

Cardiovascular Q3 Acute Coronary Syndrome

GUIDELINE: NICE NG185 - Acute Coronary Syndromes

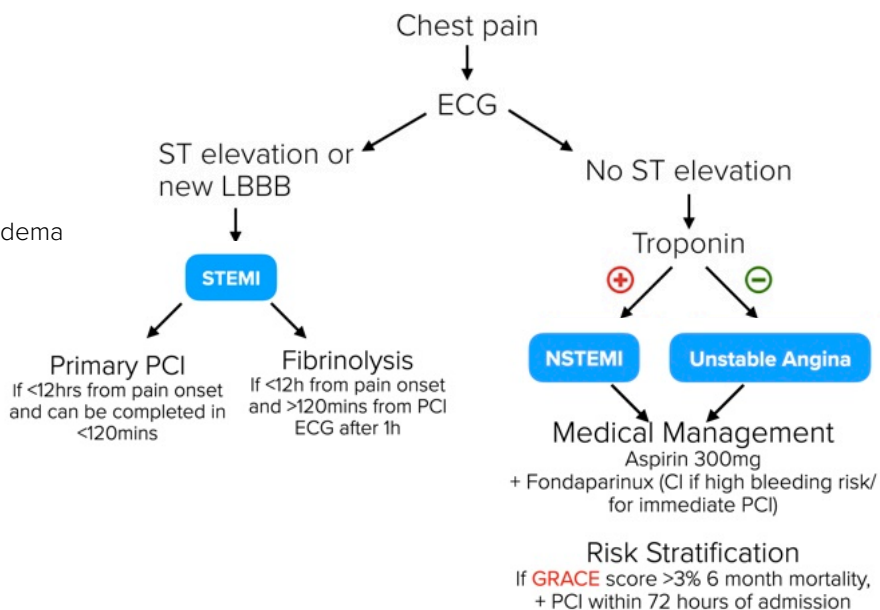
Guideline Explained

Initial management of all ACS:

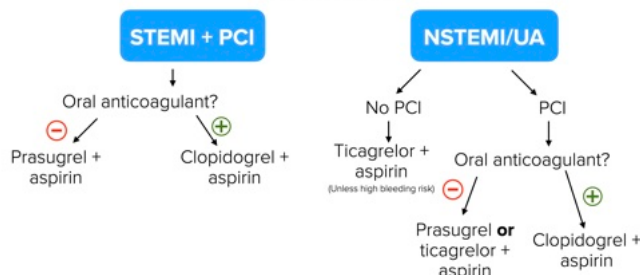
- IV opiate analgesia
- Antiemetics
- Aspirin [300mg]
- O2 only if hypoxic (SaO2 <94%)
- (+) GTN infusion for uncontrolled pain/ severe HTN/ pulmonary oedema

Post ACS management:

- Cardiac rehabilitation
- Lifestyle changes
 - Diet
 - Exercise
 - Smoking cessation
 - Weight management
- Medication
 - Dual antiplatelet therapy (DAPT):
 - B-blocker
 - ACEi
 - Statin



DAPT and ACS



Type 1 MI = acute plaque rupture

Type 2 MI = Supply over demand mismatch

Answer Explained

- Why Dressler's syndrome? Autoimmune pericarditis, weeks to months after acute MI. Pleuritic chest pain and fever.
 - ECG: global ST elevation and PR depression
- Why not LV aneurysm? Presents with heart failure or arrhythmia after acute MI.
 - ECG: persisting ST elevation
- Why not Brugada syndrome? Sodium channelopathy → arrhythmias and sudden cardiac death.
 - ECG: ST elevation + TWI in V1-3
- Why not stent thrombosis? Presents like acute MI: chest pain +/- ECG changes and troponin rise.

Complications post acute MI:

Death	VSD
Arrhythmia/ heart block	Another MI
Ruptured aneurysm	Dresslers syndrome
Thrombus	Embolus
Heart failure	Regurgitant valve

SBA Exam Tips

- Cold peripheries and poor urine output → Cardiogenic shock
- PCI with stents → Dual anti platelet therapy (DAPT) for at least 12 months
- Bradycardia & AV nodal block → Inferior MI

1st line Ix

ECG + Troponin

Key Message

- Initial treatment ACS = Aspirin, Analgesia and Antiemetics
- Risk stratification (GRACE score) is essential to guide treatment for non-ST elevation ACS
- Consider all STEMI patients who present <12 hours from pain onset for immediate reperfusion unless CI

Cardiovascular Q4 Hypertension

GUIDELINE: NICE NG136 - Hypertension in Adults

Diagnosis:

- Clinic BP >140/90mmHg → ABPM monitoring
 - Clinic BP >180/120mmHg consider same day assessment and treatment
- ABPM <135/85mmHg → recheck 5 yrs
- ABPM >135/85mmHg - <150/95mmHg → treat if:
 - 10 yr CVD risk >10%
 - End-organ damage
 - Diabetes/ CVD/ CKD
- ABPM >150/95mmHg → treat + assess for secondary causes if <40yrs

Symptoms include: Headache, dizziness, visual disturbance, chest pain

Secondary Hypertension

When to consider?

- <40 years without clear FHx or risk factors
- Severe/ resistant HTN
- Malignant HTN with evidence of end-organ damage
- HTN associated with electrolyte disorders

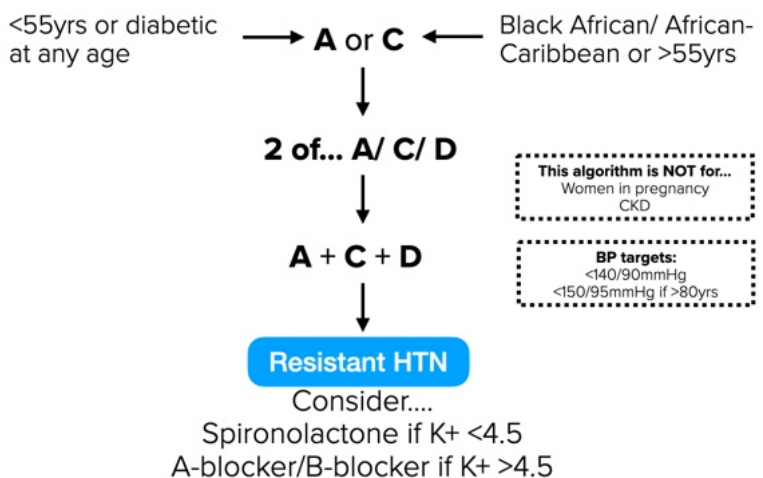
Causes of secondary hypertension:

- Renovascular (renal artery stenosis)
- Primary kidney disease
- Sleep apnoea syndrome
- Endocrine
 - Primary hyperaldosteronism
 - Cushing's syndrome
 - Hypothyroidism
 - Pheochromocytoma

Answer Explained

- Why answer C, **renal artery duplex scan**? A dramatic rise in creatinine on starting ACEi is seen with renal artery stenosis which is diagnosed via renal artery doppler US.
- Why not **24hr urinary catecholamines**? For pheochromocytoma: episodic severe HTN with headache, palpitations and sweating.
- Why not **plasma aldosterone:renin ratio**? For hyperaldosteronism.. low K⁺ with high Na⁺
- Why not thyroid function tests? For hypothyroidism
- Why not urinary cortisol? For cushing's disease

Management:



[A = ACEi or ARB; C = calcium channel blocker; D = thiazide diuretic]

“Accelerated” or “Malignant” HTN = BP >180/120mmHg with signs of retinal haemorrhage or papilloedema
- Hypertensive urgency = BP >180/120mmHg but no end organ damage

Management:

- Reduce BP slowly, aiming <160/120mmHg over hrs to days
- Drugs
- IV nitroglycerin (GTN)
 - IV nitroprusside
 - IV beta-blocker eg. Labetolol/ Esmolol
 - Oral agents eg. Amlodipine can be given if no end-organ damage and patient is asymptomatic

Other relevant topic:

Common side effects of antihypertensive drugs

ACEi	Dry cough, angioedema, AKI, hyperkalaemia
CCB	Pedal oedema, flushing, headaches
Diuretics (thiazide)	Hypokalaemia, hyponatraemia
Aldosterone antagonists	Hyperkalaemia, gynaecomastia

SBA Exam Tips

- Headache, sweating & palpitations with severe hypertension → Pheochromocytoma
- Pedal oedema resistant to diuretics → Calcium channel blocker S/E
- A-V nipping on fundoscopy → Hypertensive retinopathy

1st line Ix

Ambulatory Blood Pressure Monitoring (ABPM) or Home blood pressure monitoring (HBPM)

Key Message

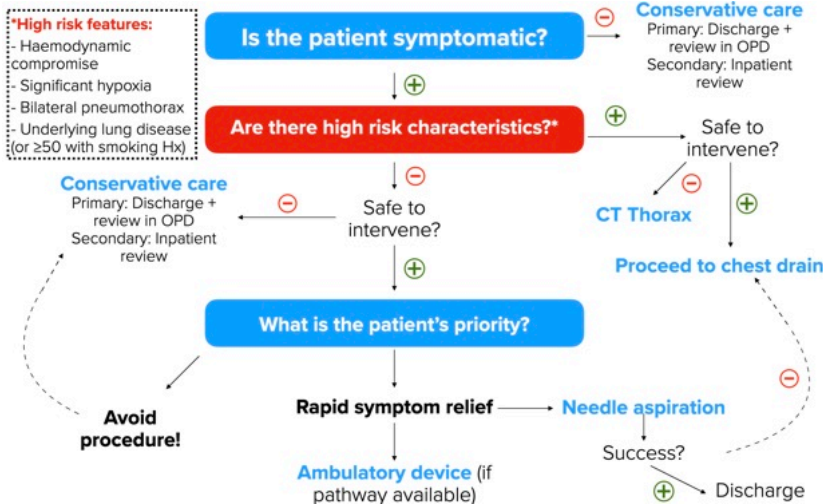
- Hypertension = clinic BP >140/90mmHg or ABPM >135/85mmHg
- Severe (>180/120mmHg) or symptomatic HTN should be referred for same day assessment and treatment
- Resistant or early-onset HTN should prompt investigation into possible secondary causes

Respiratory Q5 Pneumothorax

GUIDELINE: BTS: Pleural Disease 2023

Guideline Explained

- Pneumothorax is split into **primary** (no underlying lung pathology) vs. **secondary** (lung disease e.g. COPD/ asthma).
- Primary pneumothorax tends to be asymptomatic, whereas secondary tends to have breathlessness out of proportion to size of pneumothorax.



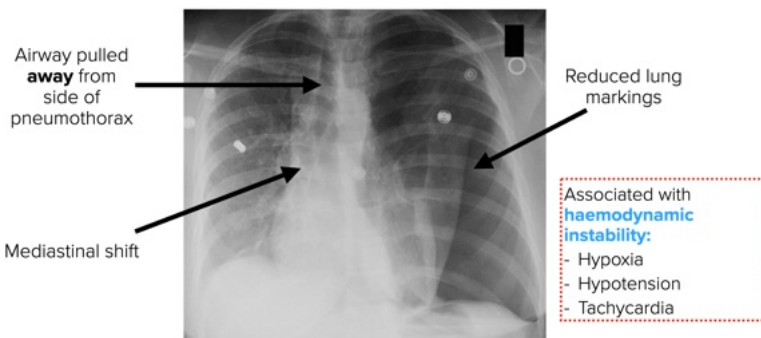
Pneumothorax Management

- In the 2023 update, management of spontaneous pneumothorax is dependent upon three key things:
 - 1: Symptoms
 - 2: Presence of high risk characteristics
 - 3: Patient preference
- 'Safety to intervene' means:
 - Pneumothorax $\geq 2\text{cm}$ laterally or apically on CXR
 - Or, any size pneumothorax on CT which can be accessed with radiological support.
- Significant smoking history refers to ≥ 20 pack year history.
- A 'resolved' pneumothorax is one which has **sustained improvement or resolution on CXR** and **symptomatic improvement**.
- Follow-up times range dependent on management.

Answer Explained

- Why A, conservative management and discharge? No history of underlying lung disease suggests primary pneumothorax. Given no high risk features and primary pneumothorax, can be discharged and reviewed in clinic in 2-4 days.
- Why not C, D or E, ambulatory management, needle aspiration or intercostal drain? No high risk features, so management dependent on patient preference. He does not want intervention, therefore for conservative approach.

Tension Pneumothorax: Radiological Features



Tension Pneumothorax

- **Medical emergency** - requires emergency decompression with **grey cannula into 2nd intercostal space, mid-clavicular line**.
- Trauma-related tension pneumothorax guidelines differ.
- One-way valve system -
 - Air in during inspiration, no air out in expiration.
 - Intrapleural pressure > atmosphere pressure \rightarrow impaired venous return and reduced cardiac output.
- Associated with
 - Ventilated patients on ICU/ patients on NIV.
 - Trauma
 - Acute asthma/ COPD presentations
 - Blocked, clamped or displaced chest drains.

SBA Exam Tips

Increased compliance of the lung

FEV1/ FVC ratio <0.7

Type 2 respiratory failure with raised bicarbonate

1st line Ix

Chest x-ray

Key Message

Management of pneumothorax is dependent on presence of 'high risk characteristics'.

All secondary pneumothoraces need admission.

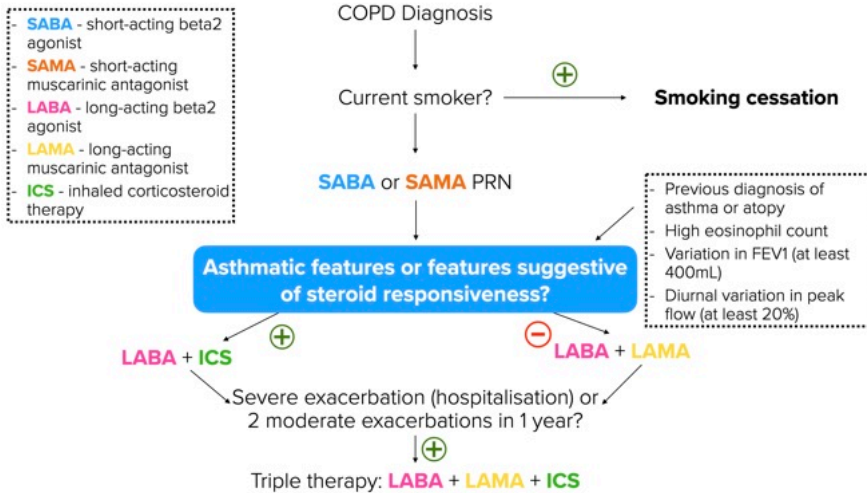
Decompression of tension pneumothorax is with a wide-bore needle into 2nd intercostal space, mid-clavicular line.

Respiratory Q6 Pulmonary Hypertension

GUIDELINE: NICE NG115: COPD in over 16's: Diagnosis and Management

Guideline Explained

- COPD is a combination of chronic bronchitis (clinical) and emphysema (histological) defined by an **obstructive defect** on spirometry: **FEV1/FVC <0.7**.
- COPD severity is determined by **FEV1** (as a percentage of predicted)
 - Mild: FEV1 ≥80%; Moderate 50-79%; Severe 30-49%; Very severe <30%.

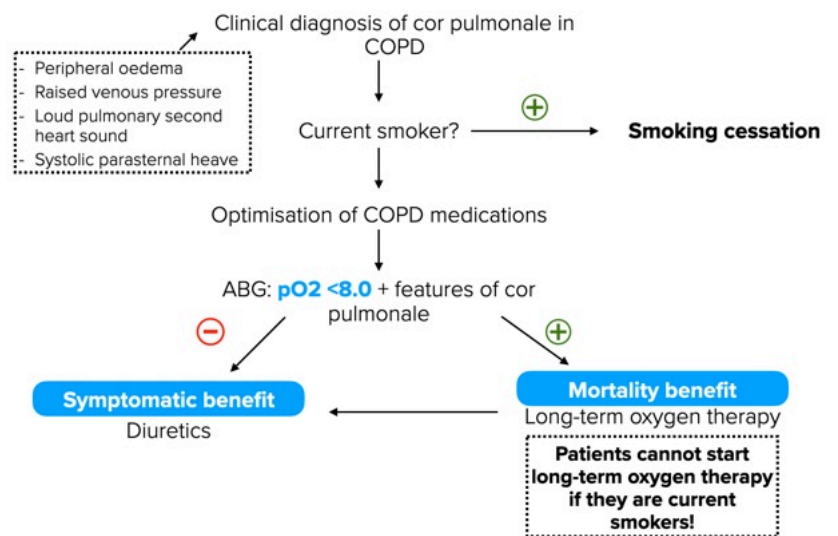


Answer Explained

- Why E, smoking cessation?
 - Diagnosis of COPD with features of cor pulmonale: raised JVP, loud second heart sound and peripheral oedema.
 - Pa7.9 is suitable for LTOT, but patient is still a current smoker → need to stop smoking first.
- Why not A or D, commencement of oxygen therapy?
 - Nothing to suggest hospital admission needed. She cannot start home oxygen therapy until she stops smoking.
- Why not B, NICE does not recommend this for cor pulmonale.

Pulmonary Hypertension (UpToDate)

- Pulmonary hypertension (pHTN) is defined as pulmonary artery pressure ≥20mmHg, with primary pHTN defined as high pulmonary artery pressure not related to underlying cause e.g. underlying lung disease.
- Clinical features:
 - F > M
 - Progressive exertional dyspnoea with lethargy.
 - R sided heart failure: raised JVP, peripheral oedema, loud P2 +/- tricuspid regurgitation
- Ix
 - Echocardiogram + pulmonary artery pressure. Exclude underlying causes
- Mx
 - Calcium channel blockers, Endothelin antagonists e.g. bosentan
 - Ultimately require heart-lung transplant



SBA Exam Tips	FEV1/FVC >0.8 with reduced FVC	→ Restrictive lung defect
	COPD exacerbation, pH <7.30 despite back-to-back nebulisers	→ Commence NIV (BiPAP)
	P450 inhibitor, nausea and refractory hypokalaemia with patient on theophylline	→ Theophylline toxicity
1st line Ix	Cor pulmonale is a clinical diagnosis; echocardiogram to confirm.	
Key Message	Cor pulmonale causes symptoms of R heart failure: peripheral oedema, raised JVP and loud P2.	
	All patients being considered for long-term oxygen therapy must stop smoking.	
	pHTN is defined as pulmonary artery pressure ≥20mmHg, can be idiopathic or secondary to other causes.	