

Chest Pain Scenario:

A 72 year-old-male has come in to the office with chest pain. *It is obvious that his age and gender place him at risk for various life-threatening (cardiac ischemia, aortic dissection) and non-life-threatening (shingles) conditions.*

Using the Epi-logical approach, what should be the probable diagnoses?

The clinician should consider all differentials on the map. As stated earlier, cardiac ischemia, aortic stenosis/dissection, pneumonia, and shingles are more likely due to this patient’s age. Some of the diagnoses which are not particularly more prevalent in this age group (costochondritis, GERD (acronym), and anxiety) are also likely because they have a high prevalence in the general population. So, to avoid base-rate neglect, the clinician should consider them as well.

How should the clinician address urgent/emergent situations?

This patient’s vital signs are BP 110/80, HR 88 bpm, T 98F, O2sat 99%, RR 14 and BMI 28, he appears to be in no distress, and is alert.

When asked the OPQRST questions, the patient says that the pain started this morning after he walked half a mile, it has gotten better, but it is still there, and feels like pressure in the center of his chest. The pain does not radiate, and the patient has felt this type of pain off and on in the last 2 months. Although this patient’s vitals and appearance are reassuring, this is a potential urgent/emergent situation because his pain seems to be exertion related, and this feature combined with his risk factors (age and gender) make cardiac ischemia a definite possibility, unless proven otherwise. No one would fault the clinician for ordering an EKG, sublingual nitroglycerin, oxygen, and a call to a cardiac care unit or to the emergency room at this point. Logistics teach the clinician that executing these steps may take some time. The clinician should not waste time and should continue asking questions within the context of this situation.

Weighing and Removing Anchor Bias

The Clinician’s Questions	The Patient’s Responses	How does this information help with diagnostic reasoning?
On a scale of 1 to 10, how severe is your pain?	It was 8, but right now it is 2.	Questions about the severity of pain usually do not help as much with establishing the diagnosis as they help with management. Because pain is so subjective, a score of 10 is no more likely to be cardiac than a score of 2. However, a clinician can decide to take quick action and manage the patient’s pain if the pain is more severe.
You said you’ve had this pain before. When was the first time you had this type of	I can’t say for sure, but I think it all started about 2 months ago. The pain starts	This is more likely to be stable than unstable angina Stable angina is defined as

<p>pain, and since then how often have you been feeling this?</p>	<p>after I walk a few blocks, and usually stops after I rest.</p>	<p>pain that is predictable after a certain distance, and resolves with rest, while unstable angina is defined as pain that is unpredictable, and does not resolve with rest. All new onset angina is also considered to be unstable angina.</p>
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Additional likely diagnoses include aortic stenosis. Some of the more acute diagnoses such as aortic dissection and esophageal tear are very unlikely. Due to the intermittent nature of the pain, GERD and DES (acronyms) would have been likely, but the fact that the pain is exertion related, makes them unlikely.

Musculoskeletal pain can start after exertion, but this pain is associated with activities that use chest muscles rather than aerobic walking. There is no evidence in favor of pericarditis, pleurisy, pulmonary embolism, and pneumothorax (the pain is not sharp, and not worse with deep inspiration), but a clinician can ask additional questions to address these and remove anchor bias. Endocarditis, pericarditis, pneumonia, and lung abscess present with fever, but they can be absent in the elderly population. However, due to the serious nature of these pathologies, patients usually look quite sick, which this patient does not appear to be. Regardless, the clinician can ask further medium yield questions, such as shortness of breath. Shingles is less likely due to the time duration and the intermittent nature of the pain. Anxiety as a new onset diagnosis presenting with chest pain is highly unlikely in this age group.

<p>Do you have any shortness of breath?</p>	<p>I feel short of breath if I don't stop walking, but it gets better over time.</p>	<p>The pain is more likely than not to be from cardiac ischemia.</p>
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<p>Is there any family history of heart disease, personal history of high cholesterol, smoking, drug use, or alcohol use?</p>	<p>My parents had heart disease when they were in their 80s, I don't smoke, or use any drugs or alcohol.</p>	<p>Despite the absence of multiple risk factors, the clinician has sufficient evidence in favor of cardiac ischemia.</p>
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Now the clinician asks questions to remove anchor bias

<p>Do you have any cough, phlegm, chills, rash, recent hospitalizations, or recent travel? <i>(The clinician is asking these questions as the patient is getting an EKG after having received sublingual nitroglycerin.)</i></p>	<p>I have not had any of that.</p>	<p>Pneumonia, pericarditis, endocarditis, and pulmonary embolism are less likely.</p>
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The questions above are good questions to remove anchor bias, especially if the clinician does not have a strong index of suspicion for any particular diagnosis. However, they may not be all that necessary in this situation because the clinician is already strongly considering cardiac ischemia. Sometimes things can get tricky in complex situations, as this patient might have had an upper respiratory infection in the last few weeks, about which he might say that he has a cough, or there might have been a coincidental travel history. Because of the relatively high

index of suspicion, all of that, if present, could turn out to be background noise in this case and the clinician should not be misled.		
The clinician does a physical exam.		
Cardiovascular exam	Loud S2 with an ejection systolic murmur in along sternal border at the second intercostal space. No skin rash.	Aortic stenosis causing cardiac ischemia and resulting in angina symptoms is highly likely. Shingles is unlikely.
Pulmonary	Normal air entry. No crackles, wheezing, or signs of consolidation.	Pulmonary causes of chest pain are unlikely.
Extremities	No swelling or tenderness.	Unlikely that a deep vein thrombus might have led to pulmonary embolism. Congestive heart failure as a complication of any differential is unlikely.

At this point, regardless of any additional evidence, the clinician should treat this patient as having cardiac ischemia secondary to aortic stenosis because the patient has classic chest pain, risk factors, and a classic murmur consistent with aortic valve pathology. The EKG should be reviewed for ongoing ischemia and, if present, the patient should be hospitalized. Immediate cardiology consultation should be obtained. If the EKG is negative for ischemia, outpatient management can be performed as long as it is deemed safe. An echocardiogram followed by medical and/or surgical management must be conducted.