Frailty and Aging – Managing from a Community Perspective

Dr. John Puxty
puxtyj@providencecare.ca

Learning Objectives

The participant will be able to:-

- appreciate the importance of identifying frailty as a marker for vulnerable community dwelling seniors
- identify potentially remediable risk factors for frailty
- describe the key components of a strategy to minimize frailty and its negative consequence

Shakespeare's Seven Age of Man

All the world's a stage, And all the men and women merely players: They have their exits and their entrances; And one man in his time plays many parts, His acts being seven ages: .....

Last scene of all, That ends this strange eventful history,
Is second childishness and mere oblivion, sans teeth, sans eyes, sans taste, sans everything.

Is it frailty and functional decline inevitable?

Jeanne Calment lived to 122
She smoke, drank and rarely exercised!

4

Defining Frailty

"A physiologic syndrome characterized by decreased reserve and resistance to stressors, resulting from cumulative decline across multiple physiologic systems, and causing vulnerability to adverse outcomes"

(Fried et al. 2003)

Or in other words –
Vulnerability to adverse outcomes resulting form an interaction of physical, socio-economic and co-morbidity factors

What do you understand by the term "Frail Elderly "?



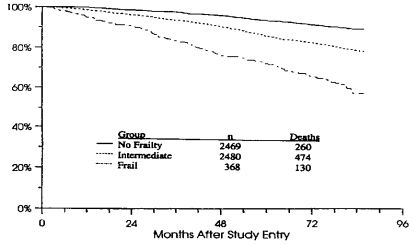





Measuring Frailty

- Cumulative Physiological Dysfunctions
  - presence of abnormalities in 3 of haematological, inflammatory, hormonal, adiposity, neuromuscular, or micronutrient systems predictive of frailty phenotype (Fried et al 2009)
- Phenotype model
  - Weight loss, fatigue, low energy expenditure, slow gait, weak grip (Fried et al 2001)
  - Additional components: cognitive impairment, mood, disability (Sourail et al 2010)
- Cumulative Deficits (Frailty index)
  - CSHA identified 92 variables (Rockwood and Mitnitski 2001)
  - 10 year outcome suggested 36 variables predictive (Song, Mitnitski and Rockwood 2010)
  - CGA 10 domains plus co-morbidities (Jones, Song and Rockwood 2004)

SURVIVAL CURVES OF FRAILTY (Phenotype model)



Prevalence of Frailty

- Review of 21 Community studies (Phenotype model) suggest prevalence of 9.9% (Collard et al 2012)
  - Higher in women (9.6 vs 5.2%)
  - Increases with age
    65-69: 4%, 70-74: 7%, 75-79: 9%, 80-84: 16%, 85>: 26%
- Comparison of Phenotype models vs Frailty Index within CSHA 16.5 vs 23% (Rockwood, Andrew, and Mitnitski 2007; Song, Mitnitski and Rockwood 2010)
- Social vulnerability increases risk
  - 32.5% 5 year mortality vs 10.8% (Andrew et al 2012)
- Comorbidity commonly present
  - 68-75% of frail individuals have 2 or more CD's (Fried at al 2004, Theou et al 2012)
  - Increases risk of functional impairment and mortality

Frailty is a “dynamic state”

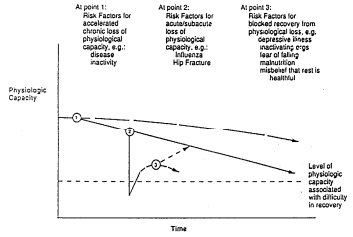


Figure 2. Conceptual model of how risk factors cause frailty.

Determinants of Frailty

- Vulnerability to adverse outcomes resulting form an interaction of :
  - Physical
    - Extreme age
    - Weight loss
    - Fatigue/Inactivity/Poor grip strength
    - Slow gait
  - Socio-economic
    - Isolation
    - Caregiver gaps
    - Poverty: gender and immigration status
  - Co-morbidity factors
    - Impaired cognition/mood
    - Polypharmacy especially sedative use
    - Multiple chronic diseases

Physical Predictors of Frailty

- Extreme age

- Despite stereotypes most of the elderly age well!
- Most of our images are based on the frail sub-set who frequently use medical services.
- Generally normal aging in associated with a reduction in functional reserve capacity in tissues and organs
- Proportion with abnormal aging increases with age

Physical Predictors of Frailty

- Extreme age
- Weight loss:
  - 10% of seniors in community malnourished
  - 20-30% individual in acute care or LTC malnourished
  - 30% early AD present with weight loss


13

Physical Predictors of Frailty

- Extreme age
- Weight loss
- Fatigue/Inactivity/Poor grip strength
  - Fatigue may be linked to underlying issues such as cardiopulmonary disease, anemia, metabolic/endocrine abnormalities etc
  - Important appreciate sarcopenia not inevitable
  - Impact of secondary loss
    - 1 day of bed rest = 1% muscle loss
    - 14-21 day of bed rest = immobile elder!

14

Physical Predictors of Frailty

- Extreme age
- Weight loss
- Fatigue/Inactivity/Poor grip strength
- Slow gait


15

Socio-Economic Predictors of Frailty

- Isolation
  - 93% live in private households.
  - Of these 2/3 live with family.
  - Only 14% men live alone compared to 34% of women.

16

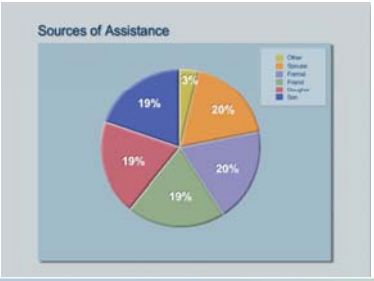
Socio-Economic Predictors of Frailty

- Isolation
- Caregiver gaps

17

Aging and Care-giving

- Estimated that 80% of care by informal caregivers



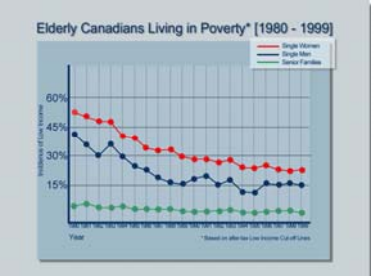
Aging and Care-giving

- Estimated that 80% of care by informal caregivers
- However:
  - 18% of those over 65 have no living offspring.
  - Nearly 20% have family living more than 90 minutes away by car.
  - Extremely old have old relatives.
  - Seniors are often caregivers themselves!

Socio-Economic Predictors of Frailty

- Isolation
- Caregiver gaps
- Poverty

The Elderly and Finance 2001



Co-Morbidity Predictors of Frailty

- Impaired cognition/mood
  - Worsens outcomes
  - Increased LOS and ALC
  - Increased likelihood of functional decline
  - Increased risk of ADR

22

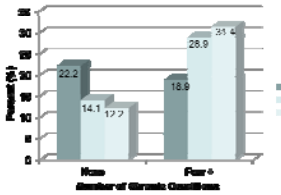
Co-Morbidity Predictors of Frailty

- Impaired cognition/mood
- Polypharmacy especially sedative use

23

Co-Morbidity Predictors of Frailty

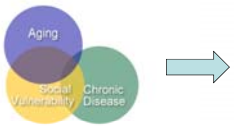
- Impaired cognition/mood
- Polypharmacy especially sedative use
- Multiple chronic diseases



Complex presentations
Modified outcomes
Potential for conflicting care plans and ADRs

24

Putting them together



Frail Elderly

- Increased impact of a "illness" on function and ability to cope
- Increased risk of other diseases
- Increased likelihood of hospitalization
- Increased challenges to health care providers
- Increased LOS and costs with worsening of outcomes

Traditional medical approaches do not cater for the heterogeneity of disease presentation in the frail elderly!

The complexity of the clinical picture of acute illness in the elderly is therefore potentially complicated by aging physiological changes co-existing with social vulnerabilities and co-morbidity. This often results in an atypical presentations of illness.

26

Treatment of Frailty

- Prevent dwindles and optimize co-morbidities
  - Early identification of onset of frailty with targeted interventions (promoting healthy aging!)

27

Treatment of Frailty

- Prevent dwindles and optimize co-morbidities
  - Early identification of onset of frailty with targeted interventions (promoting healthy aging!)
    - Exercise
    - Nutrition supplement (?)
    - Vitamin D (?)
    - Optimize Chronic Disease Management Strategies
      - Identification
      - Education patient/families
      - Individualized application of evidence-based guidelines
      - Proactive use of Community Supports Network
      - Coordinated care

28

Treatment of Frailty

- Prevent dwindles and optimize co-morbidities
- Early detection of acute illness and polypharmacy (Geriatric Giants or atypical presentation)

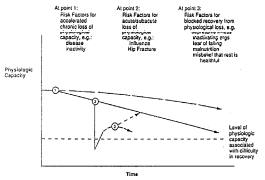


Figure 2. Conceptual model of how risk factors cause frailty.

29

Treatment of Frailty

- Prevent dwindles and optimize co-morbidities
- Early detection of acute illness and polypharmacy (Geriatric Giants or atypical presentation)
- Mobilize
  - Bed is BAD
  - Minimize Muscle Wasting

30

Metabolic Equivalent of Task (METS)

Anything is better than doing nothing!!

- 0.9 MET = sleeping (daily muscle loss of 1.3% to 3%).
- 1.0 MET = sitting
- 1.8 MET = writing, typing, desk work
- 2.3 MET = walking, strolling, (slowly)
- 3.5 MET = light moderate exercise
- 8 MET = jogging
- 10 MET = jumping rope

Challenges to Mobilizing

How many times have you heard?…

- *"I need to rest to get stronger first"*
- *"I'm not going to kitchen group because I need to save myself for physio."*
- *"At home the PSW doesn't do anything for me."*
- *"If I can't go back to my home, there is no point in doing anything. This is all a waste of time."*

Challenges to Mobilizing

- Pain
- Decreased motivation
- Decreased problem solving
- Learned non-use
- Staffing
- Delirium
- Cognitive issues – impulsivity, poor judgment
- Fear

Treatment of Frailty

- Prevent dwindles and optimize co-morbidities
- Early detection of acute illness and polypharmacy (Geriatric Giants or atypical presentation)
- Mobilize
  - Bed is BAD
  - Minimize Muscle Wasting
- Optimize environment

34

Treatment of Frailty

- Prevent dwindles and optimize co-morbidities
- Early detection of acute illness and polypharmacy (Geriatric Giants or atypical presentation)
- Mobilize
  - Bed is BAD
  - Minimize Muscle Wasting
- Optimize environment
- Maximize community and socio-economic supports

35

Joe's Story

- 86 never married, loner, living in older house
- Retired owner of transportation business
- Complains of 'cow-boy' legs with painful limitation of mobility
- Hasn't left home in over a year
- PMH DM, OA, HTN, CCF
- Is Joe Frail?

- Fell at home and unable to rise
- Attributes it to meds so he stops them!

36

Minimize Risk Factors

Review medications and their use

Minimize Risk Factors

Review the environment for potential hazards

Minimize Risk Factors

Health Professionals Goals
- Improve gait and safety
- Modify environment
- Encourage increased activity
- Reduce isolation
- Improve his mood

vs

George's Goals
•Stay where he is
•Remain in control
•Avoid new expense

That's All Folks!