

Comparison of the AHA/ACC vs ESC guidelines for management of patients with non-ST-elevation acute coronary syndromes: Are the differences clinically different?

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In this issue of JNC, Prejean et al¹ compare the 2014 American Heart Association (AHA)/American College of Cardiology (ACC) guidelines for the management of patients with non-ST-elevation acute coronary syndromes (ACS)² and the 2015 European Society of Cardiology (ESC) guidelines for the management of ACS in patients without persistent ST-segment elevation.³ This review focuses on the role of noninvasive testing in the management of these patients, the application of invasive vs conservative treatment strategies, and the evaluation and treatment of specific patient subsets. Prejean and colleagues present the recommendations in these guidelines using several tables to facilitate side-by-side comparisons of the AHA/ACC vs ESC recommendations.

In the Prejean article, Tables 1 and 3 evaluate noninvasive testing procedures. Perhaps somewhat surprisingly, given the common use of chest x-ray in the ACS setting, neither guideline assigns a specific rating to this imaging modality. Similarly, the AHA/ACC guideline does not assign a specific rating to echocardiography, although general comments contained within this document acknowledge clinical scenarios where echocardiography is helpful. These scenarios are

specifically incorporated as class I indications in the ESC document. The AHA/ACC guideline assigns IIa ratings to stress testing and coronary computed tomography (CT) angiography in stabilized patients where myocardial infarction has been ruled out. The ESC guideline assigns the same IIa rating to CT angiography and a class I rating to stress testing. Although a class I indication is a “stronger” indication than class IIa, in practice there is little difference between a class I vs IIa indication for clinical decision-making. For patients with an interpretable electrocardiogram (ECG), the AHA/ACC guideline assigns a slightly higher level of evidence (LOE) A rating to exercise ECG vs LOE B for stress imaging. The ESC document generally favors stress imaging.

Treatment strategies are listed in Table 2. Both guidelines assign class I indications to immediate or early invasive strategies to higher risk patients. These ratings are based upon meta-analyses of randomized trials that demonstrated overall improved clinical outcomes with invasive strategies, with sub-analyses of these studies demonstrating that most of the benefit applied to intermediate- and high-risk patients.^{4–6} Since randomization in these trials was not predicated upon up-front clinical risk, an invasive approach (delayed) is assigned a IIa rating in the AHA/ACC guideline even for low-risk patients. The patient subset that receives the largest discrepancy in rating recommendations between the guidelines is low-risk patients who are candidates for stress testing (addressed as an “ischemia-guided strategy” in the ESC guideline). The AHA/ACC recommendation is class IIb with LOE B or C, whereas the ESC recommendation is class I with LOE A. The only class III recommendations in either guideline are contained in the AHA/ACC document and apply to patient subsets at the extreme ends of the risk spectrum: (1) those patients with extensive comorbidities whose

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general mortality risk is very high; (2) patients who have chest pain but are at very low risk of having obstructive coronary artery disease (CAD). This latter recommendation applies primarily to low-risk women (also addressed in Table 4) and is based upon either no benefit or a trend towards worse outcome in some of the randomized trials in this subset of patients.^{4,6-8}

Table 4 addresses evaluation and treatment in special populations including advanced age, diabetes, chronic kidney disease, acute or chronic heart failure, multivessel CAD, and women. Allowing for modest differences in wording, the two guidelines assign similar ratings of class I or IIa for these special populations (with the exception of low-risk women as noted above).

Prejean et al.¹ have developed a useful document that facilitates comparison of the ACC/AHA and ESC guidelines addressing non-ST-segment elevation ACS. Overall, there is significant similarity between the guidelines for ratings recommendations for the majority of the clinical scenarios addressed. Both guidelines assign a class I indication to an immediate (< 2 hours) or early (< 24 hours) invasive strategy for patients with high-risk clinical features, including high clinical risk score, hemodynamic instability, refractory chest pain, heart failure, mechanical complications, and/or serious arrhythmias. An initial invasive strategy is also recommended for patients with abnormal laboratory test results, including significant ECG changes and/or elevated troponin compatible with acute myocardial infarction (MI). The troponin criterion is especially relevant since it constitutes the basis for diagnosing MI.⁹ Since ACS encompasses patients with either non-ST elevation MI or unstable angina, the guidelines are in agreement that all non-ST-elevation MI patients should be treated with an invasive approach (except those with extreme comorbidities).

The current clinical practice of ACS is consistent with these guideline ratings. The treatment of ACS is dominated by immediate and early invasive strategies, not only because of guideline recommendations but also because of practical considerations and financial incentives. Many higher risk patients with ACS present with severe angina and have severely stenotic lesions on coronary angiography. Limited data in the setting of chronic CAD suggests that PCI is more likely to produce a greater reduction in ischemia compared to medical therapy alone.¹⁰ CAD risk factors are highly prevalent in higher risk patients, many of whom are already taking medications that lower cardiovascular risk, including anti-platelets, statins, and anti-hypertensive agents with anti-anginal properties (calcium channel blockers and beta blockers). There may be little room for adjusting medications or dosages of medications to treat angina in these patients. Payment systems, at least in the United

States, are incentivized to favor an early invasive strategy. Reimbursement to the physician is higher for coronary angiography and PCI or coronary bypass surgery vs a simple standard treadmill test. In a fixed payment system based upon diagnostic-related grouping (DRG) codes, length of hospital stay becomes a major consideration. The length of stay is generally longer (and therefore more costly to the health care system) for the conservative approach, since a patient must first be completely stabilized before proceeding with stress testing and subsequently an invasive approach if the test results are abnormal. This sequential approach results in longer hospital stay.

The greatest discrepancy between the AHA/ACC and ESC guidelines, and particularly as it pertains to nuclear imaging, relates to treatment strategies for stabilized low-risk patients. The AHA/ACC guideline does not assign any class I ratings to this group of patients. The rating recommendation is IIa for a delayed invasive strategy for stabilized patients not at high or intermediate risk (see Prejean manuscript Table 2). This document assigns the same IIa rating to stress testing for patients with possible ACS with normal ECGs and troponins (see Prejean manuscript Table 1) and a IIb rating to an ischemia-guided strategy for initially stabilized patients (see Prejean manuscript Table 1). In other words, the ACC/AHA guideline provides considerable leeway to the clinician for the management of stabilized low-risk patients. Conversely, the ESC document assigns a stronger class I rating to a selective invasive strategy for this subset of patients. For patients who are treated with a selective stress testing-based strategy, the AHA/ACC guideline again allows for more leeway for choosing between exercise ECG vs stress imaging, whereas the ESC document favors stress imaging (see Prejean manuscript Table 1).

The Institute of Medicine defines clinical practice guidelines as “statements that include recommendations, intended to optimize patient care, that are informed by a systematic review of evidence and an assessment of the benefit and harms of alternative care options.”¹¹ Based upon this definition, one might assume that guidelines addressing the same medical condition developed by different professional organizations should provide similar recommendations. Writing committees have access to the same literature upon which recommendations are based. In the case of non-ST-elevation ACS, the AHA/ACC and ESC documents were developed during the same time period and published within one year of each other. The large majority of the recommendations provided by these two guidelines are very similar. Nonetheless, even when writing committees have access to the same literature, there can be significant discrepancies in recommendations that are provided by different professional organizations.^{12,13}

This issue especially applies when there is little or no published data to help inform recommendations, in which cases the basis for the recommendations is primarily or solely “expert opinion” (LOE C). Even when solid randomized trial evidence exists, clinical experience and application of a study’s results to different healthcare systems may influence the opinions and hence the recommendations provided by a writing group.

In summary, there is relatively little difference between the recommendations provided in the AHA/ACC and ESC guidelines for non-ST-elevation ACS. Both guidelines recommend (class I) an invasive strategy in high- and intermediate-risk patients. These patients constitute the majority of the ACS population. Treatment of ACS is dominated by early angiography and coronary revascularization, most commonly with PCI. The main discrepancy between the guidelines revolves primarily around stabilized low-risk patients. The AHA/ACC guideline provides less specific recommendations (IIa or IIb) which include either direct coronary angiography or a stress testing based strategy. The ESC guideline more strongly (class I) favors a stress imaging based strategy. Part of the discrepancy in this patient subset probably also relates to the patient with acute chest pain which is not due to CAD and thus is not a true ACS patient. However, the distinction between a true ACS low-risk patient and a patient with nonischemic acute chest pain can be difficult, especially early in the evaluation process. Although a no-testing approach in patients without true ACS might be advisable, the clinician may feel pressured by the patient/family or medical-legal system to perform a test. In reality, many of these patients are referred for stress testing even after the pain has been determined to clearly be nonischemic after initial assessment. These patients can commonly be evaluated in the emergency room and dismissed with scheduled follow-up early stress testing or undergo testing in the emergency room through a chest pain unit.¹⁴ Treatment strategies for ACS are constantly evolving. The anticipated widespread use of high-sensitivity troponin in the near future may significantly alter current guideline algorithms.¹⁵

Disclosure

None.

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