

Percutaneous Coronary Intervention

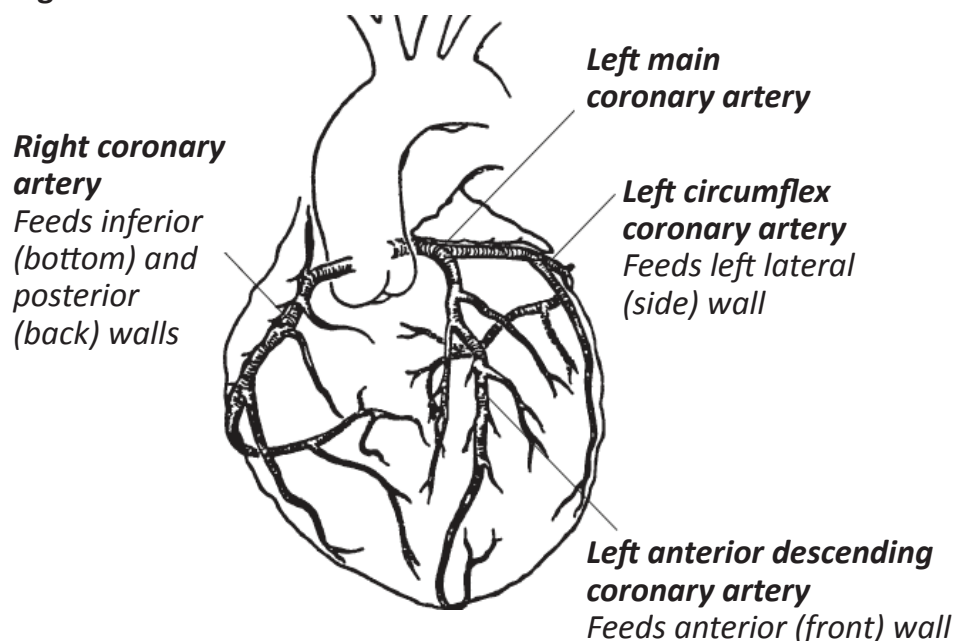
A percutaneous coronary intervention (PCI) is a procedure to treat stenosis (narrowing) of a coronary artery. This brochure will explain what to expect before, during and after the procedure.

The heart

The heart is a muscular organ about the size of a closed fist. It pumps blood to the lungs and to all of the body tissues. The heart, like any other muscle, needs oxygen to work well. Oxygen is delivered to the heart through coronary arteries. These arteries lie on the surface of the heart (Figure 1).

If you have any questions or concerns, ask your physician or nurse.

Figure 1. The heart



Before the procedure

The Cardiac Catheterization Lab (Cath Lab) nurse will contact you a few days before the exam. The nurse will answer your questions and go over how you should get ready for the procedure. Please tell the nurse if you:

- Have any allergies (especially to aspirin or metals)
- Have had a reaction to iodine or X-ray contrast dye
- Take warfarin (Coumadin®) or other blood thinners (not including aspirin)
- Take any other medications

Your healthcare clinician may need to adjust your medications before your procedure. Please tell your primary care physician that you are scheduled for a PCI. We will tell you what time to arrive the day before your procedure. We will also give you eating and drinking instructions.

Day of the procedure

On the day of the test, take only the medication the nurse tells you to take. Take your medication with small sips of water.

Be sure to bring:

- A list of allergies
- A list of all your current medications (prescription, over-the-counter and herbal)
- Photo ID
- Medical insurance information
- Medicare card (Medicare patients only)

Plan to have a responsible adult take you home the day following your PCI. Since you will get sedation (relaxing) medication during the procedure, you cannot drive. For your safety, arrange for someone to take you home.

For their own safety, children under 16 may not visit in the testing area. They may stay in the waiting room with a responsible adult.

At the hospital

Check in at the Cath Lab reception desk, Galter Pavilion, 675 North Saint Clair Street, 8th floor.

Parking is available for patients and visitors in the garage at 222 East Huron, across from Feinberg and Galter pavilions. For a discounted rate, bring your parking ticket with you. You can validate your ticket at the Customer Services Desks on the 1st, 2nd, and 8th floors of Feinberg and Galter pavilions, and the 1st floor of Prentice Women's Hospital.

We will assign you a room for your care before and after the procedure. After you change into a hospital gown, the nurse will review your health history, and take your blood pressure and pulse. You may also have blood tests. Your healthcare team will insert an IV (into the vein) into your arm or hand. They will use the IV to give you fluids and medications during the exam. Your healthcare team will clean and shave your groin area. The team will use the femoral artery in the groin or the radial artery in the wrist for the procedure.

The physician will discuss the procedure with you. After the physician has answered your questions, they will ask for your written consent.

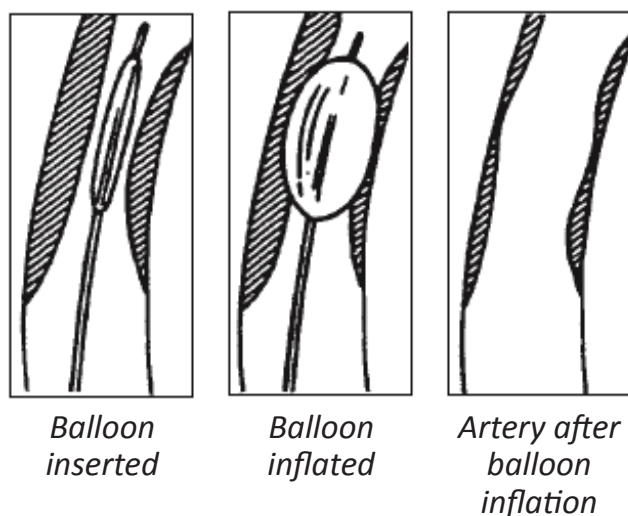
You may wear your glasses, dentures (or bridgework) and hairpieces. You will need to empty your bladder just before going into the Cath Lab.

During the procedure

Once you are in the Cath Lab, your healthcare team will help you onto an X-ray table. The room has an X-ray camera and several television monitors. You will get medication through the IV to help you relax. You may feel drowsy, but usually you will be awake and comfortable during the procedure.

Your healthcare team will clean the area around the puncture site (the groin or wrist) with a special soap that may feel cold. They will inject an anesthetic (numbing medication) into the area.

Figure 2. Removing blockage



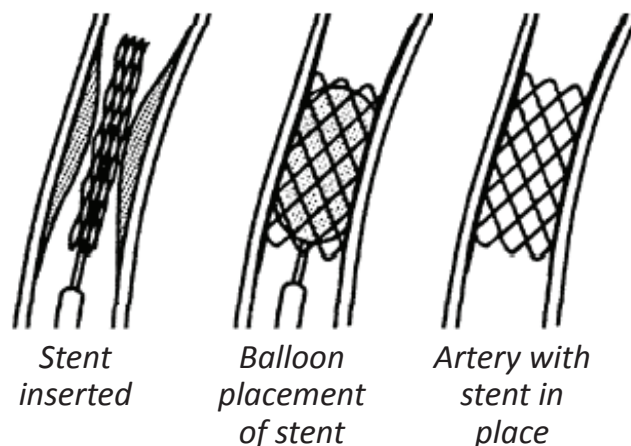
Your team will insert a plastic tube called a sheath into either the femoral (groin) or radial (wrist) artery. They will use the sheath to guide the catheter into place. This usually is not painful. But you may feel pressure and mild discomfort at the site. If needed, you can get more numbing medication.

After the sheath is in place, your healthcare team will guide a catheter up to your heart to the opening of the affected coronary artery (Figure 2). They will insert another catheter with a balloon tip through the sheath and guiding catheter. Guided by X-ray and contrast (dye), they will advance the balloon to the site of the narrowed artery.

Once in place, your healthcare team will inflate the balloon. As they inflate the balloon, it will push the plaque back up against the arterial wall. This will widen the inside of the artery. Then, they will deflate the balloon and remove the catheter.

At this time, your healthcare team may also use a small metal coil (stent) (Figure 3). A stent will be pre-mounted on a balloon catheter. Guided by X-ray and contrast (dye), your healthcare team will advance the catheter to the area of stenosis (narrowing). They will inflate the balloon/stent catheter to compress the stent to the arterial wall. They will deflate and remove the balloon catheter. You may have some chest pressure or discomfort when the balloon is inflated. This is normal. The stent will be permanent and will support the arterial wall.

Figure 3. Stent placement



If you feel any discomfort during the procedure, let the physicians and nurses know. Once the artery is opened, your healthcare team will remove all catheters. They will remove the sheath, or they will suture it in place and remove it a few hours later.

Most PCI procedures use balloons and stents. Drug-eluting stents (DES) are coated with a medication that prevents unwanted growth of cells that can narrow the vessel. These stents use very small doses of medication to:

- Deliver the medication right to the vessel
- Limit the medication's effect on other parts of the body

The medication delivery for these stents can be in effect for up to 120 days. DES help reduce the rate of re-stenosis to fewer than 1 out of every 10 people who have this procedure.

The care team at Northwestern Memorial Hospital most often uses this combined treatment of angioplasty and DES. They can do other advanced treatments, if needed.

After the procedure

After the procedure, you will return to the Cardiac Recovery Observation Unit (CROU). The nurses will see you often to check your:

- Blood pressure
- Heart rate
- Groin or wrist site(s) for any bleeding or swelling

You will be on bed rest for several hours. It is important to keep the affected leg(s) or arm(s) straight at all times. In some cases when the groin is used, the sheath remains in place after your procedure until your blood clotting time is normal. As the clinician removes the sheath, the nurse will apply firm pressure at the groin site for at least 10 to 20 minutes.

You will stay in the hospital overnight. Most patients are discharged the next morning. During this time your healthcare team will:

- Monitor your heart rate.
- Check your blood pressure and pulse.
- Do blood tests and an electrocardiogram (ECG).
- Watch your groin or wrist site for bleeding or swelling.

It is important to have a responsible adult take you home. Before going home:

- You will get a stent information card.
- Your physician will talk with you about follow-up visits.

Caring for yourself after the procedure

The Cath Lab discharge instructions will answer many questions about your care. Follow these added guidelines to help your recovery.

Activities

While the groin is healing, you may have bleeding or swelling. This is due to the stress or strain to the puncture site or surrounding muscles. Carefully follow these guidelines:

- Limit your activities on the day you are discharged.
- Do not drive for 24 hours.
- Do not take tub baths for 1 week, but you may shower after 24 hours.
- Climb stairs with a slow, steady pace for the first 2 days after the PCI.
- Do not lift more than 10 pounds for 1 week.
- Avoid sexual activity for 1 week.

If the catheter was in your radial (wrist) artery:

- Limit your activities on the day you are discharged.
- Do not bend your wrist for 24 hours.
- Do not drive for 24 hours.
- Do not soak your wrist under water (such as in a bathtub, sink or cleaning bucket) for 3 days.
- Do not lift more than 3 to 5 pounds with affected wrist for 1 week.
- Climb the stairs with a slow, steady pace until 2 days after the PCI.
- Avoid sexual activity for 1 week.

For the 1st week after your PCI, do not do any physical activity that would raise your heart rate (examples may include tennis, jogging or weightlifting).

Medications

Your physician will prescribe medications to help prevent blood clots. Take these medications with food. The medications may include:

- Aspirin (ASA)
You will take 1 aspirin (81 milligrams) once a day.
- Antiplatelet medication
You will be prescribed 1 of the following antiplatelet medications after your PCI.
 - Clopidogrel (Plavix®)
 - Prasugrel (Effient®)
 - Ticagrelor (Brilinta®)

Your physician will tell you how long to take this medication.

Do not stop taking these medications without talking with your physician.

Take all other medications as directed by your physician. Do not take any extra aspirin or ibuprofen. Doing so can increase your risk of bleeding. Many over-the-counter medications contain aspirin. If you are unsure about what the medication contains, check with your pharmacist before taking it.

For mild discomfort, you may take acetaminophen (plain Tylenol®). Follow dose directions, but do not take more than 4,000 milligrams (mg) of acetaminophen in 24 hours. This includes other medications that you may be taking.

- Many medications, including narcotic pain medications, have acetaminophen in them. Be sure to read labels carefully or check with your pharmacist. It is important that you look at your total intake of acetaminophen. Do not take more than 4,000 mg of acetaminophen in 24 hours.
- Talk with your physician about 24-hour limits that may be right for you. People who are fasting, are undernourished, have diabetes, are taking isoniazid or are frequent alcohol users may need to limit acetaminophen to just 2,000 to 3,000 mg per day — in divided doses. It is possible your physician may tell you not to take acetaminophen at all.

Special instructions for patients who have a stent

Carry your stent card with you at all times. This provides useful information about your heart disease for any physician who may be caring for you. It also is important to tell your healthcare clinicians that you are taking aspirin and a prescribed antiplatelet medication such as clopidogrel (Plavix®), prasugrel (Effient®) or ticagrelor (Brilinta®).

Please contact your physician right away or go to the nearest emergency department if you have any of these symptoms:

- Severe angina or chest pain (This may be a sign of a problem with your stent.)
- Excessive bruising
- Blood in your urine or stool
- Black tarry stools

Contact the Cath Lab physician at 312.926.5135, extension 3 if you have a new rash or itching. This may be a sign that you have an allergy to your antiplatelet medication.

Groin or wrist care

After the procedure, you will have a small bandage over your groin or wrist site. You can take the bandage off the day after the procedure. Do not put on a new bandage. Keep the site clean and dry. Do not use lotions, ointments or powders at the groin or wrist site for 1 week.

The healing puncture site should be soft and dry. You may have a bruise or a marble-sized lump.

Arterial bleeding

The following signs could mean that the puncture in the blood vessel has reopened and that there is active bleeding:

- Quickly increasing swelling around the wound, which may be pulsating
- A large amount of blood streaming from the puncture site

This is rare, but it is a **medical emergency. Apply hard pressure over the wound and call 911 right away.**

- For a groin site, apply hard pressure with all the fingers of 1 hand above the puncture site.
- For a wrist site, hold firm pressure with your thumb against the puncture site and your finger against the back of the wrist.

When to call the physician

For groin puncture site:

Call your physician or the Cath Lab physician if you have any of these symptoms:

- Redness around your groin wound
- Drainage from your groin wound
- A lump at the puncture site that gets bigger or is larger than a marble
- Pain at the puncture site that makes walking difficult
- Numbness or tingling in your thigh or leg
- Calf tenderness or pain
- Swelling of your ankle or foot
- Increased area of bruising that spreads into your thigh, buttock, or groin
- Discoloration or coolness of your leg or foot

For wrist puncture site:

Call your physician or the Cath Lab physician if you have any of these symptoms:

- Redness around your wrist wound
- Drainage from your wrist wound
- A lump at the puncture site that gets bigger or is larger than a marble
- Numbness, tingling or swelling of your fingers, hand, wrist or arm
- Increased area of bruising with discoloration that spreads into your arm
- Coolness of your hand or arm

Warning signs and symptoms

Please contact your physician right away if you have:

- Chest discomfort or pain (angina) that radiates to the neck, jaw or arm
- New symptoms or the return of your pattern of angina
- Nausea or heavy sweating
- Shortness of breath with exertion
- An irregular heartbeat
- Lightheadedness or dizziness that makes you lie down
- A fainting spell

Call 911 or go to the nearest emergency department if you have these symptoms:

- Chest discomfort or pain lasting longer than 10 minutes that is not relieved by taking 1 nitroglycerin tablet under your tongue
- Frequent, recurring episodes of chest discomfort or pain
- Bleeding from the puncture site that does not stop

Modifying risk factors

Atherosclerosis is a disease in which plaque (fatty deposits) builds up inside your arteries. Over time, plaque hardens, narrows your arteries and causes coronary artery disease (CAD). It cannot be cured, but you can take steps to reduce your risks. Follow these lifestyle changes to help improve the length and quality of your life and decrease the need for future PCIs and surgery.

- Manage high blood pressure and diabetes.
- Stop smoking.
- Exercise regularly (discuss an exercise plan with your physician).
- Reduce stress in your life.
- Eat a healthy diet (discuss your diet with your physician).

Contact information

If you have any questions or concerns, please call the Cath Lab.

- During regular business hours (8 am to 5 pm, Monday through Friday), call 312.926.2284 (312.926.CATH), extension 3, (TTY: 711).
- After hours and on the weekends, call 312.926.2284 and ask for the Cath Lab physician on call.