

Interventional Radiology: Carotid Angiogram

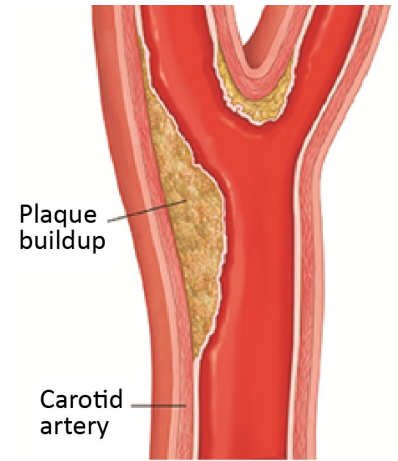
How to prepare and what to expect

This handout explains how a carotid angiogram works, how it is done, how to prepare, and what to expect during the exam.

What is a carotid angiogram?

The *carotid arteries* are large blood vessels in your neck. They carry oxygen-rich blood from your heart to your brain. An *angiogram* is an X-ray picture of the inside of blood vessels.

A carotid angiogram is a study of the inside of your carotid arteries. The procedure is done by an *interventional radiologist (IR)*, a special doctor who uses X-rays to guide procedures.



Why am I having this study?

You may have talked with your doctor about feeling dizzy or confused, or you may recently have had a stroke. We want to find out what is causing these symptoms. They might be caused by:

- *Carotid stenosis* (narrowing of the carotid artery)
- *Carotid atherosclerosis* (a buildup of a sticky substance called *plaque* that narrows the carotid artery)

A carotid angiogram will tell us if these issues are causing your symptoms.

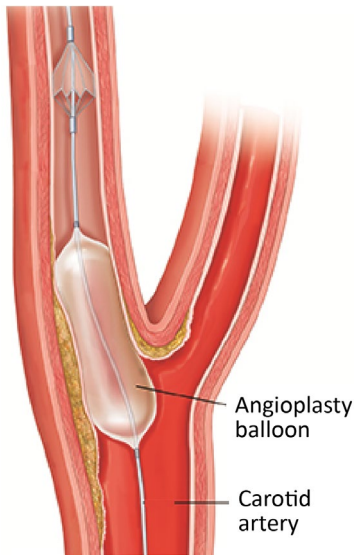
Your angiogram will show if plaque buildup is causing your symptoms.

How are these problems treated?

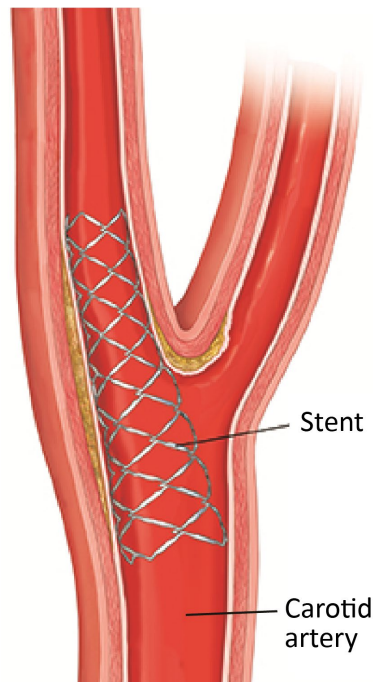
If the carotid angiogram shows narrowing in your arteries, your doctor may advise one or both of these treatments (*interventions*):

- *Angioplasty* (using a tiny balloon to stretch the inside of the artery)
- A *stent* (metal mesh tube) placed in the artery to hold it open

One or both of these interventions may be done at the same time as your carotid angiogram. (See drawings on page 2.)



Angioplasty uses a tiny balloon to stretch the artery.



A stent can be placed in the artery to hold it open.

Before Your Procedure

Arrival Time

If you are an *outpatient* (not already staying in the hospital), a nurse 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
- Remind you 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.

Allergies

If you have ever had an allergy or bad reaction to *contrast* (X-ray dye), call our Radiology Patient Care Coordinator (see numbers on the last page). You may need medicine for this allergy before the procedure.

Medicine to Protect Your Kidneys

If you will receive contrast for the procedure and your kidneys are not working normally, we may prescribe medicine for you to take before and after your procedure. This medicine will help protect your kidneys.

Blood Test

Most patients need a blood test done within the 14 days before this procedure. We may be able to do this when you arrive for your procedure. We will tell you if we need to draw blood before that day.

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, a pulmonary embolism, or if you have atrial fibrillation and a history of a stroke, you **must** contact the provider who prescribes your blood-thinning medicine. Tell them that you are having an angiogram and ask what to do about your medicine dose before your procedure.

Diabetes Medicines

If you have diabetes and take insulin or metformin (Glucophage), we will give you instructions about holding or adjusting your dose for the day of your procedure.

Overnight Stay

Plan to stay overnight at the hospital. You may be admitted to the hospital after your procedure so that we can watch you.

Sedation

Before your procedure, we will give you 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 be 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 during the procedure).

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

- Weigh more than 300 pounds (136 kilograms)
- 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 *opioid* pain medicine
- Have severe heart, lung, or kidney disease
- Have back or breathing problems and cannot lie flat for about 1 hour
- Have a hard time lying still during medical procedures

Day Before Your Procedure

- Drink lots of fluids. You may eat as usual.
- If you are an *outpatient* (not staying in the hospital):
 - Plan 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.** You may take a bus, taxi, or shuttle **only if** you have a responsible adult to ride with you.
 - Plan for a responsible adult to stay with you the rest of the day.

IMPORTANT: If you do not have a responsible adult to drive you home or ride with you on a bus, taxi, or shuttle, we will need to reschedule your procedure.

Procedure Day

- Take your usual medicines on the day of the procedure, unless the doctor or a nurse tells you to hold them. (Some patients may need to stop taking certain medicines.)
- Do **not** take vitamins or other supplements. They can upset an empty stomach.
- Starting **6 hours** before your procedure, **stop eating solid foods**. You may have only *clear liquids* (liquids 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.
- 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.
- After checking in, 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 *intravenous* (IV) tube in your arm, and go over what to expect.
 - A radiologist or physician assistant will talk with you about the risk and benefits of 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 then take you to the Radiology suite. This nurse will be with you for the entire procedure.
- 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.
- If needed, an interpreter will be in the room or will be able to talk with you and hear you through an intercom.
- You will lie on your back on a flat X-ray table for the procedure.
- We will place wires on your body to help us monitor your heart rate.
- You will have a cuff around your arm. It will inflate from time to time to 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.
- If you are scheduled to have general anesthesia, the anesthesia care provider will meet you and go over your health history.
- A technologist will clean your skin around the procedure site with a special soap. Tell this person if you have any allergies. The technologist may need to shave some hair in the area where the doctor will be working.
- To keep you from feeling pain, you will be given a local *anesthetic* (numbing medicine) at the site in your groin where the procedure will be done. You will also be given a *sedative* (a drug to help you relax). The sedative will be given to you through your IV.

What happens during the procedure?

- The interventional radiologist (IR) will use X-rays to help place a long, thin tube (*catheter*) into a blood vessel in your groin. Although it seems like a long way from the groin area to the neck, the groin is the safest place to enter an artery.
- The IR will use small wires to guide the catheter to your carotid artery. Contrast is then sent into the catheter. Contrast helps details of your blood vessels show more clearly in the X-rays.
- You may feel a warm or hot flush spreading all over your body when the contrast goes in. You may also feel like you have to urinate (pee) or have a bowel movement. These feelings are normal and should last only a few seconds.
- We will take X-rays of your head and neck while the contrast moves through your blood vessels. The X-rays will show where an artery is blocked, narrowed, leaking, or enlarged.

- After reviewing the X-rays, the IR will contact your provider who requested the angiogram. They will decide whether to do an intervention, based on what is the safest option for you.
- If your doctors decide that an intervention can repair the problem in your carotid artery:
 - We will do an angioplasty or place a stent, or both. It is normal to feel pressure or slight pain at the site of these procedures.
 - We will take more X-rays to check changes in the blood flow.
- After the intervention, we will remove the catheter. A device will be used to close the opening in the artery.
 - If the IR cannot close the artery using a device, we will apply manual pressure to the site for 20 to 30 minutes to stop bleeding. If this happens, you must lie flat on your back for 6 hours.
 - If a device is used, you must lie flat on your back for 2 to 3 hours.

How long will the procedure take?

An angiogram by itself takes about 1½ hours. If we do an intervention, the entire procedure will take longer than that. And, if we cannot use a device to close the artery, it will be even longer before you are ready to leave the hospital.

People waiting for you should expect to wait **at least** 4 hours. This includes time to prepare you, do the procedure, and apply pressure at the puncture site, if needed.

Are there any risks from an angiogram?

You may have:

- An allergic reaction to the contrast, such as:
 - Hives or swelling
 - Drop in blood pressure
 - Loss of consciousness
- An allergic reaction to the local anesthetic
- Minor discomfort if the local anesthetic does not fully numb the area
- A kidney problem that is made worse by the contrast
- A blood clot that forms around the catheter insertion site, or at the catheter tip, that blocks your blood vessel
- An injury to the groin artery where the catheter is inserted, causing bleeding or a blockage of blood flow to the leg

- Surgery to correct damage caused by the procedure
- An infection at the procedure site

What happens after the procedure?

- We will watch you closely for a short time in the Radiology department.
- If you have had general anesthesia, we will make sure you can move safely before you get up to walk.
- You will then go to a short-stay unit in the hospital. A different nurse will monitor you there.
- Most patients are able to eat and drink, and have visitors.
- You will need to rest in bed for 2 to 6 hours. You must keep your leg below the groin procedure site perfectly still for that time to control bleeding.
- **If you had an intervention:** You may need to stay overnight in the hospital so that we can monitor your recovery.
- **If you did NOT have an intervention:**
 - You will be able to go home when you are fully awake and can eat, use the restroom, and walk.
 - Before you leave the hospital, your nurse will tell you what activities you can do, and other important instructions.

Safety and Self-care at Home

If you go home the same day as your procedure:

- Relax at home for the rest of the day. Make sure you have a responsible family member, friend, or caregiver to help you.
- For a while, you may:
 - Feel sleepy
 - Have some short-term memory loss

For 24 Hours

- Do **not** drive a car or use machinery
- Do **not** drink alcohol
- Do **not** make important decisions or sign legal documents
- Do **not** be responsible for children, pets, or an adult who needs care

When to Call

Call one of the numbers listed below **right away** if you have any of these symptoms:

- Bleeding that does not stop after you apply pressure at the procedure site for about 15 minutes
- Cold or numb feeling in your leg or foot
- Slurred speech, balance problems, or trouble using your arms
- Skin rash
- Fever higher than 101°F (38.3°C) or chills
- Feeling dizzy
- Nausea, vomiting, or both
- Shortness of breath that gets worse

Who to Call

If you have any of the symptoms listed above:

UWMC - Montlake

Weekdays from 8:00am-5:00pm, call.....206.598.6209, option 2

UWMC - Northwest

Weekdays from 8:00am-5:00pm, call.....206.598.6209, option 3

Harborview Medical Center

Weekdays from 8:00am-4:00pm, call.....206.744.2857

Urgent Care

Call 911 and go to the nearest emergency room right away 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 - Montlake:
206.598.6209, option 2

UWMC - Northwest:
206.598.6209, option 3

Harborview Medical Center:
206.744.2857