No Disclosures.
Objectives

• Describe frailty in transplant
• Discuss the role of physical activity for older transplant patients
• Share our experiences at UNMC
Aging Continuum

- Normal Performance
- Frailty
- Functional Decline
- Disability
The clinical syndrome (Fried et al. 2001)

• Unintentional weight loss
• Low physical activity
• Weakness
• Slow gait
• Self-reported exhaustion
Clinical Consequences (Fried et al. 2001)

- Falls
- Worsening mobility
- Hospitalizations
- Delirium
- Loss of independence
- Death
Adapted from Hubbard et al. 2015
Frailty is dynamic and potentially reversible.

Pre-frail (1-2)
- Unintentional weight loss
- Low physical activity
- Weakness
- Slow gait
- Self-reported exhaustion

Prevention and management
### UNMC Transplant Optimization

<table>
<thead>
<tr>
<th></th>
<th>Baseline (N=18)</th>
<th>Day 100 (N=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fried Frailty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-frail: 1-2</td>
<td>17.6%</td>
<td>55.6%</td>
</tr>
<tr>
<td>Frail: 3-5</td>
<td>41.2%</td>
<td>22.2%</td>
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<tr>
<td><strong>Activities of Daily Living</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 or more impairment</td>
<td>5.9%</td>
<td>44.4%</td>
</tr>
<tr>
<td><strong>Instrumental Activities of Daily Living</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 or more impairment</td>
<td>11.8%</td>
<td>33.3%</td>
</tr>
<tr>
<td><strong>Short Physical Performance Battery (SPPB)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPPB ≤ 9 At risk for functional decline</td>
<td>29.4%</td>
<td>33.3%</td>
</tr>
</tbody>
</table>
Expert Consensus on Interventions (Morley et al. 2013)

- Exercise (resistance and aerobic)
- Caloric and protein support
- Vitamin D
- Minimize polypharmacy
- Address geriatric syndromes (depression, falls)
- Manage comorbidities
Moderate intensity physical activity improves multiple characteristics of frailty

*Mean age 50 years and above.
*Autologous and allogeneic

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>Fatigue</th>
<th>Physical activity</th>
<th>Strength</th>
<th>Endurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>2</td>
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<td>X</td>
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<tr>
<td>Germany</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Netherlands</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>USA</td>
<td>4</td>
<td>X</td>
<td>X</td>
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</tr>
</tbody>
</table>
Moderate intensity physical activity is feasible and beneficial in unfit patients

<table>
<thead>
<tr>
<th>Author</th>
<th>N</th>
<th>Frailty</th>
<th>Intervention</th>
<th>Improved Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klepin *Mean age &gt;60 years</td>
<td>24</td>
<td>Strength, Flexibility, Aerobic</td>
<td>Newly diagnosed AML with low physical function.</td>
<td>QOL (P: 0.02) Depression (P: 0.02) Physical function* clinically significant benefit.</td>
</tr>
<tr>
<td>Wiskemann</td>
<td>105</td>
<td>Endurance Strength</td>
<td>Before, during and after HCT. Partly self-administered</td>
<td>Fit patients lost 4% while unfit patients gained 13% of walking capability (P: &lt;0.05).</td>
</tr>
</tbody>
</table>

(Klepin et al. 2011, Wiskemann et al. 2014)
Our Experience

Where do you start?
Recognize the clinical syndrome

- Unintentional weight loss
- Low physical activity
- Weakness
- Slow gait
- Self-reported exhaustion
Assess functional mobility

- **Capacity**: Observation and objective performance.

- **Actual performance**: What are their daily activities? Within the home and outside?

- **Barriers and motivations**
Objective Measures

- Short physical performance battery (SPPB)
- Timed up and go (TUG)
- Gait speed
Short physical performance battery (SPPB)

- Balance, gait speed, strength and endurance (5-10 minutes)
- A score of <9: at risk for functional decline
- Impaired physical function and survival in AML: HR 2.2 [CI:1.1,4.6]
- Baseline depression and cognitive impairment is associated with greater decline in physical function.

(Klepin et al 2011, 2016)
Risk of Functional Decline

- **SPPB >9**
  - LOW
- **SPPB 7-9**
  - MODERATE
- **SPPB <7**
  - HIGH
Tailor support for physical activity

Exercise counseling and tailored plan

Low risk: Home based or Fitness center

Moderate risk: +/- Supervision

High risk: Supervision

Geriatric Syndromes (Falls, Depression)

Active Engagement of Patient and Family
Take Home Points

- Recognize the clinical syndrome of frailty.
- Benefit of physical activity before, during, and after transplant.
- Integration of physical activity promotion into care takes team work.
References


Put some spring in your step!

STAY ACTIVE
Side Arm Raise

TARGETED MUSCLES: Shoulders
WHAT YOU NEED: Hand-held weights

TIP: As you progress, use a heavier weight and alternate arms until you can lift the weight comfortably with both arms.

This exercise will strengthen your shoulders and make lifting groceries easier.

1. You can do this exercise while standing or sitting in a sturdy, armless chair.
2. Keep your feet flat on the floor, shoulder-width apart.
3. Hold hand weights straight down at your sides with palms facing inward. Breathe in slowly.
4. Slowly breathe out as you raise both arms to the side, shoulder height.
5. Hold the position for 1 second.
6. Breathe in as you slowly lower your arms.
7. Repeat 10-15 times.
8. Rest; then repeat 10-15 more times.
Patient Preferences

Counseling Timing

- 6-12 months
- 3-6 months
- First 100 days
- Before

*
Patient Preferences

Counseling Delivery

- Survivors
- Family
- PT
- Nurse
- PCP
- Oncologist

* indicates a statistical significance
Patient Preferences

Program Structure

- Transition*
- Self-directed
- Supervised

* Supervised transition to unsupervised
Frailty in Transplant (Arora et al. 2016)

• Prevalence of 8% (Mean age of 42 years)

• 8.4 times more likely to be frail than their age-matched siblings

• Frailty was associated with reduced survival OR 2.76 [CI: 1.7, 4.4]