Choosing Wisely Canada™
In partnership with the Canadian Medical Association

Five Things Physicians and Patients Should Question

1 Don't order baseline laboratory studies (complete blood count, coagulation testing, or serum biochemistry) for asymptomatic patients undergoing low-risk non-cardiac surgery.

Conducting baseline laboratory investigations before low-risk non-cardiac surgery contributes little value to perioperative care. A focused clinical history and physical examination may reliably identify relevant abnormalities sought by routine laboratory testing before low-risk surgery. In addition, evidence suggests that abnormal results in this setting only rarely influence management and do not improve clinical outcomes. Preoperative testing may add value in the setting of a symptomatic patient or higher-risk surgery, but should not be performed routinely before low-risk surgery on asymptomatic patients.

2 Don't order a baseline electrocardiogram for asymptomatic patients undergoing low-risk non-cardiac surgery.

Electrocardiograms (ECGs) performed before elective, non-cardiac, surgeries are frequently abnormal. This is especially true when this test is done in older patients. Despite the frequency of these abnormalities, ECGs do little to improve risk prediction beyond simply asking patients about their health. Serious cardiac events like heart attack are rare following low-risk surgeries; there is little that physicians can do to further lower this risk. A preoperative ECG will therefore not improve outcome but may lead to more testing or treatment that is of little benefit. ECGs used to identify the cause of symptoms (palpitations, chest pain, dyspnea, etc.) remain useful diagnostic tools regardless of whether the patient is having surgery.

3 Don't order a baseline chest X-ray in asymptomatic patients, except as part of surgical or oncological evaluation.

While chest X-rays (CXRs) remain an important part of surgeon's evaluation before cancer or thoracic surgeries, it is better if these staging examinations are complete before committing a patient to surgery. CXRs are not indicated in the routine pre–anesthetic assessment. In the absence of symptoms, CXRs yield few diagnoses and many false positives. CXRs do not improve risk prediction or stratification. CXR in the pre-anesthetic evaluation should be reserved for patients with symptoms consistent with acute cardiopulmonary illness (dyspnea, wheeze, productive sputum, etc.).

4 Don't perform resting echocardiography as part of preoperative assessment for asymptomatic patients undergoing low to intermediate-risk non-cardiac surgery.

Resting echocardiography has a clear role for resolving diagnostic questions in surgical patients, such as identifying the basis for suspicious systolic murmurs or new dyspnea on exertion. Outside these indications, resting echocardiography does not contribute significant additional prognostic information to usual clinical evaluation. It is not useful as a screening tool to identify surgical patients at risk for cardiac complications.

5 Don't perform cardiac stress testing for asymptomatic patients undergoing low to intermediate risk non-cardiac surgery.

Stress testing can help resolve diagnostic uncertainty in surgical patients, such as determining whether individuals with chest discomfort and vascular risk factors have undiagnosed coronary artery disease. It can also help identify patients at elevated risk for cardiac complications after major vascular surgery. Nonetheless, asymptomatic individuals with good functional capacity have a very low risk of cardiac complications after low-to-intermediate non-cardiac surgery. Stress testing in such individuals is not useful for delineating expected perioperative risk and guiding clinical care.

How the list was created

The Canadian Anesthesiologists' Society (CAS) established its *Choosing Wisely Canada* (CWC) Top 5 recommendations by engaging a small team of expert Canadian anesthesiologists to develop research methodology and carry out a survey to establish the CAS top five recommendations. The survey was based on similar work done by the American Society of Anesthesiologists who identified an evidence-based list of activities to question within anesthesiology as *Five Things Physicians and Patients Should Question*: American Society of Anesthesiologists. The CAS team defined a short list of twelve tests and procedures in perioperative care and asked members of the CAS to consider each and answer questions about their frequency of use, impact on quality of the care for patients, cost of the investigation, evidence to support the investigation and potential to avoid ordering the investigation. Five recommendations were selected through survey data collection and analysis by the CAS research team in conjunction with a professional survey consultant and expert consensus. The top five were presented at the CAS Annual Meeting in June 2015 and will be published in the *Canadian Journal of Anesthesia*.

Sources

1

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, et al. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Anesthesiology. 2012 Mar;116(3):522-38.

Czoski-Murray C, Lloyd Jones M, McCabe C, et al. What is the value of routinely testing full blood count, electrolytes and urea, and pulmonary function tests before elective surgery in patients with no apparent clinical indication and in subgroups of patients with common comorbidities: a systematic review of the clinical and cost-effective literature. Health Technol Assess. 2012 Dec;16(50):i-xvi, 1-159.

Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative medical testing for cataract surgery. Cochrane Database Syst Rev. 2012 Mar 14;3:CD007293.

Merchant R, Chartrand D, Dain S, et al. Guidelines to the practice of anesthesia--revised edition 2015. Can J Anaesth. 2015 Jan;62(1):54-67.

2

Liu LL, Dzankic S, Leung JM. Preoperative electrocardiogram abnormalities do not predict postoperative cardiac complications in geriatric surgical patients. J Am Geriatr Soc. 2002 Jul;50(7):1186-91.

Mathis MR, Naughton NN, Shanks AM, et al. Patient selection for day case-eligible surgery: identifying those at high risk for major complications. Anesthesiology. 2013 Dec;119(6):1310-21.

van Klei WA, Bryson GL, Yang H, Kalkman CJ, Wells GA, Beattie WS. The value of routine preoperative electrocardiography in predicting myocardial infarction after noncardiac surgery. Ann Surg. 2007 Aug;246(2):165-70.

3

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, et al. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Anesthesiology. 2012 Mar;116(3):522-38.

Joo HS, Wong J, Naik VN, Savoldelli GL. The value of screening preoperative chest x-rays: a systematic review. Can J Anaesth. 2005 Jun-Jul;52(6):568-74.

McAlister FA, Bertsch K, Man J, Bradley J, Jacka M. Incidence of and risk factors for pulmonary complications after nonthoracic surgery. Am J Respir Crit Care Med. 2005 Mar 1;171(5):514-7.

4

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. Circulation. 2014 Dec 9;130(24):e278-333.

Halm EA, Browner WS, Tubau JF, Tateo IM, Mangano DT. Echocardiography for assessing cardiac risk in patients having noncardiac surgery. Ann Intern Med. 1996 Sep 15;125(6):433-41.

Kristensen SD, Knuuti J, Saraste A, et al. 2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management: The Joint Task Force on non-cardiac surgery: cardiovascular assessment and management of the European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA). Eur Heart J. 2014 Sep 14;35(35):2383-431.

Wijeysundera DN, Beattie WS, Karkouti K, Neuman MD, Austin PC, Laupacis A. Association of echocardiography before major elective non-cardiac surgery with postoperative survival and length of hospital stay: population based cohort study. BMJ. 2011 Jun 30;342:d3695.

5

Etchells E, Meade M, Tomlinson G, Cook D. Semiquantitative dipyridamole myocardial stress perfusion imaging for cardiac risk assessment before noncardiac vascular surgery: a meta-analysis. J Vasc Surg. 2002 Sep;36(3):534-40.

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. Circulation. 2014 Dec 9;130(24):e278-333.

Kristensen SD, Knuuti J, Saraste A, et al. 2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management: The Joint Task Force on non-cardiac surgery: cardiovascular assessment and management of the European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA). Eur Heart J. 2014 Sep 14;35(35):2383-431.

Sgura FA, Kopecky SL, Grill JP, Gibbons RJ. Supine exercise capacity identifies patients at low risk for perioperative cardiovascular events and predicts long-term survival. Am J Med. 2000 Mar;108(4):334-6.

About Choosing Wisely Canada

Choosing Wisely Canada is a campaign to help physicians and patients engage in conversations about unnecessary tests, treatments and procedures, and to help physicians and patients make smart and effective choices to ensure high-quality care.

For more information on *Choosing Wisely Canada* or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwiselycanada.org. Join the conversation on Twitter @ChooseWiselyCA.

About The Canadian Anesthesiologists' Society

The Canadian Anesthesiologists' Society (CAS) is a proud partner of the *Choosing Wisely Canada* campaign. The CAS is the national specialty society for anesthesiology in Canada. The CAS was founded in 1943 as a not-for-profit, voluntary organization and is guided by its vision of innovative leadership and excellence in anesthesiology, perioperative care, and patient safety. The CAS represents 3,000 members (anesthesiologists, GP anesthetists, residents, Anesthesia Assistants, etc.) across Canada and around the world and is dedicated to promoting excellence in patient care through research, education and advocacy.