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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 increased vulnerability and decreased ability to maintain homeostasis. Recent consensus by frailty experts Prof's. Fried and Rockwood 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 elders 65 and older are frail, and 28-40% percent are prefrail, with higher prevalence found in healthcare settings. Frailty is more common with increasing age, and in women, minorities and the poor.

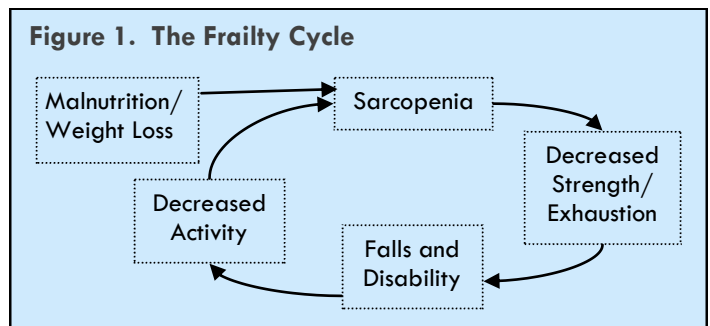
The age-related functional decline that predictably happens in all organ systems, is distinct from the loss of function that occurs with advancing frailty. Growing evidence points to the accumulation of pro-inflammatory responses to cell death and senescence, including secretion of interleukin-6 and other cytokines, as particularly important in the etiology of frailty. The result is a loss of functional capacity and limited energy reserve at a cellular level and in day-to-day activities.

Homeostasis A frail elder will experience a disproportionate decline in health, as compared to non-frail peers, when faced with stressors such as illness, hospitalization, or surgery. Frail older adults lack the capacity to regain homeostasis after the event. Unable to recover equilibrium, the individual often spirals into further decline and disability. Homeostenosis is the term used to describe this inability of frail elders to regain a steady state, and stands in contrast to the usual ability to recover, or regain homeostasis. It is important to understand that frailty exists on a continuum, advancing from non-frail, to pre-frail then frail.

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, usually developing in a "pre-frailty" stage. Weight loss is considered extreme when it results in a low body mass index (BMI <18.5), and such low BMI values are often present in individuals with frailty. It is important to keep in mind however, that frailty, as defined by the various measures in Table 1, 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.

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 such as the Mediterranean diet, along with adequate intakes of protein and vitamin D.
- Recommend resistance exercise and aerobic exercise to slow development of sarcopenia.
- Optimize management of medical conditions.

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The combination of poor nutrition, weight loss, and decreased activity in obese individuals can result in severe sarcopenia, just as it does in those with a low BMI.

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 (see Table One). 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 geriatric evaluation performed by individual clinicians in practice (see *Elder Care on Geriatric Evaluation*).

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?"

A downside to the Fried Criteria is that it includes research measures that are often not assessed in everyday clinical practice (e.g., grip strength). The SOF, in contrast, is easier to use in clinical settings, and its accuracy has been validated against the Fried Criteria.

Clinical Implications of Frailty

Frail patients are clinically challenging as they may be 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 the 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 for both planned and urgent surgeries supporting identification of elders who will benefit from aggressive resuscitation and treatment, as well as post-trauma rehabilitation.

Prevention and Treatment

Early identification and intervention is key to staving off poor outcomes. Physical activity is the most effective intervention, and can improve activities of daily living, fall risk, fatigue and quality of life. Building muscle mass through 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

- Resistance and aerobic exercise
- Physical therapy, if needed, to facilitate exercise
- Optimal nutrition (e.g., adequate protein in split doses)
- Obesity prevention
- Fall prevention
- Optimize calcium and Vitamin D intake
- Optimize prevention and treatment of medical illnesses
- Treat depression

References and Resources

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