Pre-Operative Evaluation in the Geriatric Patient

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Population Expanding

- Adults >65 years are a growing population of surgical candidates:
  - ~1/3 of US inpatient surgeries in 2007 \(^2,3\)
  - Expected to double by 2020 \(^1,6\)
  - ~50% of Americans will have an operation after age 65 \(^3\)
  - Greatest increases expected in vascular (~31%) and general surgery (~18%) \(^1\)
What does initial assessment entail? ¹

- American College of Surgeons and American Geriatrics Society recommend discussion of the following key categories during the pre-operative assessment immediately preceding surgery:

  1. Goals of care
  2. Fasting protocol
  3. Antibiotic and anticoagulant prophylaxis
  4. Medication reconciliation
Goals of Care

• Assessment of patient’s wishes regarding treatment and aggression of management \(^1,^6\)
  • Discuss code status (i.e. DNR)
  • Assign healthcare proxy

• 50% of patients over the age of 60 have to make a medical decisions about their care in their final days of life \(^1\)
  • 70% lacked decision making capacity, but 68% had advanced directives

• Review surgical risks and updates to advanced directives accordingly
Fasting Protocol

- Patients will be asked to fast prior to any procedure with anesthesia due mainly to aspiration risk

- New data suggests short-term fasting may be possible:
  - Fasting from clear liquids > 2 hours before elective procedures
    - Water, non-pulp fruit juice, clear tea, black coffee
  - Fasting from foods may need to be upwards of 6-8 hours before elective procedures
    - Especially meats and fatty foods that slow the gastric emptying
Antibiotic and Anticoagulant Prophylaxis

- Studies show that antibiotics given within 2 hours of first incision can provide a significant mortality benefit in the first 60 days post-op
  - Especially in procedures involving: abdomen, bowel, cancer, or extended time

- Anticoagulation is provided for risks of blood clotting while immobile

<table>
<thead>
<tr>
<th>Hypercoagulability</th>
<th>Venous Stasis</th>
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<tbody>
<tr>
<td>Congenital hypercoagulability</td>
<td>Congestive heart failure</td>
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<tr>
<td>Cancer</td>
<td>Immobility</td>
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<td>Cancer therapy</td>
<td>Increasing age</td>
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<tr>
<td>History of VTE</td>
<td>Obesity</td>
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<td>Inflammatory bowel disease</td>
<td>Varicose veins</td>
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<td>Oral contraceptives</td>
<td>Venous compression/obstruction</td>
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<td>Polycythemia</td>
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<td>Pregnancy</td>
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<td>Smoking</td>
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<td>Thrombocytosis</td>
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<th>Endothelial Injury</th>
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<td>Recent surgery</td>
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<td>Severe infection</td>
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<td>Trauma</td>
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Medication Reconciliation

• Review all medications!
  • Prescription, Over-the-counter, Vitamins & supplements, Herbal agents

• Consider stopping / holding non-essential medications

• Use caution when assessing essential medications
  • Withdrawal period
  • Potential for disease progression
  • Anesthesia interactions
  • Perioperative risk reducers (i.e. beta-blockers, statins)
Limitations of Traditional Testing

• Does not consider the physiology of the aging

• Testing is often single-organ based

• May not assess for possible Geriatric syndromes

• Poor predictor of LOS, functional recovery, and institutionalization need post-operatively
Indication to Test Geriatric Patients Further

• The population of patients above the age of 65 should receive a thorough evaluation to ensure prevention of:
  • Post-operative complications
  • Functional decline
  • Loss of independence
  • Untimely morbidity and/or mortality
Geriatric Parameters Predicting Post-Operative Outcome

• Frailty
• Nutrition
• Physical Function
• Cognition
• Mood
Frailty

Frailty is defined as increased vulnerability secondary to age-related decline in physiology and resilience.

Fried et al described frailty as:
- Unintentional weight loss, Self-reported exhaustion, Weakness on grip strength, Slow walking, Poor physical activity
- Others include: cognitive, mood, sensory social and past medical assessments
  - Edmonton Frailty Scale
  - Hopkins Frailty Score
  - Modified Frailty Index

Eleven items of the modified Frailty Index:

- History of diabetes mellitus
- History of congestive heart failure
- History of hypertension requiring medication
- History of either transient ischemic attack or cerebrovascular accident
- Functional status 2 (not independent)
- History of myocardial infarction
- History of either peripheral vascular disease or rest pain
- History of cerebrovascular accident with neurological deficit
- History of either COPD or pneumonia
- History of either prior PCI, PCS, or angina
- History of impaired sensorium
Frailty

- Frailty is associated with:
  - Increased LOS
  - Inability to discharge directly to home
  - Surgical complications / infections
  - Mortality
Nutrition

• Increased age correlated with unhealthier nutrition secondary to:
  • Access
  • Appetite
  • Dental / Chronic disease
  • Medications
  • Metabolism
  • Psychological barriers

• Many different scoring systems are available
  • Can also assess via Albumin and Prealbumin levels, though limitations exist
Nutrition

• Malnourishment is associated with$^3$:
  • Higher mortality
  • Infections
  • Wound complications$^6$
  • Mechanical ventilation need or extended duration or need
Physical Function

• Patients ability independently perform ADLs for fulfillment of their desired role, health, and well-being

• Multiple ways to assess:
  • Subjective exercise tolerance ("Walk four blocks" / "Climb two flights")
  • Maximal exercise test
  • Timed Up and Go Test (TUGT)
  • Need for assistance with ADLs
  • Function Questionnaires
Physical Function

• Poor functional status is associated with ³:
  • Unanticipated nursing home placement
  • Post-operative pneumonia
  • Post-operative site infection (i.e. MRSA)
  • Early post-operative mortality ⁶
Cognition

• Important to assess baseline mental function prior to surgery

• Multiple tests possible for assessment:
  • Mini Mental Status Exam (MMSE)
  • Telephone Interview for Cognitive Status
  • Montreal Cognitive Assessment (MOCA)

• American College of Surgeons and American Geriatrics Society recommend use of the Mini-Cog Test and collateral interview.
Cognition

• Cognitive impairment is associated with 3:
  • Post-operative delirium
  • Post-operative pulmonary complications
    • Poor spirometry and increased atelectasis
    • Longer duration of mechanical ventilation
  • Dementia

• Post-operative delirium is associated with 3:
  • Post-operative functional decline
  • Dementia
  • Extended LOS, with increased cost and use of hospital resources
  • Discharge to long-term care / rehabilitation facilities
  • Death
Mood

- High prevalence that should be screened for in pre-operative course
  - ~7 million adults > 65 yo are affected by depression
  - Pre-operative depression rate higher than general population

- Assessment
  - Hospital Anxiety Outcome Score
  - International Classification of Disease-9 criteria
  - Center for Epidemiological Studies – Depression measure
  - Mental Health Inventory
Mood

- Depression is associated with:
  - Post-operative delirium
  - Worse patient reported outcomes
  - Longer LOS
  - Increased likeliness for skilled nursing requirement (or other “non-home”)
  - Increased mortality rate
Summary

• There is an expanding population of patients over the age of 65, with simultaneous increase in surgical candidates of that age group

• Traditional pre-operative assessment is inadequate to properly screen the geriatric patient for surgical and post-operative risks

• Assessment for frailty, malnourishment, poor functional status, cognitive impairment, and low mood can supplement understanding of surgical risk in geriatric patients

• Present of such declines is associated with numerous post-operative complications, extended length of stay, discharge to non-home location, physiological decline, and even increased mortality
Works Cited


