

### BACKGROUND

- Frailty is a clinical syndrome including: weakness, low energy, slowed walking speed, decreased physical activity, and weight loss.
- It is a chronic progressive condition that develops along a spectrum of severity resulting in a heightened vulnerability to adverse outcomes that manifest in the face of stressors.
- Frail older adults are more likely to have delayed recovery from illness and/or are more likely to fall; to develop greater functional impairment, including becoming disabled or dependent; or to die.

### SCREENING

- Screening identifies patients at high risk of adverse clinical outcomes including:
  - Prolonged recovery from illness
  - Increased risk of falls
  - Greater functional impairment leading to disability and dependency
  - Mortality
- The goal of screening is to prevent loss of independence if possible
- Gold standard: Comprehensive Geriatric Assessment
  - A multidisciplinary approach to exclude modifiable precipitating causes of frailty, including causes that are treatable; to improve the core manifestations of frailty, especially physical activity, strength, exercise tolerance, and nutrition; thereby minimizing the consequences of the vulnerability of frail older adults.

#### Criteria that Define Frailty (≥3 indicates frailty)

Characteristic											
Weight loss	Meets criteria for frailty if: Lost >10 pounds unintentionally last year										
Exhaustion	<p><b>Meets criteria for frailty if answer:</b> Felt that everything I did was an effort in last week or could not get going in last week Self-report of “moderate or most of the time” for either:</p> <p><b>1) I felt that everything I did was an effort in the last week:</b></p> <ul style="list-style-type: none"> <li>Rarely or none of the time (&lt;1 day)</li> <li>Some or little of the time (1 to 2 days)</li> <li>Moderate amount of the time (3 to 4 days)</li> <li>Most of the time</li> </ul> <p><b>2) I could not get going in the last week:</b></p> <ul style="list-style-type: none"> <li>Rarely or none of the time (&lt;1 day)</li> <li>Some or little of the time (1 to 2 days)</li> <li>Moderate amount of time (3 to 4 days)</li> <li>Most of the time</li> </ul>										
Slowness	<p><b>Meets criteria for frailty if time to walk 15 feet (4.57 meters) is:</b></p> <table border="0"> <tr> <td><b>Men</b></td> <td><b>Women</b></td> </tr> <tr> <td>≥7 seconds for height ≤173 cm (68 inches)</td> <td>≥7 seconds for height ≤159cm (63 inches)</td> </tr> <tr> <td>≥6 seconds for height &gt;173 cm (68 inches)</td> <td>≥6 seconds for height &gt;159cm (63 inches)</td> </tr> </table> <p>Equipment: 4-meter course in walkway of ≥4.5 meters, a stopwatch. Participant will walk 15-foot length twice at his or her usual pace. Use average of 2 trials.</p>	<b>Men</b>	<b>Women</b>	≥7 seconds for height ≤173 cm (68 inches)	≥7 seconds for height ≤159cm (63 inches)	≥6 seconds for height >173 cm (68 inches)	≥6 seconds for height >159cm (63 inches)				
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Low Activity Level	<p><b>Meets criteria for frailty if:</b> ≤270 kcal of physical expenditure on activity scale per week (18 items*)</p>										
Weakness	<p><b>Meets criteria for frailty if grip strength (average of 3 trials, dominant hand) is:</b></p> <table border="0"> <tr> <td><b>Men</b></td> <td><b>Women</b></td> </tr> <tr> <td>≤29 kg for BMI ≤24</td> <td>≤17 kg for BMI ≤23</td> </tr> <tr> <td>≤30 kg for BMI 24.1–26</td> <td>≤17.3 kg for BMI 23.1–26</td> </tr> <tr> <td>≤30 kg for BMI 26.1–28</td> <td>≤18 kg for BMI 26.1–29</td> </tr> <tr> <td>≤32 kg for BMI &gt;28</td> <td>≤21 kg for BMI &gt;29</td> </tr> </table> <p>Equipment: Jamar hand dynamometer Participant attempts to squeeze the dynamometer maximally 3 times with the dominant hand.</p>	<b>Men</b>	<b>Women</b>	≤29 kg for BMI ≤24	≤17 kg for BMI ≤23	≤30 kg for BMI 24.1–26	≤17.3 kg for BMI 23.1–26	≤30 kg for BMI 26.1–28	≤18 kg for BMI 26.1–29	≤32 kg for BMI >28	≤21 kg for BMI >29
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\*Walking for exercise, moderately strenuous household chores, mowing or raking the lawn, gardening, hiking, jogging, biking, exercise cycle, dancing, aerobics, bowling, golf, singles or doubles tennis, racquetball, calisthenics, swimming  
To compute kcals expended per week, use the formula: kcal/week = [activity-specific MET (kcal/kg × hour) ] × [duration per session (min) / 60 min] × [body weight (kg)] × [number of sessions in the last 2 wk / 2] × [number of months per year activity was done]

SOURCE: Data from Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. *J Gerontol Med Sci.* 2001;56A:M146–M156.

HPI	<ul style="list-style-type: none"> <li>Describe the clinical course of decline in each domain</li> <li>Evaluate the impact of stressors/precipitants</li> <li>Evaluate the impact of frailty on functional ability (activities of daily living and instrumental activities of daily living)</li> <li>Elicit patient's goals: <ul style="list-style-type: none"> <li>Regain or prevent further loss of independence</li> <li>Treatment of modifiable causes</li> <li>Pursue a more comprehensive palliative course</li> </ul> </li> </ul>														
POSSIBLE PRECIPITANTS (Stressors)	<ul style="list-style-type: none"> <li>Hospitalization</li> <li>Surgery</li> <li>Medications</li> </ul>	<ul style="list-style-type: none"> <li>Immobility</li> <li>Pain</li> <li>Acute illness</li> <li>Multiple chronic illnesses</li> </ul>	<ul style="list-style-type: none"> <li>Extremes of heat or cold</li> <li>Depression</li> <li>Cognitive impairment</li> </ul>												
PAST MEDICAL HX	<p>The number of associated conditions is a strong predictor of frailty, also known as the multimorbid state:</p> <ul style="list-style-type: none"> <li>Decreased immune function</li> <li>Anemia</li> <li>Increased insulin resistance</li> <li>Micronutrient deficiencies</li> </ul>														
SOCIAL HISTORY	Support system, living situation, caregiver stress, alcohol, tobacco, and physical activity														
MEDICATIONS	<ul style="list-style-type: none"> <li>Medications may exacerbate frailty</li> <li>Full medication reconciliation including prescription, over the counter, and herbal</li> <li>Review patient's medications and side effect profile to determine if benefits of medications outweigh risks</li> </ul>														
PHYSICAL EXAM	<ul style="list-style-type: none"> <li>Vitals (including orthostatics; trend weights)</li> <li>HEENT: dentition, mucous membranes, vision/hearing</li> <li>Standard CV, PULM and ABD exams</li> <li>Musculoskeletal: Get up and Go, Walking Speed, Muscle bulk and strength</li> <li>Psych: affect and mood</li> <li>Neuro: cognition (MMSE, MOCA, SLUMS); rigidity</li> </ul>														
LABS	<ul style="list-style-type: none"> <li>According to patient's goals consider:</li> <li>TSH, CBC, CMP, B12/Folate, Vitamin D, Pre-albumin, total cholesterol</li> </ul>														
PREVENTION AND MANAGEMENT	<ul style="list-style-type: none"> <li>Treatment of a single component, comorbid condition, or deficiency has not been demonstrated to prevent or ameliorate frailty; improving only one system may not be clinically effective</li> </ul> <table border="1" data-bbox="354 1209 1533 1967"> <thead> <tr> <th data-bbox="354 1209 472 1251">Stage</th> <th data-bbox="472 1209 732 1251">Clinical</th> <th data-bbox="732 1209 1533 1251">Management</th> </tr> </thead> <tbody> <tr> <td data-bbox="354 1251 472 1556">Latent stage</td> <td data-bbox="472 1251 732 1556">Not clinically apparent in the absence of stressors</td> <td data-bbox="732 1251 1533 1556">           Likely most responsive to <b>prevention</b>: <ul style="list-style-type: none"> <li>Minimize and/or treat precipitants <ul style="list-style-type: none"> <li>Minimize immobility</li> <li>Minimize polypharmacy</li> <li>Treat pain</li> <li>Treat depression</li> </ul> </li> <li>Preventing and/or minimizing immobility, and maintaining physical activity and muscle mass, is critical in older adults at risk of frailty</li> <li>Maintain muscle mass and strength through resistance exercises; this can be supplemented by aerobic and balance training</li> <li>Prevent nutritional inadequacy</li> </ul> </td> </tr> <tr> <td data-bbox="354 1556 472 1776">Early stage</td> <td data-bbox="472 1556 732 1776">Clinically apparent</td> <td data-bbox="732 1556 1533 1776">           Likely most responsive to <b>intervention</b>: <ul style="list-style-type: none"> <li>Implement preventive measures (as above)</li> <li>Improve physical activity, strength, exercise tolerance, and nutrition,</li> <li>Resistance or strengthening exercise is effective in increasing muscle mass, strength, and walking speed in frail older adults</li> <li>Nutritional supplementation appears to be effective only when added to resistance exercise</li> <li>Offer "Prehab" prior to surgery</li> </ul> </td> </tr> <tr> <td data-bbox="354 1776 472 1967">Late end-stage</td> <td data-bbox="472 1776 732 1967">Severely frail older adults appear to be in an <b>irreversible</b>, pre-death phase with high mortality over 6-12 months</td> <td data-bbox="732 1776 1533 1967">           Consider <b>palliative</b> approaches for these patients <ul style="list-style-type: none"> <li>Severe frailty, with a score of 4-5 and metabolic abnormalities (low cholesterol and albumin) are associated with high short-term mortality rates and suggest a poor response to treatment</li> <li>Focus on optimizing the abilities needed to reach individual patient goals</li> <li>Compensate for diminished abilities by modification of living environment and/or increased support from caregivers</li> </ul> </td> </tr> </tbody> </table>			Stage	Clinical	Management	Latent stage	Not clinically apparent in the absence of stressors	Likely most responsive to <b>prevention</b> : <ul style="list-style-type: none"> <li>Minimize and/or treat precipitants <ul style="list-style-type: none"> <li>Minimize immobility</li> <li>Minimize polypharmacy</li> <li>Treat pain</li> <li>Treat depression</li> </ul> </li> <li>Preventing and/or minimizing immobility, and maintaining physical activity and muscle mass, is critical in older adults at risk of frailty</li> <li>Maintain muscle mass and strength through resistance exercises; this can be supplemented by aerobic and balance training</li> <li>Prevent nutritional inadequacy</li> </ul>	Early stage	Clinically apparent	Likely most responsive to <b>intervention</b> : <ul style="list-style-type: none"> <li>Implement preventive measures (as above)</li> <li>Improve physical activity, strength, exercise tolerance, and nutrition,</li> <li>Resistance or strengthening exercise is effective in increasing muscle mass, strength, and walking speed in frail older adults</li> <li>Nutritional supplementation appears to be effective only when added to resistance exercise</li> <li>Offer "Prehab" prior to surgery</li> </ul>	Late end-stage	Severely frail older adults appear to be in an <b>irreversible</b> , pre-death phase with high mortality over 6-12 months	Consider <b>palliative</b> approaches for these patients <ul style="list-style-type: none"> <li>Severe frailty, with a score of 4-5 and metabolic abnormalities (low cholesterol and albumin) are associated with high short-term mortality rates and suggest a poor response to treatment</li> <li>Focus on optimizing the abilities needed to reach individual patient goals</li> <li>Compensate for diminished abilities by modification of living environment and/or increased support from caregivers</li> </ul>
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