



# Coronary Angiogram & Percutaneous Coronary Intervention (PCI)

## A Guide for Patients



**ST VINCENT'S  
PRIVATE HOSPITAL**  
MELBOURNE

A FACILITY OF ST VINCENT'S HEALTH AUSTRALIA



## Welcome

This booklet has information covering two medical procedures, coronary angiogram and percutaneous coronary intervention (PCI). It has been designed for people who are undergoing one or both of these procedures to understand why and what is involved in the process. It is to be used in addition to information provided by your doctor and nurse.

Each year St Vincent's Private Hospital Melbourne performs nearly two thousand coronary angiograms and PCI procedures to diagnose and treat CHD, making it one of the busiest cardiac catheterisation labs in Victoria.

Coronary Heart Disease (CHD) is Australia's leading single cause of death with close to 20,000 Australian lives lost to the disease each year. On Average one Australian dies as a result every 27 minutes.<sup>1</sup>

CHD occurs when a waxy substance called plaque builds up inside the coronary arteries, this is called atherosclerosis. These deposits gradually clog the arteries and reduce the flow of blood to the heart. This may lead to acute coronary syndromes (ACS), such as myocardial infarction (heart attack), angina (chest pain) and heart failure.

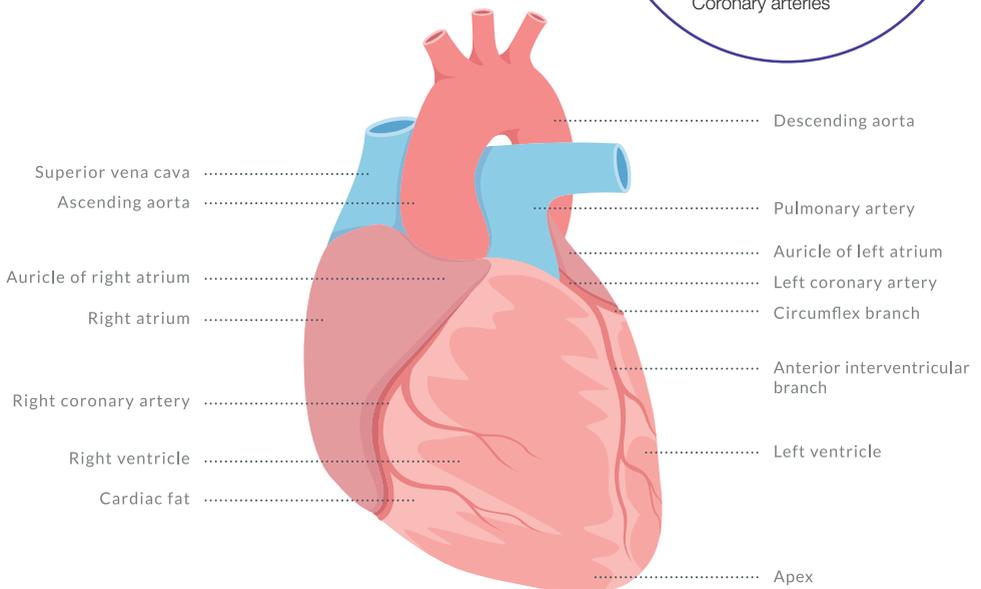
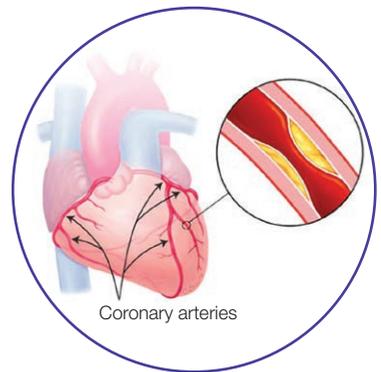
1. Australian Heart Foundation

# The Heart

The heart is a muscular organ about the size of your own fist, functioning as the body's circulatory pump. The heart muscle is called myocardium and like every other muscle in your body, it requires oxygen and nutrients in blood to be able to work efficiently. The heart pumps blood to itself through the coronary arteries. These coronary arteries arise from the aorta and spread out over the surface of your heart like the branches of a tree.

There are two main arteries:

- **The right coronary artery (RCA)** predominantly brings blood to the right side and lower surface of your heart.
- **The left coronary artery** divides into two large branches, the Circumflex branch (Cx) and the Left Anterior Descending branch (LAD). These predominantly supply blood to the front of your heart.



# Getting ready for your Angiogram

A coronary angiogram may be performed during a stay in hospital or carried out as a day procedure. For both the preparation is the same.

Before your coronary angiogram, the doctor will explain the procedure to you and your family. They will discuss all possible complications and you will be asked to sign a consent form. If you need any further information or clarification please ask the doctor before signing the form or at any time during your stay.

## How to prepare for your procedure

- If your case has been planned as a day procedure please ensure you have organised someone to drive you home. You will not be permitted to drive yourself home. You will also be required to have someone to stay with you overnight.
- However, even as a planned day procedure your situation may change requiring you to stay in hospital overnight. Please prepare for an overnight stay and bring overnight clothes, slippers and toiletries with you.
- Bring a book or something to occupy any waiting time. Emergency cases will take priority and this may delay your procedure time.
- If your doctor has pre-ordered blood tests please ensure these are completed within a week prior to admission.
- Please do not bring any valuables with you to hospital.
- If you have experienced a reaction to contrast (dye) in the past, or have a known allergy to contrast, please inform your cardiologist. You may require additional treatment in the days leading up to your procedure.

## Day of the procedure

### Food

You will be asked not to eat or drink for 4 hours prior to your procedure. You may be permitted to eat and drink soon after the procedure is completed.

### Diabetics

- Please inform your doctor or nurse if you are diabetic.
- Your doctor or Specialist should give you instructions regarding your diabetic medications and insulin prior to your procedure.
- You must withhold your Metformin for 24 hours pre and 48 hours post your procedure.
- Please bring your insulin and diabetic medications with you.

### Medications

- Unless advised otherwise, you should take all of your medications as prescribed the morning of your procedure. Please bring all your tablets and a list of your medications with you to hospital.
- Anti-coagulation tablets (blood thinning tablets) should be discussed with your doctor prior to your procedure. Warfarin must be stopped before your procedure.
- Some blood thinners, such as Aspirin, are safe to take. If you are unsure of any of your medications please withhold them the morning of your procedure and discuss them with your nurse upon arrival to the hospital.
- Please inform the doctor or nurse of any allergies you may have.



## Before the procedure

On admission your vital signs will be recorded as a base line. You will have an Electrocardiograph (ECG), blood tests, blood pressure (BP), temperature and heart rate recorded.

### Clothes

Prior to the procedure you will be given a hospital gown to wear. You will be asked to remove all your clothes including your underwear. You may wear your glasses, false teeth and hearing aids.

## Skin

To perform the Coronary angiogram we need to access either the wrist (radial artery) or groin (femoral artery). For that reason, the hair around your wrist and groin area will be shaved.

An intravenous (IV) cannula will be placed in your arm. This intravenous access is required for the administration of IV medication and fluids during your procedure.



## The Cardiac Catheterisation Lab

### The staff

The team present during your procedure will include the following:

**Cardiologist:** performs the procedure. A medical fellow may assist the cardiologist.

**Registered Nurse:** assists the doctor performing the procedure.

**2nd Registered Nurse:** assists the team and cares for you during the procedure.

**The Cardiac Technician:** monitors your heart rate and blood pressure throughout the angiogram/PCI.

**Radiographer:** operates the x-ray equipment.

**Students:** as St Vincent's Private Hospital Melbourne is a teaching hospital, with your permission, there may be nursing or medical students observing the procedure.

# Coronary Angiogram

- Throughout the procedure you will be required to lay down flat on the procedure table.
- You will be connected to a heart monitor and BP machine.
- Sedation may be given to help you relax and feel comfortable.
- To perform the coronary angiogram the heart is accessed via a tube from either the radial artery in the wrist or femoral artery in the groin. The decision for using either the wrist or groin will be discussed by your cardiologist prior to the procedure and prior to signing the consent form.
- An antiseptic wash (which is cold) is used to prepare either the wrist or groin (or prepare both sites) and a sterile drape is placed over the access site covering you from your head to past your feet. It is important to keep your hands under the sterile drape at all times during the procedure. If you feel apprehensive or have any discomfort at anytime, there is a nurse with you who will be able to assist you.
- Local anaesthetic will be injected to the access site chosen (wrist or groin). This will sting initially but the area will soon become numb.
- The artery is punctured with a small needle, and a thin tube called a sheath is positioned in your artery to allow access and minimise bleeding. Through this another thin tube called a catheter will be guided up to your heart. You should not feel any discomfort as these arteries do not have any nerve or pain cells.
- Radiographic contrast (dye) is injected via the catheter into the coronary arteries. This contrast enables the coronary arteries to be visible under x-ray screening and will illuminate any narrowing's or blockages that may be present.
- During the procedure the room lights will be darkened and the x-ray machine will rotate over your head and chest, enabling us to view and image all of your coronary arteries. You may be asked to hold your breath for a few seconds as the x-ray images are recorded.
- A larger volume of contrast may be injected into the left ventricle (LV) (the main pumping chamber of your heart). This is one way to assess the LV muscle function and pumping action of your heart.
- During the LV contrast injection you may feel a warm feeling all over. This will pass within a few seconds.
- The coronary angiogram procedure will take approximately 20-40 minutes in total.

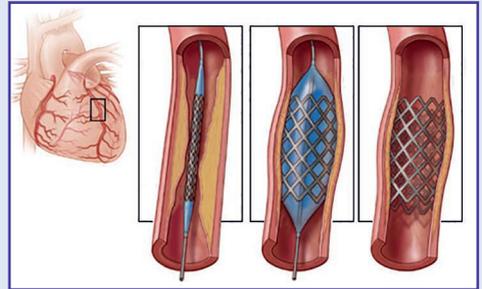
If the angiogram revealed no or minimal signs of significant narrowings of the coronary arteries then the procedure is completed.

However, if the angiogram has diagnosed narrowed or blocked arteries your cardiologist may determine that, in your situation, an angioplasty/PCI is appropriate, or coronary bypass surgery is required to improve symptoms and/or reduce the risk of future heart problems.

# PCI and Implantation of Stents

Percutaneous Coronary Intervention (PCI) is a treatment used to treat narrowed or blocked arteries and increase blood flow to heart muscle. The preparation and procedure for PCI can be similar to the angiogram and is performed in the cardiac catheterisation lab immediately following your coronary angiogram or as a separate PCI procedure.

- Contrast dye injections identify the narrowing/lesion (blockage) of your artery.
- A special thin wire is positioned across the narrowing/lesion and used as a guiderail for the placement of balloons and stents.
- The balloon catheter is positioned at the narrowed lesion of the coronary artery. The balloon is then inflated. This assists to open the lesion and increases the blood flow through the artery and into the heart muscle. The balloon is then deflated and removed.
- A coronary stent or stents may be implanted using a similar technique to balloon inflations. Stents are placed as a permanent scaffold to minimise re-narrowing of the artery.
- During balloon inflation and stent implantation, blood flow to the specific area being treated is temporarily occluded; this may result in discomfort or chest pain. This discomfort should resolve quickly on deflation and removal of the balloon. The cardiac cath lab team will be able to treat and assist you if any discomfort or chest pain occurs.



## Stents

There are different types of stents available. Your cardiologist will decide which is best suited.

- Drug eluting stents (DES)
- Bare metal stents (BMS)
- Bioresorbable vascular scaffold (BVS)

Stent implantation requires specific blood thinning medication to reduce the risk of stent thrombosis (re blocking). You will be required to take this medication for a minimum of 3 months and up to 24 months until eventually the stent becomes part of the coronary artery wall.

## Important

**Please consult your cardiologist before stopping any of your blood thinning medications.**

## Important

**Please report any chest discomfort/pain to your doctor or nurse.**



## Conclusion of the Procedure

At the conclusion of the coronary angiogram and/or PCI the sheath will be removed.

### Procedure via Wrist Access (Radial Artery)

- On removal of the sheath a small band will be wrapped around your wrist and inflated with a balloon to stop bleeding. This will slowly be deflated over 1-3 hours and the wrist band is then removed.
- The nurse will inform you of when you may get out of bed. This may be immediately or up to 4 hours after the procedure.
- You must not do any heavy lifting (greater than 5kg) with this arm for at least five days.

### Procedure via Groin Access (Femoral Artery)

- The sheath will be removed and either firm pressure applied to the site for 10-15 minutes to stop bleeding, or alternatively, a collagen plug or closure device may be used to close the puncture site. This closure device may reduce your bed rest time.

- To reduce the risk of bleeding you are required to lay flat in bed for at least 2 hours post procedure and rest in bed for a total of 4 hours. It is important that you do not bend your affected leg or try to sit up. The nursing team will assist you to remain comfortable during this required bed rest.
- You must NOT bath or go swimming for 5 days.
- You must NOT do any heavy lifting or intense activity for 2 days.
- You may resume normal activities after 2 days (or as indicated by your cardiologist).

Please remove the dressing from your puncture site the next day following your procedure.

Bruising, tenderness or numbness at and around the wrist or groin site is normal for up to a period of 3 weeks.

### Important

**To perform a coronary angiogram or PCI we access a major artery and there is a risk of bleeding post procedure.**

**You must inform the nurse immediately if you feel any pain, swelling or a warm sticky feeling at the wrist and groin site. This may indicate bleeding that requires immediate treatment.**

# Recovery

- Frequent observations of your pulse, blood pressure and groin/wrist site will be taken in the cardiac cath lab or ward area.
- You will be encouraged to drink plenty of fluids to help flush the contrast dye out of your system. Please inform your nurse if you are on a fluid restriction.
- If you have received sedation during your procedure you are advised not to consume any alcohol, sign legal documents or make important decisions for the next 24 hours.
- If you are a day patient you will usually be allowed home 3-6 hours post the procedure. Please ensure that you have arranged someone to collect you, and stay with you overnight. You will not be permitted to drive yourself home or stay home alone overnight.
- If you have had a PCI or require further investigations, you will stay overnight, usually on the 9th floor Cardiac Ward. It is expected in most cases that you will be allowed home the next morning at 9.30am. Please ensure you have organised someone to take you home as you will not be permitted to drive.

# Leaving Hospital

The result of the Coronary angiogram/ PCI will be discussed with you and future appointments with your Cardiologist may be arranged.

Your medications (current and new) will be discussed with you, including information on when you may restart all blood thinning and diabetic medications. The pharmacist will provide you with a printed medication profile upon discharge from hospital.

Please ask the doctor for a medical certificate if you or your carer need to take time off work.

## Driving

Post coronary angiogram, the RTA and Heart Foundation recommend not driving for 2 days.

Post PCI and/or if you have had a heart attack you will be advised on when it is safe for you to resume driving – this is usually within 5 days. If you drive a commercial vehicle the RTA recommend that you do not drive for at least 4 weeks. Please discuss your individual circumstance with your Cardiologist.

Please ask your doctor for advice about the effect that any illness, disability or medical condition may have on your ability to drive safely, including any medicines you may be taking.

## Physical activity

On discharge from hospital your doctor or nurse will be able to discuss with you when it is safe to resume normal physical activities such as exercise, sexual activity and return to work.

## Cardiac Rehabilitation

If you have been diagnosed with coronary artery disease (CAD), have multiple risk factors for CAD, or have had a PCI or stent implanted, outpatient cardiac rehabilitation will be arranged for you. This will be discussed with you before you leave the hospital. Cardiac rehabilitation programs aim to help people with heart disease return to an active and satisfying life and to prevent recurrence of cardiac events.

### At home

Most people have no complications after their procedure, however for a small number of people complications may occur.

If bleeding, swelling or intense pain occurs at the puncture site lay down and apply firm pressure with your hand immediately. Call 000 for an ambulance to assist you.

If your cardiac symptoms reoccur please inform your cardiologist or GP immediately.

### Important

**If you experience any angina pain/ chest discomfort not relieved by rest, Anginine or GTN spray immediately call 000 for ambulance assistance.**

### Lifestyle changes

There is a possibility that new narrowings or lesions may develop in other coronary arteries. Lifestyle changes may reduce the risk of this occurring.

The lifestyle changes recommended include:

- Stopping smoking
- Losing weight and reducing your waist circumference
- Increasing exercise
- Monitoring/reducing your cholesterol level
- Medication adherence
- Reduce stress
- Introducing a cardiac diet
- Treating depression.

Anxiety, depression and coronary heart disease (CHD) are common conditions which often occur together. There is now evidence to show that depression can be as big a risk factor for CHD as smoking, high cholesterol levels and high blood pressure. Depression can also affect the recovery of people with coronary heart disease and increase their risk of further heart problems. If you are affected by anxiety or depression please speak to your doctor/nurse or visit the beyond blue website for information.

The Heart Foundation has an excellent website to assist you and your family with information on cardiac procedures, lifestyle changes, CAD therapies and rehabilitation, healthy eating and more.

### Recommended websites:

<http://www.svpm.org.au>

<http://www.beyondblue.org.au>

<http://www.heartfoundation.org.au>

<http://www.diabetesaustralia.com.au>

If you have any questions relating to this booklet or the information you have received, or would like further information please do not hesitate to speak to your Cardiologist, your nurse, the manager of the ward, or the nursing coordinator of SVPHM.

*This information booklet was collated in conjunction with the Cardiac ward (9th Floor), Cardiovascular centre, (CVC 1st Floor) and our SVPHM Cardiologists.*



*Developed in consultation with our patients*

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**ST VINCENT'S  
HEALTH AUSTRALIA**

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