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ELDER CARE

A Resource for Interprofessional Providers

Frailty – Elders At Risk

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Frailty is a common geriatric syndrome associated with aging that is predictive of a decline in health. It is characterized by a loss of physiologic reserves that makes older adults more vulnerable to poor health outcomes. There is consensus by frailty experts Fried and Rockwood to define frailty as: “A medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual's vulnerability for developing increased dependency and/or death.”

Four to sixteen percent of community-dwelling adults age 65 and older are frail, and 28-40% percent are pre-frail, with higher prevalence found in healthcare settings. Frailty is more common with increasing age, and in women, minorities, and the poor.

Frailty is frequently conceptualized as a biological decline that results in weakness, weight loss, slowness, exhaustion, and inactivity. However, another widespread theory postulates that frailty develops due to an accumulation of medical conditions, poor nutrition, and functional and cognitive declines.

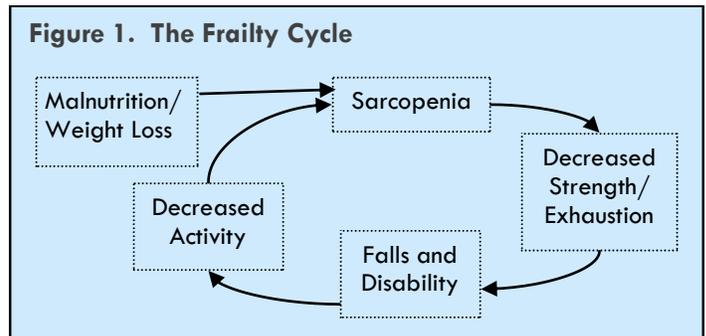
Pathophysiology

There is growing evidence that an accumulation of pro-inflammatory responses to cell death and senescence, including secretion of interleukin-6 and other cytokines, are important in the development of frailty. In addition, hormonal changes are also associated with frailty, including decreased levels of dehydroepiandrosterone sulfate (DHEA-S) and growth hormone. These hormones all play a role in maintaining muscle strength, endurance and mobility. Low vitamin D levels may also be involved. The result is a loss of functional capacity and limited energy reserve at a cellular level and in day-to-day activities. When faced with stressors such as illness, fractures, hospitalizations or surgeries, frail adults lack the ability to regain their former functional status.

What Happens in Frailty?

Frailty is associated with weakness, slowness, reduced activity, low energy, and unintended weight loss. The findings typically include sarcopenia (see next paragraph), changes in body mass, and exhaustion, entering into a cycle (Figure 1) that can lead to a decline in strength, increased disability, and decreased activity. Dependency eventually develops.

Sarcopenia Sarcopenia is the gradual loss of skeletal muscle mass that occurs with normal aging. Severe sarcopenia, however, often defined as a muscle mass >2 standard deviations below the average muscle mass of a same-sex young adult, suggests the presence of frailty.



Weight Loss Weight loss is a common precursor to frailty, and should prompt screening for frailty if it exceeds 5% over a year. Extreme weight loss resulting in a low body mass index (BMI <18.5), is frequently present in individuals with frailty. It is important to keep in mind however, that frailty can also occur in individuals, most often women, who are obese (BMI >30). Despite their high BMI, obese individuals can still lose weight due to malnutrition, and that can worsen the decline in muscle mass. Obese individuals also commonly limit their physical activity, which further contributes to loss of muscle mass. This combination of poor nutrition and weight loss in obese,

TIPS FOR DEALING WITH FRAILITY IN OLDER ADULTS

- Perform frailty assessments routinely on older adults, including those who are obese. Obesity does not prevent frailty.
- Ask about unintentional weight loss, weakness, and exhaustion.
- Recommend a healthy diet avoiding unnecessary restrictions, assuring adequate intakes of protein and vitamin D.
- Recommend resistance exercise and aerobic exercise to slow development of sarcopenia.
- Optimize management of concurrent medical conditions.

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inactive elders results in sarcopenia and can lead to a frail state.

The Frailty Cycle Once severe sarcopenia and fatigue develop, patients have limited strength and become exhausted easily. They walk more slowly and are prone to falls and injuries that can lead to disability, further limiting mobility and physical activity. The decreased physical activity leads to yet more loss of muscle mass that contributes to further loss of function. While an older adult can enter this cycle at any place on the continuum, hospitalization, acute illness, and malnutrition are common entry points.

Screening Tools

Multiple validated screening tools are available to aid in the clinical diagnosis of frailty (Table 1). Both scoring systems outlined below use both objective and subjective measures in their criteria. The Fried Frailty criteria is the most commonly used frailty measure. These screening tools can be used during formal interprofessional comprehensive geriatric assessment and also during evaluations performed by individual clinicians in practice. The SOF Frailty Tool is a quick screening tool to identify frail elderly.

Table 1. Scoring Systems to Assess Frailty in Older Adults

Cardiovascular Health Study (CHS) Index - Fried Criteria

Frail = 3 of the following findings present

Pre-frail = 1 or 2 of the following findings present

- Weight loss (≥ 5 percent of body weight in last year)
- Exhaustion (positive response to questions regarding effort required for activity)
- Weakness (decreased grip strength)
- Slow walking speed ($> 6-7$ seconds to walk 15 ft)
- Decreased physical activity. Males expending < 383 kcals/week and females < 270 kcal /week in physical activity. (For reference - walking 4 miles in 1 hour = 300 kcal)

Study of Osteoporotic Fractures (SOF) Index

Frail = 2 out of 3 criteria positive

- Weight loss of ≥ 5 percent in last year
- Inability to rise from a chair five times without using arms
- "No" response to the question "Do you feel full of energy?"

References and Resources

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The Fried Criteria is now easily determined with the web-based calculator app: <http://hopkinsfrailtyassessment.org> and a dynamometer to assess strength.

Clinical Implications of Frailty

Frail patients are clinically challenging as they are often medically complex and demonstrate a poor tolerance to treatments. Frailty is associated with anemia, clotting disorders, fall risk and poor surgical outcomes, including increased morbidity and mortality, longer lengths of hospital stay, and need for discharge to nursing facilities.

Including a frailty assessment as part of preoperative evaluation of older adults who will undergo surgery can better identify individuals at risk for these poor outcomes and may help guide clinical decision-making (see Elder Care on Preoperative Assessment). Frailty assessment is now recommended by the American College of Surgery and the American Geriatric Society for both planned and urgent surgeries to identify older adults who will benefit from a discussion of goals of care and risk assessment for potential interventions.

Prevention and Treatment

Early identification and intervention is key to staving off poor outcomes. 1.) Progressive resistance exercise is the most effective intervention, and can improve activities of daily living, fall risk, fatigue and quality of life.

2.) Hormonal therapy (e.g., testosterone, growth hormone) is not currently recommended. Table 2 lists practical interventions aimed at maintaining strength and mobility.

Table 2. Frailty Interventions

- Progressive resistance exercise or physical therapy
- Improve cognitive skills with formal weekly intervention
- Adequate protein up to 1.6g/Kg daily
- Obesity prevention
- Fall prevention
- Optimize Vitamin D intake
- Optimize prevention and treatment of medical illnesses
- Treat depression
- Prehab prior to serious medical or surgical interventions

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

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