CORONARY HEART DISEASE Following a Patient's Pathway Angina to Cardiac Rehabilitation

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Aims of this Session

- Discuss
  - CHD and Epidemiology
  - CHD and Pathophysiology
  - Risk Factors for CHD
  - Cardiac Assessment
  - Investigations
  - Treatment
  - Cardiac Rehabilitation

Epidemiology of CHD (BHF statistics 2021)

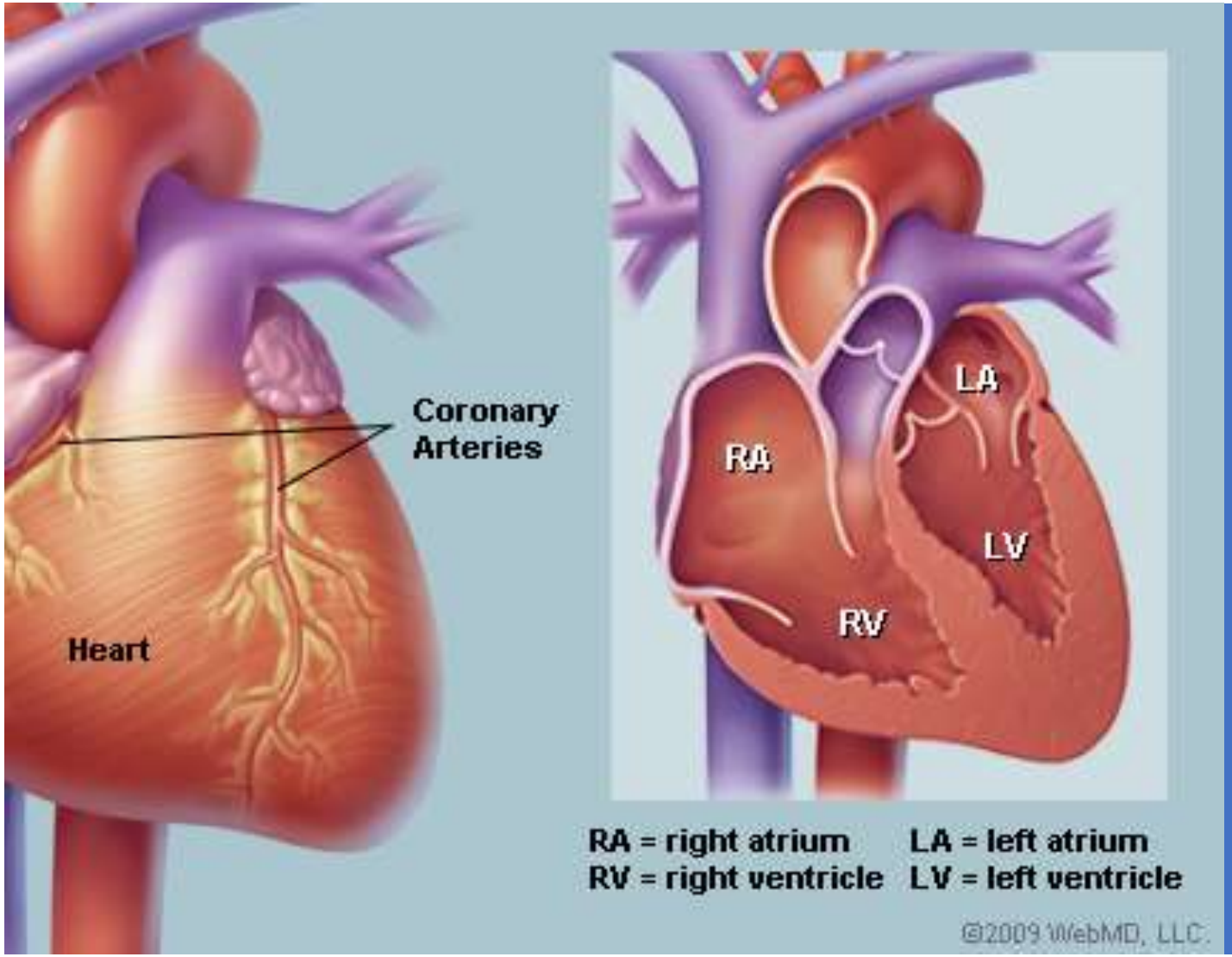
- Coronary heart disease (CHD) is the main cause of death in the UK and worldwide
- Around one in eight men, and one in thirteen women die from the disease each year. It affects more men than women, especially after the age of 50yrs
- CHD causes more than 63,000 deaths annually
- CHD is alternatively known as IHD and it is estimated that 2.3 million people living with the disease, and more than 2 millions suffering with angina

Epidemiology of CHD

- Reason for decline in mortality is due to reduction in major risk factors (particularly smoking), also due to treatment and secondary prevention

- CHD rates vary with age, gender, socio-economic status, ethnicity and geographical location, seasonal variation

The heart


Coronary Arteries
Heart
LA
RA
LV
RV
RA = right atrium
LA = left atrium
RV = right ventricle
LV = left ventricle
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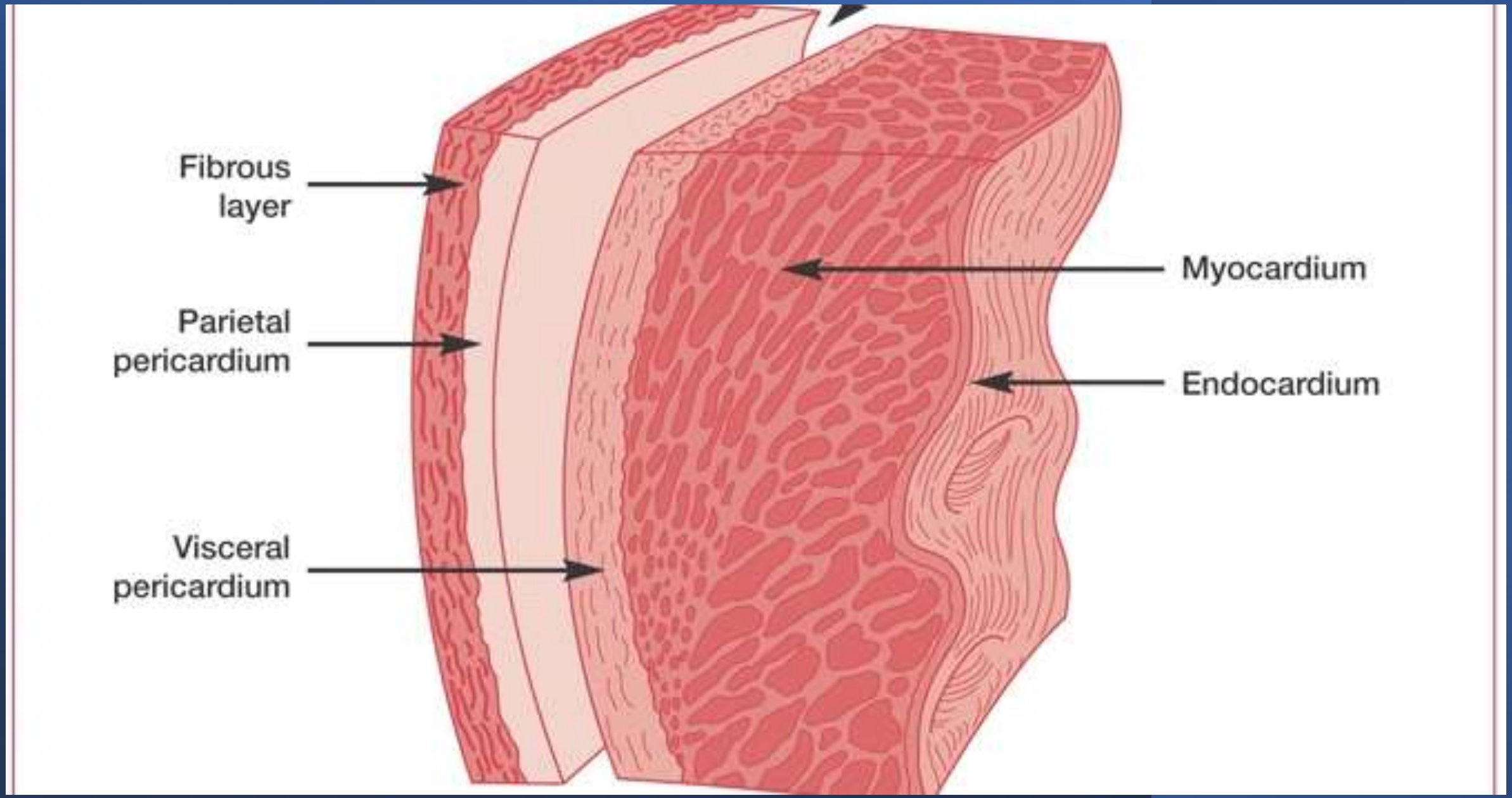
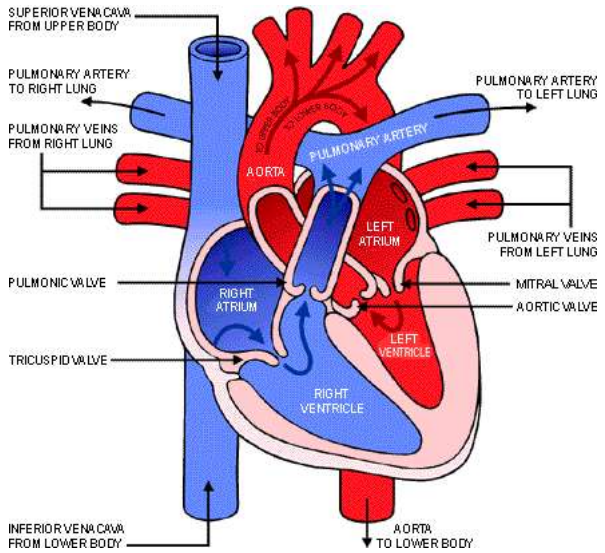
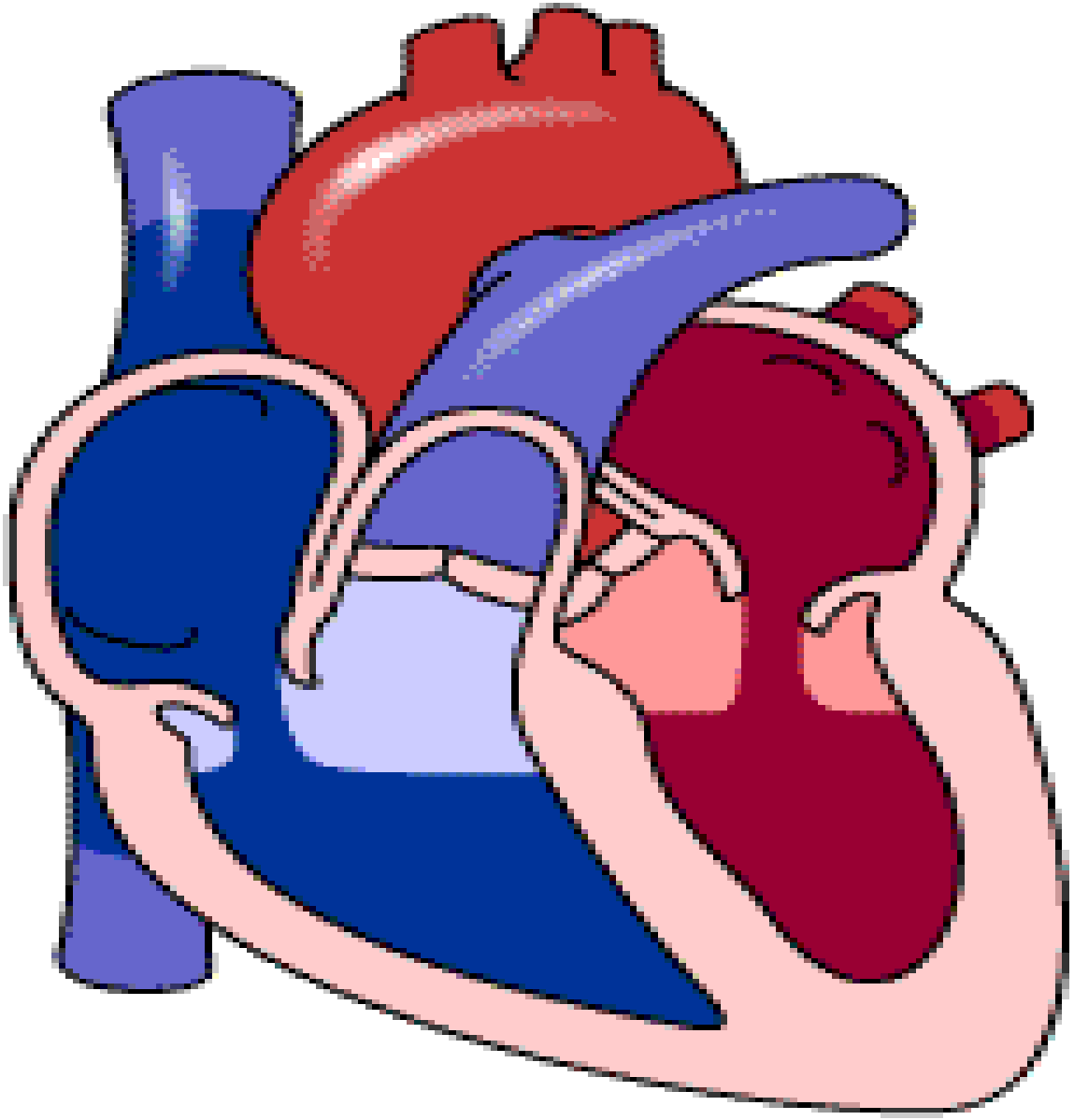
Layers of the heart

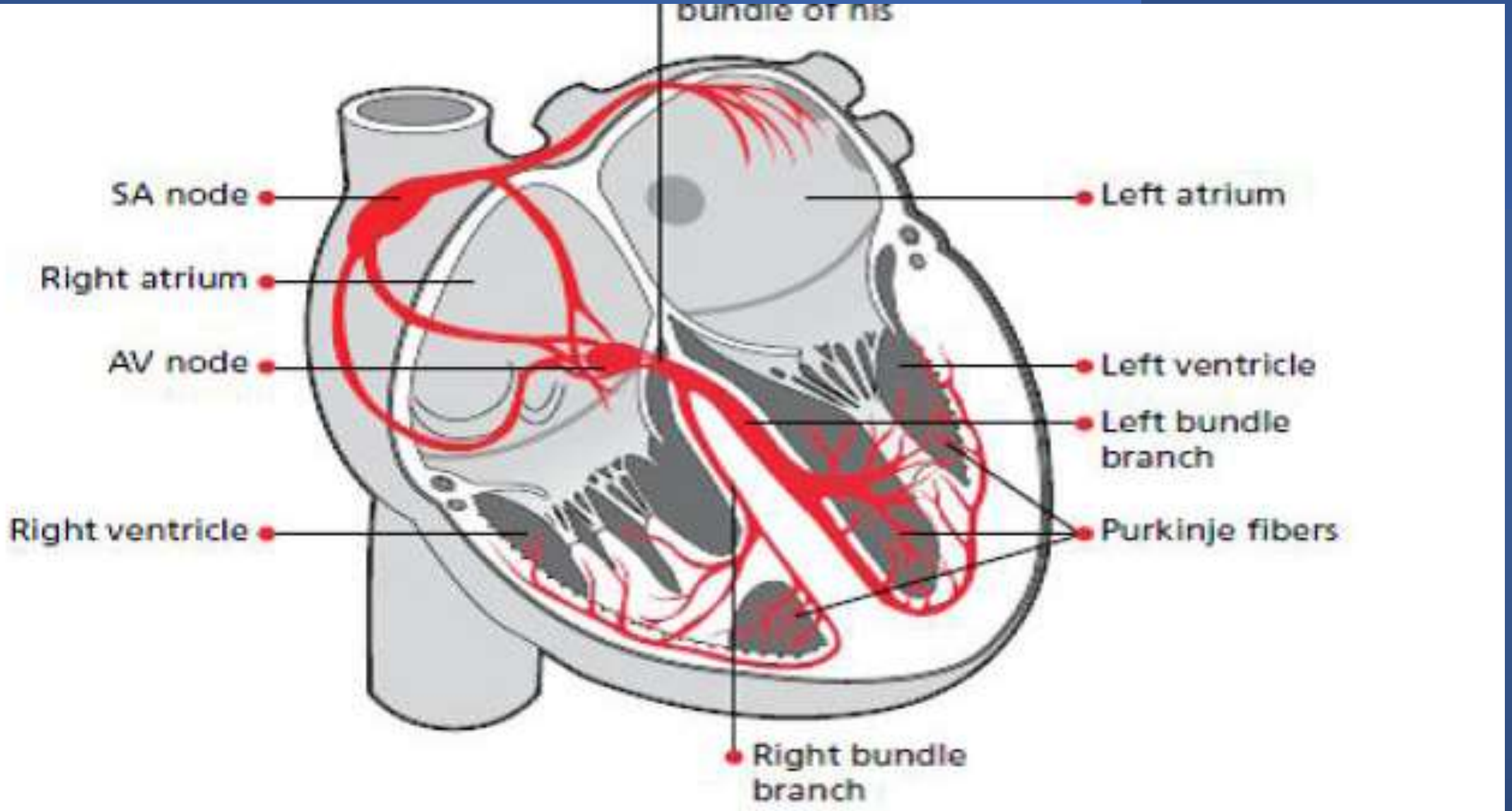
- Epicardium
- Myocardium
- Endocardium


Fibrous layer
Parietal pericardium
Visceral pericardium
Myocardium
Endocardium

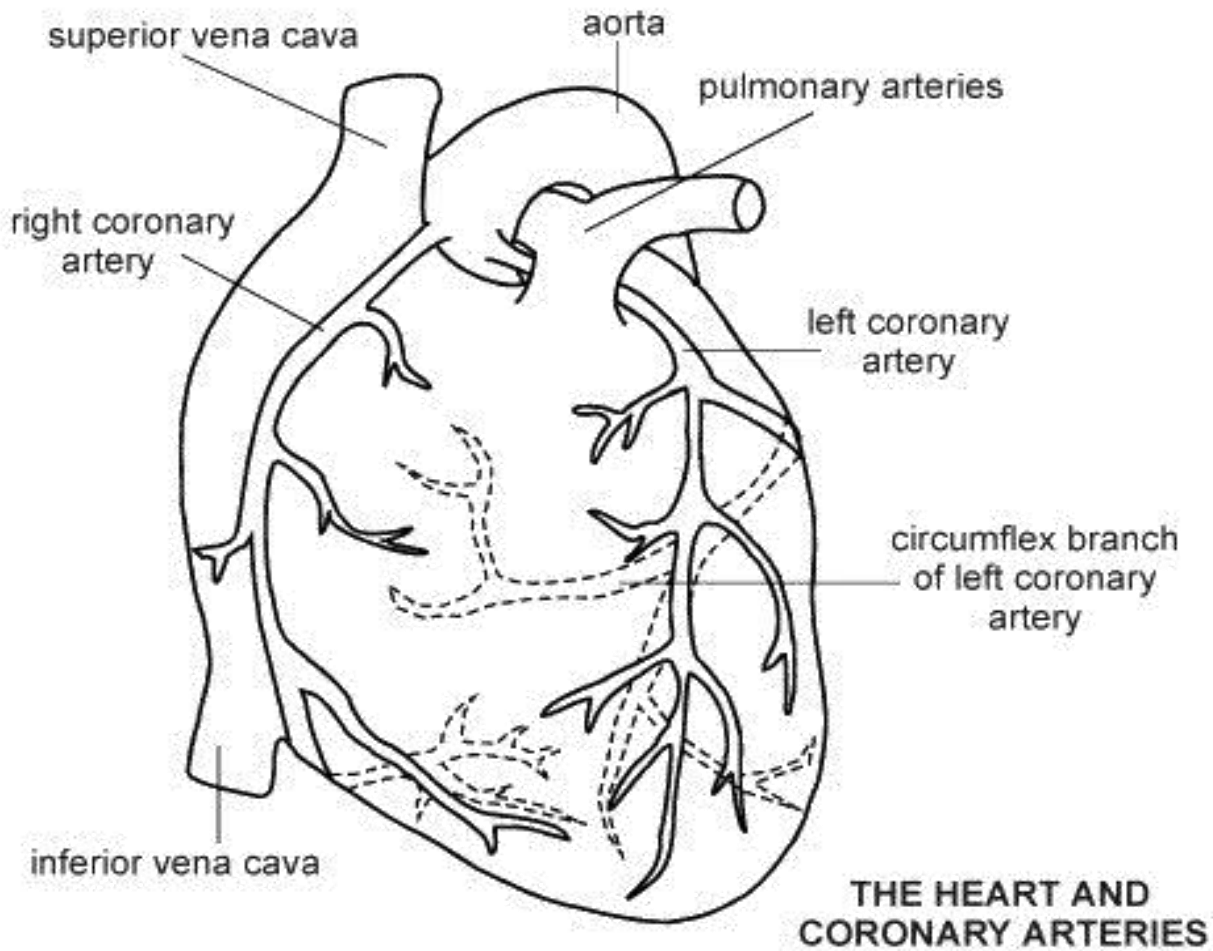
Circulation

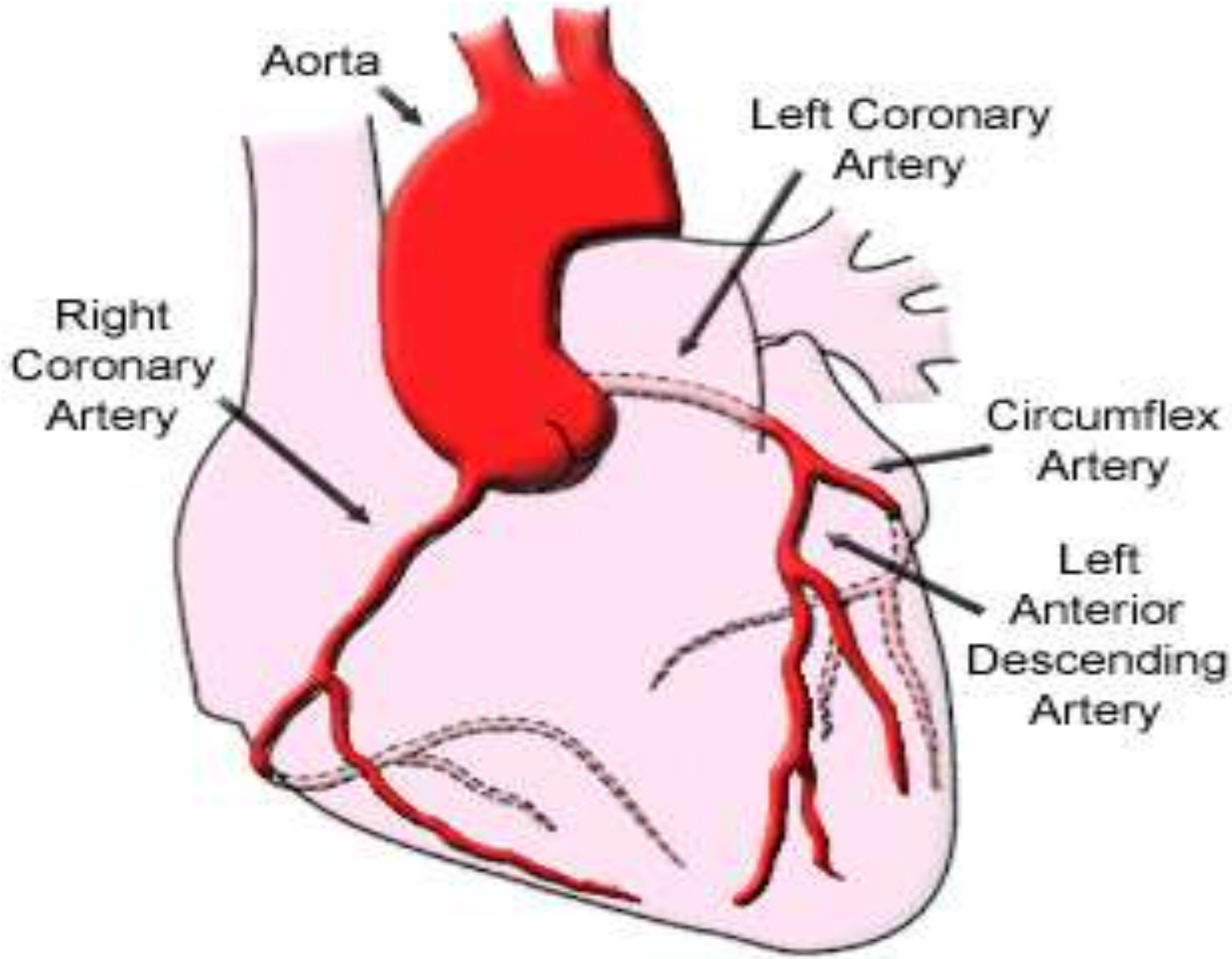





bundle of his
SA node
Right atrium
AV node
Right ventricle
Left atrium
Left ventricle
Left bundle branch
Purkinje fibers
Right bundle branch

Coronary Arteries




Aorta
Left Coronary Artery
Right Coronary Artery
Circumflex Artery
Left Anterior Descending Artery

Coronary arteries

- The heart needs its own reliable blood supply in order to keep beating – the coronary circulation.
- The coronary arteries lie in grooves (sulci) running over the surface of the heart muscle (myocardium), covered over by a thin layer of tissue (epicardium).
- The heart has three main coronary arteries, the origins of which arise from the ascending aorta.

Coronary arteries

- There are 3 main arteries:
  - The Right Coronary Artery (RCA) and
  - The Left Coronary Artery (LCA) which divides into

    the Left Anterior Descending (LAD) and Circumflex artery (LCx).

- These main vessels have many branches which terminate in very small vessels called arterioles supplying the vast capillary network of the myocardium.

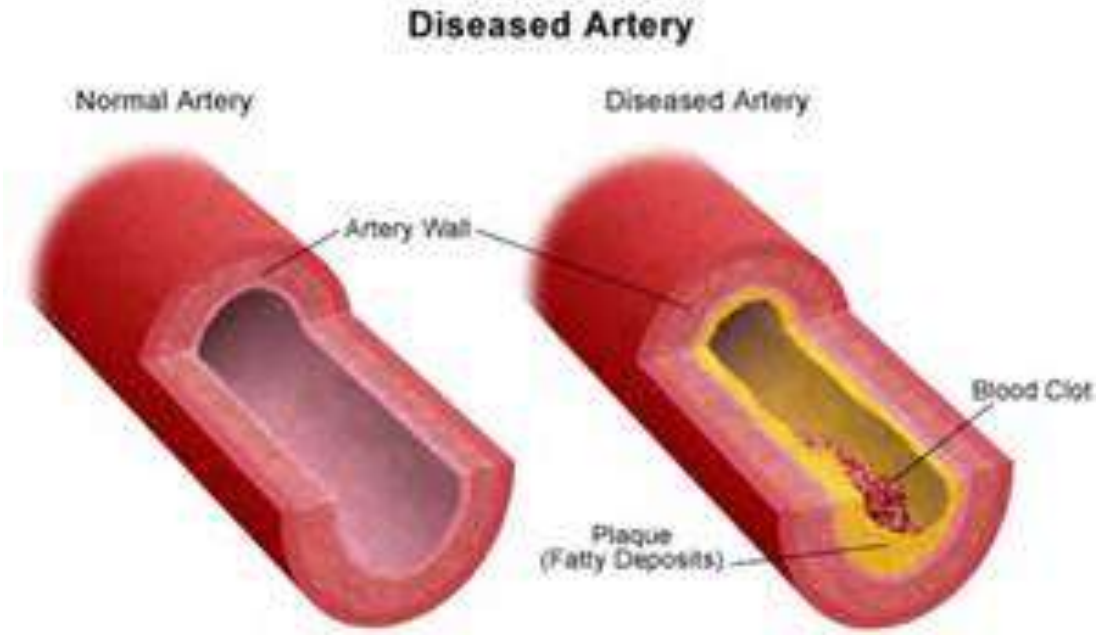
atherosclerosis

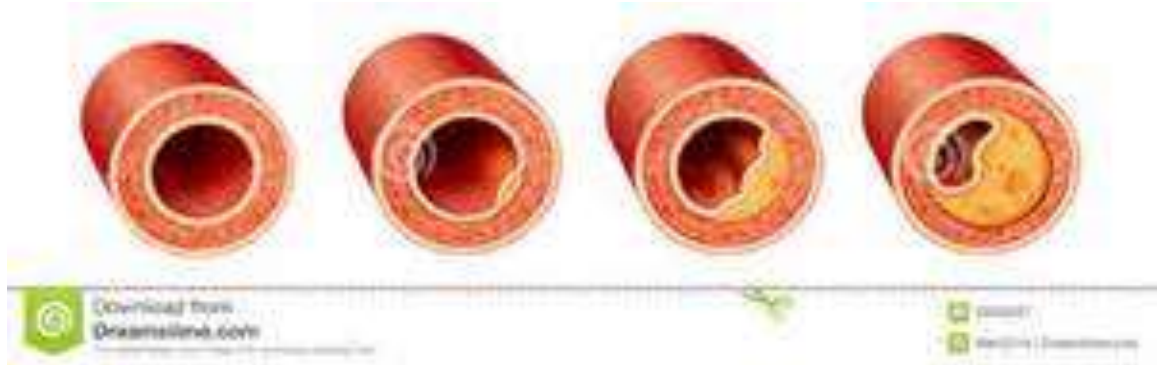
- Is a disease of the large and medium sizes arteries.
- The term comes from Latin ‘athero’ means gruel-like and ‘sclerosis’ means hardening.
- The disease is characterized by a gradual build-up of fatty plaques within the arterial wall
- This results in significant reduction of the vessel lumen impairing blood flow to the distal tissues.
- These plaques may also cause acute coronary syndromes (ACS) by becoming unstable and triggering coronary thrombosis

atherosclerosis

- The atherogenic process is characterized by dysfunction of the endothelial lining of the vessel, associated with inflammation of the vascular wall leading to the build-up of lipids, cholesterol inflammatory cells, and cellular debris within the intima and sub-intimal layers of the vessel, resulting in plaque formation and remodelling of the arterial wall

- (Ramrakha & Hill 2006)

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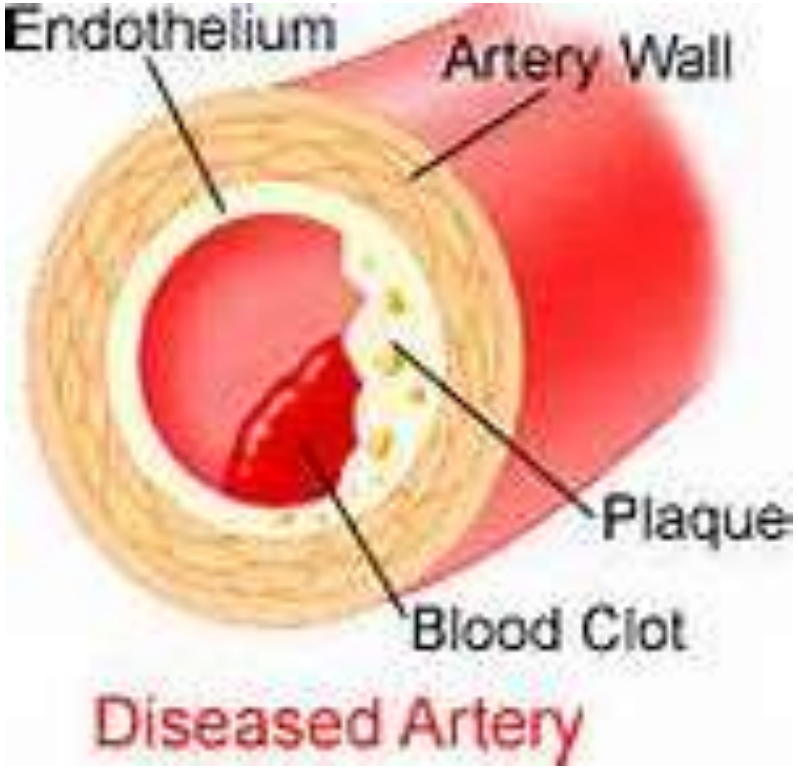
Vascular wall

- Tunica Adventitia
- Tunica Media
- Tunica Intima



Angina

- An obstruction in the coronary artery which hinders the flow of oxygenated blood
- through the coronary arteries, thus decreasing the blood supply to the heart
- muscle.

Acute coronary syndrome (acs)

- Unstable angina
- STEMI
- NSTEMI

assessment

- Cardiac
- Non-cardiac

assessment

- History of chest pains
- Presence of cardiovascular risk factors
- History of IHD and previous treatment
- Previous investigations for chest pains

- (NICE Guidlelines 2010 and 2011)

Non-cardiac

- Pulmonary Embolism
- Pneumonia
- Chest Infection / Pneumothorax
- Gastric Reflux/Indigestion
- Musculoskeletal

Assessment

LOOK

- Patients colour, pale/ flushed
- Non Verbal signs of pain – rubbing at site of pain
- Agitation/restlessness/confusion
- Disorientation

Listen

- Duration: How long have you been feeling like this?
- Location: Where is the pain
- Frequency: How often
- Character: Describe the pain
- Exacerbating or relieving factors

PQRST Assessment Of Chest Pain

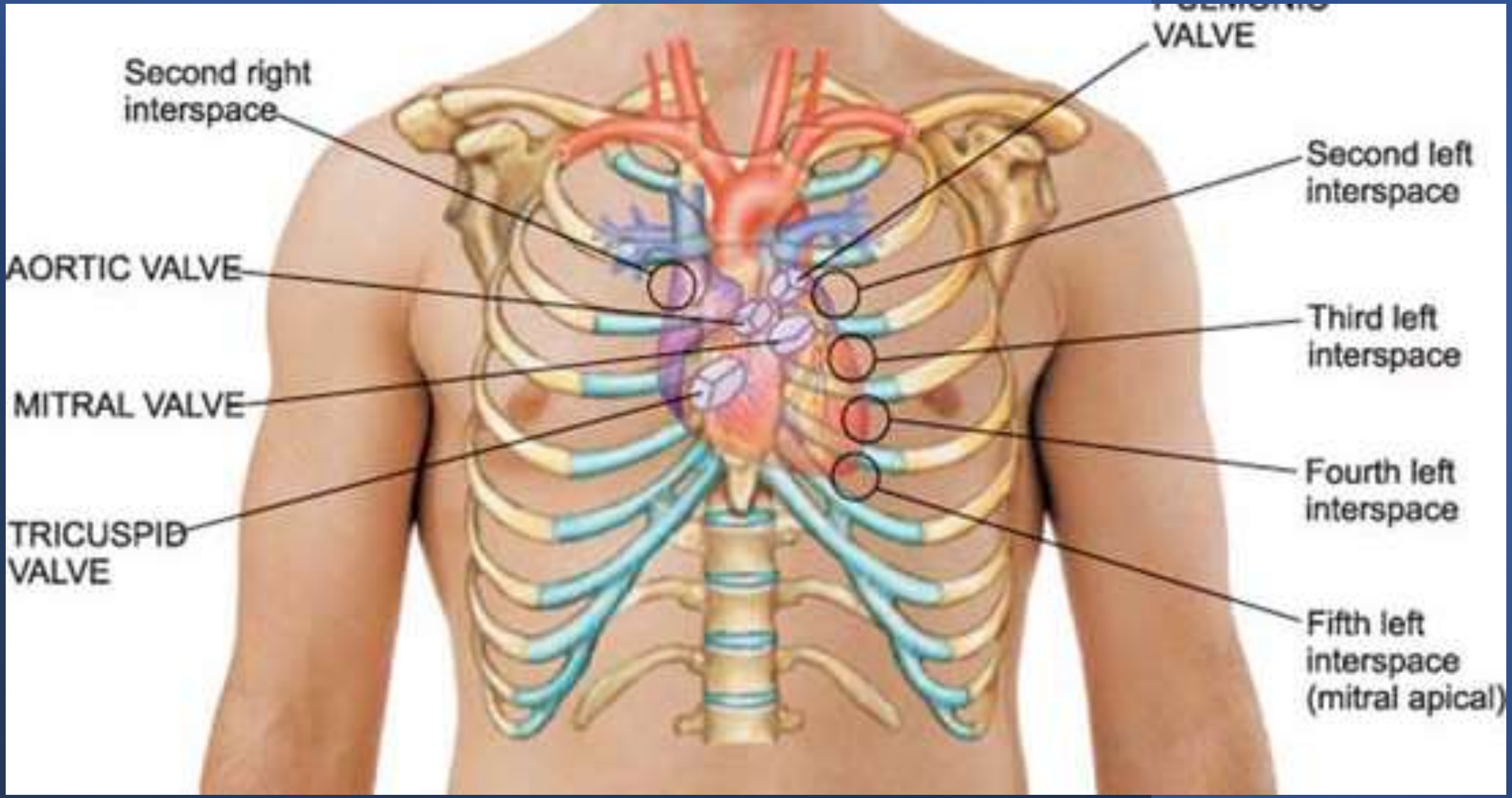
- **P = Precipitating factors**
- **Q = Qualitative factors**
- **R = Region & Radiation**
- **S = Severity & associated symptoms**
- **T = Timing**

(Murray S, White B 1999)

OLDCART

- O - ONSET
- L - LOCATION
- D - DURATION
- C - CHARACTERISTICS
- A - ACCOMPANYING SYMPTOMS
- R - RADIATION
- T – TREATMENT

(Seidal et al 1999)


VALVE
Second right interspace
Second left interspace
AORTIC VALVE
Third left interspace
MITRAL VALVE
Fourth left interspace
TRICUSPID VALVE
Fifth left interspace (mitral apical)

Feel

- Temperature of skin

(hands and feet)

- Tachycardia/
- Bradycardia/irregular pulse
- Peripheral circulation

- Hypotension

Urgent investigations

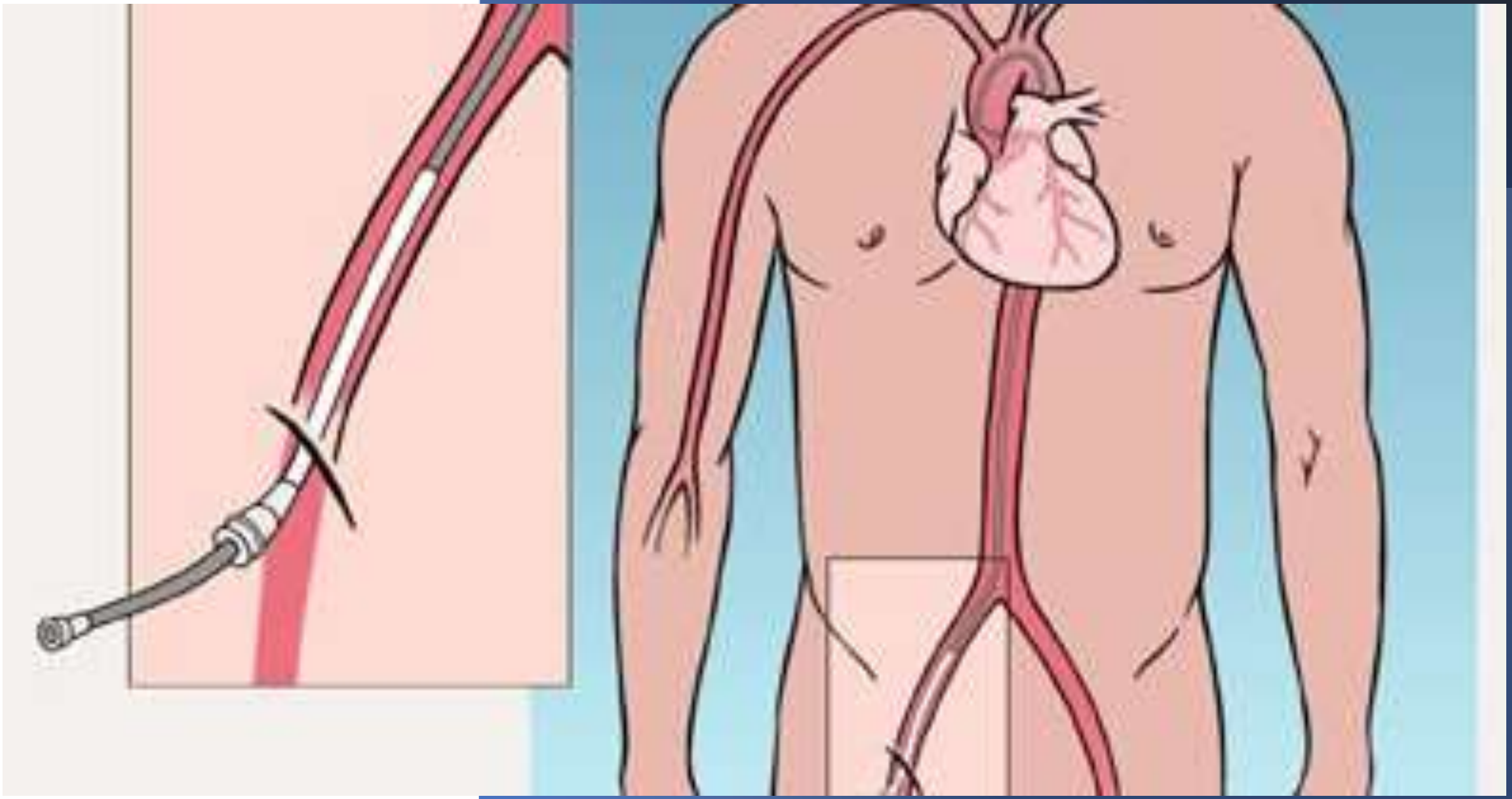
- 12 lead ECG
- Troponin
- Cardiac enzymes
- Chest x-ray
- FBC
- U & E

Routine investigations

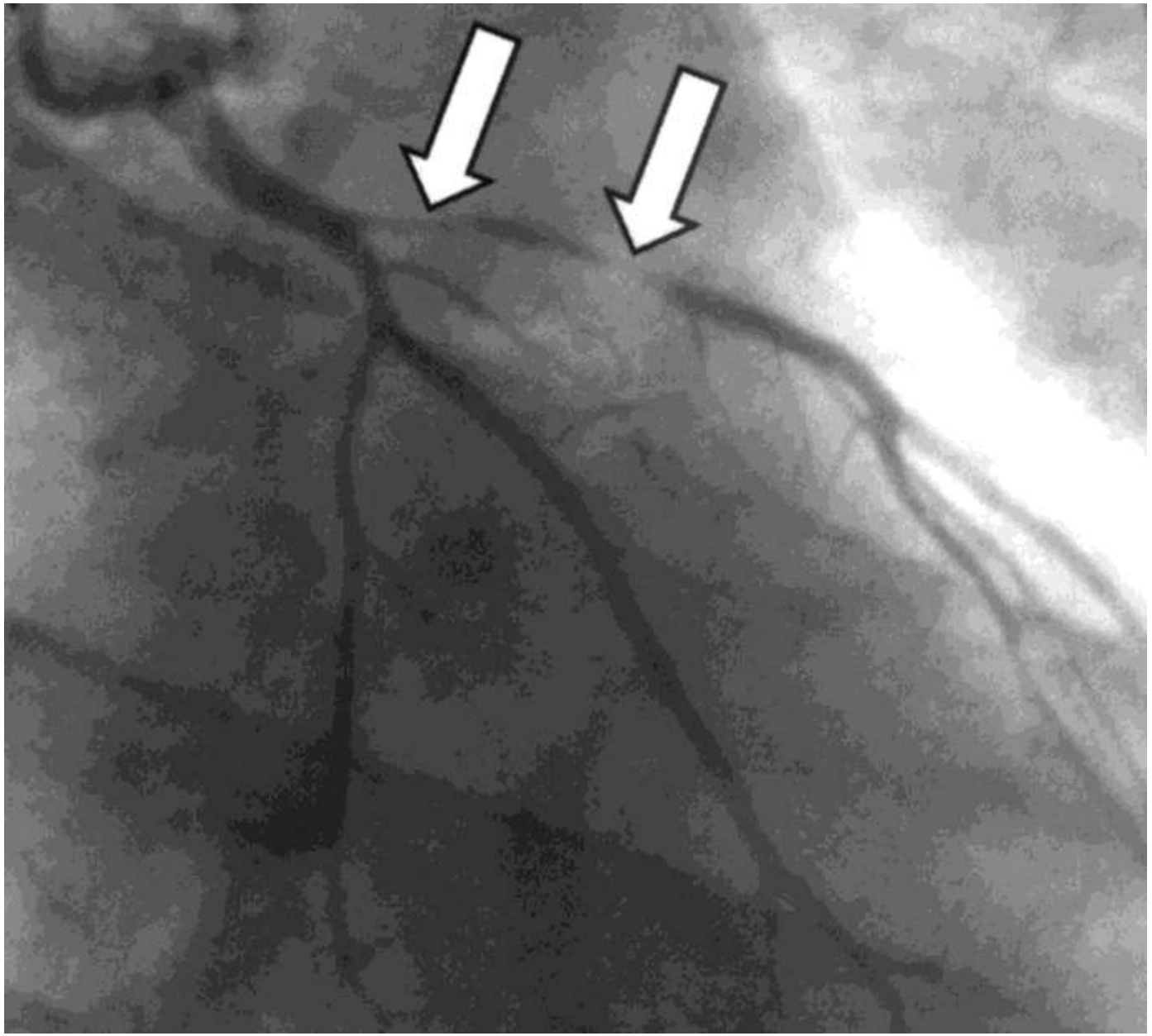
- Exercise Tolerance Test (ETT)
- Dobutamine Stress Test
- Transthoracic echocardiogram
- Transoesophageal echocardiogram (TOE)
- Thallium Scan
- Angiogram

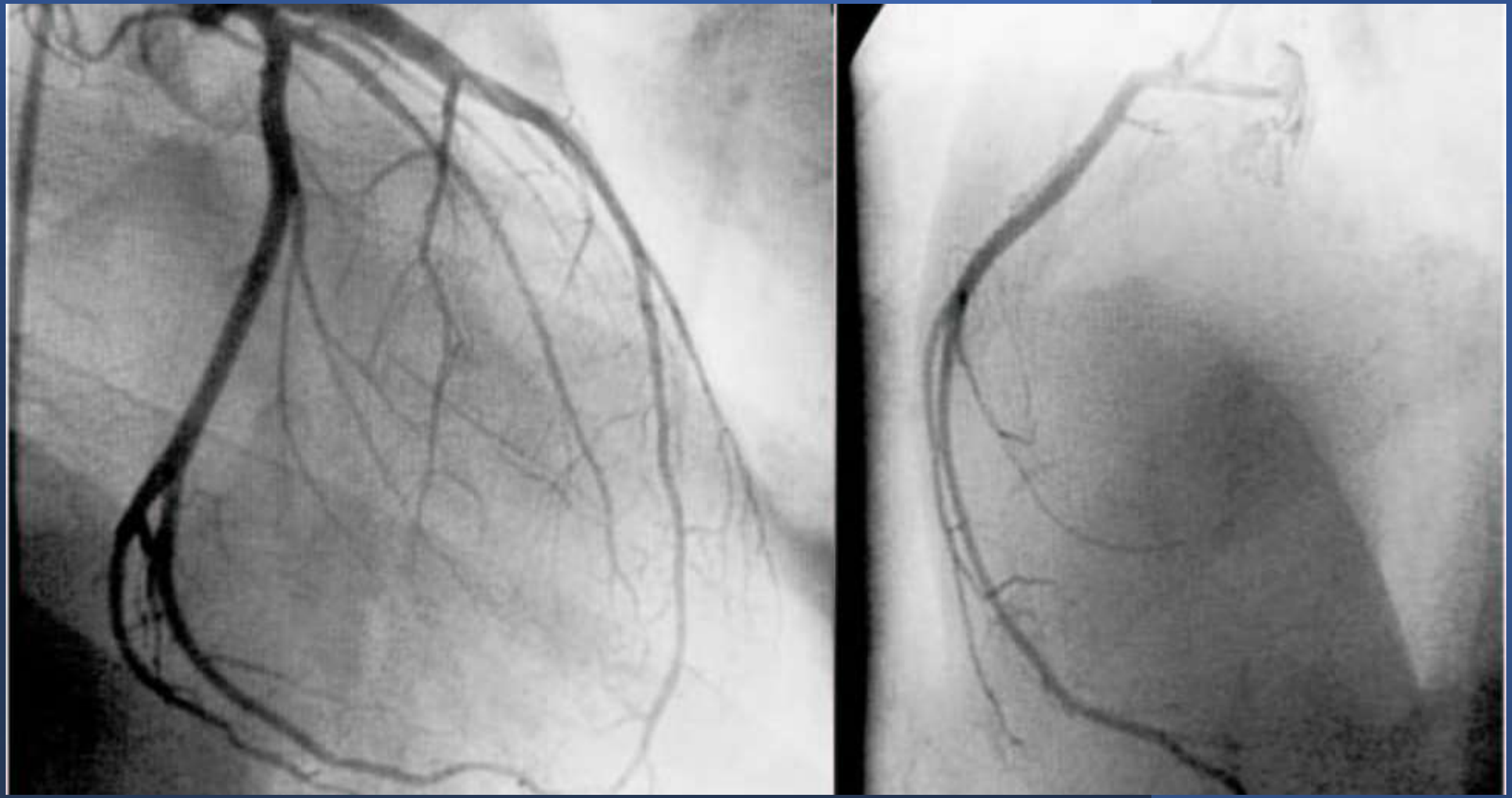
Medical treatment

- Anti-platelets
- Ace inhibitor
- Angiotensin antagonist
- Beta blocker
- Calcium channel blocker
- Statin
- Anti anginals (nitrates)



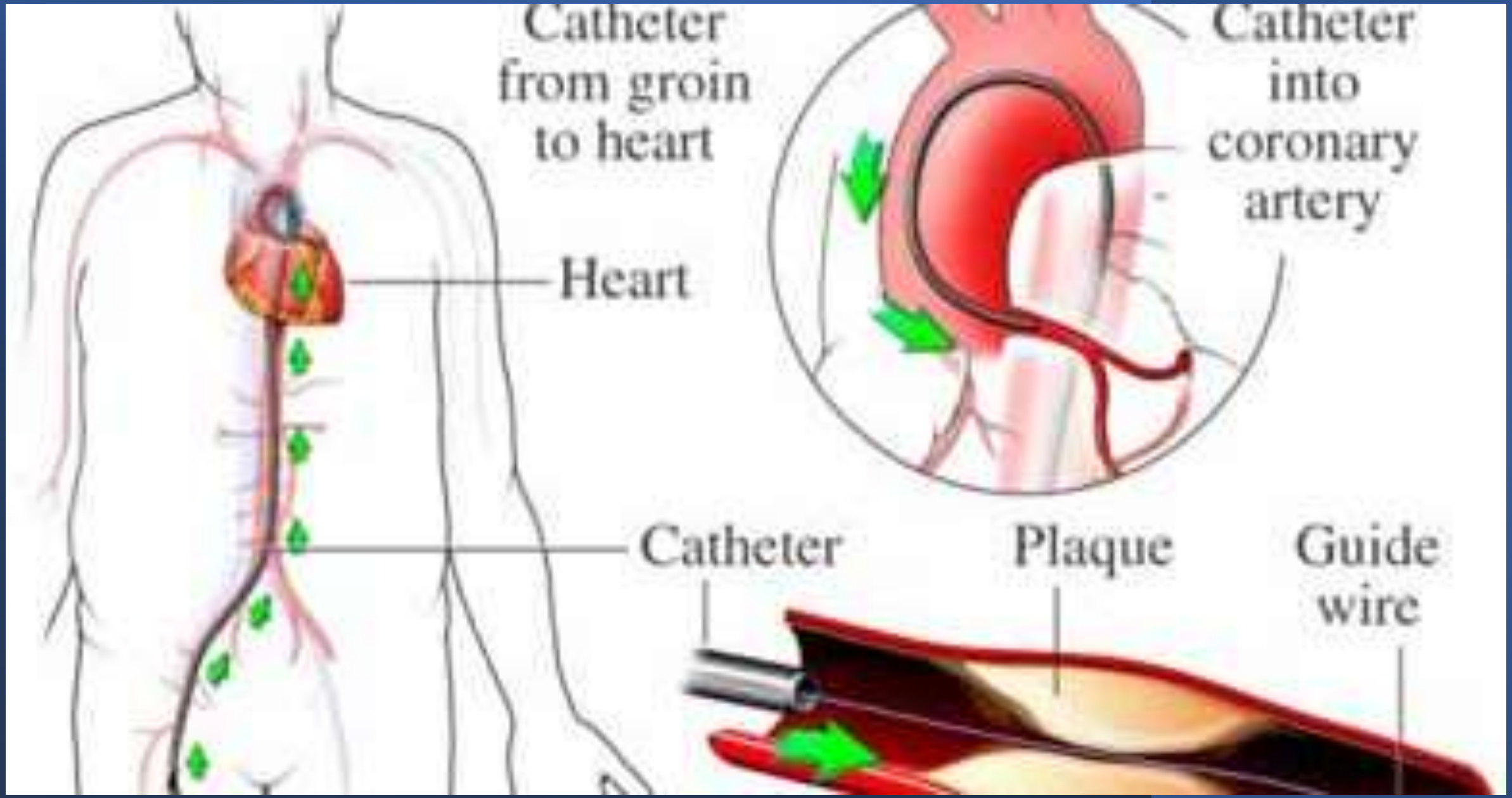
angiogram

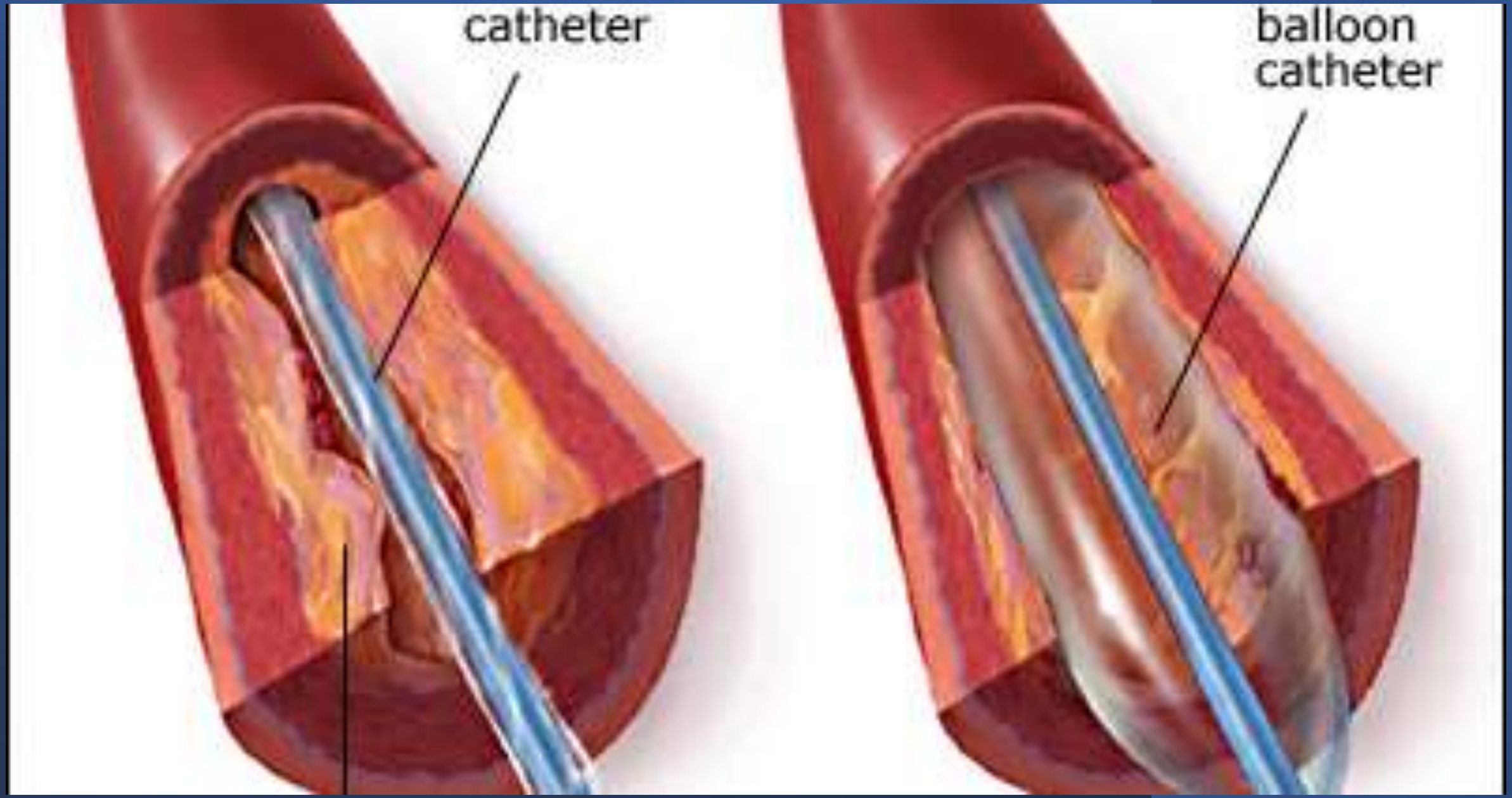


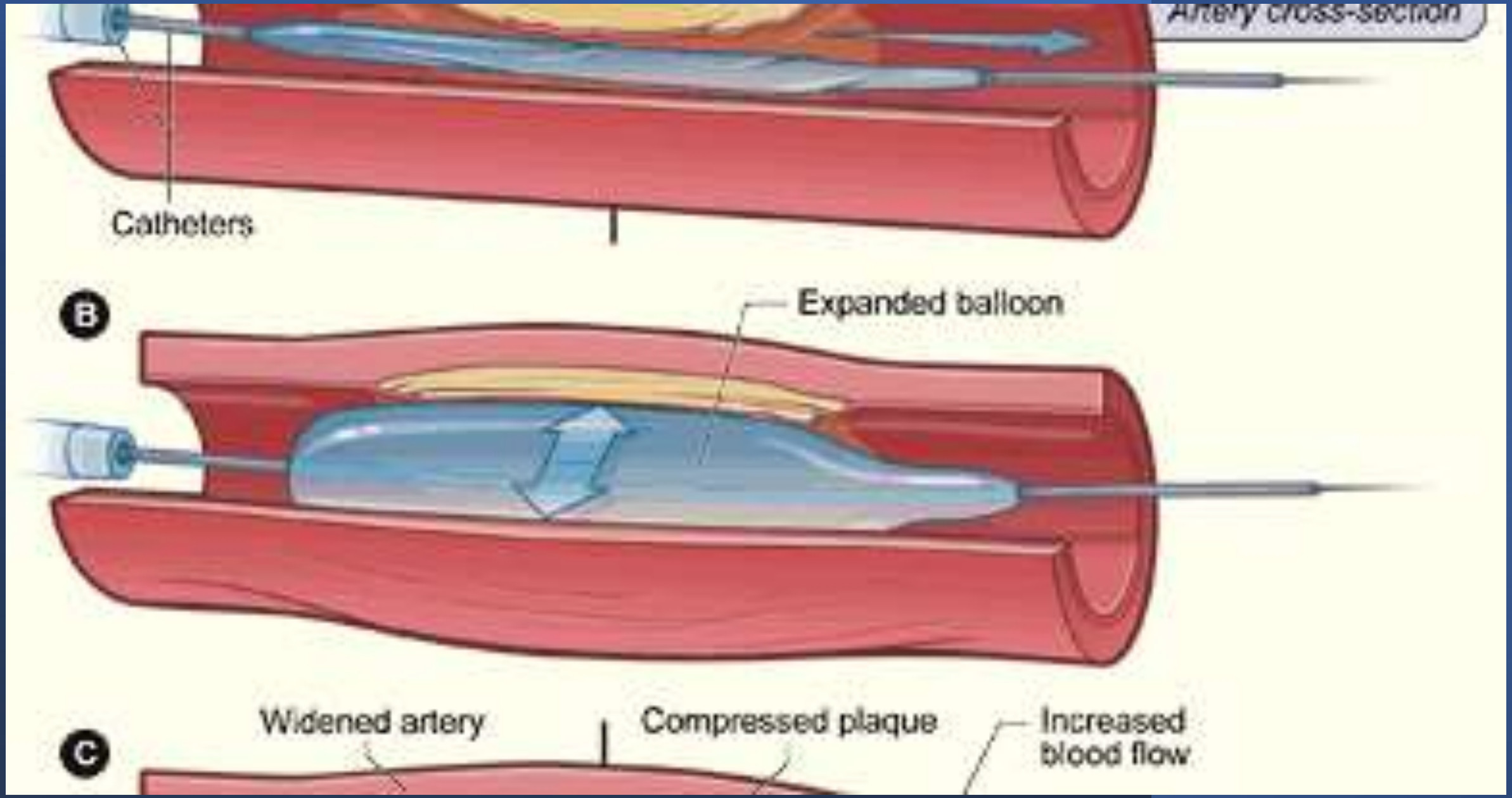


revascularisation

- Angiogram
- PCI
- PPCI
- CABG

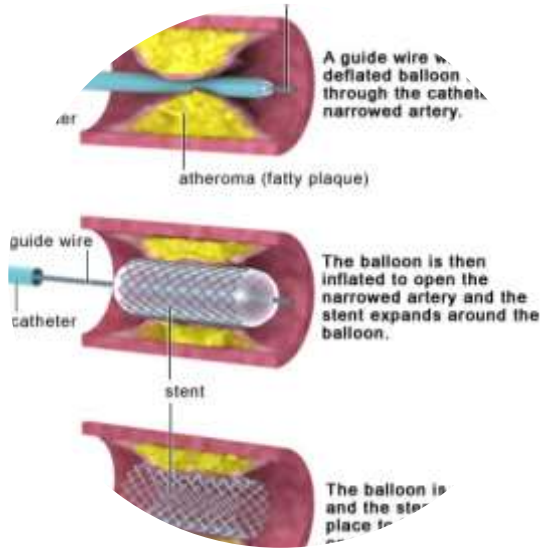

Catheter
from groin
to heart
Heart
Catheter
into
coronary
artery
Catheter
Plaque
Guide
wire


catheter
balloon
catheter


Artery cross-section
Catheters
B
Expanded balloon
C
Widened artery
Compressed plaque
Increased
blood flow

Angioplasty

- Also known as PCI/PPCI

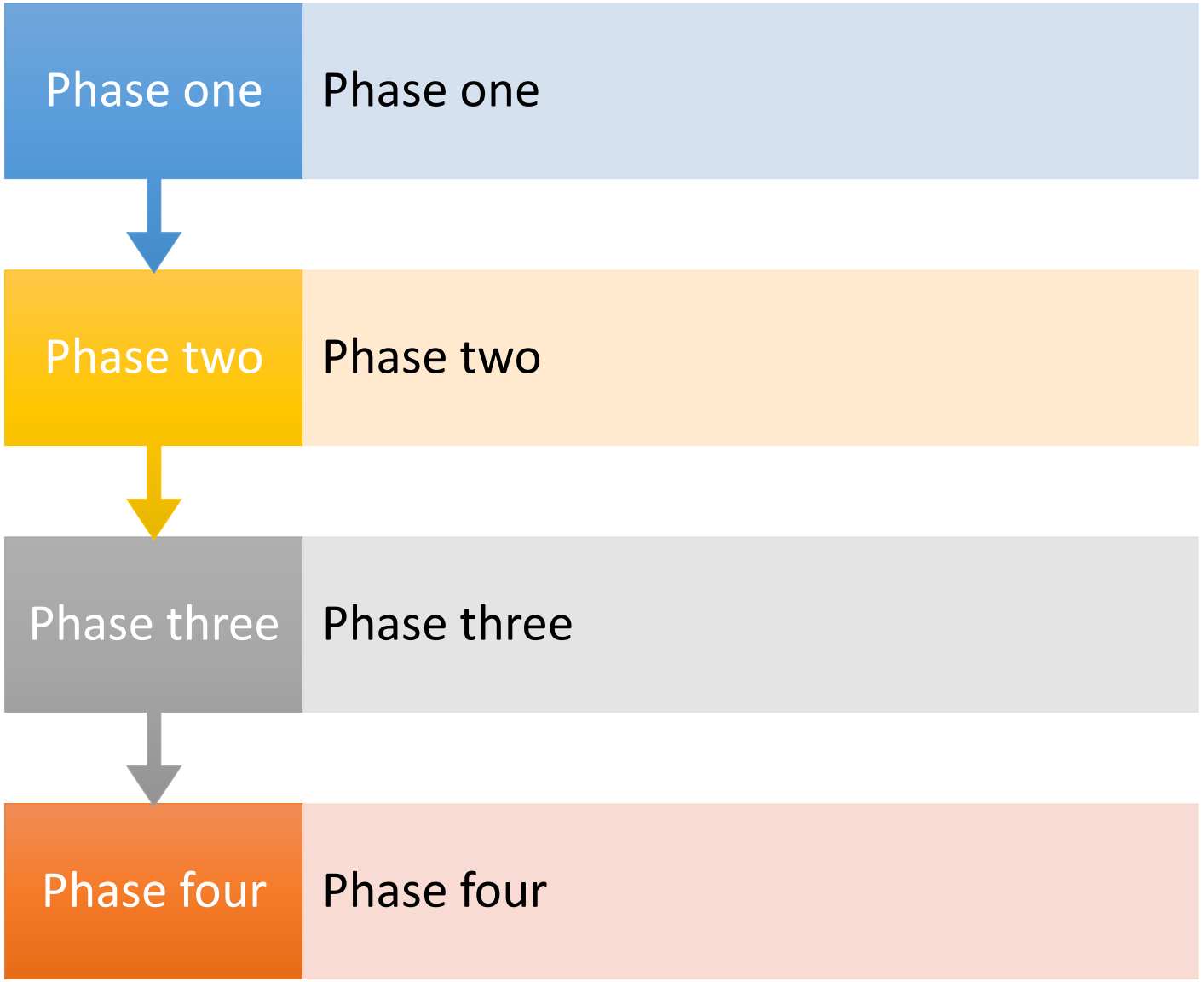


Heal

Risk factors

Modifiable	Non Modifiable
Smoking	Family History
Lack of exercise	Age
Diet	Gender
Overweight	Ethnicity
Stress	Socio-economic
Hypertension	
Diabetes	
Hypercholesteolaemia	

CARDIAC REHABILITATION (BACPR 2014)



questions?

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