Frailty

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Metro North HHS

#MrsB  #1000days  #retdogreen
Older Australia at a glance

In 2016, 3.7 million people (15% of our total population) are older Australians

The older Australian population is growing

15% in 2016 (3.7 million people)
22% by 2056 (8.7 million)
24% by 2096 (12.8 million)
Figure 1: Australian population aged 65 and over, at 30 June, over time (per cent)

Sources: ABS [1, 2].
Figure 1: Life expectancy at age 65 and 85 years by sex, 1881–1890, 1960–1962 and 2011–13

Source: AIHW [2].
What is frailty?
Frailty is the difference

- 5 year survival – >80% vs 40%
- Risk of requiring residential care within 5 years – <10% vs 50%
- Unplanned hospitalisation
- Unplanned hospital readmission
- Falls
- Delirium
- Medication related adverse event
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 "slowly 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.


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What is Frailty?

• Frailty is a medical syndrome which “develops as a consequence of age-related decline in many physiological systems and collectively results in vulnerability to sudden health status changes triggered by minor stressor events”.

• Not ..
  – Comorbidity
  – Disability
  – Old age
Frailty vs Disability vs Comorbidity

Disability: ≥1 ADL
(n = 67)

Comorbidity
*(n = 2131)*

Frailty
+

21.5%
(n = 79)

5.7%
(n = 21)

46.2%
(n = 170)

26.6%
(n = 98)

Stages of Frailty

- Healthy Aging
- Chronic Vulnerability
- Acute Illness
- Recovery

Illness stage:
- Chronic loss of capacity
- Acute loss of capacity

Fried 1999
Figure 1: Vulnerability of frail elderly people to a sudden change in health status after a minor illness
A whole of system failure

• Ageing is the result of lifelong molecular and cellular damage
• Mechanisms are regulated by complex maintenance and repair mechanisms
• Notable system redundancy (eg brain and muscle)
• Crucial threshold of age related decline
• Frailty occurs when multiple systems fail
Frequent clinical presentations

• Non-specific
  − Fatigue, unexplained weight loss, frequent infections

• Falls
  − Balance and gait impairment are major features of frailty and risk factors for falls
    o Hot falls related to minor illness
    o Recurrent spontaneous falls related to increasing frailty (loss of vision, balance and strength)

• Delirium
  − Related to reduced integrity of brain function
  − Independently associated with adverse outcomes

• Fluctuating disability
  − Day to day instability – “unstable disability”
  − Results in “good and bad” days
Two models

• Phenotypic Model (Fried et al)
  – Weight loss
  – Exhaustion
  – Low energy expenditure
  – Slow gait speed
  – Weak grip strength

• Cumulative Deficit Model (Rockwood et al)
  – Symptoms, signs, lab values and disease states

Frailty and outcomes

- Increasing frailty associated with increased
  - Mortality
  - Risk of hospitalisation
  - Risk of requiring residential care
  - Hospital length of stay
## Table 1. Baseline characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Development cohort ((n = 207,814))</th>
<th>Internal validation cohort ((n = 207,720))</th>
<th>External validation cohort ((n = 516,007))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>75.0 (7.2)</td>
<td>75.0 (7.3)</td>
<td>75.0 (7.3)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45%</td>
<td>45%</td>
<td>44%</td>
</tr>
<tr>
<td>Female</td>
<td>55%</td>
<td>55%</td>
<td>56%</td>
</tr>
<tr>
<td>FI score: mean (SD)</td>
<td>0.14 (0.09)</td>
<td>0.14 (0.09)</td>
<td>0.15 (0.10)</td>
</tr>
<tr>
<td>Males: mean (SD)</td>
<td>0.13 (0.09)</td>
<td>0.13 (0.09)</td>
<td>0.14 (0.10)</td>
</tr>
<tr>
<td>Females: mean (SD)</td>
<td>0.15 (0.10)</td>
<td>0.15 (0.10)</td>
<td>0.16 (0.10)</td>
</tr>
<tr>
<td>FI score 99th centile</td>
<td>0.49</td>
<td>0.49</td>
<td>0.42</td>
</tr>
<tr>
<td>Frailty category(^a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fit</td>
<td>50%</td>
<td>50%</td>
<td>43%</td>
</tr>
<tr>
<td>Mild</td>
<td>35%</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>Moderate</td>
<td>12%</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>Severe</td>
<td>3%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Number of comorbidities</td>
<td>2.1 (1.2)</td>
<td>2.2 (1.1)</td>
<td>2.3 (1.3)</td>
</tr>
<tr>
<td>Number of medications</td>
<td>8 (8.0)</td>
<td>8 (8.1)</td>
<td>9 (6.8)</td>
</tr>
<tr>
<td>Townsend quintile (social deprivation)(^b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (least deprived)</td>
<td>28%</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>2</td>
<td>18%</td>
<td>18%</td>
<td>24%</td>
</tr>
<tr>
<td>3</td>
<td>23%</td>
<td>23%</td>
<td>20%</td>
</tr>
<tr>
<td>4</td>
<td>16%</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>5</td>
<td>15%</td>
<td>15%</td>
<td>11%</td>
</tr>
</tbody>
</table>
### THE PRINCE CHARLES HOSPITAL Frailty Scores (FS = X) YTD PROFILE

<table>
<thead>
<tr>
<th>No. of 75 years + Presentations</th>
<th>No. of Frailty Scores Completed</th>
<th>% of Frailty Scores Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,891</td>
<td>3,690</td>
<td>75.4%</td>
</tr>
</tbody>
</table>

- **Count of FS = 1**
  - 113 (3.1%)
  - 271 (7.3%)
  - 683 (18.5%)

- **Count of FS = 4**
  - 821 (22.2%)
  - 695 (18.8%)
  - 601 (16.3%)

- **Count of FS = 7**
  - 358 (9.7%)
  - 118 (3.2%)
  - 30 (0.8%)

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#### FRAILTY SCORE COMPLETION RATE

- July 2017: 84.4%
- August 2017: 82.2%
- September 2017: 79.3%
- October 2017: 82.4%
- November 2017: 85.1%

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#### DEPARTURE CATEGORY

- **ADMITTED (INP)**: 48.8%
- **ADMITTED (SSU)**: 27.7%
- **ED DISCHARGED**: 23.7%
- **OTHER**: 0.8%
The compelling story

- **48% of people over 85 die within one year of hospital admission**

  *Imminence of death among hospital inpatients: Prevalent cohort study*
  
  David Clark, Matthew Armstrong, Ananda Allan, Fiona Graham, Andrew Carnon and Christopher Isles, published online 17 March 2014 *Palliat Med*

  If you had 1000 days left to live how many would you choose to spend in hospital?

- **10 days in a hospital bed (acute or community) leads to the equivalent of 10 years ageing in the muscles of people over 80**

  Gill et al (2004), studied the association between bed rest and functional decline over 18 months. They found a relationship between the amount of time spent in bed rest and the magnitude of functional decline in instrumental activities of daily living, mobility, physical activity, and social activity.

Risks of Hospital Based Deconditioning Habitual Inactivity

Impact of Bed Rest in Older People

In first 24 hours
• Muscle power – 2-5%
• Circulating volume by up to 5%

In first 7 days
• Circulating volume by up to 20%
• VO\textsubscript{2} Max by 8-15%
• Muscle strength – 5-10%
• FRC – 15-30%
• Skin integrity
How much time is spent mobilising while in hospital?

- Lying down – 57.4%
- Sitting – 33.6%
- Standing, walking, wheeling – 7.6%
As a consequence of hospitalisation….

• Increased mortality
• Increased risk of requiring residential care
• Increased risk of delirium
• Increased risk of falls
• Increased risk of prolonged hospital stay
• Increased risk of adverse drug related event
Figure 2: Schematic representation of the pathophysiology of frailty

- Genetic factors
- Epigenetic mechanisms
- Environmental factors

- Cumulative molecular and cellular damage

- Reduced physiological reserve
  - Brain
  - Endocrine
  - Immune
  - Skeletal muscle
  - Cardiovascular
  - Respiratory
  - Renal

- Physical activity
- Nutritional factors

- Frailty

- Stressor event

- Falls
- Delirium
- Fluctuating disability

- Increased care needs
  - Admission to hospital
  - Admission to long-term care
Figure 2: Schematic representation of the pathophysiology of frailty
Opportunities for intervention

• Modify frailty severity
• Avoiding, removing or modifying the stressor
• Appropriately managing the acute deterioration
First need to recognise frailty

• Many different screening and assessment tools

• Tools are based on either the “deficit” model or the “phenotypic” model

• Phenotypic model may require supplementary tests eg Gait Speed (more than 5 seconds to walk 4 m), Timed Up and Go (TUG), Grip Strength

• The British Geriatrics Society (BGS) recommends gait speed or TUG or the PRISMA 7 questionnaire

• Metro North uses the Rockwood Clinical Frailty Score as a screening tool (not recommended by the BGS!)
The 4m walking speed test detects frailty

Taking more than 5 seconds to walk 4m predicts future:

- Disability
- Long-term care
- Falls
- Mortality

Van Kan et al JNHA 2009; 13:881
Systematic Review of 21 cohorts
Timed Up and Go

• Time taken to:
  – Stand up from a chair
  – Walk 3 metres
  – Turn and walk back to the chair
  – Sit down again

• Cut off time is 10 seconds
Prisma 7 questionnaire

Date:

A score of three or more indicates frailty.
1. Are you more than 85 years?
2. Male?
3. In general do you have any health problems that require you to limit your activities?
4. Do you need someone to help you on a regular basis?
5. In general do you have any health problems that require you to stay at home?
6. In case of need can you count on someone close to you?
7. Do you regularly use a stick, walker or wheelchair to get about?

Score:
**Clinical Frailty Scale**

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**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.
After recognition comes assessment
Care and Support Planning

Person’s Story

Professional Story

Information gathering

Information Sharing

Goal Setting and Action Planning

Agreed & shared ‘care plan’
Outcome of CGA – Individualised Care Plan

• Named care coordinator
• A health summary (symptoms, diagnoses, medications)
• A social summary
• An optimisation and/or maintenance plan
• An urgent care plan in the event of a crisis
• An advance care plan
Modifying frailty severity

• Exercise (resistance and aerobic)
• Caloric and protein support
• Vitamin D supplementation where deficient
Remove the Stressor

• Address polypharmacy
• Prevent infection – vaccinations
• Reduce risk of falls – falls programs, deprescribing, postural hypotension
• Manage pain (carefully!)
• Address alcohol excess
Respond quickly to deterioration

Table 1: Frailty syndromes

1. Falls (e.g. collapse, legs gave way, ‘found lying on floor’).
2. Immobility (e.g. sudden change in mobility, ‘gone off legs’ ‘stuck in toilet’).
3. Delirium (e.g. acute confusion, ‘muddledness’, sudden worsening of confusion in someone with previous dementia or known memory loss).
4. Incontinence (e.g. change in continence – new onset or worsening of urine or faecal incontinence).
5. Susceptibility to side effects of medication (e.g. confusion with codeine, hypotension with antidepressants).
Benefit of CGA and individualised care plans

- Reduced nursing home admissions
- Risk of hospitalisation reduced
- Less falls
- Better physical function
GUIDELINE BASED MEDICINE or CARE & SUPPORT PLANNING?

People with a single LTC — — People with multiple LTCs/Frailty

Guideline medicine — Care & Support Planning
New Care Paradigm for Older People & Frailty

**TODAY**

‘The Frail Elderly’
(i.e. a label)

Presentation late & in crisis
(e.g. delirium, falls, immobility)

Hospital-based: episodic, disruptive & disjointed

**TOMORROW**

“An older person living with frailty”
(i.e. a long-term condition)

Timely identification for preventative, proactive care by supported self-management & personalised care planning

Community-based: person-centred & co-ordinated
(Health + Social + Voluntary + Mental Health)
Summary

- Frailty is important to recognise
- There is benefit in identifying frailty in primary care
- Frailty stratifies the need for a comprehensive geriatric assessment and an individualised care plan
- Complex interventions in the community for older people result in long term benefits
- A new paradigm is required when considering the approach to care of the frail elderly