National Evaluation of the Dementia Care in Hospitals Program (DCHP) – a shared national initiative
Acknowledgments

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Disclosures

• Nil relevant

• The Cognitive Impairment Identifier (CII) is copyrighted to Ballarat Health Services.
Summary

• Summarise the Australian literature about known hospital risks for people with dementia.
• Describe the Dementia Care in Hospitals Program (DCHP)
• Describe the DCHP Evaluation methodology
• Discuss some of the key results and limitations of the national evaluation
Dementia in Hospitals

- People aged 65 and over, make up 49% of patient days in Australian hospitals.
- Dementia prevalence estimated to be 20% of patients 70 and over.
- Average Length of Stay (ALoS) in hospitals is 3.5 times longer when dementia is the principal diagnosis and 2.5 times longer when principal and additional diagnosis groups are combined.
- Hospital complications are a major cause of increased length of hospital stay.

AIHW Dementia in Australia 2012
AIHW Australia’s hospitals 2014–15 at a glance
Dementia and Risk for Patients

Odds ratio of experiencing a preventable hospital acquired complication (HAC) in patients with dementia compared to age matched without dementia

<table>
<thead>
<tr>
<th></th>
<th>Medical Ward</th>
<th>Surgical Ward</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>1.79</td>
<td>2.88</td>
</tr>
<tr>
<td>Pressure Ulcer</td>
<td>1.61</td>
<td>1.84</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1.37</td>
<td>1.66</td>
</tr>
<tr>
<td>Delirium</td>
<td>2.83</td>
<td>3.10</td>
</tr>
</tbody>
</table>

Preventable Hospital Acquired Complications

- Target complications chosen for sensitivity to changes in nursing practice*
- Hospital acquired – based on Needleman* coding rules

*Needleman et al Nurse-staffing levels and the quality of care in hospitals NEJM 2002
Poor awareness

• Cognitive impairment is poorly identified
• Cognitive impairment is rarely the reason for admission
• Dementia, when present is documented in the notes less than half the time.*
• Dementia is 6-7 times more likely to be an additional diagnosis than the principle reason for admission.*

*Draper et al Hospital Dementia Services project (HDS)
Cognitive Impairment

- **Dementia**
  - Pre-existing
  - Behaviour more constant
  - Rapid forgetting
  - Word finding

- **Delirium**
  - Attentional deficit
  - Disorientation
  - Memory impairment
  - Mood disturbance
  - Hallucinations
  - Delusions
  - Speech disturbance

CI a functional description and does not make a diagnosis. It is an acknowledgment of potential risk and the opportunity to support the patient.
The Dementia Care in Hospitals Program

- Universal cognitive screening of all patients 65 and over
- All of hospital staff (clinical and non-clinical) education program focusing on communication that assists orientation, understanding and support for families.
- Screen positive patients are offered a bedside alert – Cognitive Impairment Identifier
Dementia Care in Hospitals Program

- Introduce yourself
- Make sure you have eye contact at all times
- Remain calm and talk in a matter of fact way
- Keep sentences short and simple
- Focus on one instruction at a time
- Involve carers
- Give time for responses
- Repeat yourself… don’t assume you have been understood
- Do not give too many choices
Study Aim

• Aim-
  • To implement the DCHP in four partner sites in four different jurisdictions.
  • To evaluate the program uptake
  • To investigate the impact of the DCHP and CII in the following domains:
    • Staff perception of confidence in care and satisfaction
    • Carer satisfaction
    • Patient quality of life
  • To measure the effect of the DCHP on the rate of hospital acquired complications in patients with cognitive impairment compared to usual care.

• Hypothesis –
  • That the DCHP is transferable nationally, will positively impact on staff and carer satisfaction, and patient quality of life and will reduce hospital acquired complications in patients with cognitive impairment.
Research Methods

• Population
  • Patients 65 years and over in acute care (ATSI >/=50)
  • Four tertiary acute hospitals
  • Four different States

• Study Design
  • Prospective, stepped-wedge, cross sectional, continuous recruitment

• Interventions
  • Screening of all patients aged 65 years and over (ATSI >/=50) for cognitive impairment using a validated tool
  • The Dementia Care in Hospitals Program used in nominated wards
## Study Design

### Prospective, stepped-wedge, cross sectional, continuous recruitment

**Project Timelines** *(Go-Live as a fixed date in green).*

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No of Days</strong></td>
<td>70</td>
<td>70</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td><strong>Site #1</strong></td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td><strong>BL2 Baseline (Train and Screen)</strong></td>
<td>T1 Intervention (Implement DCHP)</td>
<td>T2 Intervention (Implement DCHP)</td>
<td>T3 Intervention (Implement DCHP)</td>
<td>T4 Intervention (Implement DCHP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Site #2</strong></td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td><strong>BL2 Baseline (Train and Screen)</strong></td>
<td>T1 Intervention (Implement DCHP)</td>
<td>T2 Intervention (Implement DCHP)</td>
<td>T3 Intervention (Implement DCHP)</td>
<td>T4 Intervention (Implement DCHP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Site #3</strong></td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td><strong>BL2 Baseline (Train and Screen)</strong></td>
<td>T1 Intervention (Implement DCHP)</td>
<td>T2 Intervention (Implement DCHP)</td>
<td>T3 Intervention (Implement DCHP)</td>
<td>T4 Intervention (Implement DCHP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Site #4</strong></td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td>BL1 Normal Practice</td>
<td><strong>BL2 Baseline (Train and Screen)</strong></td>
<td>T1 Intervention (Implement DCHP)</td>
<td>T2 Intervention (Implement DCHP)</td>
<td>T3 Intervention (Implement DCHP)</td>
<td>T4 Intervention (Implement DCHP)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Commence Training**  
**Go-Live**

[DEAKIN UNIVERSITY AUSTRALIA]  
[UNSW SYDNEY]  
[Ballarat HealthServices]
## Cognitive Screening Measures

<table>
<thead>
<tr>
<th>Tool</th>
<th>Acronym</th>
<th>Criteria for positive CI screen</th>
<th>Used by Site</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviated Mental Test</td>
<td>AMT</td>
<td>Score ≤ 7</td>
<td>1</td>
<td>Hodkinson</td>
</tr>
<tr>
<td>Mini-Cog</td>
<td></td>
<td>Recall 1 or 2 of 3 items and abnormal Clock Drawing; or recall of 0 of 3 words.</td>
<td>4</td>
<td>Borson</td>
</tr>
<tr>
<td>Abbreviated Mental Test Score 4*</td>
<td>AMT4</td>
<td>Score of 3 or less</td>
<td>2 and 3</td>
<td>Swain</td>
</tr>
<tr>
<td>Clock Drawing Test^</td>
<td>CDT</td>
<td>Not all clock numbers present, spaced unevenly, or hands pointing to incorrect time.</td>
<td>2, 3 and 4</td>
<td>Scanlan</td>
</tr>
</tbody>
</table>

*Only used in conjunction with CDT

^Used in conjunction with either AMT4 or MiniCog
Outcome Measures

• Program Delivery Measure
  • Screening rates – the proportion of the target population screened
  • CII usage rates – the proportion of the screen positive who had a CII used
  • Staff Training rates – the proportion of staff on target wards trained

• Organisational Impact Measures
  • Staff Satisfaction – survey
  • Length of Stay
  • Cost of care and training

• Patient/Carer Specific Measures
  • Carer satisfaction - survey
  • Patient QoL – survey using the DemQoL
  • CII acceptance – record of rejections

• Hospital Acquired Complication Rate
  • Combined change in the rate of four modifiable hospital acquired complications (HAC) - UTI, Delirium, Pressure Ulcer, Pneumonia.
Data Analysis

• Hospital Acquired Complications
  • Routinely collected hospital data coded using ICD10
  • Data pooling across sites done by Health Round Table
  • Powered to detect a 25% reduction in the risk rate ratio
**Total Participants**

**Total Eligible Patients**
(Aged over 65/ATSI > 50.

\[ N = 16,834 \]

Control Period = 3,257
Intervention Period = 13,577

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**Screened**

\[ n = 11,309 \]

Control Period = 1,970
Intervention Period = 9,339

---

**Screen Positive**

\[ n = 4,278 \]

Control Period = 905
Intervention Period = 3,373

---

**Screen Negative**

\[ n = 7,031 \]

Control Period = 1,065
Intervention Period = 5,966

---

**Unscreened**

\[ n = 5,525 \]

Control Period = 1,287
Intervention Period = 4,238

---

**CII placed over bedside**

\[ n = 1,907 \]

Control Period = NA
Intervention Period = 1,907
### Population Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Screen positive CI</th>
<th>Screen negative CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Age</td>
<td>82.9</td>
<td>82.7</td>
</tr>
<tr>
<td>Charlson</td>
<td>5.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Comorbidity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Females comprised 53.1% of participants.
### Screening and CII use Rates

<table>
<thead>
<tr>
<th>Study Period</th>
<th>Not Screened</th>
<th>Screened</th>
<th>Total Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Control Phase</td>
<td>1287</td>
<td>39.5</td>
<td>1970</td>
</tr>
<tr>
<td>Intervention Phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Period (T1)</td>
<td>1341</td>
<td>31.5</td>
<td>2914</td>
</tr>
<tr>
<td>Period (T2)</td>
<td>982</td>
<td>31.4</td>
<td>2144</td>
</tr>
<tr>
<td>Period (T3)</td>
<td>875</td>
<td>28.5</td>
<td>2199</td>
</tr>
<tr>
<td>Period (T4)</td>
<td>1040</td>
<td>33.3</td>
<td>2082</td>
</tr>
<tr>
<td>Total</td>
<td>5525</td>
<td>32.8</td>
<td>11309</td>
</tr>
</tbody>
</table>

Of the 3373 patients identified as having CI in Intervention, 1907 (56.5%) had the CII placed above their bed. This figure is comparable to CII usage previously reported at Ballarat Health Services (60%).
# Staff Training

<table>
<thead>
<tr>
<th>Work Category</th>
<th>Medical</th>
<th>Nursing</th>
<th>Allied Health</th>
<th>Non-Clinical</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of staff</strong></td>
<td>411</td>
<td>1261</td>
<td>302</td>
<td>555</td>
<td>58</td>
<td>2587</td>
</tr>
<tr>
<td><strong>Number of staff trained</strong></td>
<td>247</td>
<td>916</td>
<td>211</td>
<td>323</td>
<td>51</td>
<td>1748</td>
</tr>
<tr>
<td><strong>Average staff trained</strong></td>
<td>60.10%</td>
<td>72.64%</td>
<td>69.87%</td>
<td>58.20%</td>
<td>87.93%</td>
<td>67.57%</td>
</tr>
<tr>
<td><strong>Range of staff trained</strong></td>
<td>50.40% - 100.00%</td>
<td>57.53% - 82.96%</td>
<td>19.44% - 100.00%</td>
<td>40.38% - 98.36%</td>
<td>82.93% - 100.00%</td>
<td>61.26% - 74.19%</td>
</tr>
</tbody>
</table>
## Staff Satisfaction

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Err</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2</td>
<td>Confidence</td>
<td>Control</td>
<td>954</td>
<td>3.15</td>
<td>.791</td>
<td>.026</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention</td>
<td>418</td>
<td>3.52</td>
<td>.787</td>
<td>.038</td>
</tr>
<tr>
<td>Q3</td>
<td>Comfort</td>
<td>Control</td>
<td>953</td>
<td>3.18</td>
<td>.820</td>
<td>.027</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention</td>
<td>417</td>
<td>3.53</td>
<td>.809</td>
<td>.040</td>
</tr>
<tr>
<td>Q4</td>
<td>Organisational Support</td>
<td>Control</td>
<td>943</td>
<td>2.80</td>
<td>.853</td>
<td>.028</td>
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<tr>
<td></td>
<td></td>
<td>Intervention</td>
<td>417</td>
<td>3.20</td>
<td>.913</td>
<td>.045</td>
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<tr>
<td>Q5</td>
<td>Job Satisfaction</td>
<td>Control</td>
<td>936</td>
<td>2.88</td>
<td>.790</td>
<td>.026</td>
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<tr>
<td></td>
<td></td>
<td>Intervention</td>
<td>415</td>
<td>3.11</td>
<td>.818</td>
<td>.040</td>
</tr>
<tr>
<td>Q6</td>
<td>Hospital Environment</td>
<td>Control</td>
<td>938</td>
<td>2.60</td>
<td>.858</td>
<td>.028</td>
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<tr>
<td></td>
<td></td>
<td>Intervention</td>
<td>414</td>
<td>2.74</td>
<td>.901</td>
<td>.044</td>
</tr>
</tbody>
</table>
Program delivery costs and Length of Stay

• Median cost per episode across control and intervention was $8,555.
• Median costs fell by nearly $400 in intervention for patients who screened positive for CI. They had a lower median cost in intervention compared to control ($10,236 compared to $9,862).
• The training cost per patient who screened positive for CI was $19.40.
• Median LOS for screened negative group = 6 days (no change from control to intervention)
• Median LOS for screened positive group = 8 days (increased from 7 days in control to 8 in intervention)
Patient Specific Measures

- Carer Satisfaction –
  - 177 carer surveys collected.
  - No change with intervention.

- Patient Quality of Life – Dementia Quality of Life Scale
  - 506 DEMQOLs completed across four partner sites
  - No reduction in QoL

- C1I acceptance –
  - Less than 1% rejection rate

"Noted the identifier was above dad’s bed and noted that staff then took their time to explain procedures.” – Carer comment
Hospital Acquired Complication Rates - Pooled

• For each year of age the risk of at least one HAC increased by 4%.

• Those with CI are 3 times more likely to develop at least one of the four target complications while in hospital (RR 0.33; 95%CI: 0.305; 0.364).

• 43% of people who screen positive for CI had a least one of 4 HACs, compared to 28% of the population who screened negative for CI.

• Screen positive patients with one HAC had on average 1.3HACs
Limitations

• Real world interventions limit standardisation
• Analysis is not complete and is part of a PhD
  • Not fully investigated the impact of the DCHP of HACs
  • Not investigated variation in site coding
  • Not yet investigated the impact of variation in program uptake
Key Findings

• 38% of patients 65 and over who are screened will be found to have Cognitive Impairment (CI).
• Patients 65 and over with CI have a three times increased risk of hospital-acquired complications compared to those with no CI.
• Implementation of the Dementia Care in Hospitals Program (DCHP) resulted in a significant increase in staff confidence and comfort when supporting patients with dementia, delirium or memory and thinking difficulties.
• Implementation and recurrent costs of the DCHP are insignificant
• Carer satisfaction with the impact of the DCHP on hospital care is high.
• The bedside alert, the Cognitive Impairment Identifier (CII), was welcomed by the overwhelming majority of patients and families.
• Screening can be embedded as part of normal practice and screening rates maintained if they are linked to an appropriate program of care whereby staff can see the value of screening.
Conclusions

• Screening for CI in older inpatients is an effective method to identify a hospital population at high risk of hospital acquired complications.

• These results support the requirement, in the NSQHS Standards (2nd Edition), for universal screening of patients 65 and over for cognitive impairment

• The DCHP’s high staff and patient/carer acceptance will assist sustain hospital wide screening for CI at low cost.

• The DCHP evaluation has a large data base of hospital patients with cognitive impairment for further research.
Thank you.