THE DEMENTIA CARE IN HOSPITALS PROGRAM

Protocol for National Rollout and Evaluation

M. Yates[1,2], S. MacDermott[1,2], M. Theobald[1], M. Morvell[1], J. Watts[2], & L. Lane[2].
[1] Ballarat Health Services. [2] Deakin University, Victoria.

BACKGROUND

The Dementia Care in Hospitals Program (DCHP) is an all-of-hospital training and education program designed to improve awareness of, and communication with, patients with cognitive impairment (CI) in the acute sector. The DCHP was developed at Ballarat Health Services (BHS) and has been implemented in twenty-five Health Services across Victoria (https://www.bhs.org.au/node/130; https://www.bhs.org.au/sites/default/files/finder/pdf/final%20report%20DHS%202004.pdf)

This program is unique nationally and comprises the following key elements:

(a) A requirement for hospitals to screen their at-risk populations for cognitive impairment.
(b) A unique bedside graphic that signifies cognitive impairment (the Cognitive Impairment Identifier ((CII)) and alerts staff to patients who require additional support.
(c) A provenance of close partnership with patients with cognitive impairment and their carers, as well as with Alzheimer's Australia. It was agreed as a condition of the use of the CII that the organisations that use it will change processes and culture to better care for people with dementia.
(d) An all-of-hospital staff approach, providing training to both clinical and non-clinical staff.

Australian Government Department of Health funding is supporting a national rollout of the DCHP combined with a detailed re-evaluation by Deakin University. Health services from South Australia, the Australian Capital Territory, Western Australia and Tasmania were chosen based on site readiness, executive support, and the requirement from the funding body for sites to be nationally distributed and to include both metropolitan and regional health services.

METHOD

The study is a prospective, stepped-wedge, cross sectional, continuous recruitment design as shown in Table 1. Patients are recruited on admission in a continuous and gradual process for a fixed length of time as determined by their length of stay (LOS). Patients aged 65 and over (ATSI > 50 years) admitted to the target wards of a single hospital make up the full cluster.

Table 1: Project timelines showing stepped-wedge design

PROJECT TIMELINES (Go-Live as a fixed date in green)

Period Commencing	1/02/2015	12/04/2015	5/07/2015	27/09/2015	20/12/2015	13/03/2016	5/06/2016	28/08/2016	20/11/2016	12/02/2017	7/06/2017
Site	DAYS	70	84	84	84	84	84	84	84	84	84
CAHLN (SA)	BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL2 Training	T1	T2	T3	T4			T5
Canberra Hospital (ACT)	BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL2 Training	T1	T2	T3	T4		T5
Sir Charles Gairdner (WA)		BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL2 Training	T1	T2	T3	T4	T5
Royal Hobart (TAS)			BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL1 Normal Practice	BL2 Training	T1	T2	T3	T4
					COMMENCE TRAINING		GO-LIVE				

The DCHP will be implemented and evaluated in health services in Adelaide, Canberra, Perth and Hobart. The target population on participating wards is all acute admissions aged 65 and over (ATSI < 50 years) and found to have CI using a validated assessment tool. The impact of the DCHP on patient quality of life, hospital length of stay and costs, carer satisfaction, staff knowledge and change in practice will also be evaluated.

The primary outcome measure will be the change in the rate of the combined risk of one or more of: urinary tract infection, pressure injury, pneumonia and delirium occurring during the hospital admission before and after adoption of the DCHP. This combined risk rate was identified in the hospital Dementia Services (HDS) project to be 2.5 times higher for patients with dementia when matched for co-morbidity (Draper et al., 2011). The primary and key secondary outcomes are provided in Table 2.

Table 2: Primary and Secondary Outcomes

	Outcome measure	Hypothesis	Rational for outcome selection
Primary Outcome: Clinical	Change in the rate of the combined risk of one or more of the following Adverse Events (AE): urinary tract infection, pressure injury, pneumonia and delirium.	There will be improvements in clinical care after the adoption of the DCHP as demonstrated by reduction in hospital AEs.	Dementia, when present, is documented in the medical record only 50% of the time (Draper et al.,, 2011). The rate of the combined risk of UTI, pneumonia, pressure injury and delirium is 21.9% in patients with dementia. The population with CI are thought to be less impaired so the event rate may be less (Bail et al., 2015).
Primary Outcome: Cost	Cost Effectiveness Analysis (CEA) comparing incremental cost to incremental effectiveness in terms of number of combined adverse events.	That a lower combined risk rate will result in lower hospital costs.	Length of stay and inpatient costs will be compared between two groups. These costs represent the majority of hospital costs.
Secondary Outcome: Costs	A cost-utility analysis (CUA) comparing incremental cost to incremental quality of life gained for patients with CI after adoption of the DCHP.	That the cost-utility will improve for patient with CI.	Quality of life using the DemQol can be costed (Rowen et al., 2012).
	One –to –one additional staff requirements.	The requirement for additional staffing will reduce as the DCHP is adopted.	This a significant additional and often unbudgeted care cost.
	Length of Stay.	LOS will reduce as AE rate reduces.	Key element of hospital cost.
Secondary Outcome: Satisfaction/ Confidence	Staff knowledge and confidence – staff survey.	Improved staff confidence in managing patients with CI.	Most staff acknowledge difficulties in working with people with CI and their carers (Forman & Gardiner, 2007). Both surveys have been developed for the DCHP and used across all 25 rollouts.
	Carer Satisfaction – carer survey.	Improved carer satisfaction.	The questions target key education goals e.g., changes to staff attitudes and actions expected by staff reported by carers.

Based on a conservative estimate of 750 positive screens, using a validated screening tool, in each period the target sample size is a total of 3750, i.e., a total of 750 positive screens in baseline (BL2) and 3000 in the intervention period. It is estimated that for an adverse event ranging from 20 – 26%, assuming an intra-cluster coefficient (ICC) of 0.5, this sample size will provide at least 80% power, with a significant level of 0.05, to detect 22 – 25.5% or more reduction in RR. This is equivalent to a minimum 5 – 5.5% reduction in absolute risk. A generalised linear mixed model with time epoch as a fixed factor and hospitals as a random effect for an incomplete stepped-wedge design was adopted for the power calculation (Hussey & Hughes, 2007). Stata software was used for this purpose (Hemming & Girling, 2014).

"What I did appreciate from all the staff I encountered was those who introduced themselves to me by name and role, and the attending medics who addressed me directly and quietly from a sitting position, either by or on the bed, as opposed to being addressed overbearingly from above or loudly from a position closer to the door than the bed".
Quote from patient post delirium, Royal Hobart Hospital.

"I felt her (my wife) become more tense by the way she gripped my arm as I sat by the hospital bed . . . it would have helped if they asked me as it (the questions) only made it more distressing for her…"
Quote from carer, Ballarat Health Services.

RESULTS & DISCUSSION

The choice of screening tool at each participating site was predetermined by the health service and based on tools already embedded in clinician practice often for falls screening. The tools used are the AMTS (Hodkinson, 1972), the Mini-Cog (Borson et al., 2003), and the AMT4 (Schofield et al., 2010) & Clock Drawing Test [CDT] (Shulman, 2000). Staff have reported that the inclusion of the CDT as a screening tool provides a quick and easy prompt for CI. Examples of clockface drawings are provided in Fig. 1.

Three of the four sites have now completed baseline, and commenced intervention. The introduction of universal screening for over-65s has proven challenging. While hospitals initially reported that screening of over 65s was already in place; the reality was that this was available but not universal. Uptake of universal screening required significant organisational and cultural change impacting on overall participant numbers. Having implemented universal screening, in the participating health services results show that the pooled prevalence of CI at baseline is 37%. This is consistent with the Victorian figure of 30%.

To support universal screening and the DCHP, sites have developed Cognitive Pathways as shown in Fig 2.

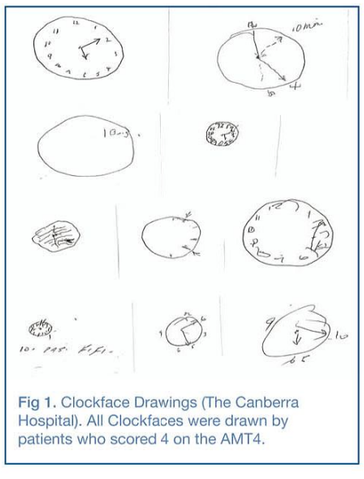

Fig 1. Clockface Drawings (The Canberra Hospital). All Clockfaces were drawn by patients who scored 4 on the AMT4.

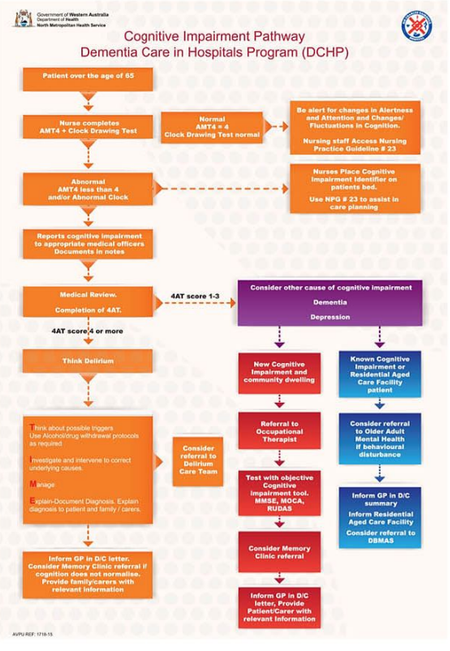

Fig 2. Cognitive Screening Pathway developed by Sir Charles Gairdner Hospital.

Table 3: Monthly Screening Rates on Participating Wards at Royal Adelaide Hospital

Ward	Nov 15	Dec 15	Jan 16	Feb 16	Mar 16
Ward 1	75.00 %	89.00 %	75.00 %	72.00 %	62.00 %
Ward 2	79.00 %	84.00 %	92.00 %	82.00 %	94.00 %
Ward 3	79.00 %	81.00 %	84.00 %	74.00 %	75.00 %
Ward 4	93.00 %	97.00 %	60.00 %	92.00 %	92.00 %
Ward 5	87.00 %	97.00 %	93.00 %	100.00 %	100.00 %
Overall	*82.60 %*	*89.60 %*	*80.80 %*	*84.00 %*	*84.60 %*

Project sites have demonstrated the capacity to implement and sustain universal screening. For example, Table 3 provides screen rates for the Royal Adelaide Hospital showing that, average screening rates in excess of 80% have been achieved and are being maintained.

CONCLUSION

Translational research in the complex environment of acute hospitals presents constant challenges when research requirements must be balanced against everyday needs and external environmental factors. Nevertheless, this project demonstrates that the DCHP can be implemented nationally in regional and metropolitan settings. The impact of environmental factors, such as implementation of revised National Safety and Quality Health Service (NSQHS) Standards and variation in the use of screening tools, require further investigation. In this context a more unified national approach including the adoption of a single national symbol for cognitive impairment is recommended. Also recommended is a longer-term evaluation to identify the determinants of maintenance and sustainability.

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