

# Chest Pain

## FAST FACTS

# 15%

of new patient referrals to cardiology clinics at Cincinnati Children's Heart Institute are for episodes of chest pain

# 44%

of teens with chest pain believe they are having a heart attack

# <1%

of pediatric patients seen for chest pain have a cardiac etiology for that pain

Chest pain is a common symptom in children and teens. Most pediatric chest pain is caused by anxiety, muscle strain, acid reflux, or inflammation of the ribs and cartilage of the chest wall. In a well-appearing pediatric patient with a reassuring history and exam, chest pain is usually benign.

## ASSESSMENT

Perform a standard health history and physical exam (HPE) with probing questions around the episodes of chest pain to determine whether the chest pain may be related to a cardiac issue.

## HPE RED FLAGS

### History of present illness (HPI):

- Chest pain is exertional:
  - Only occurs at peak exercise
  - Does NOT occur at low-level exercise
  - Same pain does NOT occur at rest
  - Is NOT reproducible to palpation
- Exertional syncope
- Chest pain is positional — worse when patient is lying down

### Past medical history (PMHx):

- Hypercoagulable state
  - Inflammatory disorder
  - Malignancy
  - Thrombophilia
- Past history of cardiac disease

### Family history:

First degree family history of:

- Cardiomyopathy
- Sudden death under 50 years of age
- Pulmonary hypertension
- Pacemaker or defibrillator
- Channelopathy
- Coronary anomaly

### Physical Exam:

- Pathologic murmur
- Hepatosplenomegaly
- Loud S2
- Obvious respiratory distress and/or abnormal vital signs requires urgent evaluation

## MANAGEMENT/TREATMENT

A thorough and focused HPE is the most important aspect of treating pediatric chest pain. The HPE will often reveal the likely cause (musculoskeletal, respiratory, GI, anxiety) of chest pain in an otherwise well-appearing child with no red flags.

Reassure and educate the patient/patient's family that the chest pain is not being caused by a heart attack or other cardiac issue.

Most pediatric chest pain is consistent with a musculoskeletal cause. In this situation, a trial of NSAIDs around the clock for three days is reasonable.

## WHEN TO REFER

If history red flags (see above) are present upon HPE, the patient should be referred to see a pediatric cardiologist at Cincinnati Children's.

### If referral is made:

Have the patient complete a diary of symptoms, including the day, time, and activity they were doing when they experienced symptoms — and instruct them to bring the diary with them to the cardiology clinic visit.

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

If you have clinical questions about patients with chest pain, email [cardiology@cchmc.org](mailto:cardiology@cchmc.org).

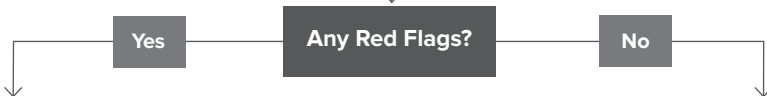
# Chest Pain

<b>Inclusion Criteria</b>	<b>Tests shown here are NOT recommended for initial workup</b>
<ul style="list-style-type: none"> <li>No previous cardiac diagnosis</li> <li>Presenting complaint of chest pain</li> </ul>	<ul style="list-style-type: none"> <li>Holter monitor</li> <li>Event monitor</li> <li>Exercise test</li> </ul>

Patient Presents

Standard Workup		
• Situational History	• Family History	• Physical Exam

HPE RED FLAGS			
<p><b>HPI</b></p> <ul style="list-style-type: none"> <li>Chest pain that is exclusively EXERTIONAL, occurring:                             <ul style="list-style-type: none"> <li>At peak exercise</li> <li>Does NOT occur during low level exercise</li> </ul> </li> <li>Same pain does NOT occur at rest</li> <li>Is NOT reproducible to palpation</li> <li>Exertional syncope</li> <li>Positional chest pain — worse with laying down</li> </ul>	<p><b>PMHX</b></p> <ul style="list-style-type: none"> <li>Hypercoagulable state                             <ul style="list-style-type: none"> <li>Inflammatory disorder</li> <li>Malignancy</li> <li>Thrombophilia</li> </ul> </li> </ul>	<p><b>Family History</b></p> <p><b>First degree family history of:</b></p> <ul style="list-style-type: none"> <li>Cardiomyopathy</li> <li>Sudden death &lt; 50 years</li> <li>Pulmonary hypertension</li> <li>Pacemaker or defibrillator</li> <li>Channelopathy</li> <li>Coronary anomaly</li> </ul>	<p><b>Physical Exam</b></p> <ul style="list-style-type: none"> <li>Pathologic murmur</li> <li>Hepatosplenomegaly</li> <li>Loud S2</li> <li>Obvious respiratory distress and/or abnormal vital signs requires urgent evaluation</li> </ul>



GOAL
To identify those patients at risk of having cardiac pathology
<p><b>Refer to Cardiology:</b></p> <ul style="list-style-type: none"> <li>Chest pain is exertional as defined above</li> <li>Worse when lying flat</li> <li>First degree family history of cardiomyopathy, sudden death less than age 50, pulmonary hypertension, pacemaker or defibrillator, channelopathy, coronary anomaly</li> </ul>

GOAL
To minimize testing
<p><b>Focused HPE to evaluate for non-cardiac cause and treatment</b></p> <p><b>Musculoskeletal pain/costochondritis/idiopathic</b></p> <ul style="list-style-type: none"> <li>Reassurance with no treatment necessary</li> <li>May start anti-inflammatory (NSAID) treatment:</li> <li>Begin ibuprofen 10 mg/kg up to 400 mg PO Q6 hour for 48 – 72 hours to decrease inflammation and then PRN for pain</li> </ul>