Identifying High-Risk Patients for Personalized Care Plans

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Paul Hebert, MD³
Allan Garland, MD⁴

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2-Schlegel-UW Research Institute for Aging
3-CHUM
4-University of Manitoba
Agenda

- Targeting high risk populations in long term care
  - Frailty
  - Health instability
- Personalized care plans based on interRAI assessments
- CFN Strategic Impact Grant:
  - Predicting transitions in health and service use – effect of advance directives
- CFN Transformative Grant:
  - Intervention study on advance care planning in LTC
Use of interRAI Instruments in Canada

Solid symbols refer to implementations that have been mandated by government.
Hollow symbols refer to research, pilot studies, or implementation planning underway.

- RAI 2.0/ interRAI Long Term Care Facilities
- RAI-Home Care
- RAI-Mental Health
- interRAI Community Mental Health
- interRAI Emergency Screener for Psychiatry
- interRAI Brief Mental Health Screener
- interRAI Child/Youth Mental Health
- interRAI Intellectual Disability
- interRAI Palliative Care
- interRAI Acute Care/Emergency Department
- interRAI Contact Assessment
- interRAI Community Health Assessment
- interRAI Subjective Quality of Life
Deriving Frailty Index from interRAI Systems
FI Scores in Ontario Complex Continuing Care Hospitals (n=662,946) & Long Term Care Homes (n=3,223,459) over Time
Distribution of FI Scores in LTC & CCC by Province/Territory, 1996-2018 (n=5,044,480 assessments)
Applications of interRAI’s Assessment Instruments:
One assessment … multiple applications

- Care Plan
- Outcome Measures
- Evaluation
  - Best Practices
  - Risk Management
- Assessment
  - Balance incentives
  - Resource Allocation
- Quality Indicators
- Patient Safety
- Quality Improvement
- Public Accountability
- Accreditation
interRAI Clinical Assessment Protocols (CAPs)

Clinical tools to identify

- Need
- Risk of adverse change/event
- Potential for improvement
interRAI CAPs for Nursing Homes, Home & Community Care

- **Functional Performance**
  - Physical activities promotion
  - Instrumental activities of daily living
  - Home environment
  - Institutional risk
  - Physical restraints

- **Cognition/Mental Health**
  - Cognitive loss
  - Delirium
  - Communication
  - Mood
  - Behaviour
  - Abusive relationships

- **Clinical Issues**
  - Falls
  - Pain
  - Pressure Ulcer
  - Cardiorespiratory conditions
  - Undernutrition
  - Dehydration
  - Feeding tube
  - Prevention
  - Appropriate medications
  - Tobacco & alcohol use
  - Urinary incontinence
  - Bowel conditions

- **Social Life**
  - Activities
  - Informal support
  - Social relationships
Triggering rates for two multi-level interRAI Clinical Assessment Protocols (CAPs), by province/territory & setting

### Falls CAP
- **CCC (2.0)**: Percentage clients triggered
- **LTC (2.0)**
- **CCAC (HC)**
- **SH (CHA)**

### Mood CAP
- **CCC (2.0)**
- **LTC (2.0)**
- **CCAC (HC)**
- **SH (CHA)**

#### Provinces/Territories
- Ontario
- Yukon
- BC
- WRHA
- Nova Scotia

#### Risk Levels
- **Moderate Risk**
- **High Risk**
- **Low Risk**
interRAI Clinical Assessment Protocol (CAP) Triggering Rates by FI Score among LTC Residents, 9 Provinces/Territories (n=2,266,402 admission/annual assessments)
Use of the interRAI CHESS Scale to Predict Mortality among Persons with Neurological Conditions in Three Care Settings

John F. Hirdes, Jeffrey W. Paus, Lori Mitchell, Lawrence Kompa, George Hecloes

Abstract

Background: Persons with certain neurological conditions have higher mortality rates than the population without neurological conditions, but the risk factors for increased mortality within diagnostic groups are less well understood. The purpose of this study was to characterize the risk factors associated with increased mortality among persons with neurological conditions in home care and institutional care settings.

Methods: Survival analysis was done with interRAI assessments linked to mortality data among persons in home care (n = 16,249), complex continuing care hospitals/units (n = 137,127), and nursing homes (n = 115,818) in seven Canadian provinces/territories.

Results: CHESS score was a significant predictor of mortality in all care settings for the 11 neurological diagnostic groups considered, after adjusting for age and sex. The distribution of CHESS scores varied between diagnostic groups and within diagnostic groups in different care settings.

Conclusions: CHESS is a valid predictor of mortality in neurological populations in community and institutional care. It may provide useful for clinical administration, policy development, evaluation, and monitoring purposes because it is readily gathered as part of routine clinical practice in jurisdictions like Canada that have implemented interRAI assessments and systems. CHESS can be utilized without additional need for data collection.

Twitter: @interrai_Hirdes
Multistate Transition Model for Nursing Home Residents

Effect of: X
Controlling for:
- Age
- Sex
- Marital status
- Day of stay at ax
- Facility size
- Province
- ADL Hierarchy
- Cognitive Performance
- Physician visits
- COPD
- Pneumonia
- Diabetes
- Arthritis
- Renal failure
- Urinary tract infection
- Alz & Related Dementia
- Heart Failure
- Cancer
- Depression
- Advanced directives DNR
- Advanced directives DNH

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CHESS 0

CHESS 1,2

CHESS 3+

Hospital

Died

Home

Other
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<tr>
<td>Do Not Resuscitate (ref=Not Present)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>--</td>
<td>1.08 (1.05-1.11)</td>
<td>1.32 (1.21-1.45)</td>
<td>0.90 (0.87-0.92)</td>
<td>1.36 (1.25-1.49)</td>
</tr>
<tr>
<td>1-2</td>
<td>0.91 (0.88-0.94)</td>
<td>--</td>
<td>1.19 (1.12-1.26)</td>
<td>0.82 (0.80-0.85)</td>
<td>1.38 (1.30-1.47)</td>
</tr>
<tr>
<td>3+</td>
<td>0.75 (0.64-0.86)</td>
<td>0.85 (0.77-0.95)</td>
<td>--</td>
<td>0.63 (0.57-0.71)</td>
<td>ns</td>
</tr>
</tbody>
</table>
# Multistate transition model for nursing home residents:

Adjusted odds ratios for advanced directives (ref=not present), Nursing homes in Ontario, BC & Alberta

<table>
<thead>
<tr>
<th>CHESS Score at baseline (T₁)</th>
<th>Remained in Nursing Home</th>
<th>Admitted to Hospital</th>
<th>Died</th>
<th>Discharged Other Setting</th>
<th>Discharged Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Not Hospitalize (ref=Not Present)</td>
<td>0</td>
<td>--</td>
<td>1.04 (1.02-1.07)</td>
<td>1.10 (1.03-1.19)</td>
<td>0.67 (0.65-0.69)</td>
</tr>
<tr>
<td></td>
<td>1-2</td>
<td>--</td>
<td>0.92 (0.90-0.95)</td>
<td>1.07 (1.03-1.12)</td>
<td>0.63 (0.61-0.65)</td>
</tr>
<tr>
<td></td>
<td>3+</td>
<td>--</td>
<td>0.76 (0.68-0.85)</td>
<td>0.81 (0.76-0.87)</td>
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</tbody>
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Advanced Directives in LTC

• Advanced directives are associated with
  • transitions from nursing home to hospital, death, transfer to other settings, discharge home
  • transitions in health among those who stayed in LTC

• Bottom line, advanced directives have a meaningful role in outcomes for persons in LTC

• Current CFN funded project: intervention study to take a systematic approach to advanced care planning in LTC to improve end of life care
  • Lead researchers: Garland and Heckman
BETTER TARGETING, BETTER OUTCOMES FOR FRAIL ELDERLY PATIENTS

ADVANCE CARE PLANNING
Background

- Canadians in general have poor knowledge and engagement in Advanced Care Planning (ACP)

- Care decisions at end of life often driven by unprepared families and often discordant with resident wishes

- Systematic approaches to ACP have shown benefits
Objective

- Starting with proven approaches to ACP, and with stakeholder engagement, we aimed to develop and evaluate an intervention to support ACP discussions and demonstrate that it can be implemented in a scalable, sustainable way across provinces.

- Cluster RCT in 24 homes: Ontario, Alberta, Manitoba
Target higher risk residents

• Any of these 4 criteria (from MDS/interRAI LTCF):
  • CHESS score 3-5
  • Heart Failure
  • Cancer
  • Leave >25% of food uneaten

• High event rates early post-admission and over the year
Cumulative Incidence Function plots for 1-year hospitalization and mortality in long term care by admission CHESS score, Ontario, Alberta and BC

a) Hospitalization: Residents with Heart Failure

b) Hospitalization: Residents without Heart Failure

c) Death in NH: Residents with Heart Failure

d) Death in NH: Residents without Heart Failure

Note: risk is highest in first three months
Percentage of nursing home residents who died (in nursing home or hospital) or were admitted to hospital but did not die there within 90 days of admission assessment, by CHESS score at admission, Ontario, Alberta and BC
Activities

• Stakeholder conference held in Sept 2017

• All documentation for the trial completed – workbooks, scripts, protocols, consent forms

• Ethics approval in Manitoba, Alberta and Ontario

• Trial began in August 2018 in four homes in Manitoba and one in Ontario
Stakeholder meeting

Toronto, September 15, 2017
• Knowledge users: 24 homes, ethicists, patients & caregivers (4)
• Workshops and breakout sessions (3) followed by whole group discussions held on Gaps in Knowledge and Treatment options in context of achievable goals of therapy
• Analysis of data was used to build documentation and the knowledge transfer intervention
• Planning manuscript for submission to a peer-reviewed journal
Designing intervention

• Stakeholder meeting instrumental in designing intervention
  • Despite different ethical and regulatory frameworks, consistent “pitfalls” in the ACP process exist across Provinces

• 2 sequential discussions with resident & substitute decision maker (and others)
  • 1\textsuperscript{st} conversation: brief, aimed at CPR and hospitalization status
  • 2\textsuperscript{nd} conversation: more involved discussion of resident specific potential scenarios, using clinical and MDS 2.0 indicators

• Scalability factors:
  • Supports, does not replace, existing process
  • Uses existing MDS 2.0 information
Status

- We are underway
- Looking for a couple of homes in Ontario
- Interested?