

What Is Hemodialysis?

Hemodialysis is the most commonly used method for treating end-stage renal disease (ESRD), or kidney failure. Hemodialysis is a way to clean your blood using a dialysis machine. This machine has a special filter called a dialyzer. The dialyzer works as an artificial kidney. It strains the toxins and removes extra fluid that builds up when your kidneys aren't working. The artificial kidney doesn't completely replace your original kidneys' function. Remember, your kidneys worked 24 hours a day, seven days a week. Hemodialysis takes a few hours a day, a few days a week. During a dialysis treatment, your blood is carried through plastic tubes to the dialyzer to be cleaned. Once your blood is cleaned, it's returned from the dialyzer to your body through another plastic tube. It might look like there's a lot of blood outside of your body. Actually, there's only about one cup of blood in the tubing and dialyzer at any time during a treatment.

Hemodialysis is usually done three times per week. Each treatment is usually four hours in length. Your nephrologist prescribes the length of your treatment.

The time depends on your body size, laboratory results and medical condition.

Most people do best and stay healthy when they follow the renal diet, take prescribed medications and spend the prescribed time on dialysis. There are certain guidelines and standards you can learn about. These help you to know you're

receiving optimal dialysis. Phase 3 of the AAKP Patient Plan[®] explains these guidelines further. You should expect and demand that guidelines be met. It's to your benefit for long-term good health.

What Is A Hemodialysis Access And How Does It Work?

Before hemodialysis can begin, you need to have a way to safely remove and return the blood to your body. Your veins aren't strong enough or big enough to run your blood through the dialyzer. To prepare for dialysis, you will need surgery to create an access.

There are three types of accesses: a fistula, a graft or a catheter.

A fistula, or arteriovenous fistula, is created by directly connecting an artery and a vein. Studies show that a fistula produces the best results for dialysis. Therefore, fistulas are the gold standard for the hemodialysis access.

A graft, or arteriovenous graft, is created by connecting an artery and vein with an artificial tube.

A catheter is inserted into a vein in the neck or chest to allow temporary hemodialysis until the fistula is healed and ready for use. Guidelines recommend that the catheter only be used on a temporary basis.

Your access site is often referred to as your "lifeline." Though most often found in the arm, your access can also be placed in your leg. It's

important to care for it properly. This ensures that your dialysis treatments can go on as scheduled. Each time you have a treatment, your access should be checked for blood flow problems and early signs of infection. Signs of adequate blood flow are when there's a buzzing or rushing feeling and a pulse can be felt in your access. If these signs aren't in place, call your nephrologist and dialysis unit immediately.

Clotting and infection are easier to treat when they're found early. Early signs of infection include redness, swelling or warmth to the touch. Keep your access clean and dry between treatments.

Before needles are placed in your access site, wash your access. Anyone placing the needles into your access should wash their hands and put on gloves. To keep your access working properly, avoid wearing tight clothes or jewelry on your access and avoid sleeping on that arm or leg. Be careful not to bump or cut your access. Do not let anyone take your blood pressure, draw blood or put an IV into the arm or leg that has your access site. Catching access problems early can make them much easier to treat. If you're unsure about the condition of your access, call your nephrologist or dialysis center.

What Happens When My Access Is Placed?

One area of great concern for both patients and renal healthcare professionals is the vascular access. This can be a catheter, which is used

on a temporary basis. Or it can be a fistula (connecting your own artery to vein) or graft (synthetic tube under the skin) which are both considered permanent. Proper care is necessary to make certain they last long. It is very important for you to know how to best care for your access.

You will probably have your initial access placed before going to the dialysis center. You may only have a catheter, which is a temporary access. You may already be on dialysis but need to have a new access. It's important to understand how the renal care team helps decide what type of access is best. The surgeon, working closely with both the nephrologist and you, usually makes the final decision where an access can be placed and the type. It's preferred to make the fistula or graft on the arm that you don't use a lot, the "non-dominant arm." So if you're a right-handed person it's better to have the access in the left arm. The surgeon will try to make a fistula if he or she can. If you have small veins or other medical problems a fistula may not work. The surgeon will then make a graft.

Sometimes special tests will be ordered to help determine the best type of access and best place to put the access. These tests are also done if there are blood flow problems with your access. The most common tests are called "venography" or "venogram" and a "Doppler exam." Sometimes other tests may need to be done.

There are two main types of permanent vascular access, the

fistula and the graft. The fistula is considered the best vascular access. To make a fistula, your own artery and vein are connected together under your skin. It lasts the longest and has the fewest problems. If a fistula can't be done then a graft is the next best access. To make a graft, a piece of special tubing is placed under your skin and connects your artery and vein together. Sometimes after the operation to place the access, a patient has to wait until it can be used. A temporary catheter can be used for dialysis until the fistula or graft is ready. Also, if the fistula or graft is infected or clotted, a catheter may need to be used until the fistula or graft is fixed. A temporary catheter usually may be used for up to about three weeks. A special temporary catheter often called a "permacath" may be used for several months. Catheters are usually placed on the side of the neck or under the collarbone.

Your access should be placed as early as possible. If possible, it should be done several months before you start dialysis. A new fistula usually takes three to four months before it can be used. To help the fistula work better, your doctor will have you do certain arm exercises (usually squeezing a ball). A graft can usually be used in three weeks. No special exercises are necessary to help the graft work. To have your access placed, you will have surgery, usually as an outpatient.

Adequate care of each hemodialysis patient requires close monitoring to make certain the vascular access is

working. A proper working vascular access should have enough blood flow for an adequate dialysis treatment. It should also last long, and have no or few complications, like infections and clotting. Problems with the vascular access may be the most common reason to place dialysis patients in the hospital.

Is There Anything Special I Have To Do With My Access?

Whether you have a fistula or graft, your access site is often called your "lifeline." It's important to care for you access properly to ensure your dialysis treatments go as scheduled. Each time you have a treatment, your access should be checked for blood flow problems and early signs of infection.

Signs of adequate blood flow are when there is a "buzzing" or "rushing" feeling and a pulse can be felt in your access. If these signs aren't in place, your nephrologist and dialysis unit should be called as soon as possible. Clotting and infection are easier to treat when they're found early. Early signs of infection may be redness, swelling or warmth to the touch. The area around your access should be kept clean and dry between treatments. Daily care and monitoring of your access are essential to keeping your "lifeline" working as long as possible.

Providing a little "TLC" to your access on a daily basis will help eliminate problems, or at least catch problems early to avoid more complications. The

“TLC’s” of caring for your access are as follows: (from “Renal Outreach,” a publication of The Renal Network.)

Touch for pulse, tenderness and temperature,

Look at your skin color, swelling or drainage,

Care to keep your access clean and protected, no resting on arm, no heavy lifting, no carrying, watch your weight, keep clothes loose, no tight jewelry. Also, be careful not to bump or cut your access. You don’t want anyone taking your blood pressure, drawing blood or putting an IV into your arm or leg that has the access site.

Why Is My Hemodialysis Access Maintenance Important?

As you know, if you’re on hemodialysis you have a fistula, a graft or a catheter and if you’re on peritoneal dialysis you have a catheter. You’ve learned to care for your access on a daily basis. Failure to check and care for your access can become life threatening. Whether you have a fistula, graft, or catheter, your access site is referred to as your “lifeline.” It’s important to care for it properly to ensure your dialysis treatments can go on as scheduled.

What Types Of Things Should I Be Watching For With My Access?

If you’re on hemodialysis and have a graft or fistula, your access should

be checked for blood flow problems and early signs of infection each time you have a treatment. Signs of adequate blood flow are when there is a “buzzing” or “rushing” feeling and a pulse, which can be felt in your access.

If a hemodialysis access is not working properly, the cause is usually a stenosis. A stenosis is a narrowing in the width of a blood vessel. Any narrowing leading to, through, or from the access can cause a problem. If it’s severe enough, it can slow down the access, allowing it to clot. The most common sites of narrowing are listed below:

1. Artery leading to the access

Usually seen in people with arteriosclerotic disease involving small arteries, such as diabetics and long-term smokers.

2. Arterial connection to veins (anastomosis)

This is the connection surgically joining the superficial veins of the arm or the artificial graft with the artery.

3. In the veins or graft leading from the arterial anastomosis

Stenosis here can come from poor needle sticking or a leakage of blood from the access into the arm, causing a hematoma or bruise.

4. Venous connection with the graft

This is the most common site of blood flow obstruction. The cause of these stenosis are not clear, but may

be related to tissue reaction to turbulent blood flow.

5. Anywhere in the native veins after the fistula anastomosis or after the venous connection with a graft

Usually due to previous catheters placed for IV infusions that have damaged the blood vessels. This is a major complication of subclavian catheters used for dialysis, but less often seen with catheters placed in the internal jugular.

Your access is designed to deliver enough blood so that dialysis can be effective.

This is the blood that will be removed by dialysis. The reading on the blood flow gauge on your dialysis machine should be 400 to 500 ml/min. Your artery must deliver more than 400 to 500 ml/min. to the access to prevent recirculation of blood or collapse of the arterial flow.

Your healthcare professionals can use various machines or even simple evaluation methods to see if your access is functioning well. The best test you can do is to make sure you feel or hear the rumbling sound your access makes. If there is any change in the sound or feel of your access, report it to your doctor immediately. Even though you may take great care of your access, there may be times when your access will clot or become infected. If your access clots, you may need to go to the hospital to have the clot removed. Usually, people who have a clot removed don't have to stay overnight in the hospital.

If your access becomes infected, your doctor will prescribe antibiotics. Although signs of infection may disappear after a couple of days, it's important to take your antibiotics as they're prescribed and until they're gone. If you don't do this, the infection may return and be harder to treat. You may also risk the possibility of your access failing.

**The information in these FAQs comes from AAKP Patient Plan©.*