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# Preoperative and Postoperative Care

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## INTRODUCTION

More than 40 million people undergo noncardiac surgical procedures in the United States annually. It is estimated that the incidence of cardiac complications after noncardiac surgical procedures is between 0.5% and 1% In other words, 200,000 to 400,000 people will experience perioperative cardiac complications annually. Moreover, more than 25% of these patients will die. Patients who survive a postoperative myocardial infarction (MI) are twice as likely to die in the following 2 years as are patients with uneventful surgical procedures. Emerging evidence-based practices dictate that the physician should thoughtfully perform an individualized evaluation of the surgical patient to provide an accurate preoperative risk assessment, risk stratification, and modification of risk parameters that can then provide the framework for optimal perioperative risk reduction strategies. This chapter reviews preoperative and postoperative cardiovascular risk assessment that targets intermediate- to high-risk patients to strategically guide perioperative preventive therapies for optimal outcome.

## EVALUATION OF PATIENTS WITH ELEVATED RISK

The preoperative evaluation includes an assessment of the risk associated with the planned surgery or procedure. Historically the risk of procedures has been categorized as low, intermediate, or high. The most recent guidelines from the American College of Cardiology/American Heart Association (ACC/AHA) on perioperative cardiovascular evaluation, however, have simplified the approach by categorizing planned procedures as low or elevated perioperative risk. Low-risk procedures (e.g., colonoscopy, cataract surgery) are associated with a less than 1% risk of major adverse cardiovascular events (MACE) of death or myocardial infarction. Those procedures with a MACE risk of ≥1% are classified as conferring escalated risk. Simple standardized preoperative screening questionnaires have been developed for the purpose of identifying patients at intermediate to high risk who may benefit from a more detailed clinical evaluation (Table 24-1).

Evaluation of such surgical patients should always begin with a thorough history and physical examination including a 12-lead resting electrocardiogram (ECG) in accordance with the ACC/AHA guidelines. A determination of the urgency of the surgery should be included in the history because truly emergent procedures are associated with unavoidably higher rates of morbidity and mortality.

Perioperative risk assessment begins with an assessment of the urgency of the noncardiac surgery; emergency surgery should not be delayed and may not allow for risk stratification. Preoperative testing should be done only for specific clinical conditions based on the history. Healthy patients of any age who are undergoing elective surgical procedures and have no coexisting medical conditions should not need any testing unless the degree of surgical stress could result in unusual changes from the baseline state. The history should focus on symptoms of occult cardiac disease.

## PREOPERATIVE CARDIAC RISK ASSESSMENT

During the perioperative risk assessment of patients undergoing noncardiac surgery, there are active cardiac conditions that should be evaluated and treated in accordance with the ACC/AHA guidelines. These conditions include unstable coronary artery disease (CAD), decompensated heart failure, severe

**TABLE 24-1 STANDARDIZED PREOPERATIVE QUESTIONNAIRE***

1. Age, weight, and height
2. Are you
   a. Female and 55 years of age or older or male and 45 years of age or older?
   b. If yes, are you also 70 years of age or older?
3. Do you take anticoagulant medications ("blood thinners")?
4. Do you have or have you had any of the following heart-related conditions?
   a. Heart disease
   b. Heart attack within the last 6 months
   c. Angina (chest pain)
   d. Irregular heartbeat
   e. Heart failure
5. Do you have or have you ever had any of the following?
   a. Rheumatoid arthritis
   b. Kidney disease
   c. Liver disease
   d. Diabetes
6. Do you get short of breath when you lie flat?
7. Are you currently on oxygen treatment?
8. Do you have a chronic cough that produces any discharge or fluid?
9. Do you have lung problems or diseases?
10. Have you or any blood member of your family ever had a problem with any anesthesia other than nausea?
    a. If yes, describe
11. If female, is it possible that you could be pregnant?
    a. Perform pregnancy test
    b. Please list date of last menstrual period

From Tremper KK, Benedict P: Paper "preoperative computer," Anesthesiology 92:1212–1213, 2000.

*University of Michigan Health System patient information report. Patients who answer yes to any of questions 2 through 9 should receive a more detailed clinical evaluation.