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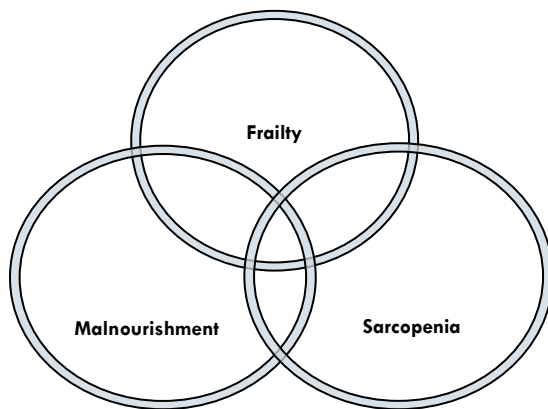
A Resource for Interprofessional Providers

Frailty in Patients Undergoing Elective and Emergency Surgery

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The number of older adults undergoing surgery is increasing rapidly as the population ages. Various studies have shown that frailty, independent of age, is an important risk factor for poor outcomes after surgery. National Surgical Quality Improvement Guidelines call for pre-surgical frailty assessment for all elders 85 years and older.

Frailty is a general state of increased vulnerability due to a decrease in physiological reserve, physical activity, and social and cognitive skills. Although frailty may overlap with conditions such as sarcopenia and malnourishment (Figure), it is usually considered as a stand alone condition referred to as the “frailty syndrome.”



Risk Assessment Prior To Surgery

Risk stratification of older surgical patients is not standardized and often based only on limited data and subjective impressions of a patient's condition. A formal assessment of frailty in geriatric patients can provide professionals, patients, and their families a better understanding of the risks of undergoing surgery.

Frailty assessment can predict in-hospital complications and

mortality rates, as well as long-term outcomes including the need for institutionalization. Frail patients are at a higher risk of institutionalization after surgery, and for a longer period of time. Patients and families can be informed of these prospects in a more objective fashion by pre-operative frailty assessment.

There are a variety of assessment tools available to aid in identifying frailty in older adults (see table on reverse side). These tools can be particularly useful for evaluating “young” older adults, in whom frailty might not be apparent based on a patient's general appearance or gait, thus answering the question “Is this a 68-year old going on 90?” Use of these tools can provide surgeons, and primary care clinicians referring patients to surgeons, with a systematic way to identify frailty, and thus include frailty in the consideration of surgical risks.

Preoperative Optimization

When possible, modifiable factors should be optimized if frailty is identified prior to elective surgery to improve the likelihood of favorable outcomes. Preoperative optimization can include attention to prehabilitation, nutrition, psychosocial factors, and possibly drug therapy.

Prehabilitation can improve frailty, and may be particularly important for frail patients with cardiac disorders. Improving nutritional deficiencies, including attention to vitamin replacement, protein supplementation, and iron supplement when indicated, may also be of value though more research is needed to explore the benefit of these interventions. Screening with a depression instrument such as the PHQ-9, and dealing with other psychosocial factors, including social support, and “will to improve” should also be addressed. Finally, it is thought that “performance-enhancing drugs” (e.g., anabolic steroids) may be helpful, though the mechanism, benefit, and safety of such treatments is unclear.

TIPS FOR DEALING WITH FRAILTY

- When older adults are being considered for elective surgery, use a validated assessment tool (see Table) to evaluate them for frailty.
- If frailty is present and surgery can be delayed, recommend interventions to lessen frailty prior to scheduling surgery. Interventions can include exercise programs, addressing nutritional deficiencies, and dealing with psychosocial factors.
- When emergency surgery is necessary, a frailty assessment should still be performed, when possible, as interventions to address frailty may still be useful as part of post-operative care.

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Continued from front page

Frailty in Elective Surgery

Many pre-operative assessment instruments and scoring systems are available for evaluating patients prior to elective surgery. However, most of these assessment and scoring systems focus on risk-reduction interventions related to specific procedures or organ systems, or on individual risk factors or interventions (e.g., interventions to reduce morbidity and mortality following cardiac surgery).

In contrast, frailty assessments are pertinent to a wide variety of elective surgeries. Indeed, frailty scores have been shown to predict complications in patients undergoing procedures ranging from cardiac to colorectal surgeries.

Patients undergoing elective surgery usually have the ability to perform the physical tests required for some of the

frailty assessments. As a result, surgeons and clinicians referring patients to surgeons, should use these assessment tools to aid in identifying frailty. The diversity of instruments provides options to choose the appropriate assessment, tailored to the patient's specific circumstances.

Frailty in Emergency Surgery

In contrast to elective surgery, there have been few studies on the utility of frailty assessments in older patients undergoing emergency surgery. In emergency situations, there is insufficient time to implement pre-operative optimization if frailty is identified. However, frailty assessment can still be helpful in guiding post-operative care, and in providing patients and families with realistic expectations of the post-operative course.

Frailty Assessment Instruments				
Instrument	Variables Assessed	Pros	Cons	Website/Source
Canadian Study on Health and Aging (CSHA) Frailty Index	<ul style="list-style-type: none"> 70 variables Cognitive Comorbidities Daily activity Self-Assessment 	<ul style="list-style-type: none"> Has few objective components, making it usable in emergency/trauma situations Can predict length of hospital stay, complications, discharge disposition, and mortality 	<ul style="list-style-type: none"> Has few objective components, raising possibility of incorrect assessments Involves a lengthy questionnaire 	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1188185/
Frailty Score (Fried Criteria)	<ul style="list-style-type: none"> Weight loss Grip strength Walking speed Physical activity Exhaustion 	<ul style="list-style-type: none"> Widely used in research Measures frailty both objectively and subjectively 	<ul style="list-style-type: none"> Requires measurements (eg, grip strength) not always available in routine practice settings 	https://rds185.epi-ucsf.org/ticr/syllabus/courses/83/2012/02/15/Lecture/readings/fried%20frailty%202001.pdf
Kinematic Assessment Methods	<ul style="list-style-type: none"> Acceleration Balance Angular velocity Delay Range of motion Speed Swing 	<ul style="list-style-type: none"> Quick Objective Technology-based Can be performed on upper or lower extremities 	<ul style="list-style-type: none"> Evaluates only limb motion Must be individualized and tailored for each patient 	http://www.karger.com/Article/Pdf/354211
Study of Osteoporotic Fractures (SOF) Index	<ul style="list-style-type: none"> Ability to rise from chair five times without using arms Weight loss 	<ul style="list-style-type: none"> Validated Simple 	<ul style="list-style-type: none"> Depending on surgical condition, it may not be possible to assess rising from chair 	http://sof.ucsf.edu/interface/

References and Resources

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

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