems Occur

Sometimes, even when you are very careful, your access may clot or become infected. If an infection occurs, your doctor will order antibiotics for you. If your access develops a

clot, you may need to go to the hospital for treatment. Removing the clot can usually be done on an outpatient basis, and you will not need to stay overnight.

What is a hemodialysis catheter?

The catheter used for hemodialysis is a tunneled catheter because it is placed under the skin. There are two types of tunneled catheters: cuffed or non-cuffed. Non-cuffed tunneled catheters are used for emergencies and for short periods (up to 3 weeks). Tunneled cuffed catheters, a type recommended by the NKF for temporary access, can be used for longer than 3 weeks when:

An AV fistula or graft has been placed but is not yet ready for use.

There are no other options for permanent access. For example, when a patient's blood vessels are not strong enough for a fistula or graft.

Catheters have two openings inside; one is an arterial opening to draw blood from your vein and out of your body into the dialysis pathway and the other is a venous opening that allows cleaned blood to return to your body.

How do I take care of my catheter?

By taking good care of your access, it will last longer and you will prevent problems such as **infection** and **clotting**. Here are some important steps to take:

- ▣ Keep the catheter dressing clean and dry
- ▣ Make sure the area of the insertion site is clean and your care team changes the dressing at each dialysis session.
- ▣ Keep an emergency dressing kit at home, in case you need to change your dressing in between treatments. Ask your dialysis care team to teach you how to change dressings in an emergency.
- ▣ Never open your catheter to air.
- ▣ Do not shower or swim; you may take baths.
- ▣ Wear a mask over your nose and mouth anytime the catheter is opened to prevent bacteria from entering the catheter and your bloodstream. Professionals changing the dressing should wear a mask and gloves as well.
- ▣ The **caps** and the **clamps** of your catheter should be kept tightly closed when not being used for dialysis. Only your care team should use your dialysis catheter to draw blood or to give medications or fluids.
- ▣ If the area around your catheter feels sore or looks red, call your dialysis care team at

once.

Ask your dialysis team about signs and symptoms that require immediate attention. Know your **Kt/V** and **URR** (urea reduction ratio). Kt/V and URR are numbers that tell you how much dialysis you are getting. The NKF recommends using Kt/V. If you are receiving enough dialysis, your **Kt/V should be at least 1.2. If URR is used, it should be 65 % or more.** If your numbers are too low, one possible cause may be that your access is not working well. Ask your dialysis team to check your access.

Should I have any concerns about my catheter?

Sometimes, even when you are very careful, your access may clot or become infected. **Clots** can form inside the opening of the catheter or form on the outside of the catheter and block the opening. This can cause blood to flow at a slower rate than the rate your doctor ordered. If the blood flow rate remains low for more than one dialysis treatment, the catheter should be checked and treated the same day. Early treatment may prevent the clot from totally blocking the catheter. It is important to restore the recommended blood flow rate and treat clots that are forming so that your catheter continues to work well and you get the amount of dialysis you need.

**Infection** can also occur even with a good blood flow rate. It is important to follow your catheter care instructions, exactly as you were taught, in order to avoid infection. You should know the following signs and symptoms of a catheter infection and report them to your doctor or dialysis team right away, so you can get the proper treatment as quickly as possible.

The signs and symptoms of a catheter infection include:

Fever

Chills

Drainage from the catheter exit site

Redness or tenderness around the catheter exit site

General feeling of weakness and illness

**Treatment** depends on the type of infection but may include:

An ointment applied directly to the infected area if it is an exit site infection.

Antibiotic medication if there is drainage from the exit site.

An intravenous IV antibiotic (a solution containing an antibiotic that is administered directly into a vein) if the infection has spread to the blood.

What happens when my catheter is not working well?

A **decrease in the blood flow rate** ordered by your doctor is a sign the catheter is not working as it should. If this occurs for more than one treatment in a week, the catheter should be checked. The lower blood flow rate will cause you to receive less dialysis. You will then need a longer than usual hemodialysis treatment to get the proper amount of dialysis.

Another sign that your catheter is not working well may be the pre-pump arterial pressure **alarms**. These sounds notify the care team that your catheter (or other vascular access) is

not allowing a free draw of blood. This can be a sign that a clot is forming in the catheter blocking the flow of blood.

What can be done to remove the blockage from my catheter?

Treatment is the administration of a “clot busting” medication called **tissue plasminogen activator (tPA)**. Most dialysis centers can give the medication while you are in your dialysis chair, thus preventing a hospital visit. If you are at the end of your treatment, tPA can be given just before your next dialysis appointment. Ask your doctor how you can arrange to be given this medication before your next treatment session.

If the clot is not treated when signs and symptoms of an early clot are found, the catheter can progress to be fully clotted. You may then be required to visit the hospital or vascular lab to have the catheter checked and possibly exchanged for a completely new catheter.

How is medication given?

Your healthcare provider injects the medication directly into the catheter opening. It needs to remain inside the catheter for 30 minutes to break down the clot. After 30 minutes if enough blood flow is not restored, the doctor can repeat the process.

What are the benefits of treating the clot early?

By restoring your blood flow, hemodialysis can work as it should to remove the toxins and excess fluids from your body.

Taking care of the clot early results in fewer treatment interruptions and improved quality of life on dialysis.

Other benefits are the prevention of additional health problems and the chance to live longer on dialysis.

What can I do to keep my catheter working well?

Learn as much as possible about your prescribed treatment plan: your blood flow rate, how often and how long you need treatments.

Follow the treatment plan

Stay for your full treatment time

Keep your dialysis appointments

Arrive on time for your hemodialysis treatments

Ask your doctor how much dialysis you should be getting. Keep a record of your **Kt/V and URR numbers**. Talk to your dialysis team if your numbers are not as good as they should be.

Share your concerns with your doctor and dialysis team. You may want to ask them the following questions:

How can I tell if my catheter is not working?

What is the flow rate my doctor ordered for me?

Why does the flow rate for my catheter need to be at this level?

If my flow rate should go down, when will I be given clot-dissolving medication?

Will the clot-dissolving medication interrupt my dialysis treatment? If so, what will

happen to the rest of my treatment?

How will you put the clot dissolving medication in my catheter?

How long do I have to wait for it to work? What are the signs and symptoms of infection?