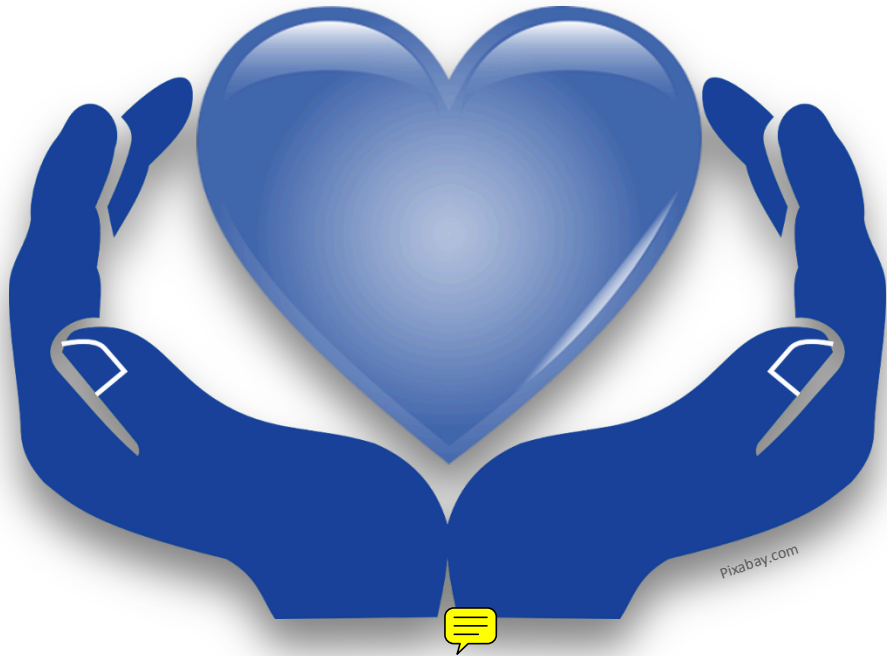


Having a Cardiac Catheterization and Possible Treatment



Working together to improve access to health care for Northerners



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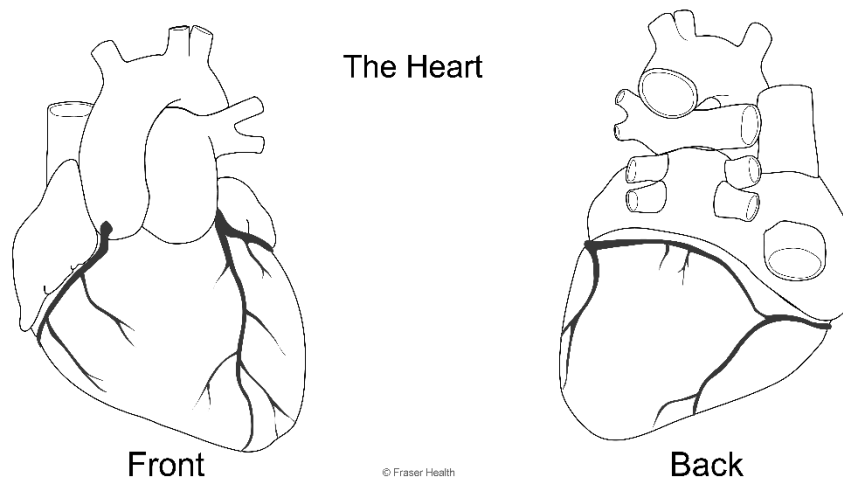
Just a Note

Throughout this booklet, you might come across medical words you have not heard before. Page 28 in the Appendix tells you how to pronounce some of the main ones.

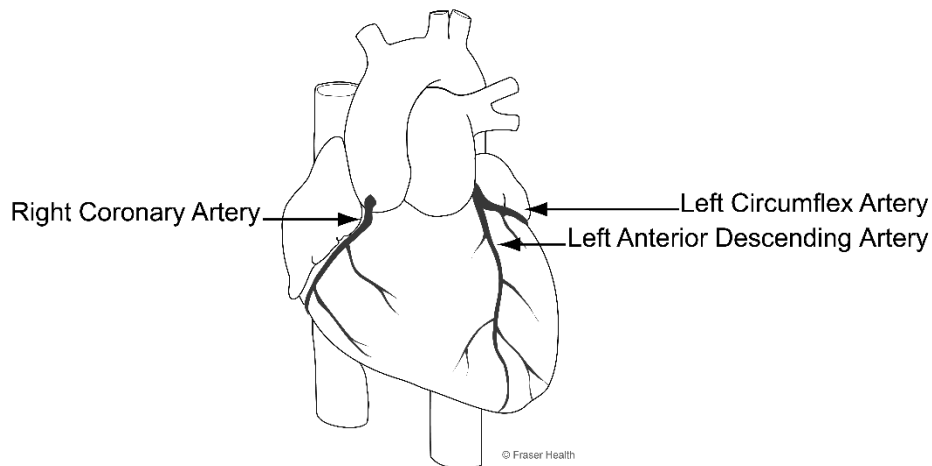
How your heart works

Your heart is a muscle about the size of a large fist. Its only job is to pump blood through your body. Blood carries the oxygen and nutrients that your body needs.

Because your heart is a muscle that is constantly working, it needs its own blood supply. The heart's arteries are called coronary arteries.



You have three main arteries that supply the heart. One for the right side of your heart and two for the left. Each branches off into smaller arteries, spreading out over and into the heart muscle.



Why you are having a cardiac catheterization

Cardiac catheterization is a medical procedure that helps doctors to see what treatment you might need. It is most often done to get more information about your heart and coronary arteries. It can also be done to treat the heart condition or find out if you need heart surgery.

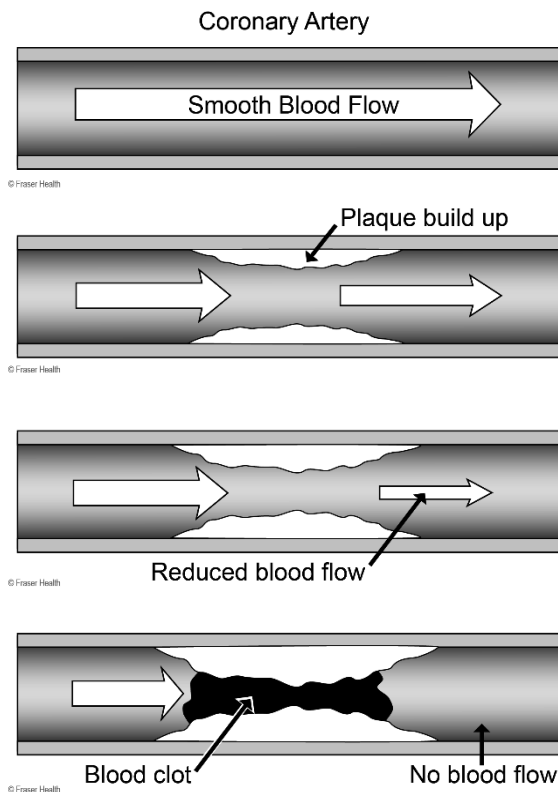
The doctor suspects you might have a problem with the blood flow in your coronary arteries. This is called coronary artery disease.

Coronary artery disease is when artery walls become narrow or blocked.

This is usually from a build-up of fat, cholesterol, and other materials. Together, they form plaques.

Over time, the plaques get larger, further narrowing the artery.

The blood flow can become so slow that blood clots form, blocking the artery completely.



Your heart tells you when it is not getting the oxygen it needs.

Common signs can include:

- Chest pain
- Chest pressure or heaviness
- Arm pain or heaviness
- Tightness in the throat, neck and/or jaw
- Shortness of breath
- Feeling sick to the stomach or feeling of indigestion
- Sweating

You might have experienced other signs than these. Everyone is different.

What is a cardiac catheterization?

This is a procedure where a heart specialist (heart doctor or cardiologist) injects a special dye into your arteries.

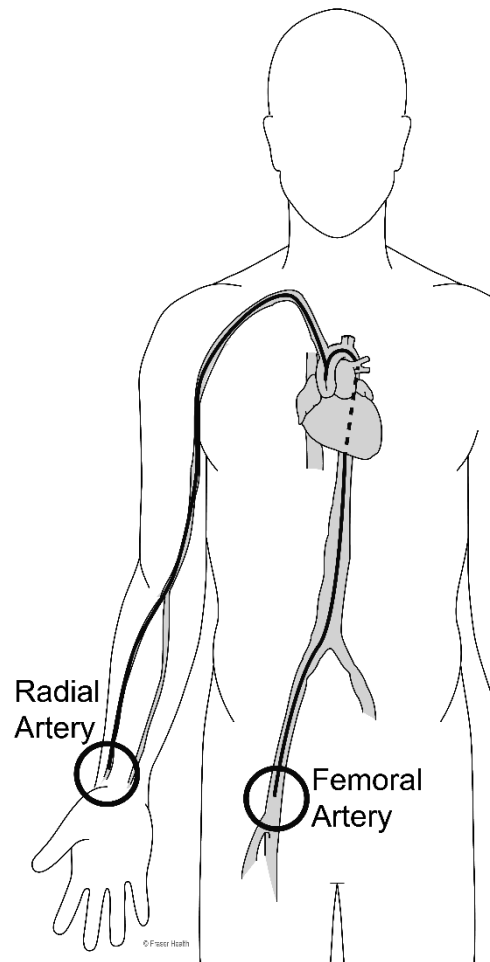
This doctor uses an artery in the wrist (radial artery) or groin (femoral artery) to guide a tiny flexible catheter up into the heart.

Dye is injected through the catheter.

An x-ray camera takes movies as the dye flows through your heart and coronary arteries.

The procedure can show:

- Any narrowing or blockages in coronary arteries
- How the heart valves are working
- How well the heart is pumping blood to the rest of the body



You might also hear cardiac catheterization called:

- Coronary angiogram or 'angio'
- Heart catheterization or heart 'cath'
- Heart or cardiac dye procedure
- Angiography

Are there any risks to this procedure?

As with any medical procedure, there is a chance of a complication.

Possible problems:

- Infection
- Bleeding
- Irregular heart beats
- Allergic reaction to the x-ray dye

Life-threatening complications are possible, but rarely happen.

Your doctor will explain the risks before you have the procedure. Ask all the questions you want.

Where will you have the procedure?

Unfortunately, cardiac catheterization is not available in Northern Health hospitals. We will be moving you to one of the Heart Centre Hospitals in the province.

Heart Centre Hospitals in the province:

Vancouver	St. Paul's Hospital www.providencehealthcare.org	
	Vancouver General Hospital www.vch.ca	
Kelowna	Kelowna General Hospital www.interiorhealth.ca	
Victoria	Royal Jubilee Hospital www.viha.ca	
New Westminster	Royal Columbian Hospital www.fraserhealth.ca	

See 'Travelling to the Heart Centre Hospital' on page 19 in the Appendix.

What can you expect at the Heart Centre Hospital?

You are taken to the Heart Centre in the hospital. Once there, you go to the Cardiac Catheterization Lab. After the procedure, you go to the recovery area. You might be kept in the hospital overnight on the heart unit or leave the hospital the same day, depending on the results from the procedure.

Before the procedure

- You meet the heart specialist (cardiologist) who reviews with you how the procedure is done. The specialist checks your health record, including your chest x-ray and electrocardiogram (heart tracing or ECG). You might have these procedures done again along with other procedures such as blood tests.
- They ask you about your health history, medical conditions, medications, and allergies.

Tell them if you are allergic to shellfish, iodine, or x-ray dye. For safety reasons, you will probably be asked about allergies a number of times.

We send a record of the medicines we have been giving you to the Heart Centre Hospital. Tell them about the other medicines you normally take at home such as vitamins, herbal supplements, and other medicines you buy at the drugstore.

- If you don't have one yet, they start an intravenous (I.V.) in one of your arms.
- You might watch a video about cardiac catheterization.
- They tell you when you must stop eating and drinking before the procedure.
- You (or a nurse) uses clippers to remove hair from a wrist and/or groin.

- Because you are awake during the procedure, they might give you medicine to help you relax.
- Just before you go for the procedure, they ask you to empty your bladder (go pee).

In the Cardiac Catheterization Lab

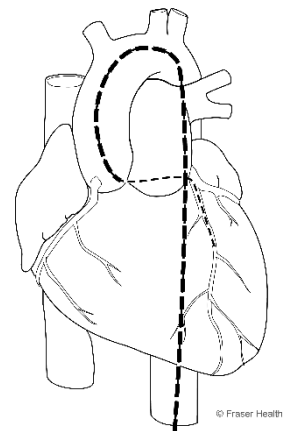
- You lie on an x-ray table.
- Everyone wears operating room clothes. They prepare the equipment around you and connect you to a heart monitor and blood pressure machine.
- They clean the skin of the wrist and groin with antiseptic. **Do not touch these areas once cleaned.**
- They place sterile (germ-free) sheets over you.
- The heart specialist injects numbing medicine to ‘freeze’ the area. This will sting for a few moments until the area gets numb.

The heart specialist decides whether to use the:

- femoral artery in your groin
- radial artery in your wrist

- Once frozen, the heart specialist makes a small cut in the skin (called the puncture site).
- The tiny, flexible, hollow tube (catheter) is inserted through the puncture site into the artery.
- Guidewires and smaller catheters are inserted through the main catheter.

Using live images on the x-ray screen, they are guided into your coronary arteries.



Example using the femoral artery

- Small amounts of x-ray dye are injected into each coronary artery. The dye makes your arteries easier to see.
As the dye is injected, you might feel a warm sensation through the middle part of your body. This is normal.
- They might ask you to hold your breath a few times and/or ask you to give a deep cough.
- The procedure takes about 45 minutes. While it is normal to feel some discomfort during the procedure, tell them right away if you feel unwell, have any discomfort, or have any chest pain. They will treat it right away.
- Depending on what the heart specialist sees, you have another procedure (see '**What's next? Possible Treatments**', page 10)

After the procedure

- All the tubes are removed.
- They put pressure over the puncture site to prevent or control any bleeding. They might use a pressure bandage or a pressure device to do this.
- You move to the recovery area where nurses continue to monitor your heart beat, blood pressure, pulse, and puncture site.
If your femoral artery is used, they also check your pulses and blood flow in your feet.
If your radial artery is used, they also check your pulses and blood flow to your arm and hand.
- You rest in bed for at least 2 hours. They tell you how to safely move in the bed and what position you need to stay in to prevent any bleeding or problems around the puncture site.
You will need to keep your leg or arm straight for a number of hours.
Always ask your nurse for help if you want to change your position in the bed or need to go to the bathroom.

- **Tell your nurse right away if you notice:**
 - discomfort or pain in your chest, jaw, or arms
 - shortness of breath
 - back pain
 - dizzy or lightheaded
 - warmth, wetness, pressure or sharp pain around the bandage of the puncture site
 - coldness, numbness, or pain in your leg, arm, or hand

- They tell you when you can drink and eat. Do not drink or eat until then.

Once they tell you that you can drink, they ask you to drink lots of clear fluids. Sometimes they leave your intravenous (I.V.) in place and give I.V. fluids. These fluids help clear the x-ray dye out of your body through your kidneys.

- The heart specialist reviews the results of your procedure with you and talks with you about what treatments, if any, are best for you. They give you a heart diagram with the results to take home.
- You stay in the recovery area for about 4 to 6 hours. After this time, they either move you to a nursing unit in the hospital where you stay overnight or they call your family or friend to pick you up.

What next? Possible treatments

Depending on what the procedure shows, you might or might not need treatment.

If your coronary arteries are normal, you might not need any treatment at this time.

If your coronary arteries show signs of plaque or blockages, there are 4 possible treatments.

1. Medication to control your symptoms
2. Opening of blocked arteries
3. Heart surgery
4. A combination of these treatments

1. Medications to control your symptoms

The heart specialist might add, stop, or adjust medications as a way of treating your heart condition.



For '**Common Heart Medications**', see page 18 in the Appendix.

Take time to learn what medications you need to take, how to take them, and why it is important that you take them.

2. Opening of blocked arteries

The procedure is called '**percutaneous coronary intervention**'.

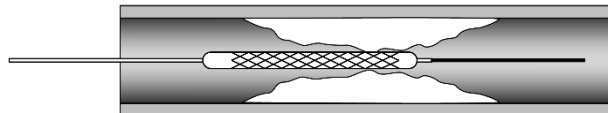
'Percutaneous' means through the skin. Narrowed or blocked coronary arteries can be opened using this treatment. No surgery is needed.

If they find one or more narrowed or blocked arteries during your cardiac catheterization, this treatment might be done right then or done another day.

How it is done

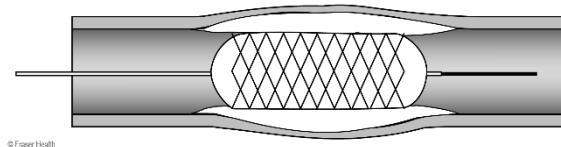
Like the cardiac catheterization, they use an artery in the groin, arm, or wrist (if during your cardiac catheterization, they use the same artery).

A small catheter is guided up into the coronary arteries.

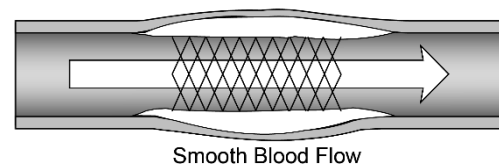


On the end of the catheter is a tiny deflated balloon and a collapsed wire mesh tube called a stent.

Once at the narrowed or blocked artery, the balloon is inflated for a few minutes. This compresses the plaque against the wall of the artery, making more room for blood to flow.



The stent stays expanded in the artery after the balloon is deflated and keeps the artery open.



Stents are usually made of stainless steel. Some are coated with medications that are slowly released over time to help keep the artery from blocking again. Your heart specialist inserts the type of stent that is best for you.

Stented arteries can narrow or block again (called stenosis or re-stenosis). You will need to take medication to help prevent this from happening (called antiplatelet medication – see '**Common Heart Medications**' on page 18 in the Appendix).

3. Heart surgery

The heart specialist might tell you that the best way to treat your coronary artery disease is to do heart surgery. This type of heart surgery is called '**Coronary Artery Bypass Graft**' surgery. You might here it called 'CABG', which sounds like 'cabbage'.

The surgery involves rerouting or bypassing the clogged coronary arteries. A heart surgeon takes a healthy blood vessel from another part of your body (such as from your leg) and uses it to make a bypass around the blocked coronary artery.

The surgery is either done by cutting down the middle of your breast bone (sternum) or by cutting between your ribs to get to the heart.

You are in the hospital for 4 to 6 days then recover at home.

Going home after cardiac catheterization

Either you leave the Heart Centre Hospital the day of your procedure or you stay overnight in the hospital and leave the next day.

You need a family member or friend to pick you up from the Heart Centre Hospital.

Even if you came to the Heart Centre Hospital by air ambulance and ambulance, you need to arrange for your travel back home.

When leaving the same day as the procedure

The Heart Centre Hospital will ask you to stay near the hospital at least one night. You need to find a place to stay overnight. Each Heart Centre Hospital's web site lists hotels close by.

This is for your safety. They give you medicines to relax and maybe something for pain. Also, there is a small chance you could start bleeding from your puncture site.

Note

If you have any worries or concerns about staying near the Heart Centre Hospital overnight or how best to return home, ask to speak to our social worker or the social worker at the Heart Centre Hospital.

Caring for yourself after you leave the Heart Centre Hospital

Puncture site care

A bandage covers your puncture site when you leave the Heart Centre Hospital. Leave it in place for 24 hours after the procedure.

You might have a small lump at the puncture site. This is normal. The lump will slowly get smaller and should go away over the next 2 to 8 weeks.

Gently clean around the puncture site each day with soap and water. Gently pat the area dry.

Keep the area clean and dry, except when showering.

No lotions, creams, powders, or ointments on the puncture site.

Pain

You will have some swelling and bruising around the puncture site. This goes away over the next few weeks.

You might have some tenderness or mild pain at the puncture site for a few days. The Heart Centre Hospital should give you instructions for how to manage this pain. You might get a prescription for pain medicine.

You might have some mild chest discomfort. It is not unusual and can be from the procedure. It should go away within 24 hours. Take your heart medications as directed.

Bathing

You can take a shower 24 hours after the procedure.

You can take the bandage off before your shower or take it off while in the shower. Moisture helps to loosen the tape.

For the first 5 to 7 days:

- × **No** baths
- × **No** hot tubs or jet tubs
- × **No** swimming

Activity

Rest and take it easy for the first few days after the procedure. Expect to feel tired and weak the first day.

Unless the heart specialist has told you not to, go for easy walks. If you need to climb stairs, go up and down more slowly than you would normally. Take your time.

For the first 5 days:

- × **No** heavy lifting (nothing over 5 pounds or 2 kilograms)
- × **No** strenuous activity. This includes most sports such as jogging, golfing, and cycling.
- × **No** sexual activity.

If you had a...

cardiac catheterization

stent(s) put in place

heart attack

No driving or operating machinery for

...at least 24 hours after the procedure

...at least 48 hours after the procedure

...as long as your heart specialist tells you

If you want to know when you can return to work, talk to your family doctor or heart specialist. When you go back to work depends on the type of job you have (such as physically demanding) or if you had a heart attack.

When to get help

Call your family doctor or heart specialist **right away** if you notice any of the following:

- increased bruising or swelling around the puncture site – signs of blood leaking from the puncture site
- pain, redness, swelling, or drainage from the puncture site, or a fever over 38.5°C (101.3°F) – signs of infection
- coldness, numbness, or ‘blue’ skin of the foot or hand on the side of the puncture site – signs of blocked blood flow

If you notice any **bleeding from the puncture site**:

- Lie down flat.
- Cover the puncture site with a clean cloth.
- Press down firmly over the puncture site for 5 to 10 minutes.
- If the bleeding has not stopped after 10 minutes, call **9-1-1**.
- If the bleeding stops, remove the wet bandage and put on a clean, dry bandage.

Call 9-1-1 or ask someone take you to the nearest Emergency right away if you have any of the following:

- chest pressure or pain that does not go away with rest and heart medication
- pain in one or both arms, the back, or jaw that does not go away with rest and heart medication
- shortness of breath with or without chest discomfort

Never ignore the signs such as chest pressure, chest pain, or any other signs similar to what first brought you to the hospital.

Checklist for when you leave the Heart Centre Hospital

	Yes	No
I have a plan for how I will get home from the Heart Centre Hospital.	<input type="checkbox"/>	<input type="checkbox"/>
I have a copy of my heart diagram.	<input type="checkbox"/>	<input type="checkbox"/>
I have a copy of the instructions for how to look after myself and my puncture site.	<input type="checkbox"/>	<input type="checkbox"/>
I know what medications I am to take, how to take them, and why it is important for me to take them.	<input type="checkbox"/>	<input type="checkbox"/>
I have enough medication to last until I get home.	<input type="checkbox"/>	<input type="checkbox"/>
I have a copy of my prescriptions.	<input type="checkbox"/>	<input type="checkbox"/>
My prescriptions were faxed to my pharmacist.	<input type="checkbox"/>	<input type="checkbox"/>
I have an appointment to see my family doctor within the next week.	<input type="checkbox"/>	<input type="checkbox"/>
I need to make an appointment to see a heart specialist.	<input type="checkbox"/>	<input type="checkbox"/>
I have been registered for Cardiac Rehabilitation Program.	<input type="checkbox"/>	<input type="checkbox"/>
If not, I have called to register myself by calling the NORTH Clinic at 1-855-565-7373	<input type="checkbox"/>	<input type="checkbox"/>
I have had all my questions answered before I leave the hospital.	<input type="checkbox"/>	<input type="checkbox"/>
If 'No', I will ask my nurse or doctor these questions before I leave.		

Common Heart Medications

Drug Name	Uses
ASA (Aspirin®) enteric coated	Antiplatelet: reduces chances of a heart attack, prevents clots in stents and blood vessels Do not stop taking without asking your heart specialist or family doctor.
Clopidogrel (Plavix®) Ticagrelor (Brilinta®) Apixaban (Eliquis®)	Antiplatelet: reduces chances of a heart attack, prevents clots in stents and blood vessels Do not stop taking without asking your heart specialist or family doctor.
Nitroglycerin	Vasodilator: treats heart pain (angina) by opening or dilating coronary arteries
Ramipril (Altace®) Perindopril (Coversyl®) Trandolapril (Mavik®)	Ace Inhibitor: reduces chances of a heart attack, improves heart pumping function, protects the kidneys, decreases blood pressure
Valsartan (Diovan®) Candesartan (Atacand®) Telmisartan (Micardis®) Losartan (Cozaar®)	ARB: reduces chances of a heart attack, improves heart pumping function, protects the kidneys, decreases blood pressure
Metoprolol (Lopressor®) Bisoprolol (Monacor®) Carvedilol (Coreg®)	Beta Blocker: reduces chances of a heart attack, improves heart pumping function, decreases blood pressure, slows heartbeat, prevents angina
Atorvastatin (Lipitor®) Simvastatin (Zocor®) Rosuvastatin (Crestor®)	Statin: reduces cholesterol level, reduces chances of a heart attack
Furosemide (Lasix®)	Diuretic (water pill): Removes extra fluid from the body, decreases swelling in feet and legs, and reduces fluid in lungs
Amlodipine (Norvasc®)	Calcium Channel Blocker: decreases blood pressure, slows heartbeat, prevents angina

Travelling to the Heart Centre Hospital

We transfer you to the Heart Centre Hospital by air ambulance.

This service is free for B.C. residents with a valid BC CareCard or BC Services Card.

Family or friends are not usually allowed to go with you in the airplane because there is very little extra space. They will need to arrange their own travel to the Heart Centre Hospital.



Photo of BC Air Ambulance - exterior



Photo of BC Air Ambulance - interior

(Preparing for Coronary Angiogram, UHNBC)

What to bring with you

- BC Services Card **or**
BC CareCard and photo identification such as a driver's license
- Health Benefits card(s) such as Band care, Extended Health, Veterans Affairs
- Credit card or debit card to pay the expenses for the return trip home
- One small bag with personal items such as toiletries, loose-fitting clothing, comfortable non-slip shoes, coat (for your return trip)
- Personal medications** in their original packaging
- Glasses or contact lenses and case
- Hearing aid(s) and spare batteries
- Dentures and case
- Mobility aids such as cane or walker
- _____
- _____

Label bag and cases
with your name

Do not bring other valuables, jewellery, or cash.

****Why bring your own medications?**

It might take a few days for you to get home after the procedure. Make sure you have enough of your medications to last the trip home.

Also you might be taking a medication that the hospital does not have. In this case, yours would be used. Always check with your nurse before taking any of your own medications.

Returning from the Heart Centre Hospital

Once you have been cleared to return home, you and your family need to arrange to travel back to your home community. This includes paying for places to stay, travel by vehicle or by air, and any other expenses. These expenses can be claimed as medical expenses on your taxes depending on how far you have to travel. Keep all your receipts and record the number of kilometres you travel.

Remember, you must travel with a family member or friend.

If you are having trouble arranging for someone to travel with you or you are having trouble arranging travel, speak to your nurse or social worker.









Possible sources for help to pay for travel

Travel Assistance Program (TAP BC)	 1-800-661-2668  www2.gov.bc.ca Search 'travel assistance'
Ministry of Social Development & Social Innovation	 1-866-866-0800  www.gov.bc.ca/hsd
First Nations, Inuit, and Aboriginal Health	 Call your local band office
Veterans Affairs	 1-866-522-2122  www.veterans.gc.ca
Hope Air	 1-877-346-HOPE (4673)  www.hopeair.ca
Extended Health Plans	 Call you plan provider or your employer





Options for Return Travel

By air

Various airlines offer daily flights into Prince George. A number of airlines also fly to many other northern communities.

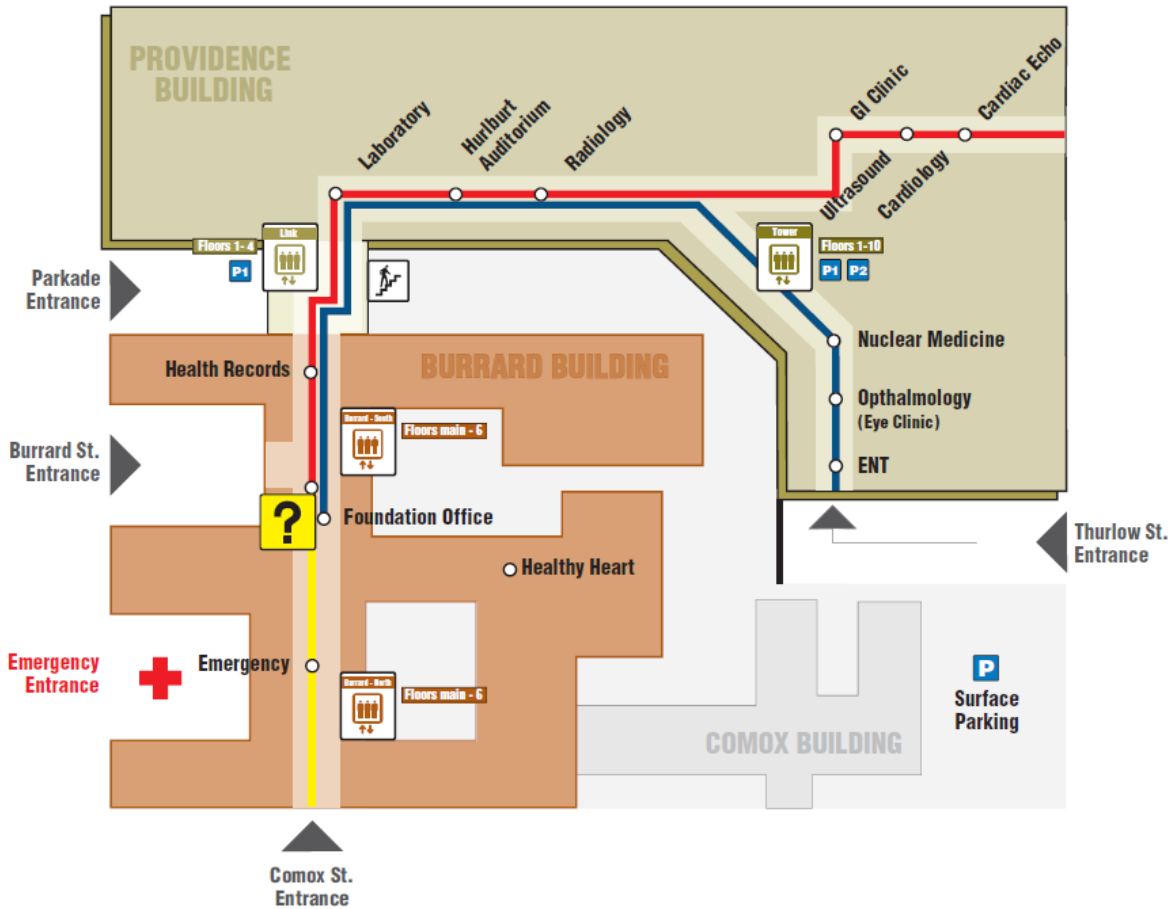
WestJet	 1-888-937-8538  www.westjet.com
Air Canada	 1-888-247-2262  www.aircanada.com
Central Mountain Air	 1-888-865-8585  flycma.com
Pacific Coastal Airlines	 1-800-663-2872  www.pacificcoastal.com

By bus

Greyhound Bus – offers service throughout B.C.	 1-800-661-8747  www.greyhound.ca
Northern Health Connections Bus – offers low cost bus travel – must be a B.C. resident with a valid BC CareCard or BC Services Card – must have proof of being in the hospital such as your hospital bracelet <u>or</u> a copy of your heart diagram given to you by the Heart Centre Hospital	 1-888-647-4997  nhconnections.ca Go to ‘Book a Trip’ for schedule, prices and locations Go to ‘Travel Alternatives’ for travel information to remote areas

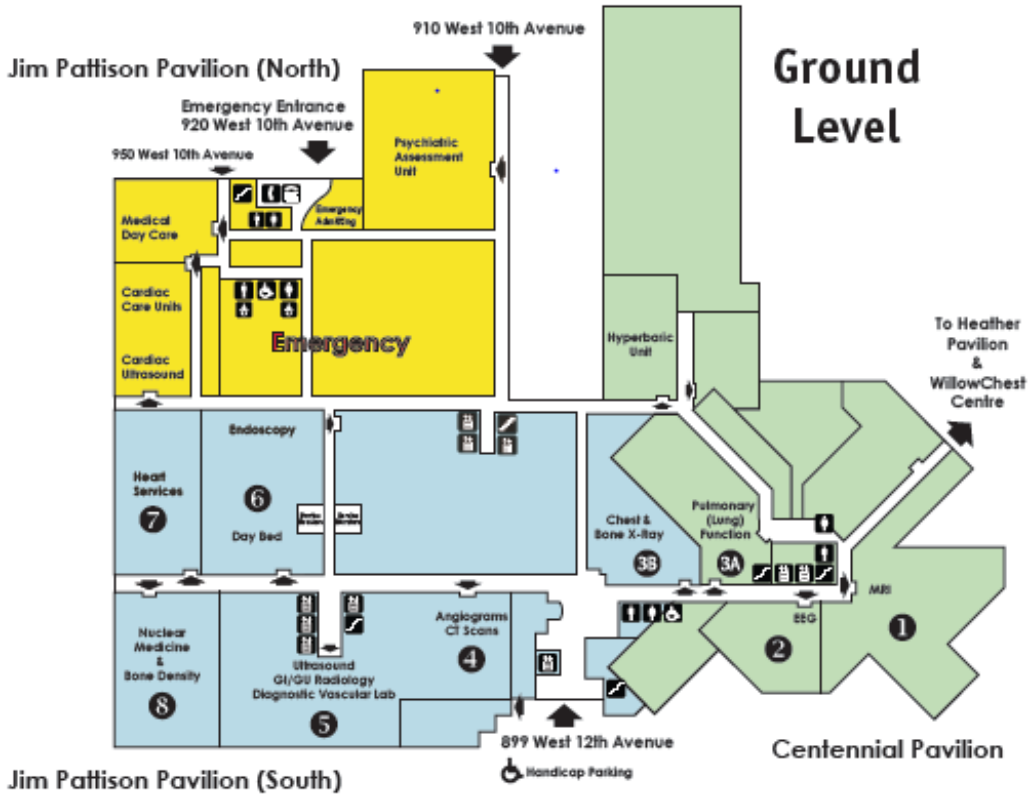
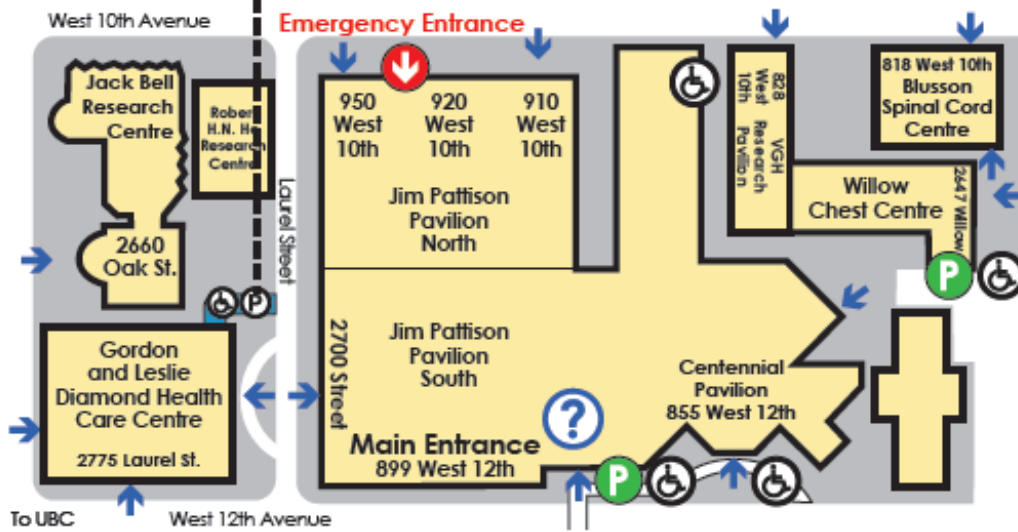
Heart Centre Hospitals Maps

Vancouver St. Paul's Hospital

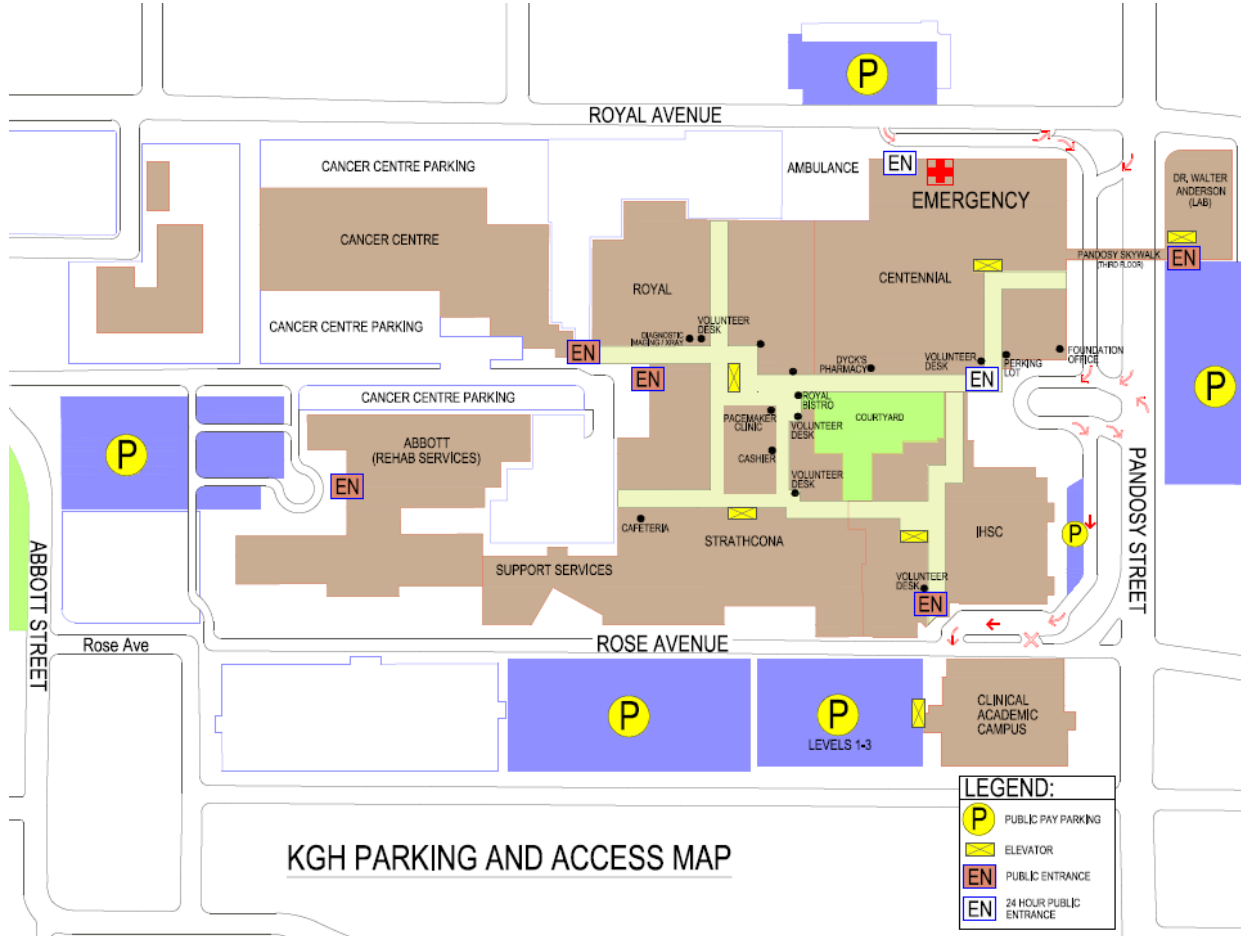


Vancouver
Vancouver General Hospital

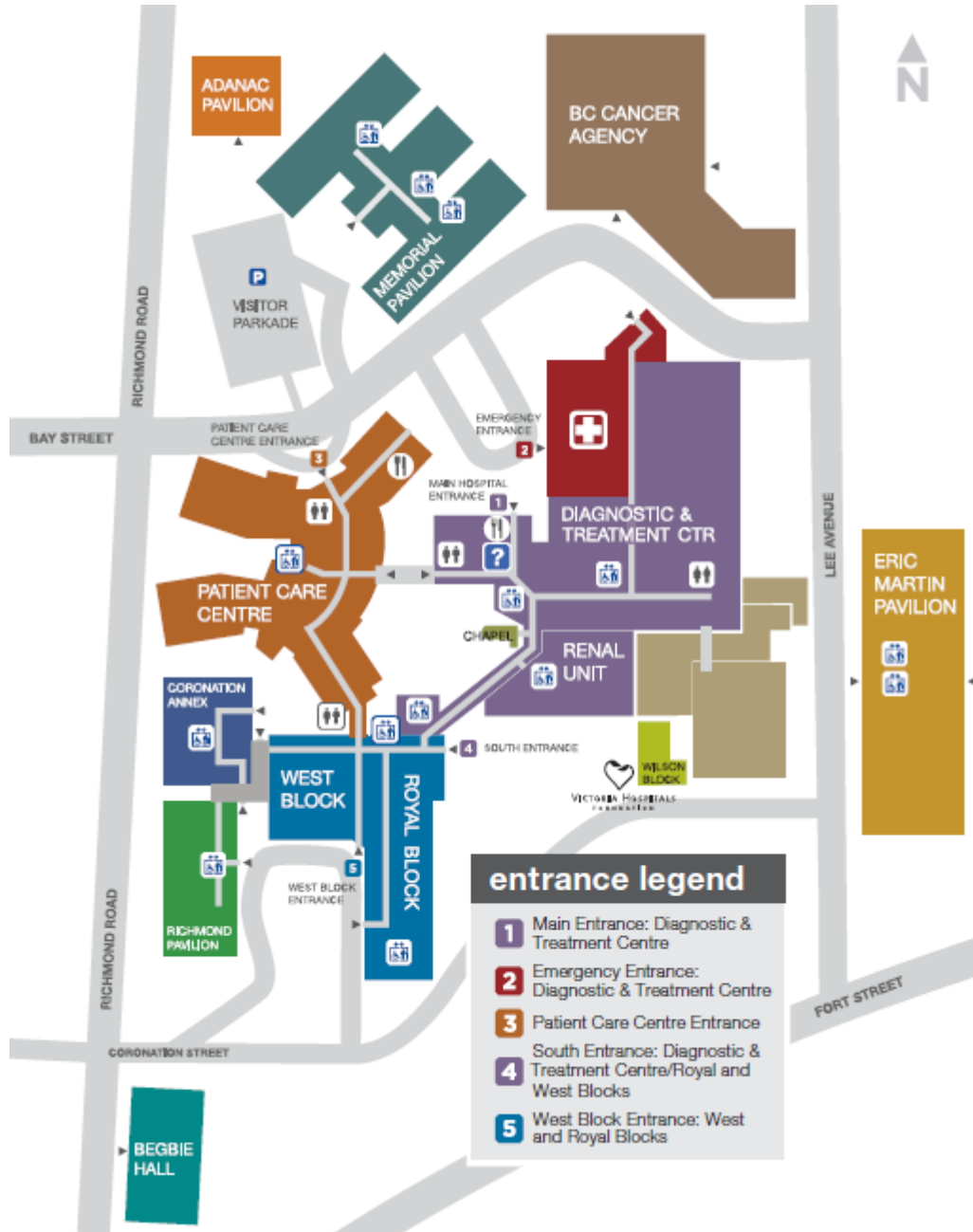
Pay Parking available via Laurel Street after 7 am



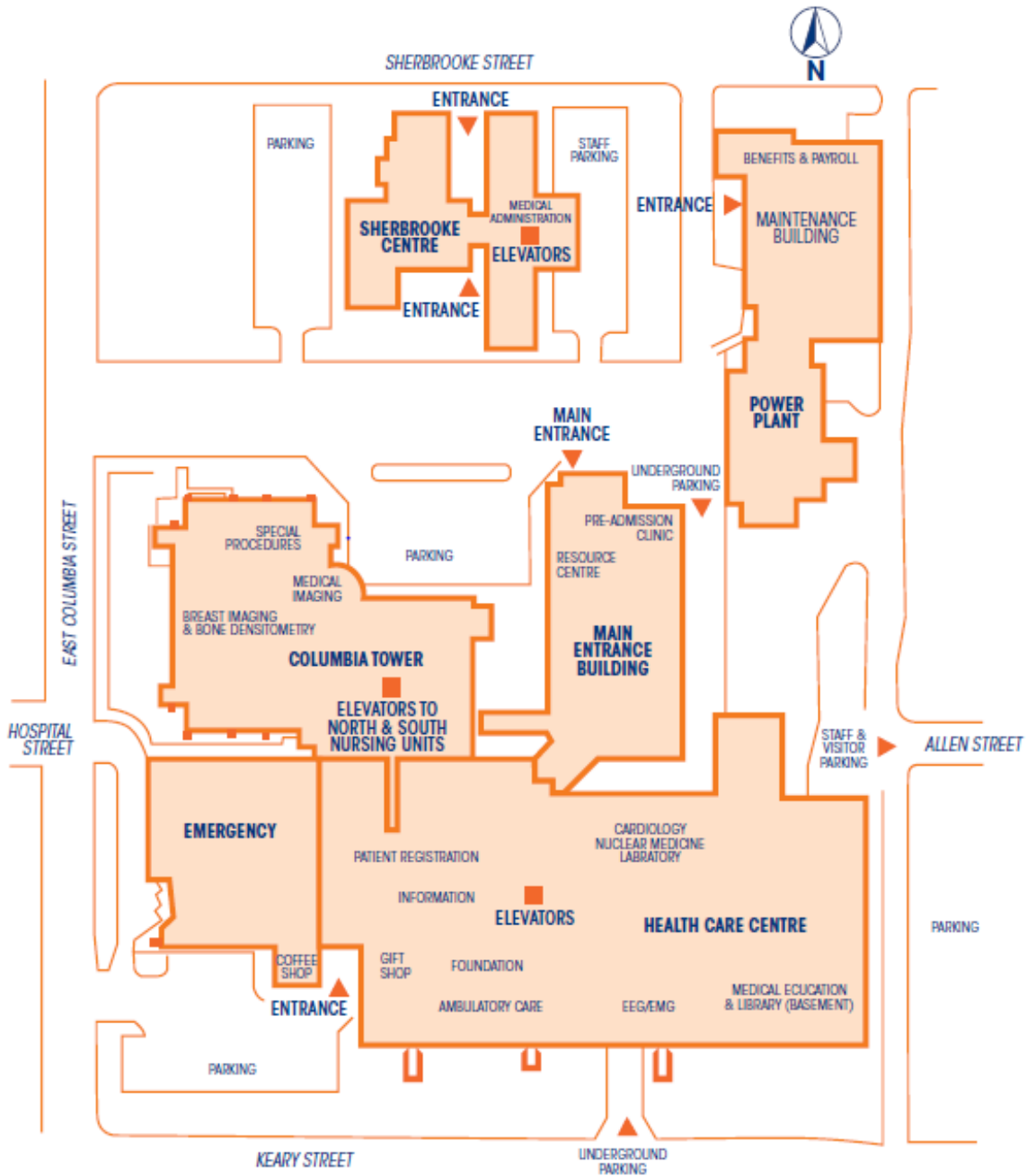
Kelowna
Kelowna General Hospital



Victoria
Royal Jubilee Hospital



New Westminster
Royal Columbian Hospital



Say what? Medical words and how to say them

Medical word	Sounds like...
angina	ann-ji-nah
angiogram	ann-jee-oh-gram
angiography	ann-jee-aw-graf-ee
antiplatelet	ann-tee-plate-let
cardiac	kar-dee-ak
cardiologist	kar-dee-all-oh-jist
catheterization	kath-eh-ter-eye-zay-shun
circumflex	sir-kum-flex
coronary	kor-on-air-ee
diuretic	di-yur-et-ick
femoral	fem-or-al
oxygen	ox-eh-jin
percutaneous	per-kew-tay-nee-us
plaques	plaks
radial	ray-dee-al
stenosis	sten-oh-sis
vasodilator	vay-zo-di-late-or

Hear us use any other words you are not familiar with?
Just ask us to explain.

My Notes

Cardiac Catheterization Images:

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Cardiac and Stroke Care Services



northern health
the northern way of caring

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