



Commonwealth of Massachusetts  
Board of Registration in Medicine  
**Quality and Patient Safety Division**

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**PREOPERATIVE ASSESSMENT AND COORDINATION OF CARE**

**January 2013**

**Background**

Over the last several years, the Quality and Patient Safety Division (QPSD) has received Safety and Quality Review (SQR) reports of patient complications associated with preoperative assessment and coordination of care. This advisory is issued to draw providers' attention to this concern, to share some of the lessons learned by the reporting hospitals, and to support hospitals in the development of preoperative protocols, medication reconciliation standards and other processes for continued improvement in perioperative care. While some references are provided, this advisory does not include a comprehensive review of the literature; nor is it intended to provide specific recommendations for evidence-based practice.

**Overview**

Preoperative screening is a complex process that is critical for identifying patients at increased risk for perioperative complications. Evidence-based guidelines and advisories from organizations such as the American College of Cardiology/American Heart Association (ACC/AHA)<sup>1</sup> and the American Society of Anesthesiologists (ASA)<sup>2</sup> assist providers in the assessment of the level of patient risk, as related to comorbidities and the type of surgery. Equally important is the process for review of previous records, communication with community and non-surgical health care providers, and reconciliation of medications.

**Case Studies**

**Case One:** A patient with morbid obesity, hepatic cirrhosis, with multiple related comorbidities was admitted to the hospital for a total knee replacement. The patient was cleared for surgery by his primary care provider and seen by the anesthesiologist on the day of surgery. The patient's laboratory tests were within normal ranges. The surgery was uneventful, but the patient was slow to recover from anesthesia and required re-intubation for respiratory failure.

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<sup>1</sup> Fleisher LA, et al. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines [published correction appears in J Am Coll Cardiol 2008; 52:794-797]. J Am Coll Cardiol 2007; 50:1707-1732.

<sup>2</sup> 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.

**Lessons Learned:** The hospital found that to prevent a future similar event, recommendations for high risk orthopedic patients need be discussed with the anesthesia department at the time of the preoperative evaluation. The patient's cardiac risk should have been assessed, using an evidence-based cardiac risk index. The hospital identified a need to have redundant systems in place to ensure effective preoperative assessment.

**Case Two:** A patient with chronic atrial fibrillation and a history of congestive heart failure was admitted to the hospital for a total hip replacement. Coumadin was stopped five days before surgery and substituted Lovenox was to end 24 hours before surgery. Medication reconciliation on the morning of surgery noted that the Lovenox was stopped the evening before, but the timing was not shared with the operating room staff. Steady bleeding was noted during the surgery. Post-operatively, the patient developed hypovolemic shock, secondary to blood loss.

**Lessons Learned:** A Root Cause Analysis identified gaps in the medication reconciliation process for surgical patients, particularly with regard to communication of findings. There was no coagulation clinic at this facility; anticoagulated patients were monitored by their primary care providers or cardiologists. This posed particular challenges to the hospital as to how to ensure adequate communication of critical information concerning a patient's anticoagulation status.

## **Systems Improvements**

Some of the systems improvements implemented by hospitals following these events and recommended by the ACC/AHA, ASA and other organizations are described.

### **Attention to Preoperative Assessment Recommendations and Protocols**

- Preoperative Assessment Criteria should be understood and used by all medical personnel. A work flow process should be developed to ensure that patients who meet these criteria are scheduled and seen prior to the day of surgery. (As an example, this advisory includes the Tufts Medical Center preoperative assessment and testing guidelines. See *Attachments A & B*.)
- History and Physical Examinations (H&P) should be complete, including medications and allergies, and available to anesthesia and surgery with adequate lead time before surgery. Standardize H&P forms and protocols for low to high risk patients. Compliance with protocols should be audited regularly.
- Consider the use of Revised Cardiac Risk Index (RCRI)<sup>3</sup> or similar criteria for the prediction of cardiac risk in stable patients undergoing non-urgent major noncardiac surgery.
- Establish redundant systems to ensure effective pre-op assessments, particularly with regard to evaluation of comorbidities.
- Evaluate protocols for preoperative antibiotics for MRSA and other chronic infections to minimize risk of adverse reactions.

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<sup>3</sup> Lee TH, et al. Derivation and prospective validation of a simple index for prediction of cardiac risk of major noncardiac surgery. *Circulation* 1999; 100:1043-1049.

## Medication/allergy/ADR reconciliation

- Clear and consistent processes for preoperative medication reconciliation and communication of findings should be reviewed, reinforced and monitored for compliance.
- Encourage use or development of a coagulation clinic, and standardize communication between various providers regarding anticoagulation medications.

## Improved communication within and between care teams

- Preoperative and perioperative consultations with referring providers, pathology and/or specialty consultants should be guided by protocol, with standardized procedures for written and verbal communication of the consultants' recommendations.
- Preoperative medical consultations should be more than simple clearance for surgery. Medical consultants can also provide guidance related to perioperative medication management, management of chronic medical conditions, can anticipate and mitigate potential perioperative complications, and recommend appropriate prophylactic measures<sup>4</sup>
- The use of the World Health Organization (WHO) Surgical Checklist can facilitate communication within the surgical team to identify potential problems and appropriate actions.<sup>5</sup>
- Inter-facility communication, such as transfers from long-term care or rehabilitation facility to the hospital, should include telephone calls between providers.

## Conclusion:

Health care facilities should evaluate their preoperative assessment and testing procedures to assure their effectiveness in identifying high risk patients and providing for accurate, targeted preoperative testing. All patients, regardless of risk, require attention to compilation and reconciliation of prior medical/surgical history, medications and allergies, with effective communication of the information to all staff and providers involved in the patient's care. National and facility guidelines for preadmission assessment and testing should be followed closely by members of the pre- and perioperative teams, and any red flags or discrepancies should be brought to the attention of all involved.

## Acknowledgments:

The QPSD expresses appreciation to Tufts Medical Center for providing its Preoperative Assessment and Testing Guidelines, as an example, for inclusion with this Advisory. (*Attachment A*)

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<sup>4</sup> University of Washington, The Medicine Consult Handbook 2011, updated May 2011. Available at: <http://depts.washington.edu/medcons/handbookpdfs/Preopeval2011.pdf>. Accessed December 3, 2012.

<sup>5</sup> WHO Surgical Safety Checklist and Implementation Manual [http://www.who.int/patientsafety/safesurgery/ss\\_checklist/en/](http://www.who.int/patientsafety/safesurgery/ss_checklist/en/). Accessed December 3, 2012.

**Additional Resources:**

Barnett S, et al. Clinical risk scores to guide perioperative management. *Postgrad Med J* 2011; Aug;87(1030):535-41.

Chopra V, et al. Perioperative practice: time to throttle back. *Ann Intern Med* 2010;152:47-51.

Crossley GH, et al. The Heart Rhythm Society (HRS)/American Society of Anesthesiologists (ASA) Expert Consensus Statement on the perioperative management of patients with implantable defibrillators, pacemakers and arrhythmia monitors: facilities and patient management. This document was endorsed by the Heart Rhythm Society on November 30, 2010, and endorsed by the American Heart Association on December 24, 2010, and by the American College of Cardiology Foundation on May 3, 2011. *Heart Rhythm* 2011;Jul;8(7):1114-54.

Fleisher LA. Cardiac risk stratification for noncardiac surgery: Update from the American College of Cardiology/American Heart Association 2007 guidelines. *Cleveland Clinic Journal of Medicine* 2009;Vol 76, Suppl 4:S9-15.

Fleisher LA, et al. 2009 ACCF/AHA focused update on perioperative beta blockade incorporated into the ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. *J Am Coll Cardiol* 2009;Nov24;54(22):e13-e118.

Gupta PK, et al. Development and validation of a risk calculator for prediction of cardiac risk after surgery. *Circulation* 2011;Jul 26;124(4):381-7.

Holt NF. Perioperative cardiac risk reduction. *Am Fam Physician* 2012;85(3):239-246.

Sawyer M. et al. Institute for Clinical Systems Improvement. Perioperative Protocol. <http://bit.ly.Periop1112>. Updated November 2012. Accessed December 3, 2012.

Zambouri A, Preoperative evaluation and preparation for anesthesia and surgery. *Hippokratia* 2007;Jan;11(1):13-21.

## **Preoperative Assessment Criteria**

To reduce the possibility of delayed or cancelled cases on the day of surgery, the Department of Anesthesiology encourages sending patients to our Center for Preoperative Assessment (CPA). Moreover, we ask the following categories of patients always be scheduled for a preoperative CPA visit:

1. Patients with significant co-morbidities. These include but are not limited to:
  - coronary artery disease, valvular disease, or cardiomyopathy
  - uncontrolled hypertension
  - poorly controlled COPD or other pulmonary pathology
  - obstructive sleep apnea
  - chronic kidney disease
  - insulin dependent diabetes
  - morbid obesity
  - bleeding disorders
2. Patients scheduled for medium or high risk surgery
3. Patients scheduled for surgery where regional or neuraxial block is an option.
4. Patients with history of difficult airway
5. Patients with chronic pain and on narcotics, narcotic antagonists (naltrexone), or mixed narcotic agonist/antagonists (suboxone – buprenorphine/naloxone)
6. Patients with questions or anxiety regarding anesthesia
7. Patients who specifically ask to see a member of the anesthesiology team before surgery
8. Patients with pacemakers and implantable cardiac defibrillators
9. Patients who refuse blood or blood products
10. Patients with rare metabolic or endocrine disorders including but not limited to pheochromocytoma, severe thyroid disorders, carcinoid, C1 esterase deficiency, sickle cell disease, porphyria.
11. Patients with severe behavioral or neuro-psychiatric issues (autism, severe anxiety, etc)
12. Patients on the following anticoagulants: warfarin, thienopyridines (clopidogrel and ticlopidine) and direct thrombin inhibitors (dabigatran)
13. Patients with chronic pain taking suboxone, naltrexone, or naloxone.

When unclear, feel free to refer the patient or call the clinic and we can help determine if the patient should be seen in our clinic. In addition, the clinic can accommodate telephone interviews in the occasional circumstance that the patient cannot physically come into clinic.

A consultation can be requested by calling x6-7538 for outpatients or x6-4526 (or by paging beeper #1745) for inpatients.

*Center for Preoperative Assessment 860 Washington St. Boston MA 02111 (o) 617.636.7538 (f) 617.636.9986*

Updated 12/30/2011

The following guidelines for pre-anesthesia testing should be followed for all routine cases unless a specific a clinical situation warrants otherwise

- Routine labs and ECG are valid within six (6) months of surgery for all stable conditions
- No routine type and hold for blood transfusions
- No routine pregnancy tests but low threshold in age appropriate patients. Note that urine and serum HCG testing is done in the central lab
- Additional testing may be ordered as clinically indicated. Not all diseases are included in this table.
- Specialized workup may be required for:
  - anterior mediastinal mass (echo, flow loops)
  - C-spine films for patients with Rheumatoid Arthritis and Downs Syndrome

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## Laboratory Testing Guidelines by Service

### **Bariatric Surgery**

Gastric Bypass, Gastric Sleeve: CBC, Chem 7, Coags, CXR, EKG

### **CT Surgery**

CBC, Chem 7, Coags, T&S, CXR, EKG

### **ENT Surgery**

For major cancer resection and reconstruction: CBC, Chem 7, Coags, T&S

Otherwise per comorbidity guidelines

### **General Surgery**

Major Abdominal Surgery: CBC, Chem 7, Coags, T&S

Otherwise per comorbidity guidelines

### **Gynecology**

Major gynecological resections: CBC, Chem 7, Coags, T&S

Otherwise per comorbidity guidelines

### **Interventional Radiology**

CBC, Chem 7, Coags, EKG

### **Neurosurgery**

Craniotomy: CBC, Chem 7, Coags, T&S

Back Surgery: CBC, Chem 7, Coags, T&S (for multi-level laminectomy and fusions)

### **Ophthalmology**

Per comorbidity guidelines

### **Oral Surgery**

For major resection and reconstruction: CBC, Chem 7, Coags, T&S

Otherwise per comorbidity guidelines

### **Orthopedic Surgery**

THA: CBC, Chem 7, Coags, T&S

TKA: CBC, Chem 7, Coags, T&S

### **Plastic Surgery**

Per comorbidity guidelines

### **Transplant Surgery**

Kidney transplants: CBC, Chem 7, Coags, T&S, EKG

### **Urology**

Nephrectomy: CBC, Chem 7, Coags, T&S

Cystoscopy: Chem 7

### **Vascular Surgery**

Arterial bypasses, AAA grafts: CBC, Chem 7, Coags, T&S, CXR, EKG