

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

**Evidence for the safety and quality issues
associated with the care of patients with
cognitive impairment in acute care settings: a
rapid review**

October 2013

Suggested citation:

Australian Commission on Safety and Quality in Health Care (2013). Evidence for the safety and quality issues associated with the care of patients with cognitive impairment in acute care settings: a rapid review, ACSQHC, Sydney.

This document can be downloaded from the ACSQHC web site: www.safetyandquality.gov.au

© Commonwealth of Australia 2013

This work is copyright. It may be reproduced in whole or in part for study or training purposes subject to the inclusion of an acknowledgement of the source. Requests and inquiries concerning reproduction and rights for purposes other than those indicated above requires the written permission of the Australian Commission on Safety and Quality in Health Care, GPO Box 5480 Sydney NSW 2001 or mail@safetyandquality.gov.au

This Evidence Check review was brokered by the Sax Institute for the Australian Commission on Safety and Quality in Health Care.

Authors

Dr Catherine Travers
Professor Len Gray
Dr Melinda Martin-Khan
Dr Ruth Hubbard
Centre for Research in Geriatric Medicine
The University of Queensland
UniQuest Project No: C01397

Disclaimer:

This Evidence Check review was produced using the Evidence Check methodology in response to specific questions from the commissioning agency. It is not necessarily a comprehensive review of all literature relating to the topic area. It was current at the time of production (but not necessarily at the time of publication). It is reproduced for general information and third parties rely upon it at their own risk.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1. BACKGROUND.....	7
2. METHOD.....	8
3. RESULTS	10
4. SUMMARY	33
4.1 Gaps in the research literature and areas for further research	36
5. REFERENCES.....	38
APPENDIX A	48
APPENDIX B	51

EXECUTIVE SUMMARY

The Australian Commission on Safety and Quality in Health Care commissioned this rapid review to identify recent evidence in relation to three key questions:

1. What is the current evidence of quality and safety issues regarding the hospital experience of people with cognitive impairment (dementia/delirium)?
2. What are the existing evidence-based pathways, best practice or guidelines for cognitive impairment in hospitals?
3. What are the key components of an ideal patient journey for a person with dementia and/or delirium?

The purpose of this review is to identify best practice in caring for patients with cognitive impairment (CI) in acute hospital settings. CI refers to patients with dementia and delirium but can include other conditions. For the purposes of this report, 'Hospitals' is defined as acute care settings and includes care provided by acute care institutions in other settings (e.g. Multipurpose Services and Hospital in the Home). It does not include residential aged care settings nor palliative care services that are not part of a service provided by an acute care institution.

Method

Both peer-reviewed publications and the grey literature were comprehensively searched for recent (primarily post 2010) publications, reports and guidelines that addressed the three key questions. The literature was evaluated and graded according to the National Health and Medical Research Council (NHMRC) levels of criteria (see Evidence Summary – Appendix B).

Results

Thirty-one recent publications were retrieved in relation to quality and safety issues faced by people with CI in acute hospitals. The results indicate that CI is a common problem in hospitals (upwards of 30% - the rate increases with increasing patient age), although this is likely to be an underestimate, in part, due to numbers of patients without a formal dementia diagnosis. There is a large body of evidence showing that patients with CI have worse outcomes than patients without CI following hospitalisation including increased mortality, more complications, longer hospital stays, increased system costs as well as functional and cognitive decline.

To improve the care of patients with CI in hospital, best practice guidelines have been developed, of which sixteen recent guidelines/position statements/standards were identified in this review (Table 2). Four guidelines described standards or quality indicators for providing optimal care for the older person with CI in hospital, in general, while three focused on delirium diagnosis, prevention and management. The remaining guidelines/statements focused on specific issues in relation to the care of patients with CI in acute hospitals including hydration, nutrition, wandering and care in the Emergency Department (ED). A key message in several of the guidelines was that older patients should be assessed for CI at admission and this is particularly important in the case of delirium, which can indicate an emergency, in order to implement treatment. A second clear message was that hospital staff should receive appropriate dementia education and training.

Eighty-one publications regarding interventions aimed at improving the quality of care provided to patients with CI in hospital were also identified in the review. A considerable number of studies focused on the identification, prevention and treatment of delirium, while a wide range of other interventions have been trialed. These include the use of trained dementia specialist nurses to provide education and support for other staff, volunteers to assist patients with CI with everyday activities and to reduce the incidence of delirium, patient identifiers to alert staff that the patient has CI, and re-designing the hospital environments to better suit patients with CI. Most projects reported some favourable outcomes.

In summary, the following interventions appear to represent good practice and are effective in improving at least some outcomes for patients with CI or improving the care experience of these patients while in hospital:

- Older patients should be assessed for CI at admission to hospital. This is a key recommendation of the Ministers' Dementia Advisory Group.¹ The identification of delirium in the ED or at admission to hospital is particularly important as it may indicate a life-threatening emergency.
- The National Institute for Health and Clinical Excellence (NICE)² recommends that all patients aged ≥ 65 years be screened for CI at admission to hospital.
- The Confusion Assessment Method (CAM) is recommended for delirium screening in both ED and acute hospital wards.
- The CAM-ICU is recommended for delirium screening in the intensive care unit (ICU).
- The DRS-R-98 is recommended for the assessment of delirium in older patients following hip fracture.

- Brief, validated tests (requiring five minutes or less) for the assessment of CI in older hospital patients include the 6-Item Cognitive Impairment Test (6CIT), Mini-Cog and Six-Item Screener (SIS).
- One study showed that the employment of paid technicians (paid medical student research assistants) to perform brief cognitive and functional assessments in the ED was regarded as beneficial by ED nurses and physicians.
- Benzodiazepines should be avoided in patients at risk of delirium.
- There is no evidence to support the use of antipsychotics as a treatment for delirium in older hospitalized adults.
- Multi-component non-pharmacological interventions to prevent delirium are effective.
- Admission of patients with CI to a dedicated geriatric ward and care from a specialist multidisciplinary team appears to improve patient outcomes.
- The use of volunteers to assist patients with CI appears to be very useful and is well accepted by patients and staff.
- The use of specialist dementia nurses to provide education and support to other hospital staff has been well received and appears to promote good dementia care.
- Staff dementia education and training can improve knowledge and confidence in interacting with patients with dementia; the provision of dementia education and training for hospital staff is recommended in several guidelines.
- The creation of a dementia-friendly physical environment (e.g. improved lighting and signage) appears to improve patient outcomes.
- The re-design of patient processes to improve the flow of older patients through hospital more quickly has been shown to result in substantially improved outcomes.
- Patient identification and support schemes (i.e., The Butterfly Scheme and TOP5) have both been well received and have received awards for excellence. The implementation of a CI symbol to identify patients with CI (should they wish to be so identified) has been successful in Victorian acute hospitals and is endorsed by Alzheimer's Australia (2013)³.
- Family carers can be taught to re-orient and interact with patients at risk of delirium and may reduce delirium incidence.

Finally, gaps in the research literature and areas for further research are identified.

Project outputs include this report together with a comprehensive summary of the included publications (Evidence Summary – see Appendix B).

1. BACKGROUND

The magnitude of the problem

An estimated 298,000 Australians had dementia in 2011 which equates to approximately 9% of all Australians aged 65 years and older. This number is expected to increase to 591,531 by 2030-2031.⁴

Dementia prevalence is particularly high amongst Indigenous Australians and is approximately three times the rate of the general Australian population.⁵ It develops at a younger age in Indigenous people with many more people aged 46-64 years affected than in the same aged Australian population, generally.⁶

Although there are very limited data specific to dementia amongst hospitalised Aboriginal and Torres Strait Islander people, the data shows that Aboriginal and Torres Strait Islander people are more likely to be hospitalised than non-Indigenous Australians.⁷ Because of this, and the higher prevalence of dementia among Aboriginal and Torres Strait Islander people, it seems likely that a considerable proportion of hospitalised Aboriginal and Torres Strait Islander people will have CI.

People with dementia rely heavily on health and aged care services including hospitals⁸ and recent Australian data indicates that between 20-25% of patients aged 70 years and older admitted to an acute hospital have dementia^{9,10,11} with the rate increasing up to 47% in patients aged 90 years and older.¹⁰ This number may be an underestimate due to (a) there being considerable numbers of people with dementia who have not received a diagnosis; and (b) the dementia may not be recognised (and hence not recorded) by hospital staff.^{9,12}

Reported rates for delirium range from 10-31% at admission and from 3-29% during the hospital episode.¹³ It may increase to 70% prevalence for ICU.¹⁴ Admitted hospital patient expenditure for patients with dementia was estimated to cost \$144.5 million in 2009-10 and is expected to more than triple by 2030-31.⁴

2. METHOD

Literature Review

Both peer-reviewed and grey literature was comprehensively searched for recent (primarily post 2010)^a publications, reports and guidelines that addressed the three key questions. The search engines Google and Google Scholar and the databases PubMed, Medline, Embase, Cinahl, Joanna Briggs and BMJ Best Practice were searched for relevant publications as well as a large number of potentially relevant websites (Appendix A; Table 3). The search terms included combinations of the keywords:

- Dementia;
- Delirium; and
- cognitive impairment

in combination with:

- hospital;
- acute hospital;
- general hospital;
- guidelines;
- best practice hospital care;
- Aboriginal Australians;
- Multicultural;
- quality care;
- discharge planning;
- hospital in the home;
- transition care;
- dementia champion;
- comprehensive geriatric assessment;
- delirium room; and
- hospitalised elder & family.

^a Some earlier key publications of which the authors of this report were aware have also been included as they were considered to be particularly relevant.

The reference lists of retrieved publications were also searched for additional articles and publications. The authors of several reports were also contacted for further information regarding projects identified on the internet.

Articles were included if they were directly relevant to the care of people with CI in the acute care setting and reported relevant outcomes. The most recent systematic reviews and reviews of a topic were included in the first instance, followed by articles and reports describing specific interventions.

3. RESULTS

Project outputs include this report together with a comprehensive summary of the included publications (see Appendix B - Evidence Summary).

Question 1: Quality and safety issues for patients with CI

Thirty-one recent publications were retrieved in relation to the quality and safety issues faced by people with CI in acute hospital environments. Results of these studies are summarised in Table 1 of this document and a detailed summary of each document is provided in the Evidence Summary (Appendix B).

Both dementia and delirium are independently associated with a number of adverse outcomes in association with hospitalisation including a significantly increased risk of in-hospital mortality. Patients with dementia are almost twice as likely to die in hospital compared to patients without dementia,^{9,15} while patients with delirium are 2.6 times more likely to die than those without delirium.² Other adverse events associated with hospitalisation for an older person with CI include significantly longer hospital stays,^{9,16,17} functional and cognitive decline,^{16,18,19,20} medical and surgical complications,^{17,21,22} and a greatly increased risk of institutionalisation.^{2,23,24}

Disruptions to the patient's routine (as a result of hospitalisation and unfamiliar surroundings) often exacerbate their confusion and distress. In addition, hospitalised patients with CI may wander, placing themselves or others at risk. They may also display disruptive behaviours including aggression, calling out, yelling or screaming making them difficult for nursing staff to manage and care for, as well as being distressing for other hospital patients. To compound these problems, staff in general do not have the necessary training to appropriately manage these behaviours and the physical environment of the hospital is not conducive to caring for patients with CI.²⁵

Table 1 Summary of potential adverse events for older patients with dementia and/or delirium when hospitalised.

Issues	Magnitude of the problem
Mortality	<p data-bbox="483 312 1877 339">Patients with dementia are almost twice as likely to die in hospital as patients without dementia.^{9,15}</p> <p data-bbox="483 379 1877 448">Mortality rates for hospitalised patients with delirium are high, ranging from 22-76%.²⁶ The odds of dying in hospital following an episode of delirium in hospital have been reported to be 2.6.²</p> <p data-bbox="483 485 1877 550">Stroke patients who develop delirium in hospital have a particularly high inpatient mortality rate (OR=4.71) and increased mortality at 12 months (OR = 4.91) compared to non-delirious patients.²⁷</p>
Delirium	<p data-bbox="483 587 1877 687">Delirium is common in older patients in the ED (8.3%) although in the majority of cases (86%), it is not detected.^{28,29} The non-detection of delirium in the ED may be associated with increased mortality within six months following discharge.³⁰</p> <p data-bbox="483 724 1877 858">Between 3-29% of older patients (aged 65 years and older) develop delirium during a hospital stay,^{11,13,31} although rates as high as 47-53% in older surgical patients have been reported.³² An early study reported that dementia increases the risk of developing delirium approximately five-fold.³³ More recently, the increased risk has been reported to be more than six-fold for CI or dementia (OR = 6.3).²</p> <p data-bbox="483 895 1877 1029">Delirium appears to persist in 44.7% of older patients at discharge and in 32.8, 25.6 and 21% of patients at one, three and six months, respectively. The outcomes (cognition, function, nursing home placement, mortality) of patients with persistent delirium are consistently worse than the outcomes of patients who recover from delirium.³⁴</p> <p data-bbox="483 1066 1877 1161">The risk of developing delirium increases with increasing age. Patients aged ≥ 65 years are three times more likely to develop delirium than younger patients (OR = 3.03), while patients aged ≥ 80 years are five times more likely to develop delirium than younger patients (OR = 5.22).²</p>

Issues	Magnitude of the problem
Cognitive Decline/ Dementia	<p>Studies suggest that critical illness and ICU treatment are associated with long-term CI in older patients (65 years and older), although the magnitude of the problem is unclear.³⁵</p> <p>Delirium is associated with a significant decline in cognitive ability during the first year after cardiac surgery.³⁶</p> <p>Dementia has been reported as a consequence of delirium in hospital – one study reported patients to be at almost six times the risk (OR = 5.97; 95%CI: 1.83 – 19.54) of developing dementia at three years follow-up compared to patients without delirium.³⁷</p> <p>More recently, Inouye and colleagues (2013), reported that older patients who developed delirium following general or cardiac surgery had an increased risk of developing cognitive dysfunction (reported relative risk (RR), based on 35 studies was 1.6-1.7). Older patients who developed delirium following hip fracture surgery were at particular risk for dementia or cognitive dysfunction (the RR ranged from 6.4 to 41.2).¹⁹</p>
Increased length of stay (LOS)	<p>Overall, patients with dementia have longer hospital stays than patients without dementia. Studies have shown that patients with dementia have a significantly longer length of stay (LOS) of between 6-30 days compared to patients without dementia.¹⁶ Other studies have shown that the LOS can be up to twice as long for patients with dementia (average LOS = 16.4 days) compared to those without dementia (average LOS = 8.9 days).⁹</p> <p>The development of delirium in hospital has been shown to increase the length of stay by 7.32 days in ICU and by 6.53 days in hospital.¹⁷</p>
Increased rate of readmission	<p>Compared to people in hospital without dementia, the rate of readmission within 30 days for people with dementia is nearly 1.5 times higher following an unplanned admission, and more than twice as high following a planned admission.³⁸</p> <p>Patients with dementia are significantly more likely to be readmitted in three months.⁹</p>

Issues	Magnitude of the problem
Falls	<p>People with dementia are more likely to fall in hospital than people without dementia. Overall, people with dementia are more than twice as likely to experience an adverse event while in hospital as those without, with falls being by far the most commonly recorded.³⁹</p> <p>Falling may result in serious injury including fractures and death, and may increase the length of the hospital stay.</p> <p>The odds of falling or suffering another complication in hospital (e.g. pressure ulcer) following delirium in hospital have been reported to be increased by 2.3.²</p>
Medical and surgical complications	<p>Older hospitalised patients with dementia (both medical and surgical) have significantly higher rates of potentially preventable complications (particularly urinary tract infections, pressure areas, pneumonia and delirium), compared to patients without dementia.²¹</p> <p>A very large scale study reported a 32% higher risk of acute organ dysfunction, a 50% higher risk of severe sepsis and a 28% higher risk of hospital mortality in patients with dementia after controlling for potentially confounding factors.²²</p>
Increased risk of institutionalisation following hospitalisation	<p>Patients with dementia have an increased risk of institutionalisation (RR = 6.9). Patients with dementia and delirium have an even higher risk (RR = 9.3).²³ Dementia has been shown to be an independent predictor of institutionalisation following hospitalisation. In one study, patients with dementia were two to four times more likely to be institutionalised following hospitalisation and the risk increased the more severe the dementia.²⁴</p> <p>Delirium is associated with high rates of institutionalisation,⁴⁰ and the odds of being institutionalised following an episode of delirium in hospital have been reported to be increased by 2.64.²</p>
Nutrition & Hydration issues	<p>Poor nutrition and dehydration may affect 20-50% of older patients in the hospital setting and are associated with adverse outcomes.⁴¹</p>

Issues	Magnitude of the problem
Increased cost to the hospital system as a consequence of longer hospital stays	The average cost of hospital care for people with dementia is higher than for people without dementia (in Australia, \$7,720 compared with \$5,010 per episode, respectively). ⁸
Functional Decline	<p>Patients with dementia are significantly more likely to experience a decline in functional ability following hospitalisation compared to patients without dementia.¹⁶ The decline in function has also been reported in older patients presenting to the Emergency Department.⁴²</p> <p>Older patients who develop delirium in hospital have an increased risk of functional decline for one month or more following their discharge from hospital. The reported RR for functional decline following discharge from hospital in general medical patients was 1.5 while RRs for patients who had undergone cardiac and non-cardiac surgery was 1.9 and 2.1 respectively.^{19,20}</p> <p>Older patients (aged 60 years and older) who developed delirium following hip fracture surgery were 1.7 times more likely to display functional decline and require assistance with care eight months following their discharge from hospital, and were 5.6 times more likely to require such assistance at 38 months following discharge, compared to patients who did not develop delirium.¹⁸</p>

Question 2: Best practice guidelines/position statements/standards

Sixteen recent best practice guidelines/position statements/standards were identified and are included in this report. They are listed in Table 2 and a detailed summary of each document is provided in the Evidence Summary (Appendix B). Five guidelines described standards or quality indicators for providing optimal care for the older person with CI in hospital, in general, while four focused on delirium diagnosis, prevention and management. The remaining guidelines/statements focused on specific issues in relation to the care of patients with CI in acute hospitals including hydration, nutrition and wandering, and one set of Quality Indicators focused on the care of older patients presenting to the ED.⁴³ One guideline outlined recommendations for the involvement of families in caring for hospitalised older patients with dementia.⁴⁴

A key tenet of the general guidelines and the delirium guidelines was that 'people with dementia admitted to hospital should have a comprehensive assessment of their cognitive and functional status' and that 'delirium should be assessed and treated'. Indeed, one of the key recommendations by the Australian Minister's Dementia Advisory Group (2012)¹ was that all patients aged 65 years and older should be screened for CI at admission to hospital so that these patients can be identified and be given appropriate, effective and compassionate care during their hospital stay. This recommendation was made on the basis that 50% of people admitted to hospital are over the age of 65 years, and almost 30% of hospital patients have CI and are at risk of a range of serious adverse outcomes, as previously discussed. While it is acknowledged that there is little direct evidence that screening for dementia in this setting improves clinical outcomes,^{43,45} there is a growing body of evidence to indicate that hospitals that are responsive to the specific needs of patients with CI result in improved patient outcomes (see Table 3 for a summary of the evidence). Another important reason for assessing the cognitive status of older patients at admission to hospital is to distinguish dementia from delirium which may indicate a life threatening emergency and hence requires identification and treatment. Furthermore, dementia is an important risk factor for delirium, and hence should be documented as part of the delirium risk assessment.

Another theme identified in several of the guidelines and documents was the importance of staff having received dementia training and education. For example, the Dementia Quality Statement (No. 1) developed by the National Institute for Health and Clinical Excellence⁴⁶ states that '*people with dementia receive care from staff appropriately trained in dementia care*'. The remaining guidelines/quality indicators are too numerous to list herein, however, all were based on very comprehensive literature reviews and consideration by expert panels.

Question 3: Best practice for patients with Cognitive Impairment in hospital

Eighty-one publications regarding interventions aimed at improving patient outcomes or the quality of care provided to patients with CI in hospital were identified and included in the review. The papers are summarised briefly in Table 3 while more detailed summaries of these studies and reports are included in the Evidence Summary (Appendix B).

Table 2 Best Practice Guidelines/Position Statements/Standards included in the review.

<p>Second round of the National Audit of Dementia (care in general hospitals) Standards document (2012). Royal College of Psychiatrists.⁴⁷</p> <p>Dementia Quality Standards (2010). National Institute for Health and Clinical Excellence.⁴⁶</p> <p>Dementia in acute care: Forum Report. (2012) Ministers' Dementia Advisory Group.¹</p> <p>1000 Lives Plus How to Guide: Improving Dementia Care. (2010)⁴⁸ http://www.wales.nhs.uk/sitesplus/1011/publications</p> <p>Assessing Care of Vulnerable Elders (ACOVE) - Quality Indicators for the Care of Dementia in Vulnerable Elders (2007). Feil, D.G. MacLean, C. & Sultzer, D. Journal of the American Geriatrics Society;⁴⁵ Arora, V.M. McGory, M.L. & Fung, C.H. Journal of the American Geriatrics Society.⁴⁹</p> <p>Dementia: wandering (2013). Published by the Joanna Briggs Institute.⁵⁰</p> <p>Advanced Dementia: Clinical Care with Eating and Drinking (2013). Joanna Briggs Institute.⁵¹</p> <p>Feeding Tubes in Advanced Dementia Position Statement (2013). American Geriatrics Society (AGS).⁵²</p> <p>Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. (2013). Barr J, et al., for the American College of Critical Care Medicine.⁵³</p> <p>Delirium in Older People (2012) - Australian and New Zealand Society for Geriatric Medicine Position Statement 13.⁵⁴</p> <p>Delirium Care Pathways (2011), Commonwealth Department of Health and Ageing - Australian Health Ministers Advisory Council [AHMAC].¹⁴</p> <p>Delirium: diagnosis, prevention and management; Clinical Guideline 103 (2010). National Institute for Health and Clinical Excellence.²</p> <p>How to try this: Delirium superimposed on dementia. (2008). Fick, D. & Mion, L. American Journal of Nursing, 108(1) p 52 – 60.⁵⁵</p> <p>Evidence Based Practice Guidelines for the Nutritional Management of Malnutrition in Adult Patients Across the Continuum of Care (2009). DAA Malnutrition Guideline Steering Committee.⁵⁵</p> <p>Quality indicators for geriatric emergency care (2009). Terrell, K. M, Hustey, F. M. et al. on behalf of the Society for Academic Emergency Medicine (SAEM) Geriatric Task Force. Academic Emergency Medicine.⁴³</p> <p>Working with families of hospitalized older adults with dementia: caregivers are useful resources and should be part of the care team (2008). Bradway, C. & Hirschman, K.B. American Journal of Nursing, 2008 108(10): 52-60.⁴⁴</p>

Table 3 Summary of the evidence in relation to interventions/programs identified in the literature search.

Intervention	Evidence of effectiveness	Strength of the Evidence Base
<p>Screening tools for evaluating cognition</p>	<p>Dementia and CI are significant risk factors for delirium; hence cognitive assessment of older patients is required as part of the risk assessment for delirium (see below),²</p>	<p>Level I</p>
	<p>Brief tests (requiring five minutes or less) with reasonable sensitivity and specificity include the 6CIT, Mini-Cog and (SIS. The Abbreviated Mental Test (AMT) and Clock Drawing Test (CDT) are less sensitive and specific than the Mini-Mental State Examination (MMSE) for the detection of CI.⁵⁶</p>	<p>Level II</p>
	<p>The Mini-Mental State Examination⁵⁷ is one of the most widely used and studied instruments for screening for CI, including in the inpatient setting.⁵⁶ Although it has some limitations, it is suggested as a screening test in the hospital setting by the Royal College of Psychiatrists.⁴⁷</p>	
	<p>The Rowland Universal Dementia Assessment Scale (RUDAS)⁵⁸ is a culture fair test with a sensitivity of 89% and specificity of 98% in comparison to the MMSE. One study has evaluated its performance in an inpatient population and reported it correlated well with the MMSE and took about nine minutes to perform.⁵⁹ Physicians preferred the MMSE to the RUDAS because of its greater familiarity.</p>	<p>Level II</p>
<p>Using technicians to screen for geriatric syndromes in the ED</p>	<p>One survey study reported the acceptability and usefulness of technicians (paid medical student research assistants) to screen for cognitive dysfunction, fall risk, or functional decline in patients older than 65 years presenting to the ED. Most survey respondents (Emergency Medicine [EM] nurses and physicians) indicated that an individual dedicated to screening older adults for geriatric syndromes would benefit overall from clinical care without negatively impacting patient flow.⁶⁰</p>	<p>Level IV</p>

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Screening tools for CI in the Emergency Department (ED)	Few tools have been formally evaluated for the assessment of CI or delirium in the ED; Tools that have been evaluated include:	
	The Mini-Cog (administration times = three minutes), has been shown to have psychometric properties similar to the MMSE ⁶¹ and has been found to reliably predict delirium in older hospitalised patients. ⁶²	Level II
	The Short Blessed Test (SBT; also referred to as the Orientation-Concentration-Memory Test), can be used for the detection of cognitive dysfunction in older patients in the ED. It has been found to have high sensitivity (95%) and specificity (65%) when compared to the MMSE. It requires less than one minute to administer. ⁶³	Level II
	A two-step process (taking less than two minutes) using the Delirium Triage Screen (DTS), the Brief Confusion Assessment Method (bCAM), has been demonstrated to accurately detect delirium in the ED. ⁶⁴	Level II
	The CAM has been evaluated as a screening tool for delirium by lay interviewers in the ED. ⁶⁵ Results showed that it can be reliably used by trained interviewers to detect delirium in the ED.	Level II

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Screening for the detection of delirium & recommended tools	<p>NICE Guideline: Patients aged ≥ 65 years are at risk for developing delirium and should be screened for delirium at admission to hospital.²</p> <p>Reasons underpinning this recommendation include:</p> <ul style="list-style-type: none"> delirium is common in the hospital setting; delirium is associated with serious adverse outcomes; and delirium can be prevented and treated (the duration of delirium can be reduced) and it is cost effective to do so, 	Level I
	<p>The Australian Health Ministers' Advisory Council (AHMAC) recommends that patients aged ≥ 70 years should be screened for delirium at admission to hospital.¹⁴</p>	Level I
	<p>NICE Recommendation 1.5.1: If any indicators for delirium are present, the diagnosis should be confirmed, either by a clinical assessment based on the DSM-IV criteria or by administering the short CAM. The assessment should be performed by a trained, experienced healthcare professional.^{2,14}</p> <p>The CAM was superior to both the MMSE and clock-drawing test for the detection of delirium in this setting.²</p>	Level I
	<p>The CAM is reliable for delirium diagnosis outside the ICU.⁶⁶</p>	Level I
	<p>The NEECHAM Confusion Scale and DRS-R-98 are useful for assessing delirium in older patients with CI and hip fracture.⁶⁷</p>	Level I

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Screening for delirium in critically ill patients	The CAM-ICU and the intensive care delirium screening checklist (ICDSC) can be used as tools for delirium screening in critically ill patients and in the ICU. ⁶⁸	Level I
	The authors of one systematic review concluded that the findings in relation to the CAM-ICU were largely obtained in research settings, and CAM-ICU has demonstrated low sensitivity of in routine, daily practice, possibly limiting its use as a screening test. ⁶⁹	Level I
	The CAM-ICU is recommended by NICE. ²	
	The authors of one large scale study demonstrated that following brief training, bedside nurses can use the CAM-ICU reliably. ⁷⁰	Level I
	The NEECHAM Confusion Scale and DRS-R-98 were recommended as tools for the assessment of delirium in older patients following hip fracture. The NEECHAM Confusion Scale has good diagnostic value and is easy to use with non-ventilated ICU patients. ⁷¹	Level II
Avoiding medications in patients at risk of delirium	Benzodiazepines should not be prescribed or, if used, physicians should consider reducing or stopping these medications where possible. ⁷²	Level I
	Authors of a systematic review concluded that there is no evidence to support the use of antipsychotics as a treatment for delirium in older hospitalised adults. ⁷³	Level I
Antipsychotic prophylaxis for surgical patients to prevent delirium	There is insufficient evidence to support the universal use of antipsychotic medications as a preventive agent for delirium in older surgical patients, though potential benefit may be seen in populations at high risk of developing delirium. ⁷⁴	Level I
	Authors of two systematic reviews concluded that prophylactic low dose haloperidol may reduce severity and duration of delirium ^{75,76} and shorten length of hospital admission in hip surgery. ⁷⁶	Level I

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Prevention of post-operative delirium	The authors of one systematic review concluded that overall, conclusions are limited by small sized and methodologically different studies. Meta-analysis supported dexmedetomidine sedation, multicomponent interventions and antipsychotics in preventing postoperative delirium. ⁷⁷	Level I

Intervention	Evidence of effectiveness	Strength of the Evidence Base
<p>Prevention of delirium using non-pharmacological approaches including guidelines.</p>	<p>Authors of one systematic review concluded that proactive geriatric consultation before, or within 24 hours of surgery, may reduce delirium incidence and severity in patients undergoing hip fracture surgery.⁷⁶</p>	<p>Level I</p>
	<p>Authors of two comprehensive reviews concluded that multicomponent non-pharmacological interventions (orientation activities for the cognitively impaired, early mobilisation, preventing sleep deprivation, minimising the use of psychoactive drugs, use of eyeglasses and hearing aids, and treating volume depletion) are effective in significantly reducing delirium incidence in elderly medical patients.^{19,66}</p>	<p>Level I</p>
	<p>Authors of a meta-analysis concluded that any interventions (pharmacologic & non-pharmacologic) to prevent delirium are effective.⁷⁸ Although Inouye and colleagues¹⁹ reported that there was no convincing evidence to show that pharmacological prevention or treatment is effective. They, however, recommended reducing the dosages of drugs used for sedation and analgesia.</p>	<p>Level I</p>
	<p>One study showed that a reorientation strategy for patients with dementia significantly reduced the risk of delirium.⁷⁹</p>	<p>Level IV</p>
	<p>One study showed that implementation of delirium guidelines may have reduced delirium incidence but was costly and resulted in increased LOS.⁸⁰</p>	<p>Level II</p>
	<p>Results of another study showed reduced delirium incidence and LOS following implementation of delirium prevention and treatment protocols. They concluded the protocols could be readily incorporated into daily work processes.⁸¹</p>	<p>Level I</p>
	<p>NICE Recommendation: 1.3.2: A multi-component intervention, based on an assessment of the patient's needs, should be implemented within 24 hours of admission for patients considered to be at risk for developing delirium.²</p>	

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Educational interventions to prevent delirium	The author of a systematic review concluded that education and guidelines used together or in combination have little effect. The most effective delirium education programs were multifaceted and comprehensive and included both enabling and reinforcing techniques such as guidelines and protocols, case-based follow-up sessions, audit, feedback, reminders and local leadership. Overall, these studies showed modest benefits. ⁸²	Level I
	One Randomised Control Trial (RCT) showed a brief delirium educational intervention for staff was effective in reducing the incidence of delirium and improving its recognition in one hospital ward. ⁸³	Level II
Prevention of delirium using family members or trained volunteers	One RCT showed that the use of family members to reorient and interact with patients at risk of delirium resulted in significantly decreased delirium risk. ⁸⁴	Level II
	Another small study (n=15) showed that implementation of Family-HELP (targeting four delirium risk factors) is feasible and may assist to prevent delirium in older patients. ⁸⁵	Level IV
	Authors of a literature review of family interventions concluded that there is some evidence that family interventions may improve delirium management although the evidence base is limited. ⁸⁶	Level II
	Another small Australian study demonstrated that the use of trained volunteers can reduce the incidence of delirium in older hospitalised patients and resulted in substantial cost savings. ⁸⁷	Level III-3

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Involving patient's families in the care of patients with CI	TOP5 (2 evaluations) TOP5 involves liaising with the patients' carer/family to identify five specific strategies that would assist staff to help settle and calm a person with CI & using an I.D. tag to alert staff. TOP5 is currently being implemented (and evaluated) in 15 public and five private hospitals in New South Wales (NSW).	
	Preliminary results show that the use of chemical restraints in patients with dementia has declined and the number of falls in patients with dementia has decreased substantially. Staffs report the program is beneficial for patients and staff. TOP5 is endorsed by Clinical Excellence Commission (CEC) as best practice for patients with CI. ^{88,89}	Level IV
	71% of survey respondents (professional hospital staff in the United Kingdom (UK), mostly nurses, n=712) considered that the involvement of family carers was the most important element to improving care for patients with dementia in hospital. ⁹⁰	Level IV
	98% of survey respondents in the UK (N=1484; primarily carers of people with dementia) felt that involving family carers/supporters was a 'very important' feature of providing good quality care for patients with dementia in hospital. ⁹¹	Level IV
	The Hartford Institute for Geriatric Medicine & the Alzheimer's Association (2004) recommend the family be involved in providing information about the patient to hospital staff to assist them in caring for the patient and involving them in patient. ⁴⁴	

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Use of volunteers to assist patients with dementia in hospital	2 publications were included: One NSW study showed high levels of staff and volunteer satisfaction with the volunteer program, a trend towards a decrease in falls but no difference in length of stay, use of antipsychotics or in-hospital mortality. ⁹² The program has won two Health Excellence Awards and is continuing.	Level IV
	Results of an evaluation of the “...Let’s Get ACTIVE on 8West1...” program in a Sydney hospital showed high levels of satisfaction with the volunteer program and the program appears to reduce the risk of developing delirium in older at-risk patients and assist them to maintain function while in hospital. ⁹³	Level IV
Use of a Dementia Identifier to identify patients with CI in hospital	One systematic literature of the evidence regarding the use of a symbol to identify dementia and/or delirium was identified. ⁹⁴ There was general consensus that a symbol for dementia is appropriate in the acute care setting.	Level I
	The Butterfly Scheme (UK) ⁹⁵ : A discreet butterfly is used to identify hospital patients with dementia (should they wish to be so identified). Staff who interact with patients with CI are trained to offer a specific five-point response. The scheme also uses a carer document, which allows carers to share their expertise in the patient’s care. Staff reports have been very positive and the scheme won a British Care Award in 2012.	Level IV
	The implementation of a CI symbol has been successfully implemented in 22 Victorian hospitals ⁹⁶ and the use of a CI symbol in acute hospitals is endorsed by Alzheimer’s Australia. ³	Level IV

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Multi-component interventions including education, delirium prevention & management strategies & family involvement.	Care of the Confused Hospitalised Older Person Study (CHOPS): A multi-component intervention including staff training, routine screening of cognition early in the admission, delirium prevention and management strategies and family involvement in assessment and decision making.	Level IV
	Pilot data have shown promising results in terms of improved staff knowledge and confidence and better patients screening – CHOPS is currently being implemented in more NSW acute wards. ⁹⁷	Level III & IV
	Delivering Excellence in Dementia Care in the Acute Hospital programme – Worcester Hospital; ⁹⁸ and Norfolk and Norwich University Hospital NHS Foundation Trust (UK). ⁹⁹ Both included elements of: <ul style="list-style-type: none"> • establishment of a specialist dementia acute medical ward (Worcester); • dementia-friendly physical environment; • staff training; • trained volunteer assistance; and • gathering information from families of patients with dementia to maximise communication, nutrition and hydration. 	
	Evaluations indicated both programs resulted in a number of benefits including increased staff knowledge and confidence, improvement in patient’s mobility and weight, reduction in antipsychotic use, and fewer complaints (Worcester).	Level IV
	Another project at NHS Lothian included: <ul style="list-style-type: none"> • environmental modifications; • staff training; and • the implementation of guidelines and processes to follow for challenging behaviour. Results showed improved staff confidence and satisfaction and trends towards improved patient outcomes. ¹⁰⁰ One RCT of a multi-component intervention showed no difference in patient outcomes but reported improved patient and carer satisfaction. ¹⁰¹	Level II

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Preadmission interventions to prevent postoperative complications in older cardiac surgery patients	Authors of a systematic review concluded that multi-component approaches that include different single interventions have the strongest effect in preventing postoperative complications. ¹⁰²	Level I
Falls Prevention programs	Authors of a systematic review concluded that there is currently insufficient evidence for the effectiveness of falls prevention strategies in hospitals. ¹⁰³	Level I
Employment of a Dementia Nurse Specialist (DNS) or Dementia Champion	<p>Two publications were included: Authors of one study concluded that the appointment of a Dementia Nurse Specialist (DNS) (one full-time position) may have reduced hospital LOS for patients who were seen (data not supplied).¹⁰⁴</p> <p>Authors of another study reported that following a 12 week training program, the dementia champions provided training and support to hospital staff. Overall, the program was positively evaluated by staff who considered the program extremely beneficial in promoting good practice in dementia care. No quantitative data were reported.¹⁰⁵</p>	<p>Level IV</p> <p>Level IV</p>
The Development of a Dementia Care Pathway	One health district in the UK (North Devon) has developed an integrated care pathway for patients with dementia and their families to improve the patient's experience, transitions across settings and outcomes. An evaluation has been performed but the report is not available. ¹⁰⁶	

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Resigning hospital process and the physical environment	One report of a study that redesigned patient processes to speed up the flow of patients through the hospital system resulted in very significant reductions in LOS and in-patient mortality (15% reduction). ¹⁰⁷	Level III-3
	One report of 26 studies that improved the physical environment of the hospital to better suit patients with CI (e.g. better lighting and signage; the removal of potential hazards; clocks with large faces are visible from all beds) reported improvements in a number of patient outcomes including reduced agitation and falls, reduced need for anti-psychotic medication, improved nutrition and hydration and improved staff morale. ¹⁰⁸	Level IV
	Authors of a literature review concluded good design principles from studies of environmental design in long-term care facilities can be used to inform the optimal design of psychogeriatric units. ¹⁰⁹	Level II
	One study that assessed an electronic Clinical Decision Support System (CDSS) to alert physicians of patients with CI versus usual care (geriatric consultation service), did not improve the process of care for hospitalised older adults with CI. ¹¹⁰	
Comprehensive Geriatric Assessment	Authors of two systematic reviews of Comprehensive Geriatric Assessment (CGA) concluded that CGA was beneficial for patients. ^{111,112}	Level I
	Authors of one of the reports further concluded that the effect is consistently seen from trials of geriatric wards where patients are admitted to a dedicated ward area and receive care from a specialist multidisciplinary team. This effect was not clearly seen where patients remained in a general ward and received assessment from a visiting specialist multi-disciplinary team. ¹¹¹ These latter results are further supported by a second systematic review. ¹¹³	

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Acute Geriatric Unit Care	Authors of one systematic review concluded that acute geriatric unit care, based on all or part of the Acute Care of the Elderly (ACE) model and introduced during the acute phase of older adults' illness or injury, significantly improves patient outcomes (falls, delirium, functional decline, LOS, increased discharges to home, cost). ¹¹⁴	Level I
	The authors of one review concluded that acute geriatric unit care reduces some clinical and functional outcomes (i.e. falls, delirium) but not mortality or hospital readmissions compared with usual care in older adults with acute illness or injury. ¹¹⁵	Level I
ACE Unit with Delirium Room	There is some evidence to suggest that an ACE Unit with a delirium room (and multi-disciplinary care) may improve function among delirious patients but does not influence LOS or mortality. ¹¹⁶	Level III-3
Case Management for people with dementia	Authors of a systematic review of case management for people with dementia concluded that the impact on resource utilisation (e.g., prevention of hospitalisation or institutionalisation) was usually not statistically significant or only very slight. ¹¹⁷	Level I
Best practice for patients with CI in the Emergency Department	Authors of two reviews concluded there is limited evidence regarding interventions that improve the quality of care of older ED patients with CI. ^{118,119}	Level I
	There is some evidence to suggest that recognition of CI (e.g. through cognitive screening) in the ED setting improves outcomes. Short screening tools (CAM, Orientation Concentration Memory test) to identify CI are suitable for use in the ED. ¹¹⁹	
Hospital in the Home	Four studies were identified including one quasi-experimental study, two RCTs and one narrative review. The results showed that hospital in the home is viable for selected patients who require hospital treatment or rehabilitation following acute hospitalisation ^{120,121} including patients with severe dementia. ¹²² The incidence of delirium is less and patient satisfaction is higher with treatment at home compared to in-hospital treatment. ^{120,121,123} Caregiver stress has also been reported to be lower, ¹²² and costs are lower when patients are treated at home. ^{120,121,123}	Level II

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Appointment of a Community Matron to support nursing home staff: A strategy to reduce the admission of people with dementia into hospital.	<p>One report was included that described the development of a community matron role to support care home staff. The aim was to support nursing home staff through education etc. to reduce emergency hospital admissions and emergency ambulance calls.</p> <p>The number of emergency ambulance calls by care homes decreased by 9.1%-15% in the six months following the appointment of the Matron.¹²⁴</p>	Level IV
Interventions aimed at improving the appropriate use of polypharmacy in older people	<p>The authors of one systematic review concluded that interventions (computerised decision support; multi-faceted pharmaceuticals care) appear to be effective in terms of reducing inappropriate prescribing and medication-related problems but it is unclear whether there are other clinical improvements.¹²⁵</p>	Level I

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Staff education & training	<p>Two studies were included in the review: The reviews of both studies showed that brief dementia education session (60 minutes; one day) for clinical and non-clinical hospital staff resulted in improved dementia knowledge and confidence in interacting with patients with CI. One study showed the changes were mostly maintained at three months follow-up.¹²⁶ Importantly, one study showed that the one hour training session promoted small behavioural changes in staff when interacting with patients with CI.¹²⁷</p>	Level IV
	<p>Authors of a recent interview study of UK hospital staff reported that staff lacks training and practical experience in recognising and managing older patients with CI. They recommended that all staff who regularly care for patients with confusion should be trained to meet their needs.²⁵</p>	Level IV
	<p>The importance of staff education and training to provide optimal care for patients with confusion in acute hospitals was also emphasised by Moyle and colleagues in their review of the literature.¹²⁸</p>	Level II
	<p>69% of survey respondents in the UK (professional hospital staff, mostly nurses, n=712) considered that the training and development of staff was one of the most important elements to improving care for patients with dementia in hospital.⁹⁰</p>	Level IV
	<p>98% of survey respondents in the UK (N=1484; primarily carers of people with dementia) felt that education and staff training was a 'very important' feature of providing good quality care for patients with dementia in hospital.⁹¹</p>	
	<p>100% of survey respondents (primarily nurses and allied health staff) in a regional hospital in NSW in 2005 reported they required dementia education. Following a 10 hour education program, dementia knowledge improved and 64% of attendees reported the sessions to have been beneficial.¹²⁹</p>	Level IV
	<p>Knowledge deficits in relation to dementia were also identified in a recent Queensland study of hospital staff - primarily nurses.¹³⁰</p>	Level IV
	<p>The development of a national dementia education strategy was a key recommendation of the Dementia in Acute Care Forum (2012) convened by the Ministers' Dementia Advisory Group (2012).¹</p>	Level IV

Intervention	Evidence of effectiveness	Strength of the Evidence Base
Appropriate staffing levels	A majority of survey respondents (professional hospital staff in the UK, mostly nurses, n=712) considered that staffing levels were insufficient to provide optimal care for patients with dementia in hospital. 75% of respondents considered this to be a barrier to improving care for these patients. ⁹⁰	Level IV
Palliative assessment and Advanced Care Planning (ACP)	<p>An RCT of the systematic implementation of an Advance Care Planning (ACP) program in Nursing homes resulted in significantly fewer hospitalisations and lower costs in the intervention homes.¹³¹</p> <p>One Australian study showed a significant decrease in the number of emergency calls to the ambulance service and admissions to hospital in the intervention homes, following education regarding ACPs and hospital in the home.¹³²</p> <p>The results of one study indicate that the care planning discussion was well received by the families of patients with severe dementia who had undergone emergency hospital admission. Few carers made ACPs and it was difficult to engage carers in formulating ACPs.¹³³</p>	<p>Level II</p> <p>Level II</p> <p>Level II</p>
Transition Care	An evaluation of a small Australian study demonstrated that it is feasible to provide transition care to patients with CI who exhibit behavioural and psychological symptoms of dementia (BPSD). ¹³⁴ The rate of re-admissions to hospital was similar to that of cognitively intact patients.	Level IV
Strategies to improve Transitions between nursing homes and hospital	One systematic review of interventions to improve communication of information for elderly patients who transfer between nursing homes and hospitals was identified. ¹³⁵ The results indicate that a standardised transfer form may improve the communication of advance directives and medication lists.	Level I

4. SUMMARY

Results of this comprehensive literature review clearly indicate that CI is a common problem in the acute hospital environment (upwards of 30% - the rate increases with increasing patient age) and that patients with CI have worse outcomes than patients without CI following hospitalisation. Patients with CI have increased mortality, more complications including more falls while in hospital, longer hospital stays, increased system costs, as well as greater functional and cognitive decline compared to patients without CI.

To address these issues, a number of best practice clinical guidelines/position statements/standards have been developed. Thirteen recent guidelines, both general and in relation to specific issues particularly delirium, were identified and included in this review. A considerable number of recent papers and reports describing interventions and program to improve the care of patient with CI in the hospital environment were also identified. Many of the studies focused on the identification, prevention and treatment of delirium while a wide range of other interventions have been trialled or are in the process of being trialled. These include (i) the use of trained dementia specialist nurses in the hospital to provide education and support for other staff; (ii) volunteers to assist patients with CI with everyday activities; (iii) patient identifiers to alert staff that the patient has CI; (iv) greater family involvement; (v) and the redesign of the hospital environment to better suit patients with CI.

Most projects reported some favourable outcomes although a number of the reports identified in this review report qualitative data only. A considerable number of projects involved multiple components with the elements most typically included being staff education, better recognition of CI in patients, delirium prevention and management strategies, and an improved environment suitable for patients with CI. While evaluations of these multi-component interventions identified several positive outcomes for staff and patients, the relative importance of each individual element to each project's success cannot be determined.

Many of the projects were undertaken in the UK where the Prime Minister has issued a challenge to the nation to improve the care of people with dementia and is offering financial rewards to hospitals for offering quality dementia care.¹³⁶

In summary, the following interventions appear to represent good practice and are effective in improving at least some outcomes for patients with CI or improving the care experience of patients with CI while in hospital:

- Older patients should be assessed for cognitive impairment at admission to hospital. This is a key recommendation of the Ministers' Dementia Advisory Group.¹ The identification of delirium in the ED or at admission to hospital is particularly important as it may indicate a life-threatening emergency.
- NICE² recommends that all patients aged ≥ 65 years should be screened for CI at admission to hospital.
- The CAM is recommended for delirium screening in both the ED and acute hospital wards.
- The CAM-ICU is recommended for delirium screening in the ICU.
- The DRS-R-98 is recommended for the assessment of delirium in older patients following hip fracture.
- Brief, validated tests (requiring 5 minutes or less) for the assessment of CI in older hospital patients include the 6CIT, Mini-Cog and SIS.
- One study showed that paid technicians (paid medical student research assistants) to perform brief cognitive and functional assessments in the ED was regarded as beneficial by ED nurses and physicians.
- Benzodiazepines should be avoided in patients at risk of delirium.
- There is no evidence to support the use of antipsychotics as a treatment for delirium in older hospitalised adults.
- Multi-component, non-pharmacological interventions to prevent delirium are effective.
- Admission of patients with CI to a dedicated geriatric ward and care from a specialist multidisciplinary team appears to improve patient outcomes.
- The use of volunteers to assist patients with CI appears to be very useful and is well accepted by patients and staff.
- The use of specialist dementia nurses to provide education and support to other hospital staff has been well received and appears to promote good dementia care.
- Staff dementia education and training can improve knowledge and confidence in interacting with patients with dementia; the provision of dementia education and training for hospital staff is recommended in several guidelines.
- The creation of a dementia-friendly physical environment (e.g. improved lighting and signage) appears to improve patient outcomes.

- The re-design of patient processes to improve the flow of older patients through hospital more quickly has been shown to result in substantially improved outcomes.
- Patient identification and support schemes i.e. The Butterfly Scheme and TOP5 have both been well received and have received awards for excellence. The implementation of a CI symbol to identify patients with CI (should they wish to be so identified) is endorsed by Alzheimer's Australia.³
- Family carers can be taught to re-orient and interact with patients at risk of delirium and may reduce delirium incidence.

By comparison, there is little evidence regarding the effectiveness of falls prevention strategies in hospitals, case management or electronic CDSS (the one study that evaluated such a system compared it with usual care provided in an ACE Unit supported by specialist geriatric staff). There is also limited evidence to support the effectiveness of Delirium Rooms.

Other studies have examined strategies to reduce the admission of older patients into hospital including Hospital in the Home schemes and education programs regarding Advance Care Planning (ACP) for staff and nursing homes residents. Several studies have shown that Hospital in the Home is viable for selected patients who require hospital treatment or rehabilitation following acute hospitalisation and results in less delirium, lower cost and greater patient satisfaction. Similarly, studies have shown that the provision of education regarding ACPs is effective in reducing emergency calls to the ambulance service and admission to hospital. Some, limited evidence was also found for the effectiveness of the Australian Transition Care Program (TCP)¹³⁷ for patients with CI following an acute hospital admission. Only one such study was identified that reported that rates of hospital readmission in patients with CI who had received transition care were comparable to those of cognitively intact patients. Further evaluation of the effectiveness of TCP for this patient group, however, is required in order to make more definitive conclusions.

Further, while it seems intuitive that dementia education and training for staff is very likely to improve patient outcomes or care processes, there is very limited evidence to support this tenet. Nevertheless, the development of a national dementia education strategy is a key recommendation of the Ministers Dementia Advisory Group¹ and dementia education and training for hospital staff is recommended in several guidelines. Recent evidence is emerging, however, to indicate that delirium education programs (even brief interventions) for hospital staff can be modestly effective in improving the recognition of delirium by clinicians and reducing its incidence in older hospitalised patients.^{82,83} [ENREF 83](#)

Finally, a number of gaps in the research literature were identified in the process of undertaking this review. While not exhaustive, some gaps and suggested areas for further research are listed below.

4.1 Gaps in the research literature and areas for further research

No recent references regarding Aboriginal people or people from multicultural backgrounds, and dementia and hospital care were identified. Research into the specific requirements of Aboriginal people with CI in hospital is required, as is research into the needs of people from multicultural backgrounds.

There is very limited evidence regarding the effectiveness of family caregivers to assist patients with CI in the hospital environment. Nor how best to engage with and utilise patient carers and families to assist the older person with confusion in hospital. Hence, this is a suggested area for further research.

Although there are a large number of cognitive screening tests available, few have been formally evaluated in the acute hospital environment, hence evidence regarding the most effective screening tool to assess CI in this environment is limited and requires further investigation.

There is minimal research in relation to best practice of the care of older people with CI in the ED and this is required.

Research into how the hospital environment and processes can be improved for older people with CI is required.

Although there is a great a deal of evidence to indicate that staff working in acute hospitals are not adequately trained in dementia care, there is very limited research evidence to indicate that dementia education and training for staff improves the quality of care provided to patients or improves patient outcomes. This should be further investigated.

There is very limited evidence regarding whether improved detection of CI in patients results in improved processes of care or patient outcomes and is an area for further research.

Carpenter and colleagues^{138,139} have raised a number of important questions in relation to CI in older patients presenting to the ED, for which research evidence is lacking.

These include:

- What is the optimal method for screening for and diagnosing delirium in the ED, and how often should delirium screening be repeated?
- Is incident delirium in the ED associated with specific risk factors, and how can ED incident delirium be prevented or moderated?
- Are there acceptable criteria for the safe discharge to home for older ED patients with delirium, and if so what are they?
- What interventions will be both feasible and effective in improving outcomes for older patients with delirium in the ED?

5. REFERENCES

1. Dementia Ministers Advisory Group. Dementia in acute care: Forum report. Canberra, 2012.
2. National Institute for Health and Clinical Excellence. Delirium: diagnosis, prevention and management; Clinical Guideline 103. London, 2010.
3. Alzheimer's Australia. Cognitive Impairment Symbol: Creating dementia friendly organisations. Alzheimer's Australia, 2013.
4. Australian Institute of Health and Welfare. *Dementia in Australia*. Canberra: Commonwealth of Australia, 2012.
5. Dementia in Aboriginal Australians three times as likely., 2013. (Accessed at <http://www.fightdementia.org.au/dementia-in-aboriginal-australians-three-times-as-likely.aspx>)
6. Arkles R, Jackson Pulver L, Robertson H, Draper B, Chalkley S, Broe G. Ageing, Cognition and Dementia in Australian Aboriginal and Torres Strait Islander Peoples: A Life Cycle Approach. A review of the literature. Canberra. Neuroscience Research Australia and Muru Marri Indigenous Health Unit, University of New South Wales, 2010.
7. Australian Institute of Health and Welfare. *Aboriginal and Torres Strait Islander Health Performance Framework 2012 report: Australian Capital Territory*. Canberra: Commonwealth of Australia, 2013a.
8. Australian Institute of Health and Welfare. Dementia Care in hospitals: costs and strategies Canberra. AIHW, 2013.
9. Draper B, Karmel R, Gibson D, Peut A, Anderson P. The Hospital Dementia Services Project: age differences in hospital stays for older people with and without dementia. *Int Psychogeriatr* 2011;23(10):1649-1658.
10. Travers C, Byrne G, Pachana N, Klein K, L. G. A prospective observational study of dementia in older patients admitted to acute hospitals. *Australasian Journal on Ageing* 2013.
11. Travers C, Byrne G, Pachana N, Klein K, Gray L. Prospective observational study of dementia and delirium in the acute hospital setting. *Intern Med J* 2013;43(3):262-269.
12. Cummings E, Maher R, Showell CM, Croft T, Tolman J, Vickers J, et al. Hospital coding of dementia: is it accurate? *HIM J* 2011;40(3):5-11.
13. Siddiqi N, House AO, Holmes JD. Occurrence and outcome of delirium in medical in-patients: a systematic literature review. *Age Ageing* 2006;35(4):350-364.
14. Australian Health Ministers Advisory Council [AHMAC]. Delirium Care Pathways. Canberra. AHMAC, 2011.

15. Sampson EL, Blanchard MR, Jones L, Tookman A, King M. Dementia in the acute hospital: prospective cohort study of prevalence and mortality. *Br J Psychiatry* 2009;195(1):61-66.
16. Mukadam N, Sampson EL. A systematic review of the prevalence, associations and outcomes of dementia in older general hospital inpatients. *Int Psychogeriatr* 2011;23(3):344-355.
17. Zhang Z, Pan L, Ni H. Impact of delirium on clinical outcome in critically ill patients: a meta-analysis. *Gen Hosp Psychiatry* 2013;35(2):105-111.
18. Bickel H, Gradinger R, Kochs E, Forstl H. High risk of cognitive and functional decline after postoperative delirium. A three-year prospective study. *Dement Geriatr Cogn Disord* 2008;26(1):26-31.
19. Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet* 2013.
20. Rudolph JL, Inouye SK, Jones RN, Yang FM, Fong TG, Levkoff SE, et al. Delirium: an independent predictor of functional decline after cardiac surgery. *J Am Geriatr Soc* 2010;58(4):643-649.
21. Bail K, Berry H, Grealish L, Draper B, Karmel R, Gibson D, et al. Potentially preventable complications of urinary tract infections, pressure areas, pneumonia, and delirium in hospitalised dementia patients: retrospective cohort study. *BMJ Open* 2013;3(6).
22. Shen HN, Lu CL, Li CY. Dementia increases the risks of acute organ dysfunction, severe sepsis and mortality in hospitalized older patients: a national population-based study. *PLoS One* 2012;7(8):e42751.
23. Fong TG, Jones RN, Marcantonio ER, Tommet D, Gross AL, Habtemariam D, et al. Adverse outcomes after hospitalization and delirium in persons with Alzheimer disease. *Ann Intern Med* 2012;156(12):848-856, W296.
24. Zekry D, Herrmann FR, Grandjean R, Vitale AM, De Pinho MF, Michel JP, et al. Does dementia predict adverse hospitalization outcomes? A prospective study in aged inpatients. *Int J Geriatr Psychiatry* 2009;24(3):283-291.
25. Gladman JR, Porock D, Griffiths A, Clisset P, al. e. Care of older people with cognitive impairment in general hospitals. National Institute for Health Research, 2012.
26. Inouye SK. Delirium in older persons. *N Engl J Med* 2006;354(11):1157-1165.
27. Shi Q, Presutti R, Selchen D, Saposnik G. Delirium in acute stroke: a systematic review and meta-analysis. *Stroke* 2012;43(3):645-649.
28. Han JH, Zimmerman EE, Cutler N, Schnelle J, Morandi A, Dittus RS, et al. Delirium in older emergency department patients: recognition, risk factors, and psychomotor subtypes. *Acad Emerg Med* 2009;16(3):193-200.
29. Barron EA, Holmes J. Delirium within the emergency care setting, occurrence and detection: a systematic review. *Emerg Med J* 2013;30(4):263-268.

30. Kakuma R, du Fort GG, Arsenault L, Perrault A, Platt RW, Monette J, et al. Delirium in older emergency department patients discharged home: effect on survival. *J Am Geriatr Soc* 2003;51(4):443-450.
31. Vasilevskis EE, Han JH, Hughes CG, Ely EW. Epidemiology and risk factors for delirium across hospital settings. *Best Pract Res Clin Anaesthesiol* 2012;26(3):277-287.
32. Bruce AJ, Ritchie CW, Blizard R, Lai R, Raven P. The incidence of delirium associated with orthopedic surgery: a meta-analytic review. *Int Psychogeriatr* 2007;19(2):197-214.
33. Elie M, Cole MG, Primeau FJ, Bellavance F. Delirium risk factors in elderly hospitalized patients. *J Gen Intern Med* 1998;13(3):204-212.
34. Cole MG. Persistent delirium in older hospital patients. *Curr Opin Psychiatry* 2010;23(3):250-254.
35. Wolters AE, Slooter AJ, van der Kooi AW, van Dijk D. Cognitive impairment after intensive care unit admission: a systematic review. *Intensive Care Med* 2013;39(3):376-386.
36. Saczynski JS, Marcantonio ER, Quach L, Fong TG, Gross A, Inouye SK, et al. Cognitive trajectories after postoperative delirium. *N Engl J Med* 2012;367(1):30-39.
37. Rockwood K, Cosway S, Carver D, Jarrett P, Stadnyk K, Fisk J. The risk of dementia and death after delirium. *Age Ageing* 1999;28(6):551-556.
38. Royal College of Nursing. Scoping the role of the dementia nurse specialist in acute care. London. Royal College of Nursing, 2013.
39. Watkin L, Blanchard MR, Tookman A, Sampson EL. Prospective cohort study of adverse events in older people admitted to the acute general hospital: risk factors and the impact of dementia. *Int J Geriatr Psychiatry* 2012;27(1):76-82.
40. Eeles EM, Hubbard RE, White SV, O'Mahony MS, Savva GM, Bayer AJ. Hospital use, institutionalisation and mortality associated with delirium. *Age Ageing* 2010;39(4):470-475.
41. DAA Malnutrition Guideline Steering Committee. Evidence based practice guidelines for the nutritional management of malnutrition in adult patients across the continuum of care. *Nutrition & Dietetics* 2009;66(Supplement 3).
42. Schnitker L, Martin-Khan M, Beattie BL, Gray L. Negative health outcomes and adverse events in older people attending emergency departments: A systematic review. *Australasian Emergency Nursing Journal* 2011;14:141-162.
43. Terrell KM, Hustey FM, Hwang U, Gerson LW, Wenger NS, Miller DK. Quality indicators for geriatric emergency care. *Acad Emerg Med* 2009;16(5):441-449.
44. Bradway C, Hirschman KB. Working with families of hospitalized older adults with dementia: caregivers are useful resources and should be part of the care team. *Am J Nurs* 2008;108(10):52-60; quiz 61.
45. Feil DG, MacLean C, Sultzer D. Quality indicators for the care of dementia in vulnerable elders. *J Am Geriatr Soc* 2007;55 Suppl 2:S293-301.

46. National Institute of Health and Clinical Excellence (NICE). Dementia Quality Standard 1, 2010.
47. Royal College of Psychiatrists. Second round of the National Audit of Dementia (care in general hospitals) Standards document. London. Royal College of Psychiatrists, 2012.
48. NHS Wales. 1000 Lives Plus How to GUide: Improving Dementia Care Cardiff, 2010.
49. Arora VM, McGory ML, Fung CH. Quality indicators for hospitalization and surgery in vulnerable elders. *J Am Geriatr Soc* 2007;55 Suppl 2:S347-358.
50. Tufanaru C. Dementia: Wandering. Joanna Briggs Institute, 2013.
51. Abbey J. Advanced Dementia: Clinical Care with Eating and Drinking. Joanna Briggs Institute, 2013.
52. American Geriatrics Society. Feeding Tubes in Advanced Dementia Position Statement. American Geriatrics Society, 2013.
53. Barr J, Fraser GL, Puntillo K, Ely EW, Gelinas C, Dasta JF, et al. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit: Executive summary. *Am J Health Syst Pharm* 2013;70(1):53-58.
54. Australian and New Zealand Society for Geriatric Medicine. Delirium in Older People - Position Statement 13., 2012.
55. Fick DM, Mion LC. How to try this: Delirium superimposed on dementia. *Am J Nurs* 2008;108(1):52-60; quiz 61.
56. Woodford HJ, George J. Cognitive assessment in the elderly: a review of clinical methods. *QJM* 2007;100(8):469-484.
57. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;12(3):189-198.
58. Storey JE, Rowland JT, Basic D, Conforti DA, Dickson HG. The Rowland Universal Dementia Assessment Scale (RUDAS): a multicultural cognitive assessment scale. *Int Psychogeriatr* 2004;16(1):13-31.
59. Pang J, Yu H, Pearson K, Lynch P, Fong C. Comparison of the MMSE and RUDAS cognitive screening tools in an elderly inpatient population in everyday clinical use. *Intern Med J* 2009;39(6):411-414.
60. Carpenter CR, Griffey RT, Stark S, Coopersmith CM, Gage BF. Physician and nurse acceptance of technicians to screen for geriatric syndromes in the emergency department. *West J Emerg Med* 2011;12(4):489-495.
61. Borson S, Scanlan J, Brush M, Vitaliano P, Dokmak A. The mini-cog: a cognitive 'vital signs' measure for dementia screening in multi-lingual elderly. *Int J Geriatr Psychiatry* 2000;15(11):1021-1027.

62. Alagiakrishnan K, Marrie T, Rolfson D, Coke W, Camicioli R, Duggan D, et al. Simple cognitive testing (Mini-Cog) predicts in-hospital delirium in the elderly. *J Am Geriatr Soc* 2007;55(2):314-316.
63. Carpenter CR, Bassett ER, Fischer GM, Shirshekan J, Galvin JE, Morris JC. Four sensitive screening tools to detect cognitive dysfunction in geriatric emergency department patients: brief Alzheimer's Screen, Short Blessed Test, Ottawa 3DY, and the caregiver-completed AD8. *Acad Emerg Med* 2011;18(4):374-384.
64. Han JH, Wilson A, Vasilevskis EE, Shintani A, Schnelle JF, Dittus RS, et al. Diagnosing Delirium in Older Emergency Department Patients: Validity and Reliability of the Delirium Triage Screen and the Brief Confusion Assessment Method. *Ann Emerg Med* 2013.
65. Monette J, Galbaud du Fort G, Fung SH, Massoud F, Moride Y, Arsenault L, et al. Evaluation of the Confusion Assessment Method (CAM) as a screening tool for delirium in the emergency room. *Gen Hosp Psychiatry* 2001;23(1):20-25.
66. Khan BA, Zawahiri M, Campbell NL, Fox GC, Weinstein EJ, Nazir A, et al. Delirium in hospitalized patients: implications of current evidence on clinical practice and future avenues for research--a systematic evidence review. *J Hosp Med* 2012;7(7):580-589.
67. Smith T, Hameed Y, Cross J, Sahota O, Fox C. Assessment of people with cognitive impairment and hip fracture: A systematic review and meta-analysis. *Arch Gerontol Geriatr* 2013;57(2):117-126.
68. Gusmao-Flores D, Figueira Salluh JI, Chalhub RA, Quarantini LC. The confusion assessment method for the intensive care unit (CAM-ICU) and intensive care delirium screening checklist (ICDSC) for the diagnosis of delirium: a systematic review and meta-analysis of clinical studies. *Crit Care* 2012;16(4):R115.
69. Neto AS, Nassar AP, Jr., Cardoso SO, Manetta JA, Pereira VG, Esposito DC, et al. Delirium screening in critically ill patients: a systematic review and meta-analysis. *Crit Care Med* 2012;40(6):1946-1951.
70. Pun BT, Gordon SM, Peterson JF, Shintani AK, Jackson JC, Foss J, et al. Large-scale implementation of sedation and delirium monitoring in the intensive care unit: a report from two medical centers. *Crit Care Med* 2005;33(6):1199-1205.
71. Matarese M, Generoso S, Ivziku D, Pedone C, De Marinis M, G. Delirium in older patients: a diagnostic study of NEECHAM Confusion Scale in surgical intensive care unit. *Journal of clinical Nursing* 2012.
72. Clegg A, Young JB. Which medications to avoid in people at risk of delirium: a systematic review. *Age Ageing* 2011;40(1):23-29.
73. Flaherty JH, Gonzales JP, Dong B. Antipsychotics in the treatment of delirium in older hospitalized adults: a systematic review. *J Am Geriatr Soc* 2011;59 Suppl 2:S269-276.

74. Gilmore ML, Wolfe DJ. Antipsychotic prophylaxis in surgical patients modestly decreases delirium incidence - but not duration - in high-incidence samples: A meta-analysis. *Gen Hosp Psychiatry* 2013;35(4):370-375.
75. Devlin JW, Al-Qadheh NS, Skrobik Y. Pharmacologic prevention and treatment of delirium in critically ill and non-critically ill hospitalised patients: a review of data from prospective, randomised studies. *Best Pract Res Clin Anaesthesiol* 2012;26(3):289-309.
76. Siddiqi N, Holt R, Britton AM, J H. Interventions for preventing delirium in hospitalised patients. *Cochrane Database Of Systematic Reviews (Online)* 2009.
77. Zhang H, Lu Y, Liu M, Zou Z, Wang L, Xu FY, et al. Strategies for prevention of postoperative delirium: a systematic review and meta-analysis of randomized trials. *Crit Care* 2013;17(2):R47.
78. Hempenius L, van Leeuwen BL, van Asselt DZ, Hoekstra HJ, Wiggers T, Slaets JP, et al. Structured analyses of interventions to prevent delirium. *Int J Geriatr Psychiatry* 2011;26(5):441-450.
79. Andro M, Comps E, Estivin S, Gentric A. Prevention of delirium in demented hospitalized patients. *Eur J Intern Med* 2012;23(2):124-125.
80. Mudge AM, Maussen C, Duncan J, Denaro CP. Improving quality of delirium care in a general medical service with established interdisciplinary care: a controlled trial. *Intern Med J* 2013;43(3):270-277.
81. Allen KR, Fosnight SM, Wilford R, Benedict LM, Sabo A, Holder C, et al. Implementation of a System-Wide Quality Improvement Project to Prevent Delirium in Hospitalized Patients. *Journal of Clinical Outcomes Management* 2011;18(6):253-258.
82. Wand AP. Evaluating the effectiveness of educational interventions to prevent delirium. *Australas J Ageing* 2011;30(4):175-185.
83. Tabet N, Hudson S, Sweeney V, Sauer J, Bryant C, Macdonald A, et al. An educational intervention can prevent delirium on acute medical wards. *Age Ageing* 2005;34(2):152-156.
84. Martinez FT, Tobar C, Beddings CI, Vallejo G, Fuentes P. Preventing delirium in an acute hospital using a non-pharmacological intervention. *Age Ageing* 2012;41(5):629-634.
85. Rosenbloom-Brunton DA, Henneman EA, Inouye SK. Feasibility of family participation in a delirium prevention program for hospitalized older adults. *J Gerontol Nurs* 2010;36(9):22-33; quiz 34-25.
86. Halloway S. A family approach to delirium: a review of the literature. *Ageing Ment Health* 2013.
87. Caplan GA, Harper EL. Recruitment of volunteers to improve vitality in the elderly: the REVIVE study. *Intern Med J* 2007;37(2):95-100.
88. Axa A, Luxford K. TOP5 Getting to know you? Sydney. Clinical Excellence Commission, 2013.

89. Strudwick M. TOP5 – A carer’s tool to support continuity of care for people with thinking and communication difficulties, across all care settings. Sydney. NSW Health, 2012.
90. Royal College of Nursing. Dignity in Dementia: transforming hospital care: Summary of findings from survey of professionals. London. Royal College of Nursing, 2011.
91. Royal College of Nursing. Dignity in dementia: transforming hospital care: Summary of findings from surveys of carers and people living with dementia. 2011.
92. Bateman C. Volunteers improving person-centered dementia care in a rural hospital, 2012.
93. Tawbe R, Frans H. “...Let’s Get ACTIVE on 8West1...” Aged Care Therapeutic Interventions by Volunteers (ACTIVE) program. Sydney. Royal Prince Alfred Hospital, 2011.
94. Hines S, Abbey J, Wilson J, Sacre. Appropriateness of using a symbol to identify dementia and/or delirium: a systematic review. *JBI Library of Systematic Reviews* 2009.
95. The Butterfly Scheme. (Accessed at <http://www.butterflyscheme.org.uk/>)
96. Foreman P, Gardner I. Evaluation of Education and Training of Staff in Dementia Care and Management in Acute setting. Melbourne. Aged Care Branch, Victorian Government Department of Human Services, 2005.
97. Temple A. CHOPS: Care of the confused hospitalised Older person study. Sydney. NSW Agency for Clinical Innovation (ACI) 2013.
98. Upton D, Krishnan N, Bray J, Bowen T, Foote C. An evaluation of quality and cost effectiveness of a newly defined suite of care interventions for patients with dementia and their carers in the acute hospital setting developed by The Royal Wolverhampton Hospitals NHS Trust REPORT Part 11. Worcester. University of Worcester, 2012.
99. Collins D. Best practice Example - Norfolk and Norwich University Hospital NHS Foundation Trust, 2013.
100. MacDonald C. Supporting people with Dementia in the general hospital (NHS Lothian): Final Report. Edinburgh. Royal Infirmary Edinburgh, 2011.
101. Goldberg SE, Bradshaw LE, Kearney FC, Russell C, Whittamore KH, Foster PE, et al. Care in specialist medical and mental health unit compared with standard care for older people with cognitive impairment admitted to general hospital: randomised controlled trial (NIHR TEAM trial). *BMJ* 2013;347:f4132.
102. Ettema RG, Van Koeven H, Peelen LM, Kalkman CJ, Schuurmans MJ. Preadmission interventions to prevent postoperative complications in older cardiac surgery patients: A systematic review of the literature. *Int J Nurs Stud* 2013.
103. Hempel S, Newberry S, Wang Z, Booth M, Shanman R, Johnsen B, et al. Hospital fall prevention: a systematic review of implementation, components, adherence, and effectiveness. *J Am Geriatr Soc* 2013;61(4):483-494.
104. Elliot R, Adams J. The creation of a Dementia Nurse Specialist role in an acute general hospital. *J Psychiatr Ment Health Nurs* 2011;18(7):648-652.

105. Alzheimers Scotland. Biggart Dementia Project 2009-2010. UK. University of Stirling, 2010.
106. North Devon Healthcare Trust. FACES. North Devon Healthcare NHS Trust. 2013.
107. Sheffield Teaching Hospitals NHS Trust. Improving the flow of older people, 2013.
108. The King's Fund. Developing Supportive Design for People with Dementia, 2013.
109. Dobrohotoff JT, Llewellyn-Jones RH. Psychogeriatric inpatient unit design: a literature review. *Int Psychogeriatr* 2011;23(2):174-189.
110. Boustani MA, Campbell NL, Khan BA, Abernathy G, Zawahiri M, Campbell T, et al. Enhancing care for hospitalized older adults with cognitive impairment: a randomized controlled trial. *J Gen Intern Med* 2012;27(5):561-567.
111. Ellis G, Whitehead MA, O'Neill D, Langhorne P, Robinson D. Comprehensive geriatric assessment for older adults admitted to hospital. *Cochrane Database Syst Rev* 2011(7):CD006211.
112. Van Craen K, Braes T, Wellens N, Denhaerynck K, Flamaing J, Moons P, et al. The effectiveness of inpatient geriatric evaluation and management units: a systematic review and meta-analysis. *J Am Geriatr Soc* 2010;58(1):83-92.
113. Deschodt M, Flamaing J, Haentjens P, Boonen S, Milisen K. Impact of geriatric consultation teams on clinical outcome in acute hospitals: a systematic review and meta-analysis. *BMC Med* 2013;11:48.
114. Fox MT, Persaud M, Maimets I, O'Brien K, Brooks D, Tregunno D, et al. Effectiveness of acute geriatric unit care using acute care for elders components: a systematic review and meta-analysis. *J Am Geriatr Soc* 2012;60(12):2237-2245.
115. Tinetti M. Review: Acute geriatric unit care reduces falls, delirium, and functional decline. *Ann Intern Med* 2013;158(12):JC11.
116. Flaherty JH, Steele DK, Chibnall JT, Vasudevan VN, Bassil N, Vegi S. An ACE unit with a delirium room may improve function and equalize length of stay among older delirious medical inpatients. *J Gerontol A Biol Sci Med Sci* 2010;65(12):1387-1392.
117. Somme D, Trouve H, Drame M, Gagnon D, Couturier Y, Saint-Jean O. Analysis of case management programs for patients with dementia: a systematic review. *Alzheimers Dement* 2012;8(5):426-436.
118. Clevenger CK, Chu TA, Yang Z, Hepburn KW. Clinical care of persons with dementia in the emergency department: a review of the literature and agenda for research. *J Am Geriatr Soc* 2012;60(9):1742-1748.
119. Schnitker L, Martin-Khan M, Beattie E, Gray L. What is the evidence to guide best practice for the management of older people with cognitive impairment presenting to emergency departments? A systematic review. *Advanced Emergency Nursing Journal* 2013;35(2):154-169.

120. Caplan GA. Does 'Hospital in the Home' treatment prevent delirium? . *Aging Health* 2008;4:69-74.
121. Leff. Hospital at home: feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients. *Annals of Internal Medicine* 2005;143:798-808.
122. Tibaldi V, Aimonino N, Ponzetto M, Stasi MF, Amati D, Raspo S, et al. A randomized controlled trial of a home hospital intervention for frail elderly demented patients: behavioral disturbances and caregiver's stress. *Arch Gerontol Geriatr Suppl* 2004(9):431-436.
123. Caplan GA, Coconis J, Board N, Sayers A, Woods J. Does home treatment affect delirium? A randomised controlled trial of rehabilitation of elderly and care at home or usual treatment (The REACH-OUT trial). *Age Ageing* 2006;35(1):53-60.
124. Burns C, Hurman C. Reducing hospital admissions from care homes. *Nurs Times* 2013;109(1-2):23-25.
125. Patterson SM, Hughes C, Kerse N, Cardwell CR, Bradley MC. Interventions to improve the appropriate use of polypharmacy for older people. *Cochrane Database Syst Rev* 2012;5:CD008165.
126. Galvin JE, Kuntemeier B, Al-Hammadi N, Germino J, Murphy-White M, McGillick J. "Dementia-friendly Hospitals: Care not Crisis": An Educational Program Designed to Improve the Care of the Hospitalized Patient With Dementia. *Alzheimer Dis Assoc Disord* 2012.
127. Travers C, Lie D. Hospital Employees Awareness and Attitudes to Dementia Study (HEADS). *Aust J Dem Care* In press.
128. Moyle W, Olorenshaw R, Wallis M, Borbasi S. Best practice for the management of older people with dementia in the acute care setting: a review of the literature. *Int J Older People Nurs* 2008;3(2):121-130.
129. McPhail C, Traynor V, Wikstrom D, Brown M, C Q. Improving outcomes for dementia care in acute aged care: Impact of an education programme. *Dementia* 2009;8:142-147.
130. Smyth W, Fielding E, Beattie E, Gardner A, Moyle W, Franklin S, et al. A survey-based study of knowledge of Alzheimer's disease among health care staff. *BMC Geriatr* 2013;13:2.
131. Molloy DW, Guyatt GH, Russo R, Goeree R, O'Brien BJ, Bedard M, et al. Systematic implementation of an advance directive program in nursing homes: a randomized controlled trial. *JAMA* 2000;283(11):1437-1444.
132. Caplan GA, Meller A, Squires B, Chan S, Willett W. Advance care planning and hospital in the nursing home. *Age Ageing* 2006;35(6):581-585.
133. Sampson EL, Jones L, Thune-Boyle IC, Kukkastenvemas R, King M, Leurent B, et al. Palliative assessment and advance care planning in severe dementia: an exploratory randomized controlled trial of a complex intervention. *Palliat Med* 2011;25(3):197-209.

134. Renehan E, Haralambous B, Galvin P, Kotis M, Dow B. Evaluation of a transition care cognitive assessment and management pilot. *Contemp Nurse* 2013;43(2):134-145.
135. LaMantia MA, Scheunemann LP, Viera AJ, Busby-Whitehead J, Hanson LC. Interventions to improve transitional care between nursing homes and hospitals: a systematic review. *J Am Geriatr Soc* 2010;58(4):777-782.
136. UK Department of Health. Prime Minister's Challenge on dementia. London, 2012.
137. Australian Government Department of Health and Ageing. Transition Care Program Guidelines-2011, 2011.
138. Carpenter CR, Heard K, Wilber S, Ginde AA, Stiffler K, Gerson LW, et al. Research priorities for high-quality geriatric emergency care: medication management, screening, and prevention and functional assessment. *Acad Emerg Med* 2011;18(6):644-654.
139. Carpenter CR, Shah MN, Hustey FM, Heard K, Gerson LW, Miller DK. High yield research opportunities in geriatric emergency medicine: prehospital care, delirium, adverse drug events, and falls. *J Gerontol A Biol Sci Med Sci* 2011;66(7):775-783.

APPENDIX A

Table 4 Websites searched for recent relevant guidelines, evidence summaries, systematic reviews and reports.

Website	Web Address
Cochrane Database of Systematic Reviews	http://www.cochrane.org/
Database of Abstracts of Reviews of Effectiveness (DARE)	http://www.crd.york.ac.uk/crdweb/AboutDare.asp
Alzheimer's Australia	http://www.fightdementia.org.au/
Australia and New Zealand Society for Geriatric Medicine	http://www.anzsgm.org/
NSW & ACT Dementia Training Study Centre (DTSC)	http://dtsc.com.au/new-south-wales-australian-capital-territory/projects/
Dementia Collaborative Research Centre	http://www.dementia.unsw.edu.au/
Australian Institute of Health and Welfare	http://www.aihw.gov.au/
NSW Health – Northern Central Sydney Coast District Carer Support page	http://www.nscchealth.nsw.gov.au/carersupport
NSW Health	http://www0.health.nsw.gov.au
National Health and Medical Research Council (NHMRC)	http://www.clinicalguidelines.gov.au/
Clinical Excellence Commission	http://www.cec.health.nsw.gov.au/
National Ageing Research Institute (NARI)	http://www.mednwh.unimelb.edu.au/index.htm
Dementia Enabling Environment Project	http://www.enablingenvironments.com.au/
Australian Institute of Health and Welfare (AIHW)	http://www.aihw.gov.au/
Australian Indigenous HealthInfoNet	http://www.healthinfonet.ecu.edu.au/
Australian Research Centre for Healthcare Innovations	http://www.archi.net.au/our-services/innovations
Alzheimer's Australia Victoria	http://www.fightdementia.org.au/victoria
Alzheimer Research Forum	http://www.alzforum.org
American Geriatrics Society	http://www.americangeriatrics.org/

Website	Web Address
National Guidelines Clearinghouse	http://www.guideline.gov/index.aspx
Gerontological Society of America	http://www.geron.org/
Alzheimer's Association	http://www.alz.org/
National Institute on Aging Alzheimer's Disease Education and Referral Centre	http://www.nia.nih.gov/alzheimers
Agency for Healthcare Research and Quality	http://www.ahrq.gov/
Trip database	http://www.tripdatabase.com/
Canadian Geriatrics Society	http://www.canadiangeriatrics.ca/default/
Canadian Gerontological Nursing Association	http://www.cgna.net/
Canadian Institutes of Health Research Institute of Aging	http://www.cihr-irsc.gc.ca/e/8671.html
Alzheimer's Society of Canada	http://www.alzheimer.ca/en
British Geriatrics Society	http://www.bgsnet.org.uk/
National Clinical Guideline Centre	http://www.ncgc.ac.uk/
Social Care Institute for Excellence	http://www.scie.org.uk/
Alzheimer's Society UK	http://www.alzheimers.org.uk/
Royal College of Nursing UK	http://www.rcn.org.uk/development/practice/dementia
National Institute for Health and Clinical Excellence (NICE)	http://www.nice.org.uk/
Care Quality Commission	http://www.cqc.org.uk/
Centre for Reviews and Dissemination (University of York)	https://pure.york.ac.uk/portal/en/organisations/centre-for-reviews-and-dissemination
The Portal of Geriatrics Online Education (POGOe)	http://www.pogoe.org/
The Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre)	http://eppi.ioe.ac.uk/cms/
Healthcare Quality Improvement Partnership	http://www.hqip.org.uk/
The King's Fund	http://www.kingsfund.org.uk/

Website	Web Address
Alzheimers New Zealand	http://www.alzheimers.org.nz/
Alzheimer's Disease International	http://www.alz.co.uk/
European Collaboration on Dementia	http://www.alzheimer-europe.org/EN/Research/European-Collaboration-on-Dementia
Google Scholar	http://scholar.google.com.au/

APPENDIX B

Evidence Summaries together with appraisal of the level of supporting evidence.

Evidence summaries were compiled for the majority of references included in this literature review (primary research articles, review articles, reports etc) and are presented in this Appendix, in the order in which they are listed in the Reference list (section 5). Evidence summaries were not compiled for secondary sources (e.g. books) or in cases where the reference referred to a concept rather than evidence regarding that concept.

The three key questions were:

1. What is the current evidence of quality and safety issues regarding the hospital experience of people with cognitive impairment (dementia/delirium)?
2. What are the existing evidence-based pathways, best practice or guidelines for cognitive impairment in hospitals?
3. What are the key components of an ideal patient journey for a person with dementia and/or delirium?

The levels of evidence were summarised according to the NHMRC levels of evidence (Table 1) which are available from: <http://www.health.qld.gov.au/healthpact/docs/gen-docs/lvl-of-evidence.pdf>

Table 1 NHMRC Evidence Hierarchy: designations of ‘levels of evidence’ according to type of research question (including explanatory notes)

Level	Intervention ¹	Diagnostic accuracy ²	Prognosis	Aetiology ³	Screening Intervention
I ⁴	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies
II	A randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, ⁵ among consecutive persons with a defined clinical presentation ⁶	A prospective cohort study ⁷	A prospective cohort study	A randomised controlled trial
III-1	A pseudorandomised controlled trial (i.e. alternate allocation or some other method)	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, ⁵ among non-consecutive persons with a defined clinical presentation ⁶	All or none ⁸	All or none ⁸	A pseudorandomised controlled trial (i.e. alternate allocation or some other method)
III-2	A comparative study with concurrent controls: <ul style="list-style-type: none"> ▪ Non-randomised, experimental trial⁹ ▪ Cohort study ▪ Case-control study ▪ Interrupted time series with a control group 	A comparison with reference standard that does not meet the criteria required for Level II and III-1 evidence	Analysis of prognostic factors amongst persons in a single arm of a randomised controlled trial	A retrospective cohort study	A comparative study with concurrent controls: <ul style="list-style-type: none"> ▪ Non-randomised, experimental trial ▪ Cohort study ▪ Case-control study
III-3	A comparative study without concurrent controls: <ul style="list-style-type: none"> ▪ Historical control study ▪ Two or more single arm study¹⁰ ▪ Interrupted time series without a parallel control group 	Diagnostic case-control study ⁶	A retrospective cohort study	A case-control study	A comparative study without concurrent controls: <ul style="list-style-type: none"> ▪ Historical control study ▪ Two or more single arm study
IV	Case series with either post-test or pre-test/post-test outcomes	Study of diagnostic yield (no reference standard) ¹¹	Case series, or cohort study of persons at different stages of disease	A cross-sectional study or case series	Case series

1. Dementia in acute care: Forum report

Author	Minister's Dementia Advisory Group, 2012
Methods	The Minister's Dementia Advisory Group convened a Dementia in Acute Care Forum on 28 November 2012. The Forum was attended by 48 researchers and clinicians, policy makers and other stakeholders. Using a small-group format, delegates discussed current issues; agreed on desired outcomes, and developed a list of recommendations that would be required to achieve these outcomes.
Results	<p>A total of 25 recommendations were made. There were three stand-out recommendations:</p> <p>A costing study should investigate the costs and benefits of improved care of people with CI. Younger for people who identify as Aboriginal and /or Torres Strait islander people.</p> <p>All people over the age of 65 admitted to hospital should be screened for CI. A national CI education strategy should be developed, including the appointment of cognition clinical nurse consultants.</p>
Conclusions	Overall, the desired outcome is that people with CI are identified so they can be given appropriate, effective and compassionate care during their stay in hospital. The recommendations should assist to achieve these outcomes.
Strength of the Evidence Base	Level IV

2. DELIRIUM: diagnosis, prevention and management; Clinical Guideline 103 (2010).

Author	National Institute for Health and Clinical Excellence, 2010.
Reference	http://www.nice.org.uk/nicemedia/live/13060/49908/49908.pdf (full guideline) http://www.nice.org.uk/nicemedia/live/13060/49913/49913.pdf (quick reference guide)
Summary	<p>When people first present to hospital or long-term care, assess them for the following risk factors. If any of these risk factors is present, the person is at risk of delirium.</p> <ul style="list-style-type: none"> – Age 65 years or older. – Cognitive impairment (past or present) and/or dementia¹ If cognitive impairment is suspected, confirm it using a standardised and validated CI measure. – Current hip fracture. – Severe illness (a clinical condition that is deteriorating or is at risk of deterioration) <p>Interventions to prevent delirium</p> <p>Ensure that people at risk of delirium are cared for by a team of healthcare professionals who are familiar to the person at risk. Avoid moving people within and between wards or rooms unless absolutely necessary.</p> <p>Give a tailored multicomponent intervention package:</p> <p>Within 24 hours of admission, assess people at risk for clinical factors contributing to delirium.</p> <p>Based on the results of this assessment, provide a multicomponent intervention tailored to the person's individual needs and care setting. The tailored multicomponent intervention package should be delivered by a multidisciplinary team trained and competent in delirium prevention.</p> <p>If indicators of delirium are identified, carry out a clinical assessment based on the DSM-IV criteria or short Confusion Assessment Method (short CAM) to confirm the diagnosis. In critical care or in the recovery room after surgery, CAM-ICU should be used. A healthcare professional who is trained and competent in the diagnosis of delirium should carry out the assessment. If there is difficulty distinguishing between the diagnoses of delirium, dementia or delirium superimposed on dementia, treat for delirium first.</p> <p>Ensure that the diagnosis of delirium is documented both in the person's hospital record and in their primary care health record.</p> <p>Initial management:</p> <p>In people diagnosed with delirium, identify and manage the possible underlying cause or combination of causes.</p> <p>Ensure effective communication and reorientation (for example, explaining where the person is, who they are, and what your role is) and provide reassurance for people diagnosed with delirium.</p> <p>Consider involving family, friends and carers to help with this. Provide a suitable care environment.</p> <p>Distressed people - If a person with delirium is distressed or considered a risk to themselves or others and verbal and non-verbal de-escalation techniques are ineffective or inappropriate, consider giving short-term (usually for 1 week or less) haloperidol³ or olanzapine. Start at the lowest clinically appropriate dose and titrate cautiously according to symptoms.</p>
Comment	The guideline is very comprehensive and the guideline recommendations are underpinned by a very comprehensive literature review.

9. The Hospital Dementia Services Project: age differences in hospital stays for older people with and without dementia

Journal	International Psychogeriatrics, 2011
Authors	Draper, B. Karmel, R. Gibson, D. Peut, A. Anderson, P.
Methods	Analysis of data from the New South Wales Admitted Patient Care Database for people aged 50 years and over for the period July 2006 to June 2007 (n=253,000 approx). The relationship between age and hospitalisation characteristics were examined for people with and without dementia.
Results	Dementia was age-related, with 25% of patients aged ≥ 85 years having dementia compared with 0.9% of patients aged 50–54 years. People with dementia were more likely to be admitted for fractured femurs, lower respiratory tract infections, urinary tract infections and head injuries than people without dementia. Mean length of stay for admissions for people with dementia was 16.4 days and 8.9 days for those without dementia. People with dementia were more likely than those without to be re-admitted within three months for another multi-day stay. Mortality rates and transfers to nursing home care were higher for people with dementia than for people without dementia. These outcomes were more pronounced in younger people with dementia.
Conclusions	Outcomes of Hospitalisation vary substantially for patients with dementia compared with patients without dementia and these differences are frequently most marked among patients aged under 65 years.
Strength of the Evidence Base	Level IV

10. A prospective observational study of dementia in older patients admitted to acute hospitals

Journal	Australasian Journal on Ageing, 2013
Authors	Travers, C. Byrne, G. Pachana, N. Klein, K. Gray, L.
Methods	Prospective observational cohort study (n = 493) of patients aged 70 years admitted to four acute hospitals in Queensland. Trained research nurses completed comprehensive geriatric assessments using standardised instruments and collected data regarding adverse outcomes. The diagnosis of dementia was established by independent physician review of patients' medical records and assessments. (as above)
Results	Patients with dementia (n = 102, 20.7%) were significantly older (P = 0.01), had poorer functional ability (P < 0.01), and were more likely to have delirium at admission (P < 0.01) than patients without dementia. They were also significantly more likely to develop delirium during the admission (p<0.01) and be discharged to a higher level of care than patients without dementia (p<.02). Dementia (OR = 4.8, P < 0.001) increased the risk of developing delirium during the hospital stay.
Conclusions	Older patients with dementia are more impaired and vulnerable than patients without dementia and are at greater risk of adverse outcomes when hospitalised. Dementia significantly increases the risk of developing delirium.
Strength of the Evidence Base	Level II

Evidence Base	
11. Prospective observational study of dementia and delirium in the acute hospital setting.	
Journal	Internal Medicine Journal, 2013
Authors	Travers, C. Byrne, G. Pachana, N. Klein, K. Gray, L.
Methods	Prospective observational cohort study (n = 493) of patients aged 70 years and older admitted to four acute hospitals in Queensland between 2008 and 2010. Trained research nurses completed comprehensive geriatric assessments and obtained detailed information about each patient's physical, cognitive and psychosocial functioning using the interRAI Acute Care and other standardised instruments. Nurses also visited patients daily to identify incident delirium. Two physicians independently reviewed patients' medical records and assessments to establish the diagnosis of dementia and/or delirium.
Results	102 (20.7%) patients were considered to have dementia. This rate increased to 47.4% in the oldest patients (aged \geq 90 years). The overall prevalence of delirium at admission was 9.7% (23.5% in patients with dementia), and the rate of incident delirium was 7.6% (14.7% in patients with dementia).
Conclusions	The prevalence of dementia and delirium among older patients admitted to acute hospitals is high and is likely to increase with population aging.
Strength of the Evidence Base	Level II

13. Occurrence and outcome of delirium in medical in-patients: a systematic literature review

Journal	Age and Ageing, 2006
Authors	Siddiqi, N. House, A. O. Holmes, J. D.
Methods	A systematic literature review was undertaken to determine the occurrence of delirium and its outcomes in medical in-patients.
Results	Results for the occurrence of delirium in medical in-patients were available for 42 cohorts. Prevalence of delirium at admission ranged from 10 to 31% and the incidence of new delirium per admission ranged from 3 to 29% in patients 55 years and older. Delirium was associated with increased mortality at discharge and at 12 months, increased length of hospital stay (LOS) and institutionalisation. A significant proportion of patients had persistent symptoms of delirium at discharge and at 6 and 12 months.
Conclusions	Delirium is common in medical in-patients and has serious adverse effects on mortality, functional outcomes, LOS and institutionalisation.
Strength of the Evidence Base	Level

14. Delirium Care Pathways

Author	Commonwealth Department of Health and Ageing - Australian Health Ministers Advisory Council [AHMAC], 2011
Reference	http://docs.health.vic.gov.au/docs/doc/Delirium-Care-Pathways-2010
Summary	Delirium Care Pathways provide examples of the management of patients during a delirium episode to improve care and minimise adverse outcomes. Topics include: screening and assessment of delirium, risk factors & preventive strategies, and nursing and management strategies.
Comment	Delirium Care Pathways is adapted from: Clinical Epidemiology and Health Services Evaluation Unit 2006, Clinical Practice Guidelines for the Management of Delirium in Older People, Victorian Government Department of Human Services, Melbourne, Victoria http://www.health.gov.au/internet/main/publishing.nsf/Content/9E46460CFDAFBA03CA25732B004C4331/\$File/Delirium_CPGforMODIOP_web.pdf

15. Dementia in the acute hospital: prospective cohort study of prevalence and mortality

Journal	British Journal of Psychiatry, 2009
Authors	Sampson, E.L. Blanchard, M.R. Jones, L. Tookman, A. King, M.
Methods	Longitudinal cohort study of 617 people (aged over 70). The aim was to investigate the prevalence of dementia in older people undergoing emergency medical admission and its effect on outcomes.
Results	Of the cohort, 42.4% had dementia (only half diagnosed prior to admission). In men aged 70-79, dementia prevalence was 16.4%, rising to 48.8% of those over 90. In women, 29.6% aged 70-79 had dementia, rising to 75.0% aged over 90. These individuals had markedly higher mortality; 24.0% of those with severe CI died during admission (adjusted mortality risk 4.02).
Conclusion	Dementia is common among older medical hospital patients and is associated with a greatly increased risk of mortality.
Strength of the Evidence Base	Level II

16. A systematic review of the prevalence, associations and outcomes of dementia in older general hospital inpatients

Journal	International Psychogeriatrics, 2011
Authors	Mukadam, N. & Sampson, E.L.
Methods	A systematic literature review of studies reporting the prevalence, associations and outcomes of dementia in older people (55 years+) in general hospitals.
Results	14 papers were included. Prevalence estimates for dementia in studies with robust methodology were 12.9-63.0%. Less than a third of studies screened for delirium or depression and therefore some subjects may have been misclassified as having dementia. The data were highly heterogeneous and prevalence estimates varied widely, influenced by study setting and demographic features of the cohorts. Patients with dementia in the acute hospital are older, require more hours of nursing care, have longer hospital stays, and are more at risk of delayed discharge and functional decline during admission.
Conclusions	Dementia is common in older people admitted to acute hospitals and is associated with poor outcomes. Most study cohorts were recruited from medical wards. More work is required on the prevalence of dementia in surgical and other specialties.
Strength of the Evidence Base	Level I

17. Impact of delirium on clinical outcome in critically ill patients: a meta-analysis

Journal	General Hospital Psychiatry, 2013
Authors	Zhang, Z. Pan, L. Ni, H.
Methods	16 studies (patients = 5891) were included in a meta-analysis of clinical observational studies was performed to investigate the association between delirium and clinical outcomes.
Results	Patients with delirium had higher mortality rate than non-delirious patients (OR=3.22), higher rates of complications (OR=6.5), and were more likely to be discharged to skilled placement (OR = 2.59). Patients with delirium had longer lengths of stay in both ICU (weighted mean difference [WMD]=7.32 days) and hospital (WMD=6.53 days), and they spent more time on mechanical ventilation (WMD=7.22 days).
Conclusions	Delirium in critically ill patients is associated with higher mortality rate, more complications, longer duration of mechanical ventilation, and longer length of stay in ICU and hospital.
Strength of the Evidence Base	Level I

18. High risk of cognitive and functional decline after postoperative delirium. A three-year prospective study

Journal	Dementia and Geriatric Cognitive Disorders, 2008
Authors	Bickel, H. Grading, R. Kochs, E. Forstl, H.
Methods	Prospective study to investigate the association between delirium following hip fracture surgery in older patients (N=200 aged 60 years+) and outcomes including cognitive impairment, functional disability and death. Patients underwent preoperative and daily postoperative assessment of their cognitive status during hospital stay.
Results	41 patients developed postoperative delirium. Delirium was a strong independent predictor of CI and the occurrence of severe dependency in activities of daily living. 38 months after discharge from hospital, 53.8% of the surviving patients with postoperative delirium suffered from CI, compared to only 4.4% of the nondelirious participants.
Conclusions	The results confirm a poor prognosis after delirium in elderly patients. The findings suggest that delirium does not simply persist for a certain time but also predicts a future cognitive decline with an increased risk of dementia.
Strength of the Evidence Base	Level II

19. Delirium in elderly people

Journal	Lancet, 2013
Authors	Inouye, SK., Westendorp, RGJ., Saczynski, JS.
Methods	Comprehensive literature review of delirium including epidemiology, predisposing and risk factors, diagnosis, outcomes, prevention and treatment.
Results	Delirium is very common among older hospital patients and causes are usually multifactorial in older people. Multicomponent non-pharmacological risk factor approaches are the most effective strategy for prevention. No convincing evidence shows that pharmacological prevention or treatment is effective. Drug reduction for sedation and analgesia and non-pharmacological approaches are recommended.
Conclusions	Delirium is an acute disorder of attention and cognition in elderly people (ie, those aged 65 years or older) that is common, serious, costly, under-recognised, and often fatal. A formal cognitive assessment and history of acute onset of symptoms are necessary for diagnosis.
Strength of the Evidence Base	Level I

20. Delirium: an independent predictor of functional decline after cardiac surgery

Journal	Journal of the American Geriatrics Society, 2010
Authors	Rudolph, J.L. Inouye, S.K. Jones, R.N. Yang, F.M. Fong, T.G. et al.,
Methods	A prospective cohort study (n=190 patients aged ≥60 yrs) to determine whether older patients were at increased risk of functional decline following cardiac surgery. Delirium was assessed daily and was diagnosed according to the CAM. Before surgery and 1 and 12 months postoperatively, patients were assessed for function using the instrumental activities of daily living (IADL) scale. Functional decline was defined as a decrease in ability to perform one IADL at follow-up.
Results	Delirium occurred in 43.1% (n=82) of the patients. Functional decline occurred in 36.3% (n=65/179) at 1 month and in 14.6% (n=26/178) at 12 months. Delirium was associated with greater risk of functional decline at 1 month and tended toward greater risk at 12 months. After adjustment for age, cognition, comorbidity, and baseline function, delirium remained significantly associated with functional decline at 1 month (adjusted RR=1.8) but not at 12 months (adjusted RR=1.5).
Conclusions	Delirium was independently associated with functional decline at 1 month and had a trend toward association at 12 months.
Strength of the Evidence Base	Level II

21. Potentially preventable complications of urinary tract infections, pressure areas, pneumonia, and delirium in hospitalised dementia patients: retrospective cohort study

Journal	BMJ Open Access, 2013
Authors	Bail, K. Berry, H. Grealish, L. Draper, B. Karmel, R. Gibson, D. Peut, A.
Methods	The aim of the study was to identify rates of potentially preventable complications for dementia patients compared with non-dementia patients. Retrospective cohort design using hospital discharge data for dementia patients, case matched on sex, age, comorbidity and surgical status on a 1:4 ratio to non-dementia patients. Data were available for 426, 276 overnight hospital episodes for patients aged 50 and above.
Results	Controlling for age and comorbidities, surgical dementia patients had higher rates than non-dementia patients in seven of the 12 complications: urinary tract infections, pressure ulcers, delirium, pneumonia, physiological and metabolic derangement (all at $p < 0.0001$), sepsis and failure to rescue (at $p < 0.05$). Medical dementia patients also had higher rates of these complications than did non-dementia patients. The highest rates and highest relative risk for dementia patients compared with non-dementia patients, in both medical and surgical populations, were found in four common complications: urinary tract infections, pressure areas, pneumonia and delirium.
Conclusions	Compared with non-dementia patients, hospitalised dementia patients have higher rates of potentially preventable complications that might be responsive to nursing interventions.
Strength of the Evidence Base	Level II

22. Dementia Increases the Risks of Acute Organ Dysfunction, Severe Sepsis and Mortality in Hospitalized Older Patients: A National Population-Based Study

Journal	PLoS One (Public Library of Science), 2012
Authors	Shen H-N, Lu, C-L. Li, C-Y.
Methods	A population-based cohort study of 41,672 older (≥ 65 years) patients, including 3,487 (8.4%) with dementia. Data were retrieved from an administrative database of a nationally representative sample of one million enrolled in a Taiwan registry. Outcomes included acute organ dysfunction, severe sepsis, and hospital mortality. The effect of dementia on outcomes was assessed using multivariable logistic regression.
Results	Dementia was associated with a 32% higher risk of acute organ dysfunction (adjusted OR=1.32), a 50% higher risk of severe sepsis (aOR=1.50) and a 28% higher risk of hospital mortality (aOR=1.28) after controlling for age, sex, surgical condition, comorbidity, principal diagnosis, infection status, hospital level, and length of hospital stay. However, the significant adverse effect of dementia on hospital mortality disappeared when life-support treatments were employed.
Conclusions	In hospitalised older patients, the presence of dementia increased the risks of acute organ dysfunction, severe sepsis and hospital mortality.
Strength of the Evidence Base	Level II

23. Adverse outcomes after hospitalisation and delirium in persons with Alzheimer disease

Journal	Annals of Internal Medicine, 2012
Authors	Fong, T.G. Jones, R.N. Marcantonio, E.R. Tommet, D. Gross, A.L. et al.
Methods	The aim was to determine risks for institutionalisation, cognitive decline, or death associated with Hospitalisation and delirium in patients with AD. Prospective cohort of 771 persons aged 65 years or older with a clinical diagnosis of AD, enrolled on a patient registry. Hospitalisation, delirium, death, and institutionalisation were identified through administrative databases.
Results	Of 771 participants with AD, 367 (48%) were hospitalised and 194 (25%) developed delirium. Hospitalized patients who did not have delirium had an increased risk for death (RR = 4.7 among hospitalized patients with AD), and institutionalisation (RR= 6.9). With delirium, risk for death (RR = 5.4) and institutionalisation (RR= 9.3) increased further. With hospitalisation and delirium, the adjusted RR for cognitive decline for patients with AD was 1.6. Among hospitalised patients with AD, 21% of the incidences of cognitive decline, 15% of institutionalisation, and 6% of deaths were associated with delirium. 21% of the incidences of cognitive decline, 15% of institutionalisation, and 6% of deaths were associated with delirium.
Conclusions	Approximately 1 in 8 hospitalised patients with AD who develop delirium will have at least 1 adverse outcome, including death, institutionalisation, or cognitive decline, associated with delirium.
Strength of the Evidence Base	Level II

24. Does dementia predict adverse hospitalization outcomes? A prospective study in aged inpatients

Reference	International Journal of Geriatric Psychiatry, 2009
Authors	Zekry, D. Herrmann, F.R. Grandjean, R. Vitale, A.M. De Pinho, M.F. et al.,
Methods	Prospective observational study of 435 inpatients (average age 85.3 yrs; 207 cognitively normal, 48 with mild CI and 180 demented) to assess the relative value of dementia for predicting hospitalization outcomes taking into account comorbidity, functional and nutritional status.
Results	Moderate and severe dementia and poor physical function strongly predicted longer hospital stay, institutionalization and greater home care needs in univariate analyses. In multivariate analysis, the best predictor of institutionalisation was dementia, whereas the best predictor of death in hospital or longer hospital stay was higher comorbidity, regardless of cognitive status. Functional status was the best predictor of greater home care needs.
Conclusion	Dementia in very old medically ill inpatients was predictive of discharge to a nursing home. Higher levels of comorbidity and poor functional status were more predictive than dementia for the other three hospitalization outcomes.
Strength of the Evidence Base	Level II

25. Better mental health: Care of older people with cognitive impairment in general hospitals: Final report

Reference	http://www.netscc.ac.uk/hedr/files/project/SDO_ES_08-1809-227_V01.pdf 2012
Authors	Gladman, J.R. Porock, D. Griffiths, A. Clisset, P. et al.
Methods	The study involved: 1. A literature review 2. An interview study to ascertain hospital staff competence, confidence and training and of organisation factors affecting their ability to care for patients with cognitive impairment. 60 staff interviews were conducted across 11 acute hospitals. 3. An observational and interview study of patients with co-morbid CI, their families and co-patients. 35 interviews were conducted.
Results	The results showed: - a lack of staff training and practical education to recognise and manage complex older patients with confusion, and -the system is inflexible and imposes unrealistic targets on staff caring for such patients and detracts from their time & ability to provide appropriate care.
Conclusion	All staff who regularly care for patients with confusion should be trained to meet their needs and the needs of others affected by their admission. More explicit support and encouragement for carers to become more involved in patient care may assist to improve patient outcomes. Hospital environments need to be designed with the older person with confusion and their carers in mind.
Strength of the Evidence Base	Level IV

26. Delirium in Older persons

Reference	New England Journal of Medicine, 2006
Authors	Inouye SK.
Methods	Narrative review of the literature in relation to delirium including epidemiology, etiology and risk factors, evaluation, relationship between dementia and delirium and prevention and management.
Results	Delirium, an acute decline in attention and cognition, is a common, life-threatening, and potentially preventable clinical syndrome among patients aged ≥65 years of age. Delirium often results in the loss of independence, an increased risk of morbidity and mortality, and increased health care costs.
Conclusion	Delirium represents one of the most common preventable adverse events among older persons during hospitalization.
Strength of the Evidence Base	Level I

27. Delirium in acute stroke: a systematic review and meta-analysis

Journal	Stroke, 2012
Authors	Shi, Q. Presutti, R. Selchen, D. Saposnik, G.
Methods	A systematic review and meta-analysis to evaluate the outcomes of acute stroke patients with delirium was conducted.
Results	Ten observational studies (n=2004 patients) were included in the review. The incidence of delirium ranged from 10% to 48%. Stroke patients with delirium had higher inpatient mortality (OR= 4.71) and mortality at 12 months (OR= 4.91) compared to nondelirious patients. Patients with delirium also tended to stay longer in hospital compared to those who did not have delirium (mean difference, 9.39 days) and were more likely to be discharged to a nursing homes or other institutions (OR = 3.39).
Conclusions	Stroke patients with development of delirium have unfavorable outcomes, particularly higher mortality, longer hospitalisations, and a greater degree of dependence after discharge. Early recognition and prevention of delirium may improve outcomes in stroke patients.
Strength of the Evidence Base	Level II

28. Delirium in older emergency department patients: recognition, risk factors, and psychomotor subtypes

Journal	Academic Emergency Medicine, 2009
Authors	Han, J.H., Zimmerman, E.E., Cutler, N., Schnelle, J., Morandi, A. et al.,
Methods	A cross-sectional study of patients aged 65 years and older (N = 303) presenting to a tertiary care ED. The aims was to determine how often delirium is missed in the ED and how often these missed cases are detected by admitting hospital physicians at the time of admission, to identify delirium risk factors in older ED patients, and to characterize delirium by psychomotor subtypes in the ED setting.
Results	25 (8.3%) presented to the ED with delirium. The vast majority (92.0%) of delirious patients had the hypoactive psychomotor subtype. Of the 25 patients with delirium, 19 (76.0%) were not recognized to be delirious by the hospital physician. Of the 16 admitted delirious patients who were undiagnosed by the hospital physician, 15 (93.8%) remained unrecognized by the hospital physician at the time of admission. Dementia, a Katz Activities of Daily Living (ADL) ≤ 4 , and hearing impairment were independently associated with presenting with delirium in the ED.
Conclusions	Delirium was a common occurrence in the ED, and the vast majority of delirium in the ED was of the hypoactive subtype. EPs missed delirium in 76% of the cases. Delirium that was missed in the ED was nearly always missed by hospital physicians at the time of admission.
Strength of the Evidence Base	Level II

29. Delirium within the emergency care setting, occurrence and detection: a systematic review

Journal	Emergency Medical Journal, 2013
Authors	Barron, E.A. & Holmes, J.
Methods	A systematic review to determine the occurrence rate, and physician detection rates, of delirium within the ED. 13 papers were included in the review
Results	Occurrence of delirium at admission to the ED ranged from 7% to 20% of patients. Physician diagnosis rates of preconfirmed delirium (using a specified tool) within the ED varied between 11.1% and 46.0%. While results vary, delirium at ED presentation may have a significant effect on long-term outcomes.
Conclusions	Delirium is a significant problem in the emergency setting. The recorded occurrence is up to 20% in the elderly patients; however, the detection of delirium is low (up to 24%).
Strength of the Evidence Base	Level I

30. Delirium in Older Emergency Department Patients Discharged Home: Effect on Survival.

Journal	Journal of the American Geriatrics Society, 2003
Authors	Kakuma R, du Fort GG, Arsenault L, Perrault A, Platt RW, Monette J, et al.
Methods	A prospective cohort study conducted in 2 large urban hospitals; The aim was to determine whether prevalent delirium is an independent predictor of mortality in older patients seen in emergency departments (EDs) and discharged home without admission. From a larger cohort study (107 delirious and 161 non-delirious subjects), 30 delirious and 77 non-delirious subjects aged 66 and older who were discharged home without admission were identified.
Results	The subjects whose delirium was not detected in the ED had the highest mortality over 6 months (30.8%). The mortality of delirious subjects detected in the ED was similar to that of the non-delirious subjects (11.8 vs 14.3%).
Conclusions	The results of this study suggest that the non-detection of delirium in the ED may be associated with increased mortality within 6 months after discharge.
Strength of the Evidence Base	Level II

31. Epidemiology and risk factors for delirium across hospital settings

Journal	Best Practice & Research: Clinical Anaesthesiology, 2012
Authors	Vasilevskis, E.E. Han, J.H. Hughes, C.G. Ely, E.W
Methods	A review of the epidemiology and risk factors for delirium across the hospital.
Results	At admission, approximately 11– 25% of older patients will have delirium. An additional 29–31% of older patients admitted without delirium will develop delirium (incident delirium). Delirium occurs frequently in older ED patients, affecting 8–10% of patients. The prevalence of delirium in ICU cohort studies has been reported as low as 20–30%, and as high as 70–80% or more. Incident delirium ranges from 22%- 83%. Dementia is the most consistently observed vulnerability factor for delirium and patients with higher severity of illness are more likely to experience delirium. Administration of potent sedative medications, most notably benzodiazepines, is most consistently and strongly associated with an increased burden of delirium. In both the hospital and ICU, delirium can be prevented with the application of protocols that include early mobility/exercise. A patient with delirium is more likely to experience increased short- and long-term mortality, decreases in long-term cognitive function, increases in hospital length of stay and increased complications of hospital care.
Conclusions	Delirium is common in hospitalised general medical patients. Further research into the epidemiology, risk factors and treatment for delirium is required.
Strength of the Evidence Base	Level II

32. The incidence of delirium associated with orthopedic surgery: a meta-analytic review

Journal	International Psychogeriatrics, 2007
Authors	Bruce, A.J. Ritchie, C.W. Blizard, R. Lai, R. Raven, P.
Method	A systematic review and meta-analysis of the literature regarding the incidence of delirium following orthopedic surgery.
Results	26 were included in the review. The reported incidence of postoperative delirium ranged between 4-53.3% in hip fracture samples and 3.6-28.3% in elective samples. Hip fracture was associated with a higher risk of delirium than elective surgery both when patients with CI were included in the sample (21.7% vs. 12.1%), and when patients with CI were excluded (25% vs. 8.8%). In 8 studies, the proportion of delirium cases with a preoperative onset ranged from 34 to 92%.
Conclusion	Delirium occurs more commonly with hip fracture than elective surgery, and frequently has a preoperative onset when associated with trauma.
Strength of the Evidence Base	Level I

33. Delirium risk factors in elderly hospitalized patients

Journal	Journal of General Internal medicine, 1998
Authors	Elie, M. Cole, M.G. Primeau, F.J. Bellavance, F.
Method	A systematic literature review was undertaken to assess the risk factors associated with the development of delirium in hospitalized geriatric patients. 27 articles were included in the review including 1,365 patients with delirium. 61 different risk factors were examined.
Results	The most strongly associated risk factors for delirium were dementia (OR 5.2), medical illness (OR 3.8), alcohol abuse (OR 3.3; 95% CI 1.9, 5.5), and depression (OR 1.9).
Conclusion	Risk factors for delirium that are consistently reported include dementia, advanced age, and medical illness.
Strength of the Evidence Base	Level I

34. Persistent delirium in older hospital patients

Journal	Current Opinion in Psychiatry, 2010
Authors	Cole, M.G.
Methods	A systematic literature review to determine the frequency of persistent delirium in older hospital patients (aged 50 years+). 18 papers were included in the review.
Results	In older hospital patients, delirium appears to persist in 44.7% of patients at discharge and in 32.8, 25.6 and 21% of patients at 1, 3 and 6 months, respectively. The outcomes (cognition, function, nursing home placement, mortality) of patients with persistent delirium are consistently worse than the outcomes of patients who recover from delirium.
Conclusions	The majority of older hospital patients with delirium may recover but the persistence of delirium in a substantial minority of patients may account, in large part, for the poor outcomes of delirium in this population.
Strength of the Evidence Base	Level I

35. Cognitive impairment after intensive care unit admission: a systematic review.

Journal	Intensive Care Medicine, 2013
Authors	Wolters, AE, Slooter AJC, van der Kooi AW, van Dijk D
Methods	A systematic review was conducted to summarize the current literature on long-term cognitive impairment in ICU survivors. Publications with an adult population and a follow-up duration of at least 2 months were eligible for inclusion in the review. Studies in cardiac surgery patients or subjects with brain injury or cardiac arrest prior to ICU admission were excluded.
Results	<p>19 studies were included in the review. Of those, four studies focused on the elderly or very elderly (65-85 years and older). Four studies assessed cognitive impairment in the elderly, two of which, both based on screening test data, did not find significant cognitive impairment among their elderly. The other two studies in elderly patients reported cognitive impairment varying from 17% to 56%.</p> <p>Baseline assessment of cognitive status before ICU admission was lacking in three studies and most studies used only screening tests, not comprehensive neuropsychological testing.</p>
Conclusions	The results of most studies reviewed suggest that critical illness and ICU treatment are associated with long-term cognitive impairment. Due to the complexity of defining cognitive impairment, it is difficult to standardise definitions and to reach consensus on how to categorize neurocognitive dysfunction. Therefore, the magnitude of the problem is uncertain.
Strength of the Evidence Base	Level I

36. Cognitive trajectories after postoperative delirium

Journal	New England Journal of Medicine, 2012
Authors	Saczynski, J.S. Marcantonio, E.R. Quach, L. Fong, T.G. Gross, A. Inouye, S.K. Jones, R.N.
Methods	A prospective, observational study of 225 patients 60 years of age or older (average age = 73 years) who were planning to undergo coronary-artery bypass grafting or valve replacement. Patients were assessed preoperatively, daily during hospitalisation beginning on postoperative day 2, and at 1, 6, and 12 months after surgery. Cognitive function was assessed with the use of the Mini-Mental State Examination (MMSE). Delirium was diagnosed with the use of the Confusion Assessment Method. Performance on the MMSE was examined in the first year after surgery, controlling for demographic characteristics, coexisting conditions, hospital, and surgery type.
Results	103 participants (46%) developed delirium postoperatively. Those who developed delirium were older ($P<0.001$) and had lower preoperative mean MMSE scores than those who did not develop delirium ($P<0.001$). In adjusted models, those with delirium had a larger drop in cognitive function (measured by the MMSE score) two days after surgery than did those without delirium ($P<0.001$) and had significantly lower postoperative cognitive function than those without delirium, both at one month ($P<0.001$) and at one year ($P<0.001$) after surgery. With adjustment for baseline differences, the between-group difference in mean MMSE scores was significant 30 days after surgery ($P<0.001$) but not at 6 or 12 months ($P=0.056$ for both). A higher percentage of patients with delirium than those without delirium had not returned to their preoperative baseline level at 6 months ($P=0.01$), but the difference was not significant at 12 months ($P=0.055$).
Conclusions	Delirium is associated with a significant decline in cognitive ability during the first year after cardiac surgery, with a trajectory characterized by an initial decline and prolonged impairment.
Strength of the Evidence Base	Level II

37. The risk of dementia and death after delirium.

Journal	Age & Ageing, 1999
Authors	Rockwood, K. Cosway, S. Carver, D. Jarrett, P. Stadnyk, K. Fisk, J.
Methods	A prospective cohort study (n = 203 patients aged ≥65 years at baseline and survivors of the index admission). The aim of the study was to examine the relationship between an episode of delirium during hospitalisation and subsequent dementia and death over 3 years.
Results	The incidence of dementia was 5.6% per year over three years for those without delirium and 18.1% per year for those with delirium. The unadjusted relative risk of dementia for those with delirium was 3.23 (95% confidence interval 1.86-5.63). The adjusted relative risk of death also increased (1.80; 1.11-2.92), while the median survival time was significantly shorter in those with than in those without delirium.
Conclusions	Delirium appears to be an important marker of risk for dementia and death, even in older people without prior cognitive or functional impairment.
Strength of the Evidence Base	Level II

39. Prospective cohort study of adverse events in older people admitted to the acute general hospital: risk factors and the impact of dementia

Journal	International Journal of Geriatric Psychiatry, 2012
Authors	Watkin, L. Blanchard, M.R. Tookman, A. Sampson, E.L.
Methods	A longitudinal cohort study on acute medical wards in a large general hospital. We recruited 710 people aged over 70 years undergoing emergency medical admission. Dementia was diagnosed using operationalised DSM-IV criteria. Patients were assessed using standardised tools including the Confusion Assessment Method, mini-mental state examination, the Functional Assessment Staging scale, the APACHE scale and Charlson co-morbidity index. Data on reported adverse events (RAE) was supplied independently by the hospital clinical risk department.
Results	8.6% of patients experienced an RAE (the most common was falling); 5.9% were patient related and 2.7% system-related (incidence rate for all RAEs was 2.1) per person year of hospital admission. There was a significant association between dementia and experiencing a patient related RAE. Patients with mild to moderate dementia (MMSE 18–23) and functional disability (FAST score 2–6) had over twice the risk compared to those without dementia.
Conclusions	RAEs were common and associated with risk factors identifiable at admission.
Strength of the Evidence Base	Level II

40. Hospital use, institutionalisation and mortality associated with delirium

Journal	Age & Ageing, 2010
Authors	Eeles, E. M. Hubbard, R.E. White, S.V. O'Mahony, M.S. Savva, G.M. Bayer, A.J.
Methods	A prospective cohort study (n= 278 medical patients aged ≥75 years) admitted acutely to a district general hospital in South Wales. Patients were screened for delirium at presentation and on alternate days throughout their hospital stay. Assessments also included illness severity, preadmission cognition, co-morbidity and functional status. Patients were followed for 5 years to determine rates of institutionalisation and mortality.
Results	Delirium was detected in 103 patients (37%) and excluded in 175. Median time to death was 162 days for those with delirium compared with 1,444 days for those without (P<0.001). After adjusting for multiple confounders, delirium was associated with an increased risk of death (P ≤ 0.002). Institutionalisation was higher in the first year following delirium (P = 0.03).
Conclusions	Delirium is associated with high rates of institutionalisation and an increased risk of death up to 5 years after index event.
Strength of the Evidence Base	Level II

41. Evidence Based Practice Guidelines for the Nutritional Management of Malnutrition in Adult Patients Across the Continuum of Care (2009)

Journal	Nutrition and Dietetics
Author	Prepared by the DAA Malnutrition Guideline Steering Committee
Recommendations in relation to patients with dementia in acute care settings	Routine screening for malnutrition should occur in the acute setting to improve the identification of malnutrition risk and to allow for nutritional care planning. A valid malnutrition screening tool appropriate to the population should be applied. The aim of a nutritional intervention is to prevent decline/ improve nutritional status and associated outcomes in adults with malnutrition or at risk of malnutrition.
Rationale & Strength of the Evidence Base	There is a high prevalence of malnutrition in the acute care setting (20–50%); (Level I) The prevalence of malnutrition is higher in older adults; (level 1) Malnutrition is under-recognised and under-diagnosed in the Acute care setting; (Level 1) Malnutrition is associated with adverse clinical outcomes and costs in the acute care setting; (Level I) Identification, documentation and coding of malnutrition results in a favourable reimbursement under casemix funding in the acute care setting; (Level II) Nutritional status deteriorates in a significant proportion of individuals

	over the course of admission in the acute care setting; (Level II)
--	--

42. Negative health outcomes and adverse events in older people attending emergency departments: A systematic review

Journal	Australasian Emergency Nursing Journal, 2011
Authors	Schnitker L, Martin-Khan M, Beattie E, Gray L,
Methods	A systematic review of the research-based literature regarding negative health outcomes and adverse events experienced by older patients (aged 65 years and older) in the emergency department (ED) was conducted.
Results	64 articles were included in the review. Long-term (>6 months) functional decline was experienced in 16% of 1,673 older (≥ 65) ED patients. The oldest (75+ and 80+) physical trauma patients are at highest risk of decreased function. In general, approximately 1%—2.2% of the ≥ 65 patients died within 30 days of the index ED visit and 2.4%—10% of ED patients died within 3 months. Studies indicated that 10.3%—19.3% of ED patients, who are 65+, experienced an ED readmission within 30 days of the index visit.
Conclusions	Common negative outcomes in older patients presenting to the ED are functional decline, death, ED readmission and subsequent hospitalisation, and institutionalization. Many negative health outcomes and adverse events in the older ED population are potentially preventable.
Strength of the Evidence Base	Level I

43. Quality indicators for geriatric emergency care

Journal	Academic Emergency Medicine, 2013
Authors	Terrell, K.M. Hustey, F.M. Hwang, U. et al., on behalf of the Society for Academic Emergency Medicine (SAEM) Geriatric Task Force
Methods	The Society for Academic Emergency Medicine (SAEM) Geriatric Task Force, including members representing the American College of Emergency Physicians (ACEP), selected three conditions where there are quality gaps in the care of older patients: cognitive assessment, pain management, and transitional care in both directions between nursing homes and EDs. For each condition, a content expert created potential quality indicators based on a systematic review of the literature, supplemented with expert opinion when necessary.
QIs for cognitive Impairment	<p>Quality Indicators for Cognitive Assessment.</p> <p>QI 1: Cognitive Assessment IF an older adult presents to an ED, THEN the ED provider should carry out and document a cognitive assessment (such as an indication of level of alertness and orientation or an indication of abnormal or intact cognitive status) or document why a cognitive assessment did not occur.</p> <p>QI 2: Assessment of Patients with Cognitive Impairment in the ED IF an older adult presents to an ED and is found to have cognitive impairment, THEN an ED care provider should document whether there has been an acute change in mental status from baseline (or document an attempt to do so).</p> <p>QIs 3 & 4: ED Care of Patients with Acute Cognitive Impairment Who Are Discharged Home IF an older adult presenting to an ED is found to have cognitive impairment that is a change from baseline and is discharged home, THEN the ED provider should document the following: 3. Support in the home environment to manage the patient's care, and 4. A plan for medical follow-up.</p> <p>QI 5: Detecting Whether Cognitive Abnormalities Were Previously Recognized IF an older adult presenting to an ED is 1) found to have an abnormal mental status, 2) has no change in mental status from baseline, and 3) is discharged home, THEN the ED provider should document whether there has been previous recognition or diagnosis of an abnormal mental status by another health care provider (or document an unsuccessful attempt to determine this).</p> <p>QI 6: ED Care of Patients with Baseline Abnormal Mental Status Who Are Discharged to Home IF an older adult presenting to an ED 1) is found to have an abnormal mental status that had not been previously recognized or diagnosed by another health care provider, 2) has no change in mental status from baseline, and 3) is discharged home, THEN a referral for outpatient evaluation of the cognitive impairment should be documented.</p>
Strength of the	Level IV

Evidence Base	The QIs are based on expert opinion as the care processes encapsulated in these QIs have not been rigorously studied.
----------------------	---

44. Working with families of hospitalized older adults with dementia: caregivers are useful resources and should be part of the care team

Journal	American Journal of Nursing, 2008
Authors	Bradway, C & Hirschman, K.B.
Recommendations	<p>When an older adult with dementia is hospitalised, family caregivers should be seen as important sources of information and included as valuable members of the health care team.</p> <p>The following approaches are recommended:</p> <p>Ask the family to provide information about the person's usual functioning to help hospital staff provide care for the person. Involve the family in care Provide information for the family.</p>
Strength of the Evidence Base	Level IV

45. The Assessing Care Of Vulnerable Elders (ACOVE) Project - Quality Indicators for the Care of Dementia in Vulnerable Elders

Journal	Journal of the American Geriatrics Society, 2007
Authors	Feil, D.G. MacLean, C. & Sultzer, D.
QI Development Process	The Assessing Care of Vulnerable Elders (ACOVE) project is a collaboration between RAND Health (UCLA) and Pfizer Inc. For each condition, a content expert created potential QIs and, based on systematic reviews, developed a peer-reviewed monograph detailing each QI and its supporting evidence. Multidisciplinary panels of clinical experts evaluated whether the QIs were valid measures of quality of care using a process that is a combination of scientific evidence and professional consensus. The Clinical Committee (who guided the overall project) evaluated the coherence of the complete set of QIs that the expert panels rated as valid.
QIs relevant to Acute hospital settings	<p>Cognitive and Functional Screening IF a Vulnerable Elder (VE) is new to a primary care practice or inpatient service, THEN there should be a documented assessment of cognitive ability and functional status.</p> <p>Supporting Evidence: No direct evidence was found that screening for dementia improves clinical outcomes, although medical, behavioral, and social interventions early in dementia improve clinical outcomes and provide indirect evidence in support of screening.</p> <p>Restraints IF a VE with dementia is physically restrained in the hospital, THEN the target behavioral disturbance or safety concern justifying the use of restraints should be documented in the medical record and communicated to the patient, caregiver, or guardian, BECAUSE this will promote the appropriate use of restraints and allow identification and correction of inappropriate use of restraints</p> <p>Supporting Evidence: Restraints should be used only when less-restrictive measures have proven ineffective. There are no clinical or observational trials to support the use of restraints for protection of the patient from injury. Some studies show an increase in the number of falls when patients are restrained.</p>
Journal	Journal of the American Geriatrics Society, 2007
Authors	Arora, V.M. McGory, M.L. & Fung, C.H.
49. QIs for Hospitalisation and Surgery in Vulnerable Elders (selected QIs only)	<p>16. Preoperative Care - Capacity to Consent IF a VE is to have inpatient or outpatient elective surgery, THEN there should be documentation of the patient’s capacity to understand the risks and benefits of the proposed procedure before the operative consent form is presented for signature, BECAUSE failure to document this information may result in a surgical procedure and surgical outcomes that are not consistent with the patient’s goals of care.</p> <p>17. Preoperative Discussion: Goals of Care IF a VE is to have elective major surgery, THEN patient priorities and preferences regarding treatment options, operative risks, anticipated postoperative functional outcome, and advance directive and designated surrogate decision maker should be discussed preoperatively, BECAUSE preoperative discussions regarding surgical options, including risks and outcomes, life-sustaining preferences, and presence of an advance directive, may improve the correlation between the patient’s wishes and administered care.</p>

6. Delirium Evaluation

IF a hospitalized VE has a suspected or definite diagnosis of delirium, acute confusional state, or reduced level of consciousness, THEN there should be a documented attempt to attribute the altered mental state to a potential etiology, BECAUSE identifying the cause of delirium could facilitate a quicker in-hospital recovery, which is associated with better cognitive and functional recovery postdischarge.

22. Preoperative Delirium Risk Factor Assessment

IF a VE is to have elective major surgery, THEN he or she should be screened for risk factors for the development of postoperative delirium within 8 weeks before surgery, BECAUSE delirium is common in elderly patients, and identification of patients at risk for delirium may allow prevention or earlier diagnosis and treatment of postoperative delirium.

29. Screen for Postoperative Delirium

IF a VE has major surgery, THEN a daily screening examination for delirium should be performed for the first 3 days after surgery, BECAUSE daily screening for delirium will improve recognition of delirium and allow earlier intervention.

7& 27. Mobilization

IF a VE who is ambulatory as an outpatient is hospitalized for longer than 48 hours and is not receiving intensive or palliative care, THEN there should be a plan to increase mobility within 48 hours of admission, BECAUSE early ambulation can reduce length of stay for hospitalized VEs by approximately 1 day. IF a VE who was ambulatory as an outpatient has major surgery and is not in intensive care, THEN ambulation should be performed by postoperative day 2, BECAUSE early ambulation, as a major component of a multimodal intervention program, is associated with better functional recovery and shorter length of hospital stay in postoperative patients.

8. Inpatient Fall Evaluation

IF a VE falls during hospitalisation, THEN presence or absence of prodromal symptoms and review of medications or drugs potentially contributing to the fall should be documented within 24 hours, BECAUSE a comprehensive evaluation, including history of prodromal symptoms and review of medications, of older persons after a fall in an acute care setting can identify the cause of the fall and appropriately target interventions.

15. Discharge Assessment

IF a VE is discharged from the hospital, THEN the hospital record should contain an assessment of: level of independence, need for home health services, and patient and caregiver readiness for discharge time and location, BECAUSE hospitalized VEs often require extensive transitional care in the postdischarge period, caregiver preparedness is often inadequate, and poor discharge planning is associated with greater risk of hospital readmission.

30. Cognition and Function at Discharge

IF a VE has major surgery, THEN assessment of cognition and functional status before discharge, in comparison with preoperative levels, should be performed, BECAUSE it may identify discharge-planning needs.

	<p>The document includes other QIs relevant to a range of conditions and treatments including Venous Thrombosis Prophylaxis, Endocarditis Prophylaxis, Pneumonia Treatment, Central Venous Catheter Infection Precautions, Indwelling Bladder Catheter, Preoperative Pulmonary Evaluation, Preoperative Cardiovascular Evaluation, Preoperative Diabetes Evaluation, Antibiotic Treatment, etc.</p>
--	---

46. Dementia Quality Standards

Author	National Institute for Health and Clinical Excellence, 2010.
Reference	http://publications.nice.org.uk/dementia-quality-standard-gs1
Note	The standards are specific statements defining high quality care
Quality Statement 1	People with dementia receive care from staff appropriately trained in dementia care.

47. Second round of the National Audit of Dementia (care in general hospitals): Standards Document

Author	Royal College of Psychiatrists, 2012
Reference	http://www.rcpsych.ac.uk/pdf/Standards%20document%20-%20second%20round%20of%20auditx.pdf
Method	A comprehensive literature review was undertaken. The review included national reports and guidelines (Department of Health, National Audit Office, NICE/Social Care Institute for Excellence); standards, guidelines and recommendations issued by professional bodies (Royal Colleges, the British Geriatrics Society); and reports and recommendations issued by organisations representing service users and carers (Alzheimer’s Society, Help the Aged, Age Concern). A secondary review identified key areas of concern for service users and carers in terms of experience of care received.

The Standards (in brief)

Assessment

People with dementia admitted to hospital should have a comprehensive assessment of their physical and mental health needs, plus assessment relating to their ongoing care, to ensure the best recovery outcomes and safer discharge. As part of their assessment, patients with dementia are asked about the presence and severity of any pain and this is recorded.

As part of their assessment, patients with dementia are asked about continence needs, and this is recorded. Information collected as part of the assessment also includes life details which aid communication for staff and integrity for the person with dementia, e.g. family situation, interests and past or current occupation.

There are policies or guidelines in place to ensure that patients with dementia or CI with behaviour changes suggesting the presence of delirium are clinically assessed by a healthcare professional who is trained and competent in the diagnosis of delirium.

There is a protocol in place governing the use of interventions for violent or challenging behaviour aggression and extreme agitation which is suitable for use in patients with dementia who present with behavioural psychological symptoms (BPSD) (in line with the NICE-SCIE guideline). The protocol specifies the precautions and risk assessments for any use of restraint or sedation in people with dementia and the frail elderly.

Access to liaison psychiatry

People with dementia in hospital require access to specialist mental health services, and these should be provided by a liaison team.

Care/Management plan

People with dementia have a management plan for any medical condition. People with dementia have a nursing management plan for the dementia or symptoms of dementia, or “confusional state” The number of moves within the hospital or between care settings is kept to a minimum and any moves are undertaken to benefit the person with dementia.

Protected mealtimes are in operation in all wards that admit adults with known or suspected dementia.

Resources

The hospital has access to intermediate care services which will admit people with dementia. Access to intermediate care allows people with dementia to be admitted to intermediate care directly and avoid unnecessary hospital admission.

Governance

Hospitals should have care pathways in place for people with dementia.
A senior clinician is responsible for the implementation and review of the care pathway.

End of Life Care

The end of life care pathway specifies that the health care team and consultant discuss any issues to do with end of life care with the patient and carers or relatives (including resuscitation and any advance decisions made by the person with dementia)

Discharge policy

There is a discharge policy which specifies that discharge is an actively managed process which begins within 24 hours of admission.

Staffing

The ward has an agreed minimum staffing level across all shifts, which is met.
The skill mix ratio on the ward meets or exceeds national benchmark.

Training & Development

Dementia awareness training relating to the care provision, systems, information & resources available in the hospital is mandatory for all acute healthcare staff involved in the care of people with dementia or who may have dementia.

Environment

Patients with dementia are situated on the ward where they are visible to staff and staff are visible to them. Colour schemes are used to help patients with dementia to find their way around the ward e.g. doors and bays are painted in a different colour.

Signs and maps use large and clear (easy to read) fonts and colours.

Key areas are clearly marked e.g. the nursing station, the bathrooms/toilets, any side rooms or waiting areas .

All patients with dementia are able to see a clock from their bed.

All patients with dementia are able to see a calendar (or orientation board) from their bed.

Signs to locate the toilet are visible from the patient's bed.

Information and Communication

The name that the person with dementia prefers to be addressed by is recorded and communicated to all staff that work with them.

There is a system to ensure that other personal information (such as routines, preferences, support needed with personal care) is conveyed to staff involved in the patients care in order to improve the type and level of care they receive. There is a system to ensure that staff directly involved in caring for/treating the person with dementia are informed about any effect of the dementia on the persons behaviour and communication.

The patient's notes are organised in such a way that it is easy to identify any Communication or memory problems and related care and support needs.

Patients and carers/relatives are given information about the ward and hospital routines: mealtimes, visiting hours, periods of rest/quiet and the local complaints procedure. The ward ensures that a healthcare professional responsible for coordinating the person's care is identified to the person and carers/ relatives.

Carers or relatives are asked about the extent to which they prefer to be involved in the care of the person with dementia while on the ward. Staff to explain changes in care and treatment to people with dementia and/or their carers and provide regular updates on progress.

There are clear guidelines regarding involvement of carers and what information is to be shared with them and this is communicated to carers.

48. 1000 Lives Plus How to Guide: Improving Dementia Care

Author	National Health Service, Wales, 2010
Reference	http://www.wales.nhs.uk/sitesplus/1011/publications
Recommended Interventions to improve care for people with dementia on general hospital wards	<p>Identify on day of admission if person already has diagnosis of dementia. If so, liaise immediately regarding care needs in relation to dementia (including medication) with family and professional carers, and commence discharge planning.</p> <p>Where there is no previous history of dementia, check history with family/other carers or people offering support.</p> <p>Assess for delirium and ensure appropriate treatment.</p> <p>Seek advice from liaison service for older adults with mental health problems, especially where additional needs identified from risk assessment in relation to challenging behaviour.</p> <p>Assess environmental needs – e.g. safety, stimulation, need for single room</p> <p>Assess needs for assistance and maintaining skills, e.g. with meals, toileting, self care, and build into care plan accordingly.</p> <p>Review all psychotropic medication on admission.</p> <p>Assess for capacity for major decisions, and where person lacks capacity, follow ‘best interests’ process.</p> <p>Carers to be involved in care-planning for the person in relation to discharge planning.</p> <p>If the patient has a diagnosis of dementia when being discharged: all carers offered carers assessment.</p>

49. see page 73

50. Dementia: Wandering

Year	2013
Author	C. Tufanaru for the Joanna Briggs Institute
Recommendations	<p>Assessment of wandering risk, reasons for wandering and wandering patterns are recommended.</p> <p>There is insufficient evidence to recommend for or against the use of multisensory stimulation, exercise, therapeutic touch, aromatherapy, or music therapy for wandering among patients with dementia.</p> <p>Physical restraints are considered as unacceptable intervention for prevention of wandering.</p> <p>Tracking devices, motion detection devices, and home alarms may be used for detecting wandering and locating lost patients.</p>
Rationale	<p>Systematic reviews studies examined the effectiveness of non-pharmacological interventions (e.g. music therapy, exercise, special care units, aromatherapy, behavioural interventions and multi-sensory environments) to prevent wandering. The review suggested that there was no robust evidence to recommend any non-pharmacological intervention to reduce wandering in dementia. (Level I)</p> <p>A Cochrane review (2009) found no evidence that subjective barriers (exit modifications such as pattern on floor/door, mirror on door, camouflage of door/knob) prevent wandering by cognitively impaired people.</p> <p>The literature advocated the provision of a safe wandering environment.</p>
Strength of the Evidence Base	<p>There is no robust evidence that any non-pharmacological evidence is effective in preventing or reducing wandering (Level 1)</p> <p>Provision of a safe wandering environment (Level IV)</p>

51. Advanced Dementia: Clinical Care with Eating and Drinking.

Year	2013
Author	Professor J Abbey for the Joanna Briggs Institute
Recommendations	<p>It is not possible to adopt a general policy for artificial nutrition and hydration. The reasons for refusal to eat and/or drink must be assessed on a case-by-case basis and the reasons for an inability or refusal to eat/drink investigated. Encouragement to eat should be offered.</p> <p>Force feeding, or artificial hydration and nutrition is not recommended.</p> <p>PEG or nasogastric tube feeding are not advantageous for the person with advanced dementia.</p> <p>Evidence suggests that a comprehensive, evidence-based palliative care approach improves the terminal care provided to people in residential care facilities and their families.</p>
Strength of the Evidence Base	Level III - IV

52. Feeding Tubes in Advanced Dementia Position Statement.

Author	American Geriatrics Society
Year	2013
Statement	<p>Percutaneous feeding tubes are not recommended for older adults with advanced dementia.</p> <p>Careful hand-feeding should be offered for persons with advanced dementia, Efforts to enhance oral feeding by altering the environment and creating patient-centered approaches to feeding should be part of usual care for older adults with advanced dementia. Institutions such as hospitals, nursing homes and other care settings should promote choice, endorse shared and informed decision-making, and honour patient preferences regarding tube feeding. They should not impose obligations or exert pressure on patients or providers to institute tube feeding.</p>
Rationale	<p>The published using observational data remains highly consistent in finding a lack of efficacy in tube feeding in this population. The current evidence suggests that the potential benefits of tube feeding do not outweigh substantial associated treatment burdens in persons with advanced dementia.</p> <p>Tube feeding is associated with agitation, increased use of physical and chemical restraints, worsening pressure ulcers and increased mortality.</p> <p>A systematic review (Cochrane, 2009) of seven controlled observational studies concluded that there is insufficient evidence to suggest that enteral tube feeding is beneficial in patients with advanced dementia. Data are lacking on the adverse effects of this intervention.</p>
Strength of the Evidence Base	Level III-2

53. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit.

Journal	Critical Care Medicine, 2013
Author	Barr J, et al for the American College of Critical Care Medicine
Recommendations in relation to delirium	<p>We recommend routine monitoring of delirium in adult ICU patients. The Confusion Assessment Method for the ICU (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) are the most valid and reliable delirium monitoring tools in adult ICU patients.</p> <p>We recommend performing early mobilization of adult ICU patients whenever feasible to reduce the incidence and duration of delirium.</p> <p>There is no published evidence that treatment with haloperidol reduces the duration of delirium in adult ICU patients.</p> <p>Atypical antipsychotics may reduce the duration of delirium in adult ICU patients.</p> <p>We recommend using an interdisciplinary ICU team approach that includes provider education, pre-printed and/or computerized protocols and order forms, and quality ICU rounds checklists to facilitate the use of pain, agitation, and delirium management guidelines or protocols in adult ICUs</p>
Rationale	<p>Delirium is associated with increased mortality in adult ICU patients. Delirium is associated with prolonged ICU and hospital LOS in adult ICU patients.</p> <p>Delirium is associated with the development of post-ICU cognitive impairment in adult ICU patients.</p> <p>Coma is an independent risk factor for the development of delirium in ICU patients.</p>
Strength of the Evidence Base	Delirium is associated with increased mortality (Level 1), prolonged ICU and hospital LOS (Level 1), and development of post-ICU cognitive impairment in adult ICU patients (Level III-2).

54. Delirium in Older People - Australian and New Zealand Society for Geriatric Medicine Position Statement 13.

Author	Australian and New Zealand Society for Geriatric Medicine, 2012
Reference	http://www.anzsgm.org/documents/PS13DeliriumstatementRevision2012.pdf
Recommendations	<p>All older persons should be assessed for risk factors for delirium on admission to hospital.</p> <p>Delirium is very common but is often not detected or misdiagnosed. Those who display altered cognition should be screened for delirium using a tool such as the Confusion Assessment Method.</p> <p>Preventative strategies have now been demonstrated to be very effective. These are based on multicomponent interventions targeting risk factors which are managed with care protocols and environmental strategies.</p> <p>Education programmes are very effective in prevention.</p> <p>Preventative strategies and Education programmes should be adopted by all healthcare institutions.</p> <p>Investigations for common precipitating factors are usually needed unless clear, recent causes are identified. Management of delirium involves identifying and treating risk factors and precipitating factors, use of non-pharmacological and pharmacological measures to manage neuropsychiatric manifestations, preventing complications and monitoring progress.</p> <p>Delirium is best managed by a multidisciplinary team utilising multicomponent interventions in an appropriate environment with adequate staffing levels.</p>
Rationale	Delirium in older patients is associated with poor outcomes, especially increased rates of cognitive and functional decline, prolonged hospital stay, institutionalisation and mortality.
Strength of the Evidence Base	<p>Level I</p> <p>Evidence for these recommendations derives from research showing that delirium interventions are effective (e.g. Reston & Schoelles, 2013; Hempenius et al. 2011).</p>

55. How to try this: Delirium superimposed on dementia

Journal	American Journal of Nursing, 2008
Authors	Fick, D. M. & Mion, L. C.
Recommendations	<p>An algorithm is outlined to guide nurses in the assessment and treatment of delirium superimposed on dementia.</p> <p>It is suggested that if a patient with dementia demonstrates a change in mental status or other behaviour, assessment for delirium is indicated.</p>
Conclusions	Use of this algorithm may improve the detection of delirium in patients with dementia.
Strength of the Evidence Base	Level IV

56. Cognitive assessment in the elderly: a review of clinical methods

Journal	QJM: An International Journal of Medicine, 2007
Authors	Woodford, H.J. & George, J.
Methods	A review of the literature regarding the more common techniques used by physicians for evaluating cognition.
Results	Brief screening tests considered in the review included the MMSE; sMMSE, Mini-Cog, Six-Item Cognitive Impairment Test (6CIT), the Clock Drawing Test (CDT), Six Item Screener (SIS), Abbreviated Mental Test (AMT), and The General Practitioner Assessment of Cognition (GPCOG)
Conclusions	Brief tests with a reasonable sensitivity and specificity include the 6CIT, Mini-Cog and SIS.
Strength of the Evidence Base	Level II

59. Comparison of the MMSE and RUDAS cognitive screening tools in an elderly inpatient population in everyday clinical use.

Journal	Internal Medicine Journal, 2009
Authors	Pang, J. Yu, H. Pearson, K. Lynch, P. Fong, C.
Methods	The MMSE and the RUDAS was compared in an inpatient population (n = 46; average age = 81.7 yrs).
Results	The RUDAS and MMSE correlated well (0.83). The mean performance time was 9.4 min for both the MMSE and the RUDAS. Patient satisfaction was similar for both tests. Surveyed clinicians preferred the MMSE because of greater familiarity.
Conclusions	IT was concluded that the RUDAS correlates well with the MMSE and is no more time-consuming to perform. It has good clinical utility as a cognitive screening tool.
Strength of the Evidence Base	Level II

60. Physician and nurse acceptance of technicians to screen for geriatric syndromes in the emergency department

Journal	Western Journal of Emergency Medicine, 2011
Authors	Carpenter, C.R. Griffey, R.T. Stark, S. Coopersmith, C.M. Gage, B.F.
Methods	This was a cross-sectional survey of attending physicians and nurses at a trauma centre ED following an 8 month project in which Geriatric technicians (paid medical student research assistants) evaluated consenting ED patients older than 65 years for cognitive dysfunction, fall risk, or functional decline. The primary objective of this anonymous survey was to evaluate ED nurse and physician perceptions about the geriatric screener feasibility and barriers to implementation.
Results	The survey was completed by 72% of physicians (total n=29) and 33% of nurses (total n=103). Most nurses and physicians identified geriatric technicians as beneficial to patients without impeding ED throughput. Fewer than 25% of physicians routinely screen for any geriatric syndromes.
Conclusions	Most EM nurses and physicians believe that an individual dedicated to screening older adults for prevalent geriatric syndromes would benefit overall clinical care without negatively impacting patient flow.
Strength of the Evidence Base	Level IV

61. The mini-cog: a cognitive 'vital signs' measure for dementia screening in multi-lingual elderly

Journal	International Journal of Geriatric Psychiatry, 2000
Authors	Borson, S. Scanlan, J. Brush, M. Vitaliano, P. Dokmak, A.
Methods	The performance of the Mini-Cog was compared with those of the Mini-Mental State Exam (MMSE) and Cognitive Abilities Screening Instrument (CASI) was assessed in a community sample of 129 patients who met criteria for probable dementia based on informant interviews and 120 with no history of CI were included; 124 were non-English speakers.
Results	The Mini-Cog had the highest sensitivity (99%) and correctly classified the greatest percentage (96%) of subjects. Its diagnostic value was not influenced by education or language. Administration time for the Mini-Cog was 3 minutes vs 7 minutes for the MMSE.
Conclusions	The Mini-Cog accurately detected CI in this sample. The brevity and ease of administration suggest it may be a useful screening test of cognition.
Strength of the Evidence Base	Level II

62. Simple cognitive testing (Mini-Cog) predicts in-hospital delirium in the elderly

Journal	Journal of the American Geriatrics Society, 2007
Authors	Alagiakrishnan, K. Marrie, T. Rolfson, D. Coke, W. Camicioli, R. et al.,
Methods	A prospective cohort study (n=132) of patients aged 65 years and older admitted to general medical units of a Canadian hospital. The aim of the study was to assess the usefulness of the Mini-Cog (administration time = 3 minutes) as a predictor of delirium in older at-risk hospital patients. All patients who were willing to participate and who were deemed to be at high risk for delirium were included in the study. Trained research assistants administered the Mini-Cog to all patients. The outcome, delirium, was based on twice-daily assessments by the trained research assistants and confirmed by specialists in geriatric medicine using the CAM.
Results	Incident delirium in this group was 15% (20/132). The Mini-Cog was a significant predictor of in-hospital delirium (OR 3.96), even after removing the group with a known history of dementia and cognitive impairment.
Conclusions	This study suggests that the Mini-Cog is a predictor of delirium in at-risk older persons. In this study, patients with an abnormal Mini-Cog were five times as likely to develop incident delirium as those who had a normal Mini-Cog.
Strength of the Evidence Base	Level II

63. Four sensitive screening tools to detect cognitive dysfunction in geriatric emergency department patients: brief Alzheimer's Screen, Short Blessed Test, Ottawa 3DY, and the caregiver-completed AD8.

Journal	Academic Emergency Medicine, 2011
Authors	Carpenter, C. R. Bassett, E. R. Fischer, G. M. Shirshekan, J. et al.
Methods	An observational cross-sectional cohort study (N = 163 patients aged ≥65 years). The primary objective was to evaluate brief screening tools for cognitive dysfunction in older ED patients: the Ottawa 3DY (O3DY), Brief Alzheimer's Screen (BAS), Short Blessed Test (SBT; also referred to as the Orientation-Concentration-Memory Test), and caregiver-completed AD8 (cAD8), using the Mini Mental Status Exam (MMSE) as the criterion standard. A secondary objective was to assess the diagnostic accuracy for the cAD8 (which is an informant-based instrument) when used in combination with the other performance-based screening tools.
Results	The prevalence of cognitive dysfunction in the sample was 37%. The SBT, BAS, and O3DY each demonstrated 95% sensitivity, compared with 83% sensitivity for the cAD8. The SBT had a superior specificity of 65%. No combination of instruments with the cAD8 significantly improved diagnostic accuracy. The SBT provided the optimal overlap with the MMSE.
Conclusions	The SBT, BAS, and O3DY are three brief performance-based screening instruments to identify geriatric patients with cognitive dysfunction more rapidly than the MMSE. Among these three instruments, the SBT provides the best diagnostic test characteristics and overlap with MMSE results. The addition of the cAD8 to the other instruments does not enhance diagnostic accuracy.
Strength of the Evidence Base	Level II

64. Diagnosing Delirium in Older Emergency Department Patients: Validity and Reliability of the Delirium Triage Screen and the Brief Confusion Assessment Method

Journal	Annals of Emergency Medicine, 2013
Authors	Han, J.H. Wilson, A. Vasilevskis, E.E. Shintani, A. Schnelle, J.F. et al.,
Methods	A prospective observational study to evaluate a novel 2-step approach to delirium surveillance for the ED (n = 406 patients). A research assistant and physician performed the Delirium Triage Screen (DTS), designed to be a highly sensitive rule-out test, and the Brief Confusion Assessment Method (bCAM), designed to be a highly specific rule-in test for delirium. The reference standard for delirium was a comprehensive psychiatrist assessment using DSM-IV criteria. All assessments were independently conducted within 3 hours of one another.
Results	50 (12.3%) had delirium diagnosed by the psychiatrist reference standard. The DTS was 98.0% sensitive with an expected specificity of approximately 55% for both raters. As the complement, the bCAM had a specificity of 95.8% and 96.9% and a sensitivity of 84.0% and 78.0% when performed by the physician and research assistant, respectively.
Conclusions	This 2-step approach accurately identified delirium in hospitalised older patients.
Strength of the Evidence Base	Level II

65. Evaluation of the Confusion Assessment Method (CAM) as a screening tool for delirium in the emergency room

Journal	General Hospital Psychiatry, 2001
Authors	Monette, J. Galbaud du Fort, G. Fung, S. H. Massoud, F. et al.
Methods	A prospective, cohort study (n=110; ≥ 66 years) of patients in the ED. The aim was to compare the results of the Confusion Assessment Method (CAM) obtained by a trained non-physician interviewer to those obtained by a geriatrician. Patients were interviewed by both the lay interviewer and the geriatrician who both completed the CAM checklist independently.
Results	The kappa coefficient was 0.91, the sensitivity 0.86, the specificity 1.00, the PPV 1.00, and the NPV 0.97.
Conclusions	In conclusion, the CAM used by a trained lay interviewer in the emergency room is sensitive, specific, reliable and easy to use for the identification of patients with delirium.
Strength of the Evidence Base	Level II

66. Delirium in hospitalized patients: implications of current evidence on clinical practice and future avenues for research--a systematic evidence review

Journal	Journal of Hospital Medicine, 2012
Authors	Khan, B.A. Zawahiri, M. Campbell, N.L. Fox, G.C. Weinstein, et al.
Methods	A review of systematic review studies of delirium diagnosis, pathophysiology, treatment & prevention.
Results	22 systematic reviews graded as good or fair provided the data.
Conclusions	Age, cognitive impairment, depression, anticholinergic drugs, and lorazepam use were associated with an increased risk for developing delirium. The Confusion Assessment Method (CAM) is reliable for delirium diagnosis outside the intensive care unit. Multi-component nonpharmacological interventions (orientation activities for the cognitively impaired, early mobilization, preventing sleep deprivation, minimizing the use of psychoactive drugs, use of eyeglasses and hearing aids, and treating volume depletion), are effective in significantly reducing delirium incidence in elderly medical patients. Low-dose haloperidol has similar efficacy as atypical antipsychotics for treating delirium. Delirium is associated with poor outcomes independent of age, severity of illness, or dementia.
Strength of the Evidence Base	Level I

67. Assessment of people with cognitive impairment and hip fracture: A systematic review and meta-analysis.

Journal	Archives of Gerontology and Geriatrics, 2013
Authors	Smith, T. Hameed, Y. Cross, J. Sahota, O. Fox, C.
Methods	A systematic review and meta-analysis of studies evaluating the diagnostic test accuracy of assessment tools for patients with cognitive impairment following hip fracture.
Results	Nine studies including 690 participants, with a mean age of 82.1 years were included. For pain, the Facial Action Coding System (FACS) and DOLOPLUS-2 tools possessed strong inter-rater reliability and internal consistency, with the FACS demonstrating concurrent validity with other pain scales. For delirium, the Delirium Rating Scale-Revisited-98 (DRS-R-98) demonstrated high inter-rater reliability and sensitivity and specificity, with the NEECHAM Confusion Scale possessing high internal consistency.
Conclusions	To conclude, there is a paucity of literature assessing the reliability, validity and diagnostic test accuracy of instruments to assess people with cognitive impairment following hip fracture surgery. Based on the current available data, delirium may be best assessed using the NEECHAM Confusion Scale or DRS-R-98. Pain is most accurately evaluated using the FACS.
Strength of the Evidence Base	Level I

68. The confusion assessment method for the intensive care unit (CAM-ICU) and intensive care delirium screening checklist (ICDSC) for the diagnosis of delirium: a systematic review and meta-analysis of clinical studies

Journal	Critical Care, 2012
Authors	Gusmao-Flores, D. Figueira Salluh, J. I. Chalhub, R. A. Quarantini, L. C.
Methods	A systematic review and meta-analysis was conducted to evaluate the current evidence on the accuracy of the Confusion Assessment Method for Intensive Care Unit (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) for the diagnosis of delirium in critically ill patients.
Results	Nine studies evaluating the CAM-ICU (including 969 patients) and four evaluating the ICDSC (n = 361 patients) were included in the final analysis. The pooled sensitivity of the CAM-ICU was 80.0% and the pooled specificity was 95.9%. The diagnostic odds ratio was 103.2. The pooled area under the summary receiver operating characteristic curve (AUC) was 0.97. The pooled sensitivity of the ICDSC was 74%, and the pooled specificity was 81.9%. The diagnostic odds ratio was 21.5. The AUC was 0.89.
Conclusions	The CAM-ICU is an excellent diagnostic tool in critically ill ICU patients, whereas the ICDSC has moderate sensitivity and good specificity. The available data suggest that both CAM-ICU and the ICDSC can be used as a screening tool for the diagnosis of delirium in critically ill patients.
Strength of the Evidence Base	Level I
<p>Comment Another recently published systematic review of studies that had assessed the validity of tools to detect delirium superimposed on dementia (Morandi et al., 2012 Tools to Detect Delirium Superimposed on Dementia: A Systematic Review. Journal of the American Geriatric Society), also found that the CAM and the CAM-ICU had data supporting their use in the general ward and ICU settings, respectively. Nonetheless, it was concluded that the overall evidence base regarding tools for detection of delirium superimposed on dementia is limited, (9 studies were included in the review).</p> <p>Because this review confirms, rather than adds to the knowledge base regarding tools for the detection of delirium, an evidence summary for this study was not included in this report.</p>	

69. Delirium screening in critically ill patients: a systematic review and meta-analysis

Journal	Critical Care Medicine, 2012
Authors	Neto, A.S. Nassar, A.P., Cardoso, S.O. Manetta, J.A. Pereira, V.G. et al.
Methods	Systematic review and meta-analysis of publications assessing the accuracy of delirium screening instruments in critically ill patients. The meta-analysis was limited to studies in critically ill patients in intensive care units, surgical wards, or emergency rooms. As the gold standard, delirium had to be diagnosed based on appropriate criteria by a delirium expert.
Results	16 studies involving 1,523 participants and five screening tools were included in the systematic review. The pooled sensitivities and specificities of Confusion Assessment Method for the Intensive Care Unit (ICU) for detection of delirium in critically ill patients were 75.5% and 95.8%, and for Intensive Care Delirium Screening Checklist 80.1% and 74.6%, respectively. All but one study was performed in a research setting, and that one study suggested that with routine use of the Confusion Assessment Method for the ICU, half of the patients with delirium were not detected.
Conclusions	The Confusion Assessment Method for the ICU was the most specific bedside tool for the assessment of delirium in critically ill patients. These findings were largely obtained in research settings, and the low sensitivity of the Confusion Assessment Method for the ICU in routine, daily practice may limit its use as a screening test.
Strength of the Evidence Base	Level I

70. Large-scale implementation of sedation and delirium monitoring in intensive care unit: A report from two medical centers.

Journal	Critical Care Medicine, 2005
Authors	Pun, B. T. Gordon, S. M. Peterson, J. F. Shintani, A. K. Jackson, J. C. et al.,
Study Aims	To implement sedation and delirium monitoring via a process-improvement project in accordance with Society of Critical Care Medicine guidelines and to evaluate the challenges of modifying intensive care unit (ICU) organisational practice styles.
Methods	<p>A Prospective observational cohort study was conducted in the medical ICUs of two large US hospitals. The subjects included 711 patients admitted to the medical ICUs for >24 hrs and followed over 4,163 days during a 21-month study period.</p> <p>Unit-wide nursing documentation was changed to accommodate a sedation scale (Richmond Agitation-Sedation Scale) and delirium instrument (Confusion Assessment Method for the ICU). A 20-min introductory in-service was performed for all ICU nurses, followed by graded, staged educational interventions at regular intervals.</p>
Results	The implementation project involved 64 nurses. Sedation and delirium monitoring data were recorded for 711 patients. Compliance with the Richmond Agitation-Sedation Scale was between 94.4% and 99.7%. Compliance with the CAM-ICU was between 84% and 90%. Overall weighted-kappa between bedside nurses and references raters for the Richmond Agitation-Sedation Scale were between 0.77 and 0.89. Overall agreement (kappa) between bedside nurses and reference raters using the CAM-ICU between 0.75 and 0.92. The two most-often-cited barriers to implementation were physician buy-in and time.
Conclusions	With minimal training, the compliance of bedside nurses using sedation and delirium instruments was excellent.
Strength of the Evidence Base	Level II

71. Delirium in older patients: a diagnostic study of NEECHAM Confusion Scale in surgical intensive care unit

Journal	Journal of Clinical Nursing, 2012
Author	Matarese, M. Generoso, S. Ivziku, D. Pedone, C. De Marinis, M,G
Methods	A descriptive prospective design was used to estimate the diagnostic value and determine the feasibility of the NEECHAM Confusion Scale on critically ill older patients. Consecutive non-intubated patients aged 65 and older, admitted to a surgical intensive care unit of an Italian hospital during a seven months period, were assessed for delirium using the NEECHAM scale and the Confusion Assessment Method for intensive care unit, once per shift, for 48 hours after admission.
Results	A sample of 41 older patients with a mean age of 78.3 years was studied. The kappa coefficient was 0.95. The sensitivity was 99.19%, specificity 95% at cut-off of 25, and the area under the curve was 0.99 (CI 0.99–1.00). Nurses evaluated positively the scale as they were able to collect data during care process in maximum 10 minutes, but experienced problems in rating the appearance behaviour and physiological control (e.g. oxygen saturation levels etc) items of the scale.
Conclusions	Findings from this study confirm the good diagnostic value and ease of application of the NEECHAM scale with non-ventilated intensive care patients.
Strength of the Evidence Base	Level II

72. Which medications to avoid in people at risk of delirium: a systematic review

Journal	Age and Ageing, 2011
Authors	Clegg, A. & Young, J.B.
Methods	A systematic review of prospective studies that investigated the association between medications and risk of delirium. 14 studies were included in the review.
Results	Delirium risk appears to be increased with opioids (OR=2.5), benzodiazepines (OR=3.0), dihydropyridines (OR=2.4) and possibly antihistamines (OR=1.8). There appears to be no increased risk with neuroleptics (OR=0.9) or digoxin (OR=0.5). There is uncertainty regarding H2 antagonists, tricyclic antidepressants, antiparkinson medications, steroids, non-steroidal anti-inflammatory drugs and antimuscarinics.
Conclusions	For people at risk of delirium, avoid new prescriptions of benzodiazepines or consider reducing or stopping these medications where possible. Opioids should be prescribed with caution in people at risk of delirium, but this should be tempered by the observation that untreated severe pain can itself trigger delirium. Caution is also required when prescribing dihydropyridines and antihistamine H1 antagonists for people at risk of delirium and considered individual patient assessment is advocated.
Strength of the	

Evidence Base	Level I
----------------------	---------

73. Antipsychotics in the Treatment of Delirium in Older Hospitalized Adults: A Systematic Review

Journal	Journal of the American Geriatrics Society, 2011,
Authors	Flaherty, J.H. Gonzales, J.P. Dong, B.
Methods	A systematic review of studies that examined the efficacy of antipsychotics in the treatment of delirium in older hospitalized adults.
Results	13 studies were included in the review: six single-agent and seven comparison studies. 12 studies reported improvements in delirium severity or resolution of delirium based on cut-off scores of the scales, but it is not clear from any of these studies what the natural course of delirium would have been without use of antipsychotics. The included studies were small and had serious methodological limitations.
Conclusions	The studies in this review do not support the use of antipsychotics in the treatment of delirium in older hospitalized adults.
Strength of the Evidence Base	Level I

74. Antipsychotic prophylaxis in surgical patients modestly decreases delirium incidence — but not duration — in high-incidence samples: A meta-analysis

Journal	General Hospital Psychiatry, 2013
Author	Gilmore, M.L. & Wolfe, D.J.
Methods	A meta-analysis of 5 RFTs (1,491 surgical patients) comparing delirium incidence between patients given prophylactic antipsychotic and placebo was performed.
Results	In the pooled analysis, prophylactic antipsychotic administration showed a reduction in delirium incidence (OR=0.42). Among the studies reporting other outcomes, patients receiving antipsychotics prophylactically showed no differences in total hospital days, days of delirium or severity of delirium.
Conclusions	Prophylactic antipsychotic treatment in surgical patients modestly decreases the incidence of delirium, but not the length of hospital stay, duration of delirium or its severity. Given the modest protective effect of antipsychotics and their potential adverse reactions, there is insufficient evidence to support its universal use as a preventive agent, though potential benefit may be seen in populations at high risk of developing delirium.
Strength of the Evidence Base	Level I

75. Pharmacologic prevention and treatment of delirium in critically ill and non-critically ill hospitalised patients: a review of data from prospective, randomised studies

Journal	Best Practice & Research: Clinical Anaesthesiology, 2012
Authors	Devlin, J.W. Al-Qadhee, N.S. Skrobik, Y.
Methods	A review of RCTs of studies evaluating a pharmacologic intervention to prevent or treat delirium in critically ill and non-critically ill hospitalised patients.
Results	Results showed: (1) that low-dose, short-term antipsychotic therapy may reduce delirium incidence, duration and severity in elderly patients undergoing elective orthopaedic surgery, (2) that the perioperative, low-dose, short-term administration of haloperidol or risperidone may reduce delirium incidence among elderly cardiac and gastrointestinal (GI) surgical patients who require ICU support, (3) that use of a dexmedetomidine sedation strategy, rather than one that is benzodiazepine-based, may resolve delirium faster, (4) that evidence remains weak to support the routine use of antipsychotic therapy for the treatment of delirium in any patient population, particularly a patient who is not acutely agitated, and (5) that cholinesterase inhibitors should never be used to prevent or treat delirium in any patient population.
Conclusions	Any conclusions about pharmacologic efficacy for the treatment and/or prevention of delirium are limited by the small size of many studies and methodological differences among studies.
Strength of the Evidence Base	Level I

76. Interventions for preventing delirium in hospitalised patients

Journal	Cochrane Database Of Systematic Reviews, 2009
Authors	Siddiqi N, Holt R, Britton AM, Holmes J
Methods	A systematic review of studies evaluating the effectiveness of interventions to prevent delirium in hospitalised patients.
Results	Six studies (n = 833) were include in the review. All were conducted in surgical settings.
Conclusions	There is a lack of robust information on delirium prevention in hospitalised patients. Proactive geriatric consultation before, or within 24 hours of surgery, may reduce delirium incidence and severity in patients undergoing hip fracture surgery. Prophylactic low dose haloperidol may reduce severity and duration of delirium and shorten length of hospital admission in hip surgery. Further studies of delirium prevention are needed.
Strength of the Evidence Base	Level I

77. Strategies for prevention of postoperative delirium: a systematic review and meta-analysis of randomised trials

Journal	Critical Care, 2013
Author	Zhang, H. Lu, Y. Liu, M. Zou, Z. Wang, L. Xu, F.Y. Shi, X.Y.
Methods	A systematic review and meta-analysis of publications describing interventions seeking to prevent postoperative delirium in adult patients.
Results	<p>The review included 38 RCTs with interventions ranging from perioperative managements to pharmacological, psychological or multicomponent interventions. Meta-analysis showed dexmedetomidine sedation was associated with less delirium compared to sedation produced by other drugs (2 RCTs with 415 patients, pooled risk ratio (RR) = 0.39). Both typical (3 RCTs with 965 patients, RR = 0.71) and atypical antipsychotics (3 RCTs with 627 patients, RR = 0.36) decreased delirium occurrence when compared to placebos.</p> <p>Multicomponent interventions (2 RCTs with 325 patients, RR = 0.71) were effective in preventing delirium. Effective prevention of postoperative delirium did not shorten the length of hospital stay (10 RCTs with 1,636 patients, standard mean difference = -0.06).</p>
Conclusions	The included studies showed great inconsistencies in definition, incidence, severity and duration of postoperative delirium. Meta-analysis supported dexmedetomidine sedation, multicomponent interventions and antipsychotics in preventing postoperative delirium.
Strength of the Evidence Base	Level I
Comment	<p>Another systematic literature review of in-facility delirium prevention programs was recently published (Reston & Schoelles 2013; In-Facility Delirium Prevention Programs as a Patient Safety Strategy, Annals of Internal Medicine) also concluded that most multicomponent interventions that target multiple risk factors are effective in preventing onset of delirium in at-risk patients in a hospital setting.</p> <p>Because this review confirms, rather than adds to the knowledge base regarding delirium prevention, an evidence summary for this study was not included in this report.</p>

78. Structured analyses of interventions to prevent delirium

Journal	International Journal of Geriatric Psychiatry, 2011
Authors	Hempenius, L.van Leeuwen, B. L.van Asselt, D. Z.Hoekstra, H. J. et al.
Methods	A meta-analysis to: (a) investigate if interventions (pharmacologic and non-pharmacologic) to prevent delirium are effective, and (b) explore which factors increase the effectiveness of these interventions.
Results	16 studies were included. Overall they showed a positive result of any intervention to prevent delirium (pooled OR: 0.64). Interventions to prevent delirium were more effective when the incidence of delirium in the population under study was high (>30%) There was no difference in the effectiveness of pharmacological interventions versus multi-component interventions versus one component interventions.
Conclusions	Interventions to prevent delirium are effective. Interventions seem to be more effective when the incidence of delirium in the population under study is above 30%.
Strength of the Evidence Base	Level I

79. Prevention of delirium in demented hospitalized patients

Journal	European Journal of Internal Medicine, 2012
Authors	Andro, M. Comps, E. Estivin, S. Gentric, A.
Methods	To compare the incidence of delirium in hospitalised older patients with dementia following the implementation of a protocol. The new protocol targeted six risk factors (cognitive decline, hearing and visual impairment, immobility, sleep deprivation). Specifically, the protocol included the placement of that orienting objects in the room: clock on the wall, date written on a blackboard in front of the bed, familiar belongings) and adapted communication (each member of the ward staff was educated to discuss with the patient, in order to reorient and reassure him by reminding as often as needed of date, place, reason for hospitalisation and explaining every procedure). The intervention was in addition to the usual geriatric care plan: hydration, nutrition, mobilisation, sensorial protocol, pain assessment protocol using the doloplus2 scale, drug list review (stop drugs with anticholinergic effect, avoid or reduce psychoactive and sedative drugs dosage).
Results	There was a 40% reduction in the incidence of delirium following implementation of the new protocol.
Conclusion	Delirium is preventable in hospitalised patients with dementia using a re-orientation protocol.
Strength of the Evidence Base	Level III-2
Comment	The findings of this study support the conclusions of the systematic review by

Khan et al (Reference 66).

80. Implementation of delirium practice guidelines - Improving quality of delirium care in a general medical service with established interdisciplinary care: a controlled trial

Journal	Internal Medicine Journal, 2013
Authors	Mudge A, Maussen C, Duncan J, Denaro CP,
Participants	Patients aged 65 years or more with/ at risk of delirium admitted to hospital with an anticipated stay of 3 days or more, over four months. 62 patients (Ave age = 82 years) were allocated to the Intervention group while 74 patients (Ave age = 79.6 years) were allocated to the Control group.
Interventions	Implementation of delirium practice guidelines in one acute medical ward of a large public hospital. Interventions included risk screening, delirium detection, multidisciplinary education, ward modifications including a 4 bed delirium bay, behaviour and medication protocols, and use of nursing assistant and volunteers.
Comparisons	Patients admitted to a control medical ward where they received treatment as usual.
Outcomes	No incident cases of delirium were detected. In the delirious subgroup, significantly fewer intervention participants were discharged with persistent delirium (32% vs 71%, p=0.016), with trends to reduced inpatient mortality (0% vs 18.5%, p=0.07) and falls (11% vs 22%, p=0.16), at the expense of a longer medical ward stay (16 vs 8 days, p=0.01).
Conclusions	Low incidence of new delirium may reflect the established interdisciplinary care environment. Improved outcomes in the delirious group are encouraging although implementation was costly, including increased length of acute ward stay.
Strength of the Evidence Base	Level III-2

81. Implementation of a System-Wide Quality Improvement Project to Prevent Delirium in Hospitalized Patients

Journal	Journal of Clinical Outcomes Management, 2011
Authors	Allen, K. R. Fosnight, S.M. Wilford, R., Benedict, L.M. Sabo, A. et al.
Methods	This was a hospital and health system–wide continuous quality improvement project to improve early detection, treatment, and prevention of delirium. Protocols were pilot tested then built into daily work processes for all hospitalized medical-surgical patients. All patients admitted to the Acute Care for Elders unit were included in the pilot (<i>n</i> = 102 pre-protocol, <i>n</i> = 97 post-protocol). Interventions included staff education in delirium recognition, treatment, and prevention; routine use of screening tool (6-Item screening tool) and Nursing Delirium Screening Scale (Nu-DESC) for delirium detection. The protocol includes implementing a care plan if the patient screens positive for delirium. This includes implementing nonpharmacologic interventions and notifying the pharmacist and physician.
Results	After implementing the protocols, there was a significant reduction in average length of stay for patients with delirium (7.6 days pre versus 4.0 days post). Decreases were also seen in rates of death (23% vs 9.5%), ICU transfers (18% vs 0%), and 30-day readmissions (31% vs 5%).
Conclusions	Implementation of delirium prevention and treatment protocols can decrease the incidence and negative consequences of delirium in the acute care hospital. These protocols are easily incorporated into daily work processes.
Strength of the Evidence Base	Level II

82. Evaluating the effectiveness of educational interventions to prevent delirium

Journal	Australasian Journal on Ageing, 2011
Authors	Wand, A.P.F.
Methods	<p>A literature review of the effectiveness of approaches to delirium education. The overall research question was: Which type of educational intervention to prevent delirium improves the performance of clinical staff and health-care outcomes for patients?</p> <p>Nineteen studies of variable design and quality were identified. Interventions included:</p> <p>(1) didactic education, (2) education in conjunction with clinical guidelines and/or protocols for the prevention and management of delirium, (3) tutorials to provide information and training in the use of a delirium screening tool, reinforced by reminders to staff using a checklist of intervention strategies, and visual and verbal cues, and (4) multifaceted intervention including chart reviews and/or audit and observation of clinical practice, each with expert clinicians.</p>
Results	The most effective delirium education programs were multifaceted and comprehensive and included both enabling and reinforcing techniques such as guidelines and protocols, case-based follow-up sessions, audit, feedback, reminders and local leadership. Overall, these studies showed modest benefits including reduced functional decline and reduced rates of delirium as well as positive changes in staff behaviour.
Conclusions	There are relatively few studies of educational interventions to prevent delirium. Education and guidelines used together or in combination have little effect. When strategies to enable and reinforce changes in clinical practice are used together with education sessions, outcomes for patients are more positive.
Strength of the Evidence Base	Level I

83. An educational intervention can prevent delirium on acute medical wards

Journal	Age and Ageing, 2005
Authors	Tabet, N. Hudson, S. Sweeney, V. Sauer, J. Bryant, C. et al.,
Methods	<p>The aim was to assess the effectiveness of a delirium education package in reducing the incidence of delirium and increasing recognition of delirium within an acute medical ward. The educational package was provided to staff on one ward (Intervention ward) consisting of a 1 hour formal presentation and group discussion, written management guidelines and follow-up sessions. The follow-up sessions were based on one-to-one and group discussions.</p> <p>The control ward did not receive the intervention. 250 acute admissions >70 years participated in the study (Intervention: n=122; Control: n=128).</p>
Results	The point prevalence of delirium was significantly reduced on intervention wards compared to control ward (9.8% vs 19.5%, $p < 0.05$) and clinical staff recognised significantly more delirium cases that had been detected by research staff on the intervention ward.
Conclusions	It was concluded that a brief, focused educational intervention for staff can decrease the incidence of delirium among older inpatients.

Strength of the Evidence Base	Level II
--------------------------------------	----------

84. Preventing delirium in an acute hospital using a non-pharmacological intervention

Journal	Age and Ageing, 2012
Authors	Martinez, F.T. Tobar, C. Beddings, C.I. Vallejo, G. Fuentes, P.
Methods	<p>287 hospitalised patients at intermediate or high risk of developing delirium were randomised to receive a non-pharmacological intervention delivered by family members (144 patients) or standard management (143 patients). No patient with delirium at admission to hospital was included.</p> <p>The intervention comprised the following:</p> <ol style="list-style-type: none"> 1. Patient education regarding delirium (max 10 mins) 2. Provision of a clock (analogue or digital as required by the patient) and calendar in the room. 3. Avoidance of sensory deprivation (glasses, denture and hearing aids must be available as needed). 4. Presence of familiar objects in the room (photographs, cushions & radio). 5. Reorientation of patient provided by family members (current date and time, recent events). 6. Extended visitation times (5 h daily). <p>The specific treatment for delirium was undertaken by the attending physician. None of the researchers interfered in his therapeutic actions. Patients in the study were visited on a daily basis to assess the presence of delirium by the confusion assessment method (CAM).</p>
Results	The relative risk of developing delirium was significantly reduced in the intervention group (5.6% developed delirium) compared to patients in the control group (13.3% developed delirium). RR = 0.41.
Conclusions	The results showed that there is a benefit in the non-pharmacological prevention of delirium using family members, when compared with standard management of patients at risk of developing delirium.
Strength of the Evidence Base	Level II

85. Feasibility of Family Participation in a Delirium Prevention Program for Hospitalized Older Adults

Journal	Journal of Gerontological Nursing, 2010,
Authors	Rosenbloom-Brunton, D.A., Henneman, E.A. Inouye, S.K.
Methods	This study examined the feasibility of family participation in a multicomponent intervention program for delirium prevention in hospitalized older adults called Family-HELP, as an extension of the Hospital Elder Life Program (HELP). Family-HELP was implemented by family caregivers who were trained in the protocols by a member of the research team. Four risk factors for delirium (i.e., impairment in cognition, ADLs, vision, hearing) were targeted. (n=15 patients aged 65 yrs+ & 15 caregivers)
Results	The orientation, therapeutic activities, vision, and hearing protocols were each completed by family caregivers at least 75% of the time. The early mobilization protocol, which presented the biggest challenge for family caregivers to complete, was completed approximately 50% of the time. None of the 15 patients developed delirium.
Conclusions	Family-HELP demonstrates that active engagement of family caregivers in preventive interventions for delirium is feasible. Family caregivers can play an important role in delirium prevention.
Strength of the Evidence Base	Level IV

86. A family approach to delirium: a review of the literature.

Journal	Aging & Mental Health, 2013
Author	Halloway, S.
Methods	A literature review was conducted to identify delirium management (prevention, identification and treatment) with family approaches or involvement.
Results	11 articles were included in the review. The aspects of delirium care that were investigated were diverse and included bedside interventions (n=3), screening strategies (n=4), family education (n=2), and care that employed multiple components (n= 2).
Conclusions	Delirium outcomes improved significantly in two high-quality studies: one multi-component intervention and one bedside intervention program. The review of the articles did not determine if the involvement of families in delirium management improves patient outcomes however the literature review revealed that this topic is emergent and requires substantial additional research.
Strength of the Evidence Base	Level II

87. Recruitment of volunteers to improve vitality in the elderly: the REVIVE study.

Journal	Internal Medicine Journal, 2007
Authors	Caplan GA, Harper EL.
Method	The aim of the study was to test a volunteer-mediated delirium prevention program (based on the HELP program) for efficacy, cost-effectiveness and sustainability on an Australian geriatric ward. Two controlled before-and-after studies were conducted. Study 1 involved 37 patients (aged > 70 years) while nursing assistants were employed to implement the intervention across a whole ward in study 2. The program involved 5 elements: daily visits, therapeutic activities, hydration and feeding assistance, vision and hearing protocols,
Results	A significantly lower incidence and lower severity of delirium was found in Study 1 as well as a trend towards decreased duration of delirium. In study 2, use of assistants in nursing was reduced by 314 hours per month suggesting a total annual saving of A\$129 186 for the hospital.
Conclusion	The program prevents delirium and improves outcomes for elderly inpatients. The program demonstrated cost-effectiveness.
Strength of the Evidence Base	Level III-3

88. TOP5 Getting to know you?

Authors	Axam, A & Luxford K. Clinical Excellence Commission Conference presentation at the Alzheimer's Aust 15 th Annual Conference, May 2013
Reference	http://www.alzheimers2013.com/wp-content/uploads/2013/05/1100-Axam.pdf
Evaluation in progress	The CEC is currently implementing a two year trial to embed TOP5 in 15 public and five private hospitals across NSW (interim results available at present). Program funding is ongoing until January 2014.
Intervention	Carer input on committee & program development; Program toolkit and education sessions with staff; Evaluation of impact and benefit – Quantitative and qualitative data is being collected.
Preliminary Results	Total of 292 TOP5's initiated up to March 2013; The use of chemical restraints in patients with dementia has declined; The number of falls in patients with dementia has decreased substantially;
Strength of the Evidence Base	Level IV

89. TOP5 – A carer’s tool to support continuity of care for people with thinking and communication difficulties, across all care settings. (2012)

What is it?	<p>Maureen Strudwick, NSW Health</p> <p>Top5 is an intervention to improve care for people with CI when they are admitted to hospital. TOP5 was developed by the Central Coast Local Health District (NSW) and involves liaising with the patients’ carer/family to identify five specific strategies that would assist staff to help settle and calm a person with CI. The strategies are negotiated between staff and carers to ensure they are appropriate to the ward or location and are written in the bed chart notes. An I.D. tag is also placed on the top of the chart and a sticker is placed on the spine of the medical record.</p> <p>T – Talk to the Carer O – Obtain the information P – Personalise the care 5 – five strategies developed</p>
Reference	http://www.nscchealth.nsw.gov.au/carersupport/cc/Top5.shtml
Participants	People with CI admitted to an acute hospital.
Pilot Evaluation	<p>An eight week pilot involving four Acute Care Wards TOP5 Champions were trained</p> <ul style="list-style-type: none"> • Staff and Carers were surveyed pre and post pilot • Staff were trained in carer role, and carer engagement <p>Staff reported patients to have:</p> <ul style="list-style-type: none"> • a quicker recovery, less agitation, frustration and distress • more effective communication, and an increased ability to relate <p>Qualitative data indicate that staff found it easy to implement and that it promotes a person-centered care approach.</p>
Evaluation	<p>October 2010 - nine hospital wards in the CCLHD were surveyed; 64 staff members included nurses, nursing executives, medical and allied health staff were interviewed. Results showed:</p> <p>91% of staff reported TOP5 strategies benefit the patient 98% of nurses reported TOP5 strategies benefit them in nursing the patient.</p>
Wider Implementation	<p>TOP5 is endorsed by Clinical Excellence Commission (CEC) as best practice for patients with CI. TOP5 has been taken up by hospitals in the following Local Health Districts: Sydney Western Sydney, West Sydney, Hunter New England, Northern NSW, Mid North Coast</p>
Strength of the Evidence Base	Level IV

90. Dignity in dementia; transforming general hospital care: Summary of findings from survey of professionals.

Authors	Royal College of Nursing, 2011
Reference	http://www.rcn.org.uk/_data/assets/pdf_file/0019/405109/RCN_Dementia_project_professional_survey_findings_.pdf
Methods	An online survey of professionals. The survey was distributed widely through the RCN and associated networks.
Results	<p>712 people completed the survey. The majority were senior nurses. Responses from unqualified staff including healthcare assistants and assistant nurse practitioners totalled 4% (n= 28). 20% of respondents were from non-nursing backgrounds including lecturers, doctors, OTs, physiotherapists, discharge coordinators and a small number of students.</p> <p>Findings from the survey indicate that a number of approaches (average of 5-6) are required to support improvements in care. Most important was the involvement of family carers (71% of respondents) and supporting the training and development of staff (69% of respondents). Other significant approaches included: (in order of frequency) Developing person-centred care planning and strategies to respond to distress as informed by life history information e.g. 'This is Me' (57%), Improving identification, assessment and screening; supported by delirium protocols, dementia specialist or mental health liaison staff and initiatives such as the 'Butterfly Scheme' (51%). Improving meal times by identifying those who need assistance e.g. Red tray system, involving families/ carers & volunteers in meal times, improving nutrition screening and making meal times more sociable (48%). Improving end of life care by developing closer links with palliative care teams and specialists, supporting identification and management of pain (43%), Improving the physical environment to make it more 'dementia friendly' (40%),</p> <p>Specific factors considered to have supported improvements included: Implementation of a specific dementia pathway (40%), Funding to release staff for training (36%), Other: education and training strategies, support from senior nursing staff and involving families in care (37%).</p> <p>Barriers to delivering improvements in care: pressure of existing workload (77%), insufficient staffing levels (75%), moving patients between wards/units is a barrier to providing good care (49%),</p>
Next steps	These findings will inform recommendations, guidance and resources to support the delivery of care for people with dementia and their families in general hospitals.

Strength of the Evidence Base	Level IV
--------------------------------------	----------

91. Dignity in dementia: transforming hospital care: Summary of findings from surveys of carers and people living with dementia.

Authors	Royal College of Nursing, UK, 2011
Reference	http://www.rcn.org.uk/development/practice/dementia/rcn_dementia_project
Method	An online survey of carers and people living with dementia regarding hospital care for people with dementia.
Results	<p>1484 responses were received in 2011. The vast majority (99.6%) were carers or family/friends of people with dementia. Six were people with dementia.</p> <p>Important features of quality dementia care The following were identified by over 90% of respondents as being ‘very important’ for caring for people with dementia: Education & staff training (98%), Involving family carers / supporters (98%), A clear plan to identify the individual’s personal needs (97%), Availability of people who have specialist knowledge of dementia (94%), Skilled assessment (93%), Improving end of life care (90%), Gathering information about the person’s background and interests (90%) ,</p> <p>Barriers to effective dementia care Staff having poor understanding of the needs of the person with dementia (79%) and limited time (75%) were the two most frequently mentioned barriers, followed by other factors, including: Poor communication with families/people with dementia (69%), Staff having poor understanding of the needs of family/ friends of the person with dementia (69%), Staff having limited access to people with specialist dementia knowledge (67%),</p>
Conclusions & Recommendations	<p>Survey respondents expressed clear views on how care in general hospitals can be improved for people with dementia. Enhancing awareness and understanding among all staff, both of the needs of people with dementia and their families/carers, was a clear priority. Better education and training would support this aim. Greater involvement of families in care is considered a clear priority in improving communication and recognising needs. Staff also need adequate time to spend with patients, to gather information about them as individuals and learn about their needs; to listen, clarify and communicate. Appropriate assessment and care planning is very important, as is support from professionals with specialist knowledge of dementia. Safe environments, appropriate for people with dementia (with good orientation and signage and quiet areas) and minimal moves, support good care. Good basic care, such as help with eating, drinking, washing, going to the toilet and good pain management is vital, as is improving continuity of care so</p>

	that each patient's needs are understood and appreciated.
Strength of the Evidence Base	Level IV

92. Volunteers improving person centred dementia care in a rural hospital.

Author	Catherine Bateman, (2012)
Reference	http://www.pgna.org.au/Symposium%20Presentations/Bateman.Williams_Hospital%20Volunteers.pdf
Intervention	In 2009, 18 volunteers were trained to support patients with dementia and/ or delirium during their hospital stay at Bega hospital, NSW. The volunteers talked with the patients, assisted them with eating, drinking, orientation, exercise, ensured they had their glasses or hearing aids, as appropriate etc. They also alerted ward staff if they had any concerns about the patients.
Participants	At admission, nurses identified patients who might benefit from the program. These included patients who met one or more of the following criteria: <ul style="list-style-type: none"> - aged 65 years and older (50 years and older for Aboriginal people), - had a diagnosis of dementia and/or delirium, - a MMSE score of <25, - the presence of one or more risk factors for delirium, <p>Patients were excluded if they were expected to remain in hospital for less than 48 hours or if they exhibited physically aggressive behaviours that could potentially place a volunteer at risk.</p> <p>Intervention group = 64 patients; Control group = 52 patients;</p>
Comparison	Key outcomes were compared with those of patients admitted to a similar hospital in which the intervention was not implemented. The evaluation occurred over 6 months;
Outcomes	There was a trend towards a decrease in falls. There was no difference in length of stay, use of antipsychotics or in-hospital mortality. 96% of hospital staff, and 100% of volunteers interviewed agreed that the program was very beneficial and should continue.
Take-Up	The program has won two Health Excellence Awards and is continuing. Several other hospitals have adopted a similar program, i.e. Port Macquarie Hospital, Gosford Hospital.
Strength of the Evidence Base	Level IV

93. "...Let's Get ACTIVE on 8West1..." Aged Care Therapeutic Interventions by Volunteers (ACTIVE) program

Author	Rola Tawbe & Hanawati Frans, Acute Aged Care Ward, Royal Prince Alfred Hospital, 2011
Intervention	<p>The ACTIVE program is being implemented on the Acute Aged Care Ward at Royal Prince Alfred Hospital, Sydney</p> <p>The program commenced in 2011 and by October 2011, there were 20 volunteers. All volunteers received education and training on dementia/delirium management and practical demonstrations on how to provide companionship and deliver diversional activities to patients.</p> <p>Volunteers agree to provide a minimum of four hours per week to the ward and provide one or more of the following interventions: Meal assistance, mobility assistance, companionship, conversation, reorientation and therapeutic activities. Volunteers also assist with a twice weekly exercise class to maintain patient function and mobility.</p>
Outcomes	<p>266 patients were visited by volunteers with more than 1020 interventions provided. In addition, there have been more than 55 attendances at exercise class which only commenced in early September 2011. The program has also shown to decrease the number of nurse specials required for patients who are a high falls risk and have a delirium due to greater supervision and reorientation. The program has been well received by staff and volunteers and has also contributed to improved patient, family and carer satisfaction.</p>
Conclusion	<p>The use of trained volunteers appears to reduce the risk of developing delirium in older at-risk patients and assist these patients to maintain function whilst in hospital.</p>
Strength of the Evidence Base	Level IV

94. Appropriateness of using a symbol to identify dementia and/or delirium: a systematic review

Journal	JBI Library of Systematic Reviews
Authors	Hines S, Abbey J, Wilson J, Sacre S,
Method	A systematic review to evaluate evidence regarding the appropriateness of developing a symbol for dementia and/or delirium, which could be used in a variety of settings to indicate that a person has dementia and/or delirium.
Results	18 papers (both quantitative and qualitative studies) were included in the review. Several (n=6) of the included studies do not specifically refer to a symbol for dementia, but were included because they provide secondary evidence for the acceptability or appropriateness of symbols to identify other illnesses or functional impairment and were considered relevant to dementia. Both staff and health consumers appear to have largely positive perceptions and attitudes towards the use of a symbol for dementia. A small, subtle, abstract design appears to be the most acceptable.
Conclusions	The systematic review revealed that several different symbols and identifiers are in current use, in various parts of the world, to represent a range of conditions, including dementia and delirium. There was general consensus in the literature that a symbol for dementia is appropriate in the acute care setting. Care must be taken in the design and use of any symbol for cognitive impairment to ensure that the dignity of people with dementia or their carers is not compromised.
Strength of the Evidence Base	Level I

95. The Butterfly Scheme (UK)

What is it?	<p>The scheme includes:</p> <p>A discreet Butterfly symbol to support the identification of people with dementia or CI in hospital (should they wish staff to be aware of it).</p> <p>Butterfly Scheme champions are chosen on each ward and in each team around the hospital (e.g. nurses, therapists) to promote appropriate care. These champions also ensure temporary or new staff are introduced to the scheme. Staff who interact with patients are trained to offer a specific 5-point response. The Butterfly alerts all staff to the existence of an easy-to-use carer sheet. The scheme also uses a carer document, which allows carers to share their expertise in the patient's care. This document is stored where it can be accessed by all staff caring for the patient, and the butterfly symbol alerts staff to the existence of such a sheet. The sheet includes simple pointers such as how to address the patient etc.</p>
Reference	<p>http://www.butterflyscheme.org.uk/</p>
Implementation	<p>The scheme has been adopted by numerous hospitals (>50) in the UK.</p>
Evaluation	<p>The scheme is currently undergoing an evaluation; however, results are not yet available.</p> <p>The following qualitative reports have been reported, to date:</p> <p>It is simple, inexpensive and very easy to implement.</p> <p>Staff reports were very positive and makes them feel they are delivering better care.</p> <p>The carer document has been highlighted as particularly beneficial. Currently, almost 100% of patients and their carers choose to be involved in the scheme.</p> <p>The scheme won a British Care Award in 2012 and was recommended in the National Audit of Dementia (UK, 2011) as a method of ensuring that staff can readily identify people with dementia.</p>
Strength of the Evidence Base	<p>Level IV</p>

96. Evaluation of Education and Training of Staff in Dementia Care and Management in Acute settings.

Author	Foreman P, & Gardner, I. 2005.
Reference	http://www.health.vic.gov.au/agedcare/downloads/dementia_eval_rpt.pdf
Methods	An evaluation of four separate projects that developed and implemented dementia education and training programs for staff in Australian acute hospitals in Victoria in 2003. This entry describes one of the projects conducted in Ballarat hospital. The project involved several components: Dementia education session (1 x 30-40 minute session); Pre- and post-training surveys were administered. The identification of dementia champions in each ward to oversee the project, The development and use of a Cognitive Impairment Identifier (CII) – a bedside symbol to identify patients with CI together with CII resource folders that included patient information.
Results	200 staff (including non-clinical staff) attended 16 dementia education sessions. Follow-up surveys of staff indicated significant increases in staff knowledge, confidence in interacting with patients with CI and job satisfaction. Nearly 56% of 122 staff surveyed reported that the CII influenced the way they communicated with patients (e.g. used better communication strategies). Surveys of family carers indicated that patients care had improved by 11%. The CII is still used in Ballarat Hospital and since 2007, has been implemented in an additional 22 health services across Victoria.
Conclusions	The staff training sessions had a positive impact on staff dementia knowledge, confidence and job satisfaction. The CII appears to have had a considerably positive impact on the way staff interact with patients.
Strength of the Evidence Base	Level IV

97. CHOPS: Care of the confused hospitalised Older person study

What is it?	A program aimed to improve the identification and management of confusion in older people in NSW acute hospitals. A multi-component approach: Staff training, Routine screening of cognition on admission or within 24hrs (to identify confusion), Use of delirium prevention strategies for those at risk, Delirium management for those with delirium, Involving the family in assessment and decision making,
Reference	Temple, A. [NSW Agency for Clinical Innovation (ACI)], 2013 http://fallsnetwork.neura.edu.au/wordpress/wp-content/uploads/2011/03/PresentationCHOPS_FALLS_MAY13.pdf
Implementation	Currently planned to implement CHOPs across NSW

Evaluation	Pilot data showed significant improvement in staff knowledge and confidence and more patients were screened. The evaluation framework is being finalised.
Strength of the Evidence Base	Level IV

98. Delivering Excellence in Dementia Care in the Acute Hospital programme – Worcester Hospital

Report	An evaluation of quality and cost effectiveness of a newly defined suite of care interventions for patients with dementia and their carers in the acute hospital setting developed by The Royal Wolverhampton Hospitals NHS Trust, 2012 http://www.worcester.ac.uk/documents/Dementia_evaluation_report_for_New_Cross_Vol_1_2.pdf
Authors	Prof D Upton (University of Worcester), N Krishnan, J Bray, T Bowen, C Foote,
Participants	Patients with dementia/CI admitted to new Cross Hospital between Dec 2010 - Dec 2011 – one year following implementation of the interventions.
Interventions	The project was delivered at New Cross Hospital, Wolverhampton. It involved a suite of interventions including: <ul style="list-style-type: none"> • Gathering information from families of patients with dementia to maximise communication, nutrition & hydration, • Establishment of a specialist dementia acute medical ward, • A Dementia Outreach Team – identifying patients for admission to the specialist ward and supporting staff on other wards caring for people with dementia; • Trained volunteer buddies; • Staff training and development: dementia training was provided for all staff; • Dementia-friendly physical environment – implementing dementia-friendly design principles in the specialist ward and across the wider hospital; • An integrated dementia pathway;
Comparisons	Data obtained during the evaluation period (Dec 2010 - Dec 2011) was compared to patient activity data from May 2010 – Nov 2010.
Outcomes	Both quantitative and qualitative data were collected by independent evaluation (statistical analyses were not performed). The following outcomes were noted: The number of cases of hospital acquired pneumonia fell, Patient's weight remained stable, Patient's mobility of patients has improved, A trend for more patients to be discharged back home, was noted. Staff knowledge of dementia has improved across the hospital as a whole, Staff satisfaction has improved, Low staff turn-over and fewer sick days were noted in the specialist ward, estimated to result in a cost saving of between £11,700 and £21,700 pa,; A low use of antipsychotic medication was documented, There has been a reduction in complaints with the specialist ward saving nearly £16,000 pa compared to the average number of complaints for a ward, Length of stay did not reduce as expected,
Strength of the Evidence Base	Level III

99. Best practice Example - Norfolk and Norwich University Hospital NHS Foundation Trust

Author & Reference	Dawn Collins, Assistant Director of Nursing, Norfolk and Norwich University Hospital http://www.rcn.org.uk/development/practice/dementia/best_practice_examples/dawn_collins (2013)
What is it?	A program that aims to: 1. Improve staff awareness and knowledge of caring for patients with dementia, 2. Provide a safe environment for staff and patients, and 3. Provide personalised care based on the specific needs of patients with dementia.
Methods	The following interventions were undertaken on one hospital ward: Dementia awareness training for staff, Prevention and Management of Aggression (PMA) training, Training Pabulum Blue Book [#] – trial the use of Pabulum Blue Books to support the provision of personalised care for patients with dementia, 'This Is Me' [*] implementation across the ward. Appointment of a Registered Mental Health Nurse into the trained nursing staff establishment. The provision of lunchtime groups to allow small groups of patients to eat together to promote eating and socialisation. Implementation of red tray, jug and beaker schemes. Establishment of Dementia Intensive Support Teams (DISTs).
Outcomes	Staff reported increased confidence in their ability to deal with aggressive incidents. 'This is Me' and Pabulum Blue Book – these proved to be a useful tool to help support staff in meeting patients' individual preferences, The lunchtime groups increased the intake of food by dementia patients and increased ability to socialise. The lunch groups were run by occupational therapists and volunteers.
Strength of the Evidence Base	Level IV

[#]<http://www.ageuk.org.uk/norfolk/free-information-advice--support/dementia-support--services/pabulum-blue-book/>

^{*}http://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=1290

100. Supporting people with Dementia in the general hospital (NHS Lothian).

Author & Reference	Colin MacDonald, (2011) http://www.rcn.org.uk/development/practice/dementia/best_practice_examples/royal_edin_burgh_hospital
Project Objectives	A quality improvement project: <ul style="list-style-type: none"> - to improve the standards of care and support for people with Dementia who are admitted to the Acute General Hospital, and - to establish “beacon wards” of good practice. -
Methods	Six wards with the highest % of dementia patients were selected <ul style="list-style-type: none"> • environmental modifications (details not given) • dementia awareness sessions for staff • developing and agreeing on 10 “good practice statements” that were realistic and achievable for each beacon ward • guidelines and processes to follow for challenging behaviour <p>Data collected from the November 2010 audit (following the intervention) were compared with baseline data from November 2009.</p>
Outcomes	Results showed: A trend towards Reduced number of bed moves and length of stay, A trend towards a reduction in discharges to long term care, A decrease in the use of psychoactive medication in hospital, A reduction in use of catheters, Improved satisfaction rates by carers, Improved confidence and well-being amongst staff,
Strength of the Evidence Base	Level IV

101. Care in specialist medical and mental health unit compared with standard care for older people with cognitive impairment admitted to general hospital: randomised controlled trial (NIHR TEAM trial)

Journal	BMJ, 2013
Authors	Goldberg, S.E. Bradshaw, L.E. Kearney, F.C. Russell, C. Whittamore, K.H. Foster, P.E. Mamza, J. Gladman, J.R. et al.
Methods	<p>RCT of an intervention designed to deliver best practice care for people with delirium or dementia, versus standard care (acute geriatric or general medical wards).</p> <p>Participants: 600 patients aged over 65 (median age = 85), admitted for acute medical care to a large, acute hospital in the UK and, identified as “confused” on admission.</p> <p>Interventions: Features of the intervention included joint staffing by medical and mental health professionals; enhanced staff training in delirium, dementia, and person centred dementia care; provision of organised purposeful activity; environmental modification to meet the needs of those with cognitive impairment; delirium prevention; and a proactive and inclusive approach to family carers.</p>
Results	<p>There were no significant differences between the two groups in length of hospital stay, mortality, readmission and new admissions to care homes.</p> <p>Patients on the specialist unit spent significantly more time with positive mood or engagement (P=0.03) and experienced more staff interactions that met emotional and psychological needs (P<0.001). More family carers were satisfied with care (P=0.004), and severe dissatisfaction was reduced (P=0.05) in the intervention group.</p>
Conclusions	Specialist care for people with delirium and dementia improved the experience of patients and satisfaction of carers, but there were no convincing benefits in health status or service use.
Strength of the Evidence Base	Level II

102. Preadmission interventions to prevent postoperative complications in older cardiac surgery patients: A systematic review of the literature

Journal	International Journal of Nursing Studies, 2013
Author	Ettema, R.G.A. VanKoevenc, H. Peelen. L.M. Kalkman, C. J. Schuurmans, M.J.
Methods	A systematic review of both single and multiple component preadmission interventions designed to prevent postoperative complications in older, cardiac surgery patients, was undertaken.
Results	23 studies were included. No high quality studies were found describing effective interventions to prevent postoperative delirium.
Conclusions	Multi-component approaches that include different single interventions have the strongest effect in preventing postoperative depression, pulmonary complications, prolonged ICU stay and hospital stay. Postoperative infection can be best prevented by disinfection with chlorhexidine combined with immune-enhancing nutritional supplements. Atrial fibrillation might be prevented by ingestion of N-3polyunsaturatedfatty acids. High quality studies are urgently needed to evaluate preadmission preventive strategies to reduce postoperative delirium or pressure ulcers in older elective cardiac surgery patients.
Strength of the Evidence Base	Level I

103. Hospital fall prevention: a systematic review of implementation, components, adherence, and effectiveness.

Journal	Journal of the American Geriatrics Society, 2013
Author	Hempel, S. Newberry, S. Wang, Z. Booth, M. Shanman, R. Et al.,
Methods	A systematic review of published studies documenting the implementation, components, comparators, adherence, and effectiveness of published fall prevention approaches in U.S. acute care hospitals, was undertaken.
Results	59 studies were included in the review. Most interventions (81%) included multiple components (e.g., risk assessments (often not validated), visual risk alerts, patient education, care rounds, bed-exit alarms, and post fall evaluations). Fewer than 50% of studies reported sufficient data to compare fall rates and pooled estimates found no statistically significant intervention effect.
Conclusions	While promising approaches exist, there is currently insufficient evidence for the effectiveness of falls prevention strategies in hospitals.
Strength of the Evidence Base	Level I

104. The creation of a Dementia Nurse Specialist role in an acute general hospital

Journal	Journal of Psychiatric and Mental Health Nursing, 2011
Authors	Elliot, R. & Adams, J.
Methods	The creation of a Dementia Nurse Specialist (DNS -one full-time position) role in a district general hospital (538 beds). The DNS performed the following interventions: Developing care plans for patients with dementia, Providing information and support for carers, Advice on management of behaviours and support for ward staff, Policy writing, pathway and local strategy planning, and Formal and informal teaching on dementia,
Results	Over 30 patients were seen each month for six months, while around 6 to 12 were diagnosed as having dementia. It is estimated that, the DNS may have reduced the length of stay for each patient seen by two days (no data was supplied).
Conclusions	This short-term post demonstrated that a DNS could have a significant impact on the care provided for people with dementia in one district general hospital.
Strength of the Evidence Base	Level IV

105. Dementia Champions Programme – Biggart Dementia Project

What is it?	The Dementia Champions Programme involves training Dementia Champions who then become mentors and support other hospital staff caring for patients with dementia.
Reference	Alzheimer's Scotland, 2010 http://www.gihub.scot.nhs.uk/media/162497/nhsaa_biggart_dementia_report_july_2010.pdf
Participants	A staff nurse and healthcare assistant from five wards as well as two generic workers from another hospital within NHS Ayrshire and Arran were also recruited as dementia champions. A Staff Nurse and Healthcare assistant from five wards within Biggart Hospital, and two Generic Workers from Kirklandside were involved in the 12 week programme
Interventions	The appointment of staff within the hospital setting to become dementia champions who undertake a 12 week training programme involving clinical placements within a mental health unit. Following this, the dementia champions provide ongoing support to hospital staff who care for patients with dementia. A one hour dementia awareness training session for clinical and non-clinical hospital staff. 18 sessions were delivered to a total of 112 staff between November 2009 & June 2010.
Comparisons	None
Outcomes	Overall, the program was positively evaluated by staff who considered the program extremely beneficial (e.g. in promoting good practice in dementia care). Difficulties in releasing staff to attend training sessions were evident. No quantitative data were included in the report.
Strength of the Evidence Base	Level IV

106. North Devon Healthcare NHS trust: Dementia – FACES; (2013).

<p>What is it?</p>	<p>This project focuses on the pathway of care for dementia patients who access any service from North Devon District Hospital in Barnstaple and are discharged back to their usual place of residence.</p> <p>The aims and activities of the project are described by the acronym FACES:</p> <p>Family: Staff engagement with patients, families and carers. Examples include: Regularly reviewing relevant patient feedback on the care experience.</p> <p>Assess: Personalised care plans, tailored to individual patient’s needs, are developed through timely assessment for, and identification of, dementia and delirium. Examples include: All adult patients are asked the Dementia/delirium screening question on admission to hospital and care plans used where appropriate. Patients identified with memory problems are screened using a recognised assessment tool.</p> <p>Communication: Information about the patient is shared across the pathway to ensure personalised and co-ordinated care is given by all clinical teams. Examples include: Reliable use of ‘This is Me’ across settings (acute and community settings). Families are involved in the discharge planning process including setting an estimated date of discharge (EDD).</p> <p>Environment: Patients with dementia are engaged in their care on a daily basis in an environment which promotes recovery. Examples include: Social activities are undertaken in the hospital setting. Continuity/consistency of environment is maintained for patients. Future ward environments are designed in a dementia friendly way.</p> <p>Staff: High quality, personalised patient experience is delivered through a workforce who are trained and engaged in the project. Examples include: Staff in key areas complete relevant specialist training to support the management of patients with dementia.</p>
<p>Reference</p>	<p>http://www.health.org.uk/areas-of-work/programmes/family-patient-centred-care/related-projects/north-devon-nhs-trust/</p>
<p>Evaluation</p>	<p>Not yet available</p>

107. Sheffield Teaching Hospital NHS Trust- Improving the flow of older people, 2013

Reference	http://www.health.org.uk/publications/improving-patient-flow/
Aim of the Project	The aim of the program was to explore the relationship between patient flow, costs and outcomes by examining patient flow through the emergency care pathway, and developing ways in which capacity can be better matched to demand.
Methods	Analysis of hospital data including bed occupancy, procedures and treatments received and patients flows through departments.
Problems & Solutions	<p>The data analysis identified several issues:</p> <p>Problem - many frail older patients 'arrived' on the medical Assessment Unit (MAU) after 6pm when there was no consultant available – meaning they had to remain in hospital overnight unnecessarily before they could see a specialist. Solution –Consultants changed their on-duty rosters extending the on-call service to 8pm and to increasing weekend coverage. This means patients can be seen earlier.</p> <p>Problem - significant delays for patients referred by GPs for an outpatient appointment. Solution - merging outpatient and emergency presentations. If patients are seen earlier in the day, the relevant tests can be done and the patient can often go home by the end of the day.</p> <p>Problem – many older patients were waiting in hospital longer than necessary for discharge Solution - working with the local authority and primary care to speed up the discharge process. In the new system, patients are discharged once they are medically fit. If there are concerns regarding their ability to cope, they are assessed in their own home (rather than waiting in hospital for this to happen).</p> <p>Other initiatives: Establish an MAU focused on frail older people – involves the co-location of specialist and other staff involved in the care of frail, older patients. A multidisciplinary assessment team was established.</p>
Results	<p>There has been a 37% increase in patients who can be discharged on the day of their admission or the following day – with no increase in the re-admission rate. Bed occupancy for emergency care for the elderly has also reduced, allowing two wards to be closed.</p> <p>There has been a decrease of around 15% in in-hospital mortality for geriatric patients.</p>
Conclusions	These changes have resulted in measureable improvements.
Strength of the Evidence Base	Level III-3

108. Improving the patient experience: Developing Supportive Design for People with Dementia

Report	The King's Fund's Enhancing the Healing Environment Programme 2009-2012, 2013 http://www.kingsfund.org.uk/
Project Overview	The programme involves two elements: 1. a development programme to equip teams with the knowledge and skills they need to undertake their projects, and 2. project grants (capital allocations) for each team to carry out a project to improve the patient environment.
Implementation	26 projects were completed at acute and community hospitals. Each project is run by a clinically led multidisciplinary team. Projects ranged from refurbishing corridors to redesigning hospital waiting areas, major ward refurbishments, creating gardens and quiet social spaces and introducing artworks in patient areas. Other examples include: Decluttering, Improved lighting Using accent colours and good pictorial and text signage to assist with way finding to reduce confusion. Colours have been used to differentiate between different rooms and bed bays, as well as to help people find bathrooms and toilets. Placing easy-to-grip handrails along ward corridors, in contrasting colours, has encouraged patients to remain active.
Evaluation	Descriptive data and survey data were collected. Statistical analyses were not performed.
Outcomes	This following outcomes were documented: <ul style="list-style-type: none"> • Reduced incidence of agitation and challenging behaviour, • Reduced need for anti-psychotic medication, • A reduction in the number of falls, • Promotion of independence, • Improved nutrition and hydration, • Increased engagement in meaningful activities, • Encouragement of greater carer involvement, • Improvement of staff morale, recruitment and retention.
Strength of the Evidence Base	Level IV

109. Psychogeriatric inpatient unit design: a literature review

Journal	International Psychogeriatrics, 2011
Authors	Dobrohotoff, J.T. & Llewellyn-Jones, R.H.
Methods	A literature review of the published and grey literature regarding the optimal design of Psychogeriatric Units (PGU).
Results	130 papers were included in the review. These were mainly government reports and observational studies. There were no RCTs.
Conclusion	There are few good quality studies to guide the design of acute PGUs and much of the existing literature is based on opinion and anecdote or, at best, based on observational studies. Good design principles from studies of environmental design in long-term care facilities can be used to inform the optimal design of PGUs. Further research is required as reports indicate there are significant problems with current acute PGUs and that the mix of patients in existing units is a significant issue.
Strength of the Evidence Base	Level IV

110. Enhancing care for hospitalized older adults with cognitive impairment: a randomised controlled trial

Journal	Journal of General Internal Medicine, 2012
Authors	Boustani, M. A. Campbell, N. L. Khan, B. A. Abernathy, G. et al.,
Participants	A total of 998 hospitalized older adults were screened for CI, and 424 patients (225 intervention, 199 control) with CI were enrolled in the trial (mean age = 74.8 years).
Interventions	An electronic Clinical Decision Support System (CDSS) was used to alert physicians to the presence of CI, recommends early referral into a geriatric consult, and suggests discontinuation of the use of Foley catheterization, physical restraints, and anticholinergic drugs.
Comparisons	The providers of the patients randomised into the usual care did not receive CDSS but had the opportunity to review the results of the cognitive screening in the medical record. Usual care is supported by a geriatric consultation service, the Acute Care for Elders (ACE) that includes a geriatrician, a geriatric nurse practitioner and allied health staff.
Outcomes & Conclusion	There were no differences between the intervention and the control groups in geriatric consult orders ($p=0.21$); discontinuation orders for Foley catheterization ($p=0.86$); physical restraints ($P=0.86$), or anticholinergic drugs ($P=0.11$). A simple screening program for CI followed by an electronic CDSS did not change physician prescribing behaviors or improve the process of care for hospitalized older adults with CI.
Strength of the	Level II

Evidence Base	
111. Comprehensive geriatric assessment for older adults admitted to hospital.	
Journal	Cochrane Database of Systematic Reviews, 2011
Authors	Ellis, G. Whitehead, M. A. O'Neill, D. Langhorne, P. Robinson, D.
Methods	<p>A systematic review of the effectiveness of Comprehensive Geriatric Assessment (CGA) in hospital for older adults (65 years and older) admitted as an emergency. The authors searched for RCTs comparing CGA (whether by mobile teams or in designated wards) to usual care.</p> <p>CGA is defined as a multidimensional interdisciplinary diagnostic process focused on determining a frail elderly person's medical, psychological and functional capability in order to develop a coordinated and integrated plan for treatment and long term follow up.</p>
Results	<p>Twenty-two trials evaluating 10,315 participants in six countries were included in the review (including patients with dementia and CI). Patients in receipt of CGA were more likely to be alive and in their own homes at up to six months (OR=1.25, P=0.0002) and at the end of scheduled follow up (median 12 months) (OR=1.16, P = 0.003) when compared to general medical care. In addition, patients were less likely to be institutionalised (OR=0.79, P < 0.0001). They were less likely to suffer death or deterioration (OR= 0.76, P=0.001), and were more likely to experience improved cognition in the CGA group (OR=1.11, P=0.02). Subgroup interaction in the primary outcomes suggests that the effects of CGA are primarily the result of CGA wards.</p> <p>Many of the hospitals (not all) that reported costs seemed to show a reduction in costs associated with CGA.</p>
Conclusions	<p>There is a clear and significant improvement in the chances of a patient being alive and in their own home at up to a year after an emergency hospital admission if they receive co-ordinated specialist services. This effect is consistently seen from trials of geriatric wards where patients are admitted to a dedicated ward area and receive care from a specialist multidisciplinary team. This effect was not clearly seen where patients remained in a general ward and received assessment from a visiting specialist multi-disciplinary team.</p>
Strength of the Evidence Base	Level I

112. The effectiveness of inpatient geriatric evaluation and management units: a systematic review and meta-analysis

Journal	Journal of the American Geriatrics Society, 2010
Authors	Van Craen, K. Braes, T. Wellens, N. Denhaerynck, K. Flamaing, J. et al.,
Method	Systematic review and meta-analysis of geriatric evaluation and management units (GEMUs).
Results	13 articles were included in the review (n=4,759 patients) GEMUs are organized in a heterogeneous way. Involvement of a multidisciplinary team was a key element in all GEMUs. There were two significant effects in the meta-analysis: less functional decline at discharge from the GEMU (RR50.87) and a lower rate of institutionalisation one year after discharge (RR50.78). For the other outcomes in the meta-analysis (mortality, re-admission, length of stay) a GEMU did not induce significantly different outcomes than usual care.
Conclusion	This meta-analysis shows a significant effect in favour of the GEMU group on functional decline at discharge and on institutionalisation after one year. There is heterogeneity between the studies, poor quality of some randomised controlled trials, and shortage of information about CGA.
Strength of the Evidence Base	Level I

113. Impact of geriatric consultation teams on clinical outcome in acute hospitals: a systematic review and meta-analysis

Journal	BMC Med, 2013
Author	Deschodt, M. Flamaing, J. Haentjens, P. Boonen, S. Milisen, K.
Methods	A review and meta-analysis of the effectiveness of inpatient geriatric consultation teams on clinical outcomes in older adults.
Results	Twelve studies evaluating 4,546 participants in six countries were included in the review. 9 were RCTs. The individual studies show that an inpatient geriatric consultation team intervention has favourable effects on functional status, readmission and mortality rate. None of the studies found an effect on the length of the hospital stay. The meta-analysis found a beneficial effect of the intervention with regard to mortality rate at six months (relative risk 0.66) and 8 months (relative risk 0.51) after hospital discharge.
Conclusions	Inpatient geriatric consultation team interventions have a significant impact on mortality rate at six and eight months post-discharge, but have no significant impact on functional status, readmission or length of stay. The reason for the lack of effect on these latter outcomes may be due to insufficient statistical power or the insensitivity of the measuring method for, for example, functional status.
Strength of the Evidence Base	Level I
Comment	These findings are consistent with the conclusions of Ellis et al., in their review of comprehensive geriatric consultation (see Reference 111).

114. Effectiveness of acute geriatric unit care using acute care for elders components: a systematic review and meta-analysis

Journal	Journal of the American Geriatrics Society, 2012
Author	Fox, M.T. Persaud, M. Maimets, I. O'Brien, K. Brooks, D. Tregunno, D. Schraa, E.
Methods	A systematic review and meta-analysis of the effectiveness of acute geriatric unit care, based on all or part of the Acute Care for Elders (ACE) model and introduced in the acute phase of illness or injury, with that of usual care, was conducted. Studies were included if the acute geriatric unit care was characterized by one or more ACE components: patient-centered care, frequent medical review, early rehabilitation, early discharge planning, prepared environment. 13 RCTs and quasi-experimental trials with parallel comparison groups were included in the review (n= 6,839 acutely ill or injured adults with an average age of 81).
Results	Results showed that acute geriatric unit care including one or more ACE components and introduced during the acute illness or injury phase had significant beneficial effects over usual care in reducing falls (RR = 0.51), delirium (RR = 0.73), functional decline (RR = 0.87), length of hospital stay (weighted mean difference = -0.61), discharge to a nursing home, and costs WMD = -\$245.80, and in increasing discharges to home (RR = 1.05).
Conclusions	Acute geriatric unit care, based on all or part of the ACE model and introduced during the acute phase of older adults' illness or injury, improves patient and system-level outcomes.
Strength of the Evidence Base	Level I

115. Review: Acute geriatric unit care reduces falls, delirium, and functional decline

Journal	Annals of Internal Medicine, 2013
Author	Tinetti, M.
Methods	A literature review was undertaken to address the following question: Is acute geriatric unit care, based on components of the Acute Care for Elders (ACE) model, better than usual care for functional and clinical outcomes in hospitalized older adults. Included studies compared acute geriatric unit care that had > 1 of 5 ACE components (patient-centered care, frequent medical review, early rehabilitation, early discharge planning, or prepared environment) with usual care in patients > 65 years of age who had acute illness or injury. Exclusion criteria included elective surgery or palliative care.
Results	13 studies (n = 6839, mean age 81 y, 62% women, 81% with an acute medical illness) met selection criteria; 10 were described as RCTs Reductions in falls in hospital and delirium in patients in the ACE units compared to usual care were noted. There was no difference in-hospital mortality or re-admission to hospital between the two groups.
Conclusions	Acute geriatric unit care reduces some clinical and functional outcomes but not mortality or hospital readmissions compared with usual care in older adults with acute illness or injury.
Strength of the Evidence Base	Level I

116. An ACE unit with a delirium room may improve function and equalize length of stay among older delirious medical inpatients

Journal	Journal of Gerontology: Medical Sciences, 2010
Authors	Flaherty, J.H. Steele, D.K. Chibnall, J.T. Vasudevan, V.N. Bassil, N. Vegi, S.
Methods	Retrospective observational study to assess the effect that an Acute Care of the Elderly (ACE) Unit, which includes a delirium room (DR), and multi-disciplinary care, has on patients with delirium. Charts of 148 patients (≥65 years) admitted to an ACE Unit with a delirium room during a 4-month period were reviewed. Delirium on admission (prevalence) was based on physician-performed Confusion Assessment Method; incident delirium was assessed by nurses using the CAM. Patients with delirium were compared with those without delirium regarding change in function between admission and discharge (activities of daily living), hospital length of stay, and mortality.
Results	The prevalence of delirium was 16.2% (24/148), and the incidence was 16.1% (20/124). There were no significant differences between delirious and non-delirious patients in demographics or comorbidity scores. Of the 44 delirious patients, 19 (43%) spent at least some time in the DR (9/19 spent their entire hospitalisation in the DR, 6/19 spent 50% to <100% of their hospitalisation in the DR, and 4/19 spent <50% of their Hospitalisation in the DR). A significant interaction effect ($p < .001$) indicated improved activities of daily living between admission and discharge among delirious patients compared with non-delirious patients. There were no differences between delirious and non-delirious patients with reference to mean length of stay and mortality.
Conclusions	The results suggest that an ACE Unit with a delirium room may improve function among delirious patients and may equalize other outcomes compared with non-delirious patients.
Strength of the Evidence Base	Level III-3

117. Analysis of case management programs for patients with dementia: a systematic review

Journal	Alzheimer's & Dementia, 2012
Authors	Somme, D. Trouve, H. Dram, M. Gagnon, D. Couturier, Y. Saint-Jean, O.
Methods	A systematic review of literature review of the impact of case management programs on clinical outcomes and the utilization of resources by persons with dementia. Six RCTs were included in the review.
Results	Two RCTs reported no impact on the hospitalisation rate or emergency services use. One RCT reported a reduction in the hospitalisation rate of the patients' main caregivers.
Conclusions	The impact on resource utilization (e.g., prevention of hospitalisation or institutionalization) was usually not statistically significant or only very slight. Parameters that appear to be related to greater case management efficacy are the integration level between the health and social service organisations and the intensity of the case management.
Strength of the Evidence Base	Level I

118. Clinical care of persons with dementia in the emergency department: a review of the literature and agenda for research

Journal	Journal of the American Geriatrics Society, 2012
Authors	Clevenger, C.K. Chu, T.A. Yang, Z. Hepburn, K. W.
Methods	A comprehensive review of the literature was conducted to examine the practices undertaken in the care of persons with dementia (PWD) specific to the ED setting.
Results	Seven articles met inclusion criteria: all provided evidence from narrative review or opinions from authorities. The articles recommended clinical practices that can be categorized into five themes: assessment of cognitive impairment, dementia communication strategies, avoidance of adverse events, alterations to the physical environment, and education of ED staff. Many recommendations are extrapolated from residential care settings.
Conclusions	There is minimal guidance for the care of PWD specific to the ED setting.
Strength of the Evidence Base	Level IV

119. What is the evidence to guide best practice for the management of older people with cognitive impairment presenting to emergency departments? A systematic review

Journal	Advanced Emergency Nursing Journal, 2013
Author	Schnitker, L, Martin-Khan, M. Beattie, E. Gray, L.
Methods	A systematic literature review of 43 research-based studies to identify practices designed to meet the care needs of older patients (65 years+) with CI in emergency departments (ED).
Results	<p>Four categories of interventions were identified:</p> <ol style="list-style-type: none"> 1. Interventions to improve recognition of CI and subsequent provision of care; 2. interventions designed to prevent acute confusion (delirium); 3. interventions to enable management of behavioural and/or psychological symptoms, and 4. other interventions <p>There is evidence that suggests that recognition of CI (e.g. through cognitive screening) in the ED setting improves outcomes.</p> <p>There is some evidence that delirium prevention programs (education, early mobilisation, multi-component interventions) may reduce the incidence and duration of delirium. One study (conducted in the acute care ward) showed that a program that accurately identified the causes and treatment (pharmacological and non-pharmacological) of BPSDs was successful in reducing BPSD and ultimately improve cognitive and functional abilities.</p>
Conclusions	Limited research is available that reports interventions that improve the quality of care of older ED patients with CI. Interventions aimed at improving the recognition of CI are well investigated in ED, and several short screening tools (CAM, Orientation Concentration Memory test) suiting the fast-paced ED environment were identified. Further research is required to identify interventions that may improve outcomes of older patients with CI following presentation to the ED
Strength of the Evidence Base	Level I
Comment	A similar conclusion was made by Parke et al (2011; J Adv Nurs) who undertook an earlier scoping review and found little evidence on interventions for this population.

120. Does 'Hospital in the Home' treatment prevent delirium?

Journal	Aging and Health, 2008
Authors	Caplan, GA.
Method	Narrative review of studies that have evaluated the incidence of delirium in older patients in hospital versus 'hospital in the home'.
Results	Results from four out of five studies, and two of three randomised controlled trials show that home treatment prevents delirium. Studies also show that patient satisfaction is higher with home treatment versus treatment in hospital.
Conclusion	There is now reasonable evidence from four studies that shows a lower incidence of delirium with home treatment compared with in-hospital treatment. Home treatment is also associated with lower rates of the sequelae of delirium, including death and cognitive and physical dysfunction. Patient satisfaction is higher when treated at home compared to in hospital.
Strength of the Evidence Base	Level II

121. Hospital at home: feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients.

Journal	Annals of Internal Medicine, 2005
Authors	Leff B, Burton L, Mader SL, et al.
Method	Prospective quasi-experiment comparing hospital in the home to in-hospital treatment for 455 community-dwelling older patients (aged 65 years and older) who required hospital treatment.
Results	60% of eligible patients chose home hospital care. Patients who received home hospital care had significantly shorter stays and cost was lower. They also had fewer procedures, consultations, restraints and in-dwelling devices, less delirium and greater satisfaction. Functional outcomes were similar across the two groups.
Conclusion	Hospital in the home care is feasible, safe and efficacious for selected older patients who require acute hospital-level care.
Strength of the Evidence Base	Level III

122. A randomised controlled trial of a home hospital intervention for frail elderly demented patients: behavioural disturbances and caregiver's stress.

Journal	Archives of Gerontology and Geriatrics, 2004
Authors	Tibaldi V, Aimonino N, Ponzetto M, et al.
Method	A RCT of 109 elderly, severely demented patients requiring admission to the Hospital Emergency Department (ED) for acute illnesses. 56 patients were randomly assigned to Geriatric Home Hospitalisation Service (GHHS) while 53 received treatment in a General Medical Ward (GMW). The objective of the study was to identify the benefits of care in a GHHS compared to GMW) in reducing behavioral disturbances in elderly patients with advanced dementia and in lowering caregiver's stress.
Results	There was no significant difference in mortality in the two groups. On discharge, there was a significant reduction of behavioral disturbances in GHHS patients. The use of anti-psychotic drugs was significantly lower in GHHS patients compared to the GMW group. The stress of caregivers on discharge was reduced only in GHHS group and not in the control ones.
Conclusion	It is feasible to treat elderly demented patients who require hospitalisation in the home environment. Treatment at home offers several advantages including continuity of care and reduced caregiver stress.
Strength of the Evidence Base	Level II

123. Does home treatment affect delirium? A randomised controlled trial of Rehabilitation of Elderly and Care at Home Or Usual Treatment (the REACH-OUT Trial).

Journal	Age & Ageing, 2006
Authors	Caplan GA, Coconis J, Board N, et al.
Method	A RCT comparing in-hospital rehabilitation with early discharge rehabilitation at home (Hospital in the Home – early discharge) for frail older patients (n=104). The occurrence of delirium was measured using the Confusion Assessment Method. Secondary outcome measures were length of stay, hospital bed days, cost of acute care and rehabilitation, functional independence measure (FIM), Mini-Mental State Examination (MMSE) and geriatric depression score (GDS) assessed on discharge and at one- and six-month follow-up and patient satisfaction.
Results	The home group had lower odds of developing delirium during rehabilitation, shorter duration of rehabilitation and used significantly fewer hospital bed days. There was no difference in FIM, MMSE or GDS scores. Hospital in the home was associated with significant cost savings and the home group was significantly more satisfied.
Conclusions	Home rehabilitation for frail elderly after acute hospitalisation is a viable option for selected patients and is associated with a lower risk of delirium, greater patient satisfaction, lower cost and more efficient hospital bed use.
Strength of the Evidence Base	Level II

124. Reducing hospital admissions from care homes

Journal	Nursing Times, 2013
Authors	Burns, C. & Hurman C.
Methods	<p>To reduce avoidable attendance/admission to hospital from care home residents, and reduce the number of emergency ambulance calls, a community matron for care homes role was developed.</p> <p>The community matron service targeted 6 nursing homes and 5 residential homes that had higher than average emergency ambulance calls in the previous 6 months.</p> <p>Interventions included:</p> <p>The provision of training session for nurses within the care homes to increase their skills and knowledge.</p> <p>Visits to the care homes to advise, monitor and review emergency ambulance calls and support staff to develop alternate pathways.</p> <p>Working with the falls team within the Community Health and Care service to reduce the number of falls within some care homes. This included encouraging care homes to implement falls prevention training for staff.</p> <p>Develop quarterly forums to promote interaction between care home staff and acute hospital staff.</p>
Results	The number of emergency ambulance calls by care homes decreased by 9.1%-15% in the six months following the intervention. Care home staff reported a high level of satisfaction surveys with the service in follow-up surveys.
Conclusions	Advice and support from a Community care matron that empowers and supports nurses in care homes can reduce inappropriate hospital admissions and emergency ambulance calls.
Strength of the Evidence Base	Level IV

125. Interventions to improve the appropriate use of polypharmacy for older people

Journal	Cochrane Database of Systematic Reviews, 2012
Authors	Patterson, S.M. Hughes, C. Kerse, N. Cardwell, C.R. Bradley, M.C.
Methods	A review of interventions alone, or in combination, aimed at improving the appropriate use of polypharmacy and reducing medication-related problems in older people (65 yrs+).
Results	Ten studies were included in the review. One intervention was computerised decision support and nine were complex, multifaceted pharmaceutical care provided in a variety of settings. One study was conducted in in-patient setting, three in outpatient clinics and one at the hospital/care home interface. The interventions included in this review demonstrated a reduction in inappropriate medication use. Medication-related problems, reported as the number of adverse drug events (three studies), reduced significantly (35%) post intervention. Evidence of the effect of the interventions on hospital admissions (four studies) was conflicting.
Conclusions	It is unclear if interventions to improve appropriate polypharmacy, such as pharmaceutical care, resulted in a clinically significant improvement; however, they appear beneficial in terms of reducing inappropriate prescribing and medication-related problems.
Strength of the Evidence Base	Level I

126. “Dementia-friendly hospitals: care not crisis” An educational program designed to improve the care of the hospitalised patients with dementia.

Journal	Alzheimer Disease and Associated Disorders PMC, 2012
Authors	Galvin JE, Kuntemeier B, Al-Hammadi N, Germino J, et al.
Methods	540 hospital staff from four hospitals attended a seven hour dementia training session conducted in one day. The program was evaluated by asking participants to complete (a) a pre-evaluation questionnaire that included demographic questions and questions to assess dementia knowledge and confidence in caring for patients with dementia, (b) a post-session questionnaire that included the same questions as the pre-evaluation questionnaire to assess immediate gains in knowledge and confidence and (c) a delayed post-test at 120 days to assess maintenance of knowledge and confidence.
Results	The results showed that participant’s dementia knowledge and confidence in caring for patients with dementia improved significantly from pre- to post training session and remained stable in participants in three of the four hospitals at 120 days follow-up. By comparison, levels of knowledge and confidence dropped considerably at the fourth hospital although no clear reason for this was identified.
Conclusion	The authors concluded that the program was successful in improving dementia knowledge and staff confidence when caring for patients with dementia. It was considered, however, that the improvements in knowledge gained from the program may not be long-lasting without continued in-service training. The authors recommended that brief dementia education and training sessions be offered on a regular, on-going basis and that this is particularly important when there are frequent staff changes.
Strength of the Evidence Base	Level IV

127. Hospital Employees Awareness and Attitudes to Dementia Study (HEADS).

Journal	Australian Journal of Dementia Care (in press)
Authors	Travers, C. & Lie, D.
Methods	Following a needs analysis, brief (30-60 minute) dementia education sessions were developed to meet the target audience's (non-clinical staff and volunteers at a large hospital) needs and interests. The sessions were provided by experienced dementia educators from the Queensland Dementia Training Study Centre. Participants were asked to complete brief surveys of dementia knowledge and confidence in interacting with patients with dementia immediately prior to, and immediately following the dementia education program, and 6 weeks following the program.
Results	Participants included 52 non-clinical hospital staff and volunteers. A generally low level of dementia knowledge and confidence in interacting with patients with dementia was evident prior to the dementia education program. Participants' self-reported dementia knowledge and confidence in interacting with a person with dementia improved significantly following the program compared to beforehand. Improvements were maintained at 6-weeks follow-up and feedback regarding the content and quality of the sessions was high. Most importantly, small behavioural changes in staff when interacting with patients with CI were reported, following the training intervention.
Conclusion	It was concluded that it is feasible to provide brief dementia education sessions for non-clinical staff within the acute hospital setting and can significantly improve participant's dementia knowledge and self-confidence when interacting with patients with dementia.
Strength of the Evidence Base	Level IV

128. Best Practice for the management of older people with dementia in the acute care setting: A review of the literature.

Journal	International Journal of Older People Nursing, 2008
Author	Moyle, W. Olorenshaw, R. Wallis, M. & Borbasi, S.
Methods	A review of the theoretical and research based literature regarding the management of older patients with dementia in acute hospitals.
Results	Three models developed for use with older people with confusion in acute care were identified. All three emphasized the importance of staff education, standard clinical protocols and expertise in assisting best practice in caring for people with confusion. There was also an emphasis on supportive environments that meet the physical, emotional and sensory needs of older people.
Conclusions	There is emerging evidence that interventions such as staff education, skilled expertise, standardised care protocols (That include tools for the detection of confusion and its treatment) and environmental modifications help to meet the needs of people with dementia in acute hospital settings.
Strength of the Evidence Base	Level II

129. Improving outcomes for dementia care in acute aged care: Impact of an education programme.

Journal	Dementia, 2009
Authors	McPhail C, Traynor V, Wikstrom D, Brown M, Quinn C.
Methods	Development and implementation of a dementia education program (10 hours per week for 10 weeks) in a small NSW district hospital.
Results	100% of survey respondents (primarily nurses and allied health staff) in a regional hospital in NSW in 2005 reported they required dementia education. Following a 10 hour education program, dementia knowledge improved and 64% of attendees reported the sessions to have been beneficial. Staff turnover also decreased substantially following the program in comparison to beforehand.
Conclusion	This dementia education program resulted in positive outcomes including improved dementia knowledge.
Strength of the Evidence Base	Level IV

130. A survey-based study of knowledge of Alzheimer's disease among health care staff

Journal	BMC Geriatrics, 2013
Authors	Smyth, W. Fielding, E. Beattie, E. Gardner, A. et al.,
Methods	An online survey of the dementia knowledge of healthcare staff in North Queensland. The survey included the 30-item Alzheimer's Disease Knowledge Scale (ADKS).
Results	360 healthcare staff completed the survey (74% were hospital staff). Overall knowledge about Alzheimer's disease was of a generally moderate level. Knowledge was lower for some of the specific content domains of the ADKS, especially those that were more medically-oriented, such as 'risk factors' and 'course of the disease.' Knowledge was higher for those who had experienced dementia-specific training.
Conclusion	Specific deficits in dementia knowledge were identified among Australian health care staff, and the results suggest dementia-specific training might improve knowledge.
Strength of the Evidence Base	Level IV

131. Systematic implementation of an advance directive program in nursing homes: a randomised controlled trial.

Journal	JAMA, 2000
Authors	Molloy DW, Guyatt GH, Russo R, Goeree R, O'Brien BJ, Bédard M et al.
Method	A RCT (n= 1292 Canadian nursing home residents) of the systematic implementation of an advance care planning (ACP) program (LetMe Decide) on patient and family satisfaction with involvement in decision making and on health care costs. The intervention included educating staff in local hospitals and NHs, residents and families about advance care directives and offering assistance to complete an ACP.
Results	49% of competent residents and 78% of families of incompetent residents completed an ACP. Satisfaction was not significantly different between intervention and control NHs. Intervention NHs reported significantly fewer hospitalisations per resident and lower cost than control NHs. There was no significant difference in mortality between Intervention and Control NHs.
Conclusion	It was concluded that the systematic implementation of an ACP program reduces health service utilisation without affecting satisfaction or mortality.
Strength of the Evidence Base	Level II

132. Advance care planning and hospital in the nursing home.

Journal	Age & Aging, 2006
Authors	Caplan, GA. Meller A, Squires B, Chan S, Willett W.
Method	To evaluate a system of educating nursing home residents (NHRs), their families, staff and general practitioners about outcomes of dementia, advance care planning (ACP) and hospital in the home One clinical nurse consultant, who utilised the 'Let Me Decide' Advance Care Directive was employed to work on the project. The intervention area consisted of two hospitals and the 21 nursing homes (NHs) around them compared with another, geographically separate, hospital and the 13 homes nearby. Emergency admissions to hospital were monitored.
Results	In year one, 45 residents (71%) and their NHs agreed to proceed with ACP. Emergency calls to the ambulance service from intervention NHs decreased significantly. The risk of a resident being in an intervention hospital bed for a day compared with in a control hospitalbed, per NH bed, fell significantly. There was no significant change in mortality in the intervention homes, but in the control homes mortality rose in the third year to be significantly higher than in the intervention area.
Conclusion	ACP and hospital in the home can result in decreased hospital admission and mortality of NHRs.
Strength of the Evidence Base	Level III-I

133. Palliative assessment and advance care planning in severe dementia: an exploratory randomised controlled trial of a complex intervention.

Journal	Palliative Medicine, 2011
Authors	Sampson, E.L. Jones, L. Thuné-Boyle, I.C.V. Kukkastenvehmas, R. et al.,
Participants	Patients with severe dementia who had undergone emergency hospital admission. 33 patients and carers entered the study (22 intervention arm; 11 control arm)
Interventions	The intervention consisted of a palliative care patient assessment which informed an ACP discussion with the carer, who was offered the opportunity to write an ACP for the person with dementia.
Comparisons	Usual care
Outcomes	The care planning discussion was well received although only 7 carers made ACPs. It was difficult to engage carers in formulating ACPs. Carer satisfaction was assessed using standardised scales although attrition precluded statistical comparison of these data between the control and intervention groups.
Strength of the Evidence Base	Level II

134. Evaluation of a transition care cognitive assessment and management pilot.

Journal	Contemporary Nurse, 2013
Authors	Renehan E, Haralambous B, Galvin P, Kotis M, Dow B.
Method	Independent evaluation of the Transition Care Cognitive Assessment and Management Pilot (TC CAMP), a transition care program established to specifically meet the needs of people with CI. Six TCP places in a Victorian residential care facility were designated for use in the program. Methods consisted of file audits, focus groups and individual interviews with nursing staffs and carers.
Results	23 patients were admitted into TC CAMP. All experienced considerable agitation in the acute hospital setting but settled quickly in the residential care setting. The TC CAMP achieved length of stay and readmission rates that were comparable with transition care for cognitively intact people. The role of the Clinical Nurse Consultant was highly valued by staff and families involved in TC CAMP.
Conclusion	It is feasible to provide appropriate transition care to people with cognitive impairment who exhibit BPSD.
Strength of the Evidence Base	Level IV

135. Interventions to improve transitional care between nursing homes and hospitals: a systematic review.

Journal	Journal of the American Geriatrics Society, 2010
Authors	LaMantia MA, Scheunemann LP, Viera AJ, Busby-Whitehead J, Hanson LC.
Method	A systematic review was conducted to identify and evaluate interventions to improve communication of accurate and appropriate medication lists and advance directives for elderly patients who transition between nursing homes and hospitals. Five studies were included in the review. Two described interventions that enhanced transmission of advance directives, two described interventions that improved communication of medication lists, and one intervention addressed both goals.
Results & Conclusions	Results indicate that a standardised patient transfer form may assist with the communication of advance directives and medication lists and that pharmacist-led review of medication lists may help identify omitted or indicated medications on transfer.
Strength of the Evidence Base	Level I
Comment	This study was not specific to nursing home patients with dementia, however, is relevant to this population.

