Innovation in models of care for older adults living with frailty:
What can Canada learn from Australia?
Scott Morrison announces royal commission into aged care after string of scandals

PM says abuse, neglect and failures can’t be excused ahead of ABC Four Corners’ investigation airing on Monday

‘I’d rather die’: the horror stories of aged care don’t tell the whole story
The application of the frailty concept to clinical practice in acute care
Why consider frailty in clinical practice?

- Predict clinical outcomes
- Guide clinical decision-making
- Support communication among health professionals
- Workload analysis
- Offer interventions that reverse frailty
Approaches to measurement

• Phenotype approach (Fried)

• Deficit accumulation approach (Rockwood)
EDITOR'S CHOICE

Development and validation of an electronic frailty index using routine primary care electronic health record data

Andrew Clegg, Chris Bates, John Young, Ronan Ryan, Linda Nichols, Elizabeth Ann Teale, Mohammed A. Mohammed, John Parry, Tom Marshall


**Published:** 03 March 2016  
**Article history**

A correction has been published:

*Age and Ageing*, Volume 47, Issue 2, 1 March 2018, Pages 319,  
[https://doi.org/10.1093/ageing/afx001](https://doi.org/10.1093/ageing/afx001)
The challenges

• System immaturity
  •Absent or incomplete digital records
  •Lack of access to community records

• Resource intensive
  •Extensive data collection
  •Documentation & task burden

• Impractical
  •Not all patients can perform tasks
Our challenge:
To measure frailty in the acute care setting

Our opportunity:
Efficient assessment using the interRAI Acute Care
Building a frailty index

Demographics

Medications

Diagnoses

Frailty index

Functional & psychosocial observations
Nursing assessment: A jigsaw of observations, screeners & forms
Current nursing assessment forms

Victorian Documentation Study

- 11 hospitals studied
- Admission assessment forms
  - 8–27 (median 11) forms
  - 150–586 (median 345) item
  - 2482 data items universal
  - 1283 data items selective

= Massive burden
+ Poor compliance
A jigsaw of observations, screeners & forms
Building the interRAI AC: System aspirations 2014…

- Reduce nursing documentation burden
- Integrate assessment into the care delivery process
- Improve the quality, availability and value of nurse generated data
- Create consistency across the continuum of care
The interRAI AC Development strategy

- 2014: Expert panel CDHB NZ → Design specifications
- 2014: Expert panel interRAI → Draft item set & outputs
- 2015-16: Field testing 4 sites / 900 cases → Psychometric properties Resource requirements
- 2018: Implementation trial QEII → Acceptability Workflow Software enhancements
- 2019: Implementation trials Tasmania + others

Faculty of Medicine Centre for Health Services Research
The interRAI Acute Care System

- Clinical observations [56 items]
  - Diagnostic screeners
    - Delirium
    - Dementia
    - Depression
    - Under-nutrition
  - Risk assessment
    - Delirium
    - Pressure ulcer
    - Falls
  - Severity measures
    - Cognition
    - Communication
    - Mood
    - ADL
    - Nutrition
  - Quality indicators
    - Self care, mobility, IDC, falls, pressure ulcer, institutional placement, prolonged stay, delirium, pain

- Cognition
  - Mood
  - Communication
  - Vision / hearing
  - Sleep
  - ADL
  - Medication management
  - Falls
  - Dyspnoea
  - Pain
  - Under-nutrition
  - Swallowing
  - Traumatic injury
  - Pressure injury
  - Other skin conditions
  - Continence
  - Bowel/bladder issues
  - Smoking & alcohol
Functional syndromes: Age-related

Cognitive impairment
Delirium
ADL
Mobility
Balance
Bladder incontinence
Skin integrity
Functional syndromes: Non-age related

- Self-reported depression
- Pain
- Sleep disturbance
- Oral health problem
- Unintended weight loss
- Substance abuse
- Housebound?
The interRAI Hospital Systems

...integrated assessment across the hospital continuum
Transforming nursing documentation

...from this...

350+ items
30% compliance
1 hour+

...to this...

MDS
56 items
100% compliance
15 minutes

Supplement
Supplement
Supplement
Supplement
Derivation of FI from interRAI Acute Care

- Large amount of information across functional, cognitive, sensory, medical domains
- We chose “core” items in interRAI AC-CGA common to most interRAI instruments
- 39 variables selected adding to 56 possible deficits
  - 15 potential deficits allowed for comorbidities; 4 for polypharmacy categories

Results: FI-AC Distribution

N=1418
Mean (SD)=0.32 (0.14)
Median (IQR)=0.31 (0.22-0.41)
99th percentile= 0.69
# Results: FI-AC vs Discharge Destination

<table>
<thead>
<tr>
<th>Discharge Destination</th>
<th>n (%)</th>
<th>FI-AC Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>917 (64.7%)</td>
<td>0.28 (0.12)</td>
</tr>
<tr>
<td>Continuing inpatient care including rehabilitation</td>
<td>237 (16.7%)</td>
<td>0.39 (0.13)</td>
</tr>
<tr>
<td>Residential Aged Care</td>
<td>207 (14.6%)</td>
<td>0.41 (0.13)</td>
</tr>
<tr>
<td>Died</td>
<td>57 (4.0%)</td>
<td>0.47 (0.16)</td>
</tr>
</tbody>
</table>

Comparison of mean FI-AC between groups (ANOVA) significant at p<0.001
Ordinal regression showed progressive frailty OR: 1.93 (1.77-2.12)
Predictive and discriminative capacity of FI for adverse events

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>OR* (95% CI)</th>
<th>AUC (95% CI)</th>
<th>At FI&gt;0.4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sensitivity</td>
</tr>
<tr>
<td>Inpatient falls</td>
<td>1.29 (1.10-1.50)</td>
<td>0.61 (0.55-0.67)</td>
<td>43%</td>
</tr>
<tr>
<td>Inpatient delirium</td>
<td>2.34 (2.08-2.63)</td>
<td>0.79 (0.76-0.82)</td>
<td>61%</td>
</tr>
<tr>
<td>Inpatient pressure injury</td>
<td>1.51 (1.23-1.87)</td>
<td>0.72 (0.66-0.78)</td>
<td>55%</td>
</tr>
<tr>
<td>Composite adverse event</td>
<td>2.21 (1.98-2.46)</td>
<td>0.77 (0.74-0.80)</td>
<td>57%</td>
</tr>
</tbody>
</table>

* OR associated with 0.1 FI increments; adjusted for age and gender.
## Predictive and discriminative capacity of FI for adverse outcomes

<table>
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<tr>
<th>Adverse Outcome</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sensitivity</td>
</tr>
<tr>
<td>Length of Stay&gt;28 days</td>
<td>1.29 (1.10-1.52)</td>
<td>0.62 (0.56-0.69)</td>
<td>45%</td>
</tr>
<tr>
<td>New discharge to RAC</td>
<td>1.31 (1.10-1.57)</td>
<td>0.65 (0.58-0.71)</td>
<td>44%</td>
</tr>
<tr>
<td>Inpatient mortality</td>
<td>2.01 (1.66-2.42)</td>
<td>0.76 (0.69-0.83)</td>
<td>67%</td>
</tr>
<tr>
<td>Died within 28 days discharge</td>
<td>1.66 (1.35-2.03)</td>
<td>0.71 (0.64-0.78)</td>
<td>55%</td>
</tr>
<tr>
<td>Composite adverse outcome</td>
<td>1.67 (1.48-1.88)</td>
<td>0.71 (0.67-0.75)</td>
<td>55%</td>
</tr>
</tbody>
</table>

* OR associated with 0.1 FI increments; adjusted for age and gender
FI and Polypharmacy

Frailty and patient management

Increasing interest in measuring frailty for risk stratification of patients for:

• Surgery
• Renal dialysis and transplants
• Chemotherapy
• Pharmacotherapy
Conclusions…

Efficient robust nursing assessment using the interRAI Acute Care will enable formulation of a Frailty Index - FREE OF CHARGE!

The opens the door to frailty assessment for a wide range of purposes in the hospital setting
Acknowledgements

- A/Prof Ruth Hubbard
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