

Angiography: Percutaneous Dialysis Fistula or Graft Treatment

How to prepare and what to expect

This handout explains what to expect when a dialysis fistula or graft is being worked on.

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, an artificial kidney machine may be used to filter their blood. This process is called *hemodialysis*.

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*
- 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



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

Why does my fistula or graft have problems?

Over time, problems usually 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 becomes fully blocked with blood clots. If this happens, it longer will not work at all.
- 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 angiogram and the percutaneous procedure will be done by an *interventional radiologist*, a doctor with special training in procedures that are guided with X-rays.

How are these procedures done?

The angiogram and the percutaneous procedure take 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.
- *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 (*angioplasty*).
- Sometimes, a *stent* must be placed. A stent is a metal 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

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 as soon as possible. **A family member or friend may not interpret for you.** We will arrange for a hospital interpreter to help you. This service is free.
- **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 care 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, Coumadin, or Plavix, you may need to stop taking it for 2 to 7 days before the procedure. The length of time depends on which medicine you are taking. If you have not been told what to do, contact your primary doctor or the clinic that prescribed your medicine. Tell them you are having this procedure and ask when to stop taking your blood-thinning medicine.

IMPORTANT: If you have ever had a heart stent, a prosthetic heart valve, a *pulmonary embolism*, or 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.

- **Changes to 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

During the procedure, you may be given a *sedative* (medicine to help you relax) through an *intravenous* (IV) tube in your arm. You will stay awake, but feel sleepy. This is called *conscious sedation*. You will still be sleepy for a while after the procedure.

Conscious sedation may not a safe option for you if you have certain health conditions. Tell us **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 at least 1 hour because of back or breathing problems
- Have a hard time lying still during medical procedures
- Weigh more than 300 pounds (136 kilograms)

Talk with the providers in Radiology about the type of medicine that will be used for your procedure. You may 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), given by an *anesthesiologist*

Day Before Your Procedure

- The day before your procedure, you may eat as usual.
- Make plans for a responsible adult to drive you home after your procedure and stay with you the rest of the day. **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.

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.
- Take your usual medicines on the day of the procedure, unless the doctor or a nurse tells you to hold them.
- Starting **6 hours** before your procedure, **stop eating solid foods**. You may only have *clear liquids* (liquid you can see through), such as water, broth, cranberry juice, or weak tea.
- Starting **2 hours** before your procedure, take **nothing** at all 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. If there is a delay in getting your procedure started, it is usually because we need to treat other people with unexpected and urgent problems. Thank you for your patience if this occurs.

At the Hospital

- Check in at Admitting on the 3rd floor (main level) of the hospital. Admitting is near the lobby, to the right and behind the Information Desk.
- You may have also been given instructions to go to the **Outpatient Lab** for a blood draw. The lab is behind the Cascade elevators, next to Outpatient pharmacy. You can go to the lab either before or after you check in at Admitting.
- After checking in and having your blood drawn, take the Pacific elevators to the 2nd floor. Check in at the Radiology reception desk.
- 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.

Your Procedure

- The nurse will take you to the Radiology suite. This nurse will be with you for the entire procedure.
- You will lie flat on an exam table.
- X-rays will be taken during the procedure to help your doctor see the graft and to see where and what the issue is.
- 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 and a probe on one of your fingers will show us how well you are breathing the oxygen
- The entire medical team will ask you to confirm your name, go over your allergies, and explain what we plan to do. This is for your safety. We do this for every procedure and every patient.
- A radiology technologist will clean your skin around your arm with a special soap. 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 needed, an interpreter will be in the room or will be able to talk with you and hear you through an intercom.
- 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. That treatment will be done at this time.
 - 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.
- After the intervention, 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. The stitch or device will be removed before you leave the hospital.

After Your Procedure

- We will watch you closely for a short time in the Radiology department.
- If you are an *outpatient* (not staying in the hospital), you will then go to a short-stay unit in the hospital. A different nurse will monitor you there.
- Most times, you will be able to eat and drink, and your family or a friend may visit you.
- When you are fully awake and are able to eat, use the restroom, and walk, you will be able to go home.
- If a short-term suture or device was used, it is usually removed by this time.
- It is rare to have problems with this procedure. If problems occur, we may need to keep you in the hospital overnight so that we can keep watching you or treat you.
- Before you leave the hospital, your nurse will tell you what activities you can do, how to take care of your incision, and other important instructions.

When You Get Home

- Relax at home for the rest of the day. Make sure you have a family member, friend, or caregiver to help you.
- You may feel drowsy or have some short-term memory loss.
- For 24 hours, do **not**:
 - Drive a car or use machinery
 - Drink alcohol
 - Make important decisions or sign legal documents
 - Be responsible for the care of another person
- After 24 hours, you may shower or take a bath.

- There is usually only minor pain after dialysis fistula or graft 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 medicine.
- Resume taking your usual medicines as soon as you start to eat. Take **only** the medicines that your doctors prescribed or approved.

When to Call

Call us **right away** if you have:

- Severe bleeding
- New numbness or weakness in your treated arm
- Loss of pulse, thrill, or bruit in your fistula or graft
- Fever higher than 101°F (38.3°C) or chills
- Worsening shortness of breath
- New chest pain
- Dizziness
- Vomiting

Who to Call

Interventional Radiology nurse coordinator206.598.6897

Procedure scheduling206.598.6209

After hours (between 5 p.m. and 7 a.m.), and on weekends and holidays
Ask for the Interventional Radiology Fellow on call 206.598.6190

Urgent Care

If you need urgent care, go to the nearest Emergency Room or call 911 right away. Do not wait to contact one of our staff.

Questions?

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

UWMC Imaging Services:
206.598.6200