JAMA
The Journal of the American Medical Association

Clinical Review& Education

Perioperative Cardiovascular Risk Assessment and Management for Noncardiac Surgery

A Review

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JAMA. 2020; 324(3):279-290

doi:10.1001/jama.2020.7840

Abstract

Importance:

Perioperative cardiovascular complications occur in 3% of hospitalizations for noncardiac surgery in the US. This review summarizes evidence regarding cardiovascular risk assessment prior to noncardiac surgery.

Observations:

Preoperative cardiovascular risk assessment requires a focused history and physical examination to identify signs and symptoms of ischemic heart disease, heart failure, and severe valvular disease. Risk calculators, such as the Revised Cardiac Risk Index, identify individuals with low risk (<1%) and higher risk (≥1%) for perioperative major adverse cardiovascular events during the surgical hospital admission or within 30 days of surgery. Cardiovascular testing is rarely indicated in patients at low risk for major adverse cardiovascular events. Stress testing may be considered in patients at higher risk (determined by the inability to climb ≥2 flights of stairs, which is <4 metabolic equivalent tasks) if the results from the testing would change the perioperative medical, anesthesia, or surgical approaches. Routine coronary revascularization does not reduce

perioperative risk and should not be performed without specific indications independent of planned surgery. Routine perioperative use of low-dose aspirin (100 mg/d) does not decrease cardiovascular events but does increase surgical bleeding. Statins are associated with fewer postoperative cardiovascular complications and lower mortality (1.8% vs 2.3% without statin use; $P < .001$) in observational studies, and should be considered preoperatively in patients with atherosclerotic cardiovascular disease undergoing vascular surgery. High-dose β-blockers (eg, 100 mg of metoprolol succinate) administered 2 to 4 hours prior to surgery are associated with a higher risk of stroke (1.0% vs 0.5% without β-blocker use; $P = .005$) and mortality (3.1% vs 2.3% without β-blocker use; $P = .03$) and should not be routinely used. There is a greater risk of perioperative myocardial infarction and major adverse cardiovascular events in adults aged 75 years or older (9.5% vs 4.8% for younger adults; $P < .001$) and in patients with coronary stents (8.9% vs 1.5% for those without stents; $P < .001$) and these patients warrant careful preoperative consideration.

Conclusions and Relevance:

Comprehensive history, physical examination, and assessment of functional capacity during daily life should be performed prior to noncardiac surgery to assess cardiovascular risk. Cardiovascular testing is rarely indicated in patients with a low risk of major adverse cardiovascular events, but may be useful in patients with poor functional capacity (<4 metabolic equivalent tasks) undergoing high-risk surgery if test results would change therapy independent of the planned surgery. Perioperative medical therapy should be prescribed based on patient-specific risk.

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July 21, 2020

JAMA. 2020; 324(3):279-290

https://doi:10.1001/jama.2020.7840