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OBJECTIVES

Know and understand:

- ▶ Why frailty is a clinical syndrome
- ▶ Clinical manifestations of frailty
- ▶ Frailty AE's
- ▶ Frailty prevention
- ▶ Assessment & management

A blue square icon with rounded corners containing white silhouettes of two elderly people. One person is standing and leaning on a cane, while the other person stands behind them, supporting their arm. A red vertical bar is in the top right corner.

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TOPICS COVERED

- ▶ Evidence as to Cause of Frailty
- ▶ Assessment of Frailty
- ▶ Management Strategies
- ▶ Prevention of Frailty
- ▶ Frailty vs Failure to Thrive
- ▶ Frailty and Palliative Care

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Active Learning

- ▶ Write your definition of frailty that could be used by clinicians to detect frail older adults.
- ▶ Use at least 5 signs or symptoms in your definition.

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DEFINE FRAILITY

- ❖ Age – related syndrome
- ❖ Decreased physiologic reserves
- ❖ ↑ vulnerability to stressors
- ❖ Multiple symptoms (e.g., weakness and fatigue)
- ❖ Adverse events



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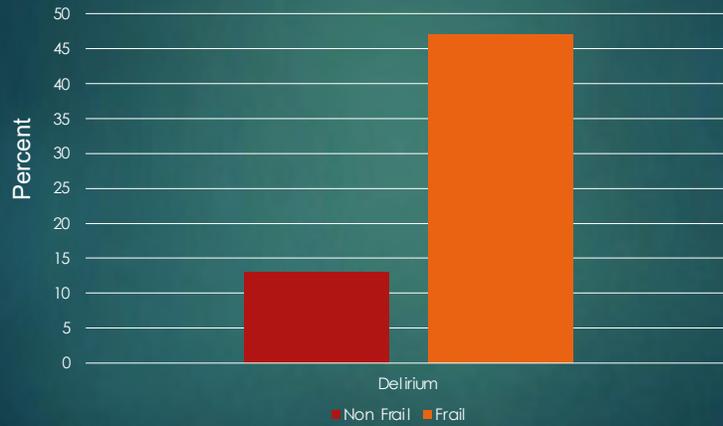
CORE CONCEPT

Stressor Risks:
Heat / cold exposure
infection / trauma,
hospitalization / surgery

- Delayed recoveries
- Functional impairment
- Dependency / isolation
- Death

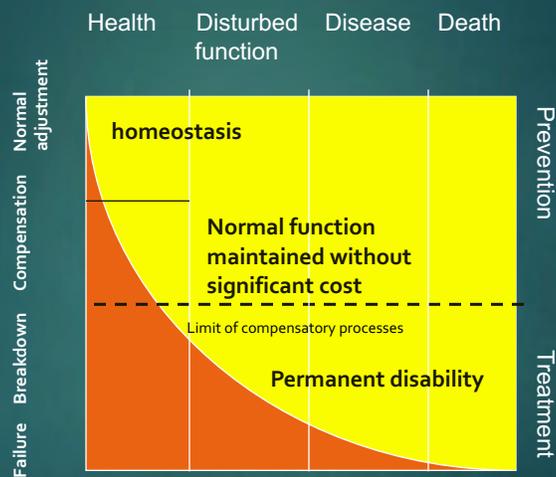
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Post operative delirium in frail older adults



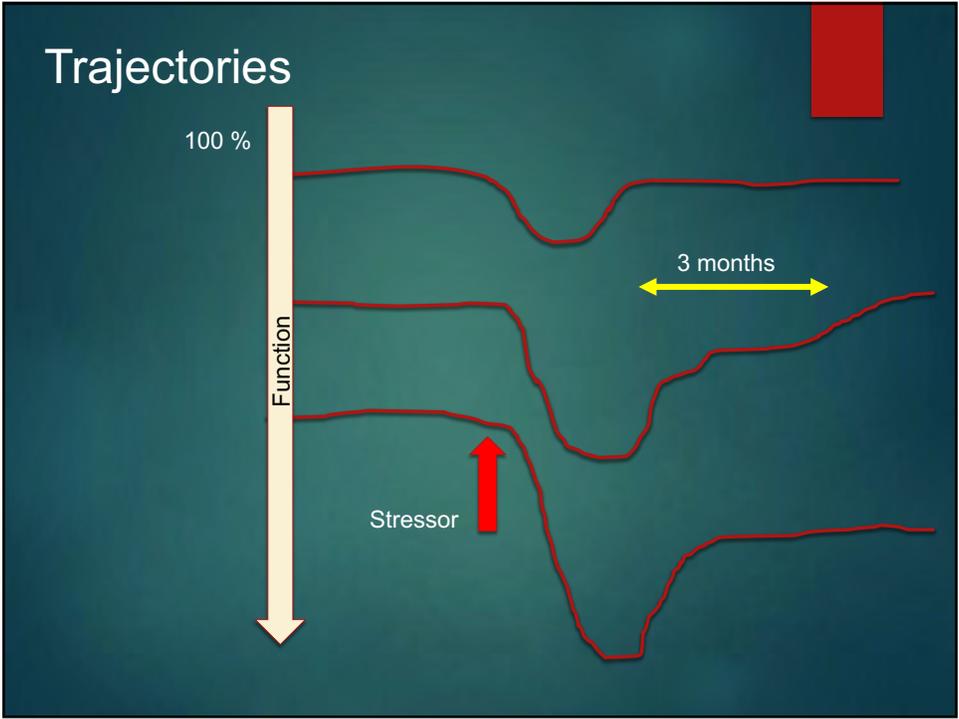
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Aging and Homeostasis

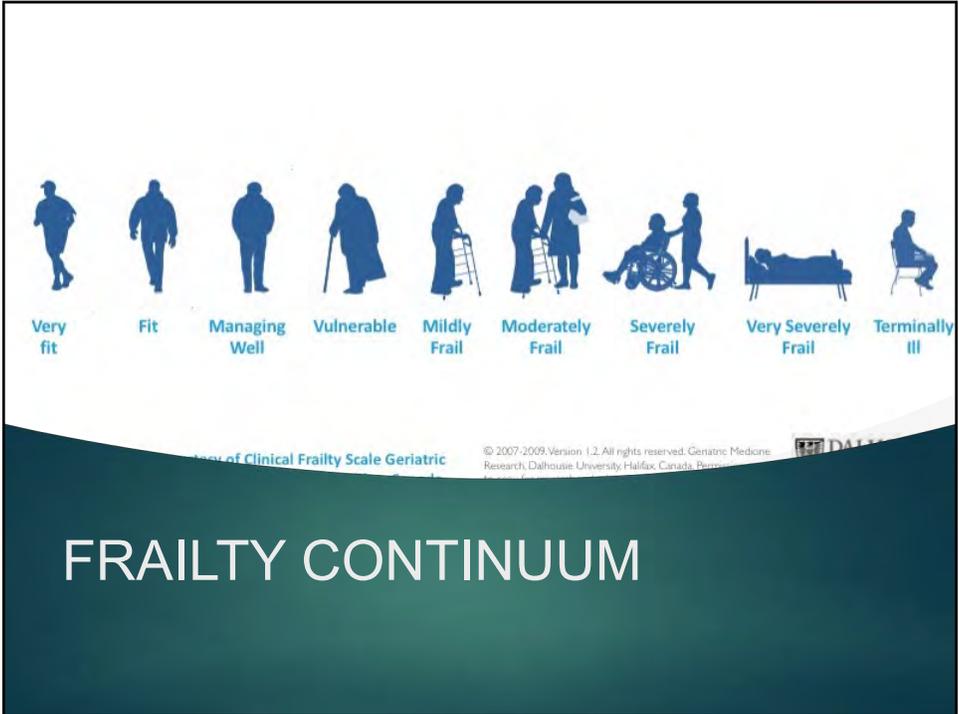


Adapted from *Physiological Basis of Aging and Geriatrics* Paola Timiras

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FRAILITY AS A CORE CONCEPT

- ▶ Severe stage
 - ▶ irreversible,
 - ▶ pre-death phase
 - ▶ high 12 M mortality
- ▶ Earlier phase
 - ▶ responsive to treatment



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Primary frailty

—results from intrinsic aging processes

Secondary frailty

—associated with end stages of several chronic diseases

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How do you identify physiologically vulnerable people before frailty becomes clinically apparent ?

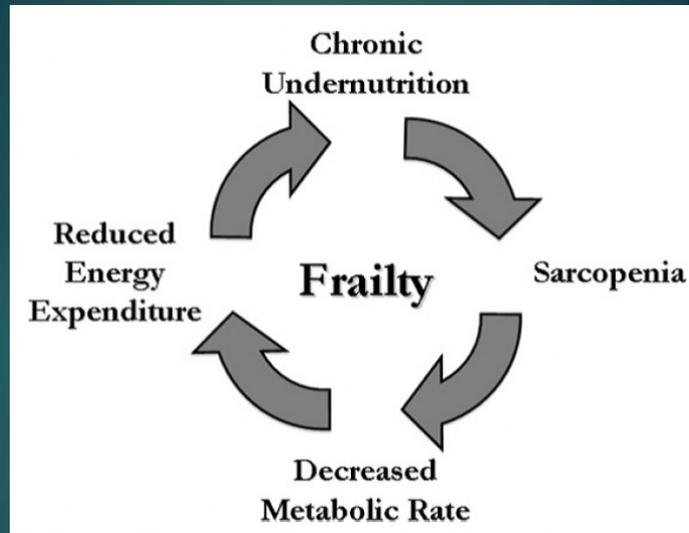
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2 FRAILTY CONCEPTS

- ▶ The number of chronic conditions predicts vulnerability
- ▶ Multiple systems dysregulated

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ICU Frailty



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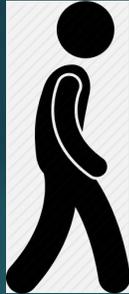
FRAILITY: A PHYSIOLOGIC PROCESS

| Characteristic | Criteria for frailty* |
|--------------------|--|
| Weight loss | Lost >10 pounds unintentionally last year |
| Exhaustion | Felt last week that "everything I did was an effort" or "I could not get going" |
| Slowness | Time to walk 15 ft (cutoff depends on sex and height) |
| Low activity level | Expends <270 kcal/week (calculated from activity scale incorporating episodes of walking, household chores, yard work, etc.) |
| Weakness | Grip strength measured using hand dynamometer (cutoff depends on sex and BMI) |

Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci.* 2001;56(3):M146-156.

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FRAILTY A PHYSIOLOGIC PROCESS



1st manifestations

- weakness
- slow walking speed
- decreased physical activity



Consider differential diagnosis

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FRAILTY DIFFERENTIAL DIAGNOSIS

WEIGHT LOSS

Medical: cancer, endocrine, chronic inflammation, organ failure
Psychological
Medications

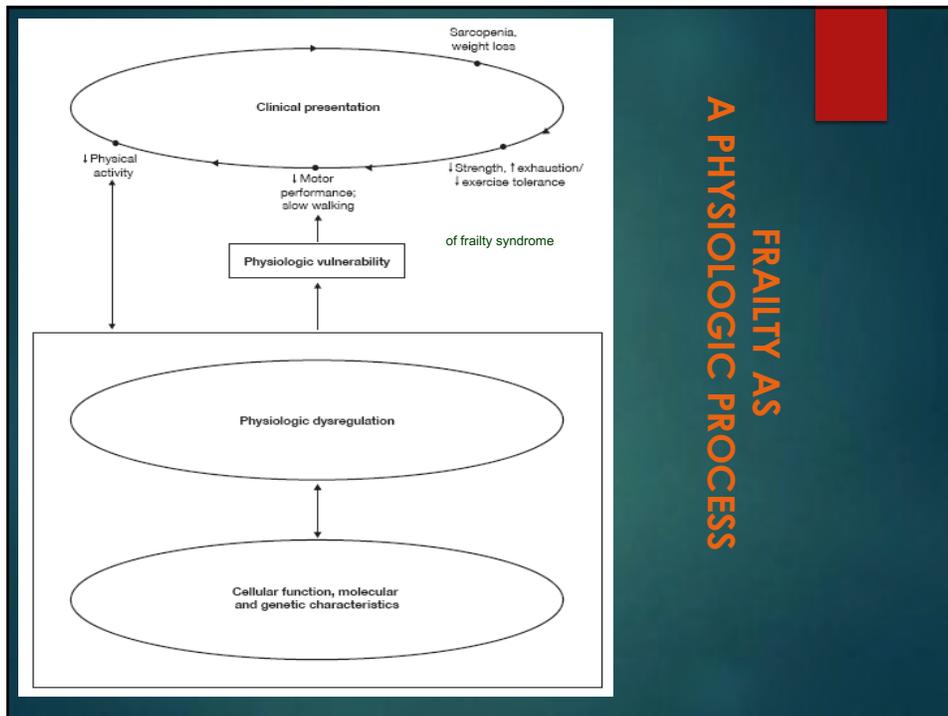
FATIGUE

OSA
Anemia
Adrenal insufficiency

WEAKNESS

Nervous system Medications
Electrolyte disorders
Myopathies

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- ### EVIDENCE AS TO CAUSE: PRIMARY FRAILITY
- Inflammation (indicated by increased IL-6 and CRP)
 - Decreased immune function
 - Anemia
 - Increased glucose intolerance, insulin resistance
 - Low levels of DHEA-S and IGF-1
 - Increased cortisol, low testosterone
 - Decreased heart rate variability
 - Mitochondrial and bioenergetic defects
 - Nutritional derangements
- A red vertical bar is on the right side of the slide.

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EVIDENCE AS TO CAUSE: SECONDARY FRAILITY



Frailty phenotype:

Immune disorders (HIV/AIDS)

Heart failure

COPD

Chronic infections (cytomegalovirus, TB)

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ASSESSMENT OF FRAILITY

- ▶ Why Screen patients for frailty ?
 - ▶ Identify risk
 - ▶ Gauge severity
 - ▶ Prevention or treatment
 - ▶ Track change in status over time
 - ▶ Palliative care transitions

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ASSESSMENT OF FRAILITY

Ways to assess frailty:

- ▶ Fried Scale (5)
- ▶ Rapid screening
 - ▶ FRAIL scale
- ▶ Clinical Global Impression of Change in Physical Frailty (CGIC-PF):
- ▶ Walking speed or grip strength

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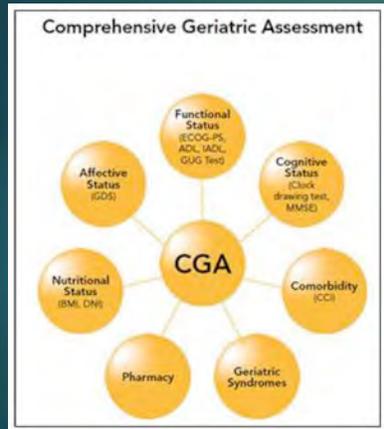
FRAIL Scale

- Fatigue
- Resistance (the ability to climb one flight of stairs)
- Ambulation (the ability to walk one block)
- Illness (greater than five)
- Loss of weight (>5%)

Scoring: 0= Robust 1-2= Pre-frail > 3 = Frail

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STRATEGIES FOR MANAGING FRAILITY



Improves outcomes for

- polypharmacy,
- falls,
- functional status,
- mood,
- nursing-home admission,
- mortality

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STRATEGIES FOR MANAGING FRAILITY

The focus of care:

Exclude secondary causes of frailty

- atrophic gastritis or unresolved grief

Improve the clinical manifestations of frailty

- physical activity, strength, and nutrition

Minimize vulnerability

- social support, avoid hospitalization or surgery

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STRATEGIES FOR MANAGING FRAILITY

Promote adaptations

- ▶ Carefully chose goals
- ▶ ADL / IADL support
 - ❖ Meal on wheels, Assisted Living, Home companion, personal trainer
 - ❖ Optimize the abilities needed to reach these goals
 - ❖ Compensate for diminished competencies by increased reliance on other functions or by replacement (e.g., meal on wheels or ALF)

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FRAILITY PREVENTION

- ▶ Anticipate and avert physiological and psychosocial stressors
- ▶ Key precipitants:
 - Immobility: may accelerate the onset of dependency
 - Depression: associated with decreased activity, energy, nutritional intake, inflammation, and social isolation. Appears to be an outcome of frailty as well as a precipitant: Hospitalization, surgery

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FRAILITY PREVENTION: PHARMACOLOGIC TREATMENT

- ▶ Hormone replacement does not work
- ▶ Future drug treatments need to target multiple systems simultaneously
 - ▶ Bioenergetics
 - ▶ Anti - inflammation
- ▶ Decrease polypharmacy

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FRAILITY PREVENTION

- ▶ Maintain physical activity and muscle mass
- ▶ Resistance, or strengthening, exercise
- ▶ Other forms of exercise, including stretching, Tai Chi, and aerobic exercise, also help
- ▶ Prevent immobility



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FRAILTY PREVENTION

- ▶ Mediterranean diet lowers frailty risk over 6 years in community-dwelling adults ≥ 65
- ▶ Protein and micronutrients supplementation
 - ▶ **Warning: Sarcopenia in obesity**
- ▶ In many studies, nutritional supplementation appears to be effective **only when added to exercise**

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FRAILTY AND FAILURE TO THRIVE

- ▶ "Failure to thrive" was historically a diagnosis applied to an older patient with severe symptoms that have no apparent cause
- ▶ Some experts believe the term should be abandoned because it does not assist in thoughtful evaluation
- ▶ Some argue that a term initially used to describe delayed development in children is pejorative when applied to older adults
- ▶ **Conceptually there may well be overlap between the concept of failure to thrive and very severe or end-stage frailty**

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FRAILITY AND PALLIATIVE CARE

- ▶ Frailty predicts:
 - ▶ functional decline
 - ▶ dependency at the end of life
- ▶ Palliative Care for
 - ▶ Frailty score of 4–5
 - ▶ low cholesterol and albumin

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SUMMARY

- ▶ Clinical syndrome
 - dysregulated energetics
 - clinical markers
 - ▶ physiologic dysregulation
 - ▶ perturbed cellular and molecular processes
- Frailty Index:
1. weakness
 2. slowed walking speed,
 3. low physical activity,
 4. low energy or exhaustion
 5. weight loss

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SUMMARY

- ▶ High risk of adverse clinical outcomes, including falls, disability and dependency, and mortality
- ▶ Frailty develops along a continuum of severity,
- ▶ The most effective prevention
 - ▶ maintaining muscle mass and strength
 - ▶ Mediterranean diet

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Frailty as a Clinical Syndrome

Clinical Syndrome of Frailty

Symptoms

- Weakness
- Fatigue
- Anorexia
- Under nutrition
- Weight Loss

Signs

- Physiologic changes marking increased risk
- Decreased muscle mass
- Balance and gait abnormalities
- Severe deconditioning



Adverse Outcomes of Frailty

- Falls
- Injuries
- Acute Illnesses
- Hospitalizations
- Disability
- Dependency
- Institutionalization
- Death

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CASE PRESENTATION

78M c/o arthritis in his hands, shoulders and knees. He is a farmer and worries that arthritis will interfere with his work. He is tired all the time.

Discussion centers on better pain management, what matters, mobility, medications, and mentation.



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CASE 1

What aspect of the frailty phenotype predicts reduced activity?

- A. Weight loss
- B. Exhaustion or fatigue
- C. Decreased strength
- D. Diminished walking speed

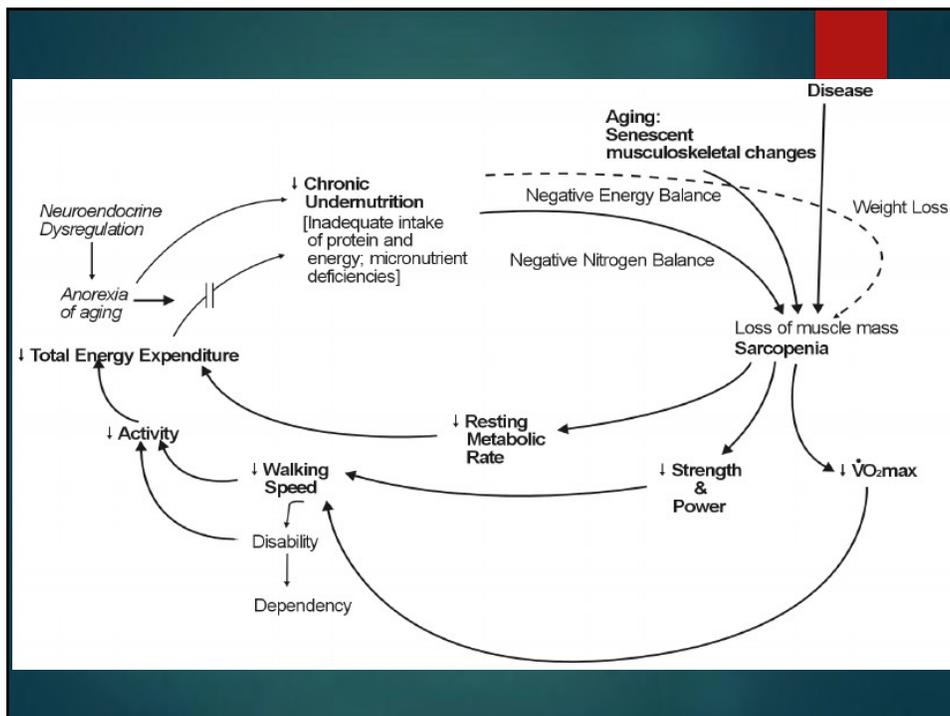
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CASE 1

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Summary

- ▶ Active life expectancy is often followed by a 2 – 3 year span of frailty prior to death, irrespective of age when death occurs.
- ▶ Frailty is common and ~ 15% of older adults
- ▶ Screening tools such as FRAIL help clinicians better recognize and manage this Geriatric syndrome.
- ▶ Frailty can be prevented and may be reversible.