WELCOME *To the*

2026 SYMPOSIUM

Frailty and Multi-Morbidity and Its Impact on Vascular Access

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Disclosures

- None

Objectives

- Define frailty and multi-morbidity
- Demonstrate how frailty and multi- morbidity impacts ESRD patients and vascular access outcomes

What is frailty?

- Components
  - Unintentional weight loss (>10 lbs in the last year)
  - Self reported exhaustion
  - Weakness (grip strength)
  - Slow gait speed
  - Low levels of physical activity
- Classification
  - 0= Robust
  - 1-2= pre-frail
  - >3= frail

Frailty: How it is measured- RAI

- 5 domains
  - Functional performance : status of ADLs
  - Physical status: dyspnea, congestive heart failure, renal failure, cancer status
  - Cognitive function
  - Nutritional state
  - Social variables : sex, age, living setting

Frailty: How it is measured- CFS



ig 1. **Clinical Frailty Scale**

1. Very fit
People who are robust, active, energetic and motivated. They commonly exercise regularly and are among the fittest for their age

2. Well
People who have no active disease symptoms but are less fit than category 1. Typically, they exercise or are very active occasionally, such as seasonally

3. Managing well
People whose medical problems are well controlled but are not regularly active beyond routine walking

4. Vulnerable
While not dependent on others for daily help, often symptoms limit activities. A common complaint is being 'slowed up' and/or being tired during the day

5. Mildly frail
People often have more evident slowing and need help with high-order IADLs. Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework

6. Moderately frail
People need help with all outside activities, housework and cooking. They often need help with stairs and bathing, and might need minimal assistance with dressing

7. Severely frail
People completely dependent for personal care. However, they seem stable and not at high risk of dying (within ~6 months)

8. Very severely frail
People completely dependent and approaching the end of life. Typically, they could not recover even from a minor illness

9. Terminally ill
People approaching the end of life. This category applies to people with a life expectancy of <6 months, who are not otherwise evidently frail

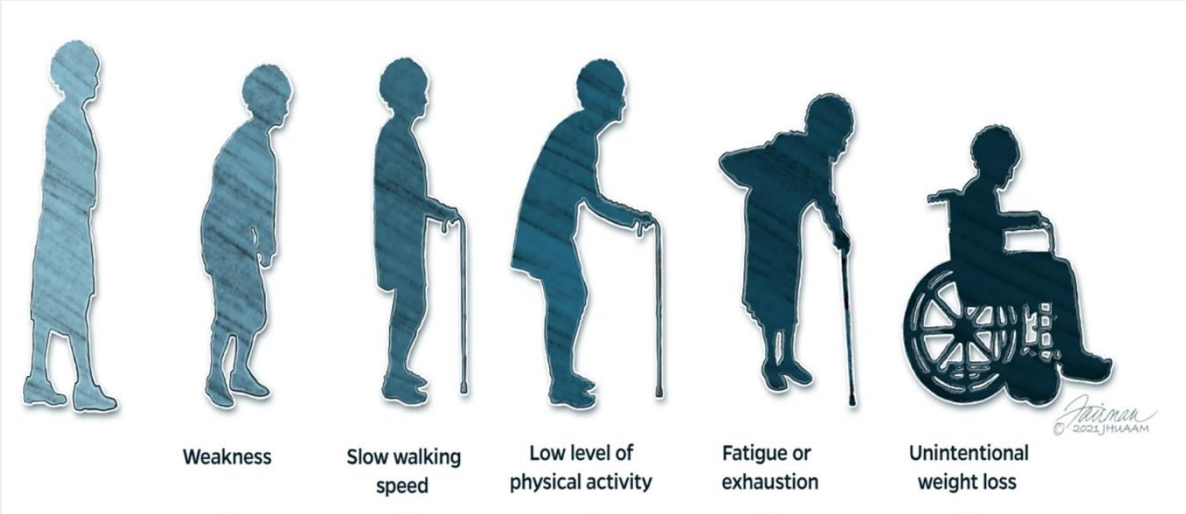
IADL = instrumental activity of daily living (such as finances, transport, heavy housework or medications)

Frailty: Prevalence and impact

- Prevalence 11%- 51%
- Clinical Relevance:
  - Increased risk of morbidity, mortality and postoperative complications

Frailty: Impact on the End Stage Renal population

- Prevalence of Frailty: up to 75%
- Prevalence of pre-frail: as high as 37%
- Associated with:
  - Increased mortality
  - Increased hospitalizations
  - Longer length of stay
  - Discharge to long term care facility
  - Cognitive decline
  - Vascular access complications



Frailty: impact on Vascular Access outcomes

- Higher non maturation
- Longer maturation times
- Decreased probability of use
- Higher rates of:
  - Thrombosis
  - Repeated intervention
  - Mortality



Multi-morbidity: What is it and how is it measured?

- Presence of 2 or more chronic conditions
- Measured by:
  - Disease counts
  - Weighted indices (MWI, Charlson Comorbidity, etc.)
  - Medication usage
- >17 weighted measures
- No standard measure

Multi-morbidity: How its measured- MWI

- Weighted index measuring cumulative burden of chronic disease
- Weights derived from short form 36
- Focus is measuring impact of lifelong chronic conditions

Multi-morbidity: How its measured-Charlson Comorbidity Index

Conditions	Assigned weights for each condition
MI	1
CHF	1
Peripheral vascular disease	1
Cerebrovascular disease	1
Dementia	1
Chronic pulmonary disease	1
Connective tissue disease	1
Ulcer disease	1
Mild liver disease	1
Diabetes	1
Hemiplegia	2
Moderate or severe renal disease	2
Diabetes with end organ damage	2
Any tumor without metastasis	2
Leukemia	2
Lymphoma	2
Moderate or severe liver disease	3
Metastatic solid tumor	6
AIDS	6

MI, myocardial infarction; CHF, congestive heart failure.

Multi-morbidity: prevalence and impact

- Prevalence: 15-43%
- Clinical relevance:
  - Increased risk of premature death, hospital admission, longer length of stay, poor functional capacity and quality of life



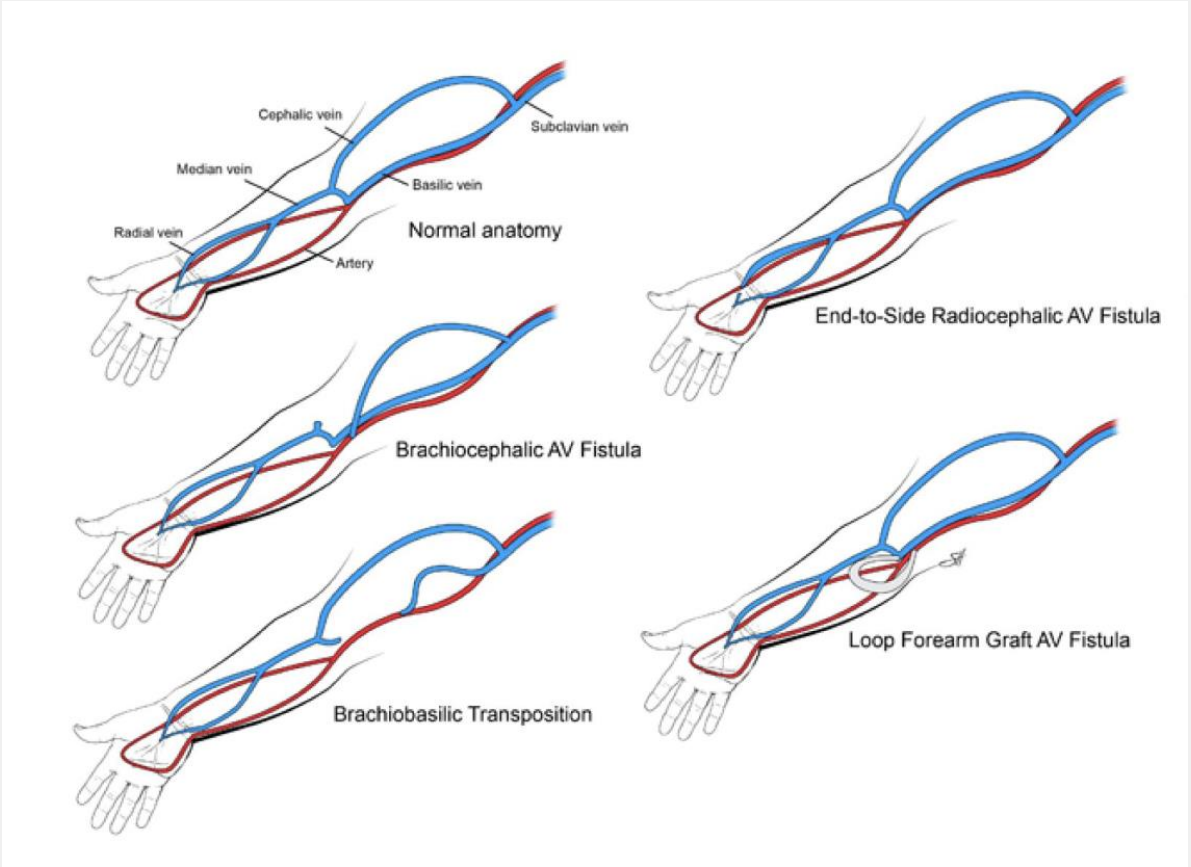
Multi-morbidity: impact on ESRD patients

- Prevalence: 70-96%
- Increased rates of:
  - Mortality
  - Cardiovascular events
  - ED utilization
  - Prolonged hospital stays



Multi-morbidity- impact on vascular access outcomes

- Lower likelihood of use
- Greater odds of needing revision
- Higher mortality post op



Frailty and multimorbidity: Differences and similarities

- Differences:
  - Frailty:
    - Dynamic
    - Often qualitative
  - Multi-morbidity:
    - Less dynamic
    - Quantitative

- Similarities:
  - Both identify people as high risk for disability, morbidity and mortality
  - Often intersect
  - Bidirectional relationship.

Future Directions

- Further research to determine additive effects
- Inclusion in shared decision making and risk prediction



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