Reducing Transfers to Hospital: What Do We Know About The Evidence from BC and Elsewhere?

Margaret McGregor, MD, CCFP, MHSc
Conflicts

• None
Learning Objectives

Understand the evidence on:

1) risks & benefits of hospital-based care for frail people
2) policy, facility, & individual characteristics associated with hospital use for frail people
3) interventions that have had some success in reducing hospital use
MCQ for Audience – which group has the highest rate of ED visits?

1) Residential care
2) Assisted Living
3) Community-dwelling seniors using home health
4) All seniors
View of Utilization Across the Health Care System

- Blue Matrix helped to identify key populations & focus strategic planning: chronic conditions, residential care

(Use of services based on $9.2B of publicly funded services reported to Ministry in administrative databases in 2009/10)

<table>
<thead>
<tr>
<th>All Population Segments</th>
<th>BC Residents (thousands)</th>
<th>Share of BC Population</th>
<th>Use of $9.2 Billion in Health Care Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Physician (Fee for Service)</td>
</tr>
<tr>
<td>All Population Segments</td>
<td>4,574</td>
<td>100%</td>
<td>27%</td>
</tr>
<tr>
<td>Non User</td>
<td>606</td>
<td>13%</td>
<td>0%</td>
</tr>
<tr>
<td>Healthy</td>
<td>1,671</td>
<td>37%</td>
<td>4%</td>
</tr>
<tr>
<td>Major all ages</td>
<td>159</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Low Complex Chronic Conditions</td>
<td>1,271</td>
<td>28%</td>
<td>7%</td>
</tr>
<tr>
<td>Medium Complex Chronic Conditions</td>
<td>343</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Mental Health and Substance Use</td>
<td>103</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Maternity and Healthy Newborns</td>
<td>117</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Frail In The Community_Disability</td>
<td>14</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>High Complex Chronic Conditions</td>
<td>184</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Cancer</td>
<td>56</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Frail In Care (In Residential Care)</td>
<td>37</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>End Of Life</td>
<td>14</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Projected Growth
Impact from Population Growth & Aging ONLY

- The impact of population growth alone can be seen by applying population projections to the age structures of these health status groups (PEOPLE 37 projections).
- These projections do not consider any other changes....
Learning Objectives

Understand the evidence on:

1) risks & benefits of hospital-based care for frail people
2) the policy, facility & individual characteristics associated with hospital use for frail people
3) interventions that have had some success in reducing hospital use
What is the evidence on risks & benefits of hospital-based care for frail people?

Large body of prospective observational evidence on the association of hospital care in frail populations and...

- longer LOS (Evans, Sayers, Mitnitski & Rockwood; 2014)
- higher mortality (Bagshaw et al; 2014) (Evans, Sayers, Mitnitski & Rockwood; 2014)
- shorter time to residential care (Evans, Sayers, Mitnitski & Rockwood; 2014) (Rockwood et al; 2014)
- permanent decline in function (Mehta et al; 2011) (Gill, Allore, Gahbauer & Murphy; 2010) with dose response relationship (Boyd, Xue, Simpson, Guralnik & Fried; 2005)
Which is the best tool to measure frailty?

- They all work
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 (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.


© 2007-2009 Version 1.2. All rights reserved. Geriatric Medicine Research, Dalhousie University, Halifax, Canada. Permission granted to copy for research and educational purposes only.

**CONCLUSION:**

- Antimicrobial treatment of suspected pneumonia episodes is associated with **prolonged survival but not with improved comfort** in nursing home residents with advanced dementia.
Learning Objectives

Understand the evidence on:

1) risks & benefits of hospital-based care for frail people

2) the policy, facility, & individual characteristics associated with hospital use for frail people

3) interventions that have had some success in reducing hospital use
What policy, facility, & individual characteristics are associated with hospital use for frail people?
### Res Care Setting – Broader Policy Factors


<table>
<thead>
<tr>
<th>Policy Characteristics</th>
<th># studies</th>
<th># studies showing more use</th>
<th># studies showing less use</th>
<th># with no significant effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reimbursement</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Bed-hold policy</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Res Care Setting – End of Life


<table>
<thead>
<tr>
<th></th>
<th># studies</th>
<th># studies showing more use</th>
<th># studies showing less use</th>
<th># studies no significant effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>End of Life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DNR</td>
<td>7</td>
<td>0</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>DNH</td>
<td>9</td>
<td>0</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Hospice</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>
# Res Care Setting – Facility Ownership


<table>
<thead>
<tr>
<th>Ownership</th>
<th># studies</th>
<th># studies showing more use</th>
<th># studies showing less use</th>
<th># studies no effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP vs NP</td>
<td>19</td>
<td>12</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
Canadian Research - Ownership

(Tanuseputro et al; 2015) Ontario - Publicly funded for-profit facilities have significantly higher rates of both mortality and hospital admissions.

(Mackenzie; 2018) Office of the Seniors Advocate report If you are a resident living in a licensed care facility operated by a contracted provider versus one operated by a health authority, you are 34% more likely to be hospitalized.

(McGregor et al; 2006) FP facilities demonstrated higher adjusted hospitalization rates compared with NP facilities attached to a hospital, amalgamated to a regional health authority, or that were multisite.
## Res Care Setting – Staffing


<table>
<thead>
<tr>
<th>Facility Factors</th>
<th># studies</th>
<th># studies showing more use</th>
<th># studies showing less use</th>
<th># studies no effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPs/PAs</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>RNs</td>
<td>12</td>
<td>0</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>LPNs</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>MDs</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
Physician organizational characteristics associated with hospital use

Physician organizational factors

- Closed Model = LESS USE (Lima et al., 2012)(McGregor et al., 2013)
- Continuity of care fewer ACS admissions in community-dwelling seniors (Menec, Sirski, Attawar & Katz; 2006) and preference for “do not hospitalize” (McGregor, Pare, Wong, Cox & Brasher; 2010)
- Variation in MD confidence (evidence from community) (Rossdale; 2007)
Individual characteristics associated with hospital use

- Demographic - sex, age (note differences between hospital & community)
- SES (Majeed, Bardsley, Morgan, O'Sullivan & Bindman; 2000) (Sundquist, Johansson, Yang & Sundquist; 2006)
- Cultural factors (Bottle, Aylin & Majeed; 2006)
- Co-morbidity - dementia (less use), CHF (more use), greater medical complexity (generally more use)
- Degrees of intervention - DNR, DNH - less use despite the MOST 2 transfers that we all see
Association does not = causation
Learning Objectives

Understand the evidence on:

1) risks & benefits of hospital-based care for frail people

2) the policy, facility & individual characteristics associated with hospital use for frail people

3) interventions that have had some success in reducing hospital use
What interventions have demonstrated success in reducing hospital use?
A Systematic Review on the Attributes of Cluster Randomized Trials in Long-Term Care Facilities

Roni Kraut MD, Lauren Katz BEd, Fabiola Diaz Carvallo MD, Oksana Babenko PhD, Derek S. Chan MD MBA, Roberto Alexanders B. Comm, Sandy Campbell MLS, and Scott Garrison MD PhD

Introduction and objective:
- Cluster randomized trials are a type of randomized control trial where groups of participants are randomized instead of individual participants. They are increasingly used in long-term care research.

The objective of this study was to delineate the characteristics of cluster randomized trials in long-term care facilities.

Methods:
- A medical librarian conducted the literature search.
- Study selection and data extraction were performed by two independent reviewers.
- Studies were included if the design was cluster randomized and participants were from long-term care facilities.
- Data was captured on year published, methodology, funding sources, journal, location, author profession and intervention target.

Results: study selection
- 1,570 unique studies identified, April 1, 2017
- 6,109 unique studies from reference search
- 7,679 studies
- 7,109 excluded by title/abstract
- 570 studies for full text review
- 341 excluded by full text review
- 229 unique studies in systematic review

Results: funding source

Results: intervention target vs. year of publication

Results: number of participants, number of clusters and consent

<table>
<thead>
<tr>
<th>Number of Individual Participants</th>
<th>Number of Studies</th>
<th>Median Number of Clusters (IQR)</th>
<th>Median Number of Participants/Cluster (IQR)</th>
<th>% Reporting Participant/Proxy Consent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 100</td>
<td>45</td>
<td>4 (2-7)</td>
<td>11 (6-22)</td>
<td>82%</td>
</tr>
<tr>
<td>100 - 250</td>
<td>63</td>
<td>10 (6-16)</td>
<td>10 (10-29)</td>
<td>73%</td>
</tr>
<tr>
<td>251 - 999</td>
<td>78</td>
<td>15 (12-24)</td>
<td>30 (17-46)</td>
<td>77%</td>
</tr>
<tr>
<td>&gt; 999</td>
<td>40</td>
<td>41 (24-58)</td>
<td>75 (44-130)</td>
<td>33%</td>
</tr>
</tbody>
</table>

Conclusion:
This study helps characterize cluster randomized trials in long-term care facilities. These results will provide guidance to researchers designing future studies in long-term care facilities.
Interventional Studies on Hospital Use in Residential Care

- ARCHUS study – no effect (Connolly et al; 2015)
- INTERACT study & results – no significant effect (Kane et al; 2017)
- Advance practice nurse embedded in facility (Rantz et al; 2017) – before/after
- INTERACT study & results – importance of institutional “buy-in” & organization’s readiness for change (Mochel et al; 2018)
- Systematic review “poor quality evidence” (Graverholt, Forsetlund & Jamtvedt; 2014)
RCTs on Advance Care Planning & Hospital Use

(Molloy et al; 2000)
- 1292 residents in 6 nursing homes, less hospital use, less resource use, no difference in mortality

(Hanson et al; 2016)
- 306 residents with advance dementia, residents in intervention group half as many hospital transfers (0.078 vs 0.163 per 90 person-days; RR, 0.47; 95% CI, 0.26-0.88). Survival at 9 months unaffected
Canadian Promising Practices
Residential Care

✓ BC Division of Family Practice initiatives (more later)
✓ Care by design (Nova Scotia)
✓ Calgary model
✓ Providence model in Vancouver
✓ INTERACT/ AMDA protocols
✓ TREK presentation forthcoming

Secret “sauce”?

➢ Quality improvement, data supported, some re-alignment of payment incentives, team-based collaboration, coaching
➢ Start somewhere, get buy-in, measure how it’s going and keep at it.
In Summary

• Growing observational evidence base that...
  - frailty & acute care “marriage made in hell”
  - for an association of various modifiable characteristics associated with higher use

• Some evidence base for...
  - interventions to help frail people avoid hospital the most robust of which do not have reduction in hospital use as their main goal, but rather improving advance care planning & end of life care
Thank You - Acknowledgments

• Roni Kraut
• The College Library (Robert Melrose)
• The Vancouver Division of Family Practice