



June 2019

ELDER CARE

A Resource for Interprofessional Providers

Preoperative Assessment of Older Adults

Shaun M. Chatelain, DO, 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, face higher rates 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 Elder Care focuses on the role of primary care clinicians and teams in “risk assessing” older adults for elective, non-cardiac surgery, and optimizing 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) cardiac risk of the surgical procedure, (2) age and co-morbid conditions (including not only cardiac conditions), and (3) functional status and physiologic reserve.

Cardiac Risk

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.

Evaluation of cardiac disease and the risk of perioperative cardiac events is perhaps the most important consideration in preoperative assessment. 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). A link to the full guideline is on the references and resources list. Both vascular and renal considerations are also included in these guidelines.

Lee’s Revised Cardiac Risk Index (RCRI) is another quick and useful tool for assessing cardiac risk in surgical candidates (Table 2). Also, note that in the past, perioperative beta blockade was routinely used to decrease adverse events in most moderate- and high-cardiac risk patients. New guidelines (see references

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)

and resources list) now recommend more selective use of perioperative beta blockade.

Age

Advanced age is an independent risk factor for adverse perioperative outcomes. It reflects the physiology of aging, such as decreased heart muscle compliance, stiffer blood vessels, reduced lung mechanics, and an age-associated decrease in

Table 2. Lee’s Revised Cardiac Risk Index

One point for each of the following:	
High-Risk Surgery	Coronary Artery Disease
Congestive Heart Failure	Cerebral Vascular Disease
Diabetes Mellitus on Insulin	Creatinine greater than 2.0
Risk Level:	
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)	

TIPS FOR PREOPERATIVE ASSESSMENT OF OLDER ADULTS

- Do not “clear” patients for surgery. Rather provide a “risk assessment” - e.g., low-risk patient for low-risk surgery.
- 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, including the need for rehabilitation in-home or inpatient.

ELDER CARE

Continued from front page

renal function - all leading to an increased risk of complications. As per ACC/AHA guidelines, however, age over 75 years itself is only considered to be a minor risk factor for adverse outcomes. In general, “physiologic age” and function are better determinants of perioperative risk than chronological age.

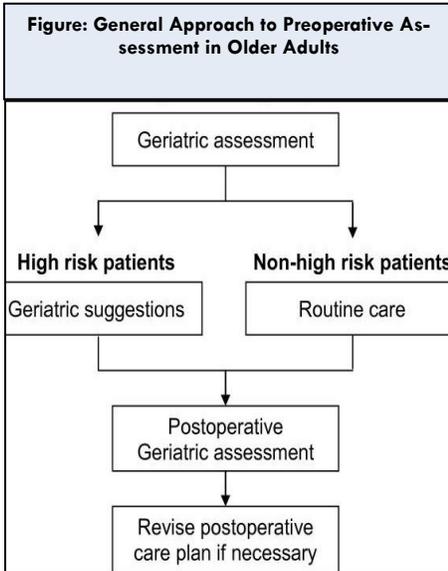
Medical Conditions

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.

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 caregiving and caregiver stress, financial and insurance constraints, and home or institutional rehabilitation plans.

In addition to the aforementioned considerations it is important to perform an overall comprehensive geriatric assessment (Figure). This assessment will help uncover geriatric syndromes that might not have been previously recognized.

An assessment of cognitive function, for example, is extremely important to assure proper informed consent and to assess the risk of developing postoperative delirium. Screening for depression is also essential, as depression is associated with higher perioperative morbidity and mortality. Nutritional status needs to be reviewed, as good nutrition is vital for adequate wound healing.



References and Resources

ACC/AHA guideline on perioperative cardiovascular evaluation for patients undergoing non-cardiac surgery. <http://www.onlinejacc.org/content/64/22/e77>.

ACC/AHA guideline on the use of perioperative beta blockers <https://www.ncbi.nlm.nih.gov/pubmed/25085964>.

Alvarez-Nebreda ML, et al . Recommendations for preoperative management of frailty from the Society for Perioperative Assessment and Quality Improvement (SPAQI). J Clin Anesth. 2018; 47, 33-42.

Brown, M, et al. The association between preoperative frailty and postoperative delirium after cardiac surgery. Anesth Analg, 2016; 123: 430-435.

Lin HS, et al. Frailty and post-operative outcomes in older surgical patients: a systematic review. BMC Geriatr. 2016;16(1):157.

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 their “fitness” to withstand the stress of surgery (Table 3).

Frailty is a geriatric syndrome characterized by physiologic vulnerability or loss of functional reserve. Checking for frailty is a helpful way to identify older adults who will have poor perioperative outcomes. Frailty is also an independent risk factor for post-operative delirium, and delirium is significantly higher in frail compared to non-frail/pre-frail patients. Several methods to diagnose frailty currently exist, and these are discussed in a [previous edition of Elder Care](#) that reviews the evaluation of frailty in preoperative patients.

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

Putting it all Together

Following a thorough preoperative assessment, older adults can face surgery with a managed risk. The patient will be optimized medically with appropriate medications, and will be screened to identify geriatric syndromes that could complicate perioperative care. Functional status will be 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 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 risks, and proceed with a care plan.

This Elder Care updates a prior edition written by Rosemary Browne, MD

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

Elder Care Editors: Editor-in-Chief: Barry D Weiss, MD; Deputy Editor: Mindy Fain, MD

National Editorial Board: Theodore M Johnson II, MD, MPH, Emory University; Jenny Jordan, PT, DPT, Sacred Heart Hospital, Spokane, WA; Jane Marks, RN, MS, FNGNA, Johns Hopkins University; Josette Rivera, MD, University of California San Francisco; Jean Yudin, CRNP, University of Pennsylvania

Interprofessional Associate Editors: Tracy Carroll, PT, CHT, MPH; David Coon, PhD; Marilyn Gilbert, MS, CHES; Carleigh High, PT, DPT; Jeannie Lee, PharmD, BCPS; Marisa Menchola, PhD; Francisco Moreno, MD; Linnea Nagel, PA-C, MPAS; Lisa O’Neill, DBH, MPH; Floribella Redondo; Laura Vitkus, MPH, CHES

Published by: The University of Arizona, PO Box 245027, Tucson, AZ 85724-5027 | (520) 626-5800 | <https://uofazcenteronaging.com>

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 U1QHP28721, Arizona Geriatrics Workforce Enhancement Program. 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.