

# Frailty and In-Home Care

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NATIONAL LEADERS IN MEDICINE

# Disclosures

- No relevant disclosures to report

# Objectives

- Gain familiarity the following
  - Definition of frailty
  - Frailty paradigms
  - Assessment of frailty
- Understand differences in prevalence of frailty
- Understand some basic management and treatment

# Case 1: Mr. H

- 96 year old Asian male who presented for an evaluation at the Geriatric Clinic.
  - PMH: HTN, osteoarthritis, inguinal hernia and BPH
  - SH: Lives alone. His children live out of town.
  - His son arranged the appointment but he didn't know the reason.
  - 4 weeks ago he fell down outside while doing yard work and was unable to get back up. He waited for his neighbors to return home and they assisted him and called the ambulance.
- Physical Exam:
  - Imbalance on Progressive Romberg
  - Walked 15 feet in 12 seconds
  - Completed 5 chair stands in 9.5 seconds
  - Strength normal in upper/lower extremity.
  - Short Blessed Test 10 (normal <9)
  - MoCA 18/30 (N>26)

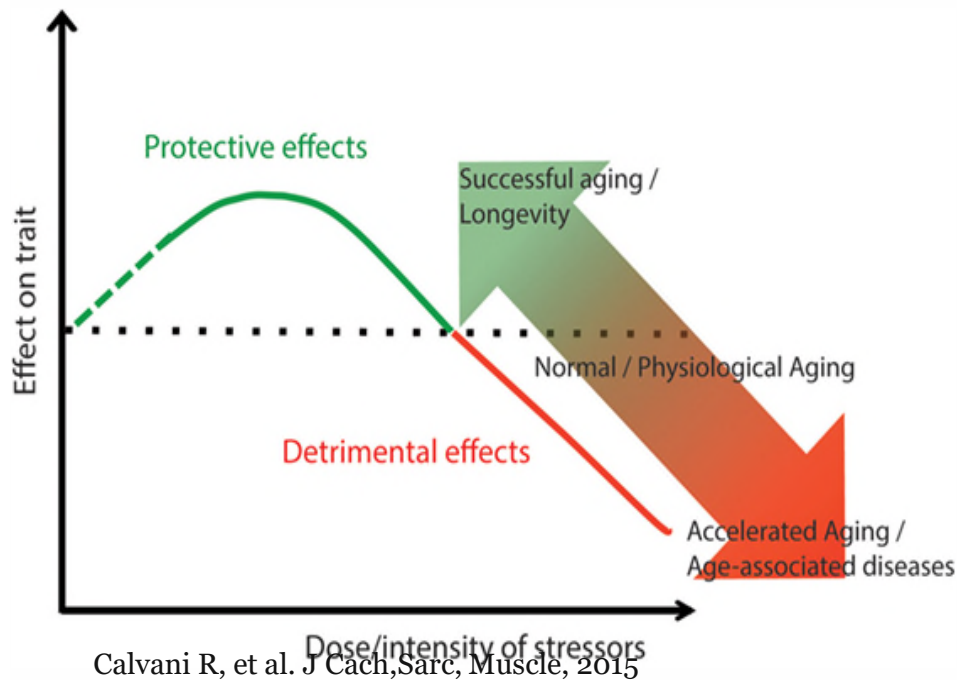
## Case 2: Mrs. B

- 70 year old African American woman returning for primary care in the readmission prevention clinic
  - PMH: HTN, DM, COPD (oxygen dependent), OSA, and SVT
  - Utilization: 3 ER visits in the last month and one hospitalization in the last year. Was admitted up to 5 times in a year before enrolling in the clinic 4 years ago.
  - PMH: Hypertension, Diabetes, COPD, and Hyperlipidemia
  - SH: Her son recently divorced and moved in with her. Stress related to son's divorce. Stairs within her apartment. No tobacco and occasional alcohol. 2 falls in the last year. Assistance with IADLs
  - Examination:
    - Pulmonary examination: 6 minute walk, ambulated 450 feet and required 15 L oxygen with exertion.
    - MoCA score 19
    - Upper and lower extremity strength bilaterally 3-4/5
    - Grip Strength 4/5
    - PHQ9= 8

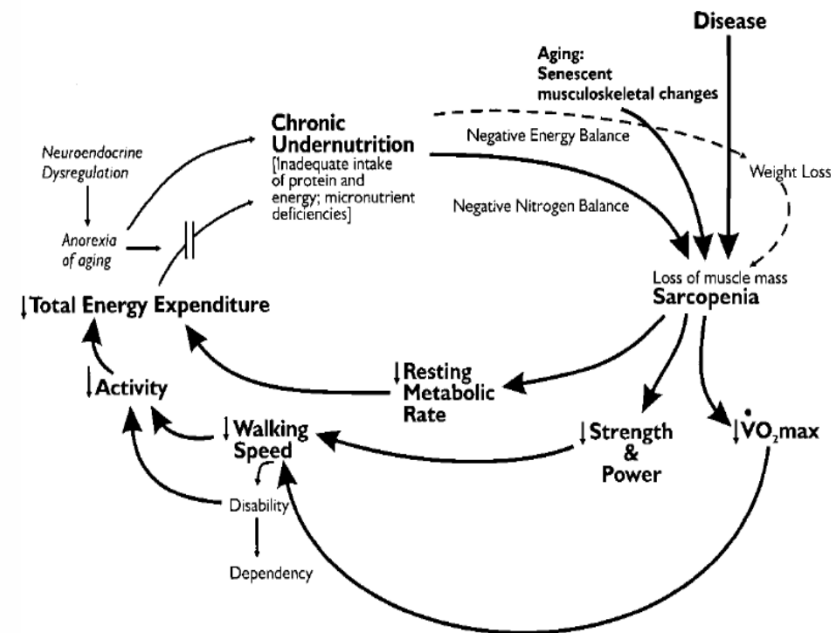
# Definitions of Frailty

- A syndrome associated with multisystem declines in physiologic reserve and increased vulnerability to stressors, resulting in increased adverse outcomes, including disability, hospitalization and death

- Accelerated aging- Accumulation of deficits (Rockwood, 2007)



- Biological syndrome with distinct pathology (Fried et al. 2001)



# Assessment of Frailty

- Limited by definitions and use of the tool
- At least 75 assessment tools
- Most common: Physical Phenotype Model versus broader social/psychological aspects, Frailty index

	<b>Phenotype model</b>	<b>Frailty index</b>
Measurements	Weight loss: Unintentional weight loss by 10 pounds or 5% of body weight over the past 12 months Weakness: significant loss of grip strength Exhaustion: Self-report of feeling tired most of the time Slowness: Long time taken to walk a short distance Low activity: unable to walks or needs assistance	Accumulation of clinical deficits of forty items (ex., loss of hearing, low mood, and tremors). A number of predetermined clinical deficits are assigned, and percentage of presence of these deficits assesses frailty
Outcomes	Pre-frail: Presence of two measurements Frail: Presence of three or more measurements	Analysis of frailty along a gradient
Strengths	Precise definition of frailty clinically reproducible	Extended and flexible items for measurements
Weaknessess	Possibility of missing frail individuals Some items depend on self-reporting	No definite standardization Some items depend on self-reporting

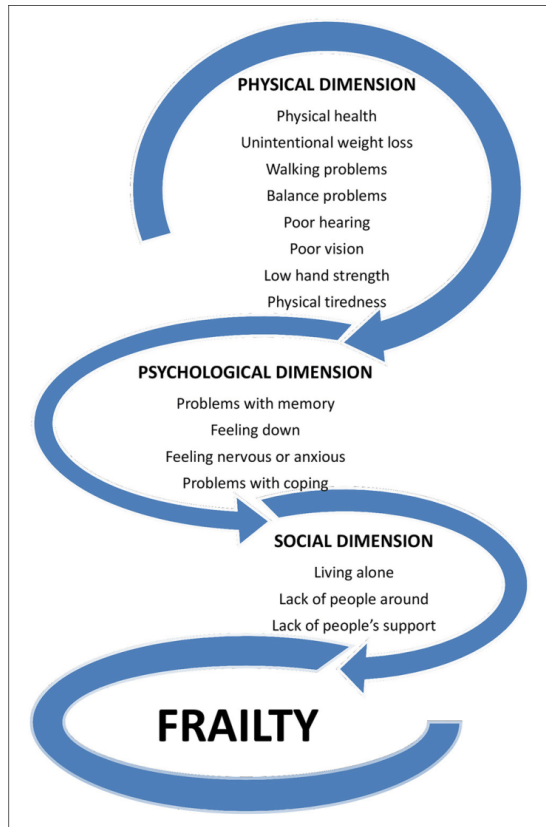
Ali H, et al, Saudi J Kidney Dis Transpl. 2017 Jul-Aug;28(4):716-724.



# Assessment of Frailty

- Reason for assessment
  - Risk Assessment
  - Clinical decision making tool
  - Determining prevalence
  - Target for Intervention
- First determining which paradigm for frailty then pick an assessment tool.
  - Accumulation of Deficits
    - Deficit Accumulation Index
  - Biologic Syndrome
    - Physical Frailty Phenotype (Fried Index)
    - FRAIL Scale

# Combining Viewpoints



**Table 2**  
Defining criteria set of frailty.

Components of frailty	Defining criteria
Vulnerability	Health state of maladaptation Inability to adequately react to stressors Risk of adverse health outcomes
Genesis	Biological ageing & genetic predisposition Risk factors (stressors) Accumulation of damages & dysregulations Exceedance of capacity threshold
Characteristics	Key systems involved Complex system behaviour Heterogeneity in phenotype Multiple triggers with impact on multiple organs/ systems
Phenotype	Progressive non-linear pathway Physical: Loss of muscle mass & strength, unintentional weight loss, reduced activities, exhaustion, slowness (e.g. [33,35,38,71]) Nutritional: Loss of appetite & nutrition sensing, reduction in energy yielding nutrients (e.g.[34,37]) Cognitive: Mild impairment co-existing with physical frailty without dementia [55] Psychological: Decline in motivation & positive mood; possibly a primary, intrinsic vulnerability to emotional stressors with age [24] Social: Loosing social resources & abilities [48] that are important for fulfilling basic social needs [92]
Adverse health-related Outcomes	Disability Amplification of co-morbidities and medication use Dependency Lower quality of life (mental, psychological, social) Increased health care use Premature mortality

Junius-Walker U, et al. Europ J IM, <https://doi.org/10.1016/j.ejim.2018.04.023>

Sacha J, et al. Frontiers in Physiology, 2017

# Frailty: Specialty practice

- Frailty assessments research and clinical practice
  - Oncology
    - Comprehensive Geriatric Assessment (CGA) and Physical Frailty Phenotype (PFP)
  - Cardiology
    - PFP and gait speed
  - Surgery
    - PFP, gait speed, Frailty Index, Edmonton Frail Scale
  - Organ Transplant
    - PFP

# Frailty in the Community

## BRIEF REPORTS

### Prevalence of Frailty in Community-Dwelling Older Persons: A Systematic Review

*Rose M. Collard, MSc,<sup>\*,†</sup> Han Boter, PhD,<sup>‡</sup> Robert A. Schoevers, MD, PhD,<sup>§</sup> and  
Richard C. Oude Voshaar, MD, PhD<sup>\*,§</sup>*

- Systematic Review of Frailty Prevalence, J Am Geriatr Soc 60:1487-92,2012
- 21 cohorts involving 61,500 community-dwelling participants
  - 10.7% frail average
  - 41.6% prefrail average
  - Range from 4.0% to 59.1%.
- Prevalence dependent on definitions and assessment
  - Difference between weighted rates of frailty according to physical phenotype (9.9%) versus broad phenotype (13.6%) was statistically significant ( $\chi^2 = 217.7$ ,  $df = 1$ ,  $P < .001$ ).

# Frailty in the Community

- Prevalence dependent on definitions and assessment
  - physical frailty definitions
    - The weighted average prevalence
      - 9.9% for frailty (95% CI = 9.6–10.2%; 15 studies; 44,894 participants)
      - 44.2% for prefrailty (95% CI = 44.2–44.7%; 13 studies; 41,197 participants).
  - Broad Frailty Phenotype
    - The weighted average prevalence
      - 13.6% had frailty (95% CI = 13.2–14.0%; 8 studies; 24,072 participants)
      - 33.5% had a prefrail state (95% CI = 32.9–34.1%; 4 studies; 19,996 participants)

# Frailty in the Community

- Prevalence according to sex
  - 11 studies enrolled 17,746 women and 22,596 men studied frailty.
    - In women, the weighted average prevalence of frailty was statistically significantly higher (9.6%, 95% CI = 9.2–10.0%) than in men (5.2%, 95% CI = 4.9–5.5%;  $\chi^2 = 298.9$ ,  $df = 1$ ,  $P < .001$ ).
  - Prefrailty prevalence was addressed in six studies involving 10,683 female participants and 17,160 male participants.
    - More prevalent in women (39.0%, 95% CI = 38.1–39.9%) than in men (37.3%, 95% CI = 36.6–38.0%;  $\chi^2 = 8,629$ ,  $df = 1$ ,  $P = .003$ ).
- Prevalence according to age
  - Four studies
    - Increasing prevalence according to age ( $\chi^2 = 6067$ ,  $df = 1$ ,  $P < .001$ ).

# Frailty: Prevalence Predicting Outcomes

Campitelli et al. *BMC Geriatrics* (2016) 16:133  
DOI 10.1186/s12877-016-0309-z

BMC Geriatrics

RESEARCH ARTICLE

Open Access

## The prevalence and health consequences of frailty in a population-based older home care cohort: a comparison of different measures



Michael A. Campitelli<sup>1</sup>, Susan E. Bronskill<sup>1</sup>, David B. Hogan<sup>2</sup>, Christina Diong<sup>1</sup>, Joseph E. Amuah<sup>3</sup>, Sudeep Gill<sup>4</sup>, Dallas Seitz<sup>5</sup>, Kednapa Thavorn<sup>6</sup>, Walter P. Wodchis<sup>7</sup> and Colleen J. Maxwell<sup>8\*</sup>

- Retrospective population-based cohort study of long stay home care clients in Ontario Canada.
- Used the Resident Assessment Instrument for Home Care (RAI-HC) data, RAI-HC embedded tool CHES scale, full frailty Index and modified frailty index.



# Frailty: Prevalence Predicting Outcomes

**Table 1** Baseline characteristics, frailty status, and study outcomes among long-stay home care recipients in Ontario (Continued)

<i>Frailty status</i>	
Full Frailty Index [FI]	
Robust	108,676 (46.3 %)
Pre-Frail	80,155 (34.2 %)
→ Frail	45,721 (19.5 %)
Modified Frailty Index [FI]	
Robust	95,209 (40.6 %)
Pre-Frail	82,107 (35.0 %)
→ Frail	57,236 (24.4 %)
CHESS Scale	
Robust	55,241 (23.6 %)
Pre-Frail	75,763 (32.3 %)
→ Frail	103,548 (44.1 %)
<i>Outcomes<sup>a</sup>one year following index date</i>	
Death	41,044 (17.5 %)
LTC admission	40,144 (17.1 %)
Hospitalization	98,385 (42.0 %)
Hospitalization with ALC stay	31,621 (13.5 %)

ALC Alternative Level of Care, CHESS Changes in Health, End-stage disease and Signs and Symptoms; LTC Long-Term Care  
a - Outcome categories are not mutually exclusive

**Table 3** Summary of agreement between frailty measures

Frailty index comparison	Agreement (%)	Weighted Kappa (95 % CI)
Full Frailty Index [FI] - Modified Frailty Index [FI]	77.0	0.72 (0.72–0.73)
Full Frailty Index [FI] – CHESS scale	43.9	0.28 (0.28–0.29)
Modified Frailty Index [FI] – CHESS scale	42.1	0.22 (0.22–0.23)

CI Confidence interval





# Frailty: Prevalence Predicting Outcomes

**Table 4** Associations between frailty measures and outcomes at one year following index date

Frailty index	Model	Frailty level <sup>a</sup>	Outcomes at one year, risk ratio (95 % CI)			
			Death	LTC admission	Hospitalization	Hospitalization with ALC stay <sup>b</sup>
Full frailty index [FI]	Unadjusted	Pre-Frail	1.47 (1.44, 1.50)	2.21 (2.16, 2.27)	1.19 (1.18, 1.20)	1.44 (1.41, 1.48)
		Frail	2.43 (2.38, 2.49)	3.92 (3.83, 4.01)	1.26 (1.24, 1.28)	1.59 (1.55, 1.63)
	Adjusted <sup>c</sup>	Pre-Frail	1.45 (1.42, 1.48)	2.20 (2.15, 2.26)	1.17 (1.16, 1.19)	1.42 (1.39, 1.45)
		Frail	2.32 (2.27, 2.37)	3.84 (3.75, 3.93)	1.22 (1.20, 1.23)	1.51 (1.47, 1.55)
Modified frailty index [FI]	Unadjusted	Pre-Frail	1.36 (1.33, 1.39)	2.13 (2.08, 2.19)	1.16 (1.15, 1.17)	1.40 (1.37, 1.44)
		Frail	2.26 (2.22, 2.31)	3.64 (3.55, 3.73)	1.25 (1.24, 1.27)	1.57 (1.53, 1.61)
	Adjusted <sup>c</sup>	Pre-Frail	1.35 (1.32, 1.38)	2.11 (2.05, 2.16)	1.15 (1.14, 1.16)	1.38 (1.35, 1.41)
		Frail	2.16 (2.12, 2.21)	3.58 (3.50, 3.67)	1.21 (1.20, 1.23)	1.50 (1.47, 1.54)
CHESS scale	Unadjusted	Pre-Frail	1.30 (1.26, 1.34)	1.39 (1.35, 1.43)	1.17 (1.15, 1.19)	1.30 (1.26, 1.34)
		Frail	2.36 (2.30, 2.43)	1.96 (1.91, 2.02)	1.40 (1.38, 1.41)	1.69 (1.64, 1.74)
	Adjusted <sup>c</sup>	Pre-Frail	1.29 (1.25, 1.33)	1.40 (1.36, 1.44)	1.15 (1.13, 1.17)	1.28 (1.25, 1.32)
		Frail	2.27 (2.21, 2.33)	1.99 (1.94, 2.04)	1.34 (1.32, 1.36)	1.62 (1.58, 1.67)

ALC Alternative Level of Care, CI Confidence Interval, ED Emergency Department

a – Robust individuals serve as the reference category

b – Individuals hospitalized without an ALC stay removed from analysis (N = 66,764)

c – Adjusted for age, sex, and number of ADG comorbidity categories

# Frailty: Quality of Life

- Kojima G, et al. J Epidemiol Community Health 2016;70:716–721.
  - Systematic Review – 13 studies (11 cross-sectional/2 prospective)
    - 11 cross-sectional studies consistently showed an association between frailty and worse quality of life, regardless of the different frailty criteria and quality-of-life tools used.
    - Most common assessment used Fried Phenotype
      - Although physical frailty used effects on mental components on quality of life significant. if defined mainly physically, can have significant
  - Meta Analysis
    - Four cross-sectional studies compared quality of life measured by the 36-Item Short Form Health Survey (SF-36) across frail, prefrail and robust defined by Fried criteria.

# Frailty: Determining needs for services

- Both the frailty phenotype and the frailty index are associated with the use of health care in the community
- The frailty phenotype is also associated with admission to nursing homes
- Tilburg Frailty Indicator seems to be linked to the use of a wide range of health services

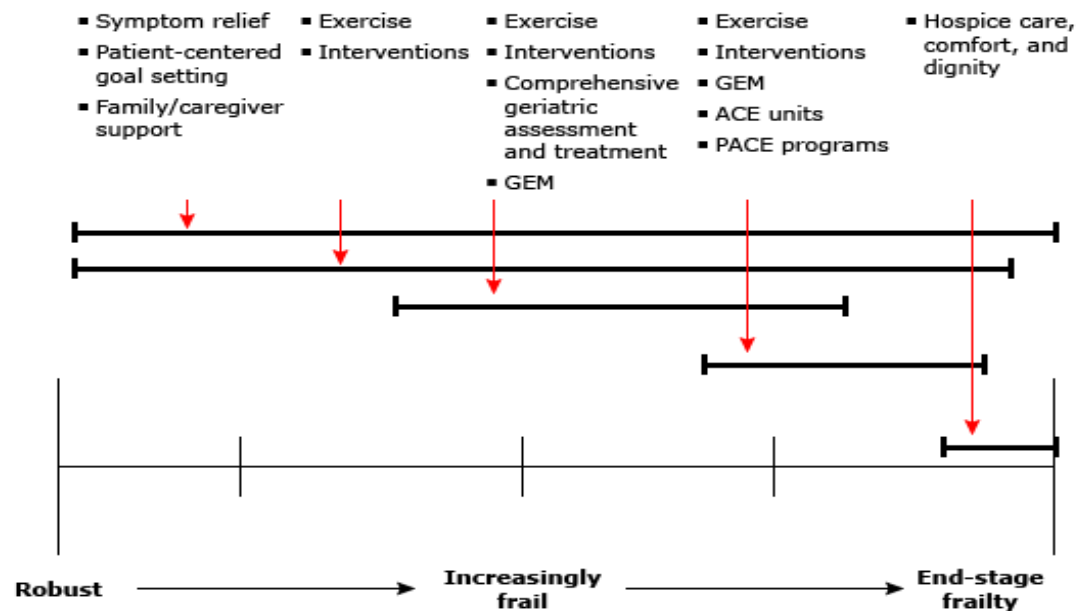
Blodgett J, et al Arch Gerontol Geriatr. 2015.

Rochat S, et al. Age Ageing. 2010;39(2):228–33.

Bandein-Roche K, et al. J Gerontol A Biol Sci Med Sci. 2006;61(3):262–6.

# Frailty: Interventions

- Goals of Interventions
  - Improve quality of life
  - Decrease prevalence of frailty
  - Decrease adverse outcomes from frailty





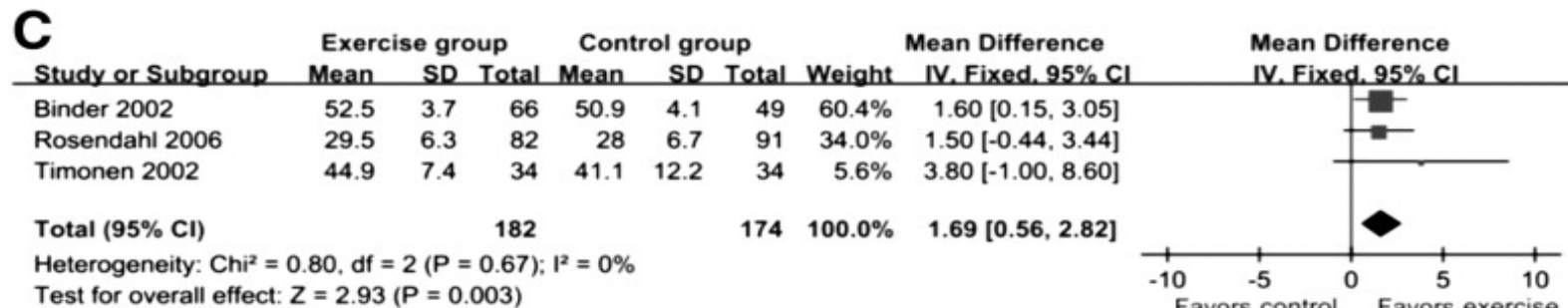
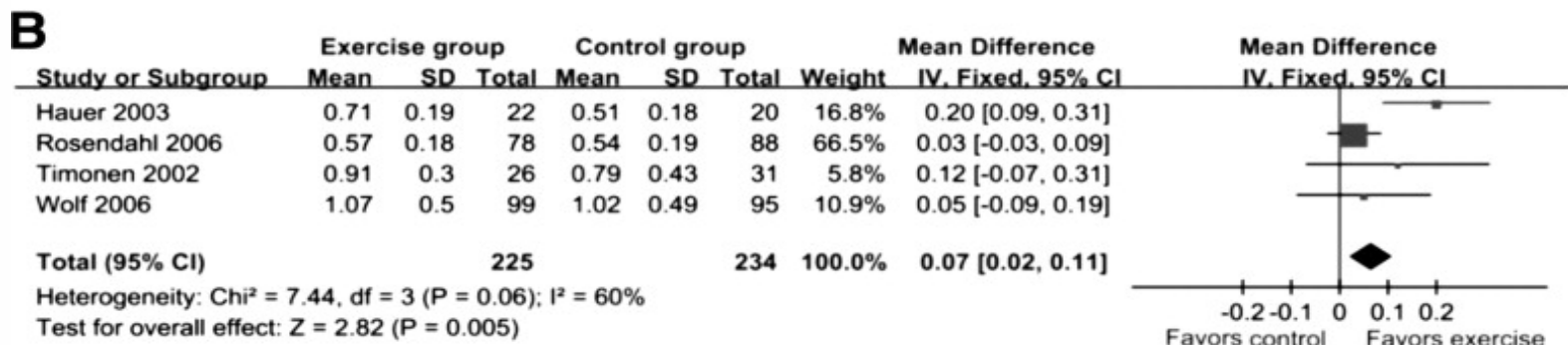
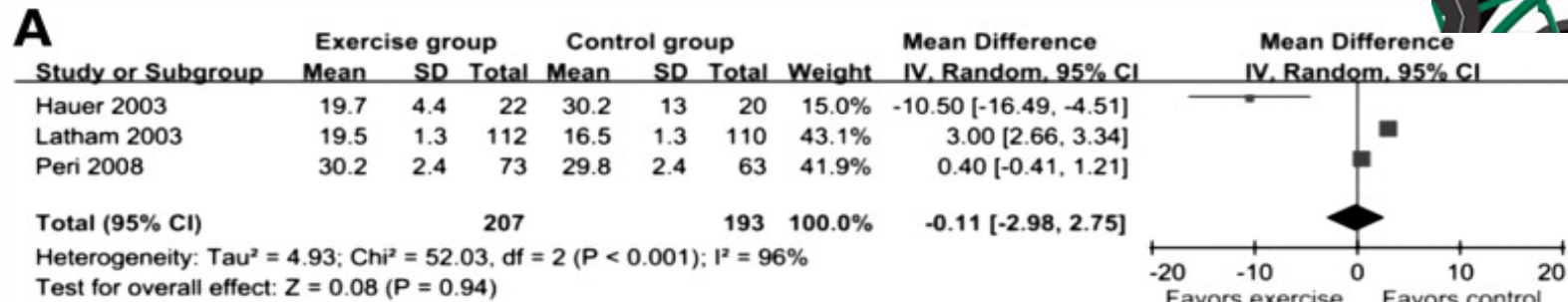
# Frailty Interventions: Exercise

- Many studies on exercise intervention for other disease processes show improvement.

DISEASE	STUDY	RESULTS
<b>CHRONIC PAIN</b>  Tse MM, et. al. J Clin Nursing. 2011 ;20(5-6) :635-644	75 NH patients <ul style="list-style-type: none"> <li>8 week physical exercise program one hour per week</li> <li>15 minute warm-up, muscle strengthening, stretching, balance, acupressure and massage</li> <li>Specific exercises to relieve pain in specific areas.</li> <li>Pain, ROM, ADLs and Mobility measured</li> </ul>	<ul style="list-style-type: none"> <li>Significant difference in pain</li> <li>Significant increase in mobility but none for ADLs in the pain group.</li> <li>No significant increase in ADLs or mobility in the no pain group.</li> <li>Positive relationship between ADLs and mobility</li> </ul>
<b>MOBILITY AND FALLS</b>  Lenze EJ, et al. J Am Med Dir Assoc 2012;13(8):708-12	<ul style="list-style-type: none"> <li>Enhanced Medical Rehabilitation (EMR), a high-intensity and high-engagement physical activity</li> <li><b>Patient directed</b></li> <li><b>Increased rehabilitation intensity</b></li> <li><b>Frequent feedback on effort and progress</b></li> <li>26 postacute rehabilitation participants</li> <li>Randomized controlled trial</li> </ul>	Improved gait speed and 6 minute walk compared to standard of care.
<b>DEPRESSION</b>  Lenze EJ,et al. Arch Fr Pediatr. 1988; 45(3): 205–206. Dunn AL et al Am J Prev Med.2005;28(1): 1–8	<ul style="list-style-type: none"> <li>Enhanced Medical Rehabilitation</li> <li>Aerobic exercise at a dose consistent with public health recommendations (17.5-kcal/kg/week )</li> </ul>	<ul style="list-style-type: none"> <li>Significant improvement in depressive symptoms and function.</li> <li>effective treatment for major depressive disorder of mild to moderate severity</li> </ul>
<b>COGNITION</b>  Kelly, ME, et al. Ageing Res. Rev. 2013. <a href="http://dx.doi.org/10.1016/j.arr.2014.05.002">http://dx.doi.org/10.1016/j.arr.2014.05.002</a> Law LLF, et al.. Age and Ageing. 2014 ; 0 :1–8, doi: 10.1093/ageing/afu055	<ul style="list-style-type: none"> <li>Resistance training versus stretching/toning.</li> <li>Tai Chi versus no exercise</li> <li>Functional task exercise, light stretching, unilateral movement, bimanual movement, and task switching</li> </ul>	<ul style="list-style-type: none"> <li>Resistance training has a greater impact on reasoning</li> <li>Tai Chi showed significant improvements over no exercise in measures of attention and processing speed</li> <li>Significant effects, over cognitive training, on cognitive domains, functional status and everyday problem solving ability.</li> </ul>



# Frailty Interventions: Exercise



Chou CH et al. 2012 Arch Phys Med Rehabil

# Frailty Interventions: Exercise



- **Normal gait speed**
  - mean improvement 0.07 m/s; [95% CI, 0.04–0.09]
- **Fast gait speed**
  - mean improvement 0.08 m/s; [95% CI, 0.02–0.14]
- **Short physical performance battery scores**
  - mean improvement, 2.18; [95% CI, 1.56–2.80]
- no consistent effect on balance or ADL functional mobility.
- Evidence comparing different modalities of exercise was scarce

Gine-Garriga M, et al. Arch Phys Med Rehabil 2014;95:753-69

# Frailty Interventions: Exercise

- HOPE

- The Home-based Older People's Exercise programme pilot
  - Clegg A, et al. Age and Ageing 2014;43:687-695
- Strengthening exercises for muscle groups required for basic mobility skills like getting out of bed, standing up from a chair, walking a short distance and toileting
- Stratified based on performance on the timed-up-and-go test (TUGT).
  - $\geq 30$  sec - Level 1
  - 20-29 sec- Level 2
  - $<20$  s - Level 3

Clegg A, et al. Age and Ageing 2014;43:687-695





# Frailty Interventions: Exercise

- HOPE
  - 12 week intervention (<15 minutes to complete/ 3 times a day/ 5 days of week)
    - 5 repetitions of each exercise routine -> 10-15 repetitions
    - Weekly support from therapist 5 face-to-face and 7 telephone calls.
  - Participants
    - 40 intervention/30 control

# Frailty Interventions: Exercise

- Primary outcome: Mobility as measured by TUGT
- Secondary outcome: Barthel ADL, Euro QOL Group 5 Dimension Self-Report Questionnaire, and Geriatric Depression Scale.
- Outcome
  - Non-significant trend towards a clinically important improved outcome in the intervention group. No differences in secondary outcome.

# Frailty Interventions: Exercise



- Systematic review of 9 articles of frail older adults in an exercise intervention program from 2003-2015
  - Benefits
    - 3 improved falls
    - 4 on enhancement of mobility
    - 1 enhancement of balance
    - 2 improvement in functional ability
    - 5 improved muscle strength
    - 1 improved frailty based on the Fried's criteria

De Labra C et.al BMC Geriat 2015;15:154

# Frailty Interventions: Nutrition



- Preventive Effect of Protein-Energy Supplementation on the Functional Decline of Frail Older Adults With Low Socioeconomic Status: A Community-Based Randomized Controlled Study

- Overall physical functioning did not change in the control group but improved by 5.9% in the intervention group.
- The short physical performance battery score declined by 12.5% in the control group, but remained stable in the intervention group.
- Gait speed decreased in both groups, but to a greater extent in the control group (11.3%) compared with the nutrition intervention group (1.1%).
- The Timed Up and Go score decreased by 11.3% in the controls, whereas it increased by 7.2% in the nutrition group.
- There were no changes in either group in hand grip strength or 1-legged standing performance.

Kim CO, et al. J Gerontol A Biol Sci Med Sci 2013;68:309-16



# Frailty Interventions: Nutrition

- Dietary protein intake in community dwelling frail and institutionalized elderly people: scope for improvement
- RCT: 24 weeks of dietary protein supplementation on muscle mass, strength, and physical performance in 65 frail older people, defined by Fried's criteria
  - Skeletal muscle mass and type I and II muscle fibers did not change in any group.
  - Muscle strength (leg extension strength) increased from 57.5 to 68.5 kg in the protein group compared with an increase from 57.5 to 63.5 kg in the placebo group.
  - Physical performance (measured with the short physical performance battery) improved significantly from 8.9 to 10.0 of 12 points in the protein group, but did not change in the placebo group (from 7.8 to 7.9 points).

Tieland M, et al. Eur J Nutr 2012;51:173-9

# Frailty Interventions: Behavior Change

- Exploratory Systematic Review
- 22 interventions in 19 eligible trials
- Assessment
  - 19 physical function outcomes
  - 4 behavioral outcomes
- Effectiveness
  - At most 50% in behavior and 42% on physical functioning
  - Techniques
    - Instruction on how to perform behavior, adding object to environment, restructuring environment
    - Functions of education and enablement

Garner et al. BMJ Open 2017;7

# Frailty: Home care interventions



- Using the interRAI Home Care Instrument
  - RAI: Comprehensive geriatric assessment tool validated for use in different settings
    - Home care interventions
  - Translation into practice
    - Consider home care agency evaluations and documentations in evaluating your interventions.

# Frailty: Home-Based Care

- Effects of home-based primary care on Medicare costs.

Table 3. Medicare Costs According to Frailty Category

Frailty Category	Cases, n = 722	Controls, n = 2,161	P-Value
Medicare-eligible months (95% CI)	23.3 (22.1–24.5)	24.2 (23.6–24.9)	.18
JEN Frailty Index, \$ (95% CI) <sup>a</sup>			
0–3 (low)	22,611 (15,667–29,554)	19,146 (16,076–22,217)	.37
4–6 (medium)	42,223 (36,670–47,775)	43,383 (39,781–46,985)	.73
≥7 (high)	58,689 (50,946–66,432)	76,827 (70,840–82,814)	<.001

The follow-up period began in the month after the index month and extended until the month of death, last month of fee-for-service eligibility, or end of the study period in December 2008.

<sup>a</sup> The JEN Frailty Index sums the presence (score = 1) or absence (score = 0) of 13 categories of illness linked to need for long-term care services, including institutionalization and healthcare costs.

DeJonge KE, et al. J Am Geriatr Soc 2014, 62:1825-1831



# Frailty Intervention: Multifactorial

- Multifactorial interdisciplinary program
  - Physical therapy, psychologist and health care worker.
  - Decreased prevalence of frailty compared with usual care
- RCT 241 frail older adults recently discharged from rehabilitation.
  - Multifactorial focus on gait speed, mobility related disability, achievement of mobility related goals, and self report of participation in multiple areas of life.
    - No change in gait speed
    - Improvement in all other areas.
- Focused intervention on specific frailty components results in improvements.

Michel JP, et al. Clin Geriatr Med 2015;31:375-387

# Frailty Interventions: Multifactorial Intervention

Effects of a primary care based multifactorial intervention on physical and cognitive frailty

- Randomized clinical trial
- 347 participants completed
  - Mean age 77.3 years
  - prefrail 25.3% and 75.3% frail
- 12-week multidisciplinary intervention or usual care.
  - exercise training, intake of hyperproteic nutritional shakes, memory training, and medication review
- Outcomes
  - Physical Dimensions: Short Performance Physical Battery, Handgrip dynamometer, functional reach, unipedal station test of balance
  - Neuropsychological performance battery 6 tests
  - Number of medications

Romera-Liebana L, et al. J Gerontol A Biol Sci Med Sci, 2018, Vol. 00, No. 00, 1–7  
doi:10.1093/gerona/glx259

# Frailty Interventions: Multifactorial Intervention

**Table 2.** Change in Physical Performance Measures and Prescriptions Between Intervention and Control Groups at 3 and 18 mo

	Control Group N = 176	Intervention Group N = 176		Adjusted Mean Difference (95% CI) Between Groups (IG-CG) <sup>a,b</sup>	p Value	SES <sup>c</sup>
	Mean (SD) <sup>a</sup>	Mean (SD) <sup>a</sup>				
Physical tests						
SPPB (range 0–12)						
Pre-I	7.3 (2.4)	7.1 (2.3)			<.001	1.18
Post-3 mo	6.8 (2.3)	8.1 (2.2)	→	1.58 (1.29–1.86)		
Post-18 mo	7.0 (2.6)	8.1 (2.3)		1.36 (0.89–1.83)	<.001	0.69
Handgrip (kg)						
Pre-I	16.5 (7.4)	16.5 (7.7)			<.001	1.12
Post-3 mo	15.8 (6.9)	18.6 (7.7)	→	2.86 (2.32–3.41)		
Post-18 mo	15.7 (7.8)	18.2 (7.9)		2.49 (1.09–3.89)	.001	0.41
Functional reach (cm)						
Pre-I	82.2 (9.3)	80.7 (10.1)			<.001	0.96
Post-3 mo	80.7 (8.8)	83.5 (9.3)		4.34 (3.35–5.32)		
Post-18 mo	79.7 (10.5)	82.7 (10.7)		4.52 (2.32–6.72)	<.001	0.47
Unipodal station (seconds)						
Pre-I	8.2 (9.7)	6.9 (8.0)			<.001	0.75
Post-3 mo	7.3 (9.2)	9.6 (9.1)		3.58 (2.57–4.59)		
Post-18 mo	7.7 (9.0)	9.3 (8.7)		2.98 (1.11–4.84)	.002	0.37
Number of drugs/day						
Pre-I	6.6 (3.8)	7.7 (3.2)			<.001	0.99
Post-3 mo	7.2 (4.0)	6.9 (3.2)	→	–1.39 (–1.69––1.10)		
Post-18 mo	7.5 (4.1)	7.5 (3.4)		–1.09 (–1.71––0.47)	.001	0.37

# Frailty Interventions: General Management

- No screening tool is recommended
- Recognition
  - All encounters with health and social care include an assessment of some aspect of frailty
    - Gait speed
    - Timed-up-and-go test
    - PRISMA 7 (Program of Research on Integration of Services for the Maintenance of Autonomy)
- Management
  - Holistic medical review based on principles of comprehensive geriatric assessment

Turner G et al. Age and Ageing 2014; 43: 744–747

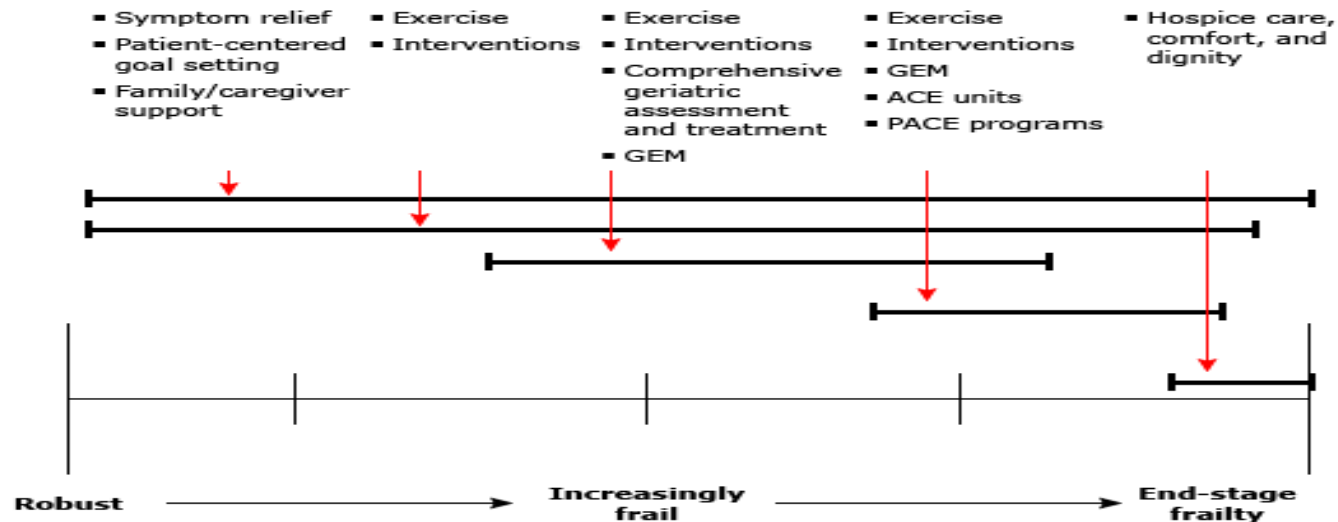
# Frailty: Recommendations for providers

**Frail older adults are living at home in the community and we can make an impact on their outcomes!**

1. Recognize components of frailty
  1. Develop proficiency in some component measure, i.e. gait speed or TUGT
  2. Use some measure of ADLs and social involvement
2. Exercise prescription and nutritionist referral is usually indicated in the pre-frail.
3. Consider referral for home health care services, adult day care or integrated services (PACE program)
  1. Follow up for progress on desired components

# Case 1 and 2: Interventions

- Where are these patients likely on the continuum?
- What interventions apply to each patient to address the following?
  - Improve quality of life
  - Decrease components of frailty
  - Decrease adverse outcomes from frailty



# Case 1: Mr. H

- 96 year old Asian male who presented for an evaluation at the Geriatric Clinic.
  - PMH: HTN, osteoarthritis, inguinal hernia and BPH
  - SH: Lives alone. His children live out of town.
  - His son arranged the appointment but he didn't know the reason.
  - 4 weeks ago he fell down outside while doing yard work and was unable to get back up. He waited for his neighbors to return home and they assisted him and called the ambulance.
- Physical Exam:
  - Imbalance on Progressive Romberg
  - Walked 15 feet in 12 seconds
  - Completed 5 chair stands in 9.5 seconds
  - Strength normal in upper/lower extremity.
  - Short Blessed Test 10 (normal <9)
  - MoCA 18/30 (N>26)

## Case 2: Mrs. B

- 70 year old African American woman returning for primary care in the readmission prevention clinic
  - PMH: HTN, DM, COPD (oxygen dependent), OSA, and SVT
  - Utilization: 3 ER visits in the last month and one hospitalization in the last year. Was admitted up to 5 times in a year before enrolling in the clinic 4 years ago.
  - PMH: Hypertension, Diabetes, COPD, and Hyperlipidemia
  - SH: Her son recently divorced and moved in with her. Stress related to son's divorce. Stairs within her apartment. No tobacco and occasional alcohol. 2 falls in the last year. Assistance with IADLs
  - Examination:
    - Pulmonary examination: 6 minute walk, ambulated 450 feet and required 15 L oxygen with exertion.
    - MoCA score 19
    - Upper and lower extremity strength bilaterally 3-4/5
    - Grip Strength 4/5
    - PHQ9= 8



# Take Home Messages

- Frailty is a complex syndrome which results in increased adverse outcomes.
- Recognizing components of frailty and risk of frailty should be evaluated in all community dwelling adults
- Exercise, nutrition, and multidomain interventions in combination do show promise in improvement in components of frailty and quality of life.
- Home based primary care should be considered in the most frail.

THANK YOU

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