

AUSTRALIAN AND NEW ZEALAND COLLEGE OF ANAESTHETISTS: TESTS, TREATMENTS AND PROCEDURES CLINICIANS AND CONSUMERS SHOULD QUESTION

The Australian and New Zealand College of Anaesthetists (ANZCA), including the Faculty of Pain Medicine, is one of Australasia's largest specialist medical colleges and is responsible for the training, examination and specialist accreditation of anaesthetists and pain medicine specialists and for the standards of clinical practice. ANZCA also plays a significant role in the advancement of anaesthesia in South East Asia and South Pacific island countries.

1. Avoid routinely performing preoperative blood investigations, chest x-ray or spirometry prior to surgery, but instead order in response to patient factors, symptoms and signs, disease, or planned surgery

Preoperative testing aims to provide results that will guide preoperative, intraoperative and postoperative care, particularly results that may change the intended plans. Preoperative laboratory blood investigations in asymptomatic patients undergoing low risk surgery are of little value in detecting abnormalities that will alter patient management and/or improve outcomes. Even when minor abnormalities in laboratory values are detected in asymptomatic patients, adverse outcomes are rare. Clinical history and physical examination should be used to determine the need for laboratory blood testing before low risk surgery; that is, test on the basis of patient and surgical factors.

Similarly, in the absence of positive clinical findings, or significant history, abnormal chest X-ray or spirometry results are uncommon. Positive results, in the absence of symptoms or signs, are unlikely to significantly influence perioperative management. Although the diagnostic yield of preoperative chest X-rays increases with age, most abnormalities reflect chronic disorders and when performed in asymptomatic patients do not impact on anaesthetic management or perioperative outcome. In other words, chest X-ray results are not predictive of postoperative pulmonary complications in most patients. Preoperative chest X-rays may, however, be appropriate prior to cardiac and thoracic surgery and as part of oncological evaluation. There is insufficient evidence to support spirometry as an appropriate tool to stratify risk of postoperative adverse respiratory events. Spirometry may be of value in lung resection surgery, unexplained dyspnoea, and uncertainty about whether known airflow obstruction is optimally reduced. Rather than performing these investigations routinely for surgery, decisions should be individualised, depending on patient history and examination.

Further, for all of these tests, lack of symptoms, signs or known disease increases the likelihood that positive findings are false positives exposing patients to the risks of unnecessary further testing.

Supporting Evidence

- Merchant R, Chartrand D, Dain S, et al. Guidelines to the practice of anesthesia – revised edition 2016. *Can J Anesth* 2016;63:86-112. http://www.cas.ca/English/Page/Files/97_Guidelines-2016.pdf
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- Benarroch-Gampel J, Sheffield KM, Duncan CB, et al. Preoperative laboratory testing in patients undergoing elective, low-risk ambulatory surgery. *Ann Surg* 2012;256(3):518–28.

- Joo HS, Wong J, Naik VN, Savoldelli GL. The value of screening preoperative chest x-rays: a systematic review. *Can J Anesth* 2005; 52:568–74.
- De Hert S, Imberger G, Carlisle J, et al. Preoperative evaluation of the adult patient undergoing non-cardiac surgery: guidelines from the European Society of Anaesthesiology. *Eur J Anaesthesiol* 2011;28(10):684-722.
- Johansson T, Fritsch G, Flamm M, et al. Effectiveness of non-cardiac preoperative testing in non-cardiac elective surgery: a systematic review. *British Journal of Anaesthesia* 2013;110(6):926-39.
- O'Neill F, Carter E, Pink N, Smith I. Routine preoperative tests for elective surgery: summary of updated NICE guidance. *BMJ* 2016;353:i3292.
- Smetana GW, Lawrence VA, Cornell JE. Preoperative pulmonary risk stratification for noncardiothoracic surgery: systematic review for the American College of Physicians. *Ann Intern Med* 2006;144:581-95.

2. Avoid ordering cardiac stress testing for asymptomatic patients prior to undergoing low to intermediate risk non-cardiac surgery

Unnecessary cardiac stress testing increases the patient risk profile for the intended surgery by exposing the patient to the inherent complications of the investigation employed. A further consequence may be the invasive treatment of asymptomatic non-critical coronary disease leading to further patient risk and delay of surgery. Cardiac stress testing should be reserved for symptomatic patients who would normally qualify for the investigation regardless of the need for an operation, and asymptomatic patients at high risk of coronary disease with a significant risk of major adverse cardiac events due to co-morbidity or the high risk nature of the surgery.

Supporting Evidence

- Devereaux PJ, Sessler DI. Cardiac complications in patients undergoing major noncardiac surgery. *N Engl J Med* 2015;373:2258-69.
- 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. *J Am Coll Cardiol* 2014;64:e77-137.
- Kristensen SD, Knutti 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;35:2383-431.
- Wijeyesundera DN, Beattie WS, Austin PC, et al. Non-invasive cardiac stress testing before elective major non-cardiac surgery: population based cohort study. *BMJ* 2010; 340:b5526.

3. Avoid administering packed red blood cells (blood transfusion) to a young healthy patient with a haemoglobin of ≥ 70 g/L who does not have on-going blood loss, unless the patient is symptomatic or haemodynamically unstable

The optimal haemoglobin criterion for transfusion remains controversial and under investigation, varying between 60 and 100 g/L. Compared with higher haemoglobin thresholds, a lower haemoglobin threshold is associated with fewer red blood cell units transfused, without adverse associations with mortality, cardiac morbidity, functional recovery or length of hospital stay in young otherwise healthy patients. Hospital mortality is lower in younger patients randomised to a lower haemoglobin threshold for transfusion versus those randomised to a higher haemoglobin threshold.

The decision to transfuse should be based on a combination of both haemoglobin level and assessment of the patient's clinical status, in particular, haemodynamic indicators and underlying cardiovascular pathology. Currently there is no evidence of benefit and some evidence of harm in the transfusion of packed red blood cells to young healthy haemodynamically stable patients without symptoms.

Supporting Evidence

- Cham G, Yan S, Heng BH, Seow E. Predicting positive blood cultures in patients presenting with pneumonia at an ED in Singapore. *Ann Acad Med Singapore*. 2009;38(6): 508-17.
- Kennedy M, Bates DW, Wright SB, Ruiz R, Wolfe RE, Shapiro NI. Do emergency department blood cultures change practice in patients with pneumonia? *Ann Emerg Med*. 2005; 46(5):393-400.
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- Makam AN, Auerbach AD, Steinman MA. Blood culture use in the ED in patients hospitalised for community-acquired pneumonia. *JAMA Intern Med*. 2014; 174(5):803.
- Kelly AM. Clinical impact of blood cultures taken in the emergency department. *J Acc Emerg Med* 1998; 15(4):254-6.
- Mountain D, Bailey PM, O'Brien D, Jelinek GA. Blood cultures ordered in the adult emergency department are rarely useful. *Eur J Emerg Med*. 2006; 13(2): 76-9.

4. Avoid initiating anaesthesia for patients with limited life expectancy, at high risk of death or severely impaired functional recovery, without discussing expected outcomes and goals of care

The high risk of postoperative morbidity and mortality in the elderly population in particular has been well documented. Patients over 70 years of age having major surgery in Australia and New Zealand health care facilities are at high risk for postoperative events, with 20% experiencing complications within 5 days, 10% requiring critical care admission and 5% dying within 30 days.

Frailty is the state of increased vulnerability to stressors and increases the risk of adverse outcomes including falls, delirium and disability. Such stressors may include hospitalisation and surgery. Functional capacity, one aspect of frailty assessment, has been shown to be an independent predictor of mortality with each ASA class. There is currently much research into the implementation of frailty assessment as part of clinical practice and into whether preoperative measures and postoperative management can improve outcomes. Discussion with the patient and family about the risks and benefits of hospitalisation and surgery in this context are important.

Discussion must centre on patient values and preferences for care and the goals of care when there is significant risk of perioperative morbidity or mortality. This is particularly pertinent in patients with limited life expectancy due to advanced cardiac, renal or respiratory failure and / or metastatic malignancy. Discussions around expected functional recovery and treatment limitations have been demonstrated to reduce stress and anxiety in patients and their families. Many healthcare facilities now require advanced care directives or goals of care plans on or shortly after admission in the appropriate clinical setting.

For patients at highest risk, and where time allows, the discussions should be led by a multidisciplinary, consultant level team, particularly where there is a risk of futile surgery and/or futile intensive care. It is important to ensure that alternative care, focused predominantly on comfort and dignity, is offered to patients and their families.

Supporting evidence

- Story DA, Leslie K, Myles PS, et al. Complications and mortality in older surgical patients in Australia and New Zealand (the REASON study): a multicentre, prospective, observational study. *Anaesthesia* 2010;65:1022-30.
- Visnjevac O, Davari-Farid S, Lee J, et al. The effect of adding functional classification to ASA status for predicting 30-day mortality. *Anesthesia & Analgesia* 2015;121(1):110-16.
- Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. *BMJ* 2010;340:c1345.

5. Avoid initiating anaesthesia for patients with significant co-morbidities without adequate, timely preoperative assessment and postoperative facilities to meet their needs

The ability to provide adequate perioperative care for patients with significant co-morbidities including morbid obesity is a crucial factor in determining whether surgery should be performed in a particular facility. The complexity of the proposed surgery should also be considered. Adequate and timely preoperative assessment must be facilitated to ensure that scheduling of a procedure is appropriate for the facility. In particular, small private hospitals which have no on-site medical practitioners overnight and no intensive care backup must have robust pre-admission processes in which higher risk patients are screened to ensure that they are not accepted for overnight admission unless they have been assessed as suitable for that facility by an anaesthetist or medical specialist.

Intraoperative staffing, equipment and infrastructure are crucial. Postoperatively, staffing ratios and skill sets, requirements for monitoring, medical support and high dependency unit care, as well as optimal pain management, must be considered.

Patients with obstructive sleep apnoea (OSA) and obese patients who may or may not have a formal diagnosis of OSA and/or obesity hypoventilation syndrome represent a particularly high risk group when pain management includes opioid analgesics. The inherent risks of postoperative respiratory depression demand adequate post procedure monitoring by skilled staff.

In summary, the patient and the proposed surgery must be appropriate for the facility. Importantly, patients in rural and remote locations may accept higher risk to be closer to home and a discussion may be required with the patient and treating physicians about whether performing a procedure at a local facility is an acceptable risk.

Supporting evidence

- Coroner's Court of South Australia. Finding of Inquest. Adelaide 2014. From: <http://www.courts.sa.gov.au/CoronersFindings/Lists/Coroners%20Findings/Attachments/581/RYAN%20John%20William%20and%20WALTON%20Patricia%20Dawn.pdf>
- McNicol, L (ed). Safety of anaesthesia: a review of anaesthesia-related mortality reporting in Australia and New Zealand 2009-2011. Melbourne: Australian and New Zealand College of Anaesthetists, 2014 From: http://www.anzca.edu.au/documents/soa-mortality-report_p4.pdf.
- Kaw R, Chung F, Pasupuleti V, et al. Meta-analysis of the association between obstructive sleep apnoea and postoperative outcome. *Br J Anaesth* 2012;109(6):897-906.
- ANZCA Professional Document PS07 Guidelines on Pre-Anaesthesia Consultation and Patient Preparation. From: http://www.anzca.edu.au/getattachment/resources/professional-documents/ps07bpguidelines_pre-anaesthesia_consultation_patient_preparation.pdf.
- Good medical practice: a code of conduct for doctors in Australia. Medical Board of Australia 2014. From: <http://www.medicalboard.gov.au/Codes-Guidelines-Policies/Code-of-conduct.aspx>.
- Report of the Review of Hospital Safety and Quality Assurance in Victoria. Targeting zero. Supporting the Victorian hospital system to eliminate avoidable harm and strengthen quality of care. Victorian Government 2016. From: <https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/hospital-safety-and-quality-review>.

How was this list created?

ANZCA's Safety and Quality Committee established a working group that developed a preliminary list of 10 anaesthetic-related practices that, based on clinical evidence, may have possible limited benefit, no benefit or may potentially cause harm to patients. Using an on-line survey tool, all ANZCA Fellows and trainees were invited to rank these recommendations and provide relevant comments. This engagement facilitated consensus and informed Fellows and trainees about ANZCA's involvement with the Choosing Wisely campaign.

ANZCA's final list of 5 Choosing Wisely recommendations deliberately supports the clinician's judgements and emphasises the importance of considering patient and surgical factors in decision making; in particular, as regards the selection of necessary preoperative testing and appropriate facilities for all patients and the expected outcomes and goals of care for the medically frail.

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