

Brachytherapy and Drug-Coated Balloon Therapy

Treatments for in-stent restenosis

This handout explains brachytherapy and drug-coated balloon therapy. It includes how doctors diagnose and evaluate in-stent restenosis at University of Washington Medical Center (UWMC).

What is in-stent restenosis?

When narrowing first occurred in your heart artery, it was called *stenosis*. When it occurs after treatment, it is called *restenosis*.

A *stent* is a tube that is placed inside an artery that has narrowed. The stent helps keep the artery open.

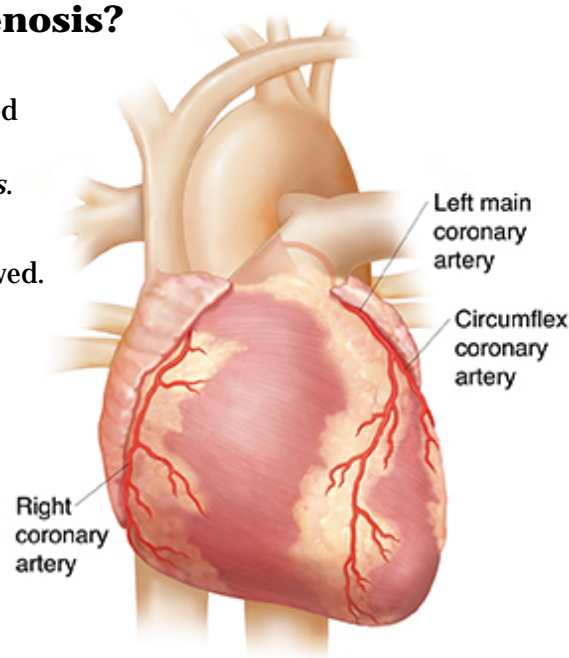
But, scar tissue can form inside a stent. This blocks or restricts blood flow. This is called *in-stent restenosis*.

What causes the scar tissue?

Scar tissue can grow if:

- Your body has a reaction to the stent material
- There are physical problems with the stent
- Your *dual antiplatelet therapy* medicines (aspirin and Plavix or another antiplatelet drug) are not working

Your in-stent restenosis is in one of your main heart arteries, where you had a stent placed to keep the artery open.



How do I know if I have in-stent restenosis?

If you have in-stent restenosis, you may feel like you did before your stent was placed. You may have:

- Chest pain or pressure
- Shortness of breath
- Fatigue (feeling very tired)

How is in-stent restenosis diagnosed?

We will use a *cardiac catheterization* to diagnose in-stent restenosis. This is the same type of procedure you had when your stent was placed.

How is it treated?

Most times, we treat in-stent restenosis by putting in another stent. This is called *re-stenting*.

But, restenosis can still occur after re-stenting. If it does, your doctor may suggest treatments like *brachytherapy* or *drug-coated balloon therapy*.

Brachytherapy

In brachytherapy, the scar tissue inside the stent is cleaned out. Then, a very small amount of radiation is placed inside the stent for a few minutes and then removed. The radiation kills the cells that make the scar tissue. This keeps the scar tissue from growing again.

Drug-coated Balloon Therapy

Drug-coated balloon therapy is a fairly new treatment. Studies show that it works almost as well as stents.

In this treatment, a balloon is used to put a drug inside your artery where there is restenosis. This drug changes the cells in the area, so that the scar tissue will not grow again. The balloon is then removed.

At this time, we use drug-coated balloon therapy only for the larger arteries. These include the *right coronary artery*, the *left main coronary artery*, and the *circumflex coronary artery* (see drawing on page 1).

Are these treatments right for me?

We will need to review your health records to find out if brachytherapy or drug-coated balloon therapy will work for you. We will ask your provider for these test results, or may ask you to have these tests, as needed:

- **Coronary angiogram.** In this test, *contrast* (X-ray dye) is injected into the blood vessels of your heart. We then take a series of X-rays that show whether you have blocked or restricted blood flow.
- **Nuclear stress test.** This test measures blood flow to your heart when you are at rest and while your heart is working harder, after you exercise or take a certain medicine.
- **Cardiac viability study.** This test helps us decide which arteries to open, if you have many heart arteries that are blocked.

How can these treatments help?

The goals of brachytherapy and drug-coated balloon therapy are to:

- Prevent restenosis in the treated stent in the future

- Ease your symptoms and improve your quality of life
- Improve your ability to exercise
- Improve your heart function

How well do these therapies work?

Brachytherapy or drug-coated balloon therapy prevent in-stent restenosis from coming back in about 85% of people (85 out of 100 people). If the problem does come back after one of these therapies, it happens within 1 year after the treatment.

What are my next steps?

Your primary care provider (PCP) or your *cardiologist* (heart doctor) will refer you to Cardiac Procedures at UWMC. Our Complex Coronary Team will work with your doctors to plan your care and treatment.

Our Complex Coronary Team will review your health records and test results that you or your provider sent us. We will then set up a time for you to meet with a member of our team. This meeting is called a *consult*.

At your consult, we will talk about your treatment options. We will also explain the risks and benefits of these treatments.

What are the risks of these procedures?

The risks of brachytherapy and drug-coated balloon therapy are like the risks of other heart procedures. They include:

- Bleeding where the doctor accessed the artery in your groin or arm
- Bleeding or damage to a blood vessel at the access site on your skin
- Kidney damage from the contrast
- Small tear in the inner lining of the artery
- Heart attack or stroke
- Death

How do I prepare for my procedures?

- Write down all the medicines you are now taking. Bring this list with you to your clinic visit. We will review them and tell you which ones to take and not take on the day of your treatment.
- At your clinic visit, be sure to ask any questions or share any concerns you have about the treatment.
- 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 options for you and your family.

- **If you are taking blood-thinning medicines:** Right before their treatment, most patients need to hold their morning or evening dose of these medicines. If you are taking warfarin (Coumadin) or another blood-thinning medicine, ask our clinic, your anticoagulation clinic, or your cardiologist about holding your medicine before your procedure.
- **If you are taking diuretics, insulin, or oral diabetes medicine:** Get detailed instructions from one of our team members about if and when to stop taking these medicines.
- **If you have children or pets:** Make plans for someone to take care of them while you are away from home. You will stay 1 night in the hospital after your treatment so that we can monitor you.
- **Arrange for someone to drive you home from the hospital and stay with you for 6 hours or longer.** If you leave the hospital the same day as your procedure, you **must** have a responsible adult take you home and stay with you for at least 6 hours. This person must be with you in the Cardiac Procedures Unit **before** you can leave the unit.
- If you have not received detailed instructions about your treatment or if you have any other questions or concerns, call our Complex Coronary Nurse at 206.598.0906.

Day Before Your Procedure

- For 24 hours before your treatment, do **not** eat or drink anything that contains caffeine. This includes coffee, tea, energy drinks, chocolate, and some supplements.
- Pack an overnight bag.
- **Do not eat or drink anything after midnight.**
- If you need to take medicines after midnight, take them with **only** a small sip of water.

Procedure Day

At Home

- You may take your usual medicines with **only** small sips of water, unless you have been told otherwise.
- If you use a CPAP machine for sleep apnea or breathing problems, bring it with you to the hospital.
- Bring with you a list of medicines you are now taking.

At the Hospital

- 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.

- **Check in at the Admitting and Reception windows.** This office is down the hall to the right of the Information Desk. Tell them that you are checking in for your heart procedure. 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, go to Cardiac Procedures on the 2nd floor:

- From Admitting, go back to the lobby and turn left. Go along the main hall 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**. A nurse will answer and 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 for your heart procedure and for the radiation treatment.
 - The procedure 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 you should know about them. Your provider will talk with you about these risks and side effects before asking for your consent to do the procedure.
 - Please ask any questions you have before signing the consent forms. You can also decide not to sign the forms. We will not do the procedure 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.

What can I expect after my procedure?

After your procedure, you will be taken back to the Cardiac Procedures Recovery Unit where you will begin to recover. Expect to stay in the recovery unit at least 1 to 2 hours after your procedure. When you are ready, you will be transferred to the 4-Southeast unit.

During recovery:

- You must lie flat. Your nurse will help you stay comfortable. You may be given pain medicines if you have any discomfort from lying flat.
- You will be able to eat as usual.
- We will check your pulse, blood pressure, and dressing often during the first 3 to 4 hours after your procedure.
- You will stay overnight on 4-Southeast so that our nurses can monitor you closely.

Discharge

Before you leave (are discharged from) the hospital:

- A doctor or nurse practitioner will check your insertion site. They will also talk with you about the results of your procedure.
- If needed, your medicines or diet will be adjusted. 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 Had 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 after your procedure.** You may not take a bus, shuttle, taxi, or any other transportation by yourself.
- **For the next 24 hours:**
 - 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 advised.
 - Do **NOT** make important decisions or sign legal papers.

When You Get Home

Follow these instructions after you go home from the hospital:

Activity

- **Starting 24 hours** after you are discharged from the hospital, you may:
 - Return to light activity
 - Drive
 - Shower
- For **48 hours** after your treatment:
 - 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 treatment:
 - Do **NOT** lift anything that weighs 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.

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 area clean and dry.
- You may remove the dressing or bandage 24 hours after your procedure.
- For the next 3 days, watch for signs of infection. Call the cardiologist who did your procedure if you have:
 - Redness around the site
 - Fever higher than 101.5°F (38.6°C)
 - Drainage from the site
- After you remove the dressing, gently clean the site with mild soap and water. Do **not** scrub or rub the area. Gently pat dry with a clean towel.
- You may have a bruise where the catheter was inserted. This is normal. If the procedure was through your groin, it may spread down your leg. It may take 2 to 3 weeks for the bruise to go away.

When to Call for Help

If you have sudden, heavy bleeding or a lot of swelling that you cannot control, apply firm pressure to the site and call 911.

Call 206.598.6190 and ask to page the Cardiology I Fellow on call 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 the site 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.

Other Concerns

Also call the cardiologist who did your procedure if you have:

- **Severe pain** that is not relieved by acetaminophen (Tylenol)
- Any of these **signs of infection**:
 - Redness around the site
 - Fever higher than 101.5°F (38.6°C)
 - Drainage from the site
 - Change in the bruise or lump

Medicines

After your procedure, you will most likely:

- Keep taking your prescribed medicines unless your doctor tells you not to.
- Take aspirin to prevent blood clots in the artery that was treated.
- Take a blood-thinning medicine. This may be clopidogrel (Plavix), prasugrel (Effient), or ticagrelor (Brilinta). Your doctor will tell you which one is best for you.
- Resume all of the heart medicines that you were taking before your treatment. Your primary cardiologist will review your medicines at your follow-up visit within 2 to 4 weeks after your treatment.
- For minor pain, you may take acetaminophen (Tylenol), either regular (325 mg) or extra strength (500 mg). Do **not** take more than 4 gm (4,000 mg) in a 24-hour period.
- **Carry a list of your medicines with you at all times. Bring all your medicines with you whenever you see your doctor**

Follow-up

We will report to your primary cardiologist about your treatment and the outcome. You will need to set up a follow-up visit with your cardiologist within 2 to 4 weeks after your treatment.

Your providers will also advise you to take steps to reduce your risk for heart problems. These include:

- Managing blood sugar (diabetes), lipids (cholesterol), and blood pressure (hypertension)
- Quitting smoking, if you smoke
- Losing weight, if needed, and staying at a healthy weight
- Exercising regularly
- Eating healthful foods
- Making sure you are taking the medicines you need, in the best doses for you

After your procedure, the artery in your heart can become blocked again. Always watch for the same symptoms that you had before the procedure.

Call your doctor right away if your symptoms return.

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 206.598.0906 and ask to speak with the Complex Coronary Nurse.

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 speak 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.