

Article

Improving clinician–carer communication for safer hospital care: a study of the ‘TOP 5’ strategy in patients with dementia

KAREN LUXFORD¹, ANNE AXAM¹, FIONA HASNIP¹, JOHN DOBROHOTOFF², MAUREEN STRUDWICK³, REBECCA REEVE⁴, CHANGHAO HOU⁴, and ROSALIE VINEY⁴

¹Clinical Excellence Commission, Sydney, NSW, Australia, ²Central Coast Local Health District, Mental Health Service for Older People, Central Coast, NSW, Australia, ³Central Coast Local Health District, Carer Support, Central Coast, NSW, Australia, and ⁴Centre for Health Economics Research and Evaluation, University of Technology, Sydney, NSW, Australia

Address reprint requests to: Karen Luxford, Clinical Excellence Commission, Locked Bag 8, Haymarket, Sydney, NSW, Australia. Tel: +61-2-9269-5515; Fax: +61-2-9269-5599; E-mail: karen.luxford@health.nsw.gov.au

Accepted 28 March 2015

Abstract

Objective: To examine the impact of implementing a clinician–carer communication tool for hospitalized patients with dementia.

Design: Surveys were conducted with clinicians and carers about perceptions and experiences. Implementation process and costs were explored through surveys of local staff. Time series analysis was conducted on incident-reported falls, usage of non-regular anti-psychotics and one-to-one nursing.

Setting: Twenty-one hospitals in Australia.

Participants: Surveys were returned by 798 clinicians, 240 carers and 21 local liaison staff involved in implementation.

Intervention: Implementation of a communication tool over 12 months.

Main outcome measures: The process of implementation was documented. Outcome measures included clinician and carer perceptions, safety indicators (incident-reported falls and usage of non-regular anti-psychotics), resource use and costs.

Results: Clinicians and carers reported high levels of acceptability and perceived benefits for patients. Clinicians rated confidence in caring for patients with dementia as being significantly higher after the introduction of TOP 5, ($M = 2.93$, $SD = 0.65$), than prior to TOP 5 ($M = 2.74$, $SD = 0.75$); $F(1,712) = 11.21$, $P < 0.05$. When analysed together, there was no change in incident-reported falls across all hospitals. At one hospital with a matched control ward, an average of 6.85 fewer falls incidents per month occurred in the intervention ward compared with the matched control ward ($B = -6.85$, $P < 0.05$).

Conclusions: Our findings indicate that the use of a simple, low-cost communication strategy for patient care is associated with improvements in clinician and carer experience with potential implications for patient safety. Minimally, TOP 5 represents ‘good practice’ with a low risk of harm for patients.

Key words: patient safety, communication, hospital care, carers, dementia, survey

Introduction

A key component of ‘patient-centred care’ is an emphasis on care preferences [1]. No-where is this more relevant than for very vulnerable patient populations such as patients with dementia and other forms of cognitive impairment [2]. Such patients present challenges for health-care services as these patients may no longer be able to articulate their needs and preferences. With ageing populations, this is an increasingly important issue for health services. The 2009 report ‘Counting the Cost’ highlighted that people with dementia over 65 years of age occupied up to one quarter of hospital beds in England [3].

Hospitalized patients with dementia have poorer clinical outcomes, are more likely to experience adverse events and are more than twice as likely as other patients to die while in hospital [4]. Patients with dementia are known to be more likely to fall while hospitalized than other patients [5], resulting in serious injury, such as fractures, subdural haematoma and excessive bleeding and longer lengths of stay [6]. The busy, noisy and unfamiliar environment of an acute care hospital exacerbates the periodic agitation and aggression that affects at least 40–60% of individuals with dementia in care settings [7–9]. Staff who are not trained or experienced in behavioural or environmental approaches to settling a patient with dementia may inappropriately resort to the use of anti-psychotic or other psychotropic medication [10]. There is a growing concern that anti-psychotics and similar medicines are being overprescribed to people with dementia first line as a means of behaviour control [11–13], instead of behavioural or environmental alternatives [14].

For patients with cognitive impairment, carers and family represent an important avenue for engagement [15] and a key source for gaining personalized ‘tips’ to improve patient care, but information imparted to clinicians by family may not always be actively used nor passed onto other clinicians at handover [16, 17]. Studies of relatives’ and clinicians’ experiences have pointed to the inadequacies of handovers for conveying information and a lack of clinician knowledge about patient’s home situations [18]. Strategies to improve the use of carer knowledge by clinicians have the potential to improve patient care [19]. Limited published evidence exists, however, regarding the effectiveness of communication-focussed engagement strategies on the quality and safety of patient care.

‘TOP 5’ is a strategy that focusses on clinician–carer communication. TOP 5 engages clinical staff in a structured process with carers to elicit and record up to five important non-clinical ‘tips’ and management strategies to aid communication and support personalized care. A conversation, typically held face to face with a carer, leads to the mutual development of the strategies recorded on a one-page form which is then attached to the patient’s charts at the bedside. Locating the form at the bedside ensures staff can access, use the information and pass the information on at handover. Developed in 2007, in conjunction with carers by the Carer Support Unit, Central Coast Local Health District (New South Wales (NSW), Australia), TOP 5 focusses on patients with cognitive impairment. Subsequently, other similar approaches to improving clinician–carer communication have emerged such as Alzheimer’s Society UK ‘This is Me’ [20]—a tool launched in 2010 to inform health and social care professionals about needs, interests, preferences, likes and dislikes of people with dementia.

This study aims to explore the use of the ‘TOP 5’ clinician–carer communication tool for patients with dementia. The study addresses the following evaluation questions: (i) what is the process of implementing TOP 5, including time taken, barriers and enablers? (ii) what are the perceptions and experiences of clinicians? (iii) what are the perceptions and experiences of carers? (iv) what is the impact on patient safety

indicators (e.g. falls)? (v) what is the impact on staffing for one-to-one nursing? and (vi) what is the cost to the hospital of using TOP 5?

Methods

Setting

In Australia, public hospitals are operated by local health districts that co-ordinate services for geographically defined populations. Private hospitals are operated by private provider companies. Our study was based in NSW, Australia’s most populous state, with 7.4 million residents. Letters inviting participation were sent to chief executives of local health districts and private provider groups in NSW seeking expressions of interest. Twenty-two hospitals in total (17 public and 5 private) were nominated by chief executives to participate, which represented a broad range of geographical locations and peer groups. Programme governance was by a state-level Steering Committee with a range of expertise including consumer input. The study was co-ordinated by a project team at a safety and quality organization.

Public hospitals participating in the study ranged from metropolitan principal referral hospitals to rural multipurpose services and were located in 10 different geographic districts. The private facilities were all metropolitan hospitals, covering three different private provider groups.

Intervention

TOP 5 was implemented by each hospital site over a 12-month period, between September 2012 and August 2013. At the outset, each hospital identified a local implementation team to champion TOP 5 use which included a local site liaison (LSL), executive sponsor, clinical champion and a carer support group contact. The LSL was the person nominated by each site to co-ordinate the local implementation process, co-ordinate the collection of local data and to be the main liaison for the external project team. Most LSLs were senior clinicians or managers with a nursing, medical or allied health background. These staff continued with their normal roles during the course of implementation. Two site visits were made by the external project team to each hospital to promote clinician engagement—one at start-up and one at 6 months. Three forums were held throughout the year for the LSLs to network and exchange ideas.

Staff education was provided in the use of TOP 5 at each hospital along with a toolkit including TOP 5 forms, information brochures for family and carers, background information and promotional material for local use. Each hospital determined the scope of implementation, varying from specific wards through to hospital-wide uptake. A total of 53 wards, primarily medical, surgical and aged care, were involved in implementing TOP 5. The wards were nominated locally as being the most relevant wards for an intervention involving patients with dementia. The three small rural multipurpose hospitals and one private hospital implemented TOP 5 facility wide. This flexible approach to local nomination of wards within the hospital was taken to ensure local ‘buy-in’ by allowing clinicians to consider where best to implement TOP 5. Flexible approaches with local engagement are recognized as promoting long-term sustainable changes in health care [21].

Data collection

A range of data was collected and analysed to address the evaluation questions. The sections below detail the data collection for each evaluation component. Surveys of clinicians and carers using Likert scales were based on pre-existing tools developed and tested by the health

district that developed the TOP 5 programme. Open-ended questions were used to collect general comments. Surveys were provided in hard copy, and participants were informed about the study and asked for written consent. Ethics approval was granted by a state lead Human Research Ethics Committee and site-specific approval was gained at each hospital.

Process of implementing TOP 5

A log data pro forma was provided to all hospitals for collection of monthly ward-level data by nominated clinicians during the implementation period. The log data pro forma was used to record the number of TOP 5 strategies initiated, patients with dementia admitted to the ward and use of non-regular anti-psychotics.

LSL staff were surveyed about the process of implementing TOP 5 at 6 and 12 months via an online survey, collecting data about types of clinicians, position levels and time involved in conducting a TOP 5, and perceived enablers and barriers to implementation.

Sites provided written examples of TOP 5 strategies implemented to illustrate the practical use of carer-identified strategies by clinicians.

Clinician perceptions and experiences

Clinician survey participants included nurses, doctors and allied health professionals. Participants were selected locally as respondents based on the wards implementing TOP 5. A sample of at least six clinicians was intended for surveying at each hospital before TOP 5 was introduced and then at 6 and 12 months. While surveys were administered in the same wards over time, it was not possible to determine whether the same clinicians completed surveys at each time point due to the use of de-identified surveys. Anecdotal feedback from the LSLs indicates that the clinician workforce was largely consistent over time; however, some staff changes did occur at a number of participating sites. Clinician surveys assessed perceptions of knowledge, attitudes, satisfaction and confidence in caring for patients with dementia and, additionally, the acceptability of the TOP 5 process and perceptions of impact during implementation (Table 1). De-identified surveys were returned to the project team for data entry.

Carer perceptions and experiences

Carer survey participants were carers of hospitalized patients with dementia who provided TOP 5 strategies to clinicians. Throughout the 12-month period, carers were invited by staff to participate in the carer's survey, either during the hospital stay or at time of discharge. Carers were provided with a reply paid envelope for returning anonymous surveys. Surveys assessed carers' satisfaction with clinician communication, with the TOP 5 process and perceptions of impact on the patient (Table 2). Carers with a previous admission experience with the same patient were asked to provide a comparison between these two different admission times.

Patient safety indicators—falls and anti-psychotic drug use

Electronic data sources used were the state patient admissions database, Incident Information Management System and local hospital records for the 17 public hospitals. Private hospital data were available from local level data systems. To enable time series analysis of incident-reported falls, monthly data were extracted for 12 months prior and 12 months during implementation for all patient falls and admissions. Analysis of incident-reported falls among all patients on a ward was conducted for all hospitals. In one of the recruited hospitals, a public metropolitan hospital, TOP 5 was implemented in one of two wards that received acute aged care patients, were similarly staffed and applied the same care protocols, allowing for a matched

Table 1 Clinician survey

Pre-implementation:

- Overall knowledge about dementia
- Views about management of patients with dementia
- Views about the role of the carer as an information source
- Value placed on carer input for patients with dementia
- Views about obtaining key strategies from carers to help manage care
- Level of confidence in caring for patients with dementia
- Level of comfort in engaging with carers

At 6 and 12 months: Same areas repeated as above plus additionally:

- Perceived impact of TOP 5 on self (clinician):
 - Ease of use
 - Time expended
 - Work environment
 - Satisfaction with caring for patients with dementia
 - Ease of relating to carers
- Perceived impact of TOP 5 on patients and carers:
 - Agitation and distress of patient
 - Restraint of patients (physical or chemical)
 - Patient recovery
 - Confidence of carers with care provided
 - Concerns/complaints raised by carers

Table 2 Carer survey

Recollection of a previous admission to the same facility:

- Satisfaction that staff were aware of role as carer
- Satisfaction that staff made carer feel comfortable to provide information about the patient
- Satisfaction that staff listened and took notice of information provided by carer

For the current admission:

- Satisfaction that staff were aware of role as carer
- Satisfaction that staff made carer feel comfortable to provide information about the patient
- Satisfaction that staff listened and took notice of information provided by carer
- Satisfaction with information provided about top 5
- Satisfaction that staff used TOP 5 tips in care provision
- Perceived impact of TOP 5 on:
 - Involvement of carer in care
 - Benefit to patient
 - Calmness of patient
 - Patient recovery
 - Staff communication with patient

comparison of falls between an intervention and control ward. Admissions and incident data were extracted from electronic collections for both wards. While this was a very useful matched comparison, it should be noted that the intervention ward, however, was a locked ward, with patients considered at risk of wandering or falling more likely to be admitted there rather than to the control ward.

For time series analysis on usage of non-regular anti-psychotics, monthly data were requested from hospitals on pharmacy stock for the 12 months prior to and 12 months during implementation.

One-to-one nursing

For time series analysis, monthly data were requested from hospitals about one-to-one nurse resourcing for the 12 months prior to and 12 months during implementation.

Cost to the hospital

Data collected from the process survey completed by LSL staff were used for a cost analysis. Data included staff time spent conducting TOP 5 interviews, staff types/levels, training and administration.

Data analysis

Process of implementing TOP 5

Ward log data were collated by hospital site on the number of TOP 5s conducted during 12 months. Data about time taken and cost to undertake a TOP 5 were collated from the LSL survey. Totals and averages across hospital sites are shown in Table 3. Surveys about the implementation process included free text responses by LSL staff. A thematic analysis of these responses was undertaken to identify common barriers to and enablers of implementing TOP 5. The thematic analysis was carried out using methods as described by Braun and Clarke [22]. One researcher (F.H.) conducted the primary content analysis, reading the survey free text comments and progressively developing a coding framework to categorize identified themes in a spreadsheet. To address the potential for bias, a second researcher (K.L.) conducted a validation on a sample of surveys and found a high degree of concordance for emerging themes.

Clinicians and carers: perceptions and experiences

Clinician and carer survey data were analysed with frequency analysis, supplemented by *t*-tests and ANOVA with contrasts where responses were to be compared by group or time point.

Patient safety indicators

Electronic datasets were analysed using a series of interrupted time series regression models. Three regression models were considered. The first included an overall time trend, a shift dummy to account for the introduction of TOP 5 and an interaction to account for any change in the time trend since the introduction of TOP 5. The second model added variables controlling for seasonal effects, and the third model added a variable controlling for any parallel 'fall-prevention strategies' as reported by each hospital. Data were analysed at the level of implementation (ward level or facility wide).

For analyses that included data both over time and across multiple sites, the modelling was conducted using random effect regression analysis to account for clustering [23]. Where sites were analysed individually, Ordinary Least Squares regression was used.

For the data analyses of falls, we first considered all 21 hospitals in a single model to estimate whether, on average, there is evidence of a decrease in falls following the implementation of TOP 5. We also estimated changes in falls at each site individually. In both of these analyses, the ability to detect differences since TOP 5 implementation is limited by the lack of a control group. However, there was a comparison ward in one hospital, and a separate analysis was conducted on data collected in this hospital. In this analysis, we estimated the difference in falls in the TOP 5 implementation ward relative to the comparison ward. Our model controlled for baseline differences so that we are capturing the difference in difference between the wards, following the intervention. In each model, falls were measured as the

Table 3 TOP 5s conducted, number of wards, average number of TOP5 s per site/month, time taken and cost to undertake a TOP 5 by hospital type

Site	Hospital type	Number of wards implementing	TOP 5 s conducted	Average TOP 5 s per month	Time per TOP 5 (min)	Est. cost per TOP 5 (\$AUD)
1	Principal referral	3	191	24	20	7.00
2	Principal referral	1	102	8	15	13.00
3	Principal referral	2	114	14	30	15.20
4	Major metropolitan	5	115	14	15	8.20
5	Major metropolitan	1	59	15	15	12.00
6	Major metropolitan	3	11	4	30	18.00
7	Major non-metropolitan	2	148	13	20	11.00
8	Major non-metropolitan	3	109	9	15	11.00
9	Major non-metropolitan	1	24	2	>40	38.40
10	Major non-metropolitan	2	13	3	15	13.00
11	Major non-metropolitan	2	21	2	20	14.00
12	District	4	157	16	15	5.90
13	District	3	6	1	15	7.00
14	District	2	19	2	>40	10.00
15	Rural multipurpose service	Facility wide	21	3	30	15.00
16	Rural multipurpose service	Facility wide	18	3	30	13.00
17	Rural multipurpose service	Facility wide	6	1	30	18.40
18	Private hospital	Facility wide	20	2	>40	45.80
19	Private hospital	4	21	2	30	16.00
20	Private hospital	1	75	6	15	5.90
21	Private hospital	2	27	3	30	18.00
			TOTAL = 1277	AV = 6	AV = 21 min	AV = AUD\$20.60
			AV = 58.05			

number of falls per month. For sensitivity analysis, we converted this to a falls rate by dividing the number of falls by the total number of admissions.

Interrupted time series analyses on the use of anti-psychotics were conducted on the individual sites that collected this information.

One-to-one nursing

Interrupted time series analyses on one-to-one nursing were conducted on the individual sites that collected this information.

Cost to the hospital

The cost analysis used data including the numbers and job titles/levels of staff and the time spent in each aspect of the TOP 5 process. To convert quantities of resource use into monetary values, the quantity of hours was multiplied by the corresponding wage rate.

Results

Process of implementing TOP 5

Of the 22 hospitals, 21 implemented TOP 5 during the 12-month period. One hospital, a private rehabilitation service, did not implement TOP 5 citing the following issues as barriers: internal refurbishments reducing the numbers of patients admitted; an overall lack of patients with dementia admitted; and staff departures leading to loss of ‘buy-in’. While providing useful feedback regarding potential barriers, this site was excluded from the quantitative analysis.

In the 21 hospitals that implemented TOP 5, an average of six TOP 5s were undertaken per month by each hospital (range: 1–24 per month), typically conducted by a nurse. The proportion of patients with dementia that had a TOP 5 implemented rose throughout the study from an average of 23% at the outset to 64% by the end of the implementation period. The average time to complete a TOP 5 with a carer was 21 min (Table 3).

Surveys about the implementation process identified that the simplicity of the TOP 5 process and strategies was considered by clinicians as the ‘key to success’. Successful uptake relied on acceptability to staff and an existing culture of engagement with carers. Early in the implementation period, a few clinicians reported difficulty in translating the carers’ tips into a workable strategy for the hospital environment as they lacked confidence to write strategies based on ‘non-clinical’ tips. This issue was addressed through further training and the development of lanyards for clinicians to use which demonstrated how to write an effective TOP 5.

The application of TOP 5 is illustrated in an example below.

Factors perceived as enabling the uptake of TOP 5 included the following main themes: executive and clinical leadership; LSL officer as a

Example of TOP 5 strategy use by a Major - Non Metropolitan Hospital

“Discussion with the patient’s carer identified that the gentleman had been an ambulance officer during his working career: all the hospital ‘bells and alarms’ only escalated his anxiety and made him think that he needed to jump into action for an ‘emergency’. The simple act of discussing all health issues in a professional tone, as if he was ‘at work’, was identified as a TOP 5 strategy as well as letting him know that the ‘emergency’ was being responded to. This strategy helped a lot. The patient settled well, and trusted us.”

central ‘driver’; clinical champions within the wards; multidisciplinary involvement (reinforcing that ‘care is everyone’s responsibility’); and education of acute care staff about dementia and instigating conversations with carers.

Although TOP 5 was considered on the whole as being simple to use, several themes emerged as perceived barriers to the uptake including: clinician resistance to change; time constraints; carer-related issues (e.g. lack of carer); and clinician confidence.

Clinician perceptions and experiences

Clinician survey responses were received prior to the implementation of TOP 5 ($n = 466$), after 6 months of using TOP 5 ($n = 164$) and at 12 months ($n = 128$)—exceeding the intended six clinician responses per site for each time point ($6 \times 21 = 126$).

Clinicians reporting that they ‘always obtain key strategies from carers to manage the care of patients with dementia’ was significantly higher in survey data collected after the introduction of TOP 5 ($M = 3.22$, $SD = 0.66$) than data collected pre-implementation ($M = 3.10$, $SD = 0.73$); $F(1,712) = 5.65$, $P < 0.05$. This difference was sustained between 6 months and the end of the 12-month period. Clinicians rated their own levels of confidence in caring for patients with dementia as being significantly higher after the introduction of TOP 5 ($M = 2.93$, $SD = 0.65$) than prior to TOP 5 ($M = 2.74$, $SD = 0.75$); $F(1,712) = 11.21$, $P < 0.05$. This increased confidence was also sustained between 6 and 12 months, $F(1,712) = 0.02$, $P > 0.05$. These results were supported by free text general comments:

Since TOP 5 arrived, I feel more confident in dealing with both patient & carer.

I think it is excellent- gives you the satisfaction that you are giving competent care.

After implementing TOP 5, the majority of clinicians reported agreeing or strongly agreeing that TOP 5 was easy to use (91%), not time consuming (70%), decreased patient agitation and distress (74%), resulted in decrease use of restraint—physical or chemical (61%)—and made it easier to relate to carers (89%). The majority of clinicians (79%) reported being more satisfied with their work in caring for patients with dementia following the introduction of TOP 5. All clinician ratings of the above factors were sustained between 6 and 12 months. Regarding complaints, 71% of clinicians perceived that less concerns and complaints had been raised with them by carers of patients following the introduction of TOP 5.

Carer perceptions and experiences

A total of 240 carer surveys were returned over the 12-month implementation period. While it was not possible to determine the true response rate for carer surveys, the surveys returned represent an average of 26% of the total TOP 5s conducted at a hospital, with one hospital achieving 92%. Anecdotal feedback from clinicians indicated that some carers stated that they felt that the positive verbal feedback they had provided to staff was ‘sufficient’ and that they did not see the need to ‘put pen to paper’ to complete a survey.

Carers reported high levels of satisfaction with the way they were provided with information about TOP 5 (97%) and the way that clinicians had used the TOP 5 strategies to personalize care (97%). The majority of carer respondents agreed that TOP 5 had benefitted the patient (85%) and that the patient was calmer as a result of TOP 5 strategies being used (82%).

Carer respondents who had experience of a previous patient hospitalization (60%) reported higher levels of satisfaction with staff relations when TOP 5 was in place compared with previous admissions without TOP 5. Satisfaction ratings were significantly higher for the current hospitalization with TOP 5 for 'staff making the carer feel comfortable to provide information about the patient' ($M = 3.68$, $SD = 0.60$) than for the previous hospitalization ($M = 3.61$, $SD = 0.54$); $t(134) = -2.36$, $P < 0.05$. Similarly, satisfaction ratings were significantly higher for 'staff listening to and taking notice of information provided by the carer' in the current hospitalization with TOP 5 ($M = 3.66$, $SD = 0.56$) than for the previous hospitalization ($M = 3.55$, $SD = 0.62$); $t(132) = -3.592$, $P < 0.05$.

In addition to improving engagement with clinicians, 88.5% of carer respondents agreed that TOP 5 had facilitated their own engagement in care. This response was supported by free text general comments by carers:

This initiative makes the carer feel respected as well as involved in the ongoing treatment of their loved one.

Carers noted that they did not need to keep reiterating the same information to different clinician members, rather that staff listened to and took notice of the information they had provided.

Patient safety indicators

When analysed together, there was no evidence of a change in the number or rate of incident-reported falls across all hospitals after TOP 5 was introduced. When analysed individually, there was little evidence of a change in the majority of hospitals. However, these analyses are limited by the lack of a control group.

In the hospital where data from a control ward were available, random effects regression found a statistically significant decrease in all patient falls in the aged care ward using TOP 5, when compared over time with the control ward. Controlling for baseline differences, seasonal effects and existing falls prevention strategies, an average of 6.85 fewer falls per month occurred in the ward using TOP 5 (Ward A) compared with the control ward (Ward B) since the introduction of TOP 5. In the sensitivity analysis where falls were measured as a rate (falls/admissions), we also detected a relative decrease in falls in the ward using TOP 5, with the change in trend in the falls rate per month 23% lower in the ward using TOP 5 compared with the control ward since the introduction of TOP 5. However, this difference is only significant at a 10% level, not at the 5% level. The results for the original model and the sensitivity analysis are reported in Table 4.

Consistent data about pharmacy stock usage of non-regular anti-psychotics were only available for analysis from two participating hospitals during the TOP 5 implementation period and for the same time period of the previous year. One of these, a major metropolitan hospital, displayed a statistically significant reduction in the use of anti-psychotics following the introduction of TOP 5 with an overall reduction of 68% in average cost of anti-psychotics per month. At the second hospital, a principal referral hospital, there was no difference in overall expenditure or supply of most types of anti-psychotic; however, there was a decrease in the usage of Risperidone quicklets (a quickly dissolving oral medication) of 67 mg per month following the introduction of TOP 5 ($P < 0.1$). Both hospitals exhibited high-end usage of TOP 5 (average 14 and 24 per month, respectively). These decreases correlate with the findings that 61% of the clinicians surveyed perceived that there was less need for restraint (physical or chemical) for patients with a TOP 5.

Table 4 Random effects regression results on number and rate of falls per ward

Variable	Original model Number of falls ($n = 50$) coefficient	Sensitivity analysis Rate of falls ($n = 50$) coefficient
Constant (Ward B at baseline)	7.31***	2.76***
Ward A (vs. Ward B) at baseline	2.92	-1.98***
Time trend (Ward B) before TOP 5	-0.50	-0.31***
Time trend Ward A (vs. Ward B) before TOP 5	0.42	0.23***
Shift after TOP 5 (Ward B)	2.88	0.96
Shift after TOP 5 Ward A (vs. Ward B)	-6.85**	-0.92
Change in time trend after TOP 5 (Ward B)	0.24	0.28**
Change in time trend after TOP 5 Ward A (vs. Ward B)	-0.07	-0.23*
Other fall-preventing strategies	1.61	0.29
Seasons (vs. Winter)		
Spring	0.02	-0.66*
Summer	-0.99	-0.33
Autumn	2.04	-0.08

***, **, * = alpha = 1, 5 and 10% levels, respectively; Ward A, the ward where TOP 5 was implemented. Ward B, the comparison ward.

Data from ward logs indicated that across all hospitals, for each additional administration of anti-psychotics to a patient with dementia for the purpose of restraint during the 12-month implementation period, there was an associated statistically significant increase of 0.4 falls ($P < 0.01$) on average by patients with dementia.

One-to-one nursing

Consistent monthly data about nurse resourcing (1:1 care) were only available for time series analysis from one participating hospital during the TOP 5 implementation period and for the same time period of the previous year. At this principal referral hospital, a statistically significant decrease in the trend in use of 1:1 staffing was observed following the introduction of TOP 5. For each month of the implementation period, there was an average additional decrease of 0.84 ($P < 0.05$) one-to-one staff used, when controlling for seasonal effects.

Cost to the hospital

Based on the time taken to conduct a TOP 5 and the classification of clinical staff involved, the average cost of conducting a TOP 5 discussion with a carer to elicit strategies was estimated as AUD\$20.60 (USD \$19.40) (range AUD\$5.90–\$45.80) (Table 3).

On average, ongoing training costs for TOP 5 implementation at a hospital were estimated at AUD\$36 per month (USD\$34 per month). Administration tasks associated with implementing TOP 5 at a hospital included attending meetings, and general liaison with associated costs was estimated at an average AUD \$1053 per month (USD\$991 per month). This includes 'start-up' time and as such represents an upper estimate of the likely true cost.

Discussion

The aim of this study was to explore experiences of clinicians and carers and the implications for patient safety of a clinician–carer communication tool ‘TOP 5’ for patients with dementia. The findings of this study indicate that the TOP 5 strategy was well received by health-care professionals and by carers of patients with dementia. The findings reveal that TOP 5 is a simple and useful communication tool to assist clinicians in formalizing personalized care delivery and engaging with carers, with early indications of potential impact on patient safety and quality of care. Although typically considered easy to implement, some barriers to the uptake of TOP 5 were identified, such as clinician resistance to change and time constraints for staff.

The benefits to clinicians included an increased satisfaction in their work and in their confidence in caring for patients with dementia. Overall, TOP 5 was acceptable to clinicians as a tool to enhance their work caring for patients.

Carer confidence in clinicians was increased when carers observed that clinicians used the strategies developed, indicating that TOP 5 assisted in the communication of this knowledge during clinical handover.

Both clinicians and carers reported that following TOP 5 implementation, the patients were less agitated and appeared more settled, providing indirect evidence for an improved patient experience of care. Staff used the TOP 5 tips to deal with agitation in hospitalized patients with dementia, reporting that this approach lessened the need for restraint. At two hospitals with long-term drug utilization records, there was evidence of a lower rate of anti-psychotics usage following the introduction of TOP 5.

One hospital with a matched control ward identified a lower incident-reported falls rate in the aged care ward using TOP 5, irrespective of seasonal effects or other ‘falls prevention strategies’ in place. This limited evidence from one hospital indicates potential implications for patient safety that warrant further investigation. Early findings suggesting implications for medication use and staff resourcing also require further study.

Our study supports previous findings about a link between the use of anti-psychotics and the incidence of falls [24]. Given this association, a decreased use of anti-psychotics could have a significant impact on the patient safety, as well as on the patient experience. Decreased usage of anti-psychotics has significant implications for patients, given evidence linking usage of these drugs to increased patient mortality [25, 26] and morbidity, especially increased risk of stroke [27, 28].

Further studies investigating impact on falls, use of anti-psychotic drugs and staff resourcing may indicate potential for cost savings. Reducing patient falls has significant implications. In Australia, the average cost of hospital care resulting from a fall with injury has been calculated at AUD\$18 454 (USD\$17 378) with longer than average lengths of stay for patients [4].

Limitations

Our study had several limitations. First, the study was limited to hospitals nominated at a district/group level by chief executives. Thus, it is possible that other findings might have emerged from inclusion of a different sample of facilities. Although this presents a potential bias, the sample of 21 participating hospitals represent a broad range of facility types and locations. Second, the study was limited by the lack of available ward-level data for specific indicators of interest (both during the period prior to the study and during the study), the use of data from incident reporting systems (which may not reflect true numbers for ‘all patient falls’) and self-reported recall in surveys (on

activities such as clinician time taken to complete a TOP 5). Local recruitment of clinicians to respond to the clinician survey may present a potential response bias. At a number of the sites, however, the sample survey represented all clinicians working on the ward. The use of de-identified surveys made it difficult to ensure the same set of clinician respondents at each stage. The potential for positive response bias should also be noted for the carers survey, given that not all carers involved in providing TOP 5 strategies returned a survey. The increase in ‘satisfaction’ reported by carers and staff could relate to the increased positive interactions brought about by using TOP 5. Clinicians and carers, however, also reported perceived benefits for the patients with dementia and perceived improvements in knowledge for clinicians. Furthermore, the use of a log data pro forma for staff to record data at ward level during the course of implementation (e.g. number of TOP 5 strategies) is subject to the potential bias of self-reporting on measures known to be being monitored for the study. While the use of process survey data collected by staff in the cost analysis has limitations, internal consistency of data among sites indicates reliability.

Conclusion

Our findings indicate that the use of a simple, low-cost communication strategy for patient care is associated with improvements in carer and clinician experience, with early indications of potential benefits for patient safety and potential cost savings to health services. Minimally, TOP 5 represents ‘good practice’ with a low risk of harm or unintended consequences. The TOP 5 strategy has potential for broader application by health services applying patient-focussed approaches to care delivery.

Ethics approval

The study was approved by a state lead Human Research Ethics Committee at Northern Sydney Local Health District and site-specific approval was gained at each site.

Authors’ contributions

K.L., M.S., J.D. and R.V. developed the study idea; A.A. co-ordinated the intervention; A.A. and F.H. co-ordinated the surveys and data collection; F.H. conducted the analyses of ward log and clinician and carer surveys; R.R. and C.H. conducted the interrupted time series and cost analyses; K.L. validated the thematic analysis; K.L. wrote the first draft of the manuscript; K.L., A.A., F.H., M.S., J.D., R.R. and R.V. helped revise the draft manuscript; all authors reviewed and agreed on the submitted version of the manuscript.

Acknowledgements

We thank all the health care organisations, health care professionals and carers of patients with dementia who participated in this study. We also thank Professor Clifford Hughes for his helpful comments on an earlier draft of the manuscript. We acknowledge the permission of the Central Coast Local Health District for the use of the TOP 5 concept and adaptation of TOP 5 materials for this study.

Funding

This study was funded by the HCF Health and Medical Research Foundation awarded following a competitive grant process. The research was conducted independently from the funders. The funders had no role in the study design; collection, analysis, and interpretation of data; writing of the report; or the decision to submit the article for publication.

References

1. Gerteis ME-L. *Through the Patient's Eyes: Understanding and Promoting Patient-Centered Care*. San Francisco: Jossey-Bass, 1993.
2. Sartain K. Caring for patients with dementia: an exceptional case. *BMJ* 2013;**346**:27.
3. Alzheimer's Society. *Counting the Cost: Caring for People with Dementia on Hospital Wards*. London: Alzheimer's Society, 2009.
4. Draper B, Karmel R, Gibson D *et al.* The Hospital Dementia Services Project: age differences in hospital stays for older people with and without dementia. *Int Psychogeriatr* 2011;**23**:1649–58.
5. Watkin L, Blanchard M, Tookman A *et al.* 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**: 76–82.
6. Hitcho E, Krauss M, Birge S *et al.* Characteristics and circumstances of falls in a hospital setting: a prospective analysis. *J Gen Intern Med* 2004;**19**:732–9.
7. Lyketsos C, Steinberg M, Tschanz J *et al.* Mental and behavioral disturbances in dementia: findings from the Cache County Study on Memory in Aging. *Am J Psychiatry* 2000;**157**:708–14.
8. Margallo-Lana M, Swann A, O'Brien J *et al.* Prevalence and pharmacological management of behavioural and psychological symptoms amongst dementia sufferers living in care environments. *Int J Geriatr Psychiatry* 2001;**16**:39–44.
9. Mitchell SL, Teno JM, Kiely DK *et al.* The clinical course of advanced dementia. *NEMJ* 2009;**361**:1529–38.
10. Douglas S, James I, Ballard C. Non-pharmacological interventions in dementia. *Adv Psych Treat* 2004;**10**:171–7.
11. Department of Health (UK). *The Use of Antipsychotic Medication for People with Dementia: Time for Action*. London: Department of Health, 2009.
12. The Royal Australian and New Zealand College of Psychiatrists. The use of antipsychotics in residential aged care. 2011. http://www.bpac.org.nz/a4d/resources/docs/RANZCP_Clinical_recommendations.pdf (26 June 2014, date last accessed).
13. Liperoti R, Pedone C, Corsonello A. Antipsychotics for the treatment of behavioral and psychological symptoms of dementia (BPSD). *Curr Neuropharmacol* 2008;**6**:117–24.
14. Ballard C, Howard R. 'Neuroleptic drugs in dementia: benefits and harm'. *Nat Rev Neurosci* 2006;**7**:492–500.
15. Jurgens FJ, Clissett P, Gladman JR *et al.* Why are family carers of people with dementia dissatisfied with general hospital care? A qualitative study. *BMC Geriatrics* 2012;**12**:57.
16. Bridges J, Flatley M, Meyer J. Older people's and relatives' experiences in acute care settings: systematic review and synthesis of qualitative studies. *Int J Nurs Stud* 2010;**47**:89–107.
17. Dewar B, Tocher R, Watson W. Enhancing partnerships with relatives in care settings. *Nurs Stand* 2003;**17**:33–9.
18. Hesselink G, Schoonhoven L, Plas M *et al.* Quality and safety of hospital discharge: a study on experiences and perceptions of patients, relatives and care providers. *Int J Qual Health Care* 2013;**25**:66–74.
19. Hartikainen S, Lonnroos E, Louhivuori K. Medication as a risk factor for falls: critical systematic review. *J Gerontol A Biol Sci Med Sci* 2007;**62**:1172–81.
20. Alzheimer's Society and Royal College of Nursing. *'This is Me'*. London: Alzheimer's Society, 2010.
21. Grol R, Wesling M (eds). *Improving Patient Care: Implementing Change in Health Care*, 2nd edn. West Sussex: John Wiley & Sons, 2013.
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psych* 2006;**3**:77–101.
23. Wooldridge JM. *Introductory Econometrics: A Modern Approach*, 2nd edn. Cincinnati: South-Western College Publishers, 2003. Ch 14.
24. Lamis RL, Kramer JS, Hale LDS *et al.* Fall risk associated with inpatient medications. *Am J Health-Sys Pharm* 2012;**69**:1888–94.
25. Huybrechts KF, Gerhard T, Crystal S *et al.* Differential risk of death in older residents in nursing homes prescribed specific antipsychotic drugs: population based cohort study. *BMJ* 2012;**344**:e9777.
26. Food and Drug Administration (US). Public Health Advisory: Deaths With Anti-psychotics in Elderly Patients With Behavioural Disturbances. US Department of Health and Human Services. 2005. <http://www.fda.gov/drugs/drugsafety/postmarketdrugsafetyinformationforpatientsandproviders/drugsafetyinformationforhealthcareprofessionals/publichealthadvisories/ucm053171.htm> (26 June 2014, date last accessed).
27. Committee on Safety of Medicines (UK). Atypical Anti-psychotic Drugs and Stroke. Department of Health (UK). 2004. <http://www.mhra.gov.uk/home/groups/plp/documents/websitesresources/con019488.pdf> (26 June 2014, date last accessed).
28. Schneider LS, Dagerman K, Insel PS. Efficacy and adverse effects of atypical antipsychotics for dementia: meta-analysis of randomized, placebo-controlled trials. *Am J Geriatr Psychiatry* 2006;**14**:191–210.