Differential Diagnosis of Acute Chest Pain

Cause grouping	Differentials	Classical history	Classic examination findings	Investigation findings (Initial test, diagnostic test)	Definitive management (remember ABCDE first)
Cardiac	ACS	•Crushing central chest pain •Radiates to neck/left arm •Associated nausea/SOB/sweatiness •Cardiovascular risk factors	•May be normal •General: sweaty, SOB, in pain •CVS: S4 gallop, JVP distension, signs of heart failure, brady/tachycardic	•ECG: ST elevation (or new LBBB), inverted T waves, Q waves •Troponin: increased (but normal in unstable angina) •CXR: normal or signs of heart failure •Coronary angiography	•MONAC •Primary coronary intervention
	Aortic dissection	•Tearing chest pain of very sudden onset •Radiates to back •Pain in other sites e.g. arms, legs, neck, head	•Unequal arm pulses or BPs •May be acute aortic regurgitation •May be new neurological symptoms due to involvement of carotid/vertebral arteries	•CXR: widened mediastinum •CT angio or transoesophageal echo •ECG: may be signs of MI	•Type A → surgical repair •Type B → BP control
	Pericarditis	•Retrosternal/precordial pleuritic chest pain •Relieved by sitting forward •May radiate to trapezius ridge/neck/shoulder •Viral prodrome common	•Pericardial rub (stepping in snow) •Tachycardia •JVP distension and pulsus paradoxus may indicate tamponade	*Clinical diagnosis* •ECG: PR depression, saddle-shaped ST elevation •CXR: may be globular heart if pericardial effusion present •Echo: if pericardial effusion suspected	•NSAIDs •Treat cause (if known)
	Myocarditis	•Chest pain •Palpitations •Fever •Fatigue •Dyspnoea	•Signs of congestive cardiac failure •Soft S1, S4 gallop •Fever •Tachypnoea	•ECG: diffuse T wave inversions, ST elevation/depression •Inflammatory markers: raised •Troponin: raised •Serology: identify cause •Myocardial biopsy (if required)	•Supportive •Bed rest
	Other cardiac differentials	Stable angina; tamponade; mitral valve prolapse; pulmonary hypertension; aortic stenosis; arrhythmias			
Respiratory	Pulmonary embolism	•Pleuritic chest pain •Dyspnoea •Haemoptysis •Risk factors (long haul flight, recent surgery, immobility)	•CVS: tachycardia, JVP distension, RV heave, loud P2, right S4 •RS: tachypnoea, clear chest •CALVES: look for DVT •SBP<90/pulselessness/persistent bradycardia = "massive PE"	•D-Dimer (if low Wells score): raised •CT pulmonary angiogram •ECG: tachycardia, RV strain (T wave inversion in right chest and inferior leads), RBBB, right axis deviation, S1Q3T3 pattern rare •ABG: hypoxia, hypocapnia •CXR: may be wedge opacity, regional oligaemia, enlarged pulmonary artery, effusion	•Treatment dose LMWH •Thrombolysis if massive PE
	Pneumonia	•Fever •Shortness of breath •Productive cough •Pleuritic chest pain •Confusion	•Tachypnoea, cyanosis •Coarse crepitations and bronchial breathing •Dullness to percussion •Increased vocal resonance/tactile vocal fremitus	•CXR: consolidation, air bronchogram •Inflammatory markers: raised Identify cause •Sputum culture •Urinary pneumococcal and legionella antigens •Blood culture	•Antibiotics
	Pneumothorax	•Sudden onset pleuritic chest pain •May be SOB if large •Risk factors e.g. Marfan's appearance, COPD/asthma	Ipsilateral •Reduced chest expansion •Absent breath sounds •Hyperresonance Tension pneumothorax •JVP distension, hypotension •Tracheal deviation (away from affected side)	•CXR: air in pleural space	Primary •<2cm → CXR monitoring •>2cm or Sx → aspirate Secondary •<1cm → observe for 24h •1-2cm → aspirate •>2cm or Sx → chest drain
	Pleurisy	•Pleuritic chest pain •May be: dry cough, fever, dyspnoea	•Pleural rub	*Clinical diagnosis* •CXR: exclude pneumothorax, effusion and pneumonia	•NSAIDS •Treat cause (if known) •Treat complications (effusion, pneumothorax)
	Other respiratory differentials	Lung cancer			
Other	Musculoskeletal	•Sharp chest pain •Exacerbated by movement and inspiration •Can point to where it is worse •Exacerbated by pressure over area	•Tenderness over area of pain •Normal exam otherwise	*Diagnosis of exclusion* •D-dimer: exclude PE •CXR: exclude pneumothorax and infection •Inflammatory markers: normal	•Analgesia •Deep breathing exercises to prevent infection
	Costochondritis	•Costosternal joint pain •Worse with coughing, twisting and physical activity	•Tenderness at sternal edges •Normal exam otherwise	*Diagnosis of exclusion* •ECG: exclude MI •Troponin: exclude MI •CXR: normal	•NSAIDs •Physical therapy
	Gastro-oesophagleal reflux disease	•Retrosternal burning chest pain •Related to meals, lying, straining •Water brash	•Usually normal •May be epigastric tenderness if associated gastritis	*Clinical diagnosis* •ECG: exclude MI •OGD (if red flags) •Oesophageal pH monitoring (if diagnostic uncertainty)	•Lifestyle advice •Antacids or PPI

	Anxiety/panic attack	•Tight chest pain, SOB, sweating, dizziness, palpitations, feeling of impending doom •Anxious personality & other symptoms of generalised anxiety disorder •Recurrent episodes triggered by a stimulus (e.g. crowds)	•Usually normal •May be hyperventilation	*Clinical diagnosis* •ECG: exclude MI •Troponin: exclude MI •CXR: exclude infection	•Reassurance •CBT
	Oesophageal spasm	•Intermittent crushing sub-sternal pain •Relieved by GTN •Associated dysphagia	•Normal	•Barium swallow: corkscrew oesophagus •Oesophagral manometry	•Avoid precipitating foods •Try: PPI, nitrates, Ca^{2+} blockers, phosphodiesterase inhibitors, antidepressants
	Other differentials	Gastritis; peptic ulcer disease; acute cholecystitis; gastritis; pancreatitis; fibromyalgia; Tietze syndrome			