Hemodialysis Accesses
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Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 1/2017. University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#4822.
Introduction to Hemodialysis Accesses

Your doctor has scheduled you for hemodialysis access placement. Knowing what an access is and how to care for it will help your access work well and last a long time.

What Is a Hemodialysis Access?

It is an entry into your blood stream. It is needed to provide a safe place to connect you to the hemodialysis machine. Your blood moves through the entry tubing to a filter that removes waste products and extra fluids. This process is called hemodialysis. Hemodialysis is needed when your kidneys do not remove enough of the wastes and extra fluid from your body.

What Are the Different Types of Hemodialysis Accesses?

There are two types of hemodialysis accesses, external and internal. The external access is for temporary use only or for patients who cannot have internal access due to various reasons. It can also be used as a bridge for internal access. The external access is called a dialysis catheter. The internal access is for long term dialysis use. It is the recommended access for hemodialysis. It can be either a fistula or a graft.

Which Type of Access Will I Have?

You will meet with a doctor and discuss the best type of access for you.

Many things are thought about when looking at which access to use: how long you will need hemodialysis, which type is most likely to work well with your blood vessels.

This booklet describes the most common kinds of accesses placed at the University of Wisconsin Hospital and Clinics. It explains how to arrange for access placement, how an access works, and how to care for your access after placement.
What Is an External Access?

There are two types of external access. There is the straight hemodialysis catheter or the cuffed and tunneled hemodialysis catheter. Both types can be used right after placement.

The Straight Catheter

The straight hemodialysis catheter is inserted into a big vein. It is used for a short period of time while you are in the hospital. You will not be sent home with this type of catheter because of the risks such as infection, bleeding or displacement. If you need hemodialysis after you leave the hospital, a cuffed and tunneled catheter will be placed.

The most common veins used for this type of catheter are the internal jugular vein (IJ) or the femoral vein. The catheter will be at your neck if the IJ vein is used. It will be at your groin if the femoral vein is used. The catheter is named by its location, such as the IJ catheter or the femoral catheter.

You will go to a dialysis room or the cardiac cath lab at the hospital to have the external catheter placed. A doctor will explain what will happen. Please ask questions or voice any concerns you might have.

For your comfort, your doctor will inject numbing medicine (lidocaine) under your skin and may order something to help you relax. The external catheter will be placed into a large vein in your neck, or groin (Figure 1). A chest X-ray will check correct placement when it is placed in your neck.

Some people feel mild pain at the site after it is in. If this should occur, you may take anything for pain that is ordered by the doctor, or Tylenol®. Do not take other kinds of pain pills as they may cause bleeding.

Figure 1. Detail of a right internal jugular straight hemodialysis catheter.
How Do I Care for an External Catheter?

An external catheter is at greater risk of infection than an internal hemodialysis access. Careful cleaning and handling is required to protect it. Infection poses a great risk to your health and even to your life. Go to an emergency room or report to your doctor if you ever notice any sign such as redness, warmth, or chills.

After the catheter is inserted, a nurse will clean your skin and place a dressing at the point where the catheter enters your skin. The dressing will help prevent infection. The staff will change your dressing during your dialysis treatment once a week or more often if needed.

The hemodialysis catheter is your life line. Only trained dialysis staff may use it. It should never be used for routine blood draws or giving medicines.

- Both you and your caretaker need to wear masks when the catheter caps are open or the dressing is being changed.

- Your caretaker must wash his or her hands with soap and water or use alcohol hand sanitizer before putting on gloves.

- The catheter should never be handled by ungloved hands.

- The catheter dressing needs to be changed when it is wet with body secretions or blood or the edges of the dressing are peeling off.

Questions and Answers about Catheter Care

Can I shower or take a bath?

- A bath should be avoided since it can get the catheter hub or catheter dressing wet which can cause infection.
- Take a shower only with the catheter dressing and hub completely covered with plastic wrap and with the edges of the plastic wrap secured with tape.
- Keep the site dry.
- If the dressing gets wet, it will need to be changed; or else you may get an infection.
What should I do if blood comes from the catheter dressing?
- Apply steady pressure over the bleeding site for 20 minutes without lifting up your fingers to check.
- If bleeding continues, repeat the steady pressure for 20 minutes.
- Call the dialysis unit or the emergency department if bleeding continues after holding pressure on the site for 40 minutes.

Can I swim with a catheter?
- No.

What should I do if the catheter seems to be coming out?
- If it comes part way out, do not push it back in.
- Do not pull on it.
- Tape it to your skin.
- Call the hemodialysis clinic if you have questions.

What should I do if blood comes from the catheter?
- If the clamp is open, close it. Call the dialysis unit.
- If there is a crack or cut on the catheter, pinch off the catheter at the site of the crack or cut. Call the dialysis unit.

What should I do if a cap falls off?
- Wash your hands.
- Put on gloves.
- Clean the open end of the catheter with povidone-iodine or alcohol and let dry. Do not touch the end of the catheter with your fingers.
- If the clamp is open, close it.
- Put a new sterile cap on the end of the catheter or cover it with sterile gauze.
- Call the dialysis unit.

What clothing should I wear during my dialysis treatment?
- A button-down shirt or blouse is best.
- A shirt or blouse with a wide or loose neck may also work.
- Wear loose shorts, skirt, or pants with a large leg opening if you have a catheter in your groin (a femoral catheter).
- Wear clothing that is easy to clean near the access site.
Cuffed and Tunneled Hemodialysis Catheter

This type of catheter is designed to last longer than a straight catheter.

The catheter is placed underneath your collar bone, through your skin, and then tunneled or threaded under your skin for a short distance before going into a large vein in your neck.

The catheter has a small “cuff” on the catheter under the skin. Your skin tissue grows into the cuff to help prevent infection and anchor the catheter so that it will not fall out after healing has occurred. (Figure 2).

Catheter Care

Care of the cuffed and tunneled catheter is like the care of the straight catheter. The main difference is that the cuffed and tunneled catheter will not require stitches at your neck after healing has occurred. The staff will tell you when the site has healed. You will always need to have a dressing under your collar bone where the catheter comes out of your skin. It is called the exit site. Care of the exit site for your cuffed and tunneled catheter is the same as care for the straight catheter. Please refer to that section for details. Some people find it helpful to tape the ends to their chest to avoid pulling it out by accident and for comfort. Avoid pulling or putting tension on the catheter.
**Changing the Dressing at Home**

You should replace the dressing only if it becomes wet, loose, or comes off. Or else, reinforce it and let the dialysis staff change it at the next treatment. You need these supplies to change your dressing. You should keep them on hand.

1. Clean gloves
2. Face mask
3. 2” X 2” sterile gauze or 4” X 4” sterile gauze or transparent adhesive dressing (Tegaderm®)
4. ChloraPrep® stick
5. Tape

To change the dressing, follow these steps.

1. Remove the soiled, wet dressing. Do not touch the catheter where it enters the skin.

2. Wash your hands with soap and water.

3. Put on gloves and face mask.

4. Inspect the catheter site for redness, skin irritation, breakdown, or drainage. Call the doctor if new tenderness, redness, swelling, or pus appears at the site.

5. Clean the site with chlora prep stick; starting where the catheter comes out of the skin, this is called the exit site. Pinch the wings on the ChloraPrep® stick to release the liquid into the sponge pad. Do not touch the pad. Gently press the sponge against the skin at the exit site until you can see the liquid on your skin. Use a circular friction rub, starting at the catheter site to about 2 inches from the site.

6. Let air dry. Do not blot, wave at, or blow-dry the area.
7. Place a 2” x 2” or 4” x 4” sterile gauze pad or Tegaderm® over the insertion site.

8. If a gauze dressing is used, apply strips of tape to cover all edges of the gauze and hold it to the skin.

9. Avoid pulling or bending the catheter. Tape the free ends down to the skin so they won't get caught on clothing.

How is a Catheter Used during Dialysis?

Dialysis staff will clean each port of the catheter then connect it to the hemodialysis tubing. Staff members will wear gloves and masks. You will be asked to wear a mask as well to keep germs from the open ends of the catheter when they are being connected.

After the catheter is connected to the dialysis tubing, the hemodialysis machine is turned on. Blood will be pulled from one of the catheter ports, through the tubing and filter, and returned to the other catheter port after waste products and extra fluids are removed. This process takes 3-4 hours for each treatment, with three treatments per week. When the treatment is done, staff will return the blood in the tubing to you.

Hemodialysis treatments should not be uncomfortable. Recliner chairs and televisions are present for your comfort. Many people either watch TV or sleep during their treatments. Sometimes side effects of fluid and waste removal may occur, such as light-headedness or leg cramps. If you feel symptoms during your treatment, report them to staff so they can help.
What Is an Internal Hemodialysis Access?

Internal hemodialysis accesses are used when hemodialysis will be needed for longer than three months. The two types of internal accesses are the arterial-venous fistula and the graft.

Like an external access, internal accesses require that you know how to care for them so they last a long time and provide you with good treatment.

How Do I Prepare for an Internal Access Placement?

Getting a fistula or graft placed is part of getting ready for hemodialysis. A fistula or graft is the preferred access for dialysis. This list outlines things you need to do to get the dialysis access.

**Begin to protect your arm** - If you are right handed, your surgeon’s first choice is to place the access in your left arm. If you are left handed, the right arm will be the surgeon’s first choice. There are times when this will not be the case. Your surgeon will tell you which arm to protect. Tell people not to use that arm for IV’s, needle sticks for lab work, or checking a blood pressure.

**Ultrasound mapping** - Some patients may need studies to check the size of the blood vessels before the access placement. Ultrasound mapping of the arm is one useful tool to assist the surgeon in planning for access. There are no needles involved when mapping is done.

**Venogram** - Some patients may need a study called a venogram. In this study, a needle is used to inject dye into your blood vessels. The Access Team will decide which study is best for you.

**Access Clinic** - At this visit, your access options will be discussed with you. The Access Team will decide the best type of access for you based on your exam and any tests you may have had. After that, you will go to the Outpatient Surgery Center to discuss anesthesia. You will NOT have surgery on this day. Your surgery will be scheduled within 30 days of this visit. You do not need to hold your medicines or insulin, or skip breakfast for this visit.
**Surgery** - A fistula or graft is placed in the operating room. This will take 1 to 2 hours. You will be watched after surgery until you are ready to go home (most often in 1-3 hours). You must have a ride to and from the hospital. You cannot drive after getting medicine for pain. You must also have someone who can stay with you during the first night.

**After surgery teaching.** Before you leave, your nurse will give you a handout about how to take care of your new fistula or graft. It is helpful if your driver can be with you when the nurse reviews these instructions. You may take your arm out of the sling after you get home. Prop it on a couple of pillows to decrease swelling when you are sitting in a chair or in bed.

**You will be scheduled back to the Access Clinic after your surgery to have your new access checked.**

Call the doctor if you have any of these symptoms.
- Severe pain
- Swelling with numbness or tingling
- Redness and heat or drainage at the incision site
- Fever above 100° F
- Bleeding from the wound that doesn’t stop
- Pale or purple cold fingers

You may contact your kidney doctor by calling (608) 270-5656 between the hours of 8-4:30 Monday - Friday. After hours, on weekends or holidays, please call the same number and follow the answering machine instructions. If you cannot contact the doctor for any reason, go to the nearest Emergency Department.
The Arterial-Venous Fistula

The arterial venous fistula (A-V fistula) is a link between an artery and a vein. It is most often in your upper or lower arm. When this link is created, the high-pressure arterial blood rushes into the low pressure vein. Over time the vein becomes larger and the vein wall thicker. The blood from these vessels can be used for dialysis.

In about 4-6 weeks, if the fistula matures, it will be possible to insert two needles for treatment. One needle will be used to pull blood from your body through the dialysis tubing and filter then return it to the other needle which returns the cleaned blood to your body. The A-V fistula is the recommended access for hemodialysis. It is less likely to become infected or clotted, because it is flexible and made of your own tissues. When it is developed well, it provides you with better dialysis. As a result, you will feel better. There is a risk that a fistula may not develop successfully.

![Diagram of arterial venous fistula](image)

Figure 3. Detail of the link between a vein and nearby artery forming the fistula.
The Graft

A graft is like a fistula because it is internal and connects an artery to a vein. It is used for dialysis in the same way as a fistula. The graft is made of a thin, hollow, semi-rigid tube of a man-made material (one type is called Gortex®). This is the best access for people with veins which cannot (or did not) develop a fistula. The graft is placed in the upper or lower arm or the upper leg. It may be straight or looped (Figure 4). Because it is larger and more rigid than a vein, needles may go in with less trouble than with a fistula. On the other hand, because the graft is made of a material that is not part of your normal body tissue, it can become infected or clotted more easily than a fistula.

If you have a loop graft, ask the surgeon which side, **thumb** or **pinky** (circle one), is the “arterial” side. You will need to relay this to dialysis staff so you receive the best dialysis treatment. You can begin using a graft about two weeks after it is placed.

Figure 4  Detail of a loop graft in the lower arm.
How Do I Care for My Fistula or Graft?

After Surgery

You will have one or more incisions, each about two to four inches long. The edges will be held together with stitches or sterile strips and covered with a dry dressing. The dressing must stay on for three days or until all drainage stops. Change the dressing to keep it clean and dry to help prevent infection.

- If your access is in your arm; rest your arm, above the level of your heart, on pillows, for 24 hours or until the swelling is gone.

- If your access is in your leg; rest your foot on a stool, or sit in bed with your leg level with your body for 24 hours or until the swelling is gone.

- Avoid extra movement.

- Begin normal use of your arm or leg after 24 hours unless swelling is still present.

- Change the dressing if it becomes wet or soiled. Replace with dry sterile gauze and tape

- Wrap and tape the area with plastic wrap during the first three days when bathing. Remove plastic wrap after your bath or shower.
Signs of Infection

- Redness, itching, tenderness, pain, warmth, or swelling at the incision site.
- Temperature by mouth above 100°F.
- Bleeding or drainage at the new access site that does not stop.
- Swelling, numbness, and tingling in access arm, hand, foot, or leg.
- Fluid that drains from the incision causing a constant wet dressing.

If you have any of the above symptoms, contact the Access Clinic, your dialysis unit, or your local emergency department (phone numbers on back page). If you are scheduled for a treatment and will not be able to keep your schedule, call to let someone know.

A scab or crust on the incision is part of the healing process. Do not remove the scab! Your stitches will be removed in two to three weeks during your dialysis treatment. Your doctor or nurse will arrange for this to be done. The sterile strips do not need to be removed. They will fall off when the incision is healed.

Maintenance Care

As long as you have a fistula or graft, you should check your access every day. Two ways this is done are:

1. Listen with a stethoscope or place your ear to the access. When you listen to your access, you should hear a whooshing sound called a **bruit** (Broo-ee).

2. Check your access for pulsation and thrill. As your access develops, you will be able to feel it pulsating. By placing your fingers over the access, you will feel blood rushing through it. This is called a **thrill**.

If the bruit decreases, the thrill will also decrease. This means blood is flowing more slowly through your access which may lead to clotting. If your access has a clot, blood will not flow through it. It cannot be used for hemodialysis. If you cannot hear the bruit or feel the thrill, call the Access Clinic and/or your local dialysis unit.
Starting one week after fistula surgery, you should start to exercise your access arm to develop your new fistula. Exercise will help the fistula to mature well and to avoid cannulation problems. If the fistula is in your lower arm, squeeze a small rubber ball at least 3 times a day for 5 minutes at a time. If the fistula is in your upper arm, do light-weight (1 – 3 pounds) lifting by bending your arm up slowly at the elbow then stretching it out. If you have a graft, you do not need to do this.

Any chores that involve movement of the arm muscles, such as washing dishes, may also help fistula development.

You may use your arm or leg with the access as you did before. To prevent infection or damage to your access:

- Make sure your access arm or leg is clean before coming to your chair. Wash the skin over your access with soap and water before sitting down. This helps to reduce Staphylococcus (staph). on your skin. Staph is a germ that is on everyone’s skin. It can make you very sick if it gets into your bloodstream.

- Do not allow anyone to collect a blood sample or start an IV in the access arm or leg.

- Do not take a blood pressure on the access arm or leg.

- Guard against direct injury to your access arm or leg.

- Check with your doctor before you go back to work.

- Avoid slowing the blood flow through the access.
  - Do not sleep or lie with the arm or leg bent.
  - Do not wear tight clothing or jewelry around your access arm or leg.
  - Do not carry a purse or bag, or wear a watch on your access arm.
  - Do not rest heavy objects on the access arm or leg.

Protect your access! Guard against infections and clots. Your access is your lifeline!
How Are Fistulas and Grafts Used with Dialysis?

Most often, a fistula is ready to use in 4-6 weeks. A graft is ready to be used 2–3 weeks or sooner depending on the type of graft material being used.

After your fistula or graft is ready to be used, the nurse or technician will place two needles into the access before each treatment. You may discuss with the nurse about options for numbing the skin before the needle is placed if you are uneasy with needle placement. The needles sites will need to be rotated to stop damage to the area being used regularly.

During dialysis you will sit in a recliner chair and rest your arm on a pillow or towel. You will be asked to limit movement of your access arm or leg. Common activities enjoyed include watching TV, talking with others, sleeping, listening to tapes, and reading.

When your treatment is over the staff will remove the needles, apply a bandage, gauze, and ask you to hold the gauze in place with your fingers until bleeding stops. If you cannot hold the gauze in place then the plastic clamps can be applied to the access site.

Apply just enough pressure to stop the bleeding after the needles are removed. This can take from five to twenty minutes.

A dialysis nurse or technician will check to make sure the bleeding has stopped before you leave. You will go home with clean gauze taped over the needle site. Check your access area often within the first hour after treatment to be sure that the bleeding has not started again. Remove the gauze 4-6 hours after your dialysis treatment if there is no more blood oozing.

Watch for bleeding after you leave. If your access arm or leg feels warm or wet all of a sudden, check for bleeding at the puncture sites. If your access is bleeding:

[Image of dialysis needle placement]
- Use gauze or a clean cloth (such as a wash cloth) to stop the bleeding
- Apply direct pressure with your fingers right to the bleeding site(s).
- Keep steady, firm pressure on the bleeding site for 20 – 30 minutes. **Do not check the site during this time.** If it is still bleeding after 20 – 30 minutes, keep steady pressure on the bleeding site for another 20 – 30 minutes. If bleeding has not stopped, continue applying pressure and call the emergency department.
- If you feel that you have lost too much (more than a cup) of blood, have someone take you to the nearest clinic or emergency department.

**Caring for Yourself on Dialysis Treatment Days**

**Wear loose clothing on your access arm or leg**
- A button down shirt, short sleeves, or sleeveless top works well with an arm access.
- Wear loose shorts, skirt, or sweat pants with a leg opening if you have a leg graft.
- Wear pants or sweater or other warm clothing over your dialysis clothes in cold weather.
- Clothing should be easy to wash.

**Prevent and be alert to the signs of low blood pressure**
- Take blood pressure medicines as ordered, but **do not take blood pressure medicine right before or after your hemodialysis treatment** unless advised to by your nurse or doctor.
- If you have weakness, dizziness or light-headedness, after a hemodialysis treatment, sit down or lie down. Drink 1 – 2 cups of water. If symptoms do not improve, have someone take you to the nearest emergency department.

It is normal to feel tired and washed out after dialysis. Take it easy and allow time to rest after a treatment.
Figure 8. Hemodialysis using a left forearm fistula or graft.
Special Instructions

If you have questions or concerns, contact dialysis staff by calling your local dialysis unit or calling the paging number at your local hospital listed on the last page of this booklet.

If there is anything that was discussed in this booklet that remains unclear to you, please ask someone to explain it to you.

Recommended Vaccination for Hemodialysis Patients

**Hepatitis B Vaccine**

Since patients who receive dialysis at a center are at risk for hepatitis B, a vaccine is recommended for all patients. It is also recommended for pre-end-stage renal patients before they become dialysis dependent or for peritoneal and home dialysis patients because they might require in-center hemodialysis. The vaccine is given into a muscle in the upper arm (deltoid). Each series of hepatitis B vaccination includes a total of 3 doses. The first dose can be given anytime. The second dose is given one month later. The third dose is given 6 months after the first dose. Some time after you receive the shots, you will be tested to be sure you have made antibodies to protect you from hepatitis B. If your antibody level is low, a second series of the vaccine will be needed for your body to respond. In this way, we will know that you are protected from the virus.

**Pneumococcal Vaccine**

People with chronic kidney failure are considered immunocompromised. This means they are at increased risk for pneumococcal disease or its complications. It is recommended that dialysis patients receive pneumococcal vaccination. There is special pneumococcal vaccine advice for dialysis patients. Your dialysis nurse will discuss this with you.

**Seasonal Influenza (Flu)**

Annual seasonal influenza (Flu) vaccination is recommended for all people with chronic kidney failure. They are at increased risk for the Flu.
What Phone Numbers Do I Call If I Need Help?

To Make an Appointment with a Doctor

**UW Hospital Renal Clinic** - *(608) 263-6808*, Monday through Friday, 8:00 a.m. - 5:00 p.m.

**UW Hospital Access Clinic** - *(608) 262-5420*, Monday-Friday, 8:00 a.m. - 5:00 p.m.

To Schedule an Internal Hemodialysis Access Placement

**UW Hospital Access Clinic** - *(608) 262-5420*, Monday-Friday, 8:00 a.m. - 5:00 p.m.

External Access Placement Questions

**UW Hemodialysis Inpatient/Hospital Unit** - *(608) 263-8748*, Monday through Saturday, 7:30 a.m. - 9:00 p.m.

Treatment Questions

**UW Hemodialysis Outpatient Clinic** - *(608) 270-5600*, Monday through Saturday, Mon. Wed. Fri. 7:00am. - 11 pm; Tues. Thurs. Sat.7:00am-5:30pm

When I Need to Talk to a Hemodialysis Doctor or Nurse and the Clinics are Closed

**UW Hospital Paging (after hours)** - *(608) 262-0486*. Ask for the Hemodialysis doctor or nurse on call. Give the operator your name and phone number with the area code. The doctor or nurse will call you back.

When I need to See or Talk with a Doctor or Nurse right away.

**UW Hospital Emergency Room** - *(263) 262-2398* (Open 24 hours daily).

**Other**

Your local dialysis unit: ________________________________

Their phone number: ________________________________

Your local hospital emergency room: ________________________________