

When To Order a Stress Test

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- Cost and benefits of stress tests
- Role of risk stratification prior to ordering a stress test
- Identifying patients for whom stress testing may not be appropriate
 1. Asymptomatic patients ?
 2. Pre-operative patients ?

- Like all choices, in medicine, as in life, the decision to order a stress test must be based on the careful analysis of the costs and benefits of the action.

“Benefit”

1. To help establish a diagnosis of CAD
 - Helps guide further diagnostic and therapeutic decisions
 - Does the patient need catheterization?
 - Should I prescribe aspirin, statin, nitrates, beta blockers etc?
2. To help with risk assessment in the asymptomatic patient and prior to

“Cost”

Patient

Time and financial cost

Anxiety related to the test, false positive results, and subsequent testing.

Potential radiation exposure

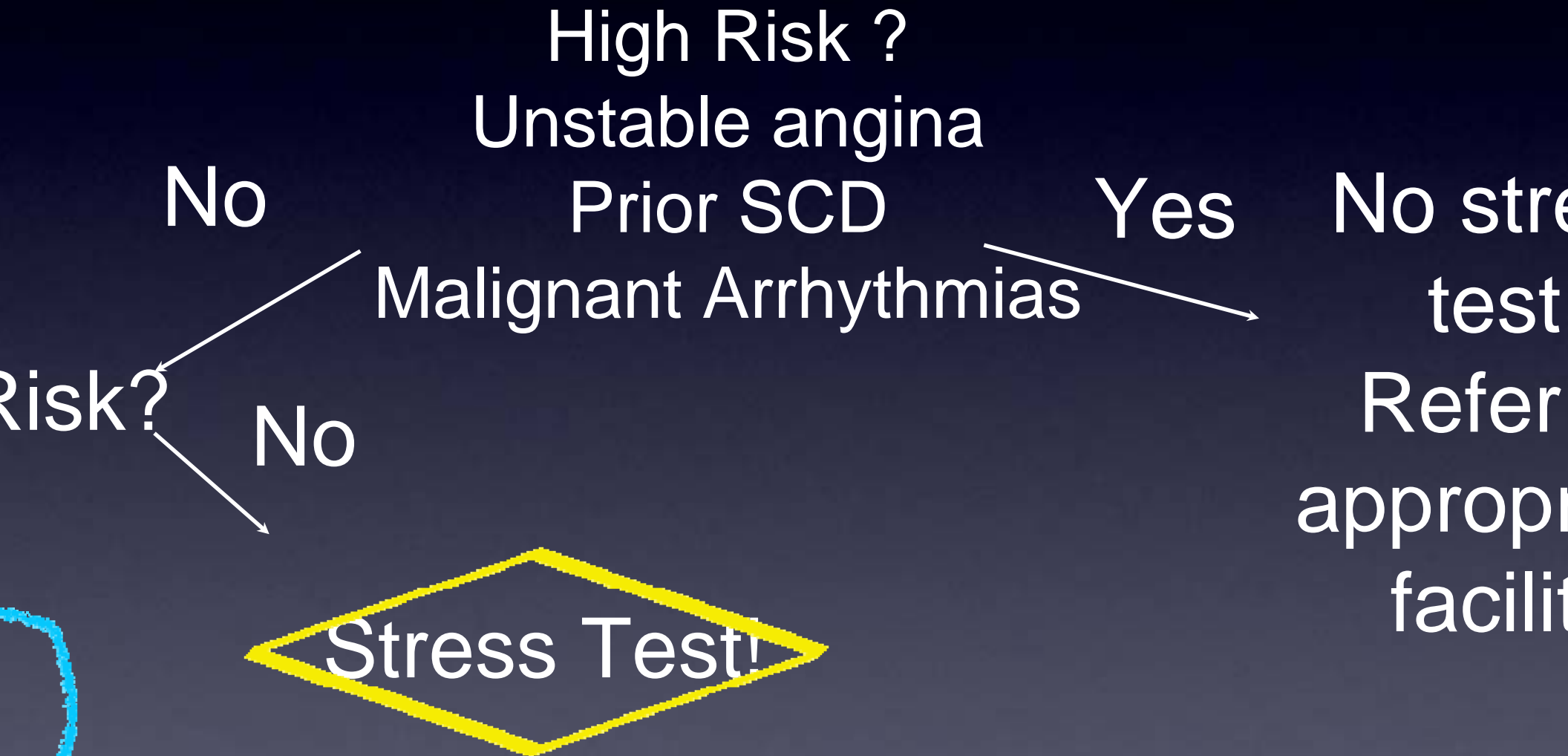
Minimal risk of adverse events during

Provider

- Administrative burden of the test
- Payor “score carding”
- Explaining the “abnormal”

Give me some help!

Comprehensive Clinical Assessment Including symptoms, risk factors, etc



Adapted from Fihn
et al "Stable

In English Please!

- If the patient is at **intermediate risk (10-90% pre-test risk)**, the sensitivity and specificity of stress testing suggest that the benefits of the test will outweigh the risks!



No High Risk Features and Not Low Risk

Patients with chest discomfort or other symptoms (anginal equivalents) that could be reasonably thought to be due to CAD

How do I determine patient's risk???

- Clinical evaluation!
- Framingham Risk Score Calculation
- Calcium scoring?
- Cardiology Consultation

Stress Testing

Asymptomatic and Low Risk Patients “Screening”

- Patients with family history or other risk factors but no symptoms.
- Patients with symptoms highly atypical for ischemic heart disease.

For patients at low risk (10 year risk of Coronary Heart Disease Events <10%), the value added in terms of prognosis of a negative result will be minimal.

● The patient was at low risk prior to the stress test and remains at low risk after the test.

● But what if the test is “positive”? Haven’t I helped the patient?

● If the patient was at low risk, the likelihood of a false positive result may be equal to or greater than that of a true positive.--Then What???

- You refer 1000 low risk patients for exercise stress testing.
- 120 will have positive result.
- Of these 120, 95 will not have significant CAD.
- Positive predictive value is only approximately 20% in this patient population!

POST-TEST DISCUSSION

- Be ready to explain what a “positive” result implies!
- Are you going to label that patient as having “CAD”?? What are the implications of this??
- At a minimum a positive EST results will likely lead to cardiology referral to answer these questions, and possible additional testing with associated cost and risk.

(AUC)

- Created by the American College of Cardiology “to respond to the need for rational use of imaging services in the delivery of high quality care.”
- AUC “are not intended to ignore ambiguity and nuance intrinsic to clinical decision making” and “should not be considered a substitute for sound clinical judgment and practice experience”.
- In recognition of these goals the AUC ratings system has changed -
- **Appropriate, Uncertain and Inappropriate**

What does that mean?

- We should use AUC to help guide decision making. However, your clinical assessment should always be the ultimate criteria for determining if stress testing is indicated for your patient.
- As with any test-before you order the stress test ask yourself two questions:
 - What clinical question will this test answer?
 - Will the result of the test alter my treatment of the patient?

ACC Highlights

1. Don't perform stress cardiac imaging in the **initial evaluation without cardiac symptoms** unless high risk markers (troponin, abnormal ECG, malignant arrhythmia) are present.
2. Only consider stress cardiac imaging in patients undergoing intermediate or **high risk** (vascular surgery) who have risk factors or poor functional capacity and only if test will change management!
3. Don't perform **annual stress cardiac imaging** as part of routine follow up for **asymptomatic** patients with known CAD.
4. **Atrial fibrillation without accompanying ischemic symptoms** is an "may be appropriate" indication of

Summary

- Like it or not, we are are being judged on the “appropriateness” of stress test utilization!
- Order stress tests in patients at **INTERMEDIATE RISK** of ischemic heart disease.
- If the patient is at low risk, a stress test will likely not be helpful. Explain this to the patient in detail and work to minimize their risk v lifestyle modification and educate them about symptoms of CAD. Consider other screening tools such as FRS or coronary artery calcium score.
- ACC Appropriate Use Criteria Guidelines suggest we should not routinely order stress cardiac imaging for asymptomatic patients without high risk features, pre-operative patients and those with atr fibrillation without symptoms.
- Consider referral to a cardiologist for further help with risk assessment or for a consultation to discuss the limitation of stress testing in mo

Thank You