# Differential Diagnosis of Acute Chest Pain

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<th>Cause grouping</th>
<th>Differentials</th>
<th>Classical history</th>
<th>Classic examination findings</th>
<th>Investigation findings (initial test, diagnostic test)</th>
<th>Definitive management (remember ABCDE first)</th>
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</table>
| Cardiac        | ACS          | • Crushing central chest pain  
• Radiates to neck/forehead  
• Associated nausea/SOB/sweatiness  
• Cardiovascular risk factors | • May be normal  
• General: sweaty, SOB, in pain  
• CVST: S4 gallop, JVP distension, signs of heart failure, brady/tachycardia | • ECG: ST elevation (or new LBBB), inverted T waves, Q waves  
• Troponin: increased (but normal in unstable angina)  
• CRF: 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 | • MRI: widened mediastinum  
• CT angiogram or transesophageal 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 paradoxicus may indicate tamponade | Clinical diagnosis  
• ECG: PR depression, saddle-shaped ST elevation  
• CRF: 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 congegestive 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  
| Tachycardia  
| JVP distension and pulsus paradoxicus may indicate tamponade | • D-Dimer (if low Wells score): raised  
• CT pulmonary angiogram | • 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 | • ECG: 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 | • ECG: air in pleural space  
| MRI: may be globular heart if effusion present | Primary  
| 2cm → CXR monitoring  
| 2cm or 5x → aspirate | Secondary  
| 1cm → observe for 24h  
| 2cm or 5x → chest drain |
| Pleurisy | • Pleuritic chest pain  
| May be: dry cough, fever, dyspnoea | Pleural rub | Clinical diagnosis  
| CXR: exclude pneumonia, effusion and pneumothorax | • NSAIDS  
• Treat cause (if known)  
• Treat complications (effusion, pneumothorax) |
| Other respiratory differentials | Lung cancer |

## Other

| Musculoskeletal | • Sharp chest pain  
| Exacerbated by movement or 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  
| CRF: exclude pneumonia 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  
| CRF: normal | • NSAIDs  
• Physical therapy |
| Gastroesophageal 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  
| SGOT (if red flags)  
| Endoscopy pH monitoring (if diagnostic uncertainty) | • Lifestyle advice  
• Antacids or PPI |

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<th><strong>Anxiety/panic attack</strong></th>
<th><strong>Clinical diagnosis</strong></th>
<th><strong>Oesophageal spasm</strong></th>
<th><strong>Other differentials</strong></th>
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<tr>
<td>• Tight chest pain, SOB, sweating, dizziness, palpitations, feeling of impending doom</td>
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<td>• Anxious personality &amp; other symptoms of generalised anxiety disorder</td>
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<td>• Recurrent episodes triggered by a stimulus (e.g. crowds)</td>
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<tr>
<td>• Usually normal</td>
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<tr>
<td>• May be hyperventilation</td>
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<td>• ECG: exclude MI</td>
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<td>• CXR: exclude infection</td>
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<td>• Reassurance</td>
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<tr>
<td>• CBT</td>
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<tr>
<td>• Intermittent crushing sub-sternal pain</td>
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<td>• Relieved by GTN</td>
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<td>• Associated dysphagia</td>
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<td>• Normal</td>
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<tr>
<td>• Barium swallow: corkscrew oesophagus</td>
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<td>• Oesophageal manometry</td>
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<td>• Avoid precipitating foods</td>
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<td>• Try: PPI, nitrates, Ca²⁺ blockers, phosphodiesterase inhibitors, antidepressants</td>
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- Gastritis; peptic ulcer disease; acute cholecystitis; gastritis; pancreatitis; fibromyalgia; Tietze syndrome