



August 2011 (updated May 2015)

ELDER CARE

A Resource for Interprofessional Providers



A program of the Hartford
Geriatric Nursing Initiative

Preoperative Assessment of Older Adults

Rosemary S. Browne, MD, College of Medicine, University of Arizona

The percentage of people over age 65 years is increasing worldwide, with the subset over age 85 growing at the most rapid pace. Predictably, as the population ages, people are living a longer time with medical illnesses, and they also develop surgical diseases. More than a third of all inpatient surgical procedures are performed on those over the age of 65. Advances in surgical and anesthetic techniques have further increased operative rates for older adults, as surgery has become a safer option than in the past.

Despite this progress, older adults, particularly those over age 80 years, face a greater frequency of adverse perioperative events. Optimizing surgical outcomes in older adults is an essential part of geriatric care, and begins with a comprehensive and multidisciplinary preoperative assessment. This issue of Elder Care will focus on the role of primary care clinicians and teams in “risk assessing” older adults for elective, non-cardiac surgery, and optimizing their preoperative status for better outcomes.

For younger patients, preoperative assessment typically consists of evaluating cardiac risk for non-cardiac surgery. Single end organ functional assessment, however, does not capture all the information required to measure risk in the older patient. Rather, geriatric surgical risk needs to be assessed across three independent domains: (1) surgical considerations, (2) age and co-morbid conditions (including cardiac status), and (3) functional status and physiologic reserve (Figure 1).

Surgical Considerations

The surgical team chooses the optimal procedure and anesthesia for the patient. The role of primary care clinicians is to determine, and advise the surgical team, about the patient’s medical risks for surgery and approaches to minimize those risks. The American College of Cardiology and the American Heart Association (ACC/AHA) have produced a useful guideline that stratifies most surgical procedures into high, moderate, or low cardiac risk (Table 1). While this categorization is also useful for establishing risk in general, not just cardiac risk, a patient’s age and other medical problems should also be considered.



Figure 1.

Age

Advanced age is an independent risk factor for adverse perioperative outcomes. This phenomenon reflects the physiology of aging, such as decreased heart muscle compliance, stiffer blood vessels, reduced lung mechanics, and an age-associated decrease in kidney function - all leading to an increased risk of complications. As per ACC/AHA guidelines, however, age over 75 years is only considered to be a *minor* risk factor for adverse cardiac events. In general, “physiologic age” and function are better determinants of perioperative risk than chronological age.

Medical Conditions

Evaluation of cardiac disease is the most important consideration. As mentioned, the ACC/AHA provide guidelines to help with cardiac risk assessment. Both vascular and renal considerations are also included in these guidelines (Table 2). Lee’s Revised Cardiac Risk Index (RCRI) is a quick and useful tool for assessing intermediate cardiac risk surgical candidates (Table 3). In the past, perioperative beta blockade was routinely used to decrease adverse events in most moderate- and high-cardiac risk patients. In 2009, ACC/AHA published new guidelines for more selective beta blocker use (Table 2). Recently, preoperative pulmonary assessment guidelines have also been established (Table 3).

Along with assessing cardiopulmonary risk, it is also important to review and optimize all of the patient’s medical conditions. For example, controlling diabetes or assessing thyroid status will help to reduce adverse perioperative events. Reviewing medications that require discontinuation or special consideration during surgery is also essential.

In addition to managing diseases and medications, it is important to perform a comprehensive geriatric assessment. This systematic review will help to uncover geriatric syndromes that might not have been previously recognized. Preoperative assessment of cognitive function, for example, is extremely important to ensure proper informed consent and to risk assess for postoperative delirium. Screening for depression is also essential, as depression is associated with higher perioperative morbidity and mortality. Nutritional status needs review, as good nutrition is vital for adequate wound healing.

TIPS FOR PREOPERATIVE ASSESSMENT OF OLDER ADULTS

- Do not “clear” patients for surgery, but rather provide a “risk assessment”.
- Use appropriate guidelines based on co-morbidities and type of surgery.
- Functional assessment is an essential component in the preoperative assessment of all older adults.
- Assess the need for postoperative care and social support.

ELDER CARE

Continued from front page

Other common geriatric conditions, such as decreased mobility, incontinence, and vision and hearing problems, should also be identified and addressed to the extent possible. Additional geriatric issues to consider include nonmedical domains such as care giving and caregiver stress, financial and insurance constraints, and home or institutional rehabilitation plans.

Functional Status and Physiologic Reserve

Geriatric patients are a heterogeneous group, and this is particularly true with regard to functional status. Low functional status has been associated with poor surgical outcomes, and can be an even better predictor of adverse events than the cardiac risk assessments mentioned previously. It has been estimated that the metabolic demands of surgery are equivalent to about 4 metabolic equivalents (METs) of physiologic stress. It is therefore important to assess whether your patients can achieve 4 METs of energy expenditure during their regular activities, to assess for “fitness” to withstand the stress of surgery (Table 4).

Table 1. ACC/AHA Surgical Risk Stratification

High Risk Surgery (Cardiac Risk >5%)

- Emergency surgery (especially > 75 yrs)
- Cardiac procedures
- Aortic or other major vascular procedures
- Peripheral arterial vascular procedures
- Prolonged surgery anticipated (>2 hours)
- Anticipated large fluid shift or blood loss

Intermediate Risk Surgery (Cardiac Risk 1-5%)

- Orthopedic surgery
- Urologic surgery
- Uncomplicated abdominal or thoracic surgery
- Uncomplicated head and neck surgery
- Carotid endarterectomy
- Prostate surgery

Low Risk Surgery (Cardiac Risk <1%)

- Endoscopy
- Bronchoscopy
- Hysteroscopy
- Cystoscopy
- Dermatologic procedures
- Breast biopsy or other breast surgery
- Ophthalmologic procedures (e.g., cataract)



Frailty is a geriatric syndrome that is characterized by physiologic vulnerability or loss of functional reserve. Determining frailty may be a helpful way to identify those older adults who will have poor perioperative outcomes. Several methods to diagnose frailty currently exist. One evidence-based protocol uses the following 5 characteristics (3 of 5 is considered diagnostic of frailty, and 2 of 5 pre-frailty): subjective report of fatigue, low physical activity, objective measures of grip strength and gait speed, and unintentional weight loss. New studies are looking at “prehabilitation” to improve functional status prior to elective surgery.

Putting it all Together

Following a thorough preoperative assessment, older adults can face surgery with a managed risk. The patient will have been optimized medically with appropriate medications, and will have been screened to identify geriatric syndromes that could complicate perioperative care. Functional status will have been assessed and optimized prior to surgery, and social supports will be in place for the perioperative period. You will provide the surgeon with your assessment of the patient’s risk (“this patient is at low/moderate/high risk for a low/intermediate/high-risk procedure”). The surgeon and patient can then decide if the need for surgery overrides the risk, and proceed with a care plan.

Table 2. Links to Guidelines for Perioperative Assessment

- 2007 ACC/AHA Guidelines on Perioperative Cardiovascular Evaluation and Care for Noncardiac Surgery <http://circ.ahajournals.org/cgi/content/full/116/17/e418>
- 2009 ACCF/AHA Focused Update on Perioperative Beta Blockade <http://circ.ahajournals.org/cgi/content/short/120/21/2123>
- Preoperative Assessment of Pulmonary Risk http://chestjournal.chestpubs.org/content/115/suppl_2/58S.full

Table 3. Lee’s Revised Cardiac Risk Index (RCRI)

One point for each of the following:

- High Risk Surgery
- Coronary Artery Disease
- Congestive Heart Failure
- History of Cerebral Vascular Disease
- Diabetes Mellitus on Insulin
- Creatinine greater than 2.0

- 0 pt: Class I Very Low (0.4% complications)
- 1 pt: Class II Low (0.9% complications)
- 2 pt: Class III Moderate (6.6% complications)
- 3 pt: Class IV High (>11% complications)

Table 4. Typical METs Activity

Sleeping	0.9
Eating	1.0
Sitting/Watching TV	1.0
Playing Cards	1.5
Showering	2.0
Walking – 2 MPH	2.0
Walking Your Dog	3.5
Sex	3.7
Walking up stairs	4.0
Golf/walking	4.0
Swimming	4.0
Dancing – slow step	4.0
Jogging	7.0

References and Resources

- Carli F, Zavorsky GS. Optimizing functional exercise capacity in the elderly surgical population. *Curr Opin Clin Nutr Metab Care*. 2005; 8:23-32.
- Christmas C, Makary MA, Burton JR. Medical considerations in older surgical patients. *J Am Coll Surg*. 2006; 203(5):746-51.
- Makary MA, Segev DL, Pronovost PJ, et al. Frailty as a predictor of surgical outcomes in older patients. *J Am Coll Surg*. 2010;210:901-8.
- Malani PN. Functional status assessment in the preoperative evaluation of older adults. *JAMA*. 2009;302(14):1582-3.

Interprofessional care improves the outcomes of older adults with complex health problems

Editors: Mindy Fain, MD; Jane Mohler, NP-c, MPH, PhD; and Barry D. Weiss, MD

Interprofessional Associate Editors: Tracy Carroll, PT, CHT, MPH; David Coon, PhD; Jeannie Lee, PharmD, BCPS; Lisa O’Neill, MPH; Floribella Redondo; Laura Vitkus, BA

The University of Arizona, PO Box 245069, Tucson, AZ 85724-5069 | (520) 626-5800 | <http://aging.medicine.arizona.edu>

Supported by: Donald W. Reynolds Foundation, Arizona Geriatric Education Center and Arizona Center on Aging

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number UB4HP19047, Arizona Geriatric Education Center. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.