Coronary artery disease, angina and chest pain

- <u>A careful history</u> is a good predictor in sorting those with cardiac pain from those without
- Coronary artery disease (CAD) = coronary heart disease (CHD) = ischaemic heart disease (IHD) = narrowing or blockage of coronary artieries, usually due to atherosclerosis
- Remember that **cardiomyopathy** may present with typical angina symptoms – consider especially if patient is young and with few risk factors for CAD

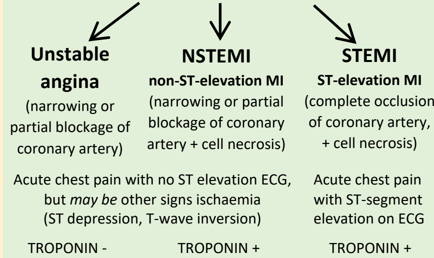
Differential diagnosis:

Cardiac: Ischaemic: stable angina, acute coronary syndrome (ACS), coronary vasospasm (Prinzmetal's angina), hypertrophic cardiomyopathy, aortic stenosis. Non-ischaemic: arrhythmias, aortic dissection, mitral valve disease, pericarditis
Respiratory: pneumothorax, pulmonary embolism, pneumonia, pleurisy, lung cancer.
Musculoskeletal: costochondritis, Tietze's syndrome, trauma, rib pain (including fracture, bone metastases, osteoporosis, radicular pain, nonspecific musculoskeletal pain (eg. fibromyalgia)
Gastrointestinal: GORD, oesophageal rupture, oesophageal spasm, peptic ulcer disease, cholecystitis, pancreatitis, gastritis.
Skin: herpes zoster infection
Psychological: anxiety, depression, panic
Breast disease
Sickle cell crisis

Risk Factors for CAD

- Hypertension, diabetes, hyperlipidaemia, CKD, other CVD
- Lifestyle: smoking, alcohol abuse, low physical activity, dietary (high salt intake, low fruit/veg, high fats, refined carbs)
- FH (1st-degree relative: M<55y, female<65y)
- Stress/anxiety/depression
- Social determinants of health e.g. poverty, social exclusion, illiteracy, air pollution

ACUTE CORONARY SYNDROME (ACS)



PATIENT PRESENTING WITH RECENT HISTORY OF CHEST PAIN
Could this be ACS?

↓

Rapid assessment at triage:

- Current chest pain? (or epigastric pain if diabetes)
- Chest pain lasting >15 minutes within last 12h?
- Any signs of instability with vital signs?

→ 'Yes' to any of the above - transfer to casualty for further assessment

→ 'No' to all of the above – continue assessment in OPD

If clinical concern for possible ACS at any point → transfer to casualty for further assessment

History & Examination

Double-check for possible ACS as per questions at triage – transfer to casualty if suspect
Further assessment of pain – see below (SOCRATES – site, onset, character, radiation, associated symptoms, timing, exacerbating and relieving factors, severity)
Risk factors for CAD and PMH
Examination – general appearance, vital signs, pulmonary oedema, other systems as indicated

→ **History of cardiac-sounding chest pain**
(patient stable to stay in OPD)

→ **History of non-cardiac chest pain**
Investigate and treat as appropriate
DISCUSS WITH CONSULTANT IF IN DOUBT

Investigations

Bloods: Troponin (only do if pain lasting >15mins within the last 3d), CBC, HbA1c, creatinine, other bloods as indicated (no need for lipids as statin indicated anyway if CAD)
ECG: look for pathological Q waves, LBBB, ST and T-wave abnormailiteis (flattening/inversion), but a normal ECG does not rule out angina
CXR: if other pathologies are a possibility

STEMI or NSTEMI

(acute ECG changes or raised troponin)
Transfer to casualty
Ensure optimal management after discharge (page 2)

Unstable angina

(angina, but unpredictable - can occur with no trigger & can continue at rest; no current chest pain; patient stable)
Discuss with consultant, start treatment as for stable angina but **urgent referral to cardiology** (call to discuss)

Stable angina

2 or 3 of the following:

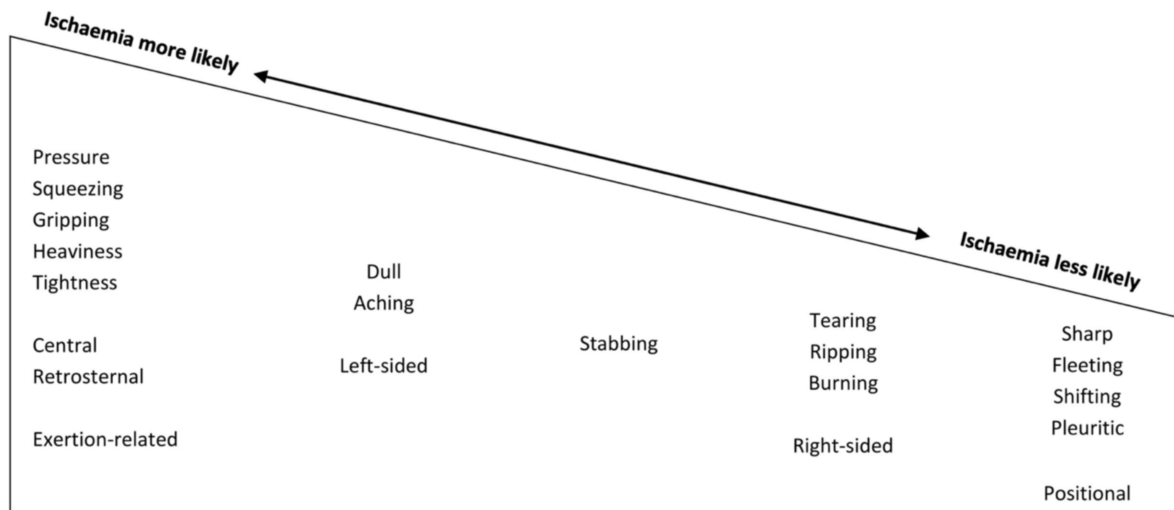
- Constricting discomfort/pain in front of chest/neck/shoulder/jaw/arms
- Precipitated by exertion
- Relived by rest or GTN within 5mins

Start treatment (page 2)
DISCUSS WITH CONSULTANT IF DOUBT

Alternative diagnosis

Treat as appropriate

Characteristics of chest pain and probability of ischaemia (BMJ 2022;377:e069591)



Common associated symptoms = shortness of breath, nausea, palpitations, light-headed or syncope, sudden unexplained fatigue, radiation to the arm, throat or jaw

<table>
<tr><th></th><th>Management of stable angina</th><th>Treatment post MI
Likely follow up will be with cardiologist, but if not, ensure that medication is as follows:</th></tr>
<tr><td>1. Secondary prevention</td><td>• Aspirin 75mg OD lifelong
(+ omeprazole 20mg OD if: >70y, hx GI bleed, on other dugs which increase the risk of GI bleed)
• Statin – lifelong, ideally high dose, e.g. start atorvastatin 40mg OD and increase to 80mg if tolerated/possible
• ACEi – titrate to maximum tolerated dose, monitor creatinine as dose increased, lifelong (if already taking ARB, continue with this; if initiating, preferred agent is ACEi)</td><td>• Aspirin 75mg OD lifelong + clopidogrel 75mg OD for 1 year
(+ omeprazole 20mg OD if: >70y, hx GI bleed, on other dugs which increase the risk of GP bleed)
• Statin – lifelong, ideally high dose e.g. atorvastatin 40mg OD and increase to 80mg if tolerated/possible
• ACEi –make sure is titrated to maximum tolerated dose within 4-6 weeks of discharge; monitor creatinine as dose increased, lifelong
• Betablocker – lifelong if LVEF reduced, 1 year if normal LVEF; titrate to maximum tolerated dose
• Spironolactone may have been started in hospital if reduced LVEF – continue lifelong</td></tr>
<tr><td>2. Symptom relief</td><td>• Beta-blocker (titrate up according to symptom control) AND GTN (see box)
• If symptoms not controlled on beta-blocker, or beta-blocker not tolerated, or if angina at rest – discuss with consultant and refer to cardiology</td><td></td></tr>
<tr><td>3. Comorbidities</td><td colspan="2">Optimise management of hypertension (target BP <140/90, or <130/80 if CKD + proteinuria), diabetes (target HbA1c 7-8% depending on frailty) and other diseases. See relevant guidelines.</td></tr>
<tr><td>4. Cardiac rehabilitation</td><td colspan="2">Multidisciplinary involvement (physio, nutrition, clinical)
• Lifestyle – weight, diet, smoking cessation, physical activity (aim 20-30 minnutes/day to point of slight breathlessness), stress management
• Information about CVD and management, driving advice, sexual activity (can resume when they feel comfortable, usually after about 4w)</td></tr>
<tr><td>5. Mental health</td><td colspan="2">Watch out for and treat stress/anxiety/depression (increases mortality)</td></tr>
<tr><td>6. Review</td><td>• Review in 1-2 weeks, in Family Medicine Clinic if possible, then 2 weekly until symptoms controlled
• Once medication titrated to maximum tolerated dose, review 3 monthly
• Check symptoms, for signs of heart failure + AFib
• Annual creatinine, Na, K, HbA1c , urine protein if not already being checked regularly
• Reinforce education and lifestyle measures at every contact</td><td>• Ensure medication is titrated to maximum tolerated dose
• Check symptoms, for signs of heart failure + AFib
• If persistent symptoms 3 months post MI, refer to cardiology
• Annual creatinine, Na, K, HbA1c, urine protein if not already being checked regularly
• Reinforce education and lifestyle measures at every contact</td></tr>
</table>

Explaining how to use GTN:
- Carry GTN at all times
- Can use before activities which might trigger angina
- If you get pain, stop what you are doing, sit down and rest, take GTN
- If pain does not go within 5 minutes, repeat the GTN
- If pain does not go within another 5 minutes, you need to get to hospital as soon as possible
- Take aspirin 300mg while getting to hospital

Medication in Coronary Heart Disease

		Dose	Considerations
ACEi:	Enalapril Alternative if ACEi not tolerated: Losartan	Starting dose: 2.5mg BD Target dose: 10-20mg BD Starting dose: 25mg OD Target dose: 150mg OD	• Start at low dose and titrate up every 2w until target or maximum tolerated dose is reached; hold/reduce dose if HR<50 • Check BP and creatinine before, 1-2w after starting and after each dose increase. - If creatinine rises 15-30%, continue ACEI/ARB and repeat creatinine in 1-2 weeks - if creatinine rises >30%, stop ACEI/ARB or return to previous dose and recheck in 5-7 d • eGFR<45: use lower doses and slower titration eGFR<30: discuss with consultant
Beta-blockers	Bisoprolol Carvedilol	Starting dose angina prophylaxis: 5mg OD Maximum: 20mg OD Starting dose angina prophylaxis: 12.5mg BD Maximum: 25mg BD	• For angina prophylaxis, increase every 2 weeks according to symptom control • COPD, diabetes, peripheral arterial disease and erectile dysfunction are NOT contraindications to starting (monitor for worsening COPD) • In asthma, beta-blockers are less safe, so start with alternative CCB • If heart failure, see separate guideline • CCB (amlodipine or nifedipine) are alternatives if beta-blockers contraindicated or cause side effects • If BP or pulse rate low, no need to stop beta-blockers unless patient is symptomatic
Statins	Atorvastatin	Starting dose: 40mg OD Increase to 80mg OD if tolerated/affordable	• Warn patients that rarely, severe muscle pain can occur as a side effect – to come for urgent review if this occurs • No need to check lipids if on highest tolerated dose as no alternative available

Anticoagulants (rivaroxaban, warfarin) not indicated routinely in CAD, but may be considered if AFib/Stroke + CAD – refer to cardiology in these cases

References
Kenya National Guidelines for Cardiovascular Diseases Management, MOH 2018; BMJ 2022;377:e069591; Red Whale GP Update 'Angina and chest pain' https://www.redwhale.co.uk/content/angina-and-chest-pain; Up-To-Date accessed 24/10/23