

BNP Levels and Risk Stratification Before Noncardiac Surgery

High preoperative BNP levels were associated with cardiac risk after noncardiac surgery.

In nonsurgical settings, high levels of brain natriuretic peptide (BNP) predict adverse outcomes among patients with heart failure or coronary artery disease. In this meta-analysis, investigators combined results from several small studies to determine whether preoperative BNP levels (or N-terminal pro-BNP levels) predict cardiac complications such as cardiac-related death, nonfatal myocardial infarction, or atrial fibrillation among patients who are undergoing noncardiac surgery.

In nine studies that met eligibility criteria, almost a quarter of 3281 noncardiac surgery patients exhibited elevated preoperative BNP levels, and 314 experienced cardiac complications within 30 days after surgery. In the seven studies that could be pooled to determine an odds ratio, the OR for complications was 19.3 in those with elevated BNP levels, and elevated levels remained an independent predictor even after adjustment for clinical history of heart failure or ejection fraction, as well as other traditional risk factors.

Comment: This interesting hypothesis-generating analysis suggests that elevated BNP levels are associated with excess short-term risk for cardiac complications. Editorialists believe that the converse also is true — low preoperative levels of BNP are associated with a high negative predictive value for complications. However, they caution that more research is required to evaluate whether therapies and treatments that are based on preoperative BNP assessment really would lower risk and improve outcomes. Finally, because the reviewed studies used different BNP cutoffs and because risk likely climbs gradually with increasing BNP level, this analysis does not establish a specific BNP threshold for predicting perioperative risk.

— [Kirsten E. Fleischmann, MD, MPH](#)

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Karthikeyan G et al. Is a pre-operative brain natriuretic peptide or N-terminal pro-B-type natriuretic peptide measurement an independent predictor of adverse cardiovascular outcomes within 30 days of noncardiac surgery? A systematic review and meta-analysis of observational studies. *J Am Coll Cardiol* 2009 Oct 20; 54:1599.

Bolliger D et al. Pre-operative cardiac risk assessment in noncardiac surgery: Are natriuretic peptides the magic bullet? *J Am Coll Cardiol* 2009 Oct 20; 54:1607.

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