AETC AIDS Education & Training Center Program Mountain West

Understanding Frailty

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Disclosures

No conflicts of interest or relationships to disclose

Objectives

- Define frailty (in a few different ways)
- Recognize and assess for frailty using validated tools
- Clinically address frailty

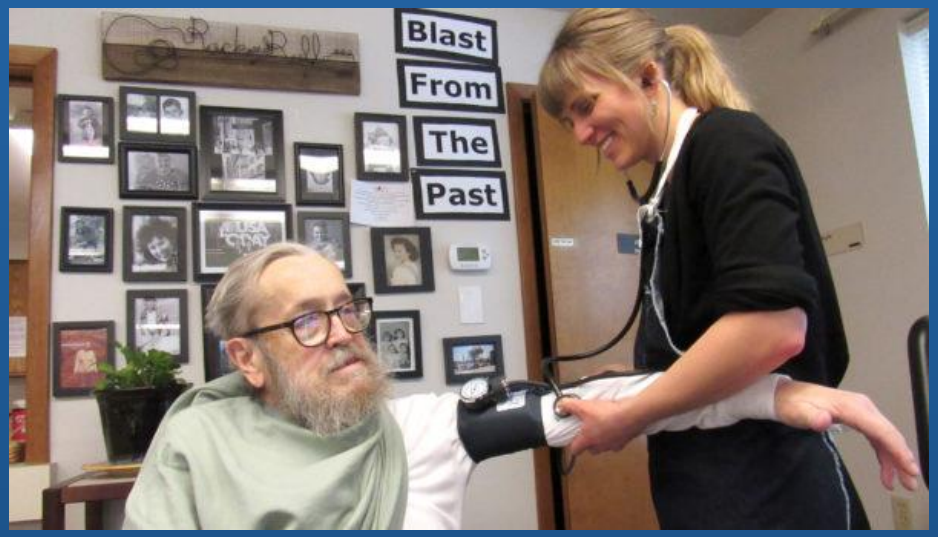
Can you define frailty?

- In the chat, tell me... What is frailty?
- A definition, description of characteristics, or synonyms will do!

What is frailty?

- Frailty is a **central concept** of Geriatrics, yet its definition remains a matter of debate.

- “Know it when I see it”
  vs
  specific clinical syndrome of easily definable characteristics.



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Who is at risk for frailty?

Non-modifiable risks:

- Older age
- Female gender
- Dementia
- African-American or Hispanic ethnicity
- Chronic systemic inflammation
- Genetics

Potentially modifiable risks:

- Low physical activity
- Extremes of weight (underweight, obese)
- Sarcopenia (age-related loss of muscle mass and function)
- Depression
- Heavy alcohol use
- Lower education and income
- Social isolation, chronic social stressors

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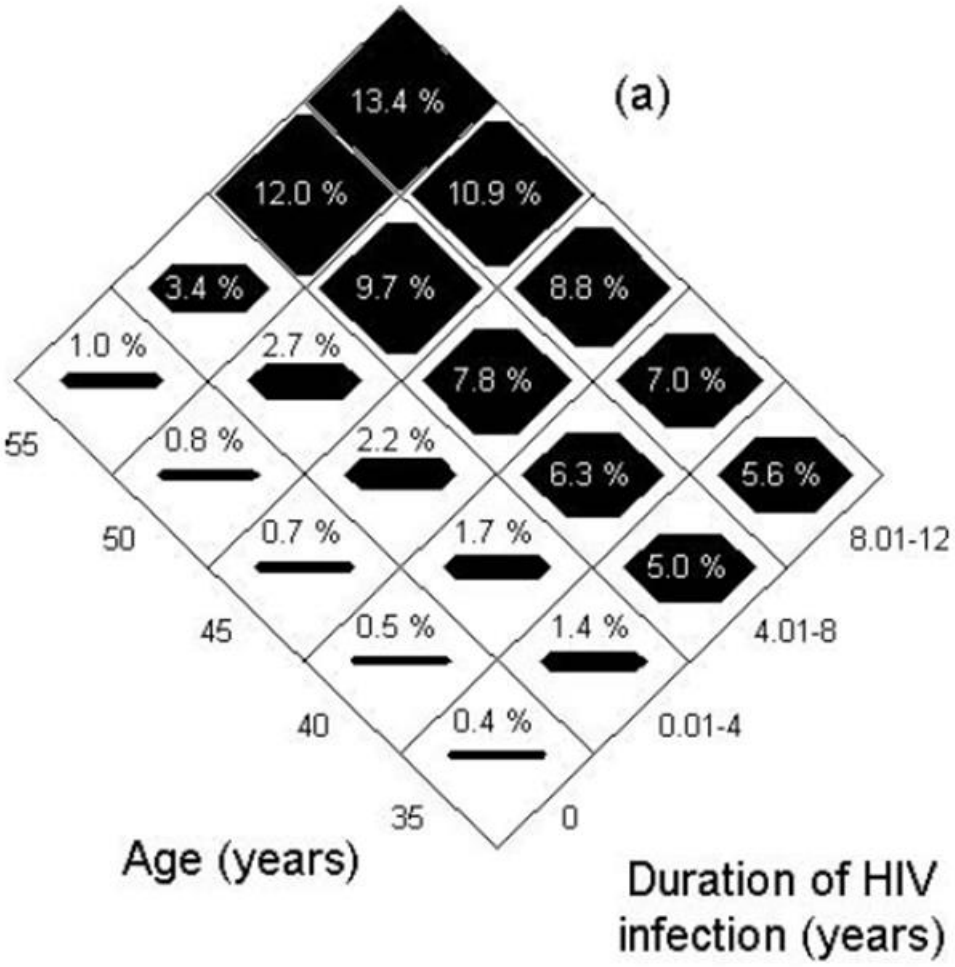
Frailty higher among individuals with HIV



PLHIV for 8-12 years at age 55:

13.4% exhibit the frailty phenotype – a 9-fold higher risk than age-matched controls

Desquilbet, et al. J Gerontol Med Sci 2007;62A:1279-86

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IAS-USA Guidelines

Box 6. Recommendations for Polypharmacy, Frailty, and Cognitive Function Screening for Older People With HIV

- Close and sustained attention to polypharmacy is recommended in the management of older people with HIV (evidence rating: AIII)
- Assessment of mobility and frailty is recommended for patients aged 50 years or older using a frailty assessment that is validated in all persons with HIV (evidence rating: BIa); the frequency of frailty assessment is guided by the baseline assessment and should be more frequent (every 1-2 years) in patients who are frail or before becoming frail, and less frequent (up to 5 yearly) in patients who are robust (evidence rating: BIII)
- In patients who are frail or prefrail, management of polypharmacy, referral for complete geriatric assessment, exercise and physical therapy, and nutrition advice is recommended (evidence rating: AIII)
- Routine assessment of cognitive function every other year using a validated instrument is recommended for people with HIV who are older than 60 years (evidence rating: BIII)

Saag MS, Gandhi RT, Hoy JF, et al. Antiretroviral drugs for treatment and prevention of HIV infection in adults: 2020 recommendations of the International Antiviral Society-USA Panel. *JAMA*. 2020;324(16):1651-1669

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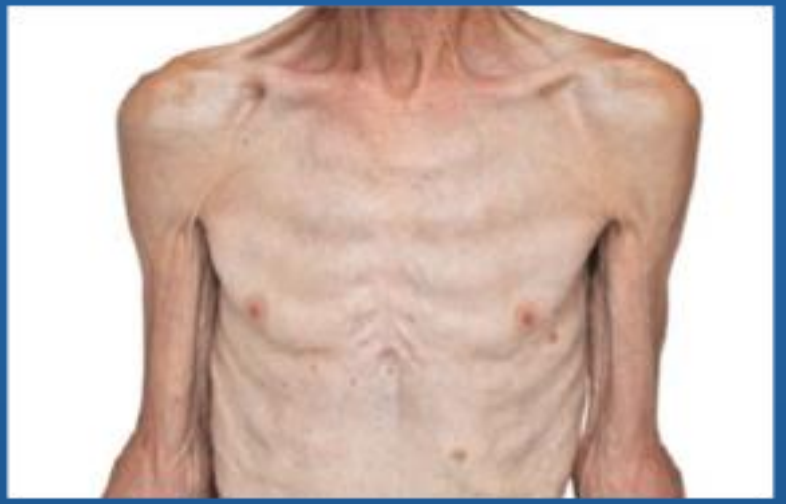
Who is frail, and does it matter?



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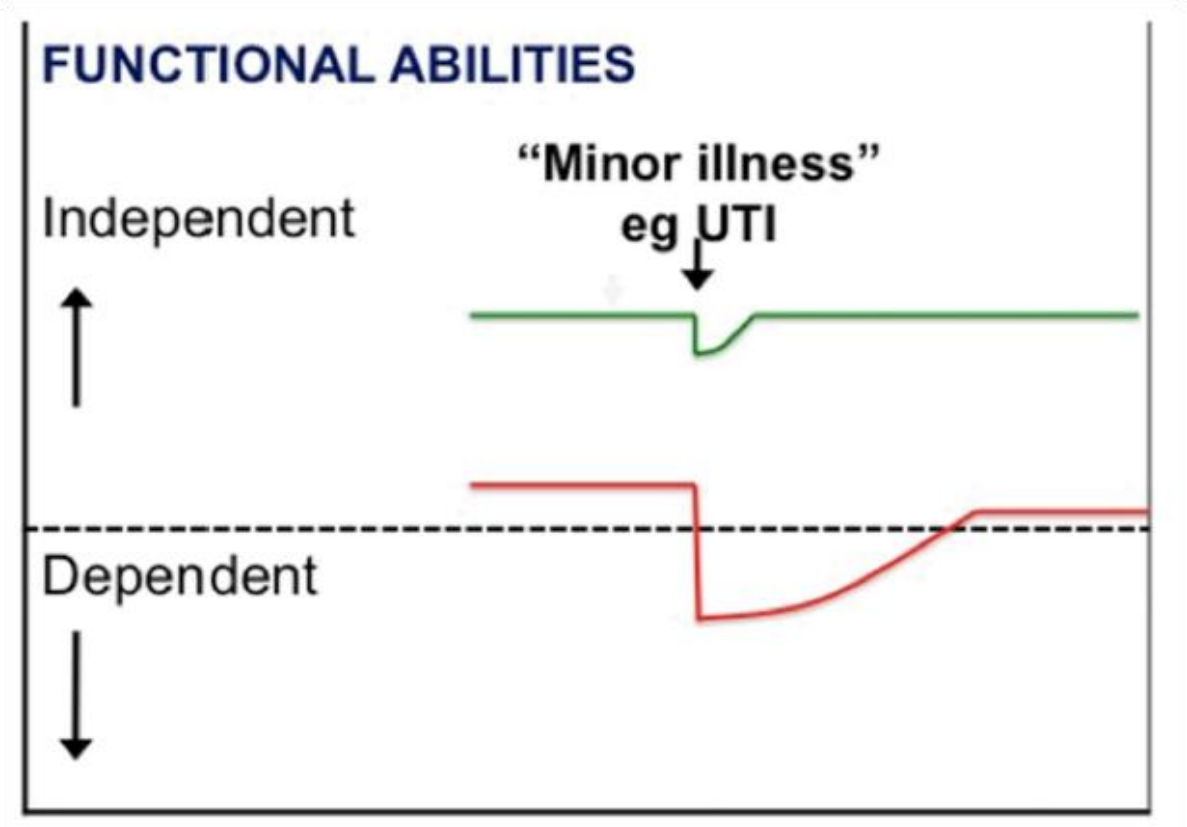
Frailty as vulnerability to dependence, poor outcomes

Frailty =

Gradual, age-related decline in function, resulting in increased susceptibility to disease and death.



Clegg A, Young J, Iliffe S, Rikkert M, Rockwood K. Frailty in elderly people. Lancet. 2013; 381: 752 - 762

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Frailty Definitions & Assessment Tools

- **Phenotypic/syndromic frailty**: based on signs/symptoms of vulnerable adults
- **Deficit Accumulation**: based on compilation of co-morbidities and multi-morbidities
- Others:
  - Biological: based on sarcopenia
  - Addition of cognitive frailty
  - Psycho-Social frailty
- Research vs Real Life Models
- A tool is only useful if it is used!

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Frailty Assessments - Fried

- **Physical Frailty** (aka Phenotypic or Syndromic Frailty)
  - Established by Dr. Linda Fried
    - **1. Involuntary weight loss (>5% of body weight in last year)**
    - **2. Weakness (decreased grip strength)**
    - **3. Slow walking speed (>6 to 7 seconds to walk 15 feet)**
    - **4. Exhaustion (response to questions regarding effort required for activity)**
    - **5. Low physical activity (Kcals spent per week: males <383Kcal, females <270)**
  - **3 or more = frailty**
  - **1-2 = *pre*-frailty**
  - **0 = robust**

  - Helpful & reproducible, but… doesn't account for the vast milieu of *causes* of frailty (and requires use of hand grip meter)

Fried LP, Tangen CM, Walston J, *et al*. Frailty in older adults: evidence for a phenotype. *J Geront A Biol Sci Med Sci*. 2001(56):146-156.

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Frailty Assessments - Rockwood

- Rockwood's Frailty Index (Deficit Accumulation Frailty)
  - Developed around a conceptual framework that identifies the most frail, vulnerable older adults through cumulative comorbidities and illnesses.
  - Multiple domains of function from which deficits accrue over time – *physiological, functional, psychological, social*
  - Quantified as a Frailty Index (FI) based on number of deficits present over the number of variables measured (40 variables)

Searle SD, Mitniski A, Gahbauer EA, *et al*. A standard procedure for creating a frailty index. *BMC* Geriatrics 2008 (8):24.

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Rockwood's Frailty Index

Table 1: Health Variables and Cut-points for the Frailty Index

List of 40 Variables included in the frailty index	Cut Point
Help Bathing	Yes = 1, No = 0
Help Dressing	Yes = 1, No = 0
Help getting in/out of Chair	Yes = 1, No = 0
Help Walking around house	Yes = 1, No = 0
Help Eating	Yes = 1, No = 0
Help Grooming	Yes = 1, No = 0
Help Using Toilet	Yes = 1, No = 0
Help up/down Stairs	Yes = 1, No = 0
Help lifting 10 lbs	Yes = 1, No = 0
Help Shopping	Yes = 1, No = 0
Help with Housework	Yes = 1, No = 0
Help with meal Preparations	Yes = 1, No = 0
Help taking Medication	Yes = 1, No = 0
Help with Finances	Yes = 1, No = 0
Lost more than 10 lbs in last year	Yes = 1, No = 0
Self Rating of Health	Poor = 1, Fair = 0.75, Good = 0.5, V. Good = 0.25, Excellent = 0
How Health has changed in last year	Worse = 1, Better/Same = 0
Stayed in Bed at least half the day due to health (in last month)	Yes = 1, No = 0
Cut down on Usual Activity (in last month)	Yes = 1, No = 0
Walk outside	<3 days = 1, ≤ 3 days = 0
Feel Everything is an Effort	Most of time = 1, Some time = 0.5, Rarely = 0
Feel Depressed	Most of time = 1, Some time = 0.5, Rarely = 0
Feel Happy	Most of time = 0, Some time = 0.5, Rarely = 1
Feel Lonely	Most of time = 1, Some time = 0.5, Rarely = 0
Have Trouble getting going	Most of time = 1, Some time = 0.5, Rarely = 0
High blood pressure	Yes = 1, Suspect = 0.5, No = 0
Heart attack	Yes = 1, Suspect = 0.5, No = 0
CHF	Yes = 1, Suspect = 0.5, No = 0
Stroke	Yes = 1, Suspect = 0.5, No = 0
Cancer	Yes = 1, Suspect = 0.5, No = 0
Diabetes	Yes = 1, Suspect = 0.5, No = 0
Arthritis	Yes = 1, Suspect = 0.5, No = 0
Chronic Lung Disease	Yes = 1, Suspect = 0.5, No = 0
MMSE	<10 = 1, 11–17 = 0.75, 18–20 = 0.5, 20–24 = 0.25, >24 = 0
Peak Flow	See Table 2
Shoulder Strength	See Table 2
BMI	See Table 2
Grip Strength	See Table 2
Usual Pace	See Table 2
Rapid Pace	See Table 2

The list of health deficit variables included in the FI and how they were coded as deficits.

Table 2: Continuous Variable Cut-points

Variable	Deficit for Men	Deficit for Women	Source of cut point
Peak Flow (liters/min)	≤ 340	≤ 310	Plotted verses frailty index
Body Mass Index (BMI)	<18.5, ≥ 30 as a deficit. 25-<30 as a 'half deficit'	<18.5, ≥ 30 as a deficit. 25-<30 as a 'half deficit'	Published [34]
Shoulder Strength (kg)	≤ 12	≤ 9	Plotted verses frailty index
Grip Strength (GS in kg)	For BMI ≤ 24, GS ≤ 29 For BMI 24.1–28, GS ≤ 30 For BMI >28, GS ≤ 32	For BMI ≤ 23, GS ≤ 17 For BMI 23.1–26, GS ≤ 17.3 For BMI 26.1–29, GS ≤ 18 For BMI>29, GS ≤ 21	Published [15,22]
Rapid pace Walk (sec)	>10	>10	Published [15]
Usual pace Walk (sec)	>16	>16	Plotted verses frailty index

Deficit cut off values for continuous variables by sex and source of cut off.

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CFS9: a pictorial tool to assess frailty

Clinical Frailty Scale*

1 **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 **Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. 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** – These people often have **more evident slowing,** and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 **Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. Terminally Ill - Approaching the end of life. This category applies to people with **a life expectancy <6 months**, who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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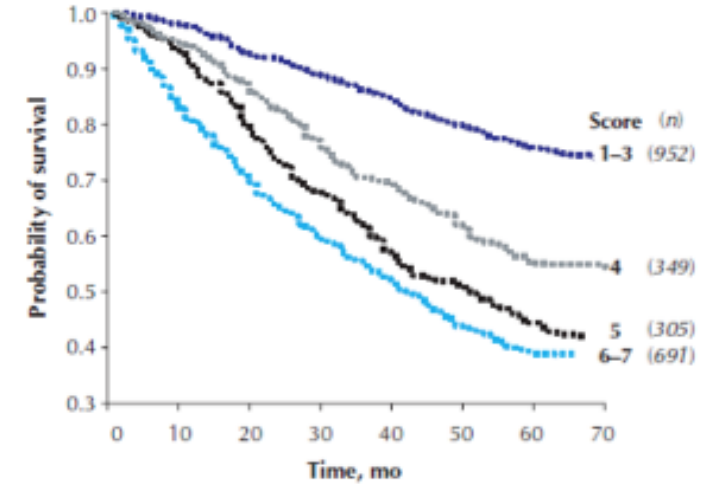
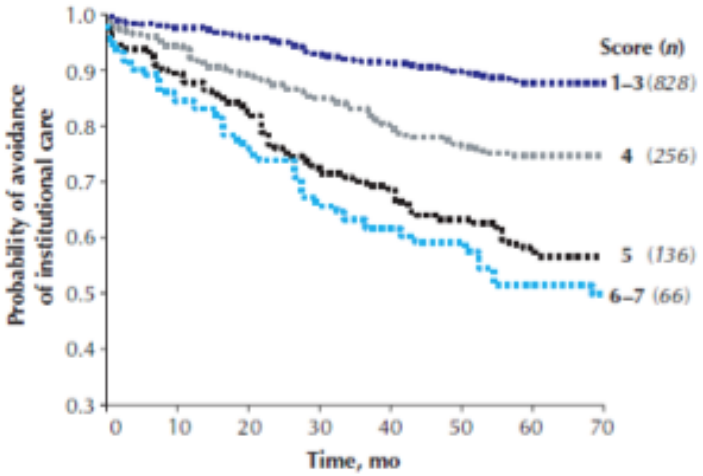
Clinical Frailty Scale (CFS9) Predicts Survival and Institutionalization





Rockwood, K., Song, X., MacKnight, C., Bergman, H., Hogan, D. B., McDowell, I., & Mitnitski, A. (2005). A global clinical measure of fitness and frailty in elderly people. *CMAJ : Canadian Medical Association Journal*, *173*(5), 489–495.

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Edmonton Frail Scale

Domain	Item	0 points	1 point	2 points
Cognition	Clock drawing	No errors	Minor spacing errors	Other errors
Health status	Number of hospital admissions in last year	0	1	>1
	Patient description of overall health	Good	Fair	Poor
Functional dependence	Help needed with number of activities of daily living?	0–1	2–4	5–8
Social Support	Reliable support available?	Always	Sometimes	Never
Medication use	>4 regular medications?	No	Yes	–
	Patient forgets to take medicines?	No	Yes	–
Nutrition	Recent weight loss present?	No	Yes	–
Mood	Often sad or depressed?	No	Yes	–
Continence	Urinary incontinence present?	No	Yes	–
Functional performance	Timed up-and-go	0–10 s	11–20 s	>20 s or unable
Score out of 17				

Scoring:
0-5 = Not Frail
6-7 = Vulnerable
8-9 = Mild Frailty
10-11 = Mod Frailty
12-17 = Severe Frailty

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Biological Definition of Frailty -

REPORT

Sarcopenia: European consensus on definition and diagnosis

Report of the European Working Group on Sarcopenia in Older People

Age Ageing. 2010 Jul;39(4):412-23.

Low muscle mass

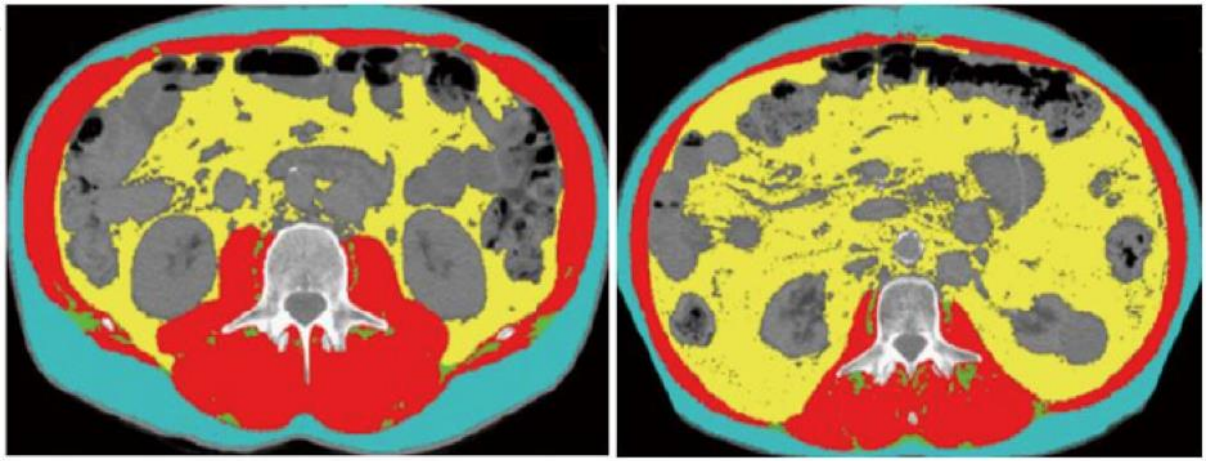
AND

Either:

Low muscle strength

OR

Low physical performance



**Psoas, Thoracic, & **Masseter muscle areas – when low, are predictive of mortality in trauma patients*

**Kaplan et al. JAMA Surgery 2017*

***Tanabe et al. JAMA Surgery 2019*

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Muscle strength & performance:

Other definitions of frailty

- Cognitive Frailty:
  - Simultaneous presence of physical frailty and mild cognitive impairment (MCI); excludes dementia.
  - Both physical frailty and deficit accumulation model of frailty are associated with incident MCI, Alzheimer's Disease pathology, and Dementia (especially vascular type).
  - Cognitive frailty is associated with falls and fall-related fractures, perhaps greater than cognitive impairment or physical frailty alone.

G. Kojima, Y. Taniguchi, S. Iliffe, *et al.* Frailty as a predictor of Alzheimer disease, vascular dementia, and all dementia among community-dwelling older people: a systematic review and meta-analysis. *J Am Med Dir Assoc* .2016(17):881-888.
Tsutsumimoto K, Doi T, Makizako H, *et al*. Cognitive frailty associated with fall-related fracture among older people. *J Nutr Health Aging*. 2018

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What to do with the diagnosis?

Focus on:

- Function: ADL training & supportive care, living situation
- Mobility, Exercise: addressing strength/balance/endurance through exercise, assistive device use
- Nutrition: monitoring weights/BMI, addressing intake, access, ability
- Cognition: screening, social engagement & community, supportive care

- In some cases, a palliative approach is best option
- Frailty intervention studies (nutrition, exercise) show the highest yield for pre-frail individuals.

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What can we do clinically now?

- Be alert to and minimize iatrogenic risks (polypharmacy)
- Integrated services focusing on big picture, quality of life, short and long-term goals of care
- Learn how to refer/connect your patients to community-based services and supports
  - Your local Area Agency on Aging (AAA)
  - Adult Day Services, Home Care, Home Health...
- Recruit experts from other disciplines! Multidisciplinary care is the way! - SW, RD, PT, OT, SLP, RN

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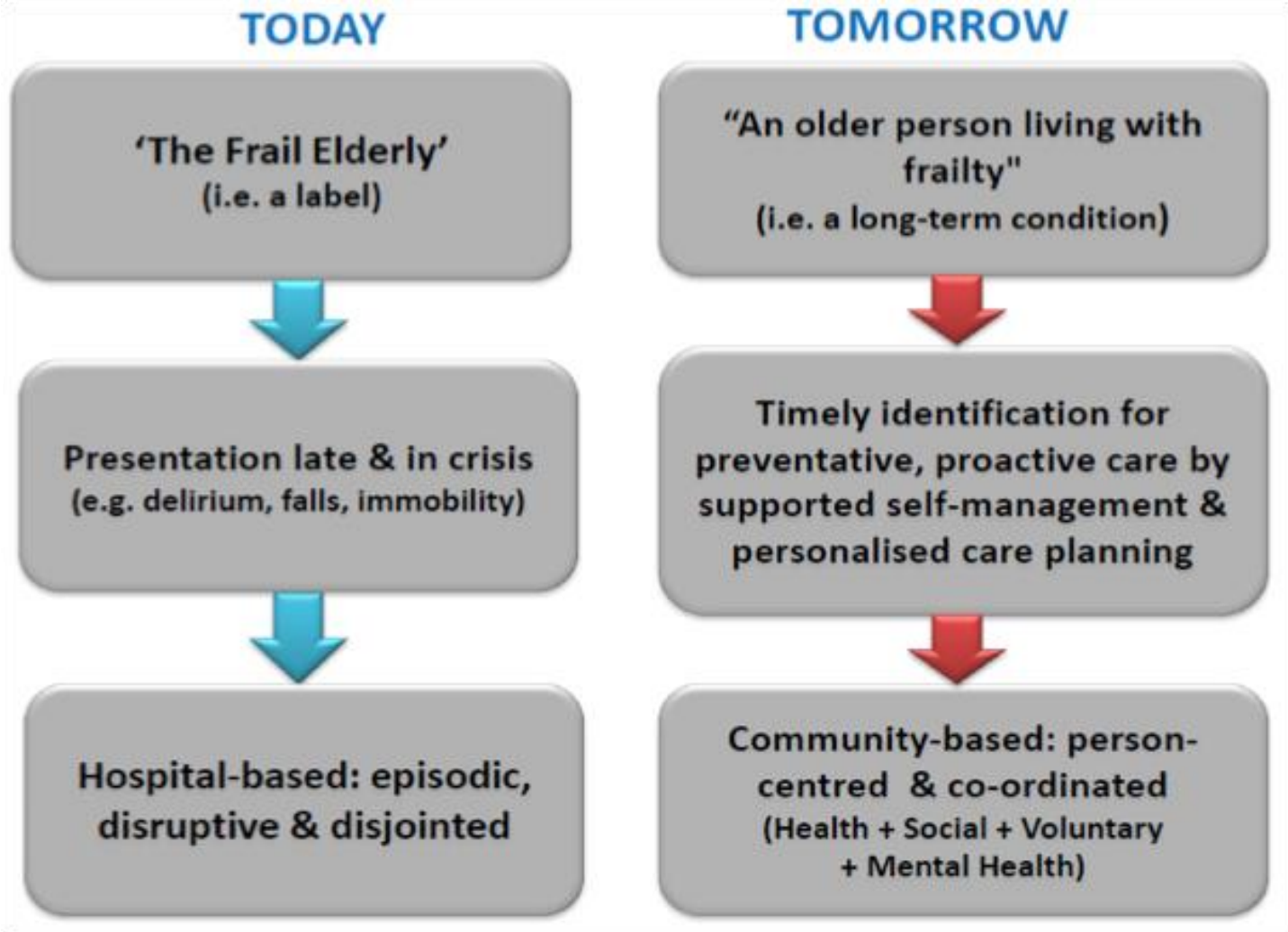
New care model for older people & frailty



Young J. 2014 A primary care-based model for frailty. Kingsfund presentation.

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Thank You!

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