

Heart Catheterization Lab Procedures

What to expect and how to prepare

This handout describes how heart catheterization works. It explains how to prepare for your procedure and the self-care needed after you go home.

Your doctor has referred you for this procedure so that we can learn more about your heart and its blood flow.



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About Your Procedure

Your doctor has referred you for this procedure to assess your heart and its circulation. This procedure is also called a *cardiac catheterization* or a *coronary angiogram*. It will give your doctor specific information about your heart and its blood flow (*circulation*).

Diagnosis

We are doing this catheterization to diagnose your heart condition. During the procedure, we will take X-ray images and pressure measurements. These will show the health of your heart chambers, valves, and blood vessels.

Treatment (Intervention)

The *cardiologist* (heart doctor) doing your procedure will talk with your doctor about whether you need treatment, also called an *intervention*. If it is safe to proceed and you wish to have this intervention, it will be done at the same time as your catheterization. For some patients, the diagnosis shows that they do not need a treatment.

We will ask you to read and sign a consent form before your heart catheterization. This form gives us permission to do an intervention, if needed, at the same time as your catheterization.

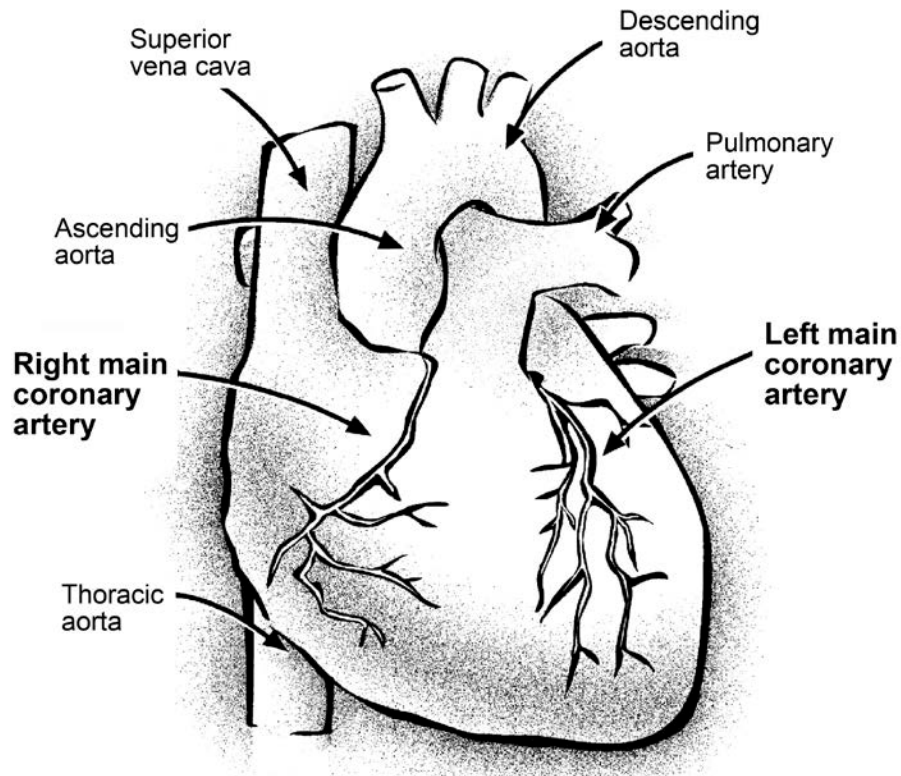
Coronary Arteries

Coronary arteries are blood vessels on the surface of the heart. As blood leaves the heart, a small amount of it is sent through these arteries to supply the heart with blood and oxygen. The cells of the heart need a constant blood supply, just like all other cells in the body.

The coronary arteries may be affected by the disease process called *arteriosclerosis*. This is a buildup of fat and cholesterol deposits, called *plaque*, inside an artery. Plaque can block normal blood flow.

- When the plaque buildup is severe, the blood flow to the heart muscle can be reduced. This may result in chest discomfort, called *angina*.
- When plaque fully blocks an artery, the heart muscle may be damaged. This is a *myocardial infarction*, or heart attack. The images taken during your procedure will show how blood flows through your arteries and whether there are blockages or limited blood flow.

There are 2 main coronary arteries, the right and the left. (See the drawing on page 3.)



Arteries of the heart, including the left and right main coronary arteries

Before You Come to the Hospital

To help make your hospital stay go more smoothly:

- If you need driving directions, please call the Cardiac Procedure Nurse Coordinator at 206.598.8435.
- Pack a small bag in case you have a treatment and need to stay overnight in the hospital. Most patients who have a catheterization to diagnose a heart condition are discharged after 6 hours. But, if you need a treatment, you may have to stay in the hospital overnight.
- If you are from out of town: Make hotel or motel reservations or other plans to stay overnight in the Seattle area. If you have family with you from out of town, be sure they plan to stay overnight in the Seattle area. Our Patient Care Coordinator can help you find lodging options.
- Please bring these items with you:
 - A list of medicines you are currently taking, and a list of all medicines you have taken in the past 2 days. Include the dose amount. Also include nonprescription medicines, herbal supplements, and vitamins.
 - The name and phone number of a person we can contact in case of an emergency.
- If you have had a catheterization before and received pictures from that procedure, please bring them.

- If you use a CPAP machine for sleep apnea or breathing problems, bring it with you to the hospital.

How to Prepare

Fasting

- **Do not eat or drink anything for at least 6 hours before your check-in time.** On the morning of your catheterization:
 - If you finish eating at least 6 hours before your check-in time, you may have a **light meal or snack**, such as tea and toast.
 - Do **not** eat high-fat foods such as bacon, sausage, or eggs for **at least 8 hours** before your check-in time.
- Most patients tell us that having something to eat and drink in the morning helps the day go more smoothly, lowers stress, and improves their overall mood. If you wake up **more than 6 hours before** your procedure, try eating a light snack. If you want to eat a small meal, set your alarm for **more than 8 hours before** your procedure.
- For **24 hours before** your procedure, do **not** eat or drink anything that contains caffeine. This includes coffee, tea, energy drinks, and some supplements.

Medicines

When you talk with the Cardiac Procedures nurse about your current medicines, the nurse will tell you if there are any that you should not take before this test. Most medicines do not have to be stopped.

- If you do not need to make any changes to your medicines, take your usual morning medicines with small sips of water.
- **Important: If your doctor has prescribed aspirin for your heart health, take it as usual the morning of your procedure.**

Procedure Day

To Check In

- Use the **main hospital entrance** on Pacific Street. When you enter, you will be in the lobby on the 3rd floor of the hospital. You will see the Information Desk in the lobby.
- **Go to the Admitting and Reception window.** This office is down the hall to the right of the Information Desk. Tell them that you are checking in for your heart catheterization. Their phone number is 206.598.4310.
- Do **NOT** go to Cardiac Procedures until after you have checked in at Admitting.

After you have checked in at Admitting, you will go to Cardiac Procedures on the 2nd floor:

- From Admitting, go out to the lobby and turn left. Go along the main hallway to the Pacific elevators. Take an elevator to the 2nd floor.
- As you step off the elevator, you will see a phone on the wall to your right. Pick up the handset and press **Key 1, Cardiac Procedures Visitors**. The Procedural Nurse will tell you what to do next.

Preparing for the Procedure

While you are in our pre-procedure area:

- You will change into a hospital gown.
- We will take your blood pressure and temperature.
- A nurse will ask you questions about your medical history.
- We will do an *electrocardiogram* (ECG or EKG). This painless test measures the electrical activity of your heartbeats. It shows whether parts of your heart are too large or are working too hard.
- We will place an *intravenous* (IV) line into a vein in your arm.
- Your groin and/or arm will be scrubbed with antiseptic solution and shaved. We do this to help prevent infection.
- We will ask you to read and sign consent forms. Heart catheterization has some risks. Some patients have side effects from the *contrast* (X-ray dye) or medicines that are used. These side effects are not common, but we want you to know about them. Your provider will explain these risks and side effects before asking for your consent to do the catheterization. Please ask any questions you have before signing the consent forms. You may decide not to sign the forms. We will not do the catheterization if you do not give your consent by signing the forms.
- We will then take you to the Cardiac Catheterization Lab. During your procedure, your family may wait in the waiting room. Staff will show them where to wait and how to get updates on how you are doing.

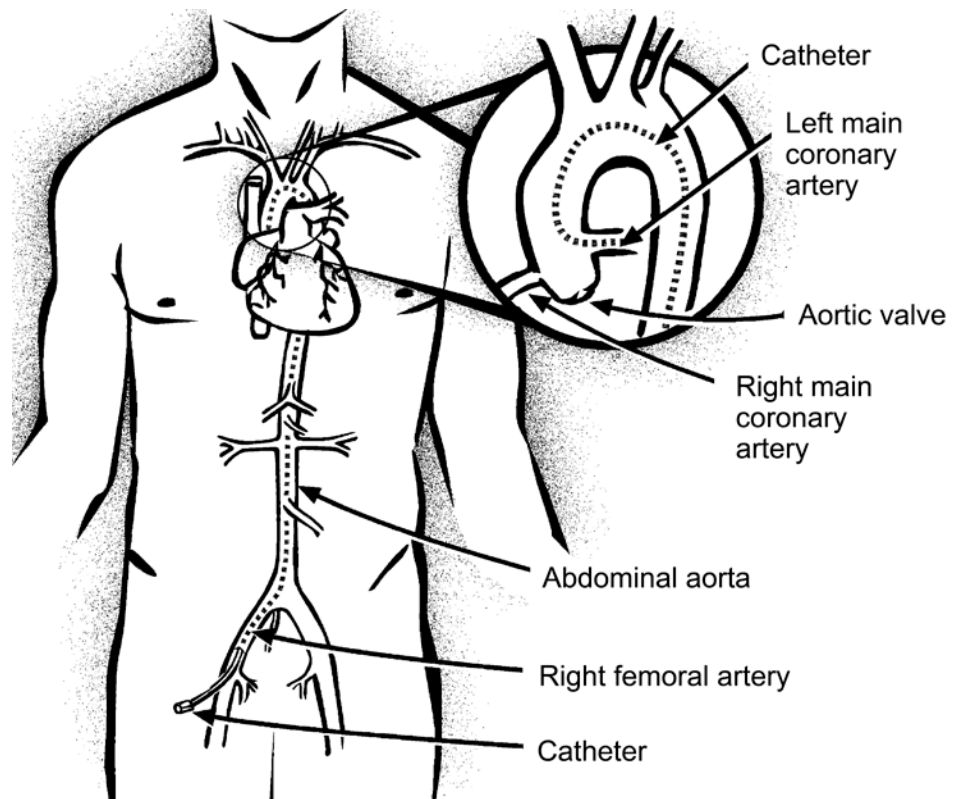
In the Catheterization Lab

- We will help you onto a special table. This table slides back and forth, and has a camera above it. This equipment helps your doctor see the blood vessels around your heart from different angles.
- We will attach *electrodes* to your chest to monitor your heart rhythms.
- We will drape your body in *sterile* (germ-free) paper sheets.
- A nurse will give you a *sedative* through your IV. This medicine will help you relax. You will be awake during the procedure but very sleepy.
- **Be sure to ask your doctor or nurse if you have any questions or do not understand part of the catheterization process.**

Cardiac Catheterization (Coronary Angiogram)

After you sign the consent forms and are ready to start the procedure:

- We will numb your groin or arm with an *anesthetic* (numbing medicine) called Lidocaine.
- We will insert a short tube (*sheath*) into one or both of these arteries:
 - Your *femoral* artery, a large blood vessel in your leg
 - An artery in your arm
- You may feel pressure, but you should not feel pain when the sheath is inserted. If you have any pain, please tell your doctor.
- Your doctor will guide a *catheter* (a long, flexible tube) through the sheath and to the arteries of your heart. You will not feel the catheter as it moves.
- Your doctor will inject contrast through the catheter and into your heart arteries. This dye will show if there are any blocks in your blood vessels. You will not feel these injections, but you may feel a warm flushing at times. This feeling is normal.
- If your doctor finds arteries that are narrowed or blocked, an *intervention* (treatment) may be needed to open the arteries.



Femoral artery catheterization sites

What to Expect During the Procedure

- You may feel pressure when the sheath is inserted, but you should not feel any pain.
- We will tell you what we are doing during each step. A nurse will be with you to help keep you comfortable.
- You may feel a fluttering in your chest. This is normal.
- If you have any discomfort, tell your doctor or nurse.

Interventions (Treatments)

If your doctor finds that plaque has narrowed your heart arteries, we may advise an intervention to improve blood flow to your heart. If you agree to have the intervention, it will be done in the catheterization lab after the angiogram.

The 2 most common interventions are:

- Placing a *stent*
- *Percutaneous transluminal coronary angioplasty* (PTCA)

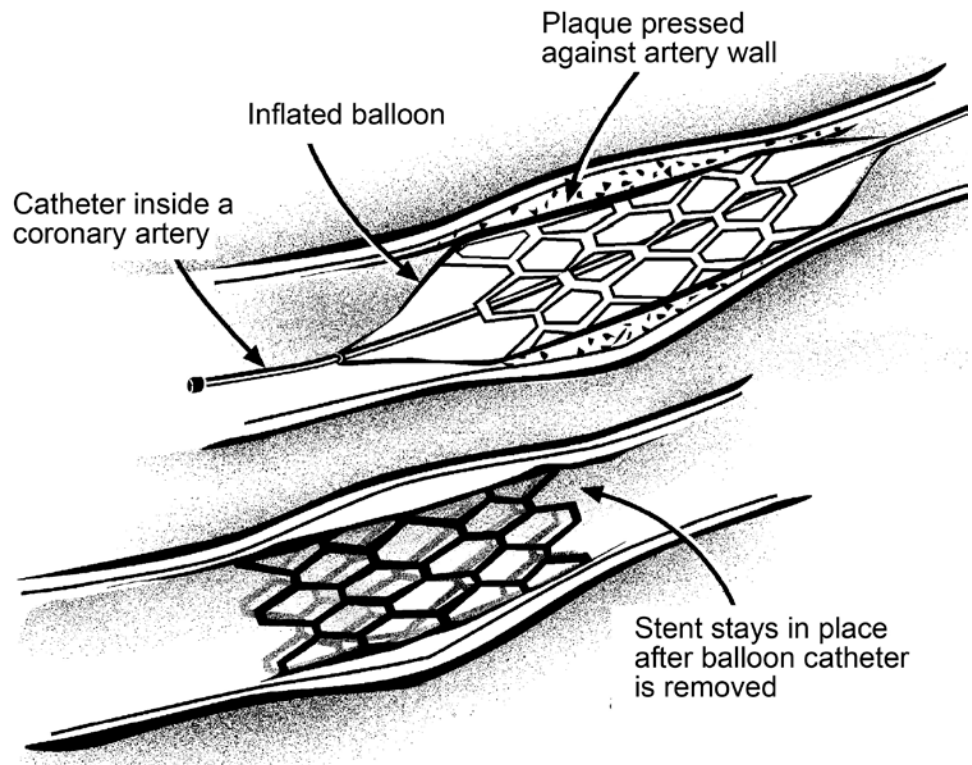
Stent

A stent is a small mesh tube that can be expanded with a balloon catheter. The balloon presses the plaque against the artery walls. This opens the artery and increases blood flow to your heart. This is the most common intervention to treat narrowing of a heart artery.

After the procedure, the catheter is removed. The stent stays inside your artery to keep the area open. (See drawings on page 8.)

Some stents are coated with a medicine that keeps scar tissue from forming and causing another blockage. These are called *drug-eluting stents*.

If you have a drug-eluting stent, you must take an *antiplatelet* medicine **and** aspirin for 1 year or longer. Antiplatelet medicines keep your blood cells from clumping together or clotting. These medicines help keep your stent open.

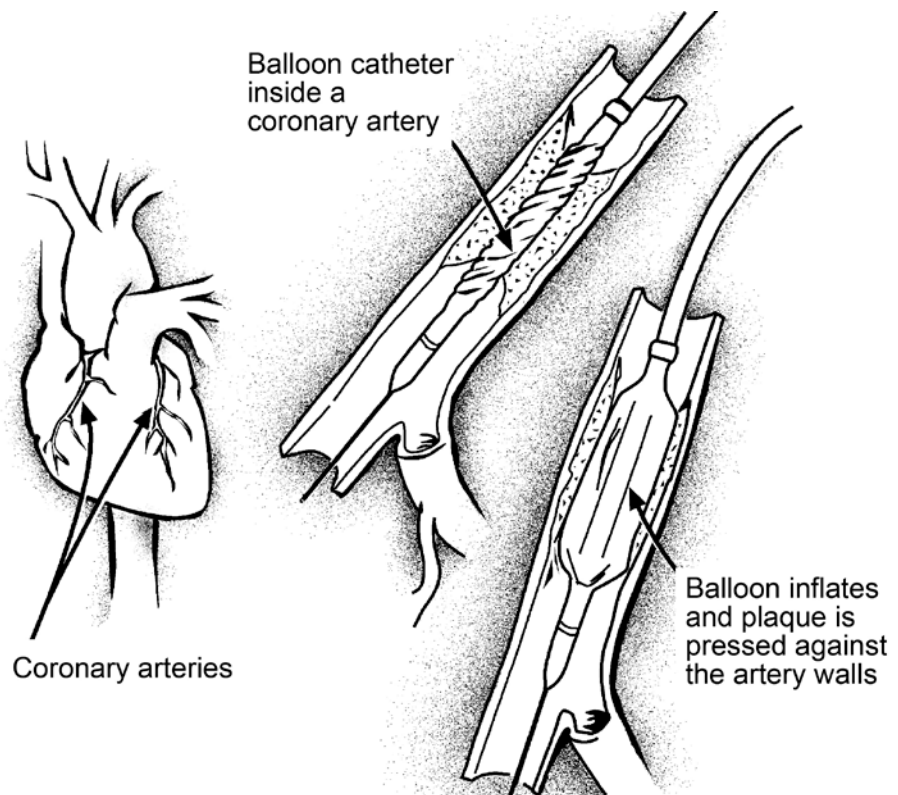


Stent placement in a coronary artery

Percutaneous Transluminal Coronary Angioplasty (PTCA)

In a PTCA, your doctor will:

- Insert a small wire into your artery through the catheter that is already in place.
- Place a balloon catheter over the wire and move it to the narrow place in your artery.
- Inflate the balloon for 20 to 60 seconds. The inflated balloon will press the plaque against the artery walls. This opens the artery and increases blood flow to your heart. (See drawings on page 9.)



Percutaneous transluminal coronary angioplasty (PCTA)

After Your Procedure

If You Have ONLY a Heart Catheterization

After your doctor gathers all the information needed, we will remove the catheter(s) and sheath. We will apply pressure to the insertion site to prevent bleeding.

We will then place a *sterile* (germ-free) dressing over the insertion site to keep the area clean. Your nurse will check the site often to make sure it is not bleeding.

Different types of devices may be used to close your artery and stop the bleeding. You will receive instructions for the device that you have.

Recovery After Catheterization

After the catheterization, you will be taken to Cardiac Procedures Recovery. If did not have an intervention procedure, you can expect to stay in Cardiac Procedures Recovery for your recovery time. Usually this is 2 to 6 hours, but it will depend on many things, including what size sheath was used in your procedure.

During recovery:

- You will need to lie flat. Your nurse will help you stay comfortable.

- **If an artery in your leg was used:** You must keep your leg straight for 1 to 6 hours.
- **If an artery in your arm was used:** We will place a band around your arm. The band helps close your artery and stop the bleeding. It will be in place for 1 to 2 hours. You must limit your arm use while the band is on and after it comes off. (See instructions on page 12, under “If the catheter was inserted in your arm.”)
- You will be able to eat as usual.
- You may be given pain medicines if you have discomfort lying flat.
- Your pulse, blood pressure, and dressing will be checked often during the first 3 to 4 hours after your procedure.

If You Also Have an Intervention

If you have an intervention after your catheterization, **you may need to stay overnight in the hospital.** Because you may not know ahead of time whether or not you will have an intervention, plan to stay in the hospital for at least 24 hours.

Discharge

Before you are discharged from the hospital:

- A doctor or nurse practitioner will examine your insertion site. They will also talk with you about the results of your procedure.
- If needed, we will adjust your medicines or diet. Your nurse will teach you about these changes and talk with you about your follow-up care.
- Ask questions if you do not understand what your nurse or doctor tells you.

If You Have ANY Sedation

Sedation can make you sleepy and make it hard for you to think clearly. Because of this:

- **A responsible adult must take you home.** You may not take a bus, shuttle, taxi, or any other transportation by yourself.
- **For 24 hours after your procedure:**
 - Do **NOT** drive. Make sure you have a responsible adult who can help you during this time.
 - Do **NOT** be responsible for the care of anyone else, such as children, pets, or an adult who needs care.
 - Do **NOT** drink alcohol or take drugs other than the ones your doctors prescribed or suggested.
 - Do **NOT** make important decisions or sign legal papers.

When You Get Home

Follow these instructions after you leave the hospital:

Activity

Starting **24 hours** after you are discharged, you may:

- Return to light activity
- Drive
- Shower

Some activity restrictions depend on whether the catheter was inserted in your groin or in your arm:

If the catheter was inserted in your groin:

- For **48 hours** after your procedure:
 - Do **NOT** do anything that puts stress on your puncture site. This includes housework, gardening, and many self-care tasks. Ask for help with any tasks that need to be done during this time.
 - You may go up and down stairs, but limit how much you do this.
- For **7 days** after your procedure:
 - Do **NOT** lift more than 10 pounds (4.54 kilograms). This includes pets, groceries, children, trash, and laundry. (A gallon of water weighs almost 9 pounds.)
 - Do **NOT** hold your breath, bear down, or strain when having a bowel movement.
 - Do **NOT** allow the puncture site to be covered by water. This means do not take a bath, sit in a hot tub, or go swimming.
- You may have a bruise at the insertion site. This is normal. It might spread down your leg over the next day. It may take **2 to 3 weeks** to go away.

If the catheter was inserted in your arm:

- For **48 hours** after your procedure:
 - **AVOID** lifting, pushing, or pulling with the affected arm.
 - **AVOID** bending, turning, or twisting the wrist of the affected arm.
 - Do **NOT** have your blood pressure taken on the affected arm.
- For **5 days** after your procedure:
 - **AVOID** heavy exercise that uses the affected arm.
 - Do **NOT** lift more than 5 pounds with the affected arm. (A 2-liter bottle of soda weighs more than 4 pounds.)
 - You may shower the day after your procedure, but do **not** take a bath, sit in a hot tub, or go swimming for **5 days**.
- It is normal to have a small bruise or lump at the insertion site. This will go away on its own.

Diet

You may resume eating your regular foods, unless your doctor or nurse advised you to change your diet. If you have questions about these changes, you can ask your primary care provider (PCP) for a referral to a dietitian. The dietitian can help you plan meals and snacks for your new dietary plan.

Pain Control

- You will most likely be sore for 1 to 2 days at the puncture site where the catheter was inserted.
- You may take acetaminophen (Tylenol) for pain relief. Follow the dosing instructions on the label.
- **For 5 days after your procedure:** Do **NOT** take anti-inflammatories such as ibuprofen (Advil, Motrin) or naproxen (Aleve, Naprosyn). They may cause bleeding.
- If your doctor prescribed aspirin for your heart, you may take it as usual. But do **not** take extra aspirin for pain control.

Site Care

- Keep the site clean and dry.
- You may remove the dressing 24 hours after your procedure.
- After you remove the dressing, gently clean the site with mild soap and water. Do **not** scrub or rub the area. Pat dry with a clean towel.

- For the next 3 days, watch for these signs of infection. Call the cardiologist who did your procedure if you see:
 - Redness around the site
 - Fever higher than 101.5°F (38.6°C)
 - Drainage at the site

When to Call for Help

If you have heavy bleeding or a lot of swelling, put pressure on the site and call 911 right away.

- **Call 206.598.6190 and ask for the Cardiology I Fellow on call to be paged if you have:**
 - **Drainage** from the site
 - A lot of **redness** around the site

Bleeding

- If you have light or moderate bleeding or swelling at the site, use clean fingers to apply pressure on it for 10 minutes.
 - If bleeding does not stop or swelling does not go down in 10 minutes, **call 911 right away**. Keep applying pressure until help arrives.
 - **If your catheter was placed in your arm:** If the bleeding stops or the swelling goes down, sit quietly for 2 hours. Do not bend the affected wrist. Call the cardiologist who did your procedure as soon as you can.

Other Concerns

Call the cardiologist who did your procedure if you have:

- Any of these **signs of infection**:
 - Redness
 - Fever higher than 101.5°F (38.6°C)
 - Drainage
 - Change in the bruise or lump
- **Numbness** in your arm or wrist, if a catheter was placed in your wrist
- **Severe pain** that is not relieved by acetaminophen (Tylenol)

Medicines After Your Procedure

- If you had a stent placed, you will take:
 - Aspirin to prevent blood clots in the artery where the stent was placed.
 - A blood-thinning medicine similar to aspirin that will help prevent blood clots. One of these is called clopidogrel (Plavix), but your cardiologist may prescribe a similar medicine with a different name.
- Resume all heart medicines you were taking before your procedure. Your primary cardiologist will review your medicines at your follow-up visit within 2 to 4 weeks after your procedure.
- For minor pain, you may take regular (325 mg) or extra strength (500 mg) acetaminophen (Tylenol). Do not take more than 4 gm (4,000 mg) in a 24-hour period.
- Keep taking your other prescribed medicines unless your doctor tells you otherwise.

Questions?

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

- **For general questions** weekdays from 8 a.m. to 5 p.m.: Call the Regional Heart Center at 206.598.4300.
- **For questions related to your procedure** weekdays from 6:30 a.m. to 8 p.m.: Call Cardiac Procedures at 206.598.7146. Ask to talk with a nurse.
- **For urgent concerns related to your procedure**, or if it is after hours or on a weekend or holiday: Call 206.598.6190 and ask to page the Cardiology I Fellow on call.

Follow-up Care

- Schedule a follow-up visit with your heart doctor (cardiologist) or primary care provider (PCP). **Be sure to keep this appointment.** Follow-up visits are usually 2 to 4 weeks after you leave the hospital.
- If you had a stent placed, the artery in your heart can become blocked again after the procedure. Watch for the same symptoms that you had before the procedure. Call your doctor right away if your symptoms return.

Your Notes and Questions
