

Guide to ordering stress tests for the **SYMPTOMATIC** patient with suspected coronary artery disease (CAD).*

1. Determine the nature of the chest pain.

Angina As Defined By ACC/AHA Guidelines

Typical Angina

Mid-sternal discomfort that is provoked by exertion or emotional distress and relieved by rest and/or nitroglycerin

Probable Angina (or "Atypical Angina")

Lacks one of these components

(Best characterization for exertional dyspnea is 'probable angina')

Nonspecific or Nonanginal Chest Discomfort

Has only one or none of the 3 characteristics of Typical Angina

2. Confirm that unstable angina is not present. The patient with typical angina and any of the following historical features should be treated for an Acute Coronary Syndrome. A stress test can be harmful.

- Rest angina within the last week.
- New onset angina within 2 months that comes on at <2 blocks, 1 flight of stairs or with minimal activity.
- Progressive angina that now comes on at <2 blocks, 1 flight of stairs or with minimal activity.

3. Use the following table to estimate the probability of obstructive coronary artery disease, expressed as a percentage. For example:

- A 75 y/o man with typical angina has a 76% chance of having significant CAD by angiography.
- A 55 y/o woman with nonspecific discomfort has only a 3% chance of serious CAD.

Men			Age	Women		
Non-specific chest pain	Probable angina	Typical angina		Non-specific chest pain	Probable angina	Typical angina
6	11	32	40-49	2	3	11
11	19	47	50-59	3	6	19
19	31	63	60-69	6	10	30
30	46	76	70-79	10	18	45
45	61	85	80-89	17	29	60

Values in this table represent the probability (expressed as a percentage) of obstructive coronary artery disease at the time of coronary angiography based on age, gender and symptoms.
 From Genders, et al. BMJ. 2012;344:e3485. doi: 10.1136/bmj.e3485

A more precise version of the CAD Consortium 1 probability of obstructive coronary artery disease calculator is available at

- The Qx calculate app. Open the Cardiology tab→Treadmill Testing→Pre-test probability of CAD (CAD consortium)

Note: This data set and the table above assume there is no prior history of coronary disease and that the evaluation is performed in outpatient settings.

4. Use these rules of thumb and the probability from the table above to help determine the need for a stress test.

High probability (>70%) Start treatment and consult a cardiologist. With a pre-test probability this high no stress test can yield a low post-test probability.

Intermediate probability (10%-70%) A stress test is indicated and of value. If the ECG is normal and the patient can exercise, consider starting with an ECG treadmill test. Exercise is preferred to pharmacologic stress.

Low probability (5%-10%) A stress test would rarely be useful for management. Consider carefully the information you will receive from the test.

Very low probability ($\leq 5\%$) A stress test is not indicated.

Guide for ordering stress tests for the **ASYMPTOMATIC patient with no known history of coronary artery disease.**

1. Use the ACC/AHA ASCVD Risk Estimator to calculate the 10 year probability of hard cardiac events.

2. Use these rules of thumb and the probability just calculated to help determine the need for a stress test.

Intermediate to high probability (>10%) The same treatments used for secondary prevention of CAD may already be indicated. The value of stress testing in this circumstance is considered uncertain. A stress test may be useful if the outcome will change management. If the ECG is normal and the patient can exercise, consider starting with an ECG treadmill test.

Low probability (5-10%) A stress test would rarely be useful for management. Consider carefully the information you will receive from the test.

Very low probability ($\leq 5\%$) A stress test is not indicated.

Circumstances where **A STRESS TEST IS RARELY HELPFUL.**

- Prior to low risk surgery
- Prior to nonvascular surgery and able to walk 2 blocks and climb 1 flight of stairs,
- <2 years since the last stress test with no changes in symptoms,
- <2 years since coronary angioplasty or <5 years since coronary bypass surgery and asymptomatic.

CONSIDER AN ECG TREADMILL TEST WITHOUT IMAGING when these **3 characteristics are present**

- A patient with a pretest probability of <30%
- Able to exercise
- A normal ECG

Good examples : An active man <40 or woman <60 with no history of coronary artery disease and a normal ECG

When **A STRESS TEST CAN LEAD TO HARM**

- Rest angina within the last week.
- New onset angina within 2 months that comes on at <2 blocks, 1 flight of stairs or with minimal activity.
- Progressive angina that now comes on at <2 blocks, 1 flight of stairs or minimal activity.
- The pretest probability of obstructive coronary disease >70% or <10%.

*This tool has been featured as an example of a successful practice innovation by the *Choosing Wisely*® initiative.

*Additional information is available from the American Society of Echocardiography at <http://asecho.org/ChoosingWisely/> and the American Board of Internal Medicine Foundation in partnership with Consumer Reports at [**Choosing Wisely: A Special Report On The First Five Years**](#)

