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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. 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-surgery frailty assessments for adults 65 years of age and older.

Frailty is a general state of increased vulnerability due to decrease in physiological reserve, physical activity, and social and cognitive skills. Although frailty may overlap with conditions such as sarcopenia and malnourishment, 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. However, a formal assessment of frailty in geriatric patients can provide professionals, patients, and their families with a better understanding of the risks of undergoing surgery.

Frailty assessments can predict in-hospital complications and mortality, as well as long-term outcomes including the need for institutionalization. Frail patients are at a higher risk of institutionalization after surgery. Patients and families can be informed of these risks in a more objective fashion by pre-operative frailty assessment.

A variety of assessment tools are 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 frailty screening initiatives have been shown to reduce mortality on index-admission and after discharge.

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.

Multimodal prehabilitation has shown promising results, especially in elective surgery. Most prehabilitation programs focus on nutritional supplementation, feedback-based exercise regimens, and pulmonary optimization. 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, although the safety, benefit, and mechanism of action of “performance-enhancing drugs” (e.g. anabolic steroids) are unclear, it is thought that they may be helpful.

Frailty in Elective Surgery

Most of the available pre-operative 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, and studies have shown their superiority in predicting outcomes, compared to other assessment methods. Moreover, frailty assessment tools consider the physiological changes in older adults that make them vulnerable to stressors. Indeed, frailty scores can predict complications in patients undergoing procedures ranging from cardiac interventions 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

TIPS FOR DEALING WITH FRAILITY

- 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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choose the appropriate assessment, tailored to the patient's specific circumstances.

Frailty in Emergency Surgery

In recent years, studies have validated the use of simple bedside frailty assessment tools to independently predict postoperative complications, mortality, and failure to rescue in older emergency general surgery patients. Frailty assessment thus helps in the decision-making process. It predicts the hospital course of the patients and will allow for early intervention and more efficient allocation of resources for patients in need. It is also helpful in guiding post-operative care, and in providing patients and families with realistic expectations of the post-operative course. Considering the detrimental pre-, peri-, and post-operative outcomes attributed to frailty syndrome, it is vital that we identify and address frailty at every point of intervention possible.

Frailty and Patient Reported Outcomes

Subjective experiences of patients as well as patient-centered outcomes have gained increased attention. Frailty has been shown to negatively affect quality of life and functional independence. Frailty is thus an important metric and a major predictor of outcomes and post discharge quality-of-life in geriatric patients. Early identification of frailty in patients being considered for surgery can steer us into tailored special interventions to improve the functional status and quality of life. Frailty care pathways involving geriatricians, nutrition/language/physical therapists, early family and social support, identifying goals of care, and thorough post-discharge follow-up plans have been shown to reduce length of stay, delirium, 30-day emergency readmissions, and loss of functional independence. Hence, frailty assessment must be an integral part in the care of geriatric patients to improve outcomes.

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 items, making it easy to use in emergency/trauma situations Predicts 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/
Emergency General Surgery Frailty index (EGSFI)	<ul style="list-style-type: none"> 15 variables Comorbidities Daily activities Health attitude Function Nutrition 	<ul style="list-style-type: none"> Validated for emergency settings Quick/Simple Can be obtained from relatives/proxy Superior to traditionally used predictors 	<ul style="list-style-type: none"> Has subjective variables Includes variables that only the patient can provide accurately 	http://www.ncbi.nlm.nih.gov/pubmed/27257694
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 (e.g., grip strength) not always available in routine practice settings 	https://academic.oup.com/biomedgerontology/article/56/3/M146/545770?login=true
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 or each patient 	http://www.karger.com/Article/Pdf/354211

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