

Preoperative Assessment of the Patient with Cardiac Disease Undergoing Noncardiac Surgery



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KEYWORDS

- Preoperative • Cardiac • Myocardial infarction • Stress testing
- Coronary revascularization

KEY POINTS

- New guidelines have been published by the American Heart Association/American College of Cardiology and the European Society of Cardiology to define the evidence surrounding preoperative cardiovascular management.
- Preoperative cardiovascular testing should only be performed if it affects the management of patients with increased risk and poor exercise capacity.
- Coronary revascularization before noncardiac surgery is indicated only in patients in whom it is warranted, independent of noncardiac surgery.
- Guidelines for perioperative antiplatelet management in patients with coronary stents is currently undergoing revision.
- Indications for perioperative beta-blockade are restricted to those already taking these agents with a class IIb indication for initiation allowing for sufficient time for titration.

The past several years has seen a dramatic increase in the number and quality of randomized and prospective studies to define the optimal and most cost-effective approach for preoperative cardiovascular evaluation and management for noncardiac surgery, including studies evaluating the role of coronary revascularization before noncardiac surgery and perioperative beta-blockers. In 2014, the American Heart Association/American College of Cardiology (AHA/ACC) Guidelines on Perioperative Cardiovascular Evaluation before Noncardiac Surgery were updated, which included a new algorithm and new recommendations regarding perioperative beta-blockade usage.¹ In addition, the European Society of Cardiology has also published guidelines for preoperative cardiac risk assessment and perioperative cardiac management in noncardiac surgery.² These recommendations are similar to the AHA/ACC

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recommendations with an algorithm, and the AHA/ACC and European Society of Cardiology discussed their recommendations before simultaneous publication to ensure that any differences in recommendations were fully vetted. Part of the rationale for updating the guidelines from both groups was the recent concerns regarding the publications by Poldermans and his group. After extensive discussion, the ACC/AHA Writing Committee determined the approach outlined in **Box 1**.

The basic tenet in preoperative evaluation remains that information regarding the extent and stability of disease will affect patient management and lead to improved outcome (**Box 2**). In the case of cardiovascular disease, preoperative evaluation seeks to define the extent of coronary artery disease and left ventricular function.

CLINICAL ASSESSMENT

Since the original manuscript by Goldman and colleagues³ in 1977 describing a Cardiac Risk Index, multiple investigators have validated various clinical risk indices for their ability to predict perioperative cardiac complications. The Revised Cardiac Risk Index (RCRI) was developed in a study of 4315 patients aged 50 years or older undergoing elective major noncardiac procedures in a tertiary care teaching hospital. Six independent predictors of complications were identified and included in the RCRI: high-risk type of surgery, history of ischemic heart disease, history of congestive heart failure, history of cerebrovascular disease, preoperative treatment with insulin, and preoperative serum creatinine of greater than 2.0 mg/d, with increasing cardiac complication rates noted with increasing number of risk factors.⁴ The RCRI has become the standard tool in the literature in assessing the prior probability of perioperative cardiac risk in a given individual and has been used to direct the decision to perform cardiovascular testing and implement perioperative management protocols, and has recently been validated for both short- and long-term outcomes.⁵

More recently, a risk calculator was developed using data from the American College of Surgeons National Surgical Quality Improvement Project (ACS-NSQIP; **Fig. 1**; available from: <http://site.acsnsqip.org>).⁶ It is based on 1,414,006 patients encompassing 1557 unique surgical codes. The authors found that the ACS NSQIP surgical risk calculator was a decision support tool that can be used to estimate the risks of most operations. The advantage of the ACS-NSQIP risk calculator is that it incorporates both clinical and surgical risk. Additionally, age is incorporated into the risk

Box 1

Approach to publications from Poldermans

1. The Evidence Review Committee will include the DECREASE trials in the sensitivity analysis, but the systematic review report will be based on the published data on perioperative beta-blockade, with data from all DECREASE trials excluded.
2. The DECREASE trials and other derivative studies by Poldermans should not be included in the clinical practice guideline data supplements and evidence tables.
3. If nonretracted DECREASE publications and/or other derivative studies by Poldermans are relevant to the topic, they can only be cited in the text with a comment about the finding compared with the current recommendation, but should not form the basis of that recommendation or be used as a reference for the recommendation.

From Fleisher LA, Fleischmann KE, Auerbach AD, et al. 2014 ACC/AHA guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task Force on practice guidelines. J Am Coll Cardiol 2014;64(22):e83; with permission.

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