Implementation of a model of care for hospitalised older persons with cognitive impairment (the Confused Hospitalised Older Persons program) in six New South Wales hospitals

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Abstract

Objective: To evaluate the implementation of a model of care known as the Confused Hospitalised Older Persons (CHOPs) program to improve recognition, assessment and management of older persons with cognitive impairment (delirium and/or dementia) admitted to acute hospitals.

Methods: The model of care was implemented in six selected hospitals across New South Wales. Pre- and postimplementation medical record audits, environmental audits, and staff knowledge and care confidence surveys were performed. Interviews with clinical leads postimplementation identified enablers and barriers.

Results: There were significant increases in cognitive screening within 24 hours (OR = 3.32 [2.50-4.91]), delirium risk identification (OR = 4.04 [2.89-5.64]), assessment of cognitive impairment (OR = 2.55 [1.90-3.43]) and interaction with families (OR = 2.81 [2.09-3.79]). Staff education and care confidence were improved, and positive environmental changes occurred in all hospitals. Barriers and enablers to implementation were identified.

Conclusion: The CHOPs program improved identification, risk assessment and management of cognitive impairment in older hospitalised patients.

KEYWORDS
cognitive dysfunction, delirium, dementia, hospitalization

1 | INTRODUCTION

Cognitive impairment due to dementia and delirium is an increasingly important issue in Australian hospitals due to the rising prevalence of these conditions. More than 30% of patients aged 65 years and over present with cognitive impairment or develop it during their admission.1 For these patients, there is an increased risk of falls and fall-related injury, worsening functional decline, increased length of hospital stay, increased chance of medical and surgical complications, increased chance of institutionalisation and increased mortality.2,3 The Australian Institute of Health and Welfare report on Dementia Care in Hospitals (2013)4 noted that 47% of older patients with dementia were not recognised as such. Pre-existing cognitive impairment or dementia is the primary risk factor for delirium.5 Early recognition and management of delirium with treatment of the underlying cause can prevent occurrence of adverse events or lessen their severity.5
Multicomponent strategies can be effective in delirium prevention. The less-than-optimal recognition and management of patients with cognitive impairment in acute hospitals are well recognised. In 2011, the New South Wales (NSW) Agency for Clinical Innovation’s (ACI) Aged Health Network prioritised work to improve the care of older hospitalised patients with cognitive impairment.

With funding from the Department of Veterans Affairs and General Practice NSW, a pilot study was conducted to implement a new approach to identification and management of cognitive impairment due to delirium and dementia in acute hospitals. This pilot study, Care of Confused Hospitalised Older Persons (CHOPs), was conducted in five hospitals in metropolitan Sydney and regional and rural NSW in 2012. The lessons learned from this 1-year pilot study in association with evidenced-based practice were used by the ACI in the development of seven key principles to improve the care of older people with delirium and dementia within acute hospitals. The key principles for Care of the Confused Hospitalised Older Person are in Table 1. Four principles focus on clinical practice (cognitive screening, risk identification and preventive measures, assessment and management), and three principles focus on enablers to ensure successful implementation (communication, education of staff and supportive care environments). These principles became the foundation of the CHOPs Program.

With the aim of translating the learnings from the CHOPs pilot study into practice, further funding was sought and secured from the National Health and Medical Research Council Cognitive Decline Partnership Centre (NHMRC 9100000) and the NSW ACI, to implement and evaluate the CHOPs program in hospitals across NSW. This paper describes the implementation and evaluation of the CHOPs program in a range of wards across six NSW hospitals between 2014 and 2016 and identifies some of the enablers and barriers to successful implementation.

### TABLE 1 Confused Hospitalised Older Persons key principles for confused, hospitalised, older persons

| Principle | Title | Description |
|-----------|-------|-------------|
| 1.        | Cognitive screening | Patients aged 65 y and over will be screened for confusion on admission or within 24 h of admission using a validated screening tool |
| 2.        | Delirium risk identification and prevention strategies | Older people will be assessed for delirium risk. Interventions will be put in place for prevention of identified risks. Identified risks will be communicated to the older person, their carer, family and staff involved in their care |
| 3.        | Assessment of older people with confusion | Older people who are confused will be assessed. The cause of their confusion will be investigated to determine the appropriate management |
| 4.        | Management of older people with confusion | NSW hospitals will have programs in place for older people with confusion that align with these principles. The implementation will be in partnership with the older person, their carer and family |
| 5.        | Communication to support person-centred care | Communication processes and tools will support person-centred community care for the older person throughout their hospital journey and at their transfer of care to the community |
| 6.        | Staff education on caring for older people with confusion | Staff are supported through training, education and leadership to enable them to deliver skilled, knowledgeable and timely care to the older person with confusion |
| 7.        | Supportive care environments for older people with confusion | NSW hospitals will provide a supportive care environment for the older person with confusion |

Source: ACI Key Principles for Care of Confused Hospitalised Older Persons 2014.

### Policy Impact

The management of cognitive impairment in acute hospitals requires a combined approach of raising awareness, staff education, carer involvement and environmental modification. Implementation of the Confused Hospitalised Older Persons program provides a framework for hospitals to respond to the increasing numbers of older people presenting with delirium and dementia.

### Practice Impact

The prevalence of delirium is increasing amongst older patients in acute hospitals. The Care of Confused Hospitalised Older Patients program provides a practical framework for acute hospitals to improve the recognition and management of delirium and to address the requirements of the National Safety and Quality Health Service Standards (2nd Edition).

### METHODS

The ACI Centre for Health Care Redesign—Accelerated Implementation Methodology (AIM) was used. This
methodology guides and enables frontline clinical staff to redesign and improve service delivery. The six phases of this methodology are as follows: planning and initiation, diagnostics, solutions design, implementation planning, implementation and evaluation, and sustainability.

2.1 | Project planning and initiation

In establishing the CHOPs program, a project officer was employed, a governance steering committee appointed, a project implementation plan written, and an ACI CHOPs resource website developed. The project officer had a clinical nursing background with expertise in aged care, dementia and delirium.

Expressions of interest were then called for from hospitals across NSW to be involved in implementation of the program. Twelve hospitals were selected on the basis of being able to identify an executive sponsor and a clinical champion who committed to implementation of the CHOPs program, and which had evidence of some current initiatives to improve care of older people with cognitive impairment. A staged implementation was planned. The six hospitals reported in this paper were in phase one and two of the implementation. The first three hospitals (one city, one regional and one rural) commenced the program in 2014 and the second group of hospitals (two city and one rural/remote) in early 2015. The third and fourth phases of implementation occurred in 2017-2018 and have not been included in this study.

Ethical approval was sought and gained from the Sydney Local Health District Human Research Ethics Committee in 2014 (CH62/6/2014-015), with Site Specific Approval gained for each individual hospital site.

Pre/postmeasures were developed for the diagnostic and evaluation phase. The measures included a medical record audit tool based on the CHOPs key principles, a CHOPs staff knowledge and care confidence survey and a ward environmental audit tool.

All measurement tools and the CHOPs implementation framework used are available at https://www.aci.health.nsw.gov.au/chops/how-to-implement-chops-at-your-service/.

The staff members who formed and led the CHOPs project team from each hospital attended a 2-day AIM Project Implementation training program with ACI. These team members included a clinical nurse consultant or clinical nurse educator, a geriatrician or other medical specialist, aged health specialist nurses, and representatives from pharmacy and allied health, and clinical governance. The teams from each hospital decided on which ward or wards they would implement the CHOPs program. This varied with two Emergency Department wards, six surgical wards, two aged care wards, four medical wards and one subacute rehabilitation ward selected across the six sites.

The CHOPs project officer and key ACI staff then visited each site to meet with the senior executive management team and assist with staff information sessions about the CHOPs program. Engaging staff and senior managers was an essential part of the project initiation.

2.2 | Diagnostic and evaluation measures

2.2.1 | Medical record audit

For the baseline evaluation (diagnostics) and at 12 months after implementation occurred, the medical records department at each hospital was asked to provide a random sample of medical records (using a random number table) for patients aged over 65 years (for Aboriginal patients over 45 years) admitted to the designated CHOPs wards over the previous 3-6 months. Exclusions were emergency-only admissions or day-only patient admissions. The purpose of this was to measure changes pre- and postimplementation in the proportion of all patients within this age group who had a cognition and delirium risk screen completed on or within 24 hours of admission and to identify the percentage of patients who had evidence of cognitive impairment. Of those patient records where evidence of cognitive impairment was identified, the auditing looked at whether appropriate investigations and management plans were in place. A recommended sample size of 55-66 records for each hospital was calculated by the ACI Health Economics and Evaluation Team (HEET) based on the population of older people in the selected wards, using a delirium prevalence of 15%. These files were audited using a specifically developed medical record audit form. All data were deidentified. Information collected included patient characteristics, length of stay, discharge destination and evidence of screening for cognitive impairment, delirium risk assessment, documentation of management plans and involvement of family members in care and decision-making.

Data were collected by the ACI CHOPs project team with assistance from senior staff from each participating hospital. All data were collected manually and reviewed by the ACI HEET before being entered into an Excel spreadsheet.

2.2.2 | Staff knowledge and care confidence survey

At both pre- and postimplementation, nursing, medical and allied health staff were invited to participate in completing the CHOPs knowledge and care confidence survey. Those who agreed to participate were provided with a participant information sheet and consent form to sign before completing the survey. These were distributed by the clinical leads. The survey was either completed through a SurveyMonkey link or via hard copy. Completed hard copies were entered into SurveyMonkey™ by ACI staff. The survey assessed
dementia and delirium knowledge, level of training, and perceived confidence by staff in identifying and managing older patients with cognitive impairment.

2.2.3 | Environmental audit

Prior to implementation of the CHOPs program in each hospital, an environmental audit was conducted by the CHOPs project officer. This assessed each participating ward against the ACI Aged Health Network’s Key Principles for Improving Health Care Environments for People with Dementia (2014). This included reviewing the layout of the ward, access, lighting, signage, availability of low-low beds, availability of single rooms, presence of large face clocks and calendars, colour contrast, availability of appropriate chairs with arms by each bed and access to lounge and dining areas, and to outdoor areas. Recommendations for improvement and change were made, and these occurred where it was financially and physically viable to do so.

2.2.4 | Interviews with clinical leads

Following written consent, a group interview with the six CHOPs site-based clinical leads was held in October 2015 when all sites had been active for at least 6 months. The interview was facilitated by a member of the ACI HEET who took written notes during the interview. This enabled the site leads to share their experiences and discuss perceived barriers and enablers to the implementation of CHOPs in their respective hospital ward or wards.

2.3 | Solutions planning, design and implementation

The baseline (diagnostic) results from the medical record audit, staff survey and environmental audit were collated by ACI staff and sent back to the project leads to present to their executive and project teams. These data assisted the clinical teams in each hospital to decide on which principles they would prioritise, while maintaining a focus on all seven key principles through staff education. This assisted in their solutions planning, design and implementation. Table 2 details the geographic location of each hospital type, the wards implementing CHOPs and the solution initiatives implemented.

The initial focus was to try for “quick wins” by addressing some of the easier areas for improvements, such as environmental changes, while planning future strategies for some of the more difficult areas to change such as routine cognitive screening.

Staff on participating wards were provided with training sessions on the CHOPs program and on management of delirium and dementia. These sessions included the importance of identifying cognitive impairment, how to engage with carers and family and how to manage behavioural changes. Education strategies included face-to-face teaching, knowledge cafés and workshop sessions and facilitated e-learning through the NSW Dementia Competency and Training Network. The education sessions were reinforced with the use of the “Barbara’s Story” DVD series.

Fortnightly teleconferences with the site clinical leads were facilitated by the CHOPs project officer. These provided regular mentoring support and the opportunity for clinical leads to report on their progress and share their experiences and solutions initiatives throughout the implementation.

2.4 | Statistical analysis

Odds ratios and confidence intervals were calculated using Select Statistics open access software (https://select-statistics.co.uk/calculators/confidence-interval-calculator-odds-ratio) to compare the baseline (preimplementation) medical record audit results with the postimplementation audit results.

The pre- and poststaff survey results were analysed through SurveyMonkey™ and compared using percentages. The environmental audit was compared pre and post for improvements with photographs used to demonstrate improvements. A number of evidence-based guidelines regarding environment are available. For the evaluation of the pre/postenvironmental audit, the ACI Aged Health Network Key Principles for Improving Health Care Environments for People with Dementia (2014) was used.

The written semistructured interview records with the six CHOPs leads were analysed by thematic analysis for common themes related to enablers and barriers by the ACI HEET staff using NVIVO.

3 | RESULTS

The results from the six participating hospitals in the first two phases of the implementation of CHOPs are presented in this paper. All six hospitals successfully implemented a number of the CHOPs key principles into their designated wards.

Table 3 contains the results from the baseline and 12-month follow-up audit of 743 randomly selected medical records for patients from the participating wards in the six hospitals. The items measured reflect the CHOPs principles of cognitive screening on admission, delirium risk identification using the Delirium Risk Assessment Tool (DRAT), assessment of cognitive impairment, management of cognitive impairment (including use of antipsychotics), interaction with families, coding of delirium on discharge and use of physical restraint. Apart from antipsychotic medication
**TABLE 2** Geographic location of each hospital implementing Confused Hospitalised Older Persons (CHOPs), the wards chosen for implementation and the range of solutions implemented

| Hospital | Geographic location | Implementation wards | Solutions implemented |
|----------|---------------------|----------------------|-----------------------|
| A        | Regional            | Aged care ward       | Delirium alert stickers for medical records and delirium alert form with prevention/management strategies |
|         |                     | Medical ward         | CHOPs icon on patient journey boards |
|         |                     | Surgical ward        | CHOPs magnets for patients whiteboards |
|         |                     |                      | Large clock calendars and orientation boards |
|         |                     |                      | Patient activity and distraction boxes |
|         |                     |                      | Antipsychotic lanyards |
|         |                     |                      | Carer information on medications and delirium |
|         |                     |                      | CHOPs promotion posters |
|         |                     |                      | Nursing, allied health and medical staff dementia delirium education |
| B        | Rural               | Medical ward         | Delirium alert stickers for medical record and delirium alert form with prevention/management strategies |
|         |                     | Emergency department | CHOPs icon on computer desktops |
|         |                     |                      | CHOPs icon magnets for whiteboards |
|         |                     |                      | Large clock calendars and orientation boards |
|         |                     |                      | Carer information and “I’m a Carer” ID card |
|         |                     |                      | Fiddle aprons and patient rummage boxes |
|         |                     |                      | Antipsychotic medication guidelines |
|         |                     |                      | Dementia delirium volunteer program |
|         |                     |                      | Staff education and knowledge cafe |
| C        | Metropolitan        | 3 surgical wards     | Development of staff education plan and packages |
|         |                     |                      | Computer desktop delirium education resources |
|         |                     |                      | Day and date clocks, black toilet seats, toilet and shower signage |
|         |                     |                      | Multilingual delirium information brochures for patients and families |
|         |                     |                      | Delirium and confusion assessments method lanyards |
|         |                     |                      | Delirium alert stickers and magnets for whiteboards |
| D        | Metropolitan        | Medical ward         | Development of Cognitive Impairment Guideline |
|         |                     | Aged care ward        | Procedure for pharmacological interventions during a behavioural emergency developed |
|         |                     |                      | CHOPs promotion day |
|         |                     |                      | Planning for a specialised dementia delirium unit |
|         |                     |                      | Introduction of personal profile Sunflower tool |
|         |                     |                      | Improving signage |
|         |                     |                      | Staff education with “Barbara’s Story” |
|         |                     |                      | Implementation of the six-item cognition screen and Delirium Risk Assessment Tool |
| E        | Metropolitan        | Emergency department | Barbara’s Story Education series and education using cognition and delirium screening tools |
|         |                     | Vascular surgical ward| Improvements in ward signage |
|         |                     |                      | Medical staff education with geriatrician on CHOPs |
|         |                     |                      | Lanyards with sedation flow chart |
|         |                     |                      | Admission packs for older patients and associated guide |
|         |                     |                      | CHOPs implementation partnership with nursing practice development staff |
|         |                     |                      | Partnering with carer program to improve support and resources for carers |
| F        | Rural/remote        | Surgical ward        | Toilet signs, day/date clocks in all rooms, patient white boards |
|         |                     | Medical ward         | CHOPs magnets, delirium alert stickers, electronic medical record delirium alerts. |
|         |                     | Subacute Rehabilitation ward | Delirium included in clinical handover communication |
|         |                     |                      | Delirium patient and family information brochures, CHOPs promotion posters |
|         |                     |                      | Introduction of the CHOPs personal profile sunflower across all wards |
|         |                     |                      | Staff education including DVDs, in services and e-learning |
|         |                     |                      | Use of patient and carer stories for education |
|         |                     |                      | Delirium resource folder in each ward |
prescribed, there were significant improvements postimplementation in all other areas, with, for example, screening for delirium within 24 hours increasing from 12% to 31%, delirium risk identification increasing from 19% to 48% and coding of delirium at discharge increasing from 27% to 79%.

Table 4 reports the findings of staff surveys conducted pre- and post-CHOPs program implementation. The results show percentage improvements postimplementation of staff who received training in dementia and delirium and who perceived this training to be sufficient, as well as increased staff confidence in recognising delirium and managing patients with confusion.

A supportive care environment for older people with cognitive impairment is considered essential to good management for these patients. All six sites demonstrated improvements in the physical environment following the preimplementation environmental audit. Simple improvements included the appropriate use of signage on toilet and bathroom doors (where previously there was none), the use of low-low beds, contrasting colour toilet seats, orientation clocks, increased space for personal items and room by each bed for family members to stay. Information on delirium and dementia was made available as posters and as brochures in a number of different languages.

The results of the environmental audit are presented in Table 5.

### 3.1 Enablers and barriers

Common key enablers discussed by the CHOPs leads during interview included the following: having lead agency (ACI) support; medical staff and geriatric team involvement; a cohesive project team and clear action plan; senior management support; and clinical lead and clinical champions. Synergy/linkages with other programs, for example fall prevention programs, were also important so that CHOPs was not seen in isolation but instead integrated with other programs aimed at improving care and reducing risk for older people in hospital.

Barriers to implementation included the following: competing program priorities; project team member attrition; poor engagement by some staff; time demands for project lead; variation in experience of project leads; staff time and release for education; the low profile of delirium and dementia in the hospital generally; and information technology system changes.

### Table 3 Overall results of medical record file audit before and 12 mo after commencement of CHOPs in six NSW hospitals

|                                | Pre-CHOPs | Post-CHOPs | Odds ratio (CI) |
|--------------------------------|-----------|------------|-----------------|
| Number of files audited        | 347       | 396        |                 |
| Cognitive screen at admission %| 29        | 37         | OR = 1.42 (1.04-2.72) |
| Cognitive screen within 24 h % | 12        | 31         | OR = 3.32 (2.50-4.90) |
| DRAT completed %               | 31        | 43         | OR = 1.73 (1.28-2.33) |
| Delirium risk identified %     | 19        | 48         | OR = 4.04 (2.89-5.64) |
| Cognitive screen repeated %    | 15        | 28         | OR = 2.25 (1.56-3.25) |
| Delirium assessment conducted %| 33        | 56         | OR = 2.55 (1.90-3.43) |
| Antipsychotics prescribed %    | 26        | 21         | OR = 1.34 (0.71-1.88) |
| Physical restraints used %     | 8         | 4          | OR = 0.54 (0.29-0.99) |
| Interaction with families %    | 39        | 64         | OR = 2.81 (2.09-3.79) |
| Delirium coded at discharge %  | 27        | 79         | OR = 10.2 (7.23-14.2) |

Abbreviations: CHOPs, Confused Hospitalised Older Persons; DRAT, Delirium Risk Assessment Tool.

### Table 4 Before and after staff responses to education and training sessions

| Hospital | A | B | C | D | E | F | Totals |
|----------|---|---|---|---|---|---|--------|
| Number of staff surveyed | 59 | 50 | 114 | 65 | 33 | 58 | 130 | 39 | 30 | 26 | 66 | 45 | 432 | 283 |
| Receiving training in delirium and dementia % | 43 | 80 | 56 | 71 | 72 | 82 | 62 | 76 | 59 | 80 | 58 | 73 | 52 | 77 |
| Training perceived as sufficient % | 51 | 75 | 38 | 50 | 42 | 65 | 42 | 47 | 33 | 67 | 28 | 46 | 40 | 59 |
| Confident to recognise delirium % | 66 | 81 | 77 | 91 | 95 | 90 | 43 | 56 | 43 | 58 | 33 | 55 | 58 | 75 |
| Confident to manage confusion % | 52 | 80 | 83 | 85 | 90 | 84 | 49 | 66 | 47 | 58 | 41 | 37 | 60 | 71 |
**TABLE 5** Overview of environmental audit recommended changes

| Principle | Title | Changes to ward environment |
|-----------|-------|-----------------------------|
| 1.        | Unobtrusively reduce risks—safety | ↑ availability of falls alarm mats  
|           |       | ↑ availability of high low beds  
|           |       | ↓ ward clutter |
| 2.        | Provide a human scale | ↑ availability of single rooms |
| 3.        | Allow people to see and be seen—visual access | ↑ visibility from nurses’ station (prioritisation of patients with cognitive impairment) |
| 4.        | Reduce unhelpful stimulation—stabilus reduction | Strategies to ↓ use of buzzers and other noise for patients with cognitive impairment |
| 5.        | Optimise helpful stimulation—highlighting useful stimuli | ↑ orientation clocks  
|           |       | ↑ suitable toilet signs  
|           |       | ↑ suitable shower signs  
|           |       | ↑ toilets with contrasting seats  
|           |       | New “Hello my name is…” patient friendly staff name badges  
|           |       | New poster of ward staff |
| 6.        | Support movement and engagement—provision for wandering, circulation and access to outside area | Doors to exits and storage areas unobtrusive  
|           |       | Pathway to common areas clearly signed  
|           |       | Outdoor areas  
|           |       | • Wayfinding  
|           |       | • Delirium brochures and admission care packs in wards  
|           |       | Accessible outside area.  
|           |       | • All wards had patient care whiteboards mostly visible from the beds, and Confused Hospitalised Older Persons (CHOPs) magnets were in use for confused patients  
|           |       | • The CHOPs icon was on the electronic journey board |
| 7.        | Create a familiar space—familiarity | Space provided for personal items  
|           |       | Families encouraged to stay  
|           |       | ↑ use of “Getting to Know You” tools  
|           |       | ↑ availability of suitable arm chairs |
| 8.        | Provide a variety of spaces to be alone or with others | Accessible outdoor area and improvements to this space  
|           |       | Natural light maximised  
|           |       | ↑ availability of lounge/visitor rooms |
| 9.        | Provide links to the community—community links | ↑ access to diversional activities (eg rummage box, fiddle mats) |
| 10.       | Support the values and goals of care | ↑ use of patient care whiteboards  
|           |       | Delirium brochures and admission care packs in wards  
|           |       | CHOPs icon on electronic journey boards  
|           |       | Delirium information in multiple languages |

### 4 | DISCUSSION

The evaluation of the implementation of the CHOPs program in six hospitals across NSW has shown both statistically and clinically significant improvements. There were overall improvements in identification, assessment and management of patients with cognitive impairment and improvements in the physical environment. Staff confidence in identifying and managing patients with confusion also improved. These are all important factors in appropriate care of older patients with cognitive impairment in hospital. Although there was a focus through staff education on risks and adverse outcomes associated with use of antipsychotic medication, there was not an overall significant reduction in the prescribing of these medications. This highlights the need for a continuing focus and education on non-pharmacological management strategies.

Improvements in identification and management of cognitive impairment in this older patient population are consistent with Australian Commission on Safety and Quality in Health Care’s Delirium Care Standard (2016) and with the second edition of the National Safety and Quality Health Service Standards. Hospitals which have implemented CHOPs will be well placed to meet the requirements of the second edition of the Health Care Standards with respect to cognitive impairment.

It is important to note the barriers and enablers to implementation identified by the six CHOPs leads. Factors, such as the position of the project lead, how well they were known at the hospital, the level of executive support, continuity of the
project team members, and the level and continuity of management leadership in the wards where CHOPs was being implemented, influenced the level of success and outcomes. Despite the successes for the six hospitals in their implementation of CHOPs, these factors are indicative of the ongoing issues and challenges related to implementing and sustaining a new program within acute hospitals.

The cost of implementing the CHOPs program was not specifically measured for each site, but there was no employment of new staff members, or expensive equipment required. Time spent on education and training was the main expense for each hospital, but the CHOPs website and training materials are all available without cost.

### 4.1 Sustainability and scalability

Following the implementation of CHOPs in six hospitals reported in this paper, a further six hospitals across NSW have undertaken CHOPs implementation. Subsequently, a CHOPs Expert Advisory Group (EAG) was established under the ACI Aged Health Network. The aim of the EAG was to support sustainability and extension of the program in existing implementation sites and to assist new sites wishing to implement CHOPs. Annual CHOPs Knowledge Sharing Forums have since been held to share learnings and facilitate implementation.

The CHOPs program has been adopted by a number of hospitals beyond NSW. Several hospitals in Queensland and Victoria have adopted and implemented the key principles of CHOPs in their model of delirium and dementia care, with one hospital adding an eighth principle on discharge planning. In addition the CHOPs, principles are being used in a research project looking to improve the care of older patients in surgical and orthopaedic wards in a number of hospitals in southern Germany.

### 4.2 Limitations

This was an observational study with pre- and postimplementation evaluation measures. Each hospital nominated different types of wards for implementation and selected different solutions based on their baseline evaluation results. Subsequently, there were some minor differences in outcomes between hospitals related to this. Other factors also impacted on differences in performance. For instance, one hospital had fewer cognitive screens performed at admission but markedly increased the number performed within the 24 hours after admission, indicating an increased awareness of the need to perform screening as soon as possible after admission. Another hospital had a decrease in family interaction over the period of the study, and this was related to movement of senior staff away from the ward.

### 5 Conclusion

The CHOPs program was designed to improve the identification, risk assessment and management of cognitive impairment in older hospitalised patients with the aim of improving care in the hospital setting. Our results show that hospital wards implementing one or more of the seven key principles of CHOPs led to improvements in systems of care. These improvements related to rates of cognition screening, delirium identification and management improved ward environments and greater staff confidence in recognising and managing delirium. Key enablers were ACI support, executive sponsorship and a ward-based clinical lead. Given the evidence on poor recognition and management of patients with cognitive impairment in hospitals, the outcomes of the CHOPs program implementation have shown it to be a practical, flexible and feasible program that can result in improvements in the number of patients with dementia and/or delirium who are identified and managed appropriately.

### CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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