

## Cardiac Surgery: Coronary Artery Disease

Your healthcare team may have discussed the need for surgery with you. To better understand these discussions and what to expect, this brochure will explain:

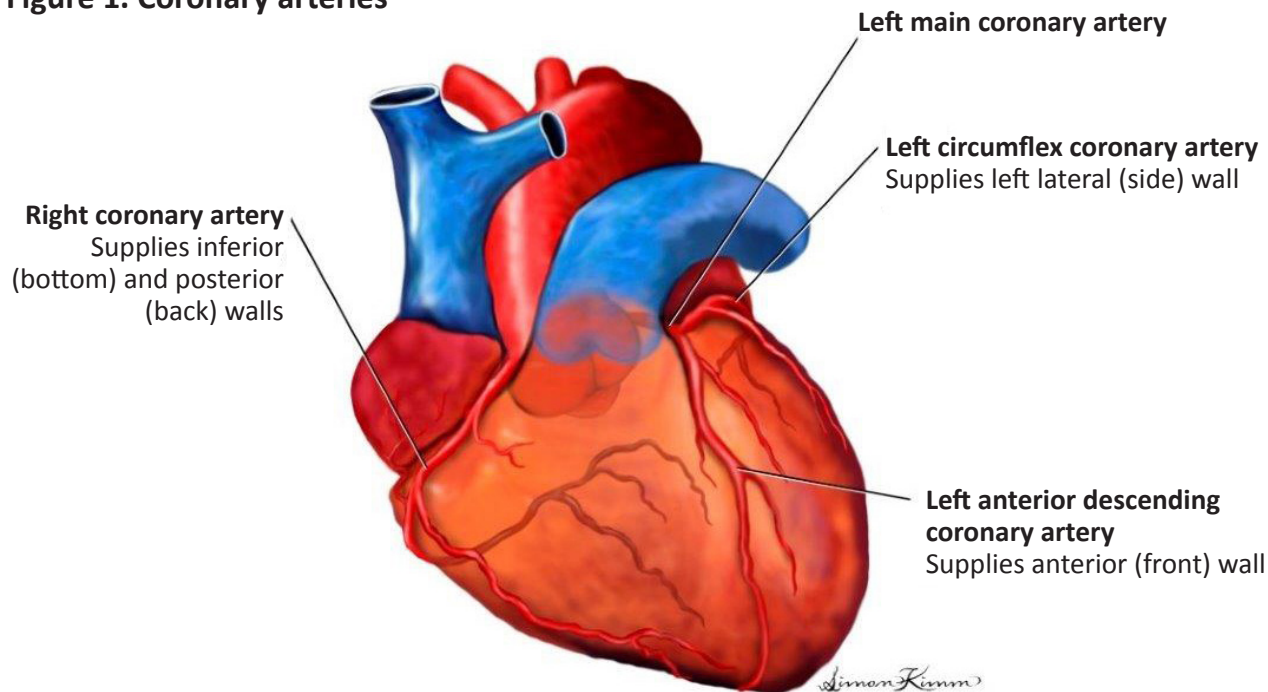
- Coronary artery disease
- Coronary artery bypass graft surgery

*If you have questions, ask your physician or nurse.*

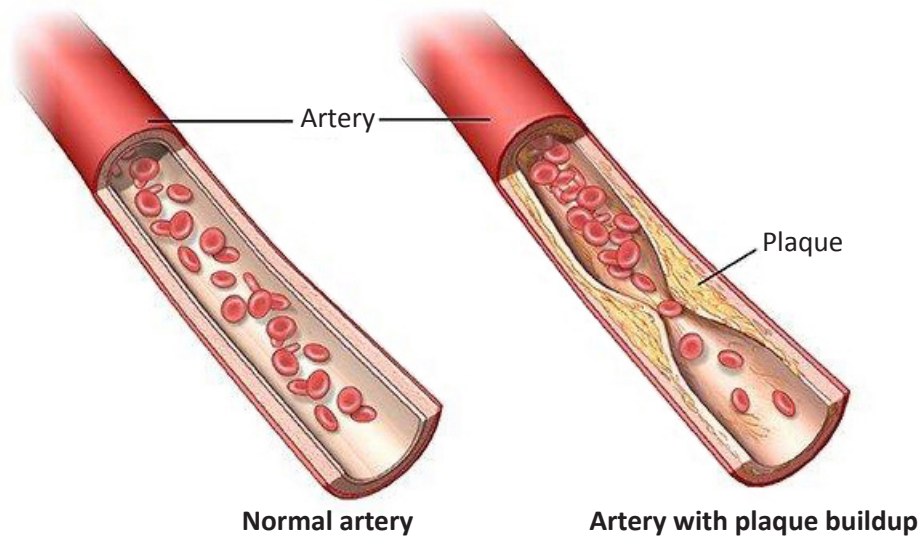
### Coronary artery disease

Coronary artery disease (CAD) affects the arteries of the heart. (Figure 1 shows some of the main arteries). CAD occurs when the arteries become clogged with plaque. Plaque consists of fat, cholesterol, and calcium that collect in the arteries. As plaque builds up, the wall of the artery becomes rough, hard and narrowed over time (Figure 2). This is known as atherosclerosis and decreases blood flow to the heart muscle. If the blood flow is decreased, the heart muscle does not get the oxygen and nutrients it needs to function at its best. This can cause damage to the heart muscle. CAD is the leading cause of death in the United States.

**Figure 1. Coronary arteries**



**Figure 2. Atherosclerosis**



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### **Risk factors**

Some common risk factors for CAD include:

- Obesity
- Smoking
- Diabetes
- High blood pressure
- Family history of CAD
- High blood cholesterol levels
- Being older than 45 (for men)
- Being post-menopausal (for women)

With the exception of family history, age and menopause, most of these risk factors can be controlled and modified with a heart-healthy lifestyle.

For more information regarding CAD risk factors, go to the American Heart Association's website at [heart.org](http://heart.org).

### **Symptoms**

With CAD, you may have one or more of the following symptoms:

- Nausea
- Dizziness
- Sweating
- Weakness
- Shortness of breath
- Chest pain or angina
- Skipped or fast heartbeats (palpitations)

## **Angina**

The most common symptom of CAD is a type of chest pain called angina, which occurs when the heart muscle is not getting enough oxygen and nutrients. Angina is often felt in the chest and is described as:

- A squeezing sensation
- Sharp or crushing pain
- Heaviness, fullness, aching or burning

Angina pain also may be felt in the shoulders, neck, throat, jaw or back. Angina symptoms often get worse during activity. Other symptoms of angina may include:

- Nausea
- Sweating
- Difficulty breathing
- Extreme fatigue or weakness

These symptoms are more common in women and in patients with diabetes.

**If untreated, angina may lead to a heart attack** (myocardial infarction).

## **Heart attack**

A heart attack is an injury to the heart muscle. Injury occurs when plaque breaks in a coronary artery. A blood clot forms around the breakage and may block the blood flow to the heart muscle. Heart muscle that no longer gets adequate blood flow can have permanent damage or tissue death known as scarring. Scarred heart tissue cannot function properly, which may lead to heart failure, arrhythmias or death. Untreated, gradual buildup of plaque over time can also cause heart failure and arrhythmias.

If you have signs or symptoms of CAD, call your physician right away. Your physician will want to order tests such as an ECG, echocardiogram, exercise stress test and/or cardiac catheterization for you.

## **Coronary artery bypass surgery**

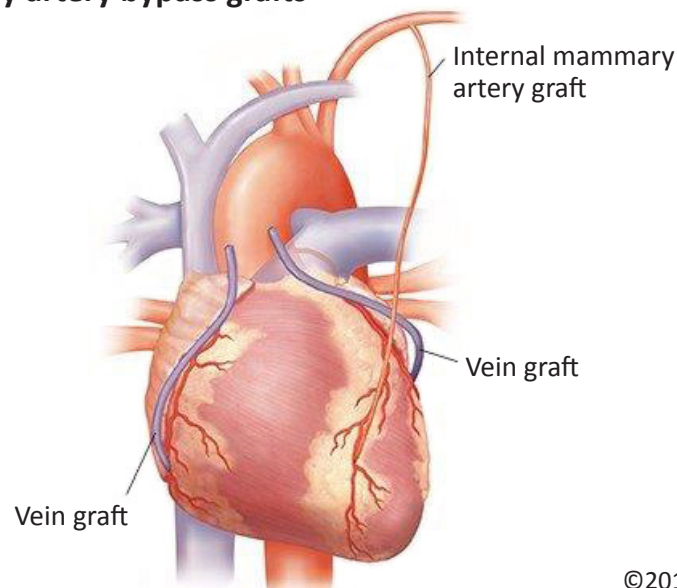
The treatment for CAD is aimed at restoring the blood flow to the heart muscle. One way to do this is with a coronary artery bypass graft (CABG). A CABG creates a detour or bypass around the blocked part of the artery. This brings oxygen-rich blood back to the heart muscle. Either arteries or veins from other parts of your body are used to create the bypasses, also called **grafts** or **conduits**. There are 3 blood vessels in your body that may be used as a conduit.

- Internal mammary artery
- Radial artery
- Saphenous vein

The **internal mammary** artery lies along your breastbone on the inside of the chest wall under your ribs. There is one internal mammary artery on each side of the breastbone.

Using an internal mammary artery to bypass your heart will not affect the blood supply to your chest. Figure 3 shows how the internal mammary artery is grafted on to the heart.

**Figure 3. Coronary artery bypass grafts**



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The radial artery is 1 of 2 arteries found in your forearm. Tests are done to check what the blood flow to your arm will be if the radial artery were removed. Let your surgeon know if you have a history of circulation problems to the hands, such as:

- Raynaud's syndrome
- Repetitive stress or carpal tunnel syndrome
- Pain in your fingers when the weather is cold

A saphenous vein is located on the inside of the leg from the ankle to the groin. When the saphenous vein is removed, the blood flow to the leg is not affected. It is common, however, for the leg or foot to swell slightly after surgery. Wearing a compression stocking can help reduce the swelling. Ask your physicians if you should wear a compression stocking after surgery.

### ***Endoscopic vessel collection***

The surgeon can remove the radial artery or the saphenous vein using a method called endoscopic vessel collection. The surgeon makes very small incisions in the limb. This technique uses special instruments to remove the healthy blood vessel that will be used as a graft.

Your surgeon will review your health history and tests, including your cardiac catheterization results, to determine:

- Where the blockages are in your heart arteries.
- How many grafts you may need.
- Which of your arteries or veins will be used to create the bypasses.

Before your surgery, your surgeon will discuss your plan of care, and explain the available treatment options and the type of incision to be used. They will answer any questions that you may have.