Chest Pain - Paediatric Full Clinical Guideline

1) Aim and Purpose

This guideline aims to give doctors and other health care professionals guidance on a systematic approach to the assessment and management of children (0-16years) presenting with chest pain at Queens' Hospital Burton and Derbyshire Children's Hospital.

Adopting a systematic approach should rule out serious causes of paediatric chest pain and will help the practitioner to initiate appropriate management which typically includes reassurance, simple analgesia, or rarely, investigations or onward referral thus reducing unnecessary anxiety in children and their families.

THIS GUIDELINE SHOULD NOT BE REFERRED TO IN CASES OF CHEST TRAUMA

2) Introduction

Chest pain, a common presenting complaint in children, is understandably a source of anxiety in both the patient and their carer. Unlike in adults, although the cause of most paediatric chest pain is unknown, the majority are self-limiting; a serious cause of new onset chest pain is rare in a child with no previous underlying medical history, with <1% being cardiac

3) Main body of the guideline

The approach to the child presenting with new onset chest pain in the acute setting is likely to be different from a child seen in the outpatient setting. However, in both settings the clinician should assess the child for risk factors (Red flags) for serious disease, as doing so minimizes unnecessary investigations and anxiety. A detailed history and examination will usually exclude a serious cause for the pain in a vast majority of cases. Investigations (ECG, CXR, bloods) are not usually needed.

RED FLAGS

If no Red flags, the cause is unlikely to be cardiac. Non-cardiac causes should be explored.

RED FLAGS (summarized) relevant to possible system affected.		
Cardiac	• First episode severe chest pain • Pain radiating to arm or back • Dizziness, palpitations, syncope • Congenital/acquired cardiac dx • Family history SCD	• Connective tissue disease • Longstanding diabetes • Chest Pain with exercise. • Familial hypercholesterolaemia • History of Kawasaki disease
Pulmonary embolism	• Immobility • Recent surgery • Hypercoagulability	• Central venous catheter • Pleuritic pain • Haemoptysis
Respiratory	• Fever, cough • Lethargy	• Pleuritic chest pain • Chronic respiratory disease
Gastro-intestinal	• Chest pain after vomiting • Recurrent vomiting • Odynophagia/Dysphagia • Food impaction • Neck pain or discomfort	• Epigastric pain or discomfort • Recent heavy alcohol consumption • History of ingested foreign body • Suspicion button battery ingestion

4) Differential diagnosis

Combining a detailed history and thorough physical examination with or without investigations will help you reach a diagnosis; you should always be vigilant for red flags which may suggest uncommon, sometimes rare, serious causes of chest pain in children. The list is by no means exhaustive.

a) **Psychogenic:** consider HEEADSSS
b) **Gastrointestinal:** eg heartburn
c) **Respiratory:** Pulmonary embolism, pneumothorax exercise induced asthma, pneumonia, pleurisy, inhaled foreign body
d) **Cardiac:** myocarditis, pericarditis, endocarditis, aortic dissection, arrhythmias
e) **Musculoskeletal:** strain, precordial catch, costochondritis
f) **Others**: breast tenderness, shingles

5) Management principles

This largely depends on the setting in which the child is reviewed.

In Outpatients, usually reassurance is all that is required. Offering unnecessary investigations sometimes creates more anxiety and except when there are Red flags, investigations should be avoided.

Acute presentation, with evidence of injury, clinical compromise should have senior review as early as possible. Identified causes should be treated and always consider simple analgesia.

Systematic approach to assessment of paediatric chest pain