Perioperative risk assessment in the older adult: “don’t call it surgical clearance!”

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Objectives

• Understand how the presence of one or more geriatric syndromes can have a profound effect on perioperative risk

• Determine geriatric assessment tools to quantify function and frailty in the older adult

• Apply current clinical guidelines for assessment of perioperative risk in the older adult

The issue

• Account for 55% of all operative procedures performed in the U.S.

• Nearly 50% of Americans will have an operation after the age of 65 years.

• 23.3% risk of being unable to return to previous function

• 35% decline in some basic ADL

• 50% of elderly patients experienced some kind of complication related to hospitalization

Geriatric Surgery

- Advanced age alone does not preclude surgical interventions aimed at improving function or quality of life.
- A decrease in physiological reserves, the presence of multiple chronic conditions, and functional impairments have all been associated with increased risk for adverse surgical complications


Functional Reserve

- Most of the body’s organ systems have some degree of redundancy
- Functional reserve diminishes: an acute insult can have much more severe consequences
- Even patients without apparent deficits may have little functional reserve so that an acute illness or insult can lead to disability and dependence far more frequently than among younger individuals

Father of “comorbidity”

- Physician and epidemiologist
- Currently separate scientific research discipline

The Charlson comorbidity index

- Predicts the ten-year mortality for a patient with range of comorbidities
- Each condition is assigned a score of 1, 2, 3.
- Scores are summed to provide a total score to predict mortality.

1 each: MI, HF, PVD, dementia, CVD, COPD, connective tissue disease, ulcer, chronic liver disease, DM.
2 each: Hemiplegia, moderate or severe kidney disease, DM with end organ damage, tumor, leukemia, lymphoma.
3 each: Moderate or severe liver disease.
6 each: Malignant tumor, metastasis, AIDS.

Where to begin?
1. Risk index
2. Surgical risk for cardiac events
3. Patient functional capacity

Various scales to measure frailty, disability, and comorbidity/cardiac surgery risk.

Evaluation of comorbidities and preoperative testing
- The ASA Practice Advisory for Preanesthesia Evaluation recommends assessment of anesthetic risks associated with the severity of the patient’s medical condition(s) and the invasiveness of the proposed surgical procedure
- Routine preoperative testing is not recommended, even in older adults

McKeown, Jason L. In Anesthesiology Clinics. Language: English. DOI: 10.1016/j.anclin.2015.05.010
ASA Physical Status Classification System

I. A normal healthy patient
II. A patient with mild systemic disease
III. A patient with severe systemic disease
IV. A patient with severe systemic disease that is a constant threat to life
V. A moribund patient who is not expected to survive without surgical procedure
VI. A declared brain-dead patient whose organs are being removed for donor purposes

The addition of ‘E’ indicates emergency surgery.


VA Surgical Quality Improvement Program (VASQIP)

• Independent variables in predicting all cause mortality: PVD, CVD, disseminated CA, HF, ESRD on HD, COPD, Recent weight loss
• Classified by death/complications with distribution by ASA Class
• Risk of death/complications both perioperative and all cause mortality


Cardiac events in non-cardiac surgery

• 2.5% of unselected patients aged >40 years had a 30-day incidence of cardiac events after surgery
• Cardiac death is the first symptom in 50% of patients with heart disease

Afilalo, Jonathan; Alexander, Karen P.; Mack, Michael J.; Maurer, Mathew S.; Green, Philip; Allen, Larry A.; Popma, Jeffrey J.; Ferrucci, Luigi; Porman, Daniel E., In Journal of the American College of Cardiology, 4 March 2014 63(8):747-762
American College of Surgeons National Surgical Quality Improvement Program® (ACS NSQIP®)

Factors predicting of MICA (myocardial infarction/cardiac arrest):
- Type of surgery;  
- Dependent functional status;  
- Abnormal creatinine;  
- American Society of Anesthesiologists' class  
- Increased age.

Cardiovascular Risk in non-cardiac surgery


Table 2: Stratification of cardiac risk for noncardiac procedures

<table>
<thead>
<tr>
<th>Category</th>
<th>Cardiac Risk</th>
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<tbody>
<tr>
<td>High</td>
<td>&gt; 5%</td>
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<tr>
<td>Vascular surgery (aortic and other major vascular surgery, peripheral vascular surgery)</td>
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<tr>
<td>Urgent or emergency surgery</td>
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<tr>
<td>Intermediate (Cardiac risk = 1.0% and &lt; 5.0%)</td>
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<tr>
<td>Cardiac endarterectomy and endovascular repair of abdominal aortic aneurysm</td>
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<tr>
<td>Head and neck surgery</td>
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<tr>
<td>Intraperitoneal and intrathoracic surgeries</td>
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<tr>
<td>Orthopedic surgeries</td>
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<tr>
<td>Prostate surgeries</td>
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<tr>
<td>Low (Cardiac risk &lt; 1.0%)</td>
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<tr>
<td>Endoscopic procedures</td>
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<tr>
<td>Superficial surgeries</td>
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<tr>
<td>Cataract surgery</td>
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<tr>
<td>Breast surgery</td>
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<td>Outpatient surgery</td>
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</tbody>
</table>

Source: Adapted from Fleisher et al., 2007. 

Perioperative beta blockade: the debate

β blockers started within 1 day or less before noncardiac surgery can prevent nonfatal MI but can ↑ risks of stroke, death, hypotension, and bradycardia.


Frailty Index = Number of deficits in an individual

- Total number of deficits measured
- e.g. in a dataset with 50 health deficit measures, a person with 10 things wrong (10 deficits) has a
- frailty index of 10/50 = 0.20.

The frailty phenotype:
- —Slow mobility
- —Weakness
- —Weight loss
- —Decreased activities
- —Exhaustion

Assessment of Functional Capacity

- Functional status = metabolic equivalents (1 MET is defined as 3.5 mL O2 uptake/kg per min (resting oxygen uptake in a sitting position)).
- Set of questions to determine a patient's functional capacity
- Utilized to risk stratify and determine need for CV testing

- Can take care of self, such as eat, dress, or use the toilet (1 MET)
- Can walk up a flight of steps or a hill or walk on level ground at 3 to 4 mph (4 METs)
- Can do heavy work around the house such as scrubbing floors or lifting or moving heavy furniture or climb two flights of stairs (between 4 and 10 METs).
- Can participate in strenuous sports such as swimming, singles tennis, football, basketball, and skiing (>10 METs)
Risk Assessment Models

- Gupta MICA NSQIP database risk model
- Revised Cardiac Risk Index (RCRI)
- VSGNE risk index
- ACS-NSQIP universal surgical risk calculator

Risk factors and risk prediction models

- History of ischemic heart disease (RCRI)
- History of heart failure (RCRI)
- History of cerebrovascular disease (RCRI)
- Insulin dependent diabetes mellitus (RCRI)
- Preoperative serum creatinine ≥2.0 mg/dL (RCRI) or >1.5 mg/dL (NSQIP)
- Increasing age (NSQIP)
- American Society of Anesthesiologist class (NSQIP)
- Preoperative functional status (NSQIP)
CGA

MAJOR COMPONENTS
● Functional capacity
● Fall risk
● Cognition
● Mood
● Polypharmacy
● Social support
● Financial concerns
● Goals of care
● Advanced care preferences

Additional components:
● Nutrition/weight change
● Urinary continence
● Sexual function
● Vision/hearing
● Dentition
● Living situation
● Spirituality

What the admitting care team can do
● Establish baseline
● Compare baseline
● Prevent iatrogenic illness
● Understand patient values
● Initiate discharge planning
● Hold family conference

Senior Adult Oncology Program (SAOP-2)
● Instrument developed by multidisciplinary team in SAOP
● Includes components of CGA
● Performance validated against Multidimensional Geriatric Assessment
● Demonstrated face validity
● Identifies interprofessional needs
● 63% senior cancer patients need psychosocial counseling
● 40% need dietary counseling
● 14% need medication instruction
Moffitt GI surgery Preop Screening

- Clinic visit includes SOAP-2 (GRN administered)
- Triggering more comprehensive interprofessional assessment preoperatively (PT, Dietary consultation)
- Post op a geriatric IPOC in place
- Interventions targeting mobility, nutrition, pain control, sleep

### Summary

- Age is not an accurate predictor of condition or function
- Co-morbidities are common
- Presentation of illness is altered (non-specific)
- Homeostatic control is less efficient
- ACS NSQI P®/AGS Best Practice Guidelines: Optimal Preoperative Assessment of the Geriatric Surgical Patient
Conclusion

• Geriatric care is best provided by an interdisciplinary team
• If no formal geriatric assessment is performed...consider prevention of iatrogenic syndromes for positive post operative outcomes
• The pool of geriatric specialists in all disciplines is insufficient to meet current needs and is not expected to increase significantly despite increasing demands over the next quarter century

All health care professionals, need to learn the basic principles of geriatrics and acquire core clinical skills in the care of the older patient