Frailty Research

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Canadian Frailty Network (CFN)
Overview

- Aging & Frailty
- Frailty in Canada’s Healthcare System
- Frailty Research
  - Identification
  - Management
- CFN Frailty Studies
Aging - Global Perspective

Sources: United Nations:
World Population Prospects: The 2010 Revision
Aging in Canada

- Proportion over the age of 65 is increasing
- Older (over age 85) growing rapidly
- Present: 4.46 working adults for every 1 senior
- Future: 2.84 working adults for every 1 senior (by 2025)

Source: Health Care in Canada, 2011: A Focus on Seniors and Aging, Canadian Institute For Health Information
Increasing Health Care Cost with Age

Over 40% of total health care spending occurs in > 65 y.o.; 20% in last year of life

Source: Canadian Institute for Health Information
Shift in the Aging Curve

Function vs. Age

Healthy Aging

CFN’s Focus
Multi-morbidity, Loss of functional capacity
The Frailty Health State

- Frailty is defined as a state of increased vulnerability resulting from reduced physiological reserve and loss of function across multiple systems reducing the ability to cope with normal or minor stressors.

- ‘Minor’ events trigger major changes in individual health status

- Common, growing multidimensional health and social care challenge, associated with increased risk of physical, cognitive and functional decline and adverse health outcomes including mortality

Source:
Frailty in Canadians

• Aging and Frailty are not synonymous but frailty becomes increasingly common as age advances
• Decline in health status and higher health care use driven more by frailty than age

Sources:
2. statcan.gc.ca/pub/82-003-x/2013009/article/11864-eng.htm
Correlation of Frailty with Outcome

Identification of frailty associated with worsened outcomes, hospitalization and mortality

Frailty in the health care system matters because...

• It is under-recognized and its impact is under-appreciated
• The healthcare system is organized around single disease, single organ dysfunction
• The healthcare system need to take into account the wishes of those with frailty or their caregivers
• Evidence generated from studying fit people may not apply
Silos in the Health Care System

Multi-jurisdictional, multi-disciplinary efforts across settings of care aimed at improving the care of those with multi-morbidity, functional loss and in late life or those who are frail are required.
We can do better - Socioeconomic benefits

Improving care for the frail elderly will benefit:

• Those who are frail
• Their caregivers
• The healthcare system in general
• Canadian society and economy
The Problem

• The frail, the elderly, and those with significant comorbidities routinely excluded from clinical trials
• Similar risks/benefits?
• Applicability or generalizability of evidence?
Lack of Evidence

Clinicians, knowledge users and decision makers often face difficult decisions in treating the frail elderly

• Is health care intervention/technology effective in this population?
• Do individual patients/families prefer one kind of technology/treatment/care setting over another?
• Is the risk/benefit ratio similar to that of younger or fit patients?
• Is this treatment good value for money?
• Is escalation of acute care interventions warranted?
• When/how should palliative care be instituted?
• What is the most appropriate setting for care?
Generalization to the frail elderly...

- Treatments generalized to the frail elderly
  - May not be effective and result in harm or wasted healthcare resources
  - May have been shown to be not effective in non-frail populations but actually be effective in those who are frail
- In the absence of evidence aggressive and expensive technologies are often overused without improvement in outcomes, causing undue suffering and wasted health care resources
- Escalation may not be wanted
Current state of evidence

- Identification and assessment of frailty
- Prevention and management of frailty
Why Frailty Assessment Matters

- “You can’t manage what you don’t measure”.
- Can serve as a catalyst for innovative care solutions or interventions
- Early assessment of frailty is critical since frailty may be reversible, if identified early
- Frailty is associated with poor outcomes from healthcare interventions.
  - E.g. Worsened outcomes when admitted to ICU, after hospital admission, after cardiac surgery, after abdominal surgery etc.
  - May allow for specialized interventions such as prehab

Sepehri et al, J Thorac Cardiovasc Surg 2014
Fagard et al, J. Geriatric Oncol. 2016, In press
Current Knowledge - Frailty Assessment

• No biological marker of frailty has proven to be of sufficient diagnostic and prognostic capacity to be valid in clinical setting

• At least 25 frailty scales are available
  – No consensus as to which scale should be used clinically or in research
    • Data collection burden vs. reliability vs. validity
  – CFN Study: A scoping review of evidence and policies for measuring frailty in acutely ill patients in pre-hospital and hospital settings (PI: Olga Theou)
    • 56% of research studies examined did not measure frailty but identified their patients as frail.

• Canadian contributions: Edmonton Frail Scale, Clinical Frailty Scale, Frailty Index, interRAI

Viña et al, 2016, Molecular Aspects of Medicine 50; 88–108
Implementation of frailty assessment in the Canadian healthcare system

• Need to resist urge to be overly reductionist in searching for a single scale for its measurement

• Need for individuals, healthcare providers, researchers and policy makers to set national standards for measuring frailty that adhere to the highest standards of data stewardship

• We continue to promote heterogeneous use of frailty case-finding instruments that fit settings and individual circumstances

• We also suggest a pragmatic approach to national standards of measurement, building on existing electronic databases (e.g. interRAI standards).

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<th>Considerations for frailty measurement</th>
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<tr>
<td>• Validity</td>
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<td>• Reliability</td>
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<td>• Standardized measurement</td>
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<td>• Data standards and coding rules</td>
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<td>• Timing of initial assessments and reassessments</td>
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<td>• Key stakeholders</td>
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Therapeutic interventions for frailty...

• Frailty and sarcopenia are closely associated and targeting muscle strength, wasting may improve outcome

• Evidence that frailty maybe potentially treated with nutritional, pharmacological, physical (exercise training), or a combination of these interventions

Calvani et al, 2015; Journal of Cachexia, Sarcopenia and Muscle
Viña et al, 2016, Molecular Aspects of Medicine
Fairhall 2016, Evid Based Med
Frailty Trials (clintrials.gov)

61,130 Open Studies
- 46,000 interventional

109 Trials
- 75 Interventional
- 47 Randomized
Therapeutic interventions for frailty...

38 RCTs reported
Most were small (1 > 1000 pts)
Outcomes varied:
- Change in frailty scale, mobility, strength, weight, gait speed, insulin resistance, muscle mass
Therapeutic interventions for frailty in the community...

- Identified only 14 studies with 3600 participants
- Quality was variable
- Studied Exercise, Nutrition, Rehabilitation, (solely or in combination) or Comprehensive Assessment
- Interventions that included nutrition and exercise seemed to be the most effective
- Main outcomes were the level of frailty
- No Canadian studies for prevention or management of frailty

http://www.cfn-nce.ca/media/366473/07-20-2016-cfn-webinar-puts-.pdf
Conflicting results on integrated care models

• Pro-active, integrated care can be beneficial for frail older people in terms of quality of life and love and friendship but not in terms of health outcomes and functional abilities ([Looman et al, 2016, BMC Geriatrics])

• No evidence that comprehensive care of frail patients reduces the number of primary care or GP visits or healthcare costs and no evidence was found for a beneficial effect of comprehensive care on caregiver-related outcomes ([Hopman et al, 2016, Health Policy])

• Three recent studies from the Netherlands show us that it is very difficult to improve outcomes in community-dwelling frail older people using integrated care ([Hoogendijk 2016, Age Ageing])
What is the right outcome...

- 20 potential instruments
- Conclusion:
  - Frailty index the most promising
    - Continuous scoring system
    - Influence of non-changeable items in index
    - Clinometric properties need to be studied further
What is the right outcome...

• Survey of elderly citizens ranking potential outcomes for critical studies
  - Highest ranking or most important
    • Permanent neurological dysfunction
    • Quality of Life
    • Long term disability requiring institutional care
  - Lowest ranking or least important outcomes
    • Duration of hospitalization
    • Mortality
    • Delirium

Muscedere et al, ESICM 2015
Citizen engagement...

- Help ensure outputs are relevant to target audience
- CFN:
  - All committees, including Board have citizen representatives
  - Citizen engagement committee
    - Develop modules for trainees, researchers in network
    - Review lay summaries, research summaries
    - Guide network on citizen engagement
  - James Lind Process to guide research priorities
  - Forum of citizens, caregivers, knowledge users, clinicians and researchers on engagement of citizens in research, health system administration, policy making
CFN Research Activity

• Investment in 88 research projects during our first term
• $19.7 Mil. total research funding ($12.8 Mil. from CFN + $6.9 Mil. partner contributions)
• 57 (65%) Interventional studies
• As of 2015: only 93 frailty papers reported from Canada – only 22 reporting on the outcome of an intervention

*Numbers add up to greater than 88 since some grants covered more than one theme
CFN - Studies Implementing Frailty Assessment

- Frailty screening in Alberta ICUs – Implementation across all medical/surgical ICUs across Alberta – Sean Bagshaw
- Implementation of the acute care interRAI tool in 10 hospitals and 3 provinces – John Hirdes
- Implementation of web-based frailty portal in community primary care practice utilizing the Frailty Assessment for Care planning Tool (FACT) - Paige Moorhouse
- A frailty measure for persons with intellectual and developmental disabilities using aging care – Helene Ouellette-Kuntz
- The essential frailty toolset (EFT) encompasses selected frailty tests with high prognostic and low collective burden of assessment, accompanied by a simple algorithm that integrates the different tests into one composite frailty rating for patients undergoing aortic-valve replacement - Jonathan Afilalo
CFN – Studies Implementing Care Innovations

- Strategic Impact Grant (Paul Hebert) and Transformative study (Paul Stolee) are looking at improving care coordination to improve care for frail Canadians
- Implementation of nutritional screening and care pathway in 5 hospitals (4 provinces) – Heather Keller
- E-CYCLE: A pilot randomized clinical trial of early in-bed cycling in elderly, mechanically ventilated patients - Michelle Kho
- Elder-friendly approaches to the surgical environment - using biological samples to identify & provide optimized care (EASE-BIO) - Rachel Khadaroo
- Volunteer patient navigators for frail rural-dwelling seniors – Drs. Pesut & Duggleby
- Inter-professional shared decision making aid/tool to assist frail elderly in decision to transition to long-term care facility – France Legare
- Feasibility of implementation of an Electronic (tablet-based) Quality of Life Assessment and Practice Support System (QPSS) – Richard Sawatzky
Conclusion

- Frailty associated with worsened outcomes
- More evidence needed to guide care
- High need for more interventional trials
- Citizen engagement may provide input on their design
Thank You!

Questions?

Canadian Frailty Network is an interdisciplinary network dedicated to improving care of Canada’s frail elderly by:

- Increasing frailty recognition and assessment
- Increasing evidence for decision making, and
- Advocating for change in the health care system to ensure that the needs of this vulnerable population are met.

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