

Hemodialysis

What is Hemodialysis?

Hemodialysis is a process that uses an “artificial kidney” (called a dialyzer) to clean your blood. This dialyzer is a filter that removes extra fluid and toxins from your blood. A hemodialysis treatment lasts from 3 to 5 hours and is usually scheduled 3 times a week. You might think of a hemodialysis machine like a washing machine; it takes away extra fluid from your body and cleans wastes from your blood. During a typical treatment, two needles are placed in your arm, one to pull the blood from your body into the filter, and another to return the filtered blood back into your body. The amount of blood that is out of your body at any one time is very small and not dangerous if you could not get it back in an emergency.

What About Needles?

Many people fear needles. If you are anxious about needles and “getting stuck,” you should talk about your feelings with your doctor. Medicines can be used to numb the area and make you feel more comfortable.

Some people become uneasy or feel “queasy” at the sight of blood. Since hemodialysis involves blood going between patient and machine, you will see blood going through plastic tubes. Soon you will become familiar with the dialysis unit, how things look and how things are done.

A Guide to Better Living

Mid-Atlantic Renal Coalition

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Some people feel a lot better when they take control and learn to stick themselves. Any unit should be willing to teach you. There are several benefits to sticking yourself.

- You don't have to wait for a staff person to be free to stick you.
- You might be able to learn a technique called the buttonhole. The buttonhole technique sticks the same few sites every time. Like a pierced ear, a tunnel is formed so the needle just glides into place and then sharp needles are no longer needed. Once the tunnel is formed you will no longer have pain from sticking. (Note: some doctors do not approve of this technique.)
- Your access will have less chance of infiltration because the same person is sticking (YOU) . And you can feel when the needle is in the right place.
- You will have the best caretaker every time (YOU!)

What is an Access?

Because of the limited time there is to clean your blood during one treatment, a larger blood flow is needed than what your vessels make naturally. An access is created in your arm by either increasing the size of one of your own vessels or by implanting a graft. This connection is called an access. An access is made by a surgeon in an operating room. Usually, you can go home the same day after surgery.

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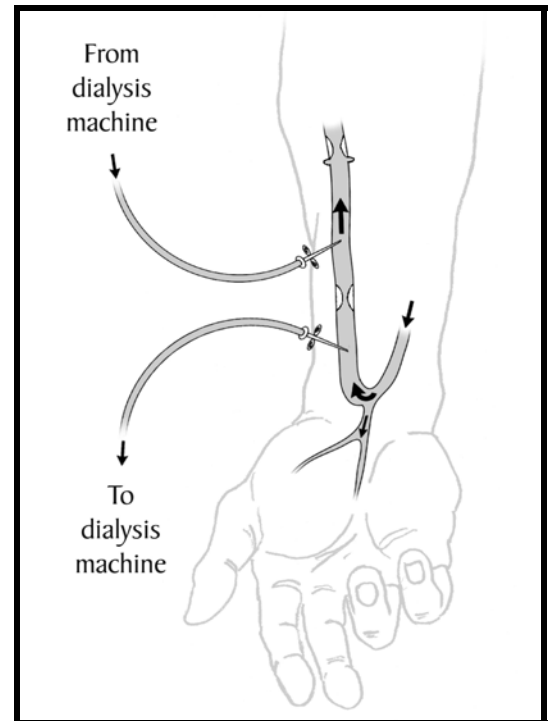
What Are the Access Types?

There are several types of accesses: fistula, graft, and catheter. The preferred type is the AVF, or Arterio-Venous Fistula.

A fistula is made by sewing a vein to an artery under the skin. This increases the amount of blood that flows through the vein and causes the vein to get bigger. A graft is created under the skin by using a piece of artificial vessel (hollow tubing) to connect an artery and a vein.

The process of the fistula or graft becoming strong enough and large enough for needle insertion is called maturing.

Some easy exercises can be done to help the access mature and you will be taught these by your surgeon or dialysis team. The new access may be slightly swollen and you may be instructed to keep that arm raised. If your access is bleeding, swollen, red or painful, or you notice a change in your temperature, report this to your doctor or unit staff. You should feel a buzzing or purring of the access when you gently touch it. This is called a thrill or bruit, and is the sign that you have good flow. If you do not feel it, let your care team know.



Arterio-Venous Fistula

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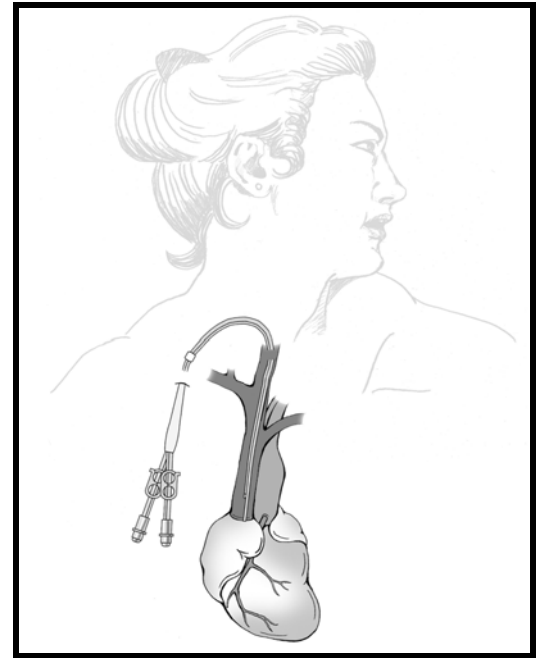
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There are also several types of temporary accesses that may be used before your permanent access is mature or if you have problems with your permanent access. A common type used is the subclavian catheter. This catheter is a flexible, hollow tube that is placed into the jugular vein just below the collarbone and rests inside the heart. This catheter remains in place between treatments.



Internal Jugular Vein Catheter

Because of the danger for infection, catheters should only be used as a last resort.

Because of the danger for infection, the catheter is not an option that should be kept for longer than necessary. Another type of temporary access is a femoral catheter. This is a flexible, hollow tube placed in a large vein near the groin. This catheter is often re-inserted every treatment. Many people do not find this access comfortable.



Why Is the Arterio-Venous Fistula (AVF) the Preferred Access?

The AVF access is preferred over all other accesses for hemodialysis because:

- It lasts longer than other types of accesses,
- Has fewer infections,
- Fewer complications requiring hospitalization,
- Gives a better blood flow for better dialysis,
- And has the least chance of clotting.

The AVF is not an option for everyone. For example, some people with severe vascular disease may have vessels that are too fragile to use. In this case, the next choice to consider should be a vascular graft.

How Does the Artificial Kidney (Dialyzer) Work?

The artificial kidney has two sections, one for blood and one for a liquid called dialysate. These areas are separated by a membrane that works like a filter. Blood cells, protein, and other important parts of the blood are too large to pass through the tiny holes in the membrane. Smaller waste products in the blood (such as urea, creatinine and extra fluid) pass through the membrane and are washed away.



Where Is Hemodialysis Done?

Hemodialysis usually requires 3 treatments a week and can be done in a hospital, a freestanding dialysis unit or in your home. If you choose to do it in your home, you and your partner will be trained to do the treatment safely. You should know about dialysis in each of these locations. This will help you understand your treatment choices so you can make the right decision for **YOU**.

There are several ways to do hemodialysis:

- In-center,
- Nocturnal,
- Short-Daily,
- Longer-More Frequent,
- And Conventional Home Hemodialysis.

In-center Hemodialysis (ICH) is done in a clinic (usually separate from the hospital) by trained staff. Some units offer more independent care, by allowing patients to set up and monitor their own machines. All patients should be encouraged to learn to stick themselves. The benefit to you is more consistent sticking, which means less pain, and less risk for infiltration.

Nocturnal Hemodialysis (night-time) is fairly new and not many centers offer it right now. Nocturnal dialysis is usually done in a center by staff while you sleep. However, there are some units that offer a monitoring system so that you can do it at home. The treatment is done 4 to 6 nights a week, for a longer amount of time (about 8 hours), and at a slower speed, so it is gentler on the body.

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What Are My Options for Home Hemodialysis?

Short-Daily Hemodialysis is usually done 5-7 times a week. Special machines have been designed for this. Some of these machines are so compact and self-contained that you can travel with them! Because the treatment is more often, fluids do not build up. Having less fluid to remove means you have less symptoms like headaches and cramping. And since it is gentler to the body you don't feel as "washed out" in between treatments.

Longer-More Frequent Hemodialysis is typically done every other day, rather than three times a week, so each month you get a couple extra treatment days. Studies show that daily, frequent, and nocturnal dialyses are having better outcomes for patients. Many patients' medications are being reduced or stopped because the treatment is controlling their health so well.

Conventional Home Hemodialysis is no different than what you would get in-center, except that you do it yourself in your own home at your convenience. The downside to this treatment is that your home will likely need plumbing for the water system required. Medicare will not pay for this plumbing. Conventional home hemodialysis is currently the most common type of home hemodialysis offered, but the other options are becoming more available and there is probably training available at another facility near you.

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Where Can I Find More Information About Treatment Options?

The pros and cons of each of these forms of hemodialysis are found on the table *Comparing Treatment Options* which is part of this educational series. For more information speak with your doctor or care team. They should help you to understand what options are appropriate for you. If your unit does not offer the type of treatment you are interested in, staff should help you locate a facility that does. You can also contact the ESRD Network (Mid-Atlantic Renal Coalition) for assistance.

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