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## Routine Stress Testing After Negative Biomarker Testing Is Seldom Helpful

### Clinical Question

What is the diagnostic yield of performing routine stress testing in patients who have tested negative for acute coronary syndrome?

### Bottom Line

Fewer than 1% of patients who undergo routine provocative cardiac testing after having two sets of negative serum troponin results following an episode of acute chest pain are identified as having potential benefit from revascularization (American Heart Association [AHA] class I or IIa). False-positive results are common. (Level of Evidence = 2b)

### Synopsis

The AHA recommends provocative testing (e.g., stress testing) in patients with acute chest pain who have negative biomarker results, with the idea that it will identify patients who may benefit from revascularization. The researchers conducting this study identified all patients (n = 4,181) without previously identified coronary artery disease who presented to an emergency

department over a six-year period. Acute coronary syndrome was ruled out in all included patients, and exercise stress testing (n = 512) or myocardial perfusion imaging (n = 3,669) was subsequently performed while they were still in the emergency department. Of these patients, 470 (11.2%) had inducible myocardial ischemia. Most were referred for further medical management, but 26.2% were deemed to require coronary angiography to determine whether they had obstructive disease that would benefit from revascularization. Of this group, 63 patients had obstructive disease, but only 28 patients had disease that would benefit from revascularization (AHA class I or IIa). As a result, the true positive rate was only 51.2% for patients undergoing provocative testing and subsequent angiography. Only 0.7% of patients who underwent provocative testing would have benefited from intervention, and an equal percentage had obstructive disease that would have been harmed by catheterization (e.g., AHA class III).

**Study design:** Cohort (retrospective)

**Funding source:** Self-funded or unfunded

**Setting:** Emergency department

**Reference:** Hermann LK, Newman DH, Pleasant WA, et al. Yield of routine provocative cardiac testing among patients in an emergency department-based chest pain unit. *JAMA Intern Med.* 2013;173(12):1128-1133.

ALLEN F. SHAUGHNESSY, PharmD, MMedEd  
Professor of Family Medicine  
Tufts University  
Boston, Mass. ■