Operative Risk Stratification in the Older Adult

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KEYWORDS

• Geriatric • Frailty • Goals of care • Cognitive function

KEY POINTS

- Older adults should undergo standard cardiopulmonary risk stratification based on history, physical, and indicated laboratory and diagnostic tests.
- Assessment of the older adult should include mental status and cognitive function evaluation.
- Functional status determination and frailty are necessary to guide decision making and true risk assessment, as well as to potentially indicate the need for "prehabilitation."
- It is necessary to define goals of care and advanced directives for older patients in the context of the current disease and their long-term prognosis.
- Overall medical care must be based on the composite of this assessment, defining personal goals, cardiopulmonary and physiologic status, functional status and frailty, and risk-to-benefit ratio.

INTRODUCTION: NATURE OF THE PROBLEM

The graying of the US population is among the most frequently described demographic shifts occurring today. The "baby boom" generation began expanding the Medicare rolls around 2010, and over the next 20 years will require more and more health care as they advance into older age. Moreover, although medical science and technology have increased life expectancy across the board, cures for many chronic medical conditions are not available, and these conditions are a source of ongoing disability and health care costs. Although disability rates have decreased modestly over the past 20 years,[1] approximately 48% of adults older than 75 years

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report some physical difficulty, and 6.5% of older adults require physical assistance. As ever larger numbers of people begin aging into their 8th and 9th decades, our health care system will be under increased pressure to function more efficiently, improve outcomes, and reduce costs.[2]

Currently, hospital beds are occupied disproportionately with older adults, who in 2005 accounted for 35% of all hospitalizations despite comprising only 12% of the US population.[2] Risks of hospitalization, documented in the IOM Report *To Err is Human*,[3] are particularly high for frail older adults requiring tailored care processes.[4] Postoperative complications, for which age is an independent risk factor, increase the risk of 30-day readmission 4-fold, and the potential costs are high.[5,6] To cite 1 example, incident delirium in a hospitalized elderly patient prolongs length of stay, is associated with increased 6-month mortality, and is estimated to cost, on average, an additional $2500 per affected patient.[7]

Aging affects individuals in various ways. Some older adults remain highly functional, cognitively and physically, well into their 10th decade, whereas others may become disabled and infirm before they reach the age of 70 years. More than 80% of older adults have more than 1 chronic medical condition, and take more than 8 prescription medications.[2] Among a subset of older adults, alterations in body composition, energy balance, homeostatic regulation, and metabolism occur, which affect physiologic and functional reserve in many organ systems.[8] This phenomenon, described as frailty, is an independent predictor of poor operative risk.[9] Identification of frail patients, and those with decreased cognitive and functional reserve, is increasingly recognized as a key component of preoperative assessment in the older adult.[10]

As hospitals and health systems innovate to create safe processes and environments for their most vulnerable patients, hospital-based physicians and surgeons too must effectively utilize knowledge of how best to care for frail older adults, and quality indicators have been developed to measure and facilitate improvement in care processes for older surgical patients.[11] Geriatric assessment can guide strategies for mitigating risk during the perioperative period, and there are several models for accomplishing this. Several centers utilize perioperative geriatric consultation services among both elective and acute surgical patients, with generally positive although heterogeneous results in terms of length of stay, rates of delirium, discharge to institutional care, and 6-month mortality.[12–14] Comanagement models, in which leadership is shared between orthopedic surgery and geriatric medicine, have been shown to improve multiple outcomes for older patients with fragility fractures, including length of stay and mortality.[15,16] Although not studied in the surgical population, specialized geriatric acute care units show promise as a systems-based intervention with potential to decrease in-hospital falls, delirium, functional decline, decreased length of stay, and lower hospital costs.[17] The geriatric preoperative evaluation, described herein, presents another key opportunity to identify important concerns and address sources of increased risk.

GERIATRIC EVALUATION

Geriatric preoperative evaluation builds on preoperative evaluation in younger adults by integrating a functional orientation. “Medical clearance” for a general medical patient includes review of the medical history with a focus on cardiovascular and pulmonary health, determination of current exercise capacity, and a discussion of prior complications. Although evidence for the utility of such testing in otherwise healthy adults is lacking,[18] routine preoperative testing includes serum electrolytes, coagulation studies, a chest x-ray, and an electrocardiogram.