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Insufficient screening for heart damage after noncardiac surgery puts patients at risk

Although national and international guidelines now recommend perioperative cardiac biomarker screening in high-risk patients undergoing noncardiac surgery, a five-year study found that use of biomarkers is still low, reports the Canadian Journal of Cardiology

Philadelphia, December 10, 2020 – About five percent of patients experience heart muscle injury around the time of their surgery for a noncardiac condition, yet guideline recommendations to identify patients at risk using biomarkers are not being followed. A five-year [study](#) in Alberta, Canada appearing in the [Canadian Journal of Cardiology](#), published by Elsevier, determined that the recommended biomarker screening is very much underutilized.

Of the 1.5 million Canadians who undergo inpatient noncardiac surgery each year, 22,000-45,000 will experience a perioperative cardiac event. For this reason, guidelines now recommend that patients with risk factors for heart disease have cardiac enzyme measurements done after their surgery, even if they do not have any symptoms.

“Although surgical and anesthetic advancements and more effective treatments for heart damage have resulted in fewer people dying around the time of surgery, perioperative cardiovascular complications remain an important concern,” explained lead investigator Michelle M. Graham, MD, University of Alberta, Division of Cardiology and Mazankowski Alberta Heart Institute, Edmonton, AB, Canada.

Without biomarker screening, asymptomatic cardiac events may not be picked up for prompt treatment, which could lead to complications and excess deaths. “Many of these events are silent, meaning that patients will not experience any chest pain alerting their doctors that they are experiencing heart damage. For most of these patients, the only way that we would identify this is by measuring cardiac enzymes in their blood released by damaged heart cells,” Dr. Graham added.

Evidence of the utility of biomarkers for perioperative screening began to emerge following the results of the 2011 Perioperative Ischemic Evaluation (POISE) study. In response to this growing evidence, multiple

national and international guidelines for noncardiac surgery now recommend perioperative cardiac biomarker screening in high-risk patients. The Canadian Cardiovascular Society (CCS) published its Guidelines on Perioperative Cardiac Risk Assessment and Management for Patients Who Undergo Noncardiac Surgery in 2017.

Using linked provincial administrative databases, investigators in Dr. Graham's study looked at the records of more than 300,000 patients in Alberta who had undergone noncardiac surgery from January 2013 to December 2017. They found that roughly one in five surgical patients, or 59,506, had risk factors for heart disease. Of these higher risk patients, only around seven percent underwent preoperative screening for the natriuretic peptide biomarker. Natriuretic peptides, which were originally used to diagnosis heart failure, now play an increasing role in identifying patients most at risk of cardiovascular disorders.

Patients with elevated perioperative screening biomarkers demonstrated increased six-month mortality, increased hospitalizations for heart failure, and acute coronary syndromes.

Investigators concluded that the use of biomarkers to assist in cardiac risk stratification and postoperative monitoring remains low, and they recommend addressing access to these tests and improving physician education regarding the asymptomatic nature of postoperative cardiac events to improve compliance with national guidelines.

"Now that we know that testing for heart damage after surgery is low, the medical community needs to be sensitized to this need and find out what we can do to improve it," noted Dr. Graham. "Improvement is going to require multispecialty cooperation among surgeons, cardiologists, other specialists, and family physicians. Further research is still required, but the first step is to actually identify these patients, closely monitor them, and aggressively treat their risk factors for heart disease."

In an accompanying [editorial](#), Joel L. Parlow, MD, and Michael McMullen, MD, both of the Department of Anesthesiology and Perioperative Medicine, Queen's University, Kingston, ON, Canada, and two of the co-authors of the CCS Guidelines, commented that, "This study is a valuable step in the process of devising strategies to ensure that the best possible evidence is being employed in perioperative practice. The routine use of biomarkers in the assessment and management of high-risk patients is an important goal toward identifying and reducing serious cardiovascular complications of surgery." However, they observed that the translation of guideline recommendations into practice is often slow and inconsistent. To really determine the uptake of the CCS Guidelines, they recommend a follow-up audit at least three years after publication.

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Notes for editors

The article is "Underutilization of Perioperative Screening for Cardiovascular Events After Noncardiac Surgery in Alberta," by Pishoy Gouda, MB, BCh, BAO, MSc, Xiaoming Wang, MSc, PhD, Michael McGillion, RN, PhD, and Michelle M. Graham, MD (<https://doi.org/10.1016/j.cjca.2020.06.003>). The editorial is "Big Data for a Big Problem: How Can We Enhance the Implementation of Perioperative Cardiovascular Guidelines?" by Joel L. Parlow, MD, and Michael McMullen MD (<https://doi.org/10.1016/j.cjca.2020.07.229>). They online ahead of the *Canadian Journal of Cardiology*, volume 37, issue 1 (January 2021) published by [Elsevier](#).

Full text of the articles is available to credentialed journalists upon request. Contact Eileen Leahy at +1 732 238 3628 or cjcmmedia@elsevier.com to obtain copies. Journalists wishing to speak to the study's authors should contact Michelle M. Graham, MD, at mmg2@ualberta.ca. To reach the editorial's authors

for comment, please contact Joel Parlow, MD, at parlowj@queensu.ca.

About the *Canadian Journal of Cardiology*

The [Canadian Journal of Cardiology](#) is the official journal of the [Canadian Cardiovascular Society](#). It is a vehicle for the international dissemination of new knowledge in cardiology and cardiovascular science, particularly serving as a major venue for the results of Canadian cardiovascular research and Society guidelines. The journal publishes original reports of clinical and basic research relevant to cardiovascular medicine as well as editorials, review articles, case reports, and papers on health outcomes, policy research, ethics, medical history, and political issues affecting practice. www.onlinecjc.ca

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