

# HOSPITAL PHYSICIAN®

## EMERGENCY MEDICINE BOARD REVIEW MANUAL

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## Chest Pain

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## Table of Contents

Overview . . . . .	2
Approach to the Patient . . . . .	2
Acute Coronary Syndrome . . . . .	2
Cocaine-Associated Chest Pain . . . . .	7
Aortic Dissection . . . . .	7
Pulmonary Embolus . . . . .	8
Pericarditis . . . . .	10
Pneumothorax . . . . .	10
Myocarditis . . . . .	11
Gastrointestinal Causes . . . . .	11
Summary Points . . . . .	11

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# Chest Pain

## OVERVIEW

Approximately 3% to 5% of all emergency department (ED) visits involve a chief complaint of chest pain. Given the potentially lethal nature of many of the conditions that manifest with chest pain, emergency medicine physicians must have an organized approach, a complete differential diagnosis, and a thorough understanding of the assessment and management of this complaint.

## APPROACH TO THE PATIENT

Patients with chest pain should receive a high triage level. The initial assessment should focus on determining the stability of the patient and should be completed within 10 to 15 minutes. The pace of assessment and treatment should be accelerated in patients who have unstable vital signs or who appear ill. When considering the differential diagnosis of chest pain, it is helpful to consider the 6 structures in the chest: heart/pericardium, lungs/pleura, esophagus, aorta, chest wall, and upper abdominal contents (Table 1).

## ACUTE CORONARY SYNDROME

Coronary heart disease is the single leading cause of death in the United States. Each year, about 1 million people experience an acute myocardial infarction (MI). One-quarter of them will die, half before reaching the hospital. In addition, 5 million patients present to EDs for assessment of chest pain, and 1.5 million patients are admitted for acute coronary syndrome (ACS).

ACS includes both unstable angina and acute MI. Angina is defined as substernal chest discomfort induced by exertion and relieved by rest or nitroglycerin. Unstable angina is defined as angina of new onset, of increasing severity, or which occurs at rest. The World Health Organization criteria for the diagnosis of acute MI is the presence of at least 2 of the following findings: clinical history of ischemic-type chest discomfort; changes on serial electrocardiograms (ECGs); and a rise and fall of serum cardiac markers.

## ASSESSMENT

The goal in the evaluation of patients with suspected

ACS is to assess the risk of a poor outcome and proceed accordingly. Patients at moderate to high risk require inpatient evaluation and treatment with monitoring in a critical care setting. Patients at this level of risk include those with (1) ECG changes diagnostic for infarct or ischemia; (2) physical findings of decreased cardiac output; or (3) elevation of serum cardiac markers. Patients deemed to be at low risk for adverse outcomes require either inpatient evaluation and monitoring or a period of observation with serial cardiac markers and ECGs to rule out acute MI, followed by an assessment for unstable angina. Follow-up may be performed immediately after observation or within an accelerated time frame (< 72 hours) on an outpatient basis. Patients at very low risk are those whose pain is thought with certainty to be due to a cause other than ACS. They may be discharged, with follow-up by a primary care physician.

## History and Physical Examination

The history should assess the character, location, and duration of the pain, radiation, associated symptoms, precipitating factors, and response to treatment. Use of the term “discomfort” instead of “pain” when questioning the patient improves detection of ischemic symptoms. Intensity of pain can be graded on a scale of 1 to 10, and this scale can then be used to assess response to treatment. Descriptions and physical findings that have been shown to lower the likelihood that a patient is having an ischemic event include the following: pleuritic pain; sharp, stabbing pain; pain reproducible with palpation or movement; age younger than 40 years; and pain of very short (seconds) or prolonged (constant over 24 hours) duration. However, it is important to note that a significant proportion of patients with acute MI may have 1 or several of these characteristics.

Clinical features that increase the likelihood of acute MI include advanced age; known coronary artery disease or diabetes; pain similar to prior MI or worse than usual angina; pain that is described as pressure-like or squeezing; pain that radiates to neck, left shoulder, or left arm; and associated symptoms such as nausea, dyspnea, or diaphoresis. The physician should specifically assess for characteristics that increase risk, and patients with any of them should receive further evaluation and treatment.

One third of patients with ACS present without chest pain; these patients more often are elderly, diabetic, or