“The challenge of frailty in providing rehabilitation to older adults

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Disclosures

Through Dalhousie’s Industry Liaison Office, I have asserted copyright of the Clinical Frailty Scale, which is made freely available for education, research & not-for-profit health care. Users are asked not to change or commercialize it.

I founded DGI Clinical Inc., which provides outcome measures & advanced data analytics to industry, chiefly pharma. We also receive support from the Industrial Research Assistance Program of Industry Canada.
Objectives

To review current thinking about ageing and frailty.

To explore how the complexity of frailty challenges provision of rehabilitation.

To propose solutions in assessment, care planning and interprofessional collaborative practice.

To encourage seeing frailty as a prompt to improve care (making care rational, not rationing care)
“The problems of old age come as a package”.

Frailty – the noun: unmeasured heterogeneity


Frail – the adjective: “Is this person frail and how can we tell?”
Health deficits accumulate with age, in various patterns, across species.

Deficit accumulation can be estimated with the Frailty Index

Frailty Index score = \frac{\text{Number of deficits in an individual}}{\text{Total number of deficits measured}}

e.g. in a dataset with 50 health deficits, a person with 10 things wrong (10 deficits) has a frailty index score of \frac{10}{50} = 0.20.
Combined in a frailty index, the variable patterns of deficit accumulation show a steady increase with age.

Rockwood et al., *Sci Rep* 2017 Feb 21;7:43068
A Frailty Index based on a Comprehensive Geriatric Assessment identifies a group at the highest risk of dying.

Relationship between age, electronic frailty index score and mortality.
Distribution of the Frailty Index

4 waves of the Chinese Longitudinal Health and Longevity Study;
6664 people ages 80-99

The frailty index defines risk of osteoporosis, osteoporotic fracture

<table>
<thead>
<tr>
<th>Reference</th>
<th>Method</th>
<th>Study</th>
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<tbody>
<tr>
<td>Fang et al. J Nutr Health Aging 2012</td>
<td>Falls, fracture</td>
<td>Beijing Longitudinal Study of Aging</td>
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<tr>
<td>Kennedy et al. Osteoporosis Int 2014</td>
<td>Fracture, FRAX</td>
<td>CaMOS (Age 25+ years)</td>
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<tr>
<td>Li et al. Bone 2015</td>
<td>FRAX, MOF</td>
<td>Global Long. Osteoporosis Women</td>
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<tr>
<td>Cook MJ et al. Age Ageing 2016 E-pub</td>
<td>QUS, DXA</td>
<td>European Male Ageing Study</td>
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What I’ve said so far

Frailty is a multiply determined risk state manifest as not everyone of the same age being at the same risk.

It is not just “complicated” but formally complex, due to the stochasticity of life-long deficit accumulation.

People are frail when they have lots of things wrong, making them complex systems close to failure.
Solutions lie in…

Comprehensive Geriatric Assessment, pattern recognition, and immediate care planning

Interprofessional Collaborative Practice; individualized care planning, goal setting and communication within the team
## Frailty States:

1. Very Fit
2. Well
3. Managing Well
4. Vulnerable
5. Mildly Frail
6. Moderately Frail
7. Severely Frail
8. Very Severely Frail
9. Terminally ill

### 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 (cueing, 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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Geriatric Giants

immobility

instability

incontinence

impaired intellect/memory

impaired independence

“sensitive but non-specific signs of illness in older adults”

The “Geriatric Giants” in a new light

It takes a lot of skill to care for an older adult who is very ill.

These skills are not simply “codified common sense”, but reflect an evidence-based, well-grounded understanding of what happens when complex systems become stressed.
Comprehensive Geriatric Assessment Form

© Geriatric Medicine Research, Dalhousie University, 2008
### Comprehensive Geriatric Assessment Form: function signals illness severity

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<tr>
<th>Instrumental Activities of Daily Living</th>
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Comprehensive Geriatric Assessment Form: function allows care planning

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**Pictorial Frailty Assessment**
The purpose of the CGA is the care plan. The initial contact captured in the CGA needs to be verified and updated to serve as an accurate baseline.

It needs to be completed with the best available information, not simply a record of “what the client says”.
The care plan

- Fundamentally, the care plan is a negotiation between what patients / families desire and what is actually achievable.

- Sometimes these conflict, and often their reconciliation requires judgment.

- Some people have better judgment than others’ that’s why processes are important.
Is your team working well?

A quick diagnostic

The team conference

• Too much time on the first three patients; not enough on the last 5.

• Variable risk tolerance: tensions about when to discharge.

• Recurring disagreement, often masked, often between same people.

• Conferences last too long.

• Even so, small groupings in the hall post TC, to sort out what needs to be done.

Remedies

• Time keeper. (Rotates.)

• Address risk tolerance.

• Often stems from variable risk tolerance; speak only to disagree. Learn how to speak to disagree.

• Focus on patient-centred goals and their attainment.

• All of the above.
Objectives, revisited

To *review* current thinking about ageing and frailty.

To *explore* how the complexity of frailty challenges provision of rehabilitation.

To *propose* solutions in assessment, care planning and interprofessional collaborative practice.

To *encourage* seeing frailty as a prompt to improve care (making care rational, not rationing care)
Guangzhou Specialized Geriatric ICU
FI Distribution

Frailty Index
Proportional distribution

survived 300 days
died in 30-300 days
died in 30 days


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- Rob Beiko
- Andrew Rutenburg
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- Susan Howlett
How deficits arise and propagate
How the model compares with Canadian data.

Red: data
Black: FI799
Green: FI30

As the mean Frailty Index score increases, so does its variability.

*Increasing mortality with age
*Broadening of FI distribution with age,
*Nonlinear increase of the FI with age,
*Higher mortality with higher FI scores

Mitnitski & Rockwood *Biogerontology* 2016;17:199-204