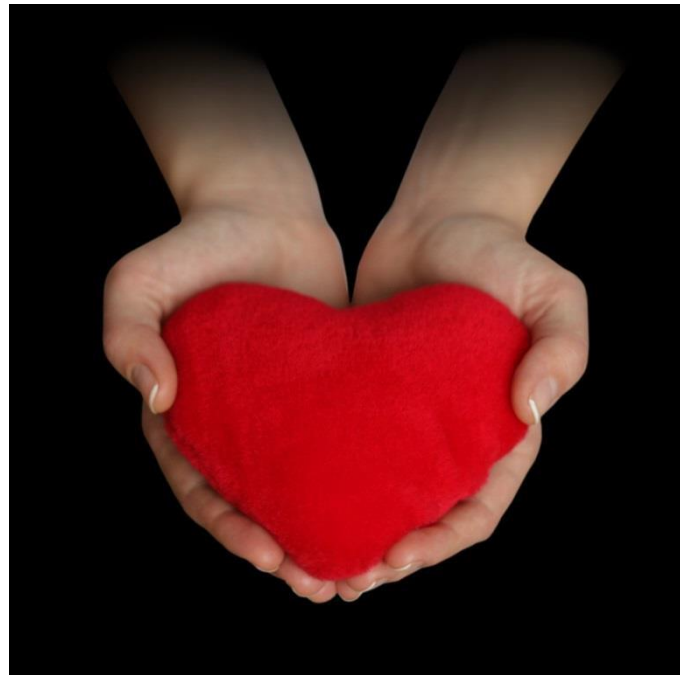


The heart



What is it?

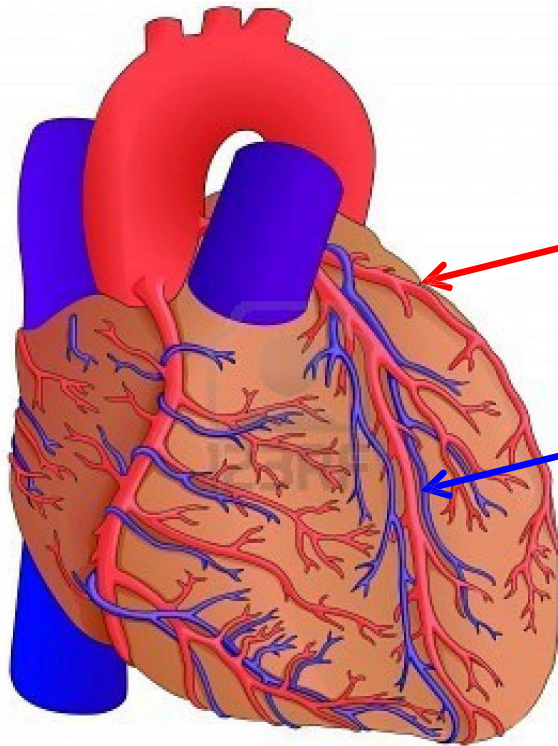
- The heart is a pump taking blood to the lungs then returns to be pumped out around the body.



- It pumps 5-7 litres a minute.
- Over 7,600 litres (2000 gallons) a day.
- And beats 2.5 billion times in a lifetime - that's 200 million litres of blood.



The heart's muscular pump has a rich blood supply. Coronary arteries deliver oxygen in the blood to the muscle and coronary veins return blood to the lungs to be replenished

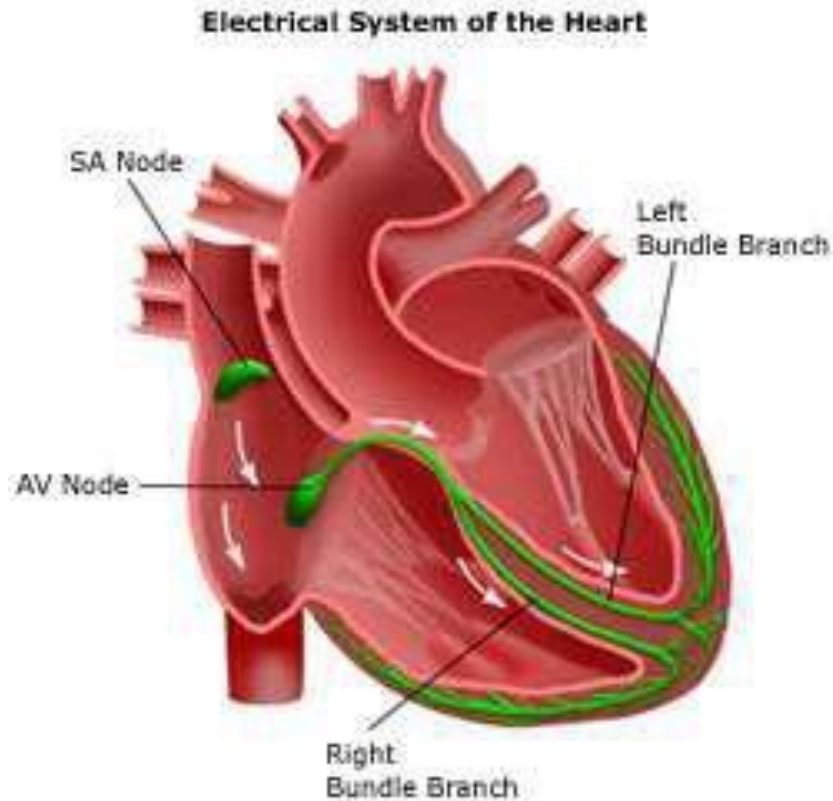


Coronary artery
carries oxygen rich
blood

Coronary vein returns
used oxygen supply.



Electrical systems

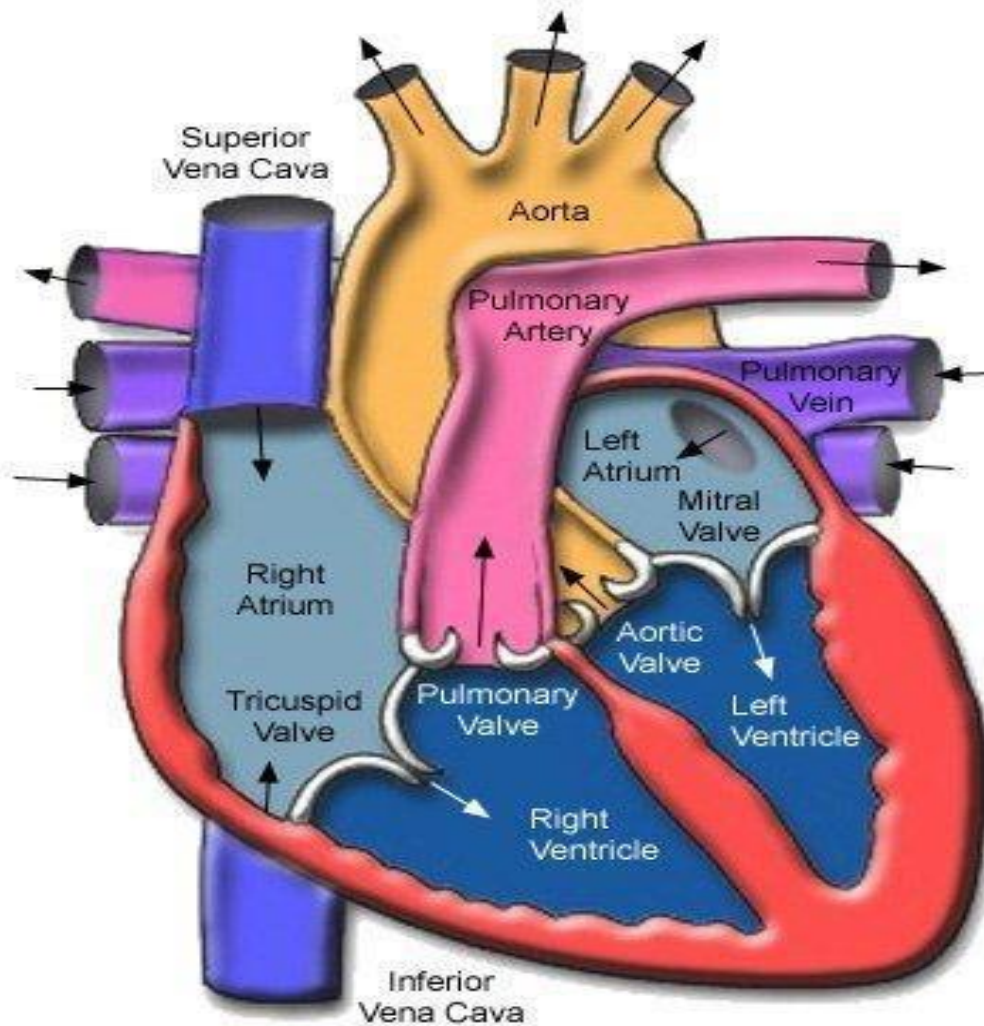


Some people develop rhythm disturbances of the heart.

Of which there are many causes and various treatment options.



What does it look like inside?



Coronary artery disease - what is it?

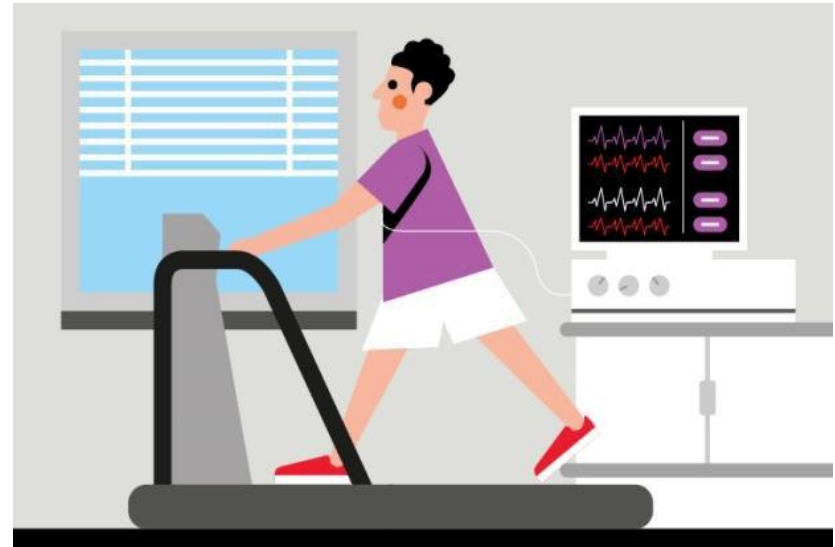
The commonest form of heart disease is coronary artery disease and comes in two forms:

- **Angina** – narrowed arteries.
- **Heart attack** – blocked arteries, also called ‘acute coronary syndrome’ or ‘myocardial infarction’.



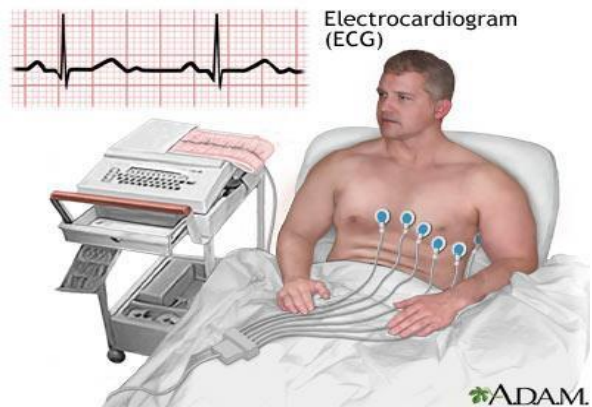
Investigations and tests

- Blood tests
- Exercise tolerance testing

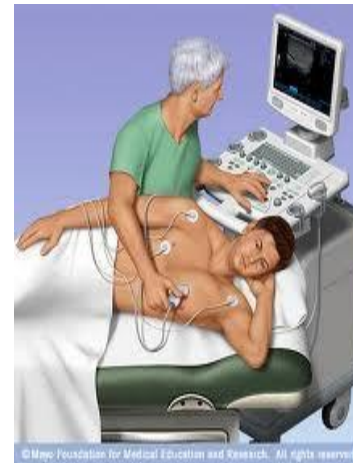


Investigations and tests

- ECG



- Echo



- MRI & CT scans



Other conditions causing cardiac presenting pain

(investigations are required to find the right cause)

- Pericarditis, coronary spasm, aortic stenosis
- Pulmonary hypertension and stenosis
- Indigestion, reflux
- Abdominal, biliary colic, gallstones
- Chest injury
- Pulled muscles and joints
- Respiratory - chest infections, pleurisy
- Pulmonary embolism



Angina: Temporary imbalance between blood supply and demand within the coronary circulation to the heart muscle

Location: Across central chest, sternum through to back, upper abdomen, arms, shoulders, back, neck, jaw, teeth.

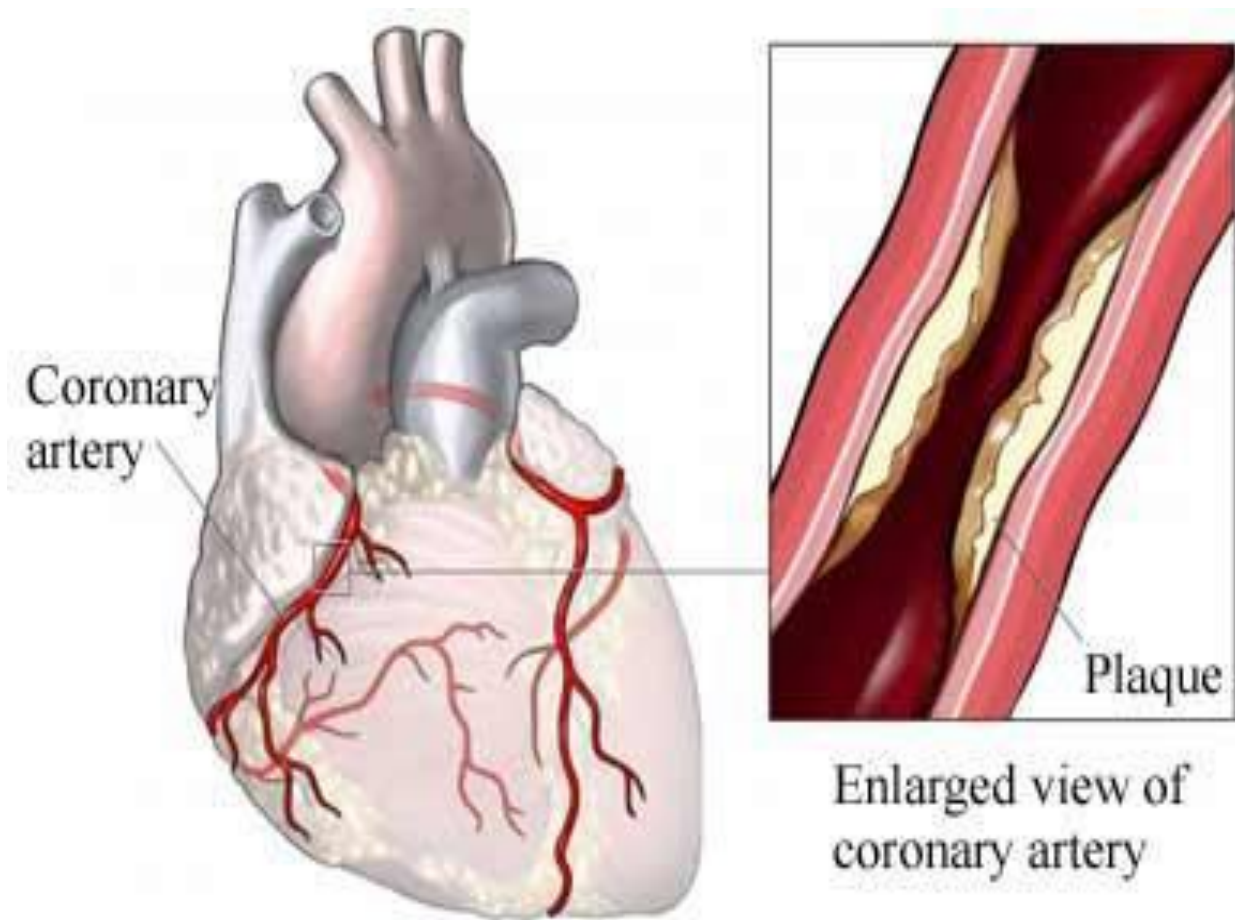
Type: Various descriptions include: crushing, vice like, stabbing, sharp, gripping, tight, heavy, pressure, cramp, squeezing, burning, dull ache, discomfort, numbness, pins and needles.

Precipitating factors: Exercise and physical activity, cold/heat, heavy meal, emotion/stress/excitement.

Attacks are usually short lived and controlled by rest / GTN but can progress to become unstable angina.



Angina: narrowing of the artery



Management of angina

- Risk factor modification – increase exercise, healthy eating, reduce weight, control blood pressure, stop smoking, control diabetes, manage stress.
- Medications.
- Stent insertion.
- Cardiac by-pass surgery.



Heart attack (ACS/Myocardial infarction):

Acute interruption of blood supply within the coronary circulation to the heart muscle

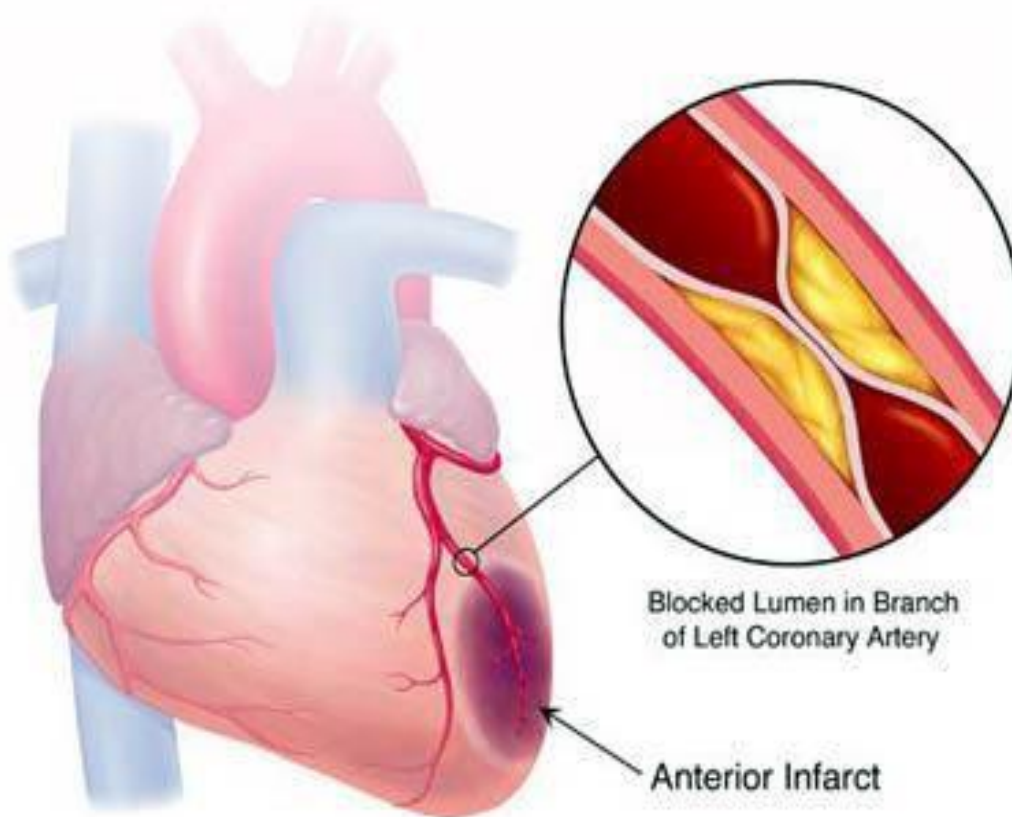
Sudden onset of pain often more severe and longer duration than angina.

Associated signs and symptoms include:

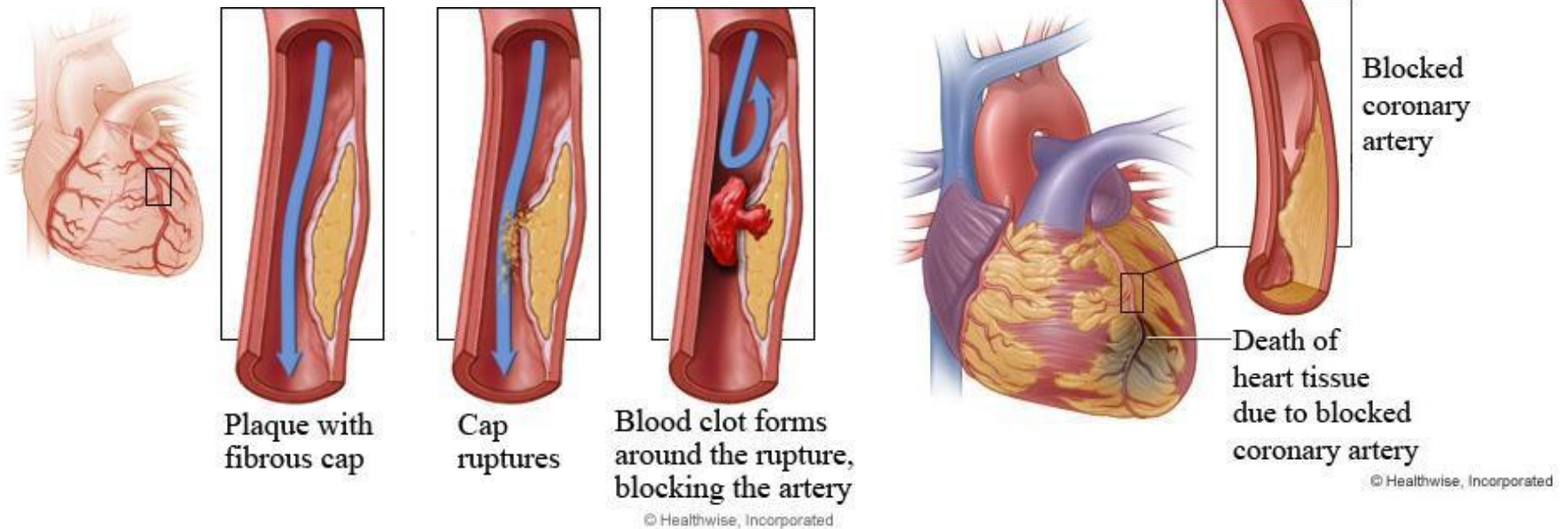
- Nausea and vomiting
- Shortness of breath
- Pale, sweaty, cold and clammy
- Light-headed, dizzy, feeling faint
- Anxious and restless
- Increased heart rate, sometimes irregular or slow
- Low blood pressure
- Raised temperature
- Raised glucose level



Heart attack: blocked artery



Plaque rupture



Management of suspected heart attack

- Call 999 for immediate assistance.
- Hospital emergency coronary angiography and stent insertion.
- Recovery in a Cardiac Care Unit.
- Change of lifestyle recommendations.
- Medications.
- Post discharge clinic and Cardiac Rehabilitation support.



NSTEMI v STEMI

What does it mean?

- NSTEMI – Non ST Elevation Myocardial Infarction: When there is a partial blockage of the coronary artery.
- STEMI – ST Elevation Myocardial Infarction: When there is a total blockage of the coronary artery.



What is a coronary angiogram?

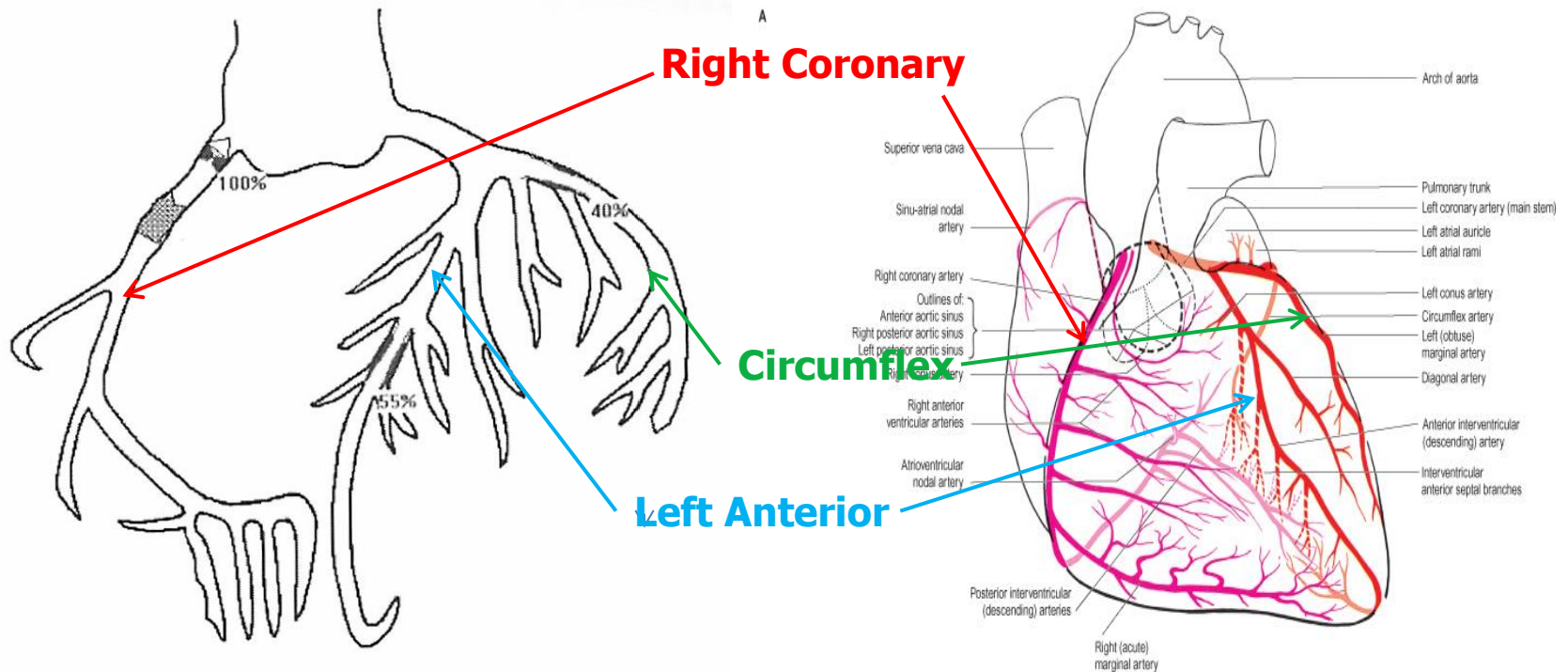
Dye is given via a catheter in the wrist or groin into the heart and coronary arteries. The circulation can then be seen by x-ray pictures and problems identified.



Coronary arteries

What you may see on your angiogram report.

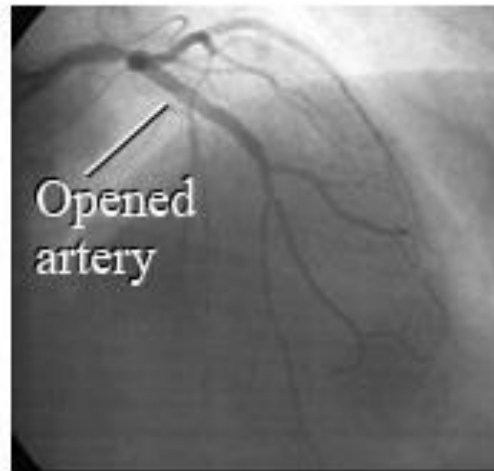
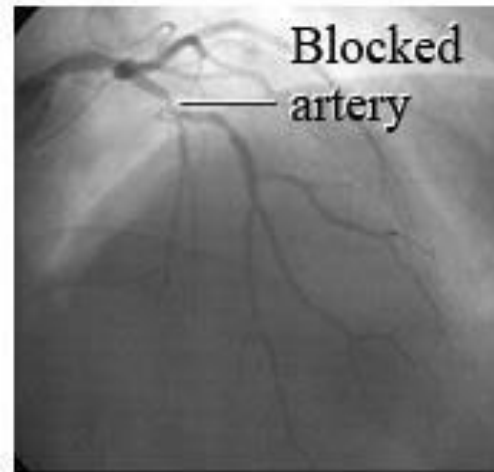
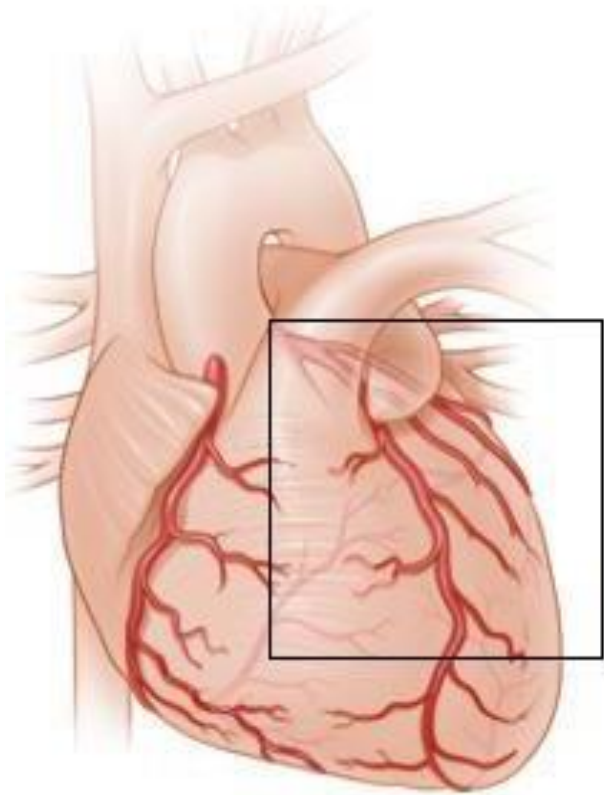
How your heart fits into the picture!



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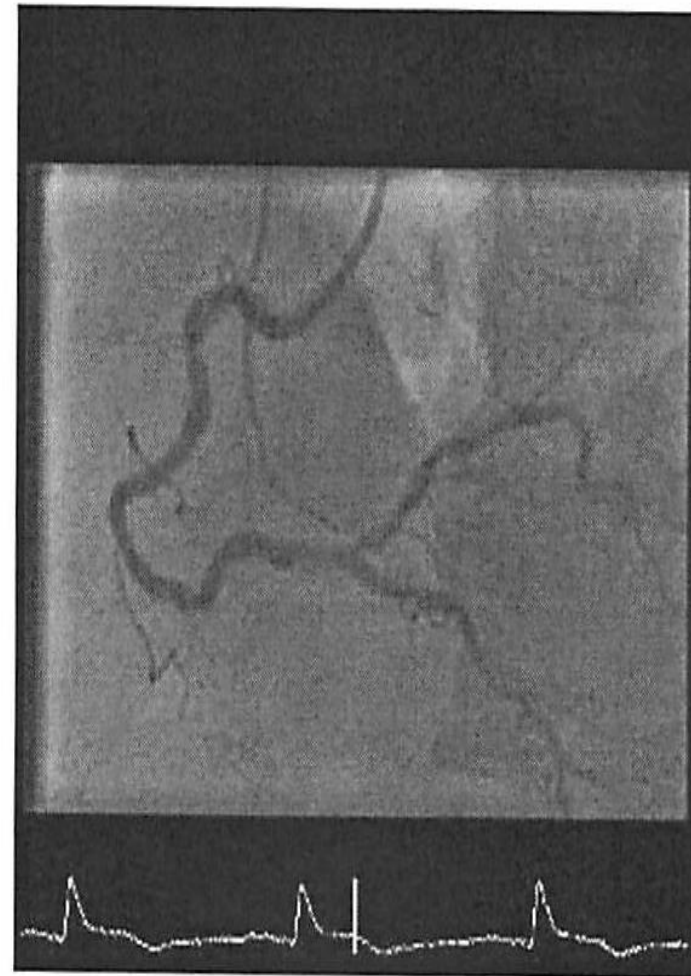
Blocked artery



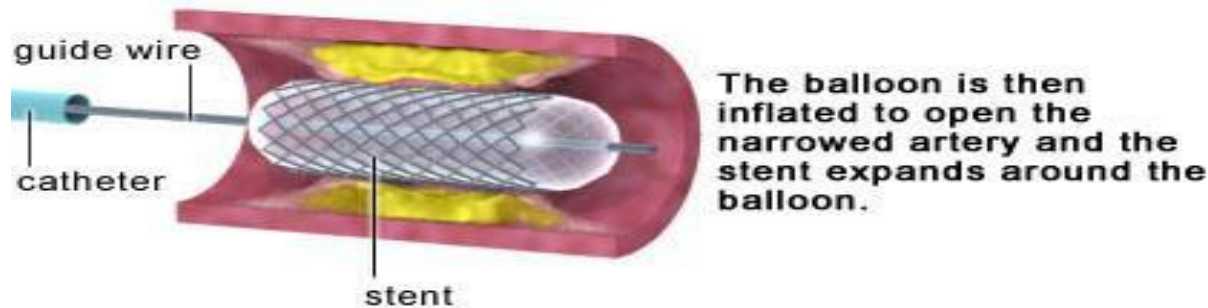
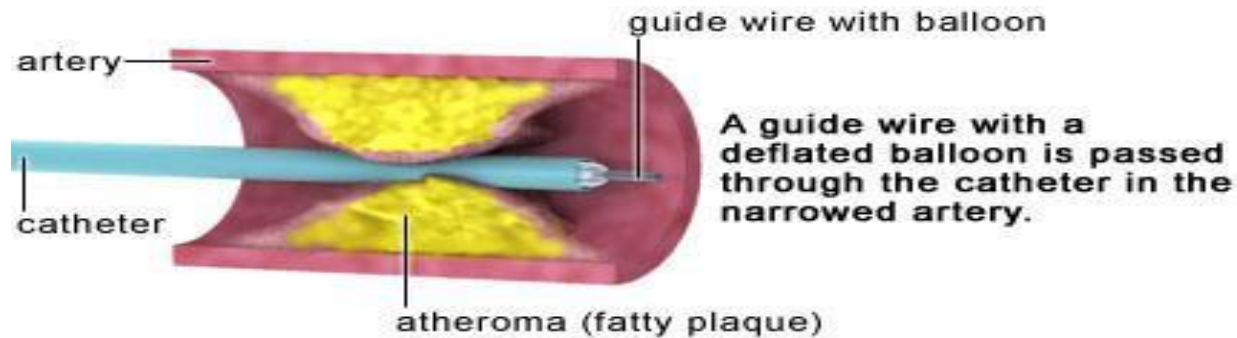
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Angiogram - unblocking an artery



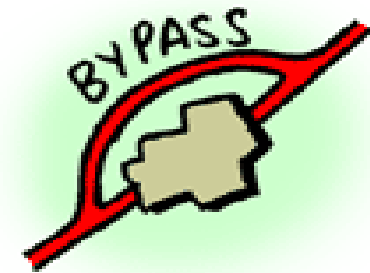
What is a stent?



I need surgery

Road Bypass – think of it like this...

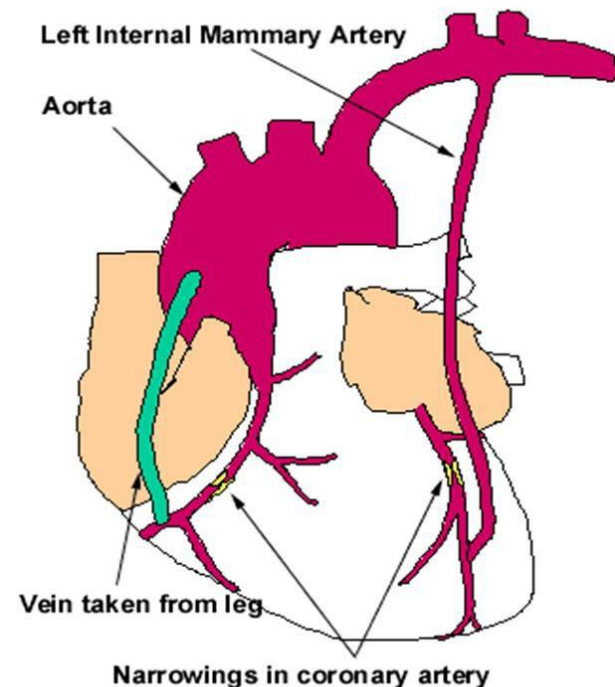
Creates a diversion of a major road carrying traffic around a built-up area, in order to improve the journey of through traffic and improve around the original route.



Coronary Artery Bypass Graft

Coronary Artery Bypass Graft (CABG)

Bypass surgery creates new routes around narrowed and blocked coronary arteries, allowing increased blood flow to deliver oxygen and nutrients to the heart muscle. Arteries are used from the chest wall and veins from the legs.



My aortic valve doesn't work properly

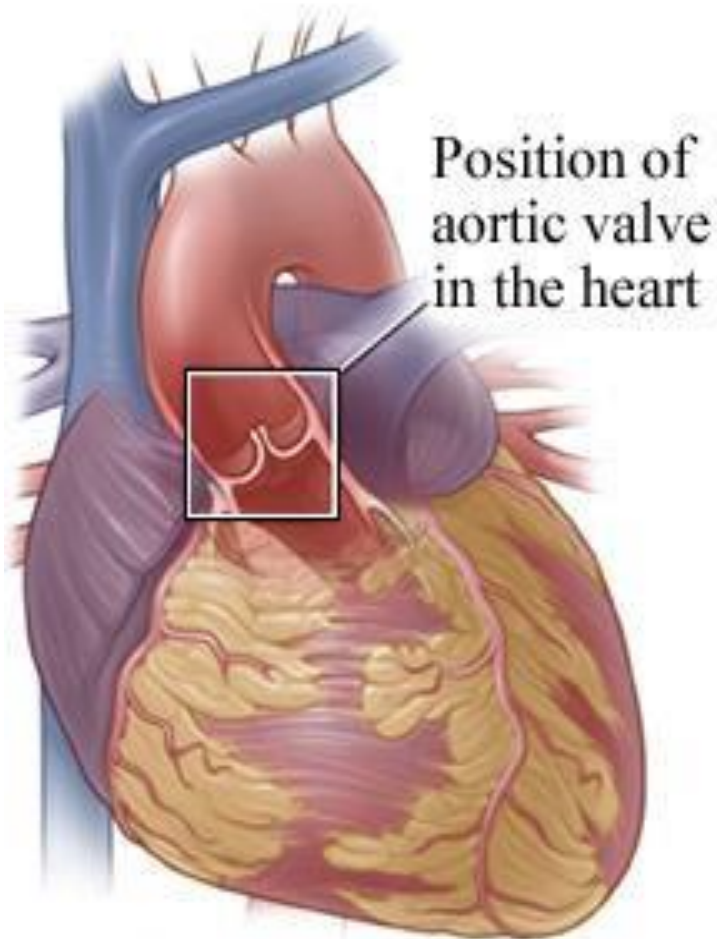
- Regurgitation – floppy valve doesn't close tightly blood flow leaks back through.
- Stenosis – stiff valve that doesn't open wide enough, blood has to squeeze through.

Associated signs/symptoms: Dizziness, fainting, shortness of breath, fatigue, chest pain and with any reduced heart function leads to ankle swelling.

Treatment/procedures: Medications, non-surgical repair, surgical repair or replacement.

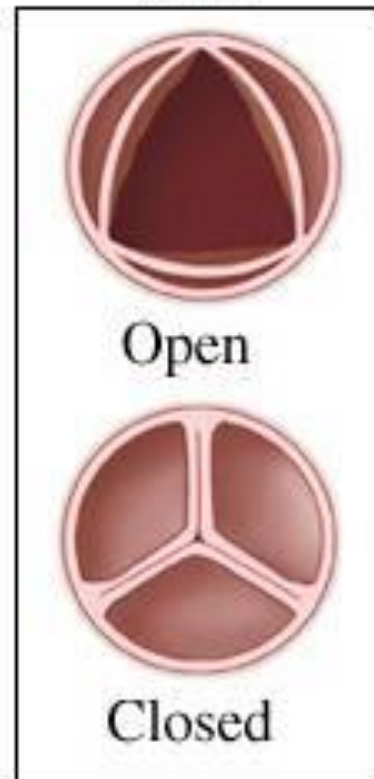


Aortic valve

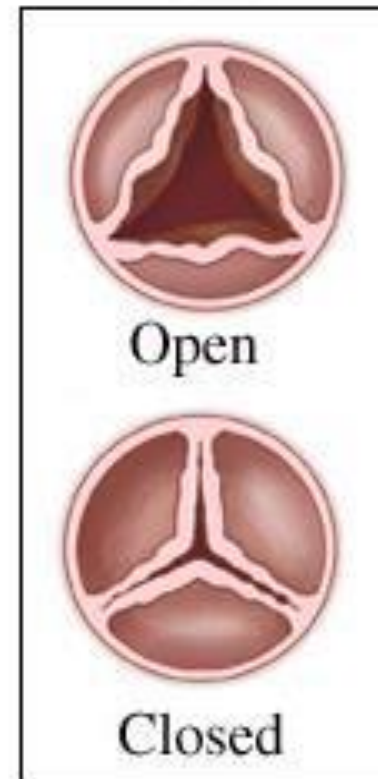


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Normal aortic valve



Aortic valve stenosis



My mitral valve doesn't work properly

- Regurgitation – floppy valve doesn't close tightly blood flow leaks back through.

Associated signs/symptoms: Dizziness, shortness of breath, fatigue, sometimes chest pain and irregular heart beat / palpitations.

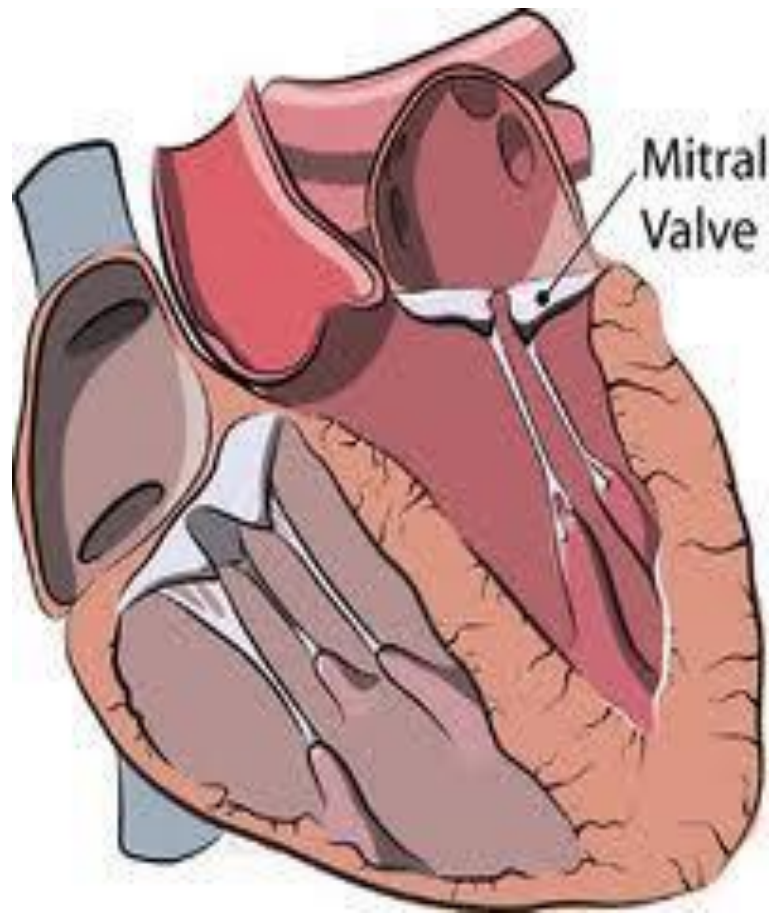
- Stenosis – stiff valve that doesn't open wide enough, blood has to squeeze through.

Associated signs/symptoms: Dizziness, shortness of breath, fatigue, chest pain.

Treatment/procedures: Medications, repair, replacement.



Mitral valve



Heart function

- Relates to the pumping action of the heart muscle.
- Determined by an echo scan.
- A number of conditions can lead to reduced heart function of which there are various treatments.

Main causes: coronary artery disease, hypertension, cardiomyopathy, atrial fibrillation, heart valve disease, congenital heart disease.

Others may include: excess alcohol, anaemia, overactive thyroid and pulmonary hypertension.



Reduced heart function may cause the following symptoms:



Useful links

<https://www.bhf.org.uk/information-support/conditions>

