A quality improvement project to prevent, detect, and reduce delirium in an acute setting

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KEY WORDS

delirium, acute care, rummage boxes

ABSTRACT

Objective
To implement a best practice approach to assessment, management and prevention of delirium in two acute medical wards.

Design
Twelve month quality improvement project using local data to develop and implement local guidelines and tools.

Setting
Two acute medical wards in a tertiary hospital.

Subjects
Ward staff and stakeholders.

Interventions
Delirium screening tool, local clinical pathway, educational program, standardised nursing care plan, practical resource 'rummage' boxes, and a carer information pamphlet.

Main outcome measures
Ward audit, focus groups and staff perception survey.

Results
Delirium was found in ten patients among a total of thirty participants (prevalence of 37%) but only half of these cases were diagnosed by the ward medical team. Confusion was noted by nursing staff in all cases of delirium. Almost all of the participants (29/30) had three or more risk factors for delirium and thus were at high risk.

Focus group participants were knowledgeable about delirium, but felt that resources and support were limited. Project tools used were acceptable to ward staff (participants of focus groups); however, substantial numbers of staff remained unaware of the project materials.

Conclusion
A global approach to prevention in high risk hospital populations may be needed. Nursing staff are well placed to screen for delirium, however, sustaining change is challenging.

INTRODUCTION

Delirium is characterised by rapid onset of an acute and fluctuating confusional state, and reduced ability to focus, maintain, and shift attention (Speed et al 2007). Given that delirium represents an acute change in cognition, information regarding the person's baseline cognitive function is essential. Delirium is common among hospitalised older people. This is thought to relate to interaction between underlying health conditions, and precipitating factors, which in most cases can be identified with careful assessment and investigation. Increasing older age, prior cognitive impairments, dementia, iatrogenic factors, visual impairment, poor mobility, and severe medical illness are important risk factors for delirium (ANZSGM 2005, DHS 2004, Speed et al 2007). The incidence varies depending on the setting and population; but rates of delirium on general medical wards are generally around 20%, including prevalent and incident delirium (Iseli et al 2007; Holden et al 2008).

Despite this, delirium remains poorly recognised, and up to 70% of cases may not be diagnosed (Khan et al 2009). This is likely to result in substantial adverse outcomes for older hospital patients, given that delirium is associated with higher rates of hospital acquired complications, prolonged hospital stay, higher rates of admission to residential care and increase in mortality. Under-recognition and mis-diagnosis may relate to the heterogeneous clinical presentations of delirium (i.e. people with hypoactive delirium may attract the attention of staff to a lesser extent than people with hyperactive delirium). Furthermore, the differential diagnosis between delirium and other causes of cognitive impairment (such as depression and dementia) may be difficult. Background chronic cognitive impairments (such as dementia) are risk factors for delirium. Thus delirium is frequently super-imposed on a pre-existing cognitive impairment. Staff may hold nihilistic or ageist attitudes, and mis-interpret acute alteration in cognition due to delirium as being due to cognitive decline which is chronic (Clinical Epidemiology and Health Service Evaluation Unit

2006). Given that the differential diagnosis of delirium is often complex, a reliable collateral history is essential to confirm whether the person's current presentation represents an acute change from their baseline state.

Prevention, early intervention, and management of delirium have clinical and cost benefits to the health system. Moreover the benefits in acute settings are: the reduced adverse events for older patients, shorter length of stay in acute care, reduced pressure on family and wider community support networks and, in particular, prevention of premature admission into residential aged care (Inouye et al 1999; Leslie et al 2005). Because of these benefits, early detection and reporting of acute changes in cognitive function are essential. Multiple management guidelines exist for the assessment of delirium outlining the evidence base and providing clinical practice guidance, such as use of screening tools on admission to acute care (Clinical Epidemiology and Health Service Evaluation Unit 2006). Resources for their implementation and evaluation are available, however translation of guidelines to practice is often difficult in busy clinical environments (Weinert and Mann 2008). Major barriers have been identified in translating research advances, such as preventative strategies of proven effectiveness for delirium and falls, into clinical practice and policy initiatives (Sharon et al 2007). These include time constraints, staff education, and rapid staff rotation. In this hospital as in most acute medical wards, staff time constraints, minimal additional resources and difficulty retaining experienced staff had been previously identified as recurring challenges. In this context, there is a risk that staff may view quality improvement as onerous, and avoid engaging in processes (such as regular screening of cognition to detect delirium) that may be viewed as adding to their already heavy workload. Thus the best way to translate clinical practice guidelines to sustainable improvements in clinical practice remains uncertain.

This study aimed to address this gap by first identifying ward based limitations to provision of best practice in delirium assessment, prevention and management,

and then introducing a sustainable clinical practice model that would drive improvements in care for older patients at risk of delirium. The focus of the project was on prevention, early detection, and care for people with acute changes in cognitive state due to delirium.

METHOD

Study design

A qualitative design, including focus groups and surveys, was used in this quality improvement study (figure 1). Elements of action research (Stringer and Genat 2004) were also incorporated to allow the project team to 'see, reflect and act', designing the intervention in response to baseline focus groups and ward audit. This approach was used to facilitate relevance and ownership of the intervention and process, and therefore, effectiveness of the intervention. A baseline audit was conducted, including all patients in the target wards on one day. The project team then facilitated development of the intervention. The intervention phase occurred during six months in 2008 and a follow-up audit evaluated adherence of staff to project guidelines.

Figure 1: Overview of study design
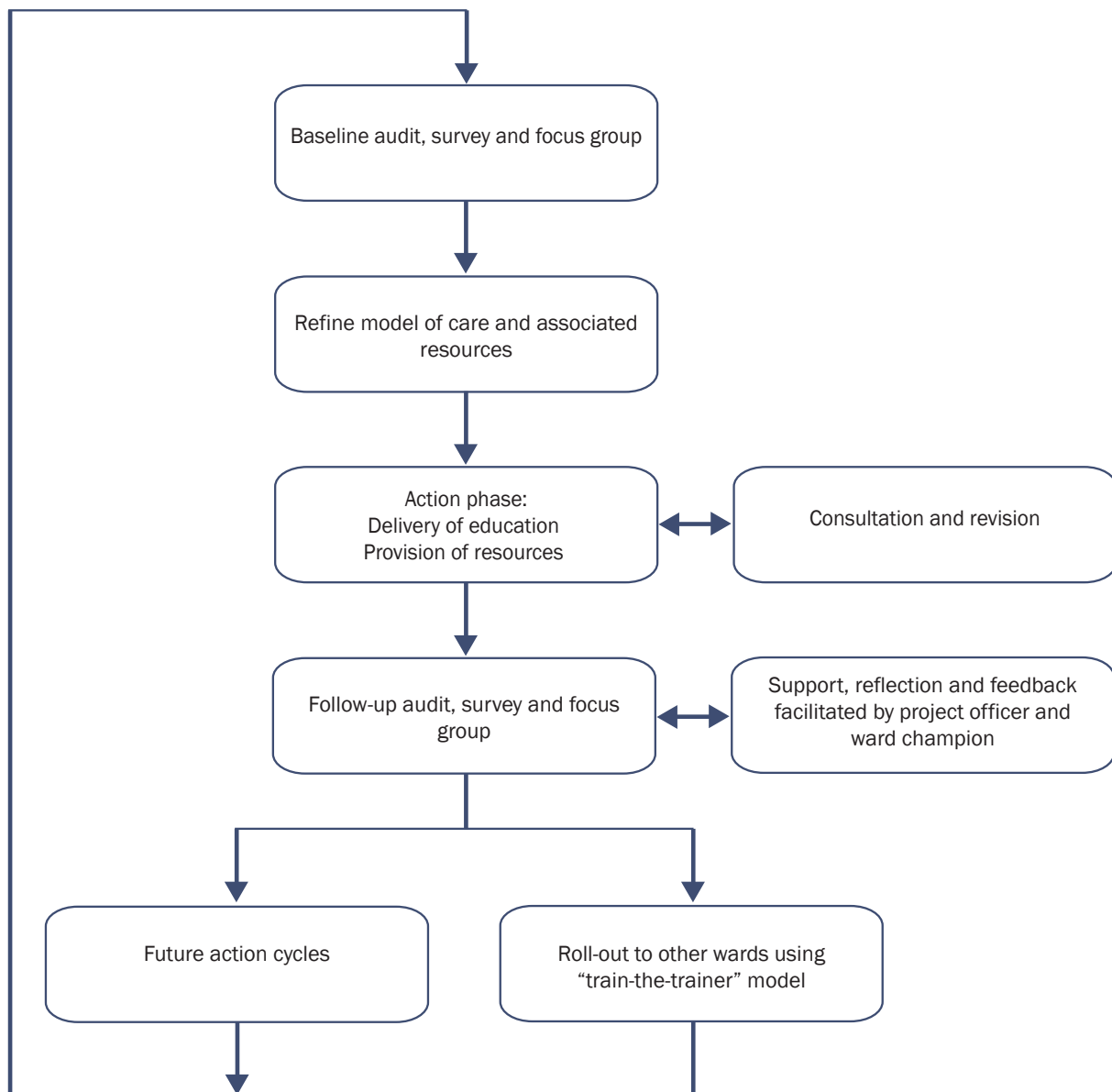
Settings and participants

Two general medical wards in a 679 bed tertiary hospital were targeted because of a high population of older patients and participated in the study. A project team was formed (including medical, nursing and allied health representatives) to oversee the twelve month project. Team members attended monthly meetings. A full time project officer was employed and a local champion, the ward Clinical Nurse Specialist, was identified. The clinical champion was considered vital to the success of the project. This role is normally assumed by a senior staff member who understands the overall mission of the organisation, is resourceful, and is well connected with members of the project team (Li et al 2009).

Data Collection and Measurement tools

1. The Confusion Assessment Method (CAM) is a reliable, validated tool for diagnosis of delirium (Inouye et al 1990) and was used in this study.

2. A staff perception survey (SPS) designed with a multidisciplinary premise was distributed to ward nurses, doctors, physiotherapists, speech pathologists, pharmacists, dieticians and occupational therapists, pre and post interventions. The survey covered three domains; job satisfaction (Likert responses), knowledge relating to delirium care, and open comment. The survey responses were anonymous.

3. Demographic details of patients over the age of 65 years on participating wards including recording of admitting diagnosis, risk factors for delirium (history of a fall in the preceding six months, taking >three medication or an opiate, memory loss or confusion, uncorrected visual impairment, severe illness and problems hearing) were collected.

4. An audit tool recording use of assessments undertaken by ward staff, interventions and diagnoses of delirium/confusion was also implemented in this study.

5. Focus groups made up of key stakeholders from nursing, medicine, allied health disciplines and psychiatry were utilised. Facilitation of the focus group utilised a delirium case study to serve as a discussion prompt. Participants were asked to consider tools which could be used in the intervention phase of the project. Two administrative staff attended focus groups to ensure detailed recording of notes.

6. Interrogation of hospital records data was undertaken to ascertain coded episodes of delirium.

Interventions

The intervention was designed by reflecting on, and discussing information from the baseline audit and the identified best practice guidelines. Consensus was reached among the project team and the ward champion that the high risk population indicated a universal approach to improving delirium care, as any attempts to stratify risk would identify virtually the whole ward population as high risk. There was also consensus that the intervention should target nursing staff predominantly, given they were already identifying all people with delirium as being confused. There was agreement the baseline data indicated a perceived need for a delirium education program for staff, patient and carer information (e.g. an information leaflet), delirium resources which could be freely accessed by ward staff, resources to support behavioural interventions, and measures to improve the environment. These components were chosen to provide staff with the knowledge and tools required to implement delirium prevention strategies, and to detect and care for people with abrupt deterioration in their cognitive state due to delirium.

A model of care for older patients with delirium was drafted by the project officer and revised with input from team members, the ward champion and stakeholders. The model of care included a screening tool - the Abbreviated Mental Test - and a local clinical pathway regarding screening for confusion, assessment of confusion, care for people with delirium, and prevention strategies. The clinical pathway emphasised the need to screen all older people admitted to the wards for cognitive impairment. Identifying and reporting all findings of cognitive impairment, and further assessment

to clarify if an acute deterioration in cognition had occurred, were emphasised as mandatory. The intervention also incorporated educational materials, a standardised nursing care plan, practical resource rummage boxes, and a carer information pamphlet (education relating to steps for the prevention and signs and symptoms of delirium for carers) (Mooney and Shank 2007). A Pharmacological Treatment Pathway for Older People with Delirium was approved by the hospital's drug sub-committee following a period of formal review and consultation in which substantive feedback was received from psychiatry and pharmacy staff. The pathway recommended the use of low dose anti-psychotic therapy for first line pharmacologic therapy, only after non-pharmacologic interventions were optimised (Milsen et al 2006).

The Delirium Education Program was designed to respond to the perceived needs of learners expressed in the baseline data collection. The program was drafted by the project officer with input from the project team and senior ward staff. Hospital-wide requirements for format and evaluation of education programs were met. The program included two face-to-face sessions covering delirium screening, diagnosis of abrupt changes in cognitive function, pharmacology and nursing interventions and management. The sessions included i) background (including presentation of a summary of the baseline data; ii) pre-test; iii) interactive discussion; and iv) post-test. The discussion was prompted by pre-prepared slides to ensure consistent coverage of key material. The draft Education Program was delivered to all nursing and allied health staff caring for patients on the target wards. Two sessions were delivered per week depending upon staff and roster availability.

Practical resource rummage boxes (28 litre storage boxes) contained tools which could be used by staff to engage patients at risk of delirium, and those experiencing hypoactive or mixed delirium without agitation or aggression. The contents of the boxes were compiled utilising suggestions from the nursing, allied health and medical staff. The rummage boxes contained laminated orientation cards and whiteboard markers, a doll, large piece puzzles, bubble wrap, scrap books, laminated pictures, non-toxic crayons and playing cards (Mooney and Shank 2007). These items were chosen to assist staff in re-orienting people with delirium and engaging them in activities. Infection control requirements were met by including only materials that could be washed or were single use.

An orange box of information and resources was designed. This was a reference to the falls prevention 'green box' which has been widely distributed in Australian hospitals (ACSQHC 2009). The orange box contained laminated copies of resources and guidelines for best practice delirium care (including definitions, prevention, assessment, diagnosis and treatment), the nursing care plans addressing assessment, diagnosis, planning, implementation and evaluation (prompting staff to consider appropriate interventions), lesson plans, and electronic copies of the education program session materials.

Data Analysis

Qualitative data (focus group notes) were transcribed. Transcripts were then summarised grouping similar themes. Quantitative audit data were summarised using descriptive statistics. All data gathered was de-identified and entered onto a secure database by the project officer.

Ethics

This quality improvement project was entered in the hospital's quality improvement register. As a quality improvement project with no experimental component, ethical approval was not required.

FINDINGS

Baseline Results

Audit

Thirty patients were included in the baseline audit. The group was high risk (with an average of 3.4 risk factors). Only one patient was 'low risk' (having less than three risk factors). One third of patients (n=10) were found, using the Confusion Assessment Method (CAM), to be suffering from delirium. Only half of these cases (n=5) were identified by the

medical team. Confusion was noted by nursing staff in twelve cases (including all of the 10 cases who had delirium). However data extracted by the medical records service identified only 0.17% of episodes of care in the previous twelve months as having a coded episode of delirium.

Staff Perception Survey (SPS)

One hundred SPS questionnaires were distributed and 55 were returned. All disciplines recommended more effective communication (verbal and written) between members of the multidisciplinary team, and between the multidisciplinary team and families of patients. A need for more education of staff relating to all aspects of delirium was also consistently cited. The current ward equipment and environment (aesthetics) were perceived as not suitable for older people, with a recommendation to provide controlled walking areas to encourage regular and safe mobility (Department of Health 2008). Staff from all disciplines indicated that the number of older and acute cognitively impaired patients with confusion admitted under general medicine should be limited. Staff also often recommended greater involvement of families in care.

Focus Group

Fifteen staff representing all major clinical disciplines participated in the baseline focus group. Staff cited a range of roles as important including core nursing functions such as personal care, monitoring, and administration of medications. They also recognised the need for holistic assessment (including assessment of baseline cognitive function) and prevention of functional decline by regular ambulation. Staff were sensitive to the need to maintain a calm environment, assess nutritional requirements, include family and/or carers in the planning of care, facilitate the patient's ability to communicate, orientate patients to their surroundings, pursue behavioural and non-pharmacological management interventions (e.g. to promote relaxation and sufficient sleep, which may be assisted by regular mobilisation, massage, encouraging wakefulness during the day), alleviate pain, and comprehensively plan discharge.

Thus the focus group discussion provided evidence that knowledge regarding care of a patient at risk of delirium, or with a diagnosis of delirium, was good. However staff did feel that resources (e.g. equipment) and support (e.g. hospital personnel) were poor. Participants reported a need for education especially in delirium related pharmacology and early recognition of delirium, including the risks, signs, and symptoms of delirium. Resources for behavioural management were highlighted as an area of need.

Evaluation of the Dementia Education Programme by participating staff

Over the course of the project 40 people participated in session one and 41 in session two. Evaluations were very positive: with the large majority reporting that the session objectives (95%), standard of presentation (100%), and quality of information (100%) met or exceeded expectations. However, although knowledge responses improved, substantial room for improvement persisted. Correct answers increased from 23.3% in the pre-test to 50% after the education sessions.

Follow-up Results

Audit

Thirty four patients were audited at follow up (three months post implementation). The prevalence of high risk patients (n=31; 86%) and of delirium (n=9; 25%) remained similar to the pre-intervention audit. Medical diagnosis of people with delirium was also similar (n=4; 44%), however use of the Mini Mental State Examination (MMSE) had increased (n=13, 36%, p=0.035). In addition, 34 randomly selected sets of patients' notes were audited over a four week period. Nurses noted confusion in 14 patients with doctors noting ten of the same patients as having confusion. However only four patients had an Abbreviated Mental Test.

applied by the nursing staff and five patients had the MMSE completed by medical staff. The standardised laminated nursing care plan for delirium prevention and care was located in all patients' files. All patients had between one and six prevention strategies implemented according to the care plan.

Staff Perception Survey

One hundred and nineteen follow up surveys were distributed, but the response rate for the follow up survey was only 21.8%. Overall, 63% of responses indicated they were unaware of the project tools referred to. Of respondents who had used the project tools, the majority (81%) responded they were effective/very effective.

Focus Group

Participants described the laminated bedside flow chart (with Abbreviated Mental Test, nursing care plan and prevention strategies), education sessions, and orange box (information and guideline) resources as very effective. However the majority of the participants were unaware of the patient/carer leaflet. Only about half of participants had used the practical resource boxes, but feedback from those who had used the rummage box endorsed it as very useful. Participants thought its utility could be further enhanced by providing an itemized list of contents, and also guidelines with suggestions for use of the items. Participants thought that electronic access to the project education program and tools would increase uptake.

DISCUSSION

The baseline audit confirmed clients on two acute care wards were almost universally at high risk of delirium. This may be generalisable to many acute care settings where older, frailer people are an increasing proportion of the inpatient population. In this context universal screening and implementation of ward based risk reduction strategies may often be indicated. The finding that nursing staff recognise patients with delirium as confused is consistent with the findings of other groups (Hare et al 2008), although it was not clear from our data to what extent these observations were recognised by the multi-disciplinary team. These data suggest that nursing staff should be a key target of educational interventions. The authors found the availability of local audit results to be very useful in engaging ward staff in the quality improvement process. It was possible to achieve a high degree of perceived

consensus regarding locally appropriate clinical pathways for delirium. This was contrary to concerns that staff may view regularly using standard tools to screen for delirium as adding to their work load and something they thus avoided.

The education program and resources provided were acceptable to the participants and perceived as useful. At baseline, survey open comments indicating a need to reduce or limit the number of confused patients admitted to the ward were notable. Similar comments were not provided in the follow-up survey, suggesting the project successfully improved staff confidence to care for acutely confused older people requiring admission. The project results seem to be generalisable to many acute hospitals. For example, there have been many requests for practical resource boxes from various areas of the hospital, and indeed other hospitals that became aware of the project. To achieve sustainability, practical resource rummage box contents have now been included as hospital stock items.

The hospital coding data were thought to indicate systemic problems with identification, recording or coding of delirium (rather than a true incidence of 0.17%). Thus monitoring coded episodes of delirium, attempting to detect falling incidence, was not undertaken. In contrast, this audit confirmed nurses recognise confusion. Furthermore, the survey and focus groups suggested nurses are well placed to implement prevention strategies, detect, and report early changes in cognitive function, and ameliorate delirium. While focus group volunteers had good knowledge levels and were enthusiastic regarding the project tools, knowledge among the broader ward staff (who participated in education sessions and completed pre-post session quizzes) seemed to be much lower. Although project tools tended to be endorsed as useful by focus group participants, follow-up audit confirmed that uptake was limited among the broader staff. At follow-up large numbers of staff remained unaware of the project materials. These results suggest a need for repeated action cycles of education and reflection by ward teams to achieve and sustain change. Senior ward staff

perceive high staff turnover as an important barrier to sustaining change, also emphasising the need for repeated action cycles.

Strengths of the project included the multiple sources of data, which make findings more reliable. For example, focus group and survey participation is likely to be affected by a volunteer bias, but interpretation of these results is aided by the audit which assessed actual practice. Another strength was adherence to hospital wide standards for development of educational programs and practice standards for nursing staff. This ensured the delirium education program was designed in a standard pedagogic framework and subjected to external evaluation. Limitations of the project were the short project time, preliminary nature of the work, and small sample size. For example, resources such as the practical resource rummage box warrant more detailed evaluation in their own right in larger, experimental samples.

CONCLUSION

Delirium is common but under-recognised during acute hospital admission. In contrast, nursing staff do identify confused patients. Guidelines recommend clinical practice strategies to optimise prevention, early detection, and treatment of delirium, but there are barriers to their uptake. It is possible to engage ward teams in a quality improvement process, developing resources and providing education which is perceived by participants as useful. However sustaining change is difficult and is likely to require multiple action cycles.

Final revisions were made to project materials after the follow up audit, staff perception survey and focus group. In response to participant feedback the project resources were made available by the hospital intranet.

RECOMMENDATIONS

Practitioners caring for acutely unwell older people should consider auditing their practice to determine the risk profile of clients. In high risk hospital populations a universal approach to delirium screening and prevention may be justified. Local resources developed for this project such as rummage boxes are likely to also be useful in other sites. It is planned that the delirium education program will be repeated on a six monthly basis and delivered to all new staff in orientation by staff development nurses. Future work will implement the Delirium Education Program hospital-wide with a train-the-trainer day in which staff development nurses will be apprised of the education program, to enable its delivery on an ongoing basis. The education program will also be converted to a self learning format which can be accessed by the hospital intranet. The Nursing Practice Standard for Care of the Older Person with Delirium (based on best practice and evidence from the Delirium Project) will be implemented hospital wide. Ongoing education of junior medical staff will be provided at each orientation and the patient / carer information pamphlet is to be translated to other languages. The authors recommend other sites consider similar models to facilitate ongoing delivery and frequent reinforcement of education.

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