WINELANDS CARDIOLOGY

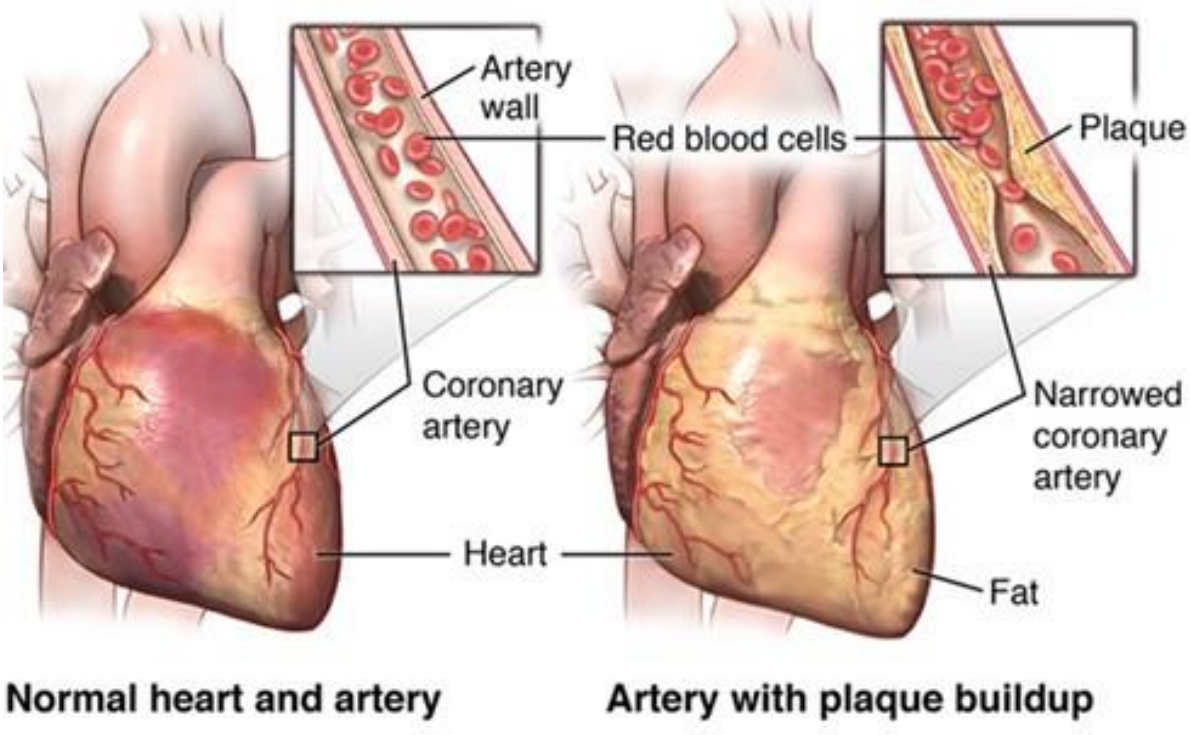
DR. TJAART P. VENTER CARDIOLOGIST INC
MB, ChB (UFS), M.Med (Int), Cert. Cardio (SA) I PN 0143189

DR. JACQUES LIEBENBERG CARDIOLOGIST INC
MB, ChB (Stell), M.Med (Int), FCP (SA), Cert. Cardio (SA) I PN 1140086

Coronary artery disease

What is coronary artery disease?

Coronary arteries are the arteries found on and around the heart muscle itself. They supply the heart muscle with blood, nutrients, and oxygen. When these coronary arteries develop atherosclerosis (plaque build-up), it could lead to the heart being deprived of blood and oxygen. Buildup of plaque in the coronary arteries is known as coronary artery disease.



What are the consequences of coronary artery disease?

If the heart muscle does not receive enough blood, it becomes 'ischemic', or oxygen deprived. An oxygen deprived heart muscle causes *angina*, typically described as a heavy pressure on the chest, mainly behind the sternum. If this abnormality persists for a prolonged period, and if severe enough, the heart muscle in the territory that is supplied by that specific coronary artery can become irreparably damaged. This is also known a myocardial infarction or a 'heart attack'. Heart attacks are medical emergencies, and is associated with significant risk of dying if not treated early.

What causes coronary artery disease?

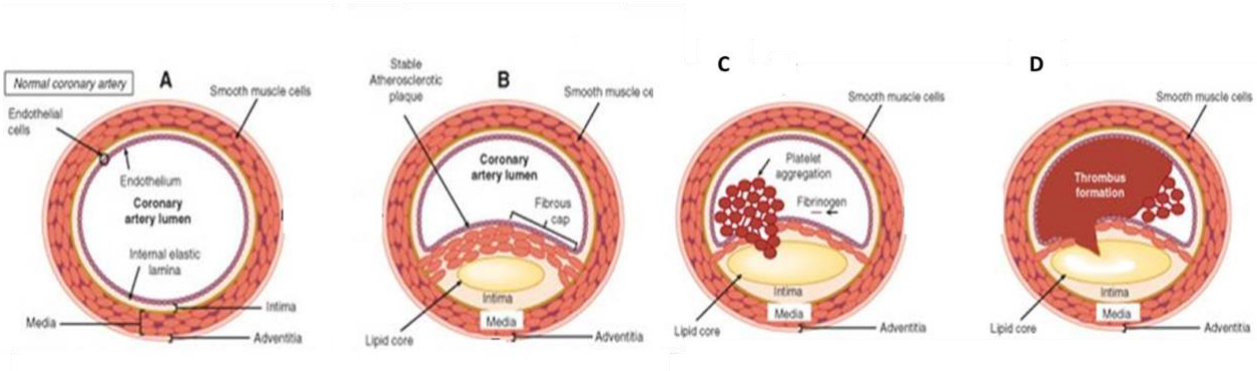
There are 5 major risk factors for coronary artery disease. These risk factors are almost always universally present in people who have coronary artery disease. They include:

1. Smoking
    - Being a smoker increases your risk for developing a heart attack by 7 – fold. It is important to realize that a catastrophic heart attack with debilitating consequences is often the first manifestation of smoking related damage – a smoker may not have any warning signs. The best time to stop smoking is now. Discuss with your doctor for various support options if you are ready to stop smoking.
2. Hypertension (High blood pressure)
3. Diabetes Mellitus (see *Diabetes and my heart*).
4. Family history of premature Coronary Artery Disease
    - In these families a 1st degree relative (a parent, sibling or child) will have suffered a heart attack, required a stent or bypass surgery before the age of 50 (men) or 60 (women).
5. Dyslipidaemia (High cholesterol).
    - High Cholesterol levels, especially LDL ("genetic cholesterol") is strongly associated with IHD. For every 1 mmol/l decrease in LDL, the risk for CAD decreases by 15%. The most effective strategy for treating high cholesterol is with a class of medication called *statins*. (See *Medication and my heart* for more information on statins)

Other important risk factors for coronary artery disease include obesity, inactive lifestyle, poor diet, and advanced age.

What is a heart attack, and how is this different from stable angina?

Coronary artery disease presents with either stable angina, or with heart attacks. Stable angina is diagnosed when there is a stable narrowing in your coronary artery that causes a supply-demand mismatch during activity. Patients typically describe very reproducible exercise related chest pain (angina). This is not a heart attack! It implies that you have a stable narrowing that causes short lived heart muscle oxygen deprivation during exercise. A heart attack on the other hand is when plaque in your coronary artery ruptures, and causes the vessel to acutely occlude in a matter of minutes by blood clot. In these cases patients typically describe severe chest pain whilst in rest. Heart attacks are often associated with sweating, nausea, vomiting, shortness of breath and feeling of impending doom.



From left to right: (A) Normal coronary artery, (B) Stable plaque build-up in the coronary artery. This occurs over many years, and may cause chest pain (angina) during exertion when the heart muscle's demand for blood flow and oxygen increases above the threshold that can be delivered by the narrowed blood vessel. (C) The cap of the plaque has ruptured! Blood clot now adheres to the site of rupture, and the vessel may occlude in a matter of minutes as seen in image (D). This is a heart attack!

How is CAD/IHD diagnosed?

Firstly, patients may suffer from symptoms, as described above.

Secondly, special tests may be done, most often in the form of a resting ECG, an exercise ECG and an echocardiogram. An exercise test will strain the heart and the ECG will become abnormal, reflecting the hidden coronary ischemia (blocked arteries). Other screening tests include a coronary CT scan, which is non-invasive. Finally, invasive angiography may be performed. A thin plastic catheter tube is guided either from the groin or from the wrist to the heart arteries. They are then injected with Iodine dye and X-ray videos are done, which excludes or confirms the presence of coronary narrowing (stenosis). The best tests/ combination thereof will be discussed with you by your cardiologist.

How is coronary artery disease treated?

The answer is threefold:

1. Controlling the risk factors that lead to the development of coronary artery disease. This implies smoking cessation, blood pressure control, controlling diabetes if present, aggressive cholesterol lowering, maintaining an active lifestyle and weight loss. (See *Healthy lifestyle for my Heart)*
2. "Revascularisation" – relieving the blockages with stents, or performing bypass surgery to 'bypass' the diseased coronary artery segments. (See *CABG* and *PCI* summaries for more information).
3. Medical therapy: If you have coronary artery disease, you will have to remain on various medications for the rest of your life. These medications have been well proven to reduce heart attacks, to slow the progression of coronary artery disease and to improve symptoms. Most patients with coronary artery disease, or following a heart attack, will be on between 3-6 different types of medication (including amongst others – Aspirin, Clopidogrel, a statin, a beta blocker, an ACE-I). (For more detail, see *Medication and my Heart*).

What should if I suspect I am having a heart attack?

We suggest that you immediately drink a full aspirin or Disprin, and to visit your nearest health care provider. They will investigate the nature of your symptoms, and perform and ECG and blood tests to ascertain what the cause of the chest pain.

"Time is muscle" – so the sooner you get medical help, the sooner blood supply can be restored and the oxygen deprivation and extent of heart muscle cell death minimised. The risk of dying increases by 8% for every 30 minute delay in restoring the patency of the coronary artery. If a heart attack is confirmed, the cardiologist will order "clot buster" medication to dissolve the blood clot, or he will take the patient to the Cath Lab, a special theatre where an angiogram will be done to remove the clot and restore the occluded blood supply. The patient will be kept for monitoring in the ICU and can expect to be hospitalized for a few days.

Are my children at risk for having a heart attack if I suffered a heart attack?

Yes, some of the cardiovascular risk factors are inherited, such as the levels of 'bad cholesterol', and as such, it is important for your children to be aware of their personal risk, with modifiable factors strictly controlled. If you love your children, discourage them from smoking!

How often do I need to see my doctor?

This may vary from patient to patient, but generally we advise at least a yearly follow up. Initially, you may need to be seen more regularly while active problems are still being addressed.