Responsiveness in the 3rd Age

Developing a New Responsive Model of Care for Home and Community Support Services for Older People in the Bay of Plenty.

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Presented by Rosemarie Webb & Tina Bennett

healthy, thriving communities  Kia Momoho Te Hāpori Ğaranga
Context

- Increase in ageing population
- Increase in complexity of clients receiving HCSS
- Older people remaining at home for longer

<table>
<thead>
<tr>
<th>Bay of Plenty Clients</th>
<th>% of numbers</th>
<th>% of spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex</td>
<td>65%</td>
<td>85%</td>
</tr>
<tr>
<td>Non-Complex</td>
<td>35%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Objectives

1. Empower the clients and their informal carers
2. Target care addressing specific client outcomes
3. Flexible services to meet the needs of the clients
Clinical Risk Groupings
Two stepped approach:
1. Develop relative client groupings based on similar levels of clinical risk
2. Develop flexible packages for these relative client groupings and associated funding mechanism

Purpose and Outcomes
• Service design that has a targeted approach to responsive model of care for our population
• Flexible services based on client outcomes and not based on input resources
• Risk stratification is based on evidence and validated measures
• Support older people to continue living in the community with appropriate support services and
  i. Prevent or delay entry to Aged Residential Care facilities
  ii. Predict and/or reduce acute hospitalisation (phase 2)
Sample and descriptives

- InterRAI – Home Care assessment data between Sep 2012 to Sep 2014
- Total of 3784 assessments, 30 had missing data leaving **3754 assessments for analysis** (337 Maori)
- There were **3380 individuals** included who had up to three assessments during the time period (315 Maori)
- **Females** made up 60.8% (n=2055) of the population. In the Maori population 68.3% (n=215) were female.
- **Age**

<table>
<thead>
<tr>
<th></th>
<th>&lt;65 years</th>
<th>65-74</th>
<th>75-84</th>
<th>85-94</th>
<th>95+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>All</td>
<td>29</td>
<td>0.9%</td>
<td>531</td>
<td>15.7%</td>
<td>1367</td>
</tr>
<tr>
<td>Maori</td>
<td>11</td>
<td>3.5%</td>
<td>113</td>
<td>35.9%</td>
<td>153</td>
</tr>
</tbody>
</table>

- 48.6% of clients were **living alone** (40.0% (n= 126) of the Maori population)
- 89.5% of clients had one or more **informal helpers** (93.3% (n=294) of the Maori population)
Scales

Outcome measures

- Used to evaluate a client’s current clinical status in a variety of domains
- Not intended as a diagnosis but to assist in clinical decision making by highlighting areas of deficit
- Researched and comparable to “gold standard” measures

SCALES OR OUTCOME MEASURES

1. ADL Hierarchy Scale (0-6)
2. Body Mass Index
3. Cognitive Performance Scale (0-6)
4. Communication Scale (0-8)
5. Depression Rating Scale (0-14)
6. IADL Capacity (0-48)
7. IADL Performance (0-48)
8. Pain Scale (0-4)
9. CHESS (0-5)
10. MAPLE Score (1-5)
11. Aggressive Behaviour Scale (0-12)
12. Pressure Ulcer Risk (0-8)
13. ADL Short Form (0-16)
14. ADL Long Form (0-28)
CHESS
Changes in Health, End-stage disease and Signs and Symptoms

- Attempts to identify those individuals who are at risk of serious decline
- Higher scores are associated with a shorter lifespan
- Scores range from 0, no symptoms of instability, to 5 which is highly indicative of death, hospitalisation, pain, caregiver distress and poor self-rated health
- The score is calculated by adding sign and symptom variables up to a maximum of two, then adding three other variables (change in decision making, change in ADL status and end stage disease)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No symptoms</td>
</tr>
<tr>
<td>1</td>
<td>Minimal health instability</td>
</tr>
<tr>
<td>2</td>
<td>Low health instability</td>
</tr>
<tr>
<td>3</td>
<td>Moderate health instability</td>
</tr>
<tr>
<td>4</td>
<td>High health instability</td>
</tr>
<tr>
<td>5</td>
<td>Highest level of instability</td>
</tr>
</tbody>
</table>

(Hirdes et al, 2003)
MAPLe
Method for Assigning Priority Levels

• MAPLe differentiates clients into five priority levels, based on their risk of adverse outcomes.
• Clients in the lowest priority level have no major functional, cognitive, behavioural, or environmental problems and are considered self-reliant.
• The highest priority level is based on presence of ADL impairment, cognitive impairment, wandering, behaviour problems, and the Institutional Risk CAP.
• Research has demonstrated that the five priority levels are predictive of risk: Individuals in the highest priority level are nearly nine times more likely to be admitted to a long-term care facility than are the lowest priority clients.
• MAPLe also predicts caregiver stress.
CPS
Cognitive Performance Scale

- The Cognitive Performance Scale (CPS) combines information covering:
  - Memory impairment;
  - Level of consciousness; and
  - Executive function

- Scores range from 0 (intact) to 6 (very severe impairment).

- The CPS has been shown to be highly correlated with the MMSE in a number of validation studies.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>MMSE approx. equiv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Intact</td>
<td>25</td>
</tr>
<tr>
<td>1</td>
<td>Borderline intact</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>Mild impairment</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Moderate impairment</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>Moderate/severe impairment</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Severe impairment</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Very severe impairment</td>
<td>0.5</td>
</tr>
</tbody>
</table>

(Morris et al, 1994)
**CAPs**

**Clinical Assessment Protocols**

- Goals of care vary but include the
  - Possibility of resolving the problem;
  - Reducing the risk of decline; or
  - Increasing the potential for improvement.
- Clients typically trigger multiple CAPs

<table>
<thead>
<tr>
<th>FUNCTIONAL PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Physical Activities Promotion</strong></td>
</tr>
<tr>
<td>2. Instrumental Activities of Daily Living</td>
</tr>
<tr>
<td>3. Activities of Daily Living</td>
</tr>
<tr>
<td>4. Home Environment Optimisation</td>
</tr>
<tr>
<td><strong>5. Institutional Risk</strong></td>
</tr>
<tr>
<td>6. Physical Restraints</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COGNITION AND MENTAL HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Cognitive Loss</td>
</tr>
<tr>
<td>8. Delirium</td>
</tr>
<tr>
<td>9. Communication</td>
</tr>
<tr>
<td>10. Mood</td>
</tr>
<tr>
<td>11. Behaviour</td>
</tr>
<tr>
<td><strong>12. Abusive Relationship</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOCIAL LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Activities</td>
</tr>
<tr>
<td>14. Informal Support</td>
</tr>
<tr>
<td><strong>15. Social Relationship</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLINICAL ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Falls</td>
</tr>
<tr>
<td>17. Pain</td>
</tr>
<tr>
<td>18. Pressure Ulcer</td>
</tr>
<tr>
<td><strong>19. Cardiorespiratory Conditions</strong></td>
</tr>
<tr>
<td>20. Undernutrition</td>
</tr>
<tr>
<td>21. Dehydration</td>
</tr>
<tr>
<td>22. Feeding Tube</td>
</tr>
<tr>
<td>23. Prevention</td>
</tr>
<tr>
<td><strong>24. Appropriate Medications</strong></td>
</tr>
<tr>
<td>25. Tobacco and Alcohol Use</td>
</tr>
<tr>
<td>26. Urinary Continence</td>
</tr>
<tr>
<td><strong>27. Bowel Continence</strong></td>
</tr>
</tbody>
</table>
Institutional Risk CAP

Overall goal of care:
• Avoid premature admission to ARC facility by supporting family efforts and providing community intervention programmes

Triggered clients typically have deficits in
• Physical functioning
• Memory
• Decision making
• Health

Most persons can remain in the community receiving informal and HCSS, however as the person’s problems increase in complexity, they are more likely to be admitted to ARC.

Physical Activities Promotion CAP

Triggered clients typically have low levels of physical activity. Most clients are at an “elevated risk of having a number of health complications and physical decline.”

Overall goal of care include:
- Increasing hours of exercise and physical activity;
- Preventing declines in functioning (ADL, IADL and mobility); and
- Suggested services for housework, mobility, exercise.

Benefits of more intensive and/or regular activity include
- Enhanced **cardiovascular** endurance;
- Better **mood**;
- Lower risk of **falls**;
- Slowing of **functional** decline;
- Better control of **weight**;
- Better **balance**;
- More **mobility**; and
- Greater **leg strength**.
Relationship between clinical risk factors

Strong relationships can be seen between the increasing MAPLe score and:

- Increasing CHESS score
- Increasing Institutional Risk (with reversibility)
- Increasing Carer Stress

There is also increased Carer Stress with increased Institutional Risk
Clinical Risk Groupings v1

Community Support Complex

Clients based on interRAI HC (3754)

- CHESS score 0-4 medical instability (3726)
  - MAPLe score 1-2 (958)
  - MAPLe score 3 (736)
  - MAPLe score 4 (1069)
  - MAPLe score 5 (963)

- CHESS score 5

End of Life Care

96.4% DO NOT trigger Institutional Risk CAP (414)

Physical Activities Promotion CAP Not triggered (414)

Institutional Risk CAP Not triggered (432)

Institutional Risk CAP Triggered (304)

Institutional Risk CAP Not triggered (424)

Institutional Risk CAP Triggered (645)

Physical Activities Promotion CAP Triggered (544)

Clinical Risk Profile 1 11.1% (414)

Clinical Risk Profile 2 14.6% (544)

Clinical Risk Profile 3 11.6% (432)

Clinical Risk Profile 4 8.2% (304)

Clinical Risk Profile 5 11.4% (424)

Clinical Risk Profile 6 17.3% (645)

Clinical Risk Profile 7

Clinical Risk Profile 8

Institutional Risk CAP Triggered (645)
MAPLe scores 1 and 2

Significantly higher triggers:
- **Physical activities promotion**
- IADLS
- Informal support
- Social relationship
- Falls
- Pain
- Cardiorespiratory conditions
- Appropriate medications

Prevention: NZ specific health

^ Except Falls and Pain where medium and high, respectively
* For those receiving home care
Client Profile Cluster algorithm

Community Support
Complex

Clients based on interRAI HC (3754)

MAPLe score 1-2 (958)

MAPLe score 3 (736)

MAPLe score 4 (1069)

MAPLe score 5 (963)

CHESS score 0-4 medical instability (3726)

MAPLe score 3-5 (1069)

Institutional Risk CAP Triggered (304)

Institutional Risk CAP Not triggered (424)

Institutional Risk CAP Triggered (645)

99.6% DO trigger Institutional Risk CAP

Institutional Risk CAP Not triggered (432)

Client Profile Cluster 3 11.6% (432)

Client Profile Cluster 4 8.2% (304)

Client Profile Cluster 5 11.4% (424)

Client Profile Cluster 6 17.3% (645)

Client Profile Cluster 7 14.6% (546)

Client Profile Cluster 8 11.6% (434)

CHESS score 5 actively dying (28)

Oncology on SCID (X)

CPS score <=2 (546)

CPS score >=3 (434)

Institutional Risk CAP Not triggered (432)

Institutional Risk CAP Triggered (304)

Institutional Risk CAP Triggered (645)

Client Profile Cluster 9 99.6% (n)

Client Profile Cluster 10 Non-Complex

InterRAI CA (X)
Clusters 7 and 8 (MAPLe 5)

RESULT
There are two clear groupings made up of CPS<=2 with mild impairment and CPS>=3 with more severe impairment.

CPS is therefore chosen as the prominent independent variable differentiating MAPLe 5 groupings.
Scales by Cluster

Cognitive Performance Scale (CPS)

Communication Scale

Activities of Daily Living Hierarchy (ADLH) Scale

Instrumental Activities of Daily Living (IADL)

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First ARC admission by cluster

First residential admission

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>Group 6</th>
<th>Group 7</th>
<th>Group 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities not trig</td>
<td>Activities triggered</td>
<td>No Inst Risk</td>
<td>Inst Risk</td>
<td>No Inst Risk</td>
<td>Inst Risk</td>
<td>CPS &lt;=2</td>
<td>CPS &gt;=3</td>
</tr>
<tr>
<td>MAPLe 1-2</td>
<td>MAPLe 3</td>
<td>MAPLe 4</td>
<td>MAPLe 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Client Profile Cluster Calculator

Outcome measures
CHESS score
MAPLe score
CPS score

CAPs
Physical Activities
Institutional Risk

Client Profile fits Need more data

To use the calculator, in the grey boxes type in the outcome measure scores and choose whether the CAPs have triggered. When there is enough information, the calculator will show the cluster for the client.

Client Profile Clusters algorithm

Community Support
Complex
- MAPLe score 1-2
  - Physical Activities Promotion CAP Not triggered
    - Client Profile Cluster 1
  - Physical Activities Promotion CAP Triggered
    - Client Profile Cluster 2
- MAPLe score 3
  - Institutional Risk CAP Triggred
    - Client Profile Cluster 3
  - Institutional Risk CAP Not trigged
    - Client Profile Cluster 4
- MAPLe score 4
  - CPS score More than or = 3
    - Client Profile Cluster 5
  - CPS score Less than or = 2
    - Client Profile Cluster 6
- MAPLe score 5
  - CHESS score 0-4 medical instability
    - Clients based on interRAI RLC

Palliative
- CHESS score 5 actively dying
  - Oncology on SCID
  - Client Profile Cluster 9 Palliative

Community Support
Non-Complex
- interRAI CA
  - Client Profile Cluster 10 Non-Complex
References

**Targeted Care**
Thompson LG: Clear goals, solid evidence, integrated systems, realistic roles. Health Pap 2000, 1: 60-66

**Institutional risk**

**InterRAI™ research papers**

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**Validation**

### MAPLe Distribution

A modification of Table 1 from Hirdes (2008) MAPLe paper is shown below. It includes the Momentum data from BOPDHB for Sep 2012 to Sep 2014. The mean of the country samples for each category has also been added for comparison. A graph visually shows these results.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Low</th>
<th>Mild</th>
<th>Moderate</th>
<th>High</th>
<th>Very high</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iceland</td>
<td>39.4</td>
<td>12.8</td>
<td>20.9</td>
<td>22.9</td>
<td>4.0</td>
<td>297</td>
</tr>
<tr>
<td>Manitoba</td>
<td>32.9</td>
<td>17.5</td>
<td>24.6</td>
<td>20.9</td>
<td>4.1</td>
<td>7,915</td>
</tr>
<tr>
<td>Sweden</td>
<td>32.0</td>
<td>12.4</td>
<td>35.4</td>
<td>14.6</td>
<td>5.6</td>
<td>178</td>
</tr>
<tr>
<td>Ontario</td>
<td>24.4</td>
<td>22.6</td>
<td>28.1</td>
<td>17.6</td>
<td>7.3</td>
<td>4,836</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>23.3</td>
<td>10.0</td>
<td>31.7</td>
<td>24.4</td>
<td>10.6</td>
<td>180</td>
</tr>
<tr>
<td>Bay of Plenty, NZ</td>
<td>20.2</td>
<td>5.4</td>
<td>19.8</td>
<td>28.7</td>
<td>26.0</td>
<td>3,766</td>
</tr>
<tr>
<td>BOP (Maori), NZ</td>
<td>12.5</td>
<td>2.7</td>
<td>22.4</td>
<td>32.8</td>
<td>29.6</td>
<td>312</td>
</tr>
<tr>
<td>Mean</td>
<td>18.2</td>
<td>9.8</td>
<td>31.5</td>
<td>27.8</td>
<td>12.7</td>
<td>5,433</td>
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<td>British Columbia</td>
<td>12.9</td>
<td>13.1</td>
<td>20.8</td>
<td>37.5</td>
<td>15.7</td>
<td>1,081</td>
</tr>
<tr>
<td>Michigan</td>
<td>5.7</td>
<td>7.2</td>
<td>42.0</td>
<td>31.9</td>
<td>13.2</td>
<td>19,491</td>
</tr>
<tr>
<td>Georgia</td>
<td>0.5</td>
<td>1.5</td>
<td>52.4</td>
<td>34.4</td>
<td>11.1</td>
<td>12,761</td>
</tr>
<tr>
<td>Japan</td>
<td>5.3</td>
<td>3.6</td>
<td>37.1</td>
<td>33.3</td>
<td>20.8</td>
<td>3,106</td>
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<tr>
<td>Italy</td>
<td>3.5</td>
<td>1.8</td>
<td>33.7</td>
<td>39.6</td>
<td>21.5</td>
<td>6,151</td>
</tr>
</tbody>
</table>

MAPLe Distribution

A modification of Table 2 from Hirdes (2008) MAPLe paper is shown below. It includes the Momentum data from BOP DHB for Sep 2012 to Sep 2014. The mean of the country samples for each category has also been added for comparison. Graphs visually show these results.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Low</th>
<th>Mild</th>
<th>Moderate</th>
<th>High</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admitted to long-term care home within 90 days</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute rate</td>
<td>1.30%</td>
<td>2.90%</td>
<td>4.70%</td>
<td>7.50%</td>
<td>14.50%</td>
</tr>
<tr>
<td>Adjusted odds ratio</td>
<td>Reference</td>
<td>2.14</td>
<td>3.64</td>
<td>5.91</td>
<td>11.35</td>
</tr>
<tr>
<td>Bay of Plenty, NZ</td>
<td>0.00%</td>
<td>1.07%</td>
<td>9.03%</td>
<td>15.10%</td>
<td>15.41%</td>
</tr>
<tr>
<td>BOP (Maori), NZ</td>
<td>0.00%</td>
<td>0.00%</td>
<td>2.90%</td>
<td>5.66%</td>
<td>4.21%</td>
</tr>
<tr>
<td><strong>Caregiver distress</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute rate</td>
<td>3.60%</td>
<td>8.00%</td>
<td>15.80%</td>
<td>26.10%</td>
<td>51.00%</td>
</tr>
<tr>
<td>Adjusted odds ratio</td>
<td>Reference</td>
<td>2.5</td>
<td>4.96</td>
<td>9.31</td>
<td>26.61</td>
</tr>
<tr>
<td>Bay of Plenty, NZ</td>
<td>5.44%</td>
<td>6.88%</td>
<td>15.18%</td>
<td>23.55%</td>
<td>29.76%</td>
</tr>
<tr>
<td>BOP (Maori), NZ</td>
<td>2.70%</td>
<td>11.11%</td>
<td>15.07%</td>
<td>32.04%</td>
<td>33.33%</td>
</tr>
<tr>
<td><strong>Better off elsewhere</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute rate</td>
<td>6.40%</td>
<td>9.10%</td>
<td>10.20%</td>
<td>18.90%</td>
<td>33.10%</td>
</tr>
<tr>
<td>Adjusted odds ratio</td>
<td>Reference</td>
<td>1.4</td>
<td>1.67</td>
<td>3.39</td>
<td>7.1</td>
</tr>
<tr>
<td>Bay of Plenty, NZ (n=3766)</td>
<td>3.43%</td>
<td>11.88%</td>
<td>17.99%</td>
<td>23.52%</td>
<td>26.73%</td>
</tr>
<tr>
<td>BOP (Maori), NZ (n=36)</td>
<td>2.38%</td>
<td>11.11%</td>
<td>6.67%</td>
<td>17.27%</td>
<td>10.10%</td>
</tr>
</tbody>
</table>