

# Evaluation and Management of Chest Pain in the Elderly



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## KEYWORDS

- Geriatric • Elderly • Chest pain • Acute coronary syndrome • Aortic dissection
- Pulmonary embolism • Pneumothorax • Esophageal perforation

## KEY POINTS

- Causes of chest pain in the elderly are common and life threatening. Acute coronary syndromes are the leading cause of death worldwide. Aortic dissection is rare but life threatening.
- This article discusses presentation, diagnosis, and treatment of acute coronary syndromes, aortic dissection, pulmonary embolism, pneumothorax, and esophageal perforation in the elderly.
- The elderly frequently present atypically and suffer greater morbidity and mortality owing to being frail and comorbid, but benefit from aggressive treatment.

Chest pain is the second most common chief complaint accounting for more than 6 million visits annually to emergency departments (EDs) in the United States.<sup>1</sup> The elderly make up a significant percentage of our population comprising 14.1% of the US population in 2013.<sup>1</sup> This percentage is expected to increase as the United States ages and longevity increases. Fifteen percent of all ED visits are made by those over 65 years of age.<sup>2</sup> An extensive differential diagnosis from benign illnesses to life-threatening disorders must be considered in patients with chest pain. Many disease entities tend to present in an atypical fashion in the elderly.

The evaluation and management of chest pain must be initiated rapidly. Within 10 minutes of arrival, in addition to vital signs, the elderly patient with chest pain should receive an electrocardiogram, the single most important test in identifying life threats.<sup>3</sup> If unstable, stabilization should be initiated using basic life support and advanced cardiac life support. In stable patients, the physician should complete a thorough history and physical examination. Based on the results of the initial evaluation,

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appropriate testing and treatment should be started. While these tests are being performed, additional history and chart review can be performed to narrow and reorder the differential diagnosis.

The elderly typically have multiple comorbidities and less physiologic reserve—the elderly are often frail—increasing morbidity and mortality for many conditions. Consequently, a more extensive diagnostic workup is usually required in the elderly patient with a complaint of chest pain and often the final cause of chest pain will not be established in the ED, but will require additional evaluation. The careful ED physician should maintain a high index of suspicion for acute, life-threatening emergencies.

The differential diagnosis for chest pain in the elderly is broad. **Table 1** lists a complete differential organized by acuity and organ system. Several diagnoses are far more likely in the elderly than in younger patients. Cardiac etiologies are not the most common cause but account for the greatest mortality. The remainder of this article focuses on the presentation, diagnosis, and management of 5 causes of chest pain: acute coronary syndrome (ACS), aortic dissection, pulmonary embolism (PE), pneumothorax, and esophageal rupture.

### ACUTE CORONARY SYNDROME

Ischemic heart disease is the leading killer in the world claiming 7,000,000 lives annually and accounting for 12.7% of all deaths.<sup>4</sup> Its incidence and lethality increases dramatically with age. The elderly over age 75, account for 33% of all episodes of ACS and 60% of deaths.<sup>5</sup> Age is a powerful predictor of adverse events from ACS with the risk of death increasing by 70% with each decade increase of age.<sup>6</sup> Being both common and deadly, the emergency provider must consider ACS early and evaluate carefully in geriatric patients with chest pain. The diagnosis and management of ACS in the elderly is similar to that in younger patients, focusing on accurate, early diagnosis and aggressive management.

#### Definition

ACS applies to a spectrum of diseases resulting from abrupt reduction in blood flow to the myocardium that cause symptoms attributable to myocardial ischemia, dysfunction, and infarction. ACS refers to diseases that are high risk, that mandate aggressive therapy, but that cannot always be distinguished at initial presentation. The term encompasses (1) unstable angina (UA), acute ischemia without infarction; (2) non-ST-elevation myocardial infarction, a similar pathophysiology in which ischemia progresses to infarction, and (3) ST-elevation myocardial infarction (STEMI),

**Table 1**  
Causes of chest pain

Organ System	High Acuity	Lower Acuity
Cardiovascular	Acute coronary syndrome Aortic dissection Aortic aneurysm	Angina Pericarditis Myocarditis
Pulmonary	Tension pneumothorax Pneumonia	—
Gastrointestinal	Esophageal perforation Esophagitis	GERD/gastro-peptic Biliary disease
Chest wall	—	Costochondritis Rib fractures/trauma Herpes zoster

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