

Interventional Radiology: Percutaneous Dialysis Fistula or Graft Treatment

How to prepare and what to expect

This handout explains what to expect when your doctor needs to work on your dialysis fistula or graft.

What is dialysis?

Healthy kidneys filter blood to balance fluid and remove waste products from the body. This process of removing waste and extra fluid from the blood is called *dialysis*.

When people have chronic *renal* (kidney) failure, they may need to use an artificial kidney machine to filter their blood. This process is called *hemodialysis*.



Talk with your provider if you have any questions about your procedure.

What are fistulas and grafts?

Hemodialysis requires good access to your blood vessels. Doctors must create a way to allow this access to occur easily. To do this, your surgeon can do one of these procedures:

- Join an artery and a vein to create a *fistula* (passageway) between them
- Place a *graft* (a soft man-made tube) between an artery and a vein

How do fistulas and grafts work?

During hemodialysis, 2 needles are placed into the fistula or graft to draw blood out, filter it, and then return it to the body. When a fistula or graft is working well, it has:

- A *bruit* (a rumbling sound that you can hear)
- A *thrill* (a rumbling sensation that you can feel)
- Good blood flow

Why does my fistula or graft have problems?

Over time, problems can occur with all fistulas and grafts. The most common problems are:

- Blocks in the vein reduce blood drainage or the flow of blood from the artery into the fistula. This means dialysis does not work as well.
- The graft or fistula gets blocked with blood clots and no longer works.
- Swelling or pain in your arm, or your hand feels numb or cool.

What is angiography?

Your doctor may advise *angiography* to find the reasons for these problems with your fistula or graft. An angiogram uses *catheters* (thin plastic tubes) to study your blood vessels.

When we find the cause of your problem, it can often be fixed right away with a *percutaneous* (through the skin) method. This kind of *intervention* (treatment) often works as well as surgery. And, it is usually safer.

Your procedure will be done by an *interventional radiologist*, a doctor with special training in procedures that are guided with X-rays.

How is this procedure done?

The procedure takes about 1 to 2 hours. During this time:

- Your doctor will insert 1 or 2 catheters into your fistula or graft. This is a lot like having dialysis needles placed. Before each catheter is inserted, the doctor will inject a *local anesthetic* to numb the area.
- *Contrast* (X-ray dye) is then injected through the catheter while X-rays are taken. These X-ray images will show where the problem is.
- If there are narrowed areas, we may open those sites using a *balloon catheter*. This procedure is called *angioplasty*.
- Sometimes, a *stent* must be placed. A stent is a metal mesh tube that helps keep the blocked area open.
- If the fistula or graft is filled with blood clots, we will infuse a material to break up the clot. Or, we may use a device that breaks up clots. We treat any narrowed areas in the same way.

What are the side effects or risks?

Angiography of your fistula or graft is usually very safe. After the procedure, you may have a slight bruise and tenderness where the catheters were placed. Most times, these symptoms ease over the next few days.

The most common problems are:

- A growing *hematoma* (a blood clot under your skin)
- Bleeding from your skin

Less common problems include:

- Complete clotting of your fistula or graft
- Infection
- Clots passing down into arteries in the hand

Your doctor will talk with you about these risks before your procedure. Please ask any questions you have. Make sure all of your concerns are addressed.

Before Your Procedure

- **Arrival time.** If you are an *outpatient* (not staying in the hospital), a nurse coordinator will call you the afternoon before your procedure. If your procedure is on a Monday, the nurse will call you the Friday before. The nurse will:
 - Tell you when to arrive at the hospital
 - Give you reminders about what to do on the morning of your procedure
 - Answer any questions you have
- **Interpreter services.** If you do not understand English well enough to understand these instructions or the details of the procedure, tell us **right away**. We will arrange for a hospital interpreter to help you. This service is free. **A family member or friend may not interpret for you.**
- **Blood tests.** You will have blood tests when you arrive for the procedure.
- **Allergies.** If you have a history of allergy or a bad reaction to contrast or iodine, please call our Interventional Radiology Nurse Coordinator at the number on the last page of this handout. You may need medicine for this allergy before the procedure.
- **Blood-thinning medicines.** If you take a blood thinner such as Lovenox (enoxaparin), Coumadin (warfarin), or Plavix (clopidogrel), you may need to stop taking it for 1 to 10 days before the procedure. The length of time depends on which medicine you are taking. If you have not been told what to do, talk with your provider or the clinic that prescribes the medicine. Ask when to stop taking this medicine.

IMPORTANT: If you have ever had a heart stent, a prosthetic heart valve, or a *pulmonary embolism*, or if you have *atrial fibrillation* with a history of a stroke, you **must** contact the provider who prescribes your blood thinner. Ask how to change your dose before your procedure.

- **Diabetes medicines.** If you have diabetes and take insulin or oral diabetes medicines, we will give you instructions about holding or adjusting your dose for the day of the procedure.

Sedation

Before your procedure, you may be given a *sedative* (medicine to make you relax) through an *intravenous line* (IV) in one of your arm veins. You will stay awake, but feel sleepy. This is called *moderate sedation*. You will still feel sleepy for a while after the procedure.

For some people, using moderate sedation is not safe. If this is true for you, you will need general *anesthesia* (medicine to make you sleep).

Let us know **right away** if you:

- Have needed anesthesia for basic procedures in the past
- Have sleep apnea or chronic breathing problems (you might use a CPAP or BiPAP device while sleeping)
- Use high doses of an opioid pain medicine
- Have severe heart, lung, or kidney disease
- Cannot lie flat for about 1 hour because of back or breathing problems
- Have a hard time lying still during medical procedures
- Weigh more than 300 pounds (136 kilograms)

If you have any of these health issues, we may need to give you different medicines. Instead of a sedative, you might receive:

- Only a *local anesthetic* (numbing medicine), such as lidocaine.
- A local anesthetic and a single pain or anxiety medicine. This is called *minimal sedation*.
- *General anesthesia* (medicine to make you sleep). This medicine is given by an anesthesia provider.

Day Before Your Procedure

- The day before your procedure, you may eat as usual. Drink plenty of fluids.
- Make plans for a responsible adult to drive you home after your procedure. **You may NOT drive yourself home or take a bus, taxi, or shuttle by yourself.** If you need to take a bus, taxi, or shuttle, the responsible adult **must** ride with you.
 - **IMPORTANT:** Your procedure will be rescheduled if you do not have a responsible adult to drive you home or ride with you on a bus, taxi, or shuttle.
- Also plan for a responsible adult to stay with you overnight.

Procedure Day

At Home

- Take all of your other usual medicines on the day of the procedure. Do **not** skip them unless your doctor or nurse tells you to.
- Starting **6 hours** before your procedure, **stop eating solid foods**. You may only have *clear liquids* (liquids you can see through), such as water, broth, cranberry juice, or weak tea.
- Starting **2 hours** before your procedure, do **not** take anything by mouth.
 - If you must take medicines, take them with **only** a sip of water.
 - Do not take vitamins or other supplements. They can upset an empty stomach.
- Bring with you a list of all the medicines you take.
- Plan to spend most of the day in the hospital.

At the Hospital

- You may have been told to go to Outpatient Lab for a blood draw. Do this before you check in. The lab is on the 3rd floor of the hospital, next to Outpatient Pharmacy, near the Cascade elevators.
- Unless you are told otherwise, check in at Admitting on the 2nd floor, next to Radiology. Take the Pacific elevator to the 2nd floor. Admitting is on the right side of Radiology Department.
- After checking in, you will be told to go to the Radiology Reception Desk.
- If there is a delay in starting your procedure, it is usually because we need to treat other people with unexpected and urgent problems. Thank you for your patience if this occurs.
- When we are ready to start your procedure, a staff member will:
 - Take you to a pre-procedure area
 - Give you a hospital gown to put on
 - Give you a bag for your belongings.
- While you are in the pre-procedure area:
 - Your family or a friend can be with you.
 - A nurse will ask you some health questions, take your vital signs (such as heart rate), place an IV tube in your arm, and go over what to expect.
 - A radiologist or physician assistant will talk with you about the procedure. They will ask you to sign a consent form, if you have not already signed one.
 - You will be able to ask any questions you have.

- The nurse will take you to the Radiology suite. This nurse will be with you for the entire procedure.

What happens during the procedure?

- You will lie flat on an exam table.
- We will use these devices to monitor you during the procedure:
 - Wires on your chest will help us watch your heart
 - A cuff around your arm will let us check your blood pressure
 - Prongs in your nose will give you oxygen. A probe on one of your fingers will show us how well you are breathing the oxygen
- For your safety, the entire medical team will ask you to confirm your name, go over your allergies, and explain what we plan to do. We do this for every procedure and every patient.
- A radiology technologist will use a special soap to clean your skin around your arm. The technologist may need to shave some hair from the area where the doctor will be working.
- Next, your nurse will give you the sedative to make you feel drowsy and relaxed before we begin.
- If you need an interpreter, they will be in the room or will be able to talk with you and hear you through an intercom.
- X-rays will be taken during the procedure to help your doctor see the graft and to see where and what the issue is.
- Before the catheters are inserted into your fistula or graft (see page 2), the doctor will inject a local *anesthetic* (numbing medicine). You will feel a sting for about 10 to 15 seconds. After that, the area should be numb and you should feel only minor discomfort.
- Once the problem is found, a decision is made about doing an intervention. If needed, that treatment will be done at this time (see “If You Have an Intervention,” below).
- When the procedure is finished, the catheters will be removed. Pressure will be applied for 15 to 20 minutes and then a tight bandage will be placed over the site. We may also place a short-term stitch (*suture*) or device on the graft or fistula to help stop bleeding. We will remove the stitch or device before you leave the hospital.

If You Have an Intervention

- It is normal to feel pressure or slight pain at the site that is being treated. Please tell your nurse if you feel pain.
- After the intervention, we will take more X-rays to check the change in the blood flow.

What happens after the procedure?

- If you:
 - Had general anesthesia, you will be watched for a short time in the recovery room.
 - Are an outpatient, you will be moved to a room in a short-stay unit in the hospital.
 - Will be staying overnight in the hospital, you will be moved to a room on an inpatient unit. You will spend the night there and should be able to go home in the morning by 11 a.m.
- Once you are settled in to your room:
 - Your family member or friend will be able to be with you.
 - You will need to rest flat on your back for 2 to 4 hours.
 - You will be able to eat and drink when you are awake and not nauseated.
- Before you get up to walk, we will assess your mobility to make sure you can walk safely. A nurse or patient care technician (PCT) will help you get out of bed. Most times, we will place a gait belt around your waist for extra safety.
- If you are in the short-stay unit, you will be able to go home when:
 - You are fully awake
 - You can eat, drink, and use the restroom
 - Your nausea and pain are under control
 - Your vital signs are stable
 - You can walk normally
 - You have a responsible driver to take you home
 - You have a responsible person to stay with you at home overnight

Self-care

For 24 Hours

The medicine that you were given to make you sleepy will stay in your body for several hours. It could affect your judgment. You may also be lightheaded or feel dizzy.

Because of this, for 24 hours:

- Do **not** drive a car.
- Do **not** use machinery or power tools.
- Do **not** drink alcohol.

- Do **not** take medicines such as tranquilizers or sleeping pills, unless your doctor prescribed them.
- Do **not** make important decisions or sign legal documents.
- Do **not** be responsible for children, pets, or an adult who needs care.

To help your recovery:

- Do only light activities and get plenty of rest.
- Someone should stay with you overnight.
- Eat as usual.
- Drink lots of fluids.
- Resume taking your medicines as soon as you start to eat. Take **only** the medicines that your doctors prescribed or approved.

For 48 to 72 Hours

- Do not lift anything that weighs more than 10 pounds with the arm that has the fistula. (A gallon of milk weighs almost 9 pounds.)
- Do only moderate activities. This will allow your puncture site to heal.
- Avoid hard work and any exercise that makes you breathe harder or makes your heart beat faster.

Dressing Care

- Keep the dressing on your puncture site for 24 hours, or until your next dialysis appointment. Make sure the dressing stays clean and dry.
- After 24 hours, remove the dressing and check the puncture site for any signs listed under “When to Call” on page 9.
- You may shower after 24 hours. Do **not** scrub the puncture site. Allow warm, soapy water to gently run over the site.
- After showering, gently pat the site dry with a clean towel.
- Do not apply lotion, ointment, or powder to the site.
- You may apply a new Band-Aid. Change the Band-Aid every day for the next few days. Always check the site when you remove the Band-Aid.
- Do not take a bath, sit in a hot tub, go swimming, or allow your puncture site to be covered with water until it is fully healed.
- You may have some slight discomfort or bruising at the site.

Pain Control

Most patients have only minor pain after this treatment.

- If your doctor says it is OK for you to take acetaminophen (Tylenol), this should ease any discomfort you have.

- If your doctor expects you to have more severe pain, you will receive a prescription for a stronger pain medication.
- If you receive a prescription for an opioid pain medicine, you may need to take a stool softener to avoid constipation.

When to Call

Call one of the numbers listed below under “Who to Call” if you have any of these symptoms:

- Bleeding from the puncture site that fills your bandage
- Swelling at the puncture site
- A lot of bruising around the puncture site
- Signs of infection at the puncture site: redness, warmth, tenderness, and discharge that smells bad
- Fever higher than 101°F (38.3°C)
- Chills
- A new rash that does not go away
- New numbness or weakness in your treated arm or leg
- Loss of a pulse, thrill, or bruit in your arm or leg with the fistula or graft

Urgent Care

Call 911 and go to the nearest emergency room if you have any of these symptoms:

- Severe bleeding that will not stop, even after you apply pressure to the puncture site
- Chest pain
- Trouble breathing
- Slurred speech
- Balance problems or trouble using your arms or legs

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

UWMC Imaging Services:
206.598.6200

Who to Call

- Weekdays from 8 a.m. to 4:30 p.m., call the Interventional Radiology Nurse Coordinator at 206.598.6209.
- After hours and on weekends or holidays, call 206.598.6190 and ask to page the Interventional Radiology Fellow on call.