Prevention of in-hospital falls: a multi-site audit and assessment of best practice implementation

Matthew Stephenson
Alexa McArthur
Kristy Giles
Craig Lockwood
Edoardo Aromataris
Alan Pearson

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Lay summary

Patient falls are a significant problem in hospitals and result in complications for patients and increased healthcare costs. Injuries resulting from falls can range from minor bruising to serious injuries such as fractures, and in some cases can lead to permanent disability or death. The impacts of falls on patient outcomes, length of stay, and the associated costs to the healthcare system are significant. Many in-hospital falls are preventable. The aims of this project were to conduct assessments of falls prevention practices at multiple hospitals around Australia, to implement strategies to promote best practice, and to assess the effects of these strategies in improving compliance with best practice and reducing in-hospital falls.

The project demonstrated sustained improvements in falls prevention practices for all hospitals that participated. These improvements in practice did not lead to a reduction in the number of reported falls in participating wards over the project period. It is likely, however, that improved falls education for healthcare professionals led to increased reporting of falls, especially those not resulting in injury which may have previously gone unreported. If healthcare staff did start to report more of these falls then the true number of falls would have decreased during the project period. This project provides valuable knowledge on the use of evidence in clinical practice, specifically for evidence-based prevention of in-hospital falls, which may be useful for hospitals Australia-wide to improve their falls prevention practices. Best practice in falls prevention in Australian hospitals will lead to improved safety and quality of care, resulting in benefits for patients and the healthcare system.

Executive summary

Background

Prevention of in-hospital falls, one of the most common adverse events in Australian hospitals, is of vital importance to improve patient safety and quality of care. Prevention of falls results in improved patient outcomes, reduced complications and length of stay, and reduced costs to the healthcare system.

Aims

The aims of this project were to assess falls prevention practices against evidence-based best practice by conducting a multi-site audit at public and private Australian hospitals, and to implement strategies to promote and work towards best practice in falls prevention. The project aimed to assess the effects of implemented strategies on compliance rates with the identified audit criteria and on fall rates in participating wards and hospitals. In addition, the project aimed to identify and describe barriers and facilitators to the conduct of an evidence implementation project in falls prevention in the acute hospital setting.

Methods

An evidence review was conducted to identify and summarise the best available evidence on in-hospital falls prevention. This was used to develop audit criteria that were informed by the evidence and had been discussed with clinicians regarding how the criteria should be interpreted and assessed in the clinical setting. Nominated individuals from nine hospitals around Australia were recruited and trained in evidence implementation and clinical leadership. These trained leaders then conducted a baseline audit cycle in their hospital setting, sampling from a medical ward and a surgical ward. Following the baseline audit, barriers to compliance were identified and targeted with specific interventions to promote best practice. A follow-up audit cycle assessed the effects of these implemented interventions on compliance rates.

A second follow-up audit, conducted up to six months after the first follow-up cycle, assessed the sustainability of practice change. Fall rate data from the participating wards was analysed to compare fall rates following the implementation phase of the project with retrospective fall rates. A focus group methodology was used to investigate the experiences of the trained leaders with their implementation projects and to explore barriers and facilitators in their hospitals.

Results

The evidence review identified eight recent systematic reviews and three evidence-based practice guidelines for in-hospital falls prevention that were appraised for quality and used to inform the development of audit criteria for best practice. In all, eight audit criteria were developed that included the domains of risk assessment, education and the use of targeted interventions. The baseline audit results for overall compliance (all audit criteria combined) ranged from 31% to 77% for participating hospitals, with a mean overall compliance of 50%.

Common barriers to best practice identified across hospitals included insufficient staff education regarding falls risk assessment and prevention strategies (leading to a lack of knowledge about when to conduct risk assessments and appropriate strategies for managing identified risks) and inadequate provision of education to patients and their carers, including a lack of appropriate educational resources. Hence, the most common strategies utilised during the implementation phase of the project centred around education, including multidisciplinary staff education sessions, and development of staff education packages and education materials for patients and their carers.

At the first follow-up audit, all hospitals showed improvements in compliance rates with increases from the baseline cycle of between 3% and 36%, resulting in overall compliance rates of between 60% and 87% (mean overall compliance 75%). These increased compliance rates were, in general, sustained at the second follow-up audit (mean overall compliance 74%). Audit data for every individual criterion showed increased compliance at the first and second follow-up cycles compared to the baseline cycle, with mean increases ranging from 10% to 55%. At baseline, compliance rates for individual criteria ranged from 30% to 73% and at follow-up cycle 2, compliance rates ranged from 57% to 98%. There were minimal differences observed when comparing compliance rates in medical wards versus surgical wards and in private hospitals versus public hospitals.

Fall rates in participating wards and hospitals for the nine-month period following the implementation phase of the project were similar when compared to retrospective falls rates for the corresponding period a year earlier. This suggests that the improvements seen in falls prevention practices during the project did not translate into a reduction in the number of falls. There are several plausible explanations for this, including the timeframe over which fall rate data was collected not being long enough to observe the effects of improved practice, or the possibility that the underlying fall rates may have decreased but were not reflected in the data due to improved reporting of fall incidents as a result of the staff education drive.

Qualitative analysis of the focus group discussion with trained leaders highlighted the importance of organisational support in establishing and facilitating a successful falls prevention implementation project. At the ward level, clinical leadership and establishing a culture of teamwork, responsibility and ownership was also identified as important. Education is seen as a crucial factor to improve falls prevention practices and healthcare professionals value education that is evidence-based and seen as directly relevant to their clinical setting.

Conclusions

This study established evidence-based best practice for in-hospital falls prevention and demonstrated sustained improvements in falls prevention practices in Australian hospitals via a multi-site audit and evidence implementation process. The enhanced knowledge and understanding of the mechanisms, barriers and facilitators to implementation of evidence in clinical practice generated by this study will assist hospitals to achieve practice change in falls prevention and other aspects relevant to safety and quality of patient care.

Introduction

The risk and burden of in-hospital falls

Falls are one of the most common adverse events experienced in hospitals. Falls are commonly defined as "inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest in furniture, wall or other objects".[1 (p.1)] Admission to hospital is often associated with a change in physical or cognitive condition, which when combined with unfamiliar surroundings presents a high risk for falls.[2] Whilst the elderly are at greatest risk, all patients may have some risk factors increasing their chances of experiencing falls. These may be related to their medical condition or the hospital environment.[3] Reported in-hospital fall rates vary significantly depending on the setting.[4, 5] In the acute setting rates from 2% to 5% have been reported, and in rehabilitation settings up to 46% of patients have been recorded as falling as least once during their hospitalisation.[6] In Australia in 2010-11, more than 22,000 falls resulting in patient harm were recorded as occurring in a health service area.[7] This represents a rate of 2.5 per 1000 separations, with a higher rate in public hospitals (3.3) than in private hospitals (1.3).

Injuries resulting from falls can be serious, and in some cases can lead to permanent disability or death. Falls can result in increased length of hospital stay, reduced quality of life and can leave patients with emotional distress and fear of a repeat fall.[2] Falls are not only costly to the individual, but they are costly to the community. The proportion of the Australian population that is over 65 years of age is increasing, which will result in increased demand for health services for falls-related injuries. Unless effective preventive strategies are utilised, the cost attributable to falls-related injury is projected to increase three-fold to $1375 million per annum by 2051.[8]

A 10-year cohort study assessed the risk and burden of in-hospital falls and fall-related fractures using data collected from Victorian public hospitals.[9] The dataset included more than three million discharge episodes, with 0.64% of these coded with an in-hospital fall. Of those in-hospital falls, 17.6% were coded with a falls-related fracture, and of those fractures, 44.4% were hip fractures. The proportion of in-hospital falls increased with age, with 79% of falls occurring in patients over 70 years of age. Younger patients did experience falls, with patients aged 18-39 years accounting for 3.2% of falls and more than 11% of falls occurred in patients under the age of 60. In-hospital falls were shown to be associated with increased mortality (hazard ratio 1.3, 95% confidence interval 1.3-1.5) and length of hospital stay (median 19 days vs 5 days, $p<0.0001$).[9]

There are a number of factors that can contribute to in-hospital falls, including patient characteristics, staff behaviour and the hospital environment.[10] Some activities such as getting out of bed increase the risk of falling. In addition, the risk of a fall can be influenced by the number and type of medications being taken by a patient, and patients that have

experienced a fall are at greater risk of a future fall.[11] A large number of interventions for preventing in-hospital falls have been recommended in the literature. These include environmental modification (such as installation of hand rails or non-slip flooring), reviewing medication, providing safer footwear to patients, encouraging regular exercise, using targeted fall care plans, and detection and treatment of conditions such as delirium, incontinence or eyesight problems.[10] Most current literature recommends a comprehensive and multifactorial approach to falls prevention, involving the use of risk assessment tools and targeted interventions.[10, 12-15]

Clinical audit and evidence-based falls prevention

Clinical audit is important in healthcare as it is an established method to identify which areas of current practice require change to improve the quality of care.[16] It seeks to improve the quality of care by comparing current clinical practice against agreed standards of predetermined best practice.[17] Within the literature, clinical audit has been described as being pivotal to the development of an evaluative culture among clinicians and within clinical teams, and it contributes to continuing professional and educational development as well as to individual and group learning on how to improve standards of care delivery.[17] Clinical audit typically involves evaluation of current practice, implementation of practice that conforms to the best available evidence, i.e. research and/or expert opinion, and one or more follow-up audit cycles to assess the effect of the implemented changes.

The Joanna Briggs Institute's (JBI) model for evidence-based health care provides a framework for the integration of pragmatic understandings of what constitutes good evidence within particular clinical contexts in order to increase the quality of care.[18] The focus on evidence for improvement of health highlights that this model intends to promote engagement, to impact clinical practice and lead to improved outcomes.[19] The JBI model draws on the best available evidence, but goes further, completing the cycle from research to implementation. The JBI approach uses a research protocol based approach to sampling, measurement and evaluation of outcomes, but with a focus on using evidence in practice to test interventions, identify barriers and resources most effective in overcoming barriers to best practice.[20]

Evidence-based guidelines for preventing falls are available and provide specific information for Australian hospital settings.[13] In addition, most Australian hospitals have fall prevention policies that include the use of fall risk assessment tools. Despite access to these resources, many preventable falls continue to occur in Australian hospitals. The aims of this project were to develop audit criteria based on the best available evidence, and to use these criteria to assess falls prevention practices in public and private hospitals around Australia. Furthermore, this project sought to identify barriers to compliance with best practice and to implement and assess the effects of strategies to promote and work towards best practice in falls prevention. In addition, a qualitative component sought to investigate the experiences of

trained leaders from participating hospitals with the audit and implementation process, including barriers and facilitators of specific strategies and the project as a whole.

Overall, the project compared falls prevention practices in Australian hospitals to evidence-based best practice and assessed strategies used to promote best practice, using both quantitative and qualitative methodologies. To tackle the ongoing issue of in-hospital falls, strategies that are informed by the best available evidence and that are applicable for everyday clinical practice are greatly needed to reduce the burden of falls on patients and the healthcare system.

Aims and objectives

The overall aim of this project was to assess falls prevention practices against evidence-based best practice by conducting a multi-site audit at public and private Australian hospitals, and to implement strategies to promote and work towards best practice in falls prevention. A staff member from each participating hospital was trained in evidence implementation and clinical leadership to facilitate best practice implementation in falls prevention from within participating wards at each site.

The specific objectives were to:

1. Establish evidence-based best practice for falls prevention and develop audit criteria to assess falls prevention practices.
2. Identify barriers to compliance with best practice, implement strategies to overcome these barriers, and assess the effects of these strategies on compliance with best practice.
3. Compare fall rates following the implementation of strategies in participating wards to retrospective fall rates prior to the intervention, to assess the impact of the project on this outcome measure.
4. Conduct focus groups with trained leaders from participating hospitals to investigate their experiences with auditing and best practice implementation, and to identify key barriers and facilitators to the process.

Methodology

Evidence review

The evidence review sought to identify and summarise the best available evidence regarding the effectiveness of acute in-hospital falls prevention strategies for adult patients. An exhaustive search was conducted for relevant systematic in PubMed, CINAHL, Embase, the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects (DARE), and the Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports. See Appendix I for the search strategies used for the major databases. A search for grey literature was also performed in Google Scholar and via a targeted search of government and organisational websites, with a specific focus on identifying relevant and recent practice guidelines on falls prevention in hospital settings. The search was limited to systematic reviews and practice guidelines that were published between 1January 2008 and 1January 2013 and to those published in the English language. Titles and abstracts of the retrieved citations were screened for inclusion, as well as the full-text publication for those citations that appeared to conform to the eligibility criteria (Table 1). The eligible systematic reviews were evaluated for quality using the quality appraisal criteria detailed in Table 2. For appraisal of practice guidelines, these were assessed against the item descriptions from the AGREE II-Global Rating Scale (AGREE II-GRS) instrument (http://www.agreetrust.org/resource-centre/agree-ii-grs-instrument/). Numeric scores were not calculated during the critical appraisal process; rather the studies were assessed on the basis of their strengths and limitations. Data were extracted from the included studies and brought together as an evidence review.

Table 1: Eligibility criteria

Population	Patients aged over 18 years in the acute hospital setting
Intervention	Falls prevention strategies
Outcomes	Prevalence of in-hospital falls
Study Designs	Systematic reviews, meta-analyses and practice guidelines

Table 2: Quality appraisal criteria

Systematic reviews: Is the review question clearly and explicitly stated? Was the search strategy appropriate? Were the inclusion criteria appropriate for the review question? Were the criteria for appraising studies appropriate? Was critical appraisal by two or more independent reviewers? Were there methods used to minimise error in data extraction? Were the methods used to combine studies appropriate?	Yes / No / Unclear

Development of audit criteria

The development of audit criteria for in-hospital falls prevention was informed by the best available evidence identified in the evidence review. In addition to using the best available research derived evidence to inform the specific criteria, they were also established in conjunction with clinicians to determine their relevance and applicability to the clinical setting and the feasibility of their use to conduct a clinical audit within the acute care setting. An initial draft of the audit criteria was developed on the basis of the evidence review. Copies of falls prevention and management policies were requested from hospitals that had agreed to participate in the multi-site audit and these were reviewed to ascertain the degree to which the policies were in line with the best available evidence and proposed audit criteria. This process ensured that compliance with any of the proposed audit criteria would not contravene hospital policy at any of the participating hospitals, which was unlikely but prudent to rule out. This also allowed JBI researchers to gain valuable knowledge of the risk assessment tools used and procedures followed at the participating hospitals.

The proposed audit criteria were discussed as a group with the clinicians who were to conduct the audit at their hospital. This was done during the first intensive training residency at JBI for the clinical leaders in falls prevention (see 'Training leaders in evidence implementation' below). Through this group discussion it was determined how the criteria would be measured in practice in their settings. This was important in order to establish clear guidelines regarding how each criterion would be measured to ensure consistency across hospitals participating in the multi-site audit. Once confirmed, the audit criteria were uploaded into the Joanna Briggs Institute's online clinical audit and feedback software, JBI Practical Application of Clinical Evidence System (JBI PACES, http://paces.jbiconnectplus.org/). JBI PACES allows users to compare audit data with other organisations of a similar size or setting and provides ideas on how to facilitate a change process in relation to the use of evidence in practice on a specific activity or intervention.

Training leaders in evidence implementation

This project recruited interested staff members from hospitals around Australia to be trained in clinical audit/feedback processes and evidence implementation. The aim of the training was to facilitate clinical leadership and the use of evidence in clinical practice. To obtain a diverse sample representative of Australian hospitals, one staff member was sought from a public hospital and one from a private hospital in each of the five mainland states of Australia. Nursing Directors at suitable hospitals were contacted to invite their hospital to participate in the study, and to nominate an interested staff member to participate in the training program and to be responsible for the conduct of the project at their hospital. Nursing Directors and nominated individuals were provided with an information sheet outlining the expectations of the project prior to any decision to participate and were asked to sign consent forms once a decision to participate had been made (see Appendix II for the information sheet and consent forms).

Ten participants from hospitals around Australia were recruited to the project; however one participant withdrew during the first intensive training week due to other work commitments (including accreditation which was occurring at the participant's hospital at same time as this project). Attempts were made to recruit another staff member from this public hospital; however it was not possible to find a replacement who could come on board at this stage of the project. This left nine participants who completed the program. The participants were predominantly nurses working in a variety of roles. These included research, safety and quality, clinical specialties, policy, administration and management, registered general nursing duties in a practice setting, lecturers and nurse leaders. They were from private and public hospitals across Queensland, New South Wales, Victoria, South Australia and Western Australia. The settings they worked in varied from acute tertiary referral hospitals to specific settings such as safety and quality, neurosurgery, nursing administration, general medical, quality and risk as well as research.

The objective of this training program was to enable participants to explore strategies to promote evidence utilisation and application as it relates to falls prevention and to collaboratively develop understandings related to clinical leadership and change management in healthcare. The specific objectives of this program were to prepare participants to:

- Discuss and describe the effectiveness of current approaches to the implementation of evidence-based practice in falls prevention;
- Critique current frameworks and implementation strategies related to falls prevention;
- Design/construct a framework for falls prevention strategies;
- Develop a comprehensive project plan that articulates clear objectives and strategies to implement falls prevention within the local health environment, using an evidence-based practice approach;
- Conduct clinical audits as required;
- Introduce and implement falls prevention initiatives within the local health environment as per the project plan;
- Identify, manage and mitigate risks;
- Monitor and evaluate progress and outcomes; and
- Use the PACES and GRIP (Getting Research Into Practice) online programs; and
- Maximise their clinical leadership potential.

The program involved:

- A stage 1 intensive week long training residency at the Joanna Briggs Institute (Week 1: 20–24 May 2013)
- The conduct of clinical audits and implementation initiatives in the trained leaders' practice sites
- A stage 2 week long intensive training residency at the Joanna Briggs Institute (Week 2: 18–22 November 2013).

Stage 1: Intensive training residency

Participants from each state attended the Joanna Briggs Institute in Adelaide for a period of five days in May 2013. During this period, participants attended a series of presentations (by Institute staff and clinical leaders from SA Health) and group activities carefully designed to facilitate the participants' development of core knowledge surrounding evidence utilisation. In addition, there was a one-day clinical leadership course focused on change management conducted by the Proteus Group, an Australian leadership training company (http://proteusleadership.com). Using the knowledge gained during this period, participants developed a project proposal grounded in the best available evidence to introduce and implement falls prevention strategies within their healthcare setting. Participants were also required to work collaboratively with their colleagues at their site in developing a consistent framework, guidelines, protocols, evaluation criteria and other associated documents for implementation of falls prevention that met the needs of the local health network and Australia as a whole.

Audit and implementation phase

Trained leaders designed and implemented an evidence-based improvement project with a focus on the introduction and implementation of falls prevention strategies in their own workplace, using the JBI PACES and GRIP audit and change promotion tools, over a period of 25 weeks. The PACES and GRIP framework for promoting evidence based healthcare involves three phases of activity:

1. Establishing a multidisciplinary team for the project and undertaking a baseline audit based on criteria informed by the evidence.
2. Reflection on the results of the baseline audit, and design and implementation of strategies to address non-compliance found in the baseline audit which was informed by the JBI GRIP framework.
3. A follow-up audit aimed at assessing the outcomes of the interventions implemented to improve practice, and identifying future practice issues to be addressed in subsequent audits.

During this period, JBI staff maintained contact with trained leaders by email, phone and group teleconferences. Following a baseline audit at each location (conducted during June 2013), barriers to compliance were identified by the trained leaders and the wider project team within each hospital. Strategies were then developed and implemented to promote and work towards best practice. A follow-up audit at each location (conducted in October/November 2013) assessed the effect of these strategies on falls prevention practices.

Stage 2: Intensive training residency

At the completion of the first follow-up audit, the trained leaders spent another five days at JBI in Adelaide in November 2013. During this period, the trained leaders developed their project report for publication and engaged in a program of interactive discussion to specify the learning achieved and to develop ongoing future plans related to falls prevention at their respective hospital sites.

Approximately five to six months after the initial follow-up audit, a second follow-up audit was conducted by the trained leaders to assess the sustainability of interventions implemented during the project period. All nine trained leaders completed this second follow-up audit around March/April 2014.

Participants who completed this program were expected to implement and maintain evidence-based systems in their own practice and at an organisational level, through clinical leadership and stewardship processes. The trained leaders also join the Alumni of the Joanna Briggs Institute Clinical Fellowship (http://www.joannabriggs.org/alumni.html) and are encouraged to maintain connection with one another for future involvement in other implementation projects.

Clinical audits and evidence implementation

Participating hospitals were asked to nominate one medical ward and one surgical ward to be included in the study. Ideally, the wards nominated would have fall rates that were above the hospital average and hence were environments in which the falls prevention project could have a greater effect. Two of the hospitals did not have separate medical and surgical wards so one large or two smaller mixed wards were included instead. For auditing purposes, the anticipated sample size was 30 per ward for each audit criterion (or 60 in the case of a large mixed ward). For ease of auditing and to allow completion within the time frame of the study, audit sampling was by convenience.

Trained leaders were responsible for auditing within the participating wards at their hospital site. Using the evidence-based audit criteria that had been discussed with them during the first intensive training residency at JBI, the trained leaders conducted the baseline audit during June 2013. Practicalities of how each criterion should be assessed had been discussed with the leaders during their first intensive training residency at JBI and they were provided with a reference guide on how to assess each criterion (refer to Table 5 in the 'Results' section), to promote consistency in auditing across all of the hospital sites. The trained leaders entered their audit results into the JBI PACES online software which displays the data graphically indicating the percentage compliance for each audit criterion for individual and aggregated wards. Presentation of results in this way facilitated feedback of audit results to relevant stakeholders, including staff in the participating wards and hospital/ward managers.

Following the baseline audit, the trained leaders used the GRIP (Getting Research into Practice) section of JBI PACES to identify barriers preventing compliance with specific audit criteria and to develop strategies that may be used to target these barriers and increase compliance with best practice. It was anticipated that trained leaders would work in conjunction with nurse unit managers and other staff within the hospital and participating wards in the development and implementation of appropriate strategies. Support was provided by JBI researchers via regular group teleconferences and one-on-one support when required.

The trained leaders had approximately three to four months for the implementation phase of the project. This phase involved implementation of the strategies identified to target barriers to compliance for specified audit criteria in need of improvement. The first follow-up audit was conducted in October/November 2013, prior to participants returning to JBI for the second intensive training residency in late November 2013. Follow-up audit data was entered into JBI PACES and the results were compared to those of the baseline audit to assess the effects of strategies employed during the implementation phase. A further follow-up audit cycle was conducted in March/April 2014 to ascertain the sustainability of any improvements in falls-prevention practices.

Fall rate data

Nursing directors/hospital managers were made aware of the intention to collect fall rate data prior to deciding to be involved in the project, with the understanding that only aggregated data would be published and that no data identifiable to a particular hospital would be made available outside of the JBI researchers involved in the project. Trained leaders were provided with a template (Appendix III) and requested to retrieve the applicable data for analysis by project researchers. In some instances, the nursing directors assisted with the retrieval of the data. Monthly fall numbers as well as monthly patient day figures (also called bed days or occupied bed days) were collected from May 2012 to March 2014. Fall rates were expressed as the number of falls per 1000 patient days. Data was collected hospital-wide for each site and also for the wards participating in the project.

Data analysis and statistics

Audit data was entered into JBI PACES by each trained leader who was responsible for the audits at their hospital. Project researchers extracted the data for each hospital from JBI PACES, including the sample size for each criterion for each participating ward and the number reported to meet each criterion. The data was extracted into Microsoft Excel (Microsoft Corporation, Washington, USA) and the percentage compliance was calculated for each criterion, ward and audit cycle. For ease of visual comparison, compliance rates were colour coded with red for less than 50% compliance, yellow for between 50% and 75% compliance and green for greater than 75% compliance. Graphing and statistical analysis was performed in GraphPad Prism (GraphPad Software Inc., California, USA). Graphs show mean percentage compliance and error bars represent the standard error of the mean. For the comparison of follow-up audits to the baseline audit, two-way Analysis of Variance (ANOVA) was performed using Dunnett's multiple comparisons test to determine the mean difference (and 95% confidence interval) in percentage compliance between audit cycles. To compare audit results between medical and surgical wards or private and public hospitals, the two-way ANOVA using Sidak's multiple comparisons test was used to calculate the mean difference (and 95% confidence interval) in percentage compliance between ward type and

hospital type. Mean differences with a positive value indicate an increase in percentage compliance and mean differences with a negative value indicate a decrease in percentage compliance. Statistical significance was considered as a p-value less than 0.05.

Focus group

The falls prevention trained leaders were invited to participate in a focus group to discuss their experiences of the project. All nine trained leaders consented to participate in the session, and to a live recording and verbatim transcript being developed from the session. As per ethical requirements, the members of the group were able to withdraw at any time, and informed that withdrawing was a right of participation. Further to this, the participants were advised that confidentiality and anonymity would be preserved by ensuring that no data that could be used to identify an individual would be presented in the project analysis or reporting. Consent was sought after an information session, and all participants were given an information sheet related to the focus group (see Appendix IV) and had the opportunity to raise questions with the research group prior to either signing consent or withdrawing from this part of the study.

Data collection was based on audio recording of the focus group discussion. The digital audio file was saved on a secure drive and was transcribed by a member of the project team. The transcript was used for data analysis. The focus group questions were developed by the research team, and used the process of clinical audit to 'map' the different domains of activity associated with the falls project.[21] The questions were developed through a group process and presented through a facilitated discussion with the focus group members. The facilitator was a senior researcher who ensured that as key questions were asked, that there was even group participation, that 'deeper' probing follow-up questions were asked in order to trigger detailed descriptive responses from the participants about their experiences within the project and that the focus group session stayed on topic. The session ran for two hours and was held at JBI headquarters in the University of Adelaide. Members were seated in a circle to enable them to see and engage with one another and to avoid having a 'head of table' power imbalance in the group, and a conventional focus group methodology was followed.[21]

Qualitative descriptive analysis was the approach adopted for the focus group data. While the best-known approaches to qualitative analysis are the interpretive methodologies such as ethnography, phenomenology and grounded theory, these are all approaches where the researcher must transcend the stated views of participants and reach a higher order interpretation from the data.[22] Such interpretations are theoretically rich, often arise from thick data, and yet lack descriptive power as the higher order theory generated is the researcher's interpretive extension from the data, rather than a grounded description of participant perspectives.[23] Given the nature of this project and the need to provide practical insights into the stated views and experiences of the focus group participants, these interpretive approaches were rejected in favour of the descriptive approach that would retain not only the implied meaning but also the spoken words of the participants in direct

correlation with the analysis.[22, 23] Sanderlowski describes qualitative descriptive research as a process in which language is not interpreted but the vehicle for communication.[22]

Data analysis in qualitative descriptive research is based on content analysis of a series of questions.[22] In this study, questions were used to guide the focus group and were embedded in a focus group guide for the group facilitator (Appendix V). On this basis, the transcript was broken into lines of code based on identification of meaning (supported by excerpts – these being the spoken words of the focus group participants). These were then brought together as 'categories' supported by selected excerpts from the transcript (excerpts being selected based on descriptive relevance to the category). The process is essentially a summative process, where observations and statements remain as they were spoken; even when codes arising from the text are combined into categories, they are not changed in meaning via an interpretive process and remain 'as recorded'. The 'as recorded' nature of qualitative descriptive research allows for a straight descriptive summary that readers can gain insight or develop actions from as they are data-driven rather than researcher interpretations arising 'from' the data.[22, 23] Visually, the process of analysis is illustrated in Figure 1.

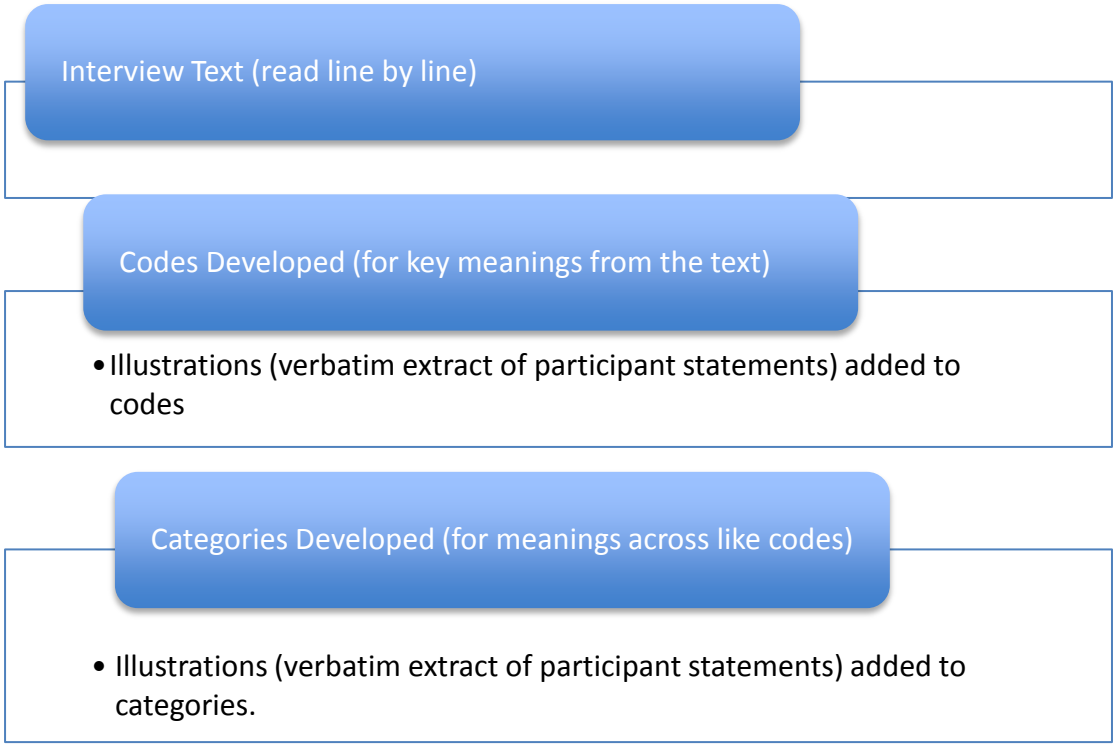


Figure 1: Focus group data analysis

The audio recording of the focus group was transcribed and the interview text read line by line. Key meanings from the text were used to develop codes, with each code accompanied by a participant statement (illustration). Categories were then developed by combining codes that had similarities in meaning. A selected participant excerpt was used as an illustration to support each category (excerpts were selected based on descriptive relevance to the category).

The components of the project formed the framework for the focus group questions, hence the results are presented under headings related to the sequenced activities within the falls project. This starts with initiation of the project, followed by baseline data collection and the intervention phase of the study. The focus group was undertaken while the study was in progress, hence the formal data is limited to activities up to the first follow-up audit phase; however, a follow-up focus group discussion via telephone interview of a sub-group of participants was also undertaken with five of the nine trained leaders, and the analysis of that data is reported at the end of the 'Results' section.

Ethics

Ethics approval for the overall project was granted by the Royal Adelaide Hospital Research Ethics Committee (Approval number 130207). Site-specific ethics approval was granted for each participating hospital site by the relevant local ethics committee.

Results

Evidence review

The search of the literature identified 333 potentially relevant citations following the removal of 28 duplicate results. Of these 333 citations, 318 were excluded upon preliminary screening of title and abstracts against the eligibility criteria. Fifteen articles were retrieved with eight systematic reviews selected for quality appraisal following full text examination. Figure 2 depicts this in a flow chart. All of the retrieved systematic reviews were assessed to be of adequate methodological quality and were included in the evidence summary of the best available evidence on in-hospital falls prevention.

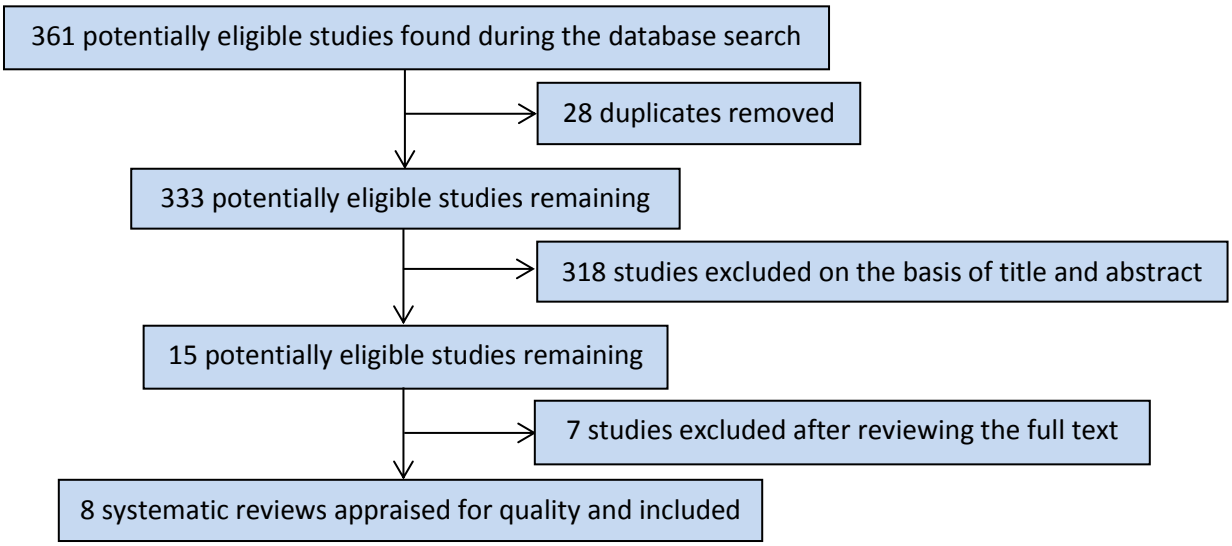


Figure 2: Study selection flow chart

The targeted search of government and organisational websites identified three relevant and recent evidence-based guideline documents. Two of these were from the Australian Commission on Safety and Quality in Healthcare, with guidance provided for preventing falls and harm from falls specifically in Australian hospital settings.[13, 24] The third document was from the Agency for Healthcare Research and Quality in the USA, which provided guidance and tools for prevention of in-hospital falls.[25] All of these guideline documents were considered to be of sufficient quality to be included in the evidence summary.

Table 3 provides characteristics of the studies included in the evidence summary and were subsequently used to inform the audit criteria. In total, eight systematic reviews and three evidence-based guidelines were included.

Table 3: Characteristics of included studies

Reference	Study Type	Intervention(s)	Conclusions
Stern et al.[10] (2009)	Systematic review of 7 randomised controlled trials (RCTs).	Exercise; vitamin D supplementation; patient education; targeted risk factor reduction plan; multidisciplinary multifactorial programs.	Education package, targeted risk factor reduction plan and multidisciplinary multifactorial programs most effective for reducing fall rates.
Choi et al.[26] (2011)	Systematic review of 34 studies (both randomised and non-randomised studies).	Focus on three distinct areas in fall prevention interventions: 1) physical environment 2) care process and culture 3) use of technology.	A multi-systemic fall prevention model, including both extrinsic and intrinsic risk factors, may contribute to a reduction in falls rates.
Cameron et al.[12] (2010)	Systematic review of 17 RCTs.	Multifactorial interventions.	Interventions targeting multiple risk factors decreased falls rates.
Hempel et al.[27] (2012)	Systematic evidence review.	Range of fall prevention interventions.	Many approaches are successful in reducing fall rates. However, many interventions to reduce falls are complex, multifaceted and specific for a particular setting, so general recommendations are unhelpful. Suggested interventions focus on individual settings, taking into account patient and staff needs, as well as considering current approaches to falls prevention within that setting.
Halm et al.[28] (2011)	Systematic evidence review of 11 studies (1 meta-analysis, 2 RCTs, 2 observational and 6 quality	In-depth falls risk assessment; diagnosis; outcomes management; care management; education of patients, family members and	Individualised patient care plans effective when used in conjunction with unit level practices, such as observational rounds, toileting before administering pain medication, and assessment of

	improvement).	healthcare staff.	patient's ability to mobilize.
Dibardino et al.[29] (2012)	Systematic review and meta-analysis of 6 primary research studies.	Multidisciplinary fall prevention strategies.	Multidisciplinary fall prevention strategies had a significant but small effect on fall rates.
Coussement et al.[30] (2008)	Systematic review of 8 studies (6 RCTs and 2 controlled trials).	Multifactorial falls interventions.	No conclusive evidence that hospital fall prevention programs decrease number of falls. However, targeting patient's most important risk factors for falls did reduce number of falls. Regard patients who have already fallen as high risk for future falls.
Miake-Lye et al.[31] (2013)	Systematic review of 4 existing reviews and 2 studies.	Implementation strategies for multicomponent falls prevention interventions.	Success of multicomponent interventions depends on leadership support, involvement of frontline clinical staff to act as 'change champions', multidisciplinary team input, pilot testing intervention, and engagement of all staff to ensure buy-in of the intervention goals.
Ganz et al.[25] (2013)	Evidence based guideline and falls toolkit from Agency for Healthcare Research and Quality (USA).	Existing falls risk assessment tools.	Suggested using falls risk assessment tools for which reliability and validity data exist; but must also consider its ability to be integrated into the clinical setting with relative ease. They specifically suggested using the Morse Fall Scale or the STRATIFY Scale.
ACSQHC[13, 24] (2009 and 2012)	Evidence-based guidelines from Australian Commission on Safety and Quality in Healthcare.	Strategies to assist with implementation of falls prevention strategies and guidelines.	Criteria included governance and systems for preventing falls, screening and assessing risks of falls and harm from falling, preventing falls and harm from falling, and communicating with patients and carers.

Evidence from one of the included systematic reviews highlighted three complex factors that require consideration in relation to fall prevention strategies:[26]

- The physical environment, including interventions such as environmental assessment/modifications, nuclear unit layouts, decentralised nurses' workstations, low beds, chair types (heights and depths for easy transfer, chairs with arm rests, and secured handrails), non-slip floors, shower seats, toilet seats with appropriate heights, and removal of bedrails.
- Hospital culture and care processes, including fall risk assessment, medication review/modifications, visual signs/identification bracelets, patient/family education, prompted/regular toileting.
- Use of technology, including nurse call bells, bed alarms, footwear, electronic low beds and hip protectors.

Multifaceted approaches toward fall prevention programs were found to be most effective, and for this reason it was difficult to link individual interventions with associated outcomes, which were a reduction in falls or fall-related injuries. This systematic review found that few hospitals had established environmental-related strategies within their multifaceted approach.[26]

Another systematic review assessed the effectiveness of various interventions in reducing falls, which were exercise, vitamin D supplementation, patient education, a targeted risk factor reduction plan and multifactorial intervention programs.[10] Interventions shown to be most effective were an education package (which was part of a larger intervention), the targeted risk factor reduction plan and multidisciplinary multifactorial programs. Issues raised in this review included the complexities of focusing on the acute hospital setting, acknowledging the difficulties in modifying fall prevention risk factors and interventions.[10]

Evidence from a clinical evidence review focusing on fall prevention in acutely and critically ill hospital patients suggested that priority areas include in-depth fall risk assessment, diagnosis, outcomes management, and care management and education of patients, family members and healthcare staff.[28] Individualised patient care plans are effective when used in conjunction with unit-level practices, such as observational rounds, toileting before administering pain medication, and assessment of the patient's ability to mobilise. Best practice also included: 1) environmental considerations such as flooring, lighting, observation, signposting, furniture and footwear, 2) identifying modifiable fall risk factors, 3) implementing interventions targeting modifiable risk factors, and 4) interventions to help decrease risk of injury to patients who fall.[28]

Evidence from a systematic review suggested that complex, multidisciplinary fall prevention strategies had a significant but small effect on fall rates within the acute inpatient setting.[29] Each included study reviewed used a fall risk assessment which then focused on individual patient interventions and modifiable fall risk factors. Evidence was reported as being limited in quality and quantity due to the complex nature of multidisciplinary fall intervention strategies which are difficult to compare as they vary between studies.[29]

Evidence from a systematic review with meta-analysis suggested that there was no conclusive evidence from the meta-analysis that hospital fall prevention programs decrease the number of falls.[30] Observations from individual studies found that targeting a patient's most important risk factors for falls did reduce the number of falls. In addition, there was a suggestion to regard any patients who have already fallen as high risk for future falls.[30]

Evidence suggested multicomponent inpatient fall prevention programs may decrease the falls risk by up to 30%.[31] Other evidence included:[31]

- Multicomponent fall prevention strategies included use of a validated fall risk assessment tool, staff and patient education, bedside signs and wristband alerts, footwear review, scheduled and supervised toileting, and medication review.
- Some of the included studies focused on implementation, evaluating the fall prevention program. Common factors of multicomponent interventions suggested that all the following were important to the 'success' of a program: leadership support, involvement of frontline clinical staff to act as 'change champions', multidisciplinary team input, pilot-testing the intervention, and engagement of all staff to ensure buy-in of the intervention goals.

Evidence from an extensive review evaluating hospital fall prevention interventions reported a large variety of approaches, many multifaceted, as successful in reducing the number of falls rather than completely eliminating falls.[27] Many of the interventions to reduce falls are complex, multifaceted and specific for a particular setting, so general recommendations are unhelpful. It was suggested that interventions focus on individual settings, taking into account patient and staff needs, as well as considering approaches to falls prevention within that setting.[27]

A clinical practice guideline that evaluated existing falls risk assessment tools for hospital settings suggested to use a tool for which reliability and validity data exist, but also with the ability to be integrated into the clinical setting with relative ease.[25] Suggested falls risk assessment scales include the Morse Fall Scale and the STRATIFY scale.

An evidence-based standard on falls prevention suggested strategies to assist with implementation in the clinical setting. The criteria included: 1) governance and systems for preventing falls, 2) screening and assessing risks of falls and harm from falling, 3) preventing falls and harm from falling, and 4) communicating with patients and carers.[13, 24]

Best practice recommendations arising from the evidence review

Based on the evidence review, a number of specific recommendations for in-hospital falls prevention were developed. The recommendations were graded using the JBI Grades of Recommendation. Grade A refers to a 'strong' recommendation for a certain health management strategy where (1) it is clear that desirable effects outweigh undesirable effects

of the strategy; (2) where there is evidence of adequate quality supporting its use; (3) there is a benefit or no impact on resource use, and (4) values, preferences and the patient experience have been taken into account. Grade B refers to a 'weak' recommendation for a certain health management strategy where (1) desirable effects appear to outweigh undesirable effects of the strategy, although this is not as clear; (2) where there is evidence supporting its use, although this may not be of high quality; (3) there is a benefit, no impact or minimal impact on resource use, and (4) values, preferences and the patient experience may or may not have been taken into account.

Best practice recommendations for in-hospital falls prevention based on the best available evidence include:

- Consideration must be given to the physical environment, hospital culture and care processes, and use of technology when implementing multifaceted fall prevention approaches within hospital settings. (Grade A)
- Multidisciplinary multifactorial programs, education packages for patients and families, and targeted risk factor reduction plans are recommended in fall prevention approaches. (Grade A)
- In-hospital patients who have already fallen should undergo post-fall assessment and be considered as high-risk for future falls. (Grade A)
- Best practice for fall prevention includes 1) environmental considerations such as flooring, lighting, observation, signposting, furniture and footwear, 2) identifying modifiable fall risk factors, 3) implementing interventions targeting modifiable risk factors, and 4) interventions to help decrease risk of injury to patients who fall. (Grade A)
- Multicomponent fall prevention strategies including use of a validated fall risk assessment tool, staff and patient education, bedside signs and wristband alerts, footwear review, scheduled and supervised toileting, and medication review are all recommended for implementation. (Grade A)
- Common factors of 'successful' multicomponent interventions include leadership support, involvement of frontline clinical staff to act as 'change champions', multidisciplinary team input, pilot-testing the intervention, and engagement of all staff to ensure buy-in of the intervention goals. (Grade A)
- Falls risk assessment tools, such as the Morse Fall Scale and the STRATIFY scale, are recommended to assist in the prevention of falls in hospital settings. (Grade B)

Review of falls prevention and falls management policies at participating hospitals

Copies of falls prevention and falls management policies were requested from the participating hospitals prior to the attendance of clinical leaders at the first intensive training residency at JBI. Policy documents were received from eight of the nine participating

hospitals. One hospital was in the process of reviewing and revising their falls policies and did not wish to provide a copy of their policy at the time requested. Table 4 shows a summary of the key aspects of the falls prevention and falls management policies. Details for six different policies are presented in the table, as two pairs of the participating hospitals were under the same parent organisation and their falls policies were very similar, hence are not presented twice. The falls prevention and management policies were reviewed to establish the degree to which they were in line with the best available evidence and the proposed audit criteria. This was done to ensure that compliance with the proposed audit criteria would not contravene hospital policy at any of the participating sites and to give JBI researchers insight into the risk assessment tools used and protocols in place at each hospital.

It was noted that the hospital policies were largely in line with the audit criteria but did differ across hospital sites in terms of the risk assessment tools used and the timing of application of risk assessment. There were also notable differences with respect to risk management procedures specified in the policy documents and management policies following a fall.

Table 4: Summary of falls prevention and falls management policies at participating hospitals

Falls prevention policies	Falls management policies
• Use the Department of Health (WA) Falls Risk Management Tool (FRMT). • Screen all inpatients. All inpatients, regardless of risk, will have minimum standards in place.	• Assess and provide necessary treatment to the patient. • Notify Medical Officer. • Notify family. • If not already identified as high falls risk, flag as per protocol, review Stay On Your Feet WA (SOYFWA)® Falls Risk Management Tool, update nursing care plan and implement the required interventions. • Report incident on a Clinical Incident Management form within 24 hours. • Document fall and interventions implemented in medical record. • Communicate the incident, outcome and care plan to all staff involved in the care of the patient. • CNS/most senior nurse/midwife to contact nursing director on call if fall occurs after hours and serious injury sustained. • Multidisciplinary team to review patient and develop care plan to prevent/reduce risk of further falls/injury. • Educate patient on falls risk and management. • Physiotherapy and occupational therapy to review mobility status/transfer techniques to be used and update care plan/mobility chart and any other communication system to reflect patient's current mobility status. • Review patient's fall risk and using SOYFWA® Falls Risk Management Tool and skilled knowledge. • Put in place all relevant interventions.
• Falls risk assessment tool Ontario Modified STRATIFY (Sydney Scoring).	• Ensure patient safety and comfort, and assess patient for injuries. • Notify the medical practitioner and nurse manager/duty manager.

• Risk assessment conducted on admission and daily thereafter, after any fall, and after any change in the patient's clinical condition.	• Notify family. • Log incident on electronic incident management system. Reassess patient risk level and implement added interventions as per the falls risk assessment tool. • Document incident in integrated progress notes. • Patient and carer education.
• Falls risk assessment occurs at pre-admission and admission, and is re-assessed when there is a change in the patient's condition. • Use a red dot system which indicates the falls risk of every patient. • The red dot status is reviewed at least once a day, and is changed as required and documented in the progress notes (electronic medical record). • Nurses verbally communicate the patient's red dot status and falls risk at each staff handover ensuring that the falls prevention procedure is continued. • The nurse communicates the red dot status to the patient and their family.	• Patients who have sustained a fall will immediately receive a complete patient assessment by nursing and medical staff. • The medical officer attending the fall will document the assessment and any investigations ordered in the patient's progress notes. • The falls management procedure will be implemented. • The fall incident will be investigated and reported in RiskMan® Information Management System. • The outcome of the fall will be documented in RiskMan® and referred to in the electronic medical progress notes. • Patient falls are discussed as an agenda item at ward meetings.
• Use the STRATIFY tool as part of their Falls and Pressure Injury Risk Assessment Tool. • Initial falls risk screening and assessment will be performed for all patients on admission to the hospital/ward by nursing staff except for outpatients and maternity services. • Risk screening and assessment will identify patients as at risk or high risk. • High risk patients are required to have 'falls risk' alert sticker on the assessment tool and placed in the alert section (inside cover) of the medical record. • Individual falls prevention strategies are to be considered on all	• Attend to patient. • Notify the patient's family/next of kin. • Provide the patient and family with a falls prevention information leaflet. • Complete the Falls and Pressure Injury Risk Assessment Tool and classify the patient as high risk. • Implement and document strategies on the Falls and Pressure Injury Risk Assessment Tool. • Complete online incident report and documentation in the medical record. • Ensure the details of the incident, outcome and revised care plan

patients • The patients' falls risk, mobility status and prevention plan should be assessed, documented and communicated to staff via the clinical record/care path, falls and pressure injury risk assessment tool and through verbal handover at the transfer of care. • All patient falls, including near misses and lowering to the ground, regardless of whether an injury is sustained, must be documented in the patient's medical record. • All patient falls are considered a clinical incident and must be reported through the Clinical Incident Reporting System via the Mater Health Services Intranet. • Rescreening and assessment is to occur daily, following a significant clinical event/change in condition, or after a fall. • Standard fall prevention strategies – screen/assess all patients in hospital for their risk of falling; identify high risk patients by using falls risk alerts; review medications to identify high risk medications and those that may cause postural blood pressure issues; routine screening of urine to identify urinary tract infections; implement a plan of care to maintain bowel and bladder function; routine physiotherapy review for patients with mobility difficulties; ensure mobility limitations are communicated to staff and patients using verbal, written and visual communication; educate staff, patients and carers about falls risks and falls prevention strategies and record these discussions; encourage participation in functional activities and exercise; ensure that the environment is safe (orient patient to bed area, facilities and how to obtain help if required; ensure use of assistive devices is understood and within reach of patient; supervise/assist patient where required; ensure appropriate	are incorporated into handover.

footwear is worn; ensure bed is the appropriate height and brakes are on; ensure environment is free from clutter and floor is clean and dry; ensure adequate lighting is supplied, especially at night; ensure personal possessions are accessible); minimise the use of restraints and bed rails.	
• Falls Risk Assessment Ontario Modified STRATIFY (Sydney Scoring) • All patients must have a falls risk assessment completed within four hours entry to the ward/ unit or on transfer using the Falls Risk Assessment form or Power Chart and the risk score/risk category (low/ medium/ high) is documented in Power Chart and on the Adult Admission and Discharge Assessment. • Appropriate interventions must be implemented for medium/high risk patients. • Re-assessment must be conducted when there is a change to the patient's environment, on transfer, a change in the health or functional status or post-fall. • Re-assessment must occur at least weekly. • Any patient who is admitted to hospital because of a fall injury, or has a history of falling in the last 12 months, or has a fall in hospital must automatically be classified as medium/ high risk. • The falls risk category for every patient must be reported at every patient transfer point, nursing shift clinical hand over, and on discharge. • All patients in the medium/high risk category must have their level of risk and appropriate risk management strategies communicated to carers, relatives and relevant health professionals. • Discharge plan and/or referral on discharge to help address any identified issues.	• Assess and treat the patient • Notify the family • Report and document all falls on the Incident Information Management System and in the patient's healthcare record using a sticker. • Determine how and why the fall may have occurred and implement strategies to reduce the risk of another fall. • Investigate the cause of the fall, including assessing for delirium in aged patients. • Review implementation of existing falls prevention strategies • Complete another falls risk assessment, because new risk factors may be present that require intervention/management. • Ensure appropriate allied health referral.

• Patients at risk of falls identified upon entry to facility using appropriate standardised and validated tool. • Patients will have falls risk assessment repeated in the following circumstances: a change to their environment; a change in health/functional status; following a fall; prior to discharge. • Targeted and individualised fall risk minimisation plans are to be developed and implemented after assessment has been undertaken to determine the identified risk level. A multifaceted approach to falls risk intervention will be undertaken. • Patients with identified falls risks will have a documented plan to manage these risks on discharge. • All clinical staff will be provided with timely education to ensure competency in falls risk screening and assessment, and in implementing appropriate interventions. • Each service is responsible for evaluating and monitoring falls within their facility. • Each service will submit data for organisational benchmarking activities, using the Australian Council on Healthcare Standards clinical indicators. • All facilities to conform to legislated safety requirements. • All facilities will undertake environmental audits to ensure that any environmental hazards potentiating a falls risk are identified and minimised. • Use an adapted version of Queensland Health's Falls Risk Assessment Tool.	• Post fall patients will be assessed and treated appropriately for underlying cause of fall and any injuries sustained as a result of fall. • Patients are to be reassessed for falls risk using standardised and validated tool with appropriate interventions implemented. • All falls should be documented and reported.

Development of evidence-based audit criteria

The evidence review bringing together the best available evidence on in-hospital falls prevention was used as the basis for the development of evidence-based audit criteria. A number of specific strategies were repeatedly highlighted from the falls prevention literature as being vital to preventing in-hospital falls from occurring. These identified strategies were used to form the foundation upon which the audit criteria were developed for this project. Current literature recommends a comprehensive and multifactorial approach to falls prevention, involving the use of risk assessment tools and targeted interventions. Drawn from the best available evidence and in consultation with trained leaders undertaking the falls prevention clinical audit within their hospital settings, eight audit criteria were determined. The audit criteria are as follows (see also Table 5):

1. Fall risk assessment is done upon admission.
2. Fall risk assessment is done upon transfer.
3. Reassessment occurs when there is a change in condition or following a fall.
4. Patients who have experienced a fall are considered at high risk for future falls.
5. Fall risk assessment is done accurately using a falls assessment tool.
6. Healthcare professionals have received education regarding falls assessment and prevention strategies.
7. Patient and family education is carried out for patients at risk of falls.
8. Targeted interventions are implemented according to risk factors.

As risk assessment was identified as such an important aspect of falls prevention, five of the eight criteria (1-5) are related to risk assessment. The evidence suggests that all adult patients are a potential falls risk while in hospital and should be assessed using a falls risk assessment tool.[32] This assessment should be performed upon admission to hospital and should be repeated whenever there is potential for a change in risk factors. This may be when a patient is transferred within the hospital, as the new environment the patient is in may present different risks. Reassessment should also occur if the patient has a change in clinical condition, including but not limited to a deterioration of illness, commencement of a new medication, or following a surgical procedure, for example. Reassessment should also occur if a patient experiences a fall, and patients who have had a recent fall or who have a history of falls should be considered a high risk for future falls. It is important that a risk assessment tool be used to properly assess patients and importantly that the assessment tool is completed accurately. Many nurses may feel as though their clinical judgment is an accurate predictor of falls risk. While clinical judgment certainly plays a part in falls risk assessment, evidence-based best practice dictates that a risk assessment tool be accurately completed when indicated.[32]

The evidence identified education as a crucial aspect to falls prevention in hospitals.[32] Firstly, education for healthcare professionals is key to ensure they are aware of their obligations in

terms of falls prevention practices. It is important for healthcare professionals to understand when to conduct risk assessments and how to conduct them accurately. It is also important for healthcare professionals to know what to do for patients that are identified as 'at risk' and to know what preventative strategies to put in place for specific risk factors. For these reasons, education should be ongoing to keep healthcare professionals up to date with current recommendations. While falls risk assessment and prevention is largely seen as the responsibility of nurses, all healthcare staff have a responsibility to practise appropriate falls prevention and to function as an effective multi-disciplinary team to deliver safe, quality care.[32]

Education of patients and/or family members or caregivers is also an important aspect identified from the evidence.[32] When patients are in hospital they are in an environment that may be unfamiliar to them and they may be suffering from reduced physical or cognitive functioning. Many patient falls occur when patients try to get out of bed unassisted. Patients identified as being at risk of falls should be educated about the particular relevant risk factors and given information about what they can do to minimise their chances of experiencing a fall. Strategies to educate patients/family members may include keeping the nurse call bell close and ringing for assistance when required (especially for assistance when getting out of bed), location of call bells in bathrooms, appropriate footwear and use of walking aids. Education may be delivered verbally or in the form of a brochure/information sheet. The preference is for both verbal and written information to be provided to patients.[32]

Importantly, the implementation of targeted interventions for identified risk factors is equally as crucial as identifying the risk factors in the first place.[32] For patients at risk of falls, appropriate strategies need to be put in place to address and minimise the risk. The evidence review identified that many studies to date have used multifactorial interventions but there is a lack of specific evidence assessing the effectiveness of single interventions to address particular risk factors.[32] Hence, criterion 8 remains broad as the evidence was not sufficient to develop more specific criteria; however this in no way diminishes the importance of intervention in the falls prevention pathway.

Following consultation with the falls prevention trained leaders regarding the use and adaptability of these criteria in practice, it was decided amongst the group and with JBI researchers how specific criteria should be interpreted to ensure consistency in auditing across hospitals. It was agreed that specific criteria should be assessed as follows:

- Criteria 1 to 3 would be considered met if it was documented in the patient case notes that a risk assessment was completed within eight hours of the respective event [i.e. 1) admission, 2) intra-hospital transfer, 3) change in clinical condition or a fall]. Hospitals had differing policies regarding the time frame within which a falls risk assessment should occur and some did not state a time frame. Within eight hours of the event (i.e. within the same shift) was chosen as the ideal period within which the risk assessment should occur.
- Criterion 4 would be considered met if patients who have a documented history of falls are assessed as high risk for future falls according to the risk assessment. This

criterion relates to recent falls but also past falls documented in the patient's case history.

- Criterion 5 would be considered met if the case notes suggest the fall risk assessment was completed accurately. If this was not clear from the case notes, clinicians and stakeholders agreed the patient may be visited to determine the accuracy of the assessment.
- Criterion 6 (education of healthcare professionals) would be considered met if healthcare professionals working in the participating wards report that they have received education regarding falls assessment and prevention strategies within the last two years. While it is expected that the majority of healthcare professionals sampled would be nurses, the occupation of those sampled would be recorded to allow assessment of differences in falls prevention education between professions. This is important because falls prevention commonly comes under the jurisdiction of nurses and it is possible that other ward staff may not be provided with the same level of education as the nursing staff, which may ultimately impact on the incidence of falls at particular hospitals.
- Criterion 7 (education of patients and/or their families) would be considered met if it is documented in the case notes that patient/family education was conducted. Documented education may differ from actual education so, where possible, clinicians may speak with patients and families to gauge the relationship between documented education and retained knowledge. However, for the purposes of the audit the type of education received by hospital staff, patients and their families will not be recorded, just whether or not education on in-hospital falls had been received by these groups.
- Criterion 8 (implementation of specific falls prevention interventions) would be considered met if it is documented in the case notes for patients assessed at risk that there has been implementation of targeted interventions to address each identified risk factor.

Table 5: Audit criteria for in-hospital falls prevention

Risk assessment	**1. Fall risk assessment is done upon admission** This criterion will be considered met if the case notes show a risk assessment completed within 8 hours of admission. Sample: 30 medical patients and 30 surgical patients at admission
	2. Fall risk assessment is done upon transfer This criterion will be considered met if the case notes for patients that have been transferred (intra-hospital transfer) show a risk assessment completed within 8 hours of transfer. Sample: 30 medical patient and 30 surgical patient transfers
	3. Reassessment occurs when there is a change in condition or following a fall This criterion will be considered met if the case notes for patients who have had a change in clinical condition (that affects their falls risk status) or experienced a fall include a reassessment performed within 8 hours of this event. Sample: 30 medical patient and 30 surgical patient events
	4. Patients who have experienced a fall are considered at high risk for future falls This criterion will be considered met if by looking at case notes for patients who have a history of falls, they are assessed as high risk for future falls according to the risk assessment. Sample: 30 medical patients and 30 surgical patients who have experienced a fall
	5. Fall risk assessment is done accurately using a falls assessment tool This criterion will be considered met if the case notes suggest the fall risk assessment was done accurately. If the accuracy of the risk assessment is not clear from the notes, then the patient can be visited to determine the accuracy of the assessment. Sample: 30 medical patient and 30 surgical patient risk assessments
Education	**6. Healthcare professionals have received education regarding falls assessment and prevention strategies** This criterion will be considered met if staff members in the participating wards report that they have received education in the last 2 years. Question: “Have you received education regarding falls assessment and prevention strategies in the last 2 years?” This is by convenience sampling, please record the professions of the healthcare staff questioned e.g. nurse, doctor, physiotherapist, pharmacist, etc. Sample: 30 healthcare staff from medical ward and 30 healthcare staff from surgical ward
	7. Patient and family education is carried out for patients at risk of falls This criterion will be considered met if from the case notes, for patients at risk of falls, patient and family education is documented as being done. Sample: 30 at risk medical patients and 30 at risk surgical patients
Intervention	**8. Targeted interventions are implemented according to risk factors** This criterion will be considered met if it is documented in the case notes for patients assessed as at risk, that there has there been implementation of targeted interventions to address each identified risk factor. Sample: 30 at risk medical patients and 30 at risk surgical patients

Site-specific audits and best practice implementation projects

Baseline audits were conducted by each of the trained leaders in the participating wards at their hospitals during June 2013. Following identification of specific barriers to compliance, implementation strategies to address these barriers were developed locally at each hospital site and these were implemented, in general, from July to October 2013. The first reaudits were conducted around late October/early November 2013. Following this, when the trained leaders returned to JBI for their second intensive training residency, they developed individual project reports. These reports included the baseline and first follow-up audit cycle results, along with details of the barriers identified, strategies implemented and outcomes achieved at each hospital. The trained leaders continued to work on these reports over the following months and when they conducted a second follow-up audit around March/April 2014, these results were added to each report. The trained leaders were responsible for writing their individual reports and were supported in this process by members of the research team. The individual implementation reports from the trained leaders are in Appendix VI. These reports are currently being prepared for submission to the refereed online journal, the JBI Database of Systematic Reviews and Implementation Reports (JBISRIR) at http://www.joannabriggslibrary.org/index.php/jbisrir.

Multi-site audit results

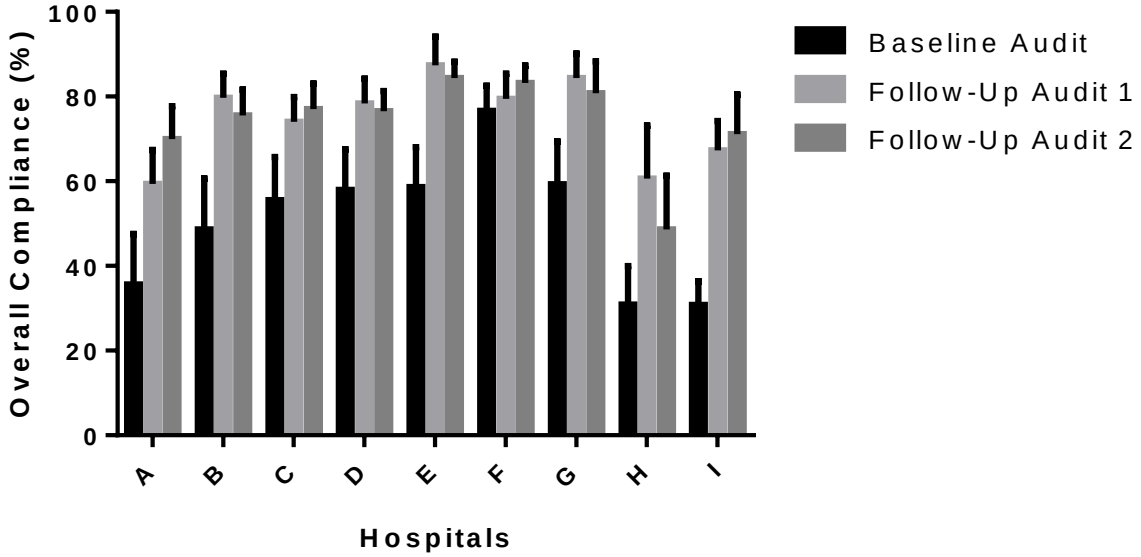
Overall compliance for each hospital

The audit data from the individual hospitals was compiled and analysed by members of the research team. The overall percentage compliance for each hospital was calculated by averaging the compliance across all eight audit criteria, using the aggregated data from participating medical and surgical wards. Figure 3 shows the compliance for each hospital for the baseline audit cycle and the two follow-up cycles. Note that hospitals A through E are private hospitals and hospitals F through I are public hospitals.

Results from the baseline audit indicated that with the exception of one of the public hospitals (Hospital F, 76.6% compliance), all other public and private hospitals showed compliance of less than 60%. Hospitals H and I (both public hospitals) reported the lowest overall compliance for the baseline audit with both at just over 30% compliance. The mean overall compliance for the baseline cycle was 50%.

The results for follow-up audit cycle 1 were very encouraging, with all hospitals achieving compliance rates of approximately 60% up to 87% (mean overall compliance 75%). All hospitals showed an increase in overall compliance between the baseline audit cycle and follow-up cycles 1 and 2, with a mean increase in percentage compliance ranging from 3% up to 40%. Hospital A showed a statistically significant increase of 34% (95% confidence interval [CI] 9-60%) between the baseline audit and follow-up audit cycle 2 and hospitals B, E and H showed statistically significant improvements in compliance of around 30% ($p<0.05$) in at least one of the follow-up cycles. Hospital I, which had the lowest baseline compliance, showed the largest increase in compliance with a mean difference of 40% (95% CI 15-66%) between the baseline audit and follow-up cycle 2.

At follow-up cycle 2, the percentage compliance achieved during cycle 1 was largely maintained (mean overall compliance 74%) and there were no statistically significant differences between compliance at follow-up cycle 1 and 2 for any hospital. As follow-up cycle 2 was conducted some five to six months after follow-up cycle 1, this suggests that the increased compliance achieved during the intervention period of the project was sustained over this period of time.



Hospital	Comparison	Mean Diff.	95% CI of diff.	Significance
A	Follow-Up Audit 1 vs. Baseline Audit	23.75	-1.990 to 49.49	ns
	Follow-Up Audit 2 vs. Baseline Audit	34.37	8.626 to 60.10	**
B	Follow-Up Audit 1 vs. Baseline Audit	31.12	5.376 to 56.85	*
	Follow-Up Audit 2 vs. Baseline Audit	26.92	1.176 to 52.65	*
C	Follow-Up Audit 1 vs. Baseline Audit	18.54	-7.197 to 44.28	ns
	Follow-Up Audit 2 vs. Baseline Audit	21.54	-4.199 to 47.28	ns
D	Follow-Up Audit 1 vs. Baseline Audit	20.46	-5.280 to 46.20	ns
	Follow-Up Audit 2 vs. Baseline Audit	18.55	-7.188 to 44.29	ns
E	Follow-Up Audit 1 vs. Baseline Audit	28.83	3.086 to 54.56	*
	Follow-Up Audit 2 vs. Baseline Audit	25.78	-0.8614 to 52.42	ns
F	Follow-Up Audit 1 vs. Baseline Audit	2.858	-22.88 to 28.60	ns
	Follow-Up Audit 2 vs. Baseline Audit	6.615	-19.12 to 32.35	ns
G	Follow-Up Audit 1 vs. Baseline Audit	25.12	-0.6205 to 50.86	ns
	Follow-Up Audit 2 vs. Baseline Audit	21.58	-4.162 to 47.32	ns
H	Follow-Up Audit 1 vs. Baseline Audit	29.74	4.005 to 55.48	*
	Follow-Up Audit 2 vs. Baseline Audit	17.69	-8.049 to 43.43	ns
I	Follow-Up Audit 1 vs. Baseline Audit	36.47	10.73 to 62.21	**
	Follow-Up Audit 2 vs. Baseline Audit	40.33	14.59 to 66.07	**

Figure 3: Overall compliance for each hospital

Compliance for all eight audit criteria combined was determined for each hospital (aggregated medical and surgical wards). The results for the baseline audit cycle (conducted in June 2013) were compared to follow-up cycle 1 (conducted in Oct/Nov 2013) and follow-up cycle 2 (conducted in Mar/Apr 2014) and the mean difference in percentage compliance is shown above. Note that hospitals A-E are private hospitals and F-I are public hospitals. ns = not significant; * = $p<0.05$; ** = $p<0.01$

Compliance for individual audit criteria – Aggregated wards

In addition to assessing the overall compliance for each hospital, compliance for each individual audit criterion was assessed. Table 6 shows the percentage compliance for each audit criterion across aggregated wards of all participating hospitals. For ease of visual comparison, the percentage compliance for each of the criteria at each audit cycle has been colour coded, with red for less than 50% compliance, yellow for between 50% and 75% compliance, and green for greater than 75% compliance. As can be seen in the table, at the baseline audit cycle five out of eight criteria show less than 50% compliance. For follow-up cycles 1 and 2, there were no criteria remaining below 50% and four of the criteria had increased to greater than 75% compliance, with another close to reaching this mark.

For the baseline audit, the criterion with the lowest compliance was criterion 7 regarding patient and family education for patients at risk of falls. This education was documented as occurring in less than 30% of cases for patients at risk of falls. Other criteria that performed poorly were criteria 2 and 3, that a risk assessment was performed upon patient transfer or following a change in condition or a fall. Both of these criteria showed compliance around 35%. Some of these low rates of compliance are not surprising given the compliance reported for criterion 6, that healthcare professionals have received education regarding falls assessment and prevention strategies. Only 43% of healthcare professionals in the participating wards reported having received falls education in the previous two years. The best performing criterion for the baseline audit was criterion 1, that a risk assessment is done upon admission, which achieved a compliance rate of 72.5%.

For follow-up audit cycle 1, all audit criteria showed improvements in compliance over the baseline audit results. Patient and family education remained the criterion with the lowest compliance at 53%; however education of healthcare professionals showed the largest improvement in compliance rising to more than 91% compliance. Education of healthcare professionals in the participating wards continued to improve between the first and the second follow-up audit and had reached almost 98% compliance at follow-up audit 2.

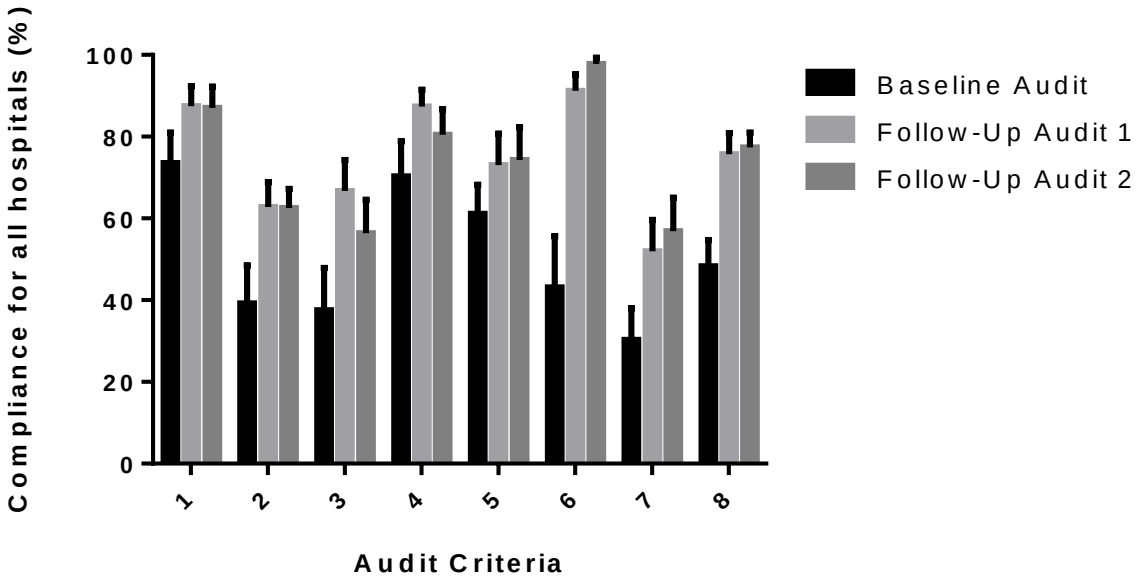
Figure 4 illustrates graphically the increase in compliance across every audit criterion from the baseline audit to follow-up cycle 1 and the sustained compliance at follow-up cycle 2. Criterion 2, that a fall risk assessment in done upon transfer, showed a statistically significant improvement of approximately 23% (95% CI 1-46%) at both follow-up audits. Patient and family education, whilst remaining the criterion with the poorest compliance at follow-up audit 2, showed 27% (95% CI 4-49%) improvement in compliance between the baseline audit and follow-up cycle 2. Other criteria to show pronounced statistically significant improvements at follow-up cycle 2 compared to the baseline cycle were criterion 6 (education of healthcare professionals, mean difference 55%, 95% CI 32-77%) and criterion 8 (implementation of targeted risk factors, mean difference 29%, 95% CI 7-52%).

Table 6: Compliance for individual audit criteria across aggregated wards of all participating hospitals

Data was extracted from JBI PACES for each of the participating wards, including the sample size for each criterion and the number reported as meeting each criterion. This was used to calculate the percentage compliance for each audit criterion across the aggregated wards for each audit cycle.

	Percentage Compliance (No. meeting criteria/Sample size)		
Criteria	**Baseline Audit**	**Follow-Up Audit 1**	**Follow-Up Audit 2**
1. Fall risk assessment is done upon admission	72.5% (367/506)	88.1% (451/512)	86.4% (439/508)
2. Fall risk assessment is done upon transfer	35.0% (134/383)	62.3% (245/393)	59.4% (186/313)
3. Reassessment occurs when there is a change in condition or following a fall	35.6% (147/413)	67.0% (272/406)	59.3% (217/366)
4. Patients who have experienced a fall are considered at high risk for future falls	64.7% (213/329)	84.0% (225/268)	81.8% (220/269)
5. Fall risk assessment is done accurately using a falls assessment tool	61.1% (330/540)	72.9% (391/536)	74.2% (396/534)
6. Healthcare professionals have received education regarding falls assessment and prevention strategies	43.1% (233/540)	91.2% (489/536)	97.8% (524/536)
7. Patient and family education is carried out for patients at risk of falls	29.9% (151/505)	52.9% (265/501)	56.7% (303/534)
8. Targeted interventions are implemented according to risk factors	48.1% (247/513)	75.7% (406/536)	77.4% (415/536)

Key:	< 50% compliance	50-75% compliance	>75% compliance



Criteria	Comparison	Mean Diff.	95% CI of diff.	Significance
1	Follow-Up Audit 1 vs. Baseline Audit	13.91	-8.567 to 36.39	ns
	Follow-Up Audit 2 vs. Baseline Audit	13.51	-8.967 to 35.99	ns
2	Follow-Up Audit 1 vs. Baseline Audit	23.61	1.133 to 46.09	*
	Follow-Up Audit 2 vs. Baseline Audit	23.33	0.8551 to 45.81	*
3	Follow-Up Audit 1 vs. Baseline Audit	29.16	6.677 to 51.63	**
	Follow-Up Audit 2 vs. Baseline Audit	18.78	-3.700 to 41.26	ns
4	Follow-Up Audit 1 vs. Baseline Audit	17.06	-5.423 to 39.53	ns
	Follow-Up Audit 2 vs. Baseline Audit	10.14	-13.03 to 33.31	ns
5	Follow-Up Audit 1 vs. Baseline Audit	11.94	-10.53 to 34.42	ns
	Follow-Up Audit 2 vs. Baseline Audit	13.19	-9.289 to 35.67	ns
6	Follow-Up Audit 1 vs. Baseline Audit	48.07	25.59 to 70.54	****
	Follow-Up Audit 2 vs. Baseline Audit	54.63	32.16 to 77.11	****
7	Follow-Up Audit 1 vs. Baseline Audit	21.67	-0.8115 to 44.14	ns
	Follow-Up Audit 2 vs. Baseline Audit	26.61	4.133 to 49.09	*
8	Follow-Up Audit 1 vs. Baseline Audit	27.37	4.888 to 49.84	*
	Follow-Up Audit 2 vs. Baseline Audit	29.03	6.555 to 51.51	**

Figure 4: Compliance for individual audit criteria across all participating hospitals

Compliance for each audit criterion was determined using aggregated data from all participating hospitals. The results for the baseline audit cycle (June 2013) were compared to follow-up cycles 1 (Oct/Nov 2013) and 2 (Mar/Apr 2014) and the mean difference in percentage compliance is shown above. ns = not significant, * = $p<0.05$, ** = $p<0.01$, **** = $p<0.0001$

Compliance for individual audit criteria – Medical wards

Compliance for the individual audit criteria were assessed separately for the participating medical wards (Table 7 and Figure 5). As with the aggregated data, baseline compliance for four of the eight criteria was below 50%, the only difference being education of healthcare professionals which was higher in the medical wards (58% compliance). Criterion 7 (patient and family education) and criterion 3 (reassessment occurs following a change in condition or a fall) were both below 30% compliance for the baseline audit. Baseline compliance for conducting fall risk assessments upon admission was at 76%.

All audit criteria showed improved compliance in the two follow-up audits compared to the baseline cycle. In follow-up audit 2, four of the eight criteria achieved compliance of more than 75% and another was close to reaching this mark. Education of healthcare professionals had reached 99% compliance by the second follow-up cycle. Two of the criteria (3 and 7), however, remained below 50% compliance at follow-up audit 2, although they were close to reaching this mark. Criterion 3 had increased to almost 60% at follow-up audit 1, a mean increase of 32% (95% CI 5-60%) from the baseline cycle, but had declined from that high by the time follow-up cycle 2 was conducted five to six months later (although the comparison between audit cycle 1 and 2 was not statistically significant).

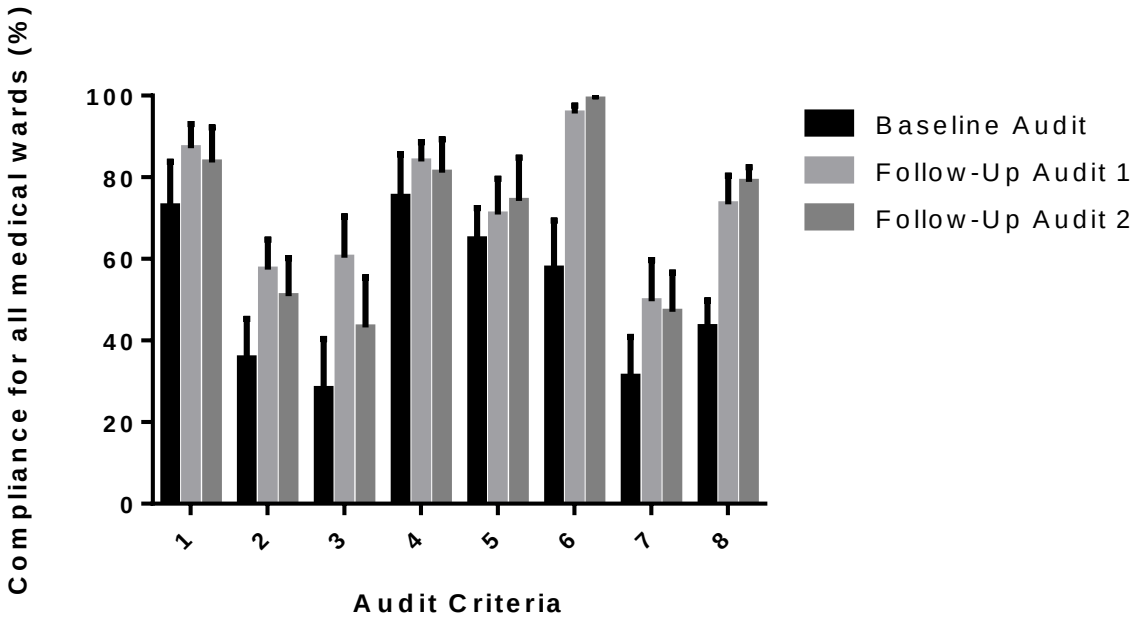
Criteria 6 (education of healthcare professionals) and 8 (implementation of targeted interventions) were statistically significantly increased at both follow-up cycles compared to baseline. At follow-up cycle 2, criterion 6 had a mean increase of 41% (95% CI 14-69%) over the baseline cycle and criterion 8 showed a mean increase of 36% (95% CI 8-63%).

Table 7: Compliance with audit criteria in medical wards across participating hospitals

Data was extracted from JBI PACES for each of the participating medical wards, including the sample size for each criterion and the number reported as meeting each criterion. This was used to calculate the percentage compliance for each audit criterion across the medical wards at all participating hospitals for each audit cycle.

	Percentage Compliance (No. meeting criteria/Sample size)		
Criteria	**Baseline Audit**	**Follow-Up Audit 1**	**Follow-Up Audit 2**
1. Fall risk assessment is done upon admission	75.8% (141/186)	89.6% (164/183)	82.9% (155/187)
2. Fall risk assessment is done upon transfer	35.5% (61/172)	56.4% (92/163)	50.5% (56/111)
3. Reassessment occurs when there is a change in condition or following a fall	28.7% (49/171)	59.9% (94/157)	49.6% (65/131)
4. Patients who have experienced a fall are considered at high risk for future falls	71.1% (108/152)	81.8% (99/121)	78.9% (120/152)
5. Fall risk assessment is done accurately using a falls assessment tool	64.8% (136/210)	70.5% (146/207)	74.0% (154/208)
6. Healthcare professionals have received education regarding falls assessment and prevention strategies	57.6% (121/210)	95.7% (198/207)	99.0% (206/208)
7. Patient and family education is carried out for patients at risk of falls	29.4% (57/194)	47.7% (92/193)	46.6% (96/206)
8. Targeted interventions are implemented according to risk factors	42.3% (85/201)	73.4% (152/207)	78.8% (164/208)

Key:	< 50% compliance	50-75% compliance	>75% compliance



Criteria	Comparison	Mean Diff.	95% CI of diff.	Significance
1	Follow-Up Audit 1 vs. Baseline Audit	14.24	-13.38 to 41.87	ns
	Follow-Up Audit 2 vs. Baseline Audit	10.8	-16.83 to 38.43	ns
2	Follow-Up Audit 1 vs. Baseline Audit	21.79	-5.841 to 49.41	ns
	Follow-Up Audit 2 vs. Baseline Audit	15.24	-13.52 to 43.99	ns
3	Follow-Up Audit 1 vs. Baseline Audit	32.16	4.531 to 59.78	*
	Follow-Up Audit 2 vs. Baseline Audit	15.1	-12.53 to 42.73	ns
4	Follow-Up Audit 1 vs. Baseline Audit	8.686	-18.94 to 36.31	ns
	Follow-Up Audit 2 vs. Baseline Audit	5.886	-21.74 to 33.51	ns
5	Follow-Up Audit 1 vs. Baseline Audit	6.086	-21.54 to 33.71	ns
	Follow-Up Audit 2 vs. Baseline Audit	9.443	-18.18 to 37.07	ns
6	Follow-Up Audit 1 vs. Baseline Audit	37.99	10.36 to 65.61	**
	Follow-Up Audit 2 vs. Baseline Audit	41.41	13.79 to 69.04	**
7	Follow-Up Audit 1 vs. Baseline Audit	18.57	-9.055 to 46.20	ns
	Follow-Up Audit 2 vs. Baseline Audit	15.93	-11.70 to 43.55	ns
8	Follow-Up Audit 1 vs. Baseline Audit	30.01	2.388 to 57.64	*
	Follow-Up Audit 2 vs. Baseline Audit	35.51	7.888 to 63.14	**

Figure 5: Compliance for individual audit criteria across participating medical wards

Compliance for each audit criterion was determined using data from all participating medical wards. The results for the baseline audit cycle (June 2013) were compared to follow-up cycles 1 (Oct/Nov 2013) and 2 (Mar/Apr 2014) and the mean difference in percentage compliance is shown above. ns = not significant, * = $p<0.05$, ** = $p<0.01$

Compliance for individual audit criteria – Surgical wards

As with the participating medical wards, compliance with individual audit criteria were assessed separately for the participating surgical wards (Table 8 and Figure 6). For the surgical wards, the poorest performing criterion at the baseline audit was criterion 2, that a fall risk assessment is done upon transfer, which achieved below 20% compliance. Other criteria with low compliance rates for the baseline audit were criterion 3 (reassessment following a change in condition or a fall, 26%) and criterion 7 (patient/family education, 28%). The criterion with the highest baseline compliance was that a fall risk assessment is done upon admission, achieving 76% compliance.

Increases were observed for all audit criteria between the baseline audit and the two follow-up audit cycles. Criteria for which statistically significant increases were seen include criteria 2, 3, 6, 7 and 8. For the comparison between the baseline cycle and second follow-up cycle, criterion 2 showed a mean increase of 40% (95% CI 11-69%), criterion 3 increased by 32% (95% CI 3-61%), criterion 6, 49% (95% CI 20-78%), criterion 7, 37% (95% CI 9-66%), and criterion 8, 31% (95% CI 2-60%).

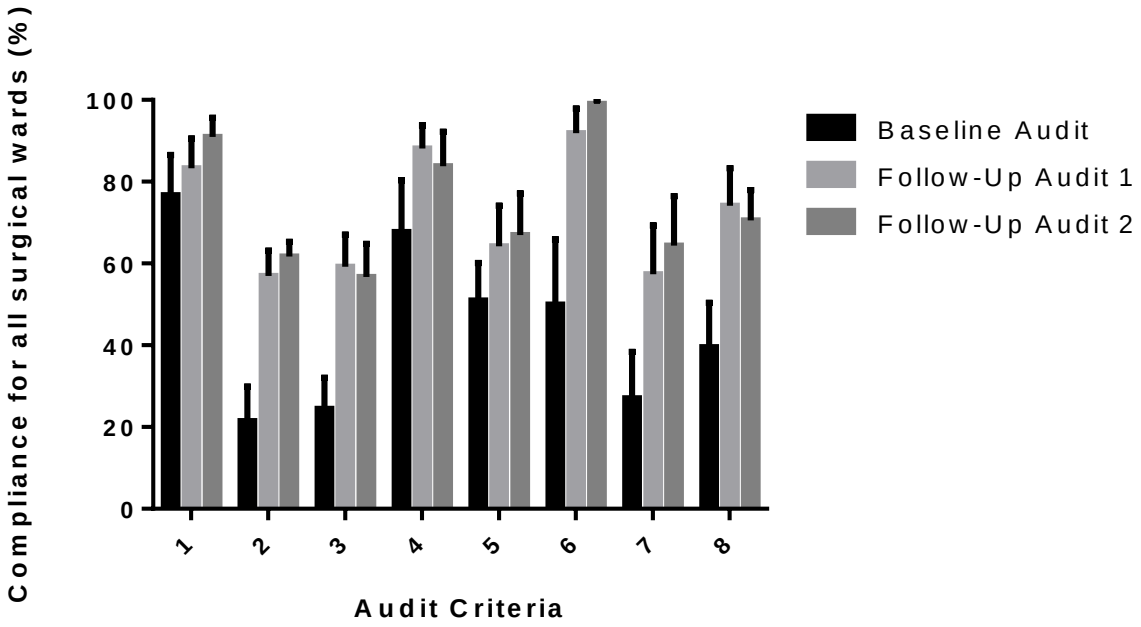
At follow-up cycle 2, criterion 1 (risk assessment upon admission) reached greater than 90% compliance and education of healthcare professionals achieved 99% compliance. Criteria 2 and 3 remained the criteria with the lowest compliance at follow-up cycle 2; however significant improvement saw both criteria reach 58% compliance.

Table 8: Compliance with audit criteria in surgical wards across participating hospitals

Data was extracted from JBI PACES for each of the participating surgical wards, including the sample size for each criterion and the number reported as meeting each criterion. This was used to calculate the percentage compliance for each audit criterion across the surgical wards at all participating hospitals for each audit cycle.

	Percentage Compliance (No. meeting criteria/Sample size)		
Criteria	**Baseline Audit**	**Follow-Up Audit 1**	**Follow-Up Audit 2**
1. Fall risk assessment is done upon admission	75.5% (151/200)	83.3% (174/209)	90.5% (182/201)
2. Fall risk assessment is done upon transfer	19.6% (30/153)	56.1% (83/148)	57.9% (73/126)
3. Reassessment occurs when there is a change in condition or following a fall	26.0% (45/173)	60.9% (95/156)	57.6% (80/139)
4. Patients who have experienced a fall are considered at high risk for future falls	55.5% (76/137)	84.2% (101/120)	86.6% (84/97)
5. Fall risk assessment is done accurately using a falls assessment tool	51.0% (107/210)	64.1% (134/209)	66.8% (139/208)
6. Healthcare professionals have received education regarding falls assessment and prevention strategies	50.0% (105/210)	91.9% (192/209)	99.0% (206/208)
7. Patient and family education is carried out for patients at risk of falls	28.4% (56/197)	63.3% (119/188)	64.4% (134/208)
8. Targeted interventions are implemented according to risk factors	40.4% (78/193)	74.2% (155/209)	70.7% (147/208)

Key:	< 50% compliance	50-75% compliance	>75% compliance



Criteria	Comparison	Mean Diff.	95% CI of diff.	Significance
1	Follow-Up Audit 1 vs. Baseline Audit	6.657	-22.10 to 35.42	ns
	Follow-Up Audit 2 vs. Baseline Audit	14.29	-14.47 to 43.05	ns
2	Follow-Up Audit 1 vs. Baseline Audit	35.44	6.683 to 64.20	*
	Follow-Up Audit 2 vs. Baseline Audit	40.2	11.44 to 68.96	**
3	Follow-Up Audit 1 vs. Baseline Audit	34.77	6.012 to 63.53	*
	Follow-Up Audit 2 vs. Baseline Audit	32.21	3.455 to 60.97	*
4	Follow-Up Audit 1 vs. Baseline Audit	20.41	-8.345 to 49.17	ns
	Follow-Up Audit 2 vs. Baseline Audit	16.1	-12.66 to 44.86	ns
5	Follow-Up Audit 1 vs. Baseline Audit	13.27	-15.49 to 42.03	ns
	Follow-Up Audit 2 vs. Baseline Audit	15.99	-12.77 to 44.75	ns
6	Follow-Up Audit 1 vs. Baseline Audit	41.9	13.14 to 70.66	**
	Follow-Up Audit 2 vs. Baseline Audit	49.07	20.31 to 77.83	***
7	Follow-Up Audit 1 vs. Baseline Audit	30.34	1.583 to 59.10	*
	Follow-Up Audit 2 vs. Baseline Audit	37.33	8.569 to 66.09	**
8	Follow-Up Audit 1 vs. Baseline Audit	34.57	5.812 to 63.33	*
	Follow-Up Audit 2 vs. Baseline Audit	30.97	2.212 to 59.73	*

Figure 6: Compliance for individual audit criteria across participating surgical wards

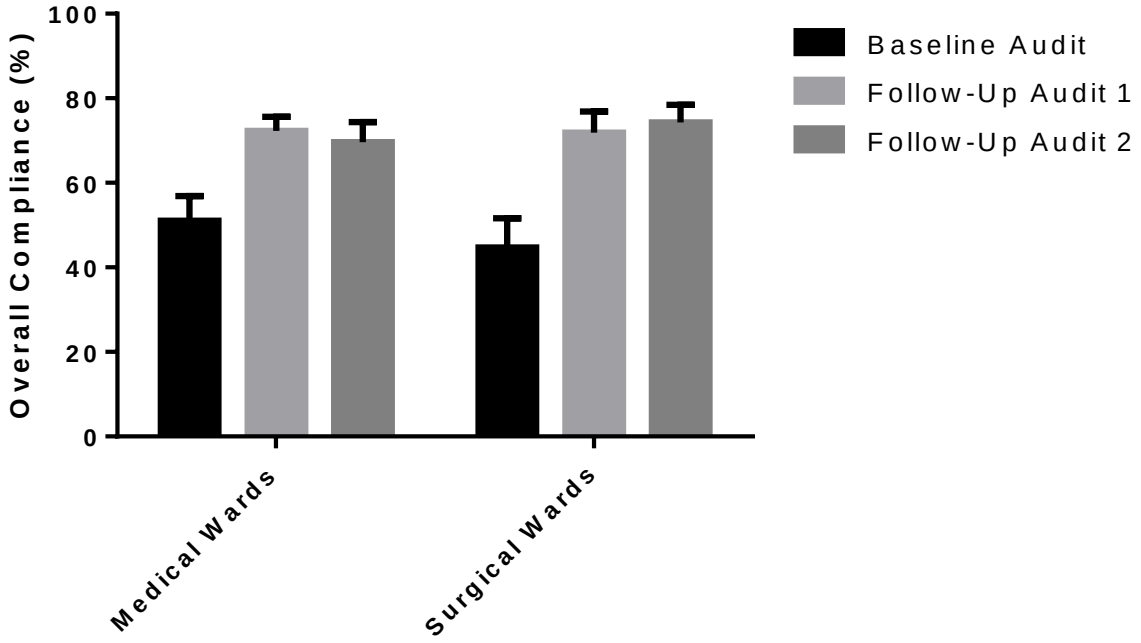
Compliance for each audit criterion was determined using data from all participating surgical wards. The results for the baseline audit cycle (June 2013) were compared to follow-up cycles 1 (Oct/Nov 2013) and 2 (Mar/Apr 2014) and the mean difference in percentage compliance is shown above. ns = not significant, * = $p<0.05$, ** = $p<0.01$, *** = $p<0.001$

Compliance in medical wards versus surgical wards

The overall compliance, i.e. the mean compliance across all eight audit criteria, was assessed for medical wards and surgical wards for each of the audit cycles (Figure 7). The mean baseline compliance for medical wards was 51%. This had increased to 72% at follow-up audit cycle 1, a mean difference of 21% (95% CI 5-38%). At follow-up audit cycle 2, the rate of overall compliance was 70%, indicating it had been largely sustained from follow-up cycle 1. This was consistent with a statistically significant mean increase over the baseline cycle of 19% (95% CI 2-35%).

The overall mean baseline compliance for surgical wards was 45%, which increased to 72% and 74% at follow-up cycles 1 and 2, respectively. This represents a mean increase of 27% (95% CI 10-44%) between the baseline cycle and follow-up cycle 1 and a mean increase of 30% (95% CI 13-46%) between the baseline cycle and follow-up cycle 2. So for surgical wards, the increased compliance seen at follow-up cycle 1 was certainly sustained at follow-up cycle 2 and even slightly increased.

The overall compliance rates for medical wards and surgical wards were similar and no statistically significant differences in compliance were observed between ward types at any of the audit time points.



Comparison	Mean Diff.	95% CI of diff.	Significance
Medical Wards			
Follow-Up Audit 1 vs. Baseline Audit	21.19	4.507 to 37.88	*
Follow-Up Audit 2 vs. Baseline Audit	18.55	1.862 to 35.23	*
Surgical Wards			
Follow-Up Audit 1 vs. Baseline Audit	27.17	10.48 to 43.85	**
Follow-Up Audit 2 vs. Baseline Audit	29.52	12.83 to 46.20	***
Surgical Wards - Medical Wards			
Baseline Audit	-6.34	-24.49 to 11.81	ns
Follow-Up Audit 1	-0.3668	-18.52 to 17.78	ns
Follow-Up Audit 2	4.63	-13.52 to 22.78	ns

Figure 7: Compliance in participating medical wards and surgical wards

The overall compliance for the eight audit criteria combined was determined for participating medical and surgical wards across all hospitals. The results for the baseline audit cycle (June 2013) were compared to follow-up cycles 1 (Oct/Nov 2013) and 2 (Mar/Apr 2014) and the mean difference in percentage compliance is shown above. In addition, the compliance for medical wards and surgical wards was compared at each of the three audit time points to investigate if ward type had any effect on compliance rates. ns = not significant, * = $p<0.05$, ** = $p<0.01$, *** = $p<0.001$

Compliance in private hospitals versus public hospitals

Of particular interest in the analysis of audit data was the comparison of compliance rates in falls prevention practices between private and public hospitals. Figure 8 shows the percentage compliance for each individual audit criterion for private and public hospitals at each of the audit cycles.

For criterion 1, that a risk assessment was completed upon admission, private hospitals achieved higher compliance than public hospitals at each audit time point by 12% to18% (note that a negative mean difference in Figure 8 indicates higher compliance for private hospitals, while a positive mean difference indicates higher compliance for public hospitals). However, the 95% confidence intervals for these comparisons were large and these differences were not statistically significant.

For criterion 2, that a risk assessment was done upon transfer, there were no differences in compliance rates between private and public hospitals at any of the audit cycles.

For criterion 3, that a risk assessment occurs following a change in clinical condition or a fall, private hospitals achieved higher compliance than public hospitals at each audit by 12-19%. Once again, however, the 95% confidence intervals for these comparisons were large and none of the differences were statistically significant.

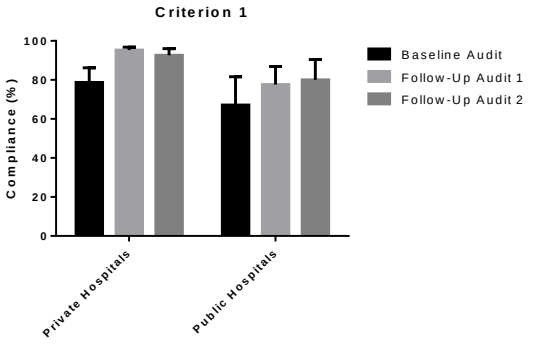
There were minimal differences between private and public hospitals for compliance with criterion 4, that patients who have experienced a fall are considered a high risk for future falls. There were no significant differences at any of the audit time points between private and public hospitals.

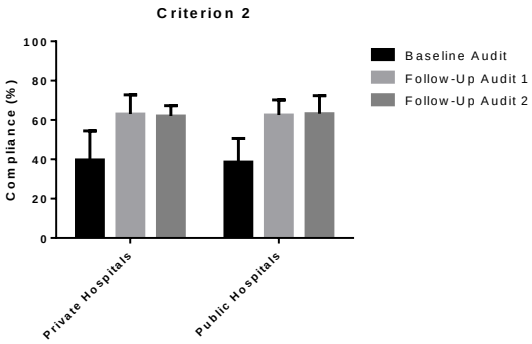
For criterion 5, that a falls risk assessment is completed accurately, for the baseline cycle the difference in compliance between private and public hospitals was negligible (mean difference of approximately 3% in favour of private hospitals). At follow-up cycle 1, however, the mean difference had increased to 21% in favour of private hospitals and at follow-up cycle 2 the mean difference was 13% in favour of private hospitals. The 95% confidence intervals for these comparisons were large and none were statistically significant.

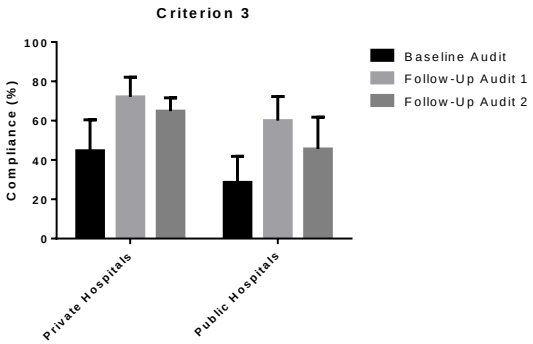
Regarding the education of healthcare professionals in falls prevention (criterion 6), the comparisons showed slightly higher compliance rates at all audit cycles for public hospitals over private hospitals. The mean differences which ranged from 4% to 12% were however not statistically significant.

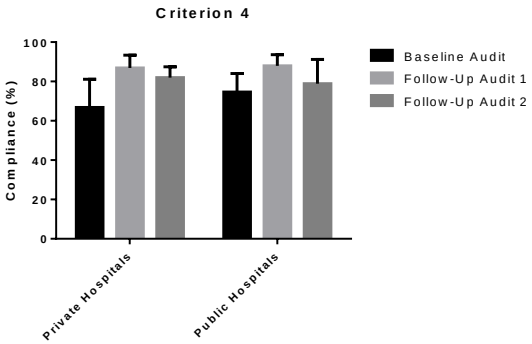
For criterion 7, regarding provision of education for patients/family members, public hospitals were slightly in front of private hospitals at the baseline cycle and follow-up cycle 1 by 5% to 6%. At follow-up cycle 2, however, the compliance rate at private hospitals had exceeded that at public hospitals by 7%, although none of these comparisons were statistically significant.

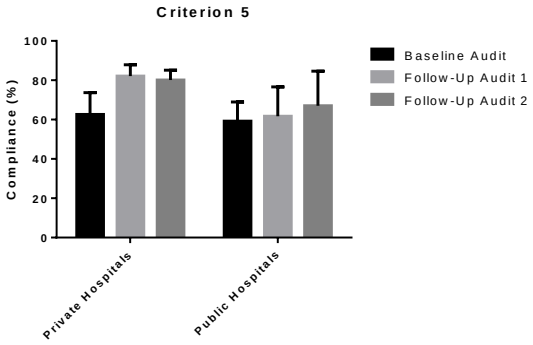
Lastly, for implementation of targeted interventions (criterion 8), there were minimal differences between private and public hospitals. At the baseline cycle, private hospitals just edged public hospitals with compliance about 4% higher, but public hospitals showed greater improvement at the follow-up cycles and were 9% and 5% ahead at follow-up cycle 1 and 2 respectively. Once again, none of these comparisons were statistically significant.

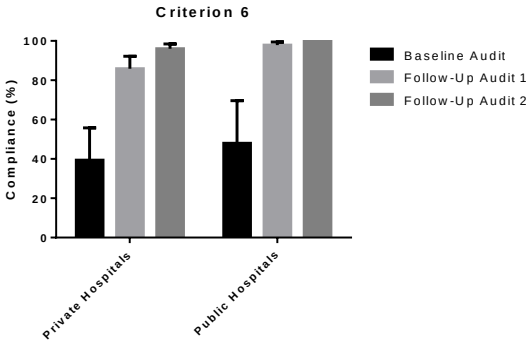

Criterion 1
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2

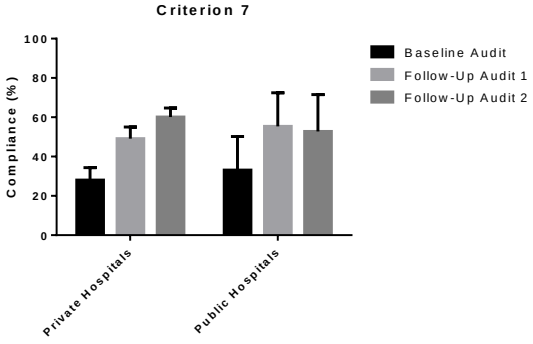

Criterion 2
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2

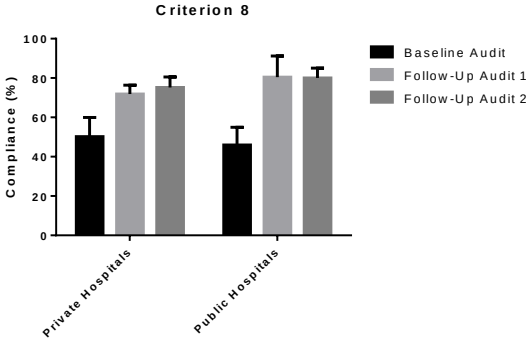

Criterion 3
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2


Criterion 4
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2


Criterion 5
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2


Criterion 6
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2


Criterion 7
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2


Criterion 8
Compliance (%)
100
80
60
40
20
0
Private Hospitals
Public Hospitals
Baseline Audit
Follow-Up Audit 1
Follow-Up Audit 2

Criteria	Comparison	Mean Diff.	95% CI of diff.	Significance
1	**Public Hospitals - Private Hospitals**			
	Baseline Audit	-11.55	-41.57 to 18.47	ns
	Follow-Up Audit 1	-17.67	-47.69 to 12.35	ns
	Follow-Up Audit 2	-12.61	-42.63 to 17.40	ns
2	**Public Hospitals - Private Hospitals**			
	Baseline Audit	-1.046	-39.51 to 37.42	ns
	Follow-Up Audit 1	-0.4955	-38.96 to 37.97	ns
	Follow-Up Audit 2	1.174	-37.29 to 39.64	ns
3	**Public Hospitals - Private Hospitals**			
	Baseline Audit	-16.12	-62.48 to 30.24	ns
	Follow-Up Audit 1	-12.09	-58.45 to 34.27	ns
	Follow-Up Audit 2	-19.29	-65.65 to 27.07	ns
4	**Public Hospitals - Private Hospitals**			
	Baseline Audit	7.849	-28.34 to 44.03	ns
	Follow-Up Audit 1	1.055	-35.13 to 37.24	ns
	Follow-Up Audit 2	-3.115	-41.26 to 35.03	ns
5	**Public Hospitals - Private Hospitals**			
	Baseline Audit	-3.499	-43.53 to 36.54	ns
	Follow-Up Audit 1	-20.5	-60.53 to 19.54	ns
	Follow-Up Audit 2	-13	-53.04 to 27.03	ns
6	**Public Hospitals - Private Hospitals**			
	Baseline Audit	8.583	-33.04 to 50.21	ns
	Follow-Up Audit 1	12.04	-29.59 to 53.66	ns
	Follow-Up Audit 2	3.998	-37.63 to 45.62	ns
7	**Public Hospitals - Private Hospitals**			
	Baseline Audit	5.085	-38.47 to 48.64	ns
	Follow-Up Audit 1	6.295	-37.26 to 49.85	ns
	Follow-Up Audit 2	-7.386	-50.95 to 36.17	ns
8	**Public Hospitals - Private Hospitals**			
	Baseline Audit	-4.239	-32.44 to 23.97	ns
	Follow-Up Audit 1	8.511	-19.69 to 36.72	ns
	Follow-Up Audit 2	4.76	-23.44 to 32.96	ns

Figure 8: Compliance in private hospitals versus public hospitals

The percentage compliance for each audit criterion was determined for participating private and public hospitals. The compliance for private hospitals and public hospitals was compared at each of the three audit time points to investigate if hospital type had any effect on compliance rates. The mean difference in percentage compliance for each audit criterion is shown above. ns = not significant

Implementation strategies

The evidence implementation projects conducted at each of the participating hospital sites used the JBI PACES and GRIP audit and change promotion tools. The GRIP process involves identifying the major barriers to compliance for particular audit criteria and developing implementation strategies to overcome these barriers and improve compliance. This is achieved through the development of a GRIP matrix which documents the barriers, strategies, resources required to implement the strategies and expected outcomes of the intervention (Table 9). Successful evidence implementation in the clinical setting requires a local project team with knowledge of the setting and with the authority and resources to put in place appropriate intervention strategies. All trained leaders sought to involve a wide multidisciplinary mix within their local project teams, with varying degrees of success. This included nurses, doctors, allied health, administration staff and patient representatives. Allocating time to analyse the audit results, and prioritising evidence-based strategies to implement was of vital importance in order to engage with all key stakeholders impacted by the project.

Details of the most common barriers experienced in this project and the strategies most frequently implemented are presented as follows:

Most common barriers experienced (for more detail see Table 9 and information from individual site reports in Appendix VI):

- Insufficient falls education provided to staff.
- Lack of staff knowledge of when to conduct a risk assessment, and which strategies to implement.
- Inadequate delivery of falls prevention education to patient and carers, and lack of appropriate material.
- Competing accreditation priorities at the time of this project.

Most common strategies implemented:

- Multiple multidisciplinary staff education sessions with department heads and executive support.
- Review and further development of fall risk assessment and prevention tools.
- Development of staff education package (online or hard copy), and orientation for new staff members.
- Opportunities for interactive staff discussion and communication at regular ward meetings.
- Development of patient and family education materials.
- Frequent conduct of follow-up clinical audits, with feedback to all key stakeholders.

Table 9: GRIP matrix summarising the most common barriers, strategies, resources and outcomes identified by trained leaders

Barriers	Strategies	Resources	Outcomes
• Insufficient falls risk assessment and prevention education provided to staff • Lack of knowledge about when to conduct a risk assessment	• Overview of falls risk factors, impact of falls, falls incidents over the past two years to be presented to a hospital wide nursing audience via the Nursing and Midwifery Grand Rounds • Analysis of falls incident reports at ward level – communicate analysis to core ward groups and discuss findings • Participate in interactive discussion and open communication	• Secure a session on the Nursing & Midwifery Grand Rounds schedule • Evaluation • PowerPoint – LCD projector • Executive support and policies in place • Access to incident management system • Weekly 'protected time' and meeting room for each ward group	• Overview session presented at Nursing and Midwifery Grand Round. • Positively evaluated by staff • Executive support provided at session • Copy of presentation placed on hospital intranet • Staff aware of falls rates and patterns within ward groups • Staff aware that 'Preventing Falls and Harm from Falls' is a National Standard 10 • Increase in number of fall prevention strategies implemented, and types of environmental changes made
• Inadequate delivery of falls prevention education to patients and carers	• Source appropriate fall educational materials and engage consumer representative regarding appropriateness of material	• Access to patient education material • Ward 'Falls resource manual'	• Nurses distributing educational material to patients and carers as a best practice strategy • Client's satisfaction regarding fall prevention interventions
• Competing accreditation	• Engage the multidisciplinary team – within each	• Project team members	• Staff feel valued and given a

priorities at same time of project	ward • Use a practice development approach, to explore staff opinions and use their advice and ideas regarding implementation of best practice/patient centred care • Provide positive feedback and encouragement to improve fall prevention practices • Participate in interactive discussion and open communication	• All nursing staff and stakeholders • Regular meetings/focus groups	sense of ownership of the project and falls prevention strategies and management
• Lack of visual management to identify patients who are at high risk of falling	• Implement visual management and provide education on what this visual management means and behavioural expectations	• Use of various visual aids	• Visual aids in use at patient bedside, and staff understanding and awareness

Fall rates

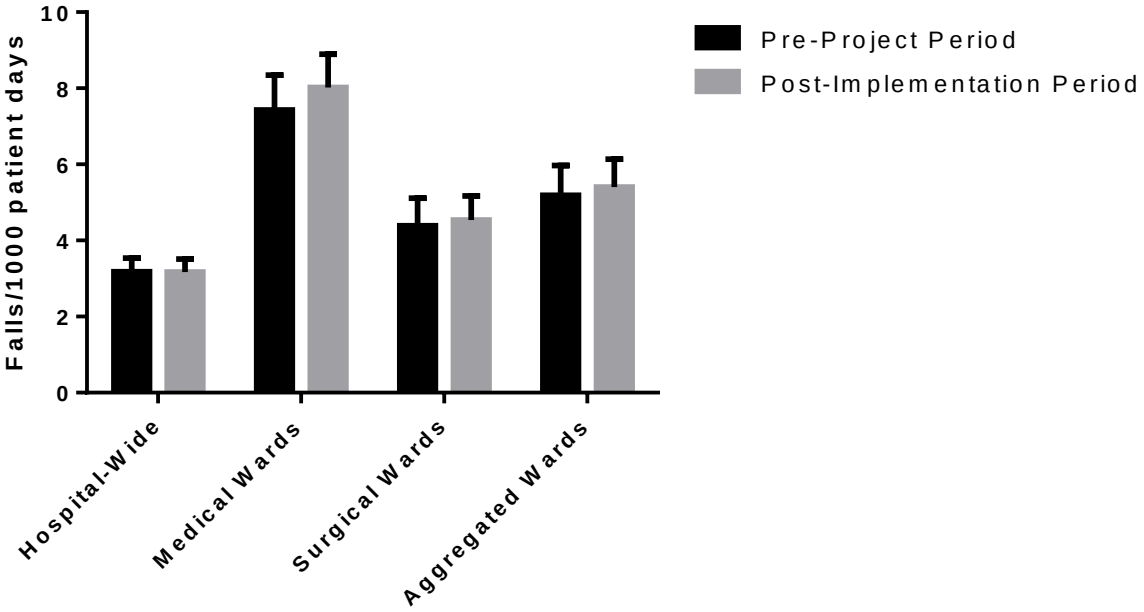
To assess if the implementation projects had an effect on fall rates in participating wards and hospitals, fall rates in the nine-month period following the implementation phase of the project (July 2013 to March 2014 – 'post-implementation period') were compared to retrospective fall rates from the corresponding period a year earlier (July 2012 to March 2013 – 'pre-project period'). Figure 9 shows the comparison between the pre-project period and the post-implementation period. Fall rate data was collected hospital-wide and also for the specific wards participating in the project. As the majority of interventions implemented as part of the project were initiated only in the participating wards, the collection of hospital-wide data served as a control with which to compare the fall rates in the participating medical and surgical wards. The data for the aggregated wards is made up of the data from the participating medical and surgical wards combined.

The mean hospital-wide fall rates did not vary between the pre-project period and the post-implementation (3.17 falls/1000 patient days during both periods). The mean fall rates for participating medical wards were similar in both periods (7.43 falls/1000 patient days pre-project and 8.02 falls/1000 patient days post-implementation; mean difference not statistically significant). Participating surgical wards also showed similar mean fall rates during both periods (4.39 falls/ 1000 patient days pre-project and 4.54 falls/1000 patient days post-implementation; mean difference not statistically significant). When the data from participating medical wards and surgical wards was aggregated, the mean difference in fall rates between the two periods was also not statistically significant (5.19 falls/1000 patient days pre-project and 5.40 falls/1000 patient days post-implementation).

The fall rate data indicated that the improvements in falls prevention practices seen following the implementation phase of the project (at follow-up cycle 1 and 2) did not appear to translate into a reduction in the number of falls in the participating wards. There are a number of reasons why this may be the case. Firstly, it may be that there was not sufficient time between the improvements in falls prevention practices and the measurement of post-implementation fall rates for the true effect of best practice improvements to be realised. It is likely that there would be a time lag between improved practice and improved outcomes and this was flagged as a possibility prior to the commencement of this project. There were also significant month-to-month variations in fall rates in some of the participating wards and perhaps using a time period of greater than nine months is necessary to accurately gauge the long-term fall rates within each ward.

Another possibility that may explain why the improvements in practice did not reduce fall rates over the period measured is that due to the focus on falls education among healthcare professionals and the fact that falls were very much in the spotlight, the reporting of falls may have improved in participating wards. During the discussion about this with the trained leaders in the final follow-up teleconference, one of them stated that *"with the education drive that we did as part of one of the strategies which was made mandatory for all nurses to*

attend, we talked about reporting falls and we made a decision as a hospital that we wanted to report all near-misses because that was something that was done quite poorly… our data, it is unable to separate that [actual falls and near-misses] at this point in time, so all actual falls and all near-misses all show up in the data as falls…. So we're thinking that the education drive probably increased reporting and reporting of near-misses which actually looks like a fall on the data". The same participant also mentioned that while the number of falls appears not to have decreased following the implementation project, there does appear to have been a reduction in the severity of injuries sustained from falls: *"The SAC (Severity Assessment Code) 1 and SAC 2 incidences relating to falls have decreased, so our patients are still falling but they are not hurting themselves as much, so we can sort of prove that in our data they're all SAC 3 and SAC 4 incidences where there has been no damage, no injury or anything."*



Comparison	Mean Diff.	95% CI of diff.	Significance
Post-Implementation Period - Pre-Project Period			
Hospital-Wide	-0.00625	-2.335 to 2.322	ns
Medical Wards	0.5917	-2.097 to 3.281	ns
Surgical Wards	0.15	-2.539 to 2.839	ns
Aggregated Wards	0.2125	-2.116 to 2.541	ns

Figure 9: Comparison of fall rates in participating wards in the period prior to and the period post the implementation project

Fall rates (number of falls per 1000 patient days) were collected from participating hospitals for a period prior to the commencement of the project (July 2012 to March 2013) and compared to the corresponding period the following year (July 2013 to March 2014), after the commencement of the implementation phase of the project. Fall rates over the two time periods were compared hospital-wide, for the participating medical and surgical wards separately, and also for the aggregated participating wards. The mean differences for these comparisons are shown above. ns = not significant

Qualitative analysis

As described in the methods, each line of text in the transcripts was reviewed, and codes developed for key concepts that were communicated by participants. These codes were then brought together to form categories – but only where there was a commonality between codes. The categories are numbered and an excerpt is provided as the supporting illustration. The codes included excerpts (illustrations) to show the meaning conveyed through the verbatim transcripts. No data was excluded on the basis of being discordant or incongruent with the majority voice, and therefore these focus group results include some codes and categories with very few illustrations from the transcript, while others represent the synthesis of larger bodies of data from across the participants. The focus group questions were structured according to the sequenced activities of the falls prevention project, hence the results are presented under headings related to these distinct phases. This starts with initiation of the project, followed by baseline data collection, then the intervention phase of the study. At the end of each section, there are stated implications for practice specific to the phase of the project. These have been developed from the analysis, and are provided for consideration.

Initiating a project in your organisation

Within the series of questions related to project initiation there were four categories and illustrations that were extracted from ten separate codes the focus group members spoke about.

Category	Illustration
1. Visible support from executive staff is a powerful statement and, a helpful facilitatory strategy – removing barriers to project participation.	"I had a good experience and I think I put it down to the executive support I had… it was very timely for us… My Director of Nursing chose the medical ward as she knew it had good leadership… she set up a falls reference group to oversee that work and put the JBI project as part of a regular agenda item on that falls reference group so it is feeding back all the time."
2. Setting up a best practice project can be delayed and complicated by the need for widespread engagement and consultation, including impacts of shift work and competing organisational priorities.	"We had one sort of glitch about getting it rocking after the initial pre audit and that was that we had a periodic review accreditation coming up so people were really focused on that and weren't open to organising things…"
3. Successful staff engagement was based on relating the project to local practice needs and organisational priorities.	"They were very positive. They reacted in a very positive way about it because they knew they had falls, they knew they were the lead ward for this project… and they knew that we really needed to have a re-look

		at our falls…"
4.	Bringing staff on to the project with locally recognised roles and expertise in the topic area was important in obtaining and maintaining local staff engagement from start-up onwards.	"I knew the areas quite well, one was my own area… I used to engage with them as I was one of the unit managers… so it's quite easy because they're my colleagues."

The results of this focus group study suggest that while senior hospital executive did not need to be involved in the day-to-day aspect of the falls prevention project, progress with establishing the study was quicker and more effective in organisations where hospital executive staff were known to support the project, provided ongoing brief reminders of the project's organisational significance, and facilitated the involvement of staff who were known clinical leaders within their organisation. These strategies were recognised by focus group participants as assisting in the recruitment of key persons to the project, reducing barriers of perception by other staff, with both of these factors enhancing the project set up phase. Barriers encountered during the set up phase may not be responsive to local ward level leadership alone, and resistance to project set up can not only cause significant delays in start-up but have a flow-on effect on other stages of the project.

Implications for project initiation

- Brief periodic intervention by executive to demonstrate visible, engaged executive support is recommended for successful project implementation.
- Clear communication across all staff on where the project fits within organisational priorities is an important facilitatory process.
- Successful project initiation requires staff known for their clinical leadership as well as those known for their topic expertise and familiarity with organisational systems, policies and processes.

Baseline data collection

Baseline data collection was not a major focal point of the discussion. Had it been a higher priority among participants, there would have been more data from this particular sub set of the focus group. The two categories and illustrations reported below were derived from five codes.

	Category	Illustration
1.	Empowering staff who are motivated or knowledgeable in the topic area with leadership and capacity facilitates completion of baseline data collection.	"I knew where I was going to get the information, people were used to seeing me around looking at notes and talking… to them about falls."

2.	Where wider staff involvement is required, having visual aids in the environment and providing benefits related to KPI or professional learning can value add to the level of cooperation and buy-in by staff.	"Positively leveraging competency requirements and mandatory KPIs can facilitate engagement with data collection as it involves staff… multiple needs, both organisational and individual."

Access to baseline data was sometimes complicated if ward staff were unaware of who was involved, and how the data would be collected. Data collection was not consistently undertaken by the project lead; rather some sites treated it as an opportunity to engage ward staff in the project, and provided them with recognition by way of recording their participation as professional development. Use of visual aids/reminders in ward areas about the current stage of the project and the purpose of the data collection might have increased staff engagement and support.

Implications for baseline data collection

- Giving staff explicit permission and support to enable ready entry to ward or unit environments and access to records and sources of data facilitates timely data collection.
- Reward and recognition for participation can include aligning project participation with regulatory requirements for continuing professional development.

Feedback on baseline data

Within the analysis of feedback on baseline data collection, there were 4 categories with illustrations that were extracted from 11 separate codes the focus group members spoke about.

	Category	Illustration
1.	Goodness of fit between a project and current organisational priorities helps engage staff, build involvement and fine tune relevance of outcomes to clinical practice.	"…we had a big education drive on falls last year… we were asking questions, what were the criteria, have you received education regarding falls prevention in the last 12 months… and that was why we honed in on several areas of weakness…"
2.	A decision to not feed back baseline results may have been based on perceived lack of staff interest, but is seen by staff as a lack of leadership.	"I didn't put a report together with graphs and charts and actual stats because historically, I found that people – it doesn't mean anything to them, they're not interested in that sort of thing."
3.	Where outcomes were not good,	"I had to be delicate as it was not their fault… the

	feedback directed at roles or systems avoids placing blame, while opening the topic for critical review of gaps in policy and practice.	hospital did not have an education program… this is our area for improvement and this is where we need to go forward."
4.	A useful approach to providing feedback is to tie it to timeframes for improvements, and a focus on the role of the nurse as an advocate.	"I said there is no doubt in my mind we can reduce [falls]. So that was the way it sort of influenced them… we targeted people who were at high risk after evaluating their risks."

Results from baseline data need to be presented to staff in the context of their practice, or their group of patients. This helps staff engage and see how the project aligns with pragmatic issues in day-to-day care of patients. Feedback that is analytic or explanatory has greater power to inform and motivate staff than where it is simply descriptive of current results. Sites which put thought into why their baseline results were either good or poor had a better grasp on how the auditing informed organisational systems rather than reflected on the individuals providing day-to-day care. Feedback should therefore focus on organisational implications and priorities.

Implications for feedback on baseline data

- Clarifying the relationship between a project and organisational priorities helps build staff engagement and alignment of project outcomes to relevant policy and practice.
- Where outcomes of a project are not fed back to the participants, engagement is reduced, and the decision may be interpreted as a lack of leadership or fear of poor results.
- Feedback that is analytic (i.e. describes how and why a result looks the way it does) tends to be more system orientated (and better received) than feedback that is passively descriptive (i.e. presents the results without analysis of factors that may have contributed to the outcomes).

Experiences with the GRIP phase

The section of the focus group interview on implementation was the largest volume of data, and the dominant interest of the participants; therefore the larger volume of data has been coded and categorised and then grouped under summary headings. The codes/categories from the GRIP phase of the focus group session were divided into a series of six naturally descriptive headings based on similarity of meaning. These included: culture, resistance, resourcing, tools, strategies and ownership. While culture, resistance and ownership could have been grouped under one overarching heading, there was a risk of dilution of description, therefore each of the above headings was kept as the basis for structuring this part of the focus group interview data.

Culture

Category	Illustration
1. Undertake solution building that is relevant to local culture and environment as experienced by staff. (derived from two codes)	"…I had to approach them differently… both wards are really different, so a lot of it came from me…"
2. While pre-conceived notions about culture and practice inhibit project facilitation, working through assumptions to find solutions is further complicated by diversity of skill sets, professional background, level of knowledge and abilities. (derived from three codes)	"I believe there is an assumption… that you know the basics… so we set out our perceptions around falls, that they are not just something that happens by chance, there are risk factors that we can change, so the perception is created earlier on rather than when we are set in our ways…"

Resistance

Category	Illustration
1. Resistance factors including time, availability and competing priorities may cause facilitator defensiveness; preparedness to work around resistance factors is integral to successful feedback opportunities. (derived from four codes)	"I organize with the manager that these are the list of people… and I kind of provide everything and they just need to be there… I said look, we know we are doing this project, you need to lock in some dates, just lock them in and then everyone signed off and I had their names typed and they signed against the names…"

Resourcing

Category	Illustration
1. Dedicated project time is essential; creating 'off floor time' for group processes may require ongoing advocacy by project leads for themselves and other staff involved. (derived from three codes)	"One of the issues I found was actually getting the time off the floor for them to be able to sit down and have a chat about it… so we actually funded a non-clinical day for them so they could sit down and look at the results, talk about why we think those results were and sit and talk about what we were going to do about it."

Tools

Category	Illustration
1. Introduction of a new tool can help drive care improvement when staff are clear on the purpose and how to apply the tool, particularly when the tool is seen as directly	"I showed them how to do it… and I explained that our tool was from a stratified study where they identify major risk factors of falling and that's why we have this [tool]… So I basically

relevant to an improvement in a patient outcome. (derived from two codes)	enumerated all of the risk factors… and that is one of the things they do love… and then that's it."

Strategies

Category	Illustration
1. Education linked to best evidence for practice improvement and delivered via programmed sessions reduces barriers to shared knowledge and accessibility by stakeholders. (derived from four codes)	"They talk about falls rates, the cost… its background information but it's not education… but you explain to them the process which is how now we can get that education in around doing it on transfer…"
2. Provision of clear guidance and direction on how to improve outcomes using clinician-relevant language helps improve the focus and strategic value of group planning sessions. (derived from three codes)	"We put them as a suggestion and what did they think was achievable. And there was one they asked to be removed – they thought it was unnecessary and that was fine, we took that feedback and we took one strategy out at their request… consultation is a big thing… I'd like you guys to look at the accuracy of your assessment and to focus on that because accuracy is only 20%, so I translated it straight away…"
3. Implementation strategies (including assessment) that draw upon existing skills and knowledge minimise the learning curve experience and hence the project trajectory. (derived from two codes)	"…everything we implemented was stuff that they already had a bit of knowledge on, but it just needed to be reinforced… they needed a little bit of TLC around 'let's do it this way'."

Ownership

Category	Illustration
1. Ownership starts with a project leader able to facilitate staff to engage (derived from two codes)	"I went in and said 'this is your project not mine'. I figured if they came up with ideas, they would be more likely to run with them… you need to come up with something to get the ball rolling…. so there was a lot of discussion around what I put forward."
2. The structure and implementation of ownership can vary with local needs, but it needs to include team actions directed at project goals and outcomes. (derived from two codes)	"….there was a whole heap of work that we were all doing so this fitted nicely into that… and it's a good way of getting it done."

3. Ownership by actively recognising and responding to diverse feedback has a positive impact on compliance. (derived from five codes)	"Participants across… wards and administrative staff can bring feedback to implementation that is a good fit with existing systems and processes, getting this right can have a positive impact on compliance."

Results from the focus group session in relation to GRIP lead to the categorisation of data into six domains; these included cultural considerations, resistance, resourcing, tools, strategies and ownership. Cultural influences can have a substantive impact on best practice projects; the level of influence is dependent on how well culture is understood and engaged with during the project. From the focus group exercise it was evident that culture could be positively influenced by undertaking the GRIP process within a multi professional group rather than by a single person or single profession.

Culture also influenced the degree of resistance, where a resistor was identifiable as a person or attribute that acted or was perceived to act as a hurdle to practice change. Working to remove or address hurdles lowers resistance and improves the GRIP process.

Resourcing was raised frequently in the focus group discussion. Project leads and participants were often of the view that if further human resources were required, executive support was lacking and ongoing justification for time needed to be provided. Some sites reported innovative ways of creating or allocating 'off floor' time to encourage involvement by key staff. Resourcing was seen primarily more as a human resource issue than an equipment and materials issue; this strongly suggests that for most sites, it was human resources that was the hardest to source and retain within the project.

Tools were generally variations of assessment instruments. The focus groups were very clear though that introduction of new assessment instruments was often poorly done, with a focus on risk assessment and repeat assessment rather than on the direct implications for practice. Introducing a risk assessment instrument by simply citing the risks and impact on the organisation's bottom line was considered a recipe for failure by participants. Newer risk assessments with less fields where there was a clear link to patient care activities were seen as adding value and therefore beneficial in terms of successful implementation and uptake.

While the focus group session sought to identify new or alternate strategies that had been implemented, the group raised a few key points. These included the message that implementation strategies that draw on existing staff skills, knowledge and experience are easier to gain consensus on, and create less hurdles than new strategies that had learning curve requirements. The group also felt that educational strategies based on a recognised 'best practice' source or partnership, such as with JBI, was a significant factor in overcoming issues of 'credibility' and perceived 'validity' of the evidence. A partnership with JBI and utilising high quality evidence and resources were two of the biggest strategies implemented

across sites. Some work was done to enhance this strategy, particularly by using language appropriate to the specific groups of clinicians.

While group ownership of a project is unclear in terms of the role of ownership in implementation, there was consensus across most sites that it needed to be a focus of activity. The concept of ownership was introduced from project planning through to initial start-up as a strategy to engage and 'bring staff along'. Ownership was important as sites felt that without it, project sustainability would not be achievable. Strategies to promote ownership included team-based meetings, team activities that were relevant to the project goals and outcomes, and authenticating group ownership. Authentication of ownership was characterised by listening and responding positively to all feedback by group members, and taking on board feedback on improved care delivery or better patient outcomes.

Implications for experiences with the GRIP phase

Cultural considerations:

- Identifying local cultural factors that influence project outcomes is done though participatory group processes in GRIP, particularly in exploring assumptions and possible solutions to better compliance.

Resistance:

- Acknowledging and working around or sufficiently resourcing identified 'resistors' (a resistor being a feature, issue or characteristic at the system level that creates a hurdle to improving compliance).

Resourcing:

- Creative solutions to adequate resourcing of projects, such as allocating 'off floor' time, can be a value-added feature at the organisational level but it requires ongoing advocacy by project leaders.

Tools:

- Clarity of purpose, relevance and benefits to patient or practice outcomes should be key messages when introducing a new tool (including assessment instruments).

Strategies:

- Education based on recognised sources of 'best practice' is seen as having greater credibility and influence on what would otherwise be barriers to knowledge transfer.
- Strategies should be clear and stated in 'clinician language' before being endorsed by the project group for implementation in a project.
- Implementation strategies that draw on existing skills, knowledge and experience reduce the hurdles for the successful uptake of best practices.

Ownership:

- Staff ownership begins at the project initiation with a planned approach to engaging and including staff, and project leads who are able to 'bring staff with them'.
- Creating ownership includes creating team-based actions and activities that are relevant to project goals and outcomes.

- Staff ownership of a project can be enhanced by listening and responding positively to all feedback, particularly where it relates to improving outcomes for patients or care delivery practices.

Extended questions on education and interventions

This section of the focus group sought to examine in greater detail the experiences and learning outcomes of the group related to education, and the strategies and factors that were associated with educational interventions. The aim was to bring together core data related to factors that either negatively impacted or positively influenced the ability to deliver education. As the term education is a broad construct, there were many aspects to content delivered, how it was delivered and the perceived impact of delivery. This section of the report focuses on these elements, including the effectiveness of strategies arising from an educational session.

Category	Illustration
1. Being time poor is a barrier to effective ward-based education strategies; however, repetition can compensate for smaller time slots. (derived from seven codes)	"Work hours are tight….we have the half hour critical handover, but nothing else… But face to face is really powerful with something like this because you have that opportunity for them to talk to you about their issues which is fabulous; and they buy in more…"
2. Education that focuses on clinical care, not just assessment, and is incrementally rolled out via both face-to-face and alternate strategies is seen as increasing impact on staff practice and patient outcomes. (derived from three codes)	"Face to face opportunities and e-learning present key avenues to share project feedback… education for practice change should focus on how to effectively prevent falls… not just give information on rates of falls and their costs…"
3. A problem with risk assessments that do not lead directly to best practice interventions is the focus on assessment indicators, and this can become routinised without impacting on patient care once a form is completed. (derived from six codes)	"Current risk assessment strategies become routine processes that tick a box rather than…feed in to care planning and prevention."
4. Awareness raising and a continual focus on falls was undertaken via pamphlets created on-site, but required staff to also be self-directed in reading and engaging with policy. (derived from three codes)	"Awareness raising including pamphlets [is] considered important, although mostly as a starting point…"

5. Big policy changes often require multiple, incremental strategies for staff uptake and utilisation, hence the timing and sequence of hospital-based initiatives can impede or facilitate practice improvements for falls. Leadership on falls that facilitates and integrates the 'big policy' decisions with smaller, flexible changes reduces staff frustration. (derived from five codes)	"We had the spotlight on policy, so over a month you would have everything to do with falls… we've got a group fall prevention package... we've got this massive big falls prevention package coming… and you run the risk of having to make more changes once you have implemented that."
6. Collaborative cultures where staff are engaged led to better group discussions on what was and was not working as an intervention to improve best practice compliance. (derived from five codes)	"We got staff reading the entire falls policy and if staff could not attend education sessions that I facilitated with them, we had them come to a case study session where I made up a clinical scenario…"
7. Brief screening is seen as more clinically useful and relevant than comprehensive assessment by staff and may overcome barriers in perception of the usefulness of risk assessment and its relationship to best practice. (derived from four codes)	"We do an admission re-screening tool… there's five questions, you don't do a detailed falls risk assessment…. they actually found it quite easy and it was quite well complied with…post audit they were really doing it and it gave an opportunity where they could show evidence what they had implemented…"
8. Workforce mobility to address competing organisational priorities acts as a barrier to continuity of good policy and practice in fall prevention and management. (derived from three codes)	"I am going to be moving on to other things and not necessarily because I want to… there's also the competing priorities…"
9. Sustainable implementation of best practice in falls prevention is consistently linked to having a named person with a clearly defined role; locating such a person is seen as a fundamental resourcing issue for effective care. (derived from nine codes)	"I put a proposal to the hospital that we needed a falls clinical leader… a dedicated role I think would help sustainability."

10. Ensuring falls are a standing agenda item on relevant committees is a small but useful strategy for raising and maintaining a falls project profile. (derived from four codes)	"…putting it in as a standing item on say clinical management meetings so it's… consistently there and… it becomes incorporated into the whole picture."
11. While falls are costly both to hospitals and insurers these costs can inform organisational support for falls prevention programs and projects. (derived from four codes)	"We have a local health fund that keeps sending back and questioning different things based on coding… they fall in the bathroom and fracture… that's $20,000 and now it's a replacement issue…."
12. Implementation strategies that involve family or non-hospitalised people are seen as an organisational risk, and therefore simplified messaging was preferred for family and significant others. (derived from five codes)	"I designed one [family brochure on fall prevention and management]… but it had to be approved through our Board of Approval and they said 'no, it will take six months sorry'… I had a bad feeling anyway… they were good with everything else but when it came to that and having it approved…"
13. When patients or their significant other disagree with a risk assessment, their behaviour may be seen as increasing the risk of falls. Professional documentation is the primary back-up used by nurses to safeguard against this risk. (derived from three codes)	"Consumers don't want it, they've made that very clear… I guess it comes down to patients who do not see that risk of it…"
14. While some claim fall prevention is a nursing role, overall, getting buy-in from across the practice-based professions was seen as important, and required a shift in claimed problem ownership. (derived from five codes)	"A fall prevention unit in my ideal world [will be] a multidisciplinary team… we need to work together on this fight against falls… and we went right down to hotel services so the cleaners, kitchen staff, everyone… it's not a nursing problem, it's everyone's problem."
15. Engaging beyond the nursing profession is more effective if the knowledge and ownership of falls prevention and management are not seen solely as a domain of nursing. (derived from three codes)	"I really think it was difficult to include multi-disciplinary because doctors don't know what our [work] looks like so it was really difficult to include them [as] part of the audit."

Given education was the primary strategy used across sites for implementation, the last half of the focus group session was on a series of extended questions related to the methods and outcomes of educational interventions that were implemented.

While 'lack of time' and sporadic staff availability to attend education sessions were hurdles to delivering education, the key strategy for mobilising time effectively was keeping the educational interventions brief. Brief sessions were able to fit in with clinical priorities better, and provided flexibility with regard to when and how sessions were offered to staff.

Within a flexible brief educational session, a focus on clinical care issues rather than the 'need for assessment', 'risks' or other issues perceived as not being about clinical care delivery was better received. Where there was a need to educate on risk assessment, making the link to direct patient care was the key strategy for making those sessions meaningful and effective. Brief flexible strategies included the use of handover time, pamphlets to act as reminders, setting fall policy reading requirements linked to KPIs for staff, avoiding a silo effect and ensuring that sessions were multi-disciplinary, and seeking to responsively adapt strategies to participant feedback. For example, in one site, staff highlighted that a brief screening instrument could achieve the same goals as the more comprehensive assessment being offered. The falls project team then changed to a brief assessment and achieved an improved level of compliance.

A number of organisational factors were identified through the focus groups in addition to the ward- or unit-based strategies already raised. These included a need to consider the impact of workforce mobility. With knowledgeable staff often moving between clinical and administrative areas, local knowledge could be lost to projects. In contrast, having clearly defined roles within the project was seen as an effective organisational strategy to retain project knowledge, and to provide reward and recognition to staff engaged in falls prevention.

The group recognised that having defined roles with role descriptions may constitute a cost for some organisations, and that this often constituted an obstacle to the introduction of best practice projects. While operational costs were seen as a hurdle, they were not always seen as congruent with healthcare priorities as falls were a recognised cost and a risk burden to organisations. Therefore some investment in fall prevention was considered appropriate by all participating sites.

The final point in this section of the focus group was that working with families and significant others who acted as informal care givers was seen as both important from a best practice perspective and high risk. Some sites would not engage with families due to perceived risk, while other project leaders had immediate support to engage family. The impact of this on project outcomes was not clear, but what was clear was that if patients themselves or their families did not see, accept and believe the risk of falls, they became a hurdle to effective fall prevention. Therefore, at some level, it seemed important to 'get the message across' to patients and families where there was an identified risk of falls about

appropriate ways to prevent falls and to mitigate the risk of non-adherence to defined strategies.

Implications from education and implementation

- Awareness raising for fall prevention projects can be enhanced by ensuring the project is a standing item on all relevant agendas, by use of locally produced pamphlets, and the introduction of named expert roles that have clearly defined role-related expectations.
- Collaborative cultures where staff from across professions and service groups engage lead to better group discussion and shared ownership of fall prevention projects.
- A focus on clinical assessment can reduce the impact of care provision if there is no direct link between assessment and interventions.
- Engaging family and significant others is seen as a risk, and organisations generally seek to minimise this risk by minimising engagement.
- Time and resource challenged settings can accommodate best practice projects by use of brief repetitive education sessions, taking an incremental approach to practice changes and managing internal mobility of staff.
- Costs or cost benefits may be associated with a project, therefore organisational support for the project, and resourcing and tracking of costs/cost benefits should be considered.

Follow-up focus group

The follow-up focus group was held after completion of the second follow-up audit, and provided participants with the opportunity to offer their final thoughts and reflections on the project, particularly the implementation aspects and sustainability. This final focus group discussion investigated three main areas:

1. Whether introduction of tools or changes were sustained.
2. Whether additional barriers were identified or alternate strategies required.
3. If additional interventions were added, what the timing and impact of timing were.

For question 1, there were three categories that arose from the data. These were related to: 1) role of education, 2) evidence of organisational support, and 3) clinical judgment as a valued intervention.

Category	Illustration
1. Education can reduce barriers and resistance among staff and patients, Fall champions can be considered an organisational commitment to fall prevention, with rewards given to	"They saw it as another piece of paperwork… so it does need to be backed up by… education… invest a bit of time in to those falls champions, provide them with… education days and a master class and give them email access… they can have access to their ward data."

	staff with recognised clinical leadership, provided they are resourced and developed appropriately. (derived from two codes)	
2.	Organisational support, including purchase of equipment or facilitating central communication and time management, are seen as critical to project success. (derived from three codes)	"We purchased equipment that we never had before… interventions [must be] consistently applied and communication is fundamental to success… so people are systematically cued… which is really important."
3.	Aspects of clinical judgment should be integral to the decision-making process and implementation of fall strategies. (derived from four codes)	"You need to have good intervention strategies that are known but then you need to add the clinical judgment level… you [need to] be mindfully putting in interventions for that patient…"

For question 2 related to barriers and strategies, there were two categories that arose from the data; these were related to: 1) barriers and their impact on sustainability, and 2) strategies for gaining momentum.

	Category	Illustration
1.	Perception of 'do-ability' is an important influence on engagement and sustainability; however, sustainability also requires momentum, topic visibility and prioritisation, with higher input projects at greater risk of drop-off over time. (derived from four codes)	"It has got to be conceived as do-able by staff… some have gone backwards as well… it's just to do with the overwhelming [demands of] other things that are happening… just having a constant driver in the ward; unfortunately, unless I am there driving it myself, it just falls off the radar."
2.	Partnering with a recognised entity such as JBI for evidence-based practice reduces barriers of perception; combined with good governance this creates a robust structure which supports best practice. (derived from four codes)	"I used the strength of the JBI project to eliminate a whole lot of things about falls prevention… a lot of strategies were rolled out with executive support… so I had really strong governance behind me."

For question 3, there was one category related to new strategies that arose during the project.

Category	Illustration
1. Open display of outcomes in wards can be combined with investing in the nurturing and training of change champions as a project management strategy. (derived from five codes)	"We did a master class for educators… we started to publicly display our fall rates in all units."

Members of the focus group were invited to re-convene for a final discussion at the end of the project. The areas of discussion were around whether changes that had been made were considered sustainable, whether additional hurdles had been identified and whether further strategies for implementation had been added.

No new information specific to these three questions came out in this final focus group session. However it did reinforce that sustainable best practice projects in fall prevention bring together educational interventions with clear organisational support and a focus on enhancing clinical judgment to promote best practice. Interventions that facilitated a valid role for clinical judgment while providing education and best practice resources (resources included not only evidence-based materials and educational content but also named staff with defined role expectations in relation to falls) were clearly preferred.

Implications from the follow-up focus group session

- Sustainability is a combination of education, organisational support and recognition that clinical judgment is central to best practice, with education guiding both the project and evidence informed practice.
- Overcoming barriers implies addressing perceived 'do-ability' or practical achievability, while partnering with a known, reputable evidence-based organisation such as JBI addresses issues of 'credibility of the evidence'.
- Additional interventions were rare, although one site identified routine display of outcome data in all wards as an additional intervention as part of awareness raising.

Conclusions

This project reviewed and summarised the best available evidence on in-hospital falls prevention and, from this, developed evidence-based audit criteria that were used to conduct multi-site audits at nine hospitals around Australia. A nominated staff member from each hospital was trained in clinical leadership and evidence implementation, and over the course of the program learnt how to conduct clinical audit and feedback cycles. Following a baseline audit cycle, strategies were implemented at each of the hospital sites to work towards best practice. These implementation strategies resulted in improvements in overall compliance at all participating hospitals and, in addition, the aggregated data for all hospitals showed improvements in every audit criterion. Comparison of audit data from the first follow-up cycle with the second follow-up cycle (conducted five to six months later) showed very similar results, indicating the improvements in compliance were largely sustained over a time period well beyond the initial focus of the project. At any of the audit cycles very few differences were seen when comparing compliance rates for medical wards to those of surgical wards, and for private hospitals to those of public hospitals.

The most common strategies implemented to work towards best practice in falls prevention included staff education (through both education sessions and online education packages), education resources for patients and their family members, further development of risk assessment tools, and improved processes to assist healthcare staff to intervene appropriately in relation to specific risk factors. The significant improvements in compliance in some of the audit criteria following the implementation phase show that practice change can occur relatively rapidly when appropriate strategies are used to target identified areas. Conducting clinical audits and feedback at regular intervals helps to improve and maintain evidence-based best practice standards.[16]

While fall rates from the post-implementation period were similar to the pre-project period, it is likely that there were improvements in outcomes that were not reflected in the data. Firstly, it seems the focus on falls education may have led to increased reporting of near misses or falls not resulting in injury which may have previously gone unreported. So with increased reporting, the underlying fall rate may have actually decreased although this cannot be determined from the data available. Secondly, the fall rate data collected only included the number of falls, not the severity of injury resulting from falls. It is possible that the improvements seen in falls prevention practices, while not reducing fall numbers outright, may have led to fewer and less serious fall-related injuries.

The focus group conducted with the trained leaders provided insight into the barriers and facilitators to initiating and running a project of this nature in acute hospital settings. It is clear that good organisational support is important to the success of an implementation project. At a ward level, clinical leadership and establishing a culture of teamwork, responsibility and ownership were also identified as important. Specifically, to improve falls

prevention practices, education was identified as a key factor. For healthcare staff, education should be evidence-based and seen as relevant to their clinical setting.

Overall, this project established evidence-based best practice for in-hospital falls prevention and demonstrated how it can be successfully applied in acute hospital settings as a multi-site audit to improve falls prevention practices. More broadly, this study has enhanced the knowledge and understanding of the use of evidence in practice and mechanisms by which the implementation of research evidence can be achieved in healthcare practice.

Translation of results

The evidence-based audit criteria developed as part of this project may be used by hospitals wishing to audit their falls prevention practices. In addition, the knowledge obtained regarding barriers and facilitators to successful audit and feedback, and regarding implementation of strategies to promote best practice, is valuable to hospitals wishing to translate research evidence into clinical practice.

The results of this project will be disseminated as widely as possible to spread the message of evidence-based in-hospital falls prevention and the implementation of evidence in practice more generally.

Publications:

- The nine implementation reports written by the falls prevention trained leaders (Appendix VI) are in preparation for submission to the refereed online journal, the JBI Database of Systematic Reviews and Implementation Reports (JBISRIR, http://www.joannabriggslibrary.org/index.php/jbisrir).
- The project team has drafted an article ready for submission which is titled "Prevention of in-hospital falls: development of criteria for the conduct of a multi-site audit" which details the process of the evidence review and development of the evidence-based audit criteria.
- A further article detailing the audit results, best practice implementation strategies and outcomes will be prepared for submission.
- Two qualitative research papers will be developed that: 1) focus on the barriers and facilitators to implementation of evidence into clinical practice, with a specific focus on falls prevention, and 2) focus on barriers and facilitators for specific interventions used to improve compliance with best practice in falls prevention and the perceived effectiveness of these strategies.

Conference presentations:

- Preliminary results of this project were presented at the JBI International Convention in Adelaide in October 2013:

    - Giles K, Stephenson M, McArthur A, Aromataris E, Lockwood C, Pearson A. A multi-site audit of current in-hospital falls prevention practices.
- Two abstracts will be submitted to present the final results of the project at the Australian and New Zealand Falls Prevention Conference in Sydney in November 2014.

Some of the trained leaders, with support of their hospital management, have begun to expand strategies introduced in wards that participated in the project. Strategies that were identified as successful in the participating wards are now being rolled out for hospital-wide uptake, which should improve falls prevention practices in entire hospital sites. Ongoing falls prevalence data may be monitored over time at participating hospitals with the anticipation that improvements in practice will ultimately lead to a reduction in the number of falls. The continued presence of the trained leaders should ensure that the benefits observed during this project are ongoing and that regular follow-up auditing may be used to ensure continued compliance with best practice recommendations. If any of the trained leaders move to other hospitals they will take with them their knowledge and skills in evidence implementation and will hopefully play a role in improvement in falls prevention practices at their new hospital.

In addition, there is potential to expand the project to cover a larger number of hospitals. Other hospitals around Australia would be interested in utilising successful strategies to improve practice for falls prevention and minimise falls. JBI is currently conducting an international, multi-site best practice implementation project titled "Encouraging and improving best practice for insertion and management of indwelling urethral catheters for adult patients". Sites across Spain, Finland, Australia, Singapore and the United States of America self-enrolled in an evidence-based clinical audit cycle with a focus on reducing adverse events and risks associated with indwelling urinary catheters. Like falls, catheter-associated urinary tract infections are a common adverse event experienced in acute care hospitals. This project also indicates that small changes that improve practice can have a big impact on patient outcomes. Results to date (unpublished) show that using evidence-based audit criteria leads to improved compliance with best practice during follow-up audit cycles, and this is perhaps the most pertinent conclusion to be reached by this study, while practice that is not based on evidence tends to vary widely within and between countries (for no clear reasons), and practice that is based on evidence tends to decrease the degree of unexplainable variation. By way of further observation, all hospitals self-selected to be involved and were very keen to not only see their data but to cross compare internationally against anonymised data for this important clinical outcome. It is anticipated that a falls prevention project could work in much the same way as this on a national scale. We will seek opportunities to further promote this to Australian hospitals and give hospitals the opportunity to enrol in a large-scale audit and best practice implementation project facilitated by JBI.

Wide-scale implementation of effective strategies to work towards best practice in falls prevention will lead to improvements in quality and safety of care for all patients at risk of in-hospital falls. In addition, implementation of the findings from this research should lead to a

reduced burden on healthcare resources and result in significant cost savings for the Australian health system.

Acknowledgements

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Appendix I: Search strategy for major databases

PubMed

("Accidental Falls"[Mesh] OR “fallers”[tiab] OR “falls per”[tiab] OR “falls rate”[tiab] OR “falls incidence”[tiab] OR “falls prevention”[tiab] OR “fall prevention”[tiab] OR “prevention of falls”[tiab] OR "prevent falls”[tiab] OR “prevents falls”[tiab] OR “prevent patient falls”[tiab] OR “prevents patient falls”[tiab] OR “preventing fall”[tiab] OR “preventing falls”[tiab] OR “falls reduction”[tiab] OR “fall reduction”[tiab] OR “reduction of falls”[tiab] OR “reduce falls”[tiab] OR “reduces falls”[tiab] OR “reducing fall”[tiab] OR “reducing falls”[tiab] OR “improve fall”[tiab] OR “improve falls”[tiab] OR “improves fall”[tiab] OR “improves falls”[tiab] OR “improving fall”[tiab] OR “improving falls”[tiab]) AND (hospital OR hospitals OR hospitali*) AND English[lang] AND (systematic[sb] OR "Meta-Analysis as Topic"[Mesh] OR review[pt] OR practice guideline[pt] OR meta analysis[pt] OR "Practice Guidelines as Topic"[Mesh])

Results limited to 01/01/2008 – 01/01/2013 & English only

CINAHL

("Accidental Falls" OR “fallers” OR “falls per” OR “falls rate” OR “falls incidence” OR “falls prevention” OR “fall prevention” OR “prevention of falls” OR "prevent falls” OR “prevents falls” OR “prevent patient falls” OR “prevents patient falls” OR “preventing fall” OR “preventing falls” OR “falls reduction” OR “fall reduction” OR “reduction of falls” OR “reduce falls” OR “reduces falls" OR “reducing fall” OR “reducing falls” OR “improve fall” OR “improve falls” OR “improves fall” OR “improves falls” OR “improving fall” OR “improving falls”) AND (Hospital OR hospitals OR hospitali*) AND (systematic review OR Meta-Analysis OR review OR meta analysis OR Guideline)

Results limited to January 2008 – January 2013 & English only

Embase

('accidental falls'/exp OR 'fallers' OR 'falls per' OR 'falls rate' OR 'falls incidence' OR 'falls prevention' OR 'fall prevention' OR 'prevention of falls' OR 'prevent falls' OR 'prevents falls' OR 'prevent patient falls' OR 'prevents patient falls' OR 'preventing fall' OR 'preventing falls' OR 'falls reduction' OR 'fall reduction' OR 'reduction of falls' OR 'reduce falls' OR 'reduces falls' OR 'reducing fall' OR 'reducing falls' OR 'improve fall' OR 'improve falls' OR 'improves fall' OR 'improves falls' OR 'improving fall' OR 'improving falls') AND (hospital/exp OR hospitals/exp OR hospitali*) AND ((((systematic AND review/exp) OR 'meta analysis'/exp OR review/exp OR meta) AND analysis/exp) OR guideline) AND [english]/lim AND [embase]/lim AND [2008-2013]/py

Appendix II: Information sheet and consent forms for participating hospitals and nominated individuals

Information Sheet

Prevention of in-hospital falls: A multi-site audit and best-practice implementation project

Background

Patient falls are a significant problem in hospitals and primarily involve the elderly. Injuries resulting from falls can range from minor bruising to serious injuries such as fractures, and in some cases can lead to permanent disability or death. The impact of falls on patient outcomes and the added costs to the healthcare system are significant. Many in-hospital falls are preventable. Evidence-based best practice guidelines for preventing falls are available and provide specific information for Australian hospital settings. In addition, most Australian hospitals have fall prevention policies that include the use of fall risk assessment tools. Despite access to these resources, many preventable falls continue to occur in Australian hospitals, resulting in complications for patients and increased healthcare costs.

Aim:

The main aims of this project are to conduct a multi-site audit of in-hospital falls prevention practices, to implement interventions to promote best practice, and assess the effects of these strategies at minimizing in-hospital falls. The overall purpose of this project is to increase staff compliance with falls prevention best-practice within hospital settings to prevent in-hospital falls amongst at-risk patients.

Participation:

Your participation in the study is completely voluntary; it is up to you whether or not you take part in the study. You are entirely free to withdraw your permission to be involved at any time without disadvantage to you in any way, now or in the future.

Participating hospitals will be asked to:

- Nominate an interested hospital staff member who will undertake training in clinical leadership, clinical audit and evidence implementation at the Joanna Briggs Institute, and will apply this knowledge to their clinical setting.
- Nominate one medical and one surgical ward (with a sample size of approximately 30 patients per ward) where nominated staff can conduct a clinical audit and best-practice implementation project.

- Provide hospital-wide fall rates for 12-months before and after the intervention.
- Provide fall rates from nominated medical and surgical wards for 12-months before and after intervention.

Nominated staff will be asked to participate in the JBI Evidence-Based Clinical Fellowship Program. This is a *six-month* workplace, evidence-based, implementation program that will involve:

- Attending 2 x five-day intensive training weeks in Clinical leadership, clinical audit and evidence implementation training at the Joanna Briggs Institute in Adelaide with study participants from other clinical sites around Australia.
    - **1st week of training:** 20-24 May 2013, Adelaide, SA
    - **2nd week of training:** 18-22 November 2013, Adelaide, SA

Following training, participating staff – with assistance from JBI researchers - will have the opportunity to implement best practice in falls prevention in their hospital, this will involve:

- Conducting a baseline audit of falls-prevention practices at participating wards (one medical and one surgical) within their hospital using evidence-based audit criteria.
- Based on the results of the baseline audit, identifying barriers preventing compliance with best practice.
- Determining appropriate strategies to target the identified barriers and developing an action plan to overcome these barriers to facilitate the implementation of evidence into practice.
- Conducting one or more follow-up audits to assess the impact of the implemented strategies in improving compliance with best practice for falls prevention.
- Completing a project report for publication at the conclusion of the second training week.

The Joanna Briggs Institute will provide:

- Free enrolment for study participants in the JBI Evidence-Based Clinical Fellowship Program; the usual cost for this program is $2,540 for JBI members and for non-members is $3,175.
- Airfares and transfers to attend two training weeks in Adelaide (for interstate attendees).
- Accommodation in Adelaide and per diem during the two training weeks (for interstate attendees).
- Paid salary for 3-hrs/week during the data collection phase of the project (implementation of evidence) from 27 May to 15 November 2013 (25 weeks). Salary will be paid at the participants usual salary scale, up to the level of RN3.

Possible benefits of research participation:

- Benefits associated with participation can in no way be assured, however, it is anticipated this project will reduce the number of preventable falls, thus improving the quality and safety of care for patients at-risk for falls, and reducing costs to healthcare systems.

Time commitment

In considering your acceptance, please bear in mind that the JBI Evidence-Based Clinical Fellowship Program is a *six-month* workplace, evidence-based, implementation program. It is important that staff participate for the duration of the program, which will run for 27-weeks (from 20 May to 22 November). During this period, participating staff will be asked to commit to 10-days of training (conducted in Adelaide) and 3-hours per week at their participating workplace.

Anonymity and Confidentiality

This research study is anonymous. No directly identifying information will be collected. Any potential identifying data will not be used in the reporting of this research; only aggregate results will be analysed and presented. Data will be stored securely and will remain confidential and only accessed by the research team.

Contact information

Professor Alan Pearson, AM
Principal Investigator
Executive Director, The Joanna Briggs Institute
Head, School of Translational Health Science,
Faculty of Health Sciences, The University of Adelaide
Tel: (08) 8313 4880, Fax: (08) 8313 8280

For questions regarding this project please contact:

Dr Matthew Stephenson
Research Fellow
The Joanna Briggs Institute
School of Translational Health Science
Faculty of Health Sciences, The University of Adelaide
Tel: (08) 8313 6480, Fax: (08) 8313 4881, Email: matthew.stephenson@adelaide.edu.au

Ethics

This project has been approved by the Research Ethics Committee of the Royal Adelaide Hospital (RAH). The research will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research, 2007. If you wish to speak to someone who is not involved in the study about its conduct or your rights as a participant, please contact the RAH Research Ethics Committee:
Tel: (08) 8222 4139, Fax: (08) 8222 3035, Email: rah.ethics@health.sa.gov.au

Upon agreement of a hospital to participate in this project, JBI will contact the Research Ethics Committee at the participating hospital to secure appropriate approval at that site.

Consent form for participating hospitals

Prevention of in-hospital falls: A multi-site audit and best-practice implementation project

Investigators: Professor Alan Pearson, Dr Edoardo Aromataris, Dr Craig Lockwood, Dr Matthew Stephenson, Ms Alexa McArthur

To be completed by the Director of Nursing / Director of Nursing Research / General Manager / Nursing Director:

1. The nature and purpose of the research project has been explained to me. I understand it, and I consent to the hospital named below to participate in this project.
2. I agree to provide researchers involved in the project at JBI with hospital-wide fall rates and fall rates for the participating wards for a period of 12 months preceding the intervention and for 12 months following the intervention. N.B. Fall rates for individual wards and hospitals will remain confidential.
3. I understand the requirements for study participants and I agree to nominate and support an interested staff member from the hospital to take part in this project.
4. I understand the time commitment required of participating staff during the study period, which is contained in the Information Sheet.
5. I understand the statement concerning payment to my staff for taking part in this project, which is contained in the Information Sheet.
6. I understand that I may not benefit from taking part in this project.
7. I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
8. I understand that I can withdraw from the project at any stage without any disadvantage to me or my hospital of any kind, now or in the future.
9. I have had the opportunity to discuss taking part in this investigation with a family member, colleague or friend.

Name of hospital:.....

Title and name:.....

Position:.....

Signature:..... Date:.....

I certify that I have explained the study to the volunteer and consider that he/she understand what is involved.

Signature:..... Date:.....

Consent form for study participants

Prevention of in-hospital falls: A multi-site audit and best-practice implementation project

Investigators: Professor Alan Pearson, Dr Edoardo Aromataris, Dr Craig Lockwood, Dr Matthew Stephenson, Ms Alexa McArthur

To be completed by nominated individuals:

10. The nature and purpose of the research project has been explained to me. I understand it, and agree to take part.
1. I agree to fulfil the participant requirements detailed in the Information Sheet to the best of my ability.
11. I understand the time commitment required of during the study period, which is contained in the Information Sheet.
12. I understand the statement concerning payment to me for taking part in this project, which is contained in the Information Sheet.
13. I understand that I may not benefit from taking part in this project.
14. I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
15. I understand that I can withdraw from the project at any stage without any disadvantage to me or my hospital of any kind, now or in the future.
16. I have had the opportunity to discuss taking part in this investigation with a family member, colleague or friend.

Name of hospital:.....

Title and name:.....

Position:.....

Signature:..... Date:.....

I certify that I have explained the study to the volunteer and consider that he/she understand what is involved.

Signature:..... Date:.....

Appendix III: Template for collection of falls data from participating hospitals

Please enter the **number of Falls** and the **number of Patient Days** (same as Bed Days or Occupied Bed Days) for each month

The Fall Rate (Falls/1000 patient days) will then be calculated for each month

	Hospital-wide			Participating Medical Ward			Participating Surgical Ward		
Month	Falls	Patient Days	Falls/1000 patient days	Falls	Patient Days	Falls/1000 patient days	Falls	Patient Days	Falls/1000 patient days
May-12			#DIV/0!			#DIV/0!			#DIV/0!
Jun-12			#DIV/0!			#DIV/0!			#DIV/0!
Jul-12			#DIV/0!			#DIV/0!			#DIV/0!
Aug-12			#DIV/0!			#DIV/0!			#DIV/0!
Sep-12			#DIV/0!			#DIV/0!			#DIV/0!
Oct-12			#DIV/0!			#DIV/0!			#DIV/0!
Nov-12			#DIV/0!			#DIV/0!			#DIV/0!
Dec-12			#DIV/0!			#DIV/0!			#DIV/0!
Jan-13			#DIV/0!			#DIV/0!			#DIV/0!
Feb-13			#DIV/0!			#DIV/0!			#DIV/0!
Mar-13			#DIV/0!			#DIV/0!			#DIV/0!
Apr-13			#DIV/0!			#DIV/0!			#DIV/0!
May-13			#DIV/0!			#DIV/0!			#DIV/0!
Jun-13			#DIV/0!			#DIV/0!			#DIV/0!
Jul-13			#DIV/0!			#DIV/0!			#DIV/0!
Aug-13			#DIV/0!			#DIV/0!			#DIV/0!
Sep-13			#DIV/0!			#DIV/0!			#DIV/0!
Oct-13			#DIV/0!			#DIV/0!			#DIV/0!
Nov-13			#DIV/0!			#DIV/0!			#DIV/0!
Dec-13			#DIV/0!			#DIV/0!			#DIV/0!
Jan-14			#DIV/0!			#DIV/0!			#DIV/0!
Feb-14			#DIV/0!			#DIV/0!			#DIV/0!
Mar-14			#DIV/0!			#DIV/0!			#DIV/0!

Appendix IV: Information sheet and consent form for focus group

Information Sheet – Focus Group

Prevention of in-hospital falls: A multi-site audit and best-practice implementation project

Aim:
We are conducting a focus group in order to gauge your experiences in conducting the audit cycle in an attempt to improve falls prevention practices within your site. We are hoping to get a sense of the challenges, successes and failures you experienced during this project. We are also interested in what you believe to be the most useful strategies for improving falls prevention practice in acute care settings and what the barriers and facilitators are to implementing these.

Participation:
Your participation in the study is completely voluntary; it is up to you whether or not you take part in the focus group. You are entirely free to withdraw your permission to be involved at any time without disadvantage to you in any way, now or in the future.

Confidentiality:
All information provided by you during the focus group will remain confidential. You and your organisation will not be identifiable from the data, nor will you be identified in any publications using the data obtained during the focus group. The focus group will be recorded however; the recording will be stored securely on the University of Adelaide server and password protected so only the project investigators have access to it.

Principal Investigator:
Professor Alan Pearson, AM
Executive Director, The Joanna Briggs Institute
Head, School of Translational Health Science,
Faculty of Health Sciences, The University of Adelaide
Tel: (08) 8313 4880, Fax: (08) 8313 8280

Contact information:
For questions regarding this project please contact:

Kristy Giles
Research Assistant
The Joanna Briggs Institute
School of Translational Health Science
Faculty of Health Sciences, The University of Adelaide
Tel: (08) 8313 0174, Email: kristy.hodgson@adelaide.edu.au

Prevention of in-hospital falls: A multi-site audit and best-practice implementation project

Consent Form – Focus Group Participation

INVESTIGATORS: Prof. Alan Pearson, Assoc. Prof. Edoardo Aromataris, Assoc. Prof. Craig Lockwood, Dr. Matthew Stephenson, Alexa McArthur, Kristy Giles

1. The nature and purpose of the focus group has been explained to me. I understand it and agree to take part.

2. I understand that I may not benefit from taking part in the focus group.

3. I understand that, while information gained during the focus group may be published, I and the hospital I work for will not be identified and my personal results will remain confidential.

4. I understand that my responses during the group discussion will be audio recorded and how this audio data will be managed has been explained to me and is acceptable.

5. I understand that I can withdraw from the focus group at any stage and that this will not have consequences for me or my organisation, now or in the future.

Name: _____

Signed: _____

Dated: _____

I certify that I have explained the purpose of the focus group to the participant and consider that he/she understands what is involved.

Signed: _____

Dated: _____

(Investigator)

Appendix V: Focus Group Guide

In-hospital falls prevention: Focus group guide

Purpose and goals

To explore the experiences of the Clinical Fellows with the audit of falls-prevention practices and the implementation of interventions to work towards best practice in falls prevention.
Specific goals include:

- To investigate facilitators and barriers to the initiation of the project and audit data collection.
- To explore the experiences of Clinical Fellows with feedback of the baseline audit results to relevant stakeholders (e.g. staff in participating wards, supervisors/management).
- To investigate experiences of working with the project team at participating hospitals.
- To gain a deeper understanding of specific interventions that were implemented and explore the facilitators and barriers experienced.
- To assess the perceptions regarding the overall success of the project in the participating wards and the likelihood that interventions will continue to be implemented and further follow-up audits conducted in the future.

Introduction from the moderator

- Focus groups are used to explore people's knowledge and experiences, and explore and clarify views, in a group dynamic. There is a structured list of questions to work through, but feel free to speak of anything of importance to you, and we can veer off from the structured question guide.
- This discussion is being recorded, purely for ease of analysis and also to ensure accurate recall of everything said. This recording will be stored on a computer which can only be accessed with a password. The only people who will listen to the audio are the researchers involved in the project, and when transcribed confidentiality will be maintained.
- Chatham house rules are rules used during meetings or focus groups, which state that 'when a meeting is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker, nor that of any other participant, may be revealed.'
- You are encouraged to speak openly and freely. Please do not feel pressured to answer any questions you do not wish to, and please know that you can withdraw from this group at any time.
- Amongst you there may be a variety of perspectives and opinions. It is absolutely fine to disagree with others but please do so in a respectful way. I will try as much as possible to ensure there is a balanced level of input from everyone here, so by the end, we all feel there has been a fair opportunity for input from everyone around the table.
- As we are recording this discussion, please avoid speaking over one another. Raise your hand if you feel you are being missed and I will come to you at the next break in discussion. We are aiming for a group discussion, so please feel free to talk to one another, and do not feel you need to address me. You may like to ask each other questions.

- We do have a lot to discuss, in a fairly short amount of time – so a large part of my role as moderator will be to keep us on time and progressing forward through the topic list.

Semi-structured interview questions

Project initiation and the baseline audit

1. What was it like trying to initiate the project in your hospital?
2. Were there particular facilitators or barriers to audit data collection?

Feedback of baseline audit results to stakeholders

3. What were your experiences regarding feedback of the baseline audit results to:
    a. staff members in the participating wards?
    b. managers?
4. If the results were critical of current practice, how did you feel presenting these?

The team dynamic

5. What was it like working with your project team at your hospital? Did you feel supported by managers and staff and how did this affect your experience?
6. How did the team work together to identify appropriate intervention strategies for the implementation phase?

Implementation

7. What specific interventions did you implement? Please describe in detail how these were implemented.
8. What were the facilitators or barriers to successful implementation? These may be general or may be specific for a particular intervention.
9. Why do you think particular interventions used were successful or not successful in improving practice?

Impact/Outcomes

10. Do you think the implementation project has had an effect on patient falls in the participating wards? Why or why not?

Sustainability

11. Do you think that any improvements seen in falls-prevention practices at your hospital are sustainable? Will interventions continue to be used to work towards best practice in falls prevention?
12. Would you use the audit criteria to perform audits on a regular basis to monitor falls-prevention practices? Why or why not?

Appendix VI: Individual project reports from trained leaders

Falls Prevention Strategies among acute Neurosurgical and Aged Care inpatients in a Tertiary Hospital in Sydney: a Best Practice Implementation Report

Kylie M. Wright, M. Clin. P(Neuro), BSc(Nurs), R.N.

Clinical Nurse Consultant Neurosurgery, Liverpool Hospital

Primary Contact

Kylie M. Wright

Email: kyliem.wright@sswahs.nsw.gov.au

Key Dates:
Commencement date: 27/5/13

Completion date: 17/4/14

Executive Summary

Background

Patient falls are a significant problem and one of the most common adverse events experienced in hospitals; with the impact of falls on patients and the added costs to the healthcare system of great significance. Falls are considered an indicator of the quality of nursing care that requires uncompromising attention and they have been recognised by the Australian Commission on Safety and Quality in Health Care as a National Standard.

Objectives

This project aimed to conduct an audit of in-hospital falls prevention practices, to implement evidence-based best practice recommendations and to increase staff compliance with falls prevention best-practice within an acute neurosurgical and an aged care unit in a large tertiary hospital.

Methods

The project used the Joanna Briggs Institute's Practical Application of Clinical Evidence System and Getting Research into Practice audit tool for promoting change in healthcare practice. A baseline audit was conducted measuring eight best practice recommendations, followed by the implementation of targeted strategies and follow up audits.

Results
The baseline audit revealed large gaps between current practice and best practice and overall performance was poor in both sample groups. Barriers for implementation of best practice falls prevention strategies were identified by the project team and numerous strategies, including an education package and falls risk assessment and management plan, were implemented. There were improved outcomes across both sample groups in the follow up audits.

Conclusions

The findings showed how audit may be used to promote best practice in healthcare and that focussed education and provision of relevant resources can have an immediate impact on clinical practice.

Some of the measured criteria did not improve to a great degree, leaving plenty of room for improvement, however by the end of the project attitudes to falls prevention on the two wards had been ‘transformed’ from passive acceptance of falls to active engagement in falls prevention. Future audits are planned to ensure sustainability.

Keywords

falls prevention; evidence implementation; best practice; audit; acute inpatients

Background

Patient falls are a significant problem and one of the most common adverse events experienced in hospitals. Evidence-based best practice guidelines for preventing falls are available and provide specific information for Australian hospital settings and most hospitals have fall prevention policies that include the use of fall risk assessment tools. However, despite access to these resources, many preventable falls continue to occur in Australian hospitals.

Patients admitted to hospital often have changes in physical or cognitive condition, which when combined with unfamiliar surroundings present a high risk of falling. Injuries resulting from falls can range from minor bruising to serious injuries such as intracranial haemorrhages and fractures and in some cases can lead to permanent disability or death. Falls rates in Australian acute care settings are reported to range from 2-5% per 1000 patient separations,[1] with one health service area reporting more than 22,000 falls resulting in patient harm in a one year period, representing a rate of 2.5 falls per 1000 patient separations, with a higher rate in public hospitals (3.3) than in private hospitals (1.3).[2]

The impact of falls on patients and the added costs to the healthcare system are significant. Patients may experience decreased physical activity related to the fear of further falls,[3] decreased falls self-efficacy (the belief that one can independently ambulate without falling), a diminished sense of dignity,[4] an increased length of hospital stay, a reduced quality of life and emotional distress.[5] Furthermore, the cost to the community and increase on the demand for health services for falls-related injuries is considerable. It has been predicted that unless effective preventative strategies are utilised, the cost attributable to falls-related injury will increase three-fold to $1375 million per annum by 2051.[5]

Multiple risk factors that can contribute to in-hospital falls have been identified in the literature and include patient characteristics, staff behaviour and the hospital environment.[6] Patient risk factors include advanced age, muscle weakness, gait or balance problems, visual impairment, altered bowel or bladder elimination patterns, dizziness or vertigo, depression, cognitive deficits, impaired activities of daily living, use of psychotropic medications and a history of falls.[7-11]Neurosurgical and geriatric patient groups experience many of these identified risk factors, with falls rates of 4-12 per 1000 bed days in patients over the age of 65 years and more than 40% of patients with specific clinical neurological problems experiencing one or more falls during their hospital admission.[12]

A large number of interventions for preventing in-hospital falls have been recommended in the literature. These include early detection and treatment of conditions such as incontinence, eyesight problems and delirium, reviewing medication regimes, providing safe non-slip footwear to patients and modifying the environment with things such as handrails and non-slip flooring surfaces.[6] Current literature recommends a comprehensive and multi-factorial methodology to falls prevention, involving the use of risk assessment tools and targeted interventions.[6,12-14]

This project aimed to conduct an audit of in-hospital falls prevention practices, to implement evidence-based best practice and assess the effects of these strategies at minimising in-hospital falls. The project was undertaken in a neurosurgical and an aged care unit of a large 855 bed public, tertiary referral hospital and major trauma centre in Sydney, Australia. The hospital has a strong commitment to teaching and research across a wide range of disciplines and serves between 1.3 and 1.4 million people in the South West of Sydney, with the most culturally diverse population in the state with 39% of people from non-English speaking backgrounds (NESBs).The hospital has well established policy directives on fall injury prevention and management for inpatients including a falls risk assessment tool embedded into the electronic medical record, patient/carer falls brochures in six different languages, established 'falls champions' in clinical areas, patient falls risk assessment guidelines and prevention strategies endorsed by the New South Wales (NSW) Clinical Excellence Commission (CEC). Despite a culture of falls prevention awareness and established resources, the 2012 falls rates for the neurosurgical and aged care units were 6.44 and 13.27 per 1000 beds respectively.[15]

Not only are patient falls one of the most common adverse events experienced in hospitals, but such incidences are considered an indicator of the quality of nursing care that require uncompromising attention. The Australian Commission on Safety and Quality in Health Care (ACSQHC) has recognised the prevention of falls and harm from falls as a National Standard.[16] In brief, this standard requires that health service organisations have governance structures and systems in place to reduce falls and minimise harm from falls; that patients on presentation, during admission and when clinically indicated are screened for risk of a fall and the potential to be harmed from falls; and that patients and carers are informed of the identified risks from falls and are engaged in the development of a falls prevention plan. Overall, the aim of this standard is to reduce the incidence, or number, of patient falls and minimise harm from falls when they occur, hence in-patient falls prevention is very much a priority of modern Australian healthcare.

Objectives

This project aimed to conduct an audit of in-hospital falls prevention practices, to implement evidence-based best practice and assess the effects of these strategies at minimising in-hospital falls in a neurosurgical and an aged care unit in a large tertiary hospital. The overall purpose of the project was to increase staff compliance with falls prevention best-practice within an acute hospital setting to prevent in-hospital falls amongst at-risk patients. Objectives included:

- To improve the local practice of completing patient fall risk assessments appropriately, accurately and in a timely manner.
- To ensure health care professionals have been educated regarding falls assessment and prevention strategies and targeted interventions have been implemented.
- To ensure patient and family education regarding falls is conducted.

An evidence-based practice approach underpins the entire implementation project.

Methods

The project used the Joanna Briggs Institute (JBI) Practical Application of Clinical Evidence System (PACES). JBI PACES is an online tool for health professionals and/or researchers to use for collection and comparison of data and to conduct efficient audits in small or large healthcare settings.

PACES has been designed to facilitate the use of audits to promote evidence informed health practice and includes the Getting Research into Practice (GRIP) framework that may be used to help identify factors underpinning gaps between practice and best practice and strategies to overcome them. The project involved three phases as follows.

Phase 1 -Baseline audit

A baseline audit of in-hospital falls prevention practices was conducted. A multidisciplinary team of key stakeholders was formed to support the work of this project. The lead author of this article, who works as a senior neurosurgical clinical nurse consultant at the hospital where the project was implemented, led the project as part of the JBI Clinical Fellowship program (Joanna Briggs Institute, Adelaide, South Australia, Australia). The team included the Director of Nursing and Midwifery Services, Director of Medical Services and Executive Officer (Clinical Governance and Executive sponsorship), nurse managers, nurse educators, designated registered nurse 'falls champions', a geriatrician, allied health, a pharmacist and a consumer participation representative, with team members representing the overall hospital and/or the specific neurosurgical and aged care units. Involvement of the project team was in varying capacities of support, data collection, data entry and/or participation. Patients/consumers were also inclusive of the team at a participatory level.

The objectives of the baseline audit were to establish the size and nature of the gap between practice and best practice in falls prevention strategies at the hospital. The JBI best practice recommendations related to falls assessment and preventative interventions are based on a structured search of the literature and selected evidence-based health care databases. Eight criteria based on these best practice recommendations were audited throughout this project. The eight identified criteria for data collection are divided into assessment, education and intervention categories and were measured as follows:

<u>Assessment</u>

1. Fall risk assessment is done upon admission

This criterion was considered met if the case notes/electronic medical record (EMR) showed a risk assessment completed within eight hours of admission.

2. Fall risk assessment is done upon transfer

This criterion was considered met if the case notes/EMR for patients that have been transferred (intra-hospital transfer) show a risk assessment completed within eight hours of transfer.

3. Reassessment occurs when there is a change in condition or following a fall

This criterion was considered met if the case notes/EMR for patients who have had a change in clinical condition (that affects their falls risk status) or experienced a fall, include a reassessment performed within eight hours of this event.

4. Patients who have experienced a fall are considered at high risk for future falls

This criterion was considered met if it was documented in the case notes/EMR for patients who have had a history of falls, are assessed as high risk for future falls according to the risk assessment.

5. Fall risk assessment is done accurately using a falls assessment tool

This criterion was considered met if the case notes suggest the fall risk assessment was done accurately. If the accuracy of the risk assessment is not clear from the notes, then the patient can be visited to determine the accuracy of the assessment.

<u>Education</u>

6. Healthcare professionals have received education regarding falls assessment and prevention strategies

This criterion was considered met if staff members in the participating wards report that they have received education in the last two years. Question: “Have you received education regarding falls assessment and prevention strategies in the last two years?” This is by convenience sampling. Sample: 30 healthcare staff from medical ward, 30 healthcare staff from surgical ward

7. Patient and family education is carried out for patients at risk of falls

This criterion was considered met if from the case notes, for patients at risk of falls, patient and family education is documented as having been done.

Intervention

8. Targeted interventions are implemented according to risk factors

This criterion was considered met if it is documented in the case notes for patients assessed as at risk, that there has there been implementation of targeted interventions to address every identified risk factor.

The baseline audit was conducted over a 4 week period. To assess the compliance of each audit criterion, the case notes or electronic medical record of 30 surgical (neurosurgical) inpatients and 30 medical (aged care) inpatients were examined. To assess compliance for the audit criteria on staff education, 30 clinicians working in each of the sample groups were interviewed by the project lead.

Phase 2 – GRIP Strategy

The objectives for the second phase of the project were to gain an understanding of the barriers underpinning gaps between practice and best practice found in the baseline audit and implement tailored strategies to close gaps and address barriers. Using the PACES program, baseline audit results were collected for analysis and discussion by the project team and proposed strategies for improving compliance of falls prevention best practice were identified. This process of facilitating change management was implemented using the JBI GRIP tool, a module of the PACES program.

Open communication and engagement with all stakeholders was maintained and welcomed at all times throughout the project and provided the platform to suggest and discuss strategies for improvement. Via a series of face-to-face meetings using practice development principles and e-mail correspondence between the project team, each best practice criterion was reviewed and strategies for improved compliance were discussed. Furthermore, potential barriers and strategies to overcome such barriers, as well as resources required to implement change strategies were identified, discussed and formally documented into the GRIP framework. The GRIP strategies are presented in the results section of this report.

A GRIP report matrix was generated and fostered the project team engagement by keeping them informed, as well as providing a means of gathering and recording their opinions and clearly outlining the implementation plan and the team involvement. As described further in the results section, a major strategy identified to close the gap between practice and best practice was educating clinicians on best practice falls prevention strategies. This education, along with other strategies, was implemented during Phase 2 of the project which was conducted over a 4 month period.

Phase 3 -Follow-up audits- Cycle 1 and Cycle 2

The objectives of the follow-up audits were to assess whether there had been improvement in compliance with best practice, to establish if improvements, if any, had been sustained, and identify remaining areas where further improvements are required. Cycle 1 and Cycle 2 post-implementation audits and collection of data were repeated using the same eight criteria defined in Phase 1. There were not any variations to the topic, the criteria, the sample size, the characteristics or the location of the project during the follow-up cycles.

The follow-up data was entered into the PACES program and data analysis comparing follow-up results with those of the baseline audit were undertaken to examine any change in compliance rates. Phase 3 was conducted over a 4 week period on both occasions.

The project received formal approval by South Western Sydney Local Health District Research Ethics Committee (NSW).

Results

Baseline Audit

The percentages for compliance with each audit criterion in the baseline audit for the neurosurgical ward, the aged care ward, as well as aggregated data are shown in Figures 1,2, and 3.
For the neurosurgical and aged care wards (Figures 1 and 2), the best baseline performance was found for criterion 4, which measured that patients who had experienced a fall were considered at high risk for future falls. In 52% of cases of the neurosurgical sample and 77% of the aged care sample there was evidence of this practice, with an aggregated compliance of 65% (Figure 3). Furthermore, in the aged care sample (Figure 2), criterion 5 displayed 50% compliance of the fall risk assessment being done accurately using a falls assessment tool.

Performance emerged as very poor in the baseline audit for the remaining criteria in both sample groups. In the neurosurgical sample (Figure 1), only 30% of occasions showed evidence that the fall risk assessment was done upon patient transfer (Criterion 2) and/or when there was a change in condition or following a fall (Criterion 3). There was evidence that only three patients had targeted interventions implemented according to risk factors (Criterion 8), and one healthcare professional, a medical officer, had received education regarding falls assessment and prevention strategies, resulting in very low compliance of 3% (Criterion 6). Of most concern, from the neurosurgical sample was that upon review of 30 patient medical records there was no documented evidence that patient and family education was carried out for patients at risk of falls (Criterion 7).

In the aged care sample (Figure 2), 43 % of healthcare professionals had received education regarding falls assessment and prevention strategies, and upon review of patient medical records there was documented evidence that patient and family education was carried out for patients at risk of falls on 37% of occasions. This sample group performed poorly with performing the fall risk assessment upon admission (Criterion 1), upon transfer (Criterion 2) and when there was a change in condition or following a fall (Criterion 3), with evidence of 17%, 13%, and 20% compliance consecutively. Aggregated data showed poor compliance with the majority of the baseline best practice audit criteria.

GRIP Strategy

Table 1 shows the barriers to best practice falls prevention strategies that emerged from the project team discussions of the phase 1 results. It also shows resources identified as being required to implement the strategies and the outcomes.

Table 1 – GRIP (Identified barriers to best practice and strategies to overcome them)

Barriers	Strategies	Resources	Outcome
Staff nurses' lack of awareness and understanding of the extent of the 'problem' of inpatient falls and its importance in relation to the National Standards.	• Overview of falls risk factors, impact of falls, falls incidents over the past 2 years (analysis of SAC1 & SAC 2 incidences at Hospital) to be presented to a hospital wide nursing audience via the Nursing & Midwifery Grand Rounds. • Analysis of falls incident reports at ward level – present & communicate analysis to core ward groups and discuss findings. • Build awareness by ➢ Displaying falls rates "running tally", ➢ Displaying National Standard signage ➢ Commencement of ward "measles chart" • Participate in interactive discussion & open communication	• Secure a session on the Nursing & Midwifery Grand Rounds schedule • Evaluation • PowerPoint – LCD projector • Executive support • Access to incident management system • Weekly 'protected time' & meeting room for each ward group • National Standard signs	• Overview session presented at Nursing & Midwifery Grand Rounds 26/6/13. • 50 staff attended the session • Positively evaluated • Executive support provided at session • Copy of presentation placed on hospital intranet. • Staff aware of falls rates and patterns within ward groups. • Staff aware that "Preventing Falls and Harm from Falls" is a National Standard- 10.
Staff nurses lack awareness and understanding of the evidence base for falls prevention strategies among in-patients	• Build and promote awareness via ➢ Education sessions / handouts ➢ Signs in clinical areas ➢ Distribution of baseline audit results ➢ Focus groups ➢ Environmental checklists • Identify and engage ward based Falls Champions • Promote hospital wide awareness of JBI Best Practice Implementation Project- initiate as a regular agenda item on ➢ Falls reference group ➢ Falls prevention committee ➢ Ward based meetings. • Participate in interactive discussion & open communication	• Education sessions / meeting room • PowerPoint – LCD projector • Weekly 'protected time' & meeting room for each ward group • Access to NUM/CNE e-mail lists • Project lead attendance at hospital Falls reference group and Falls prevention committee • Executive support / NUM & clinician engagement	• Education sessions presented. • Signs designed and placed in clinical areas outlining falls prevention best practice strategies (green paper). • Weekly focus groups conducted which included interactive discussion, open communication and action planning. • Environmental "Rounds" initiated using environmental checklists • Falls champions identified and engaged • JBI Best Practice Implementation project a regular agenda item at hospital falls committees
No existing standardised hospital wide falls prevention education package	• Engage hospital Falls Reference group & Falls Prevention Committee and collaborate with key stakeholders for input into education session content. • Develop, distribute and deliver a 'Falls prevention and management' education package incorporating 1. Falls risk assessment 2. Management strategies 3. Post fall management including an adaptable case study to highlight each section. • Gain executive support for mandatory nursing attendance at educational session. • Engage key stakeholders to deliver	• Attendance at falls related committee meetings • Falls education package development working group (key stakeholders) • PowerPoint / computer • Local Health District &Hospital policy (in line with evidence) • Evaluation form • Attendance lists • Conference room booking x 6 • Advertising flyer • Executive support /	• Extensive education package developed with multidisciplinary input – pilot tested, and then delivered hospital wide • 500 staff attended falls prevention and management education sessions. • Formally evaluated- positive results • Five key stakeholders (senior nurses) delivered education package in hospital wide sessions. Numerous CNEs delivered education package at ward

	education package	NUM /CNE & clinician engagement •	levels.
A culture of 'weekly' falls risk assessments were embedded into clinical practice due to an existing weekly "falls score compliance" audit occurring routinely on Wednesdays.	• Reinforce via education session situations when the falls risk assessments should be completed and re-assessed and in what time frame including use of the over-ride option • Perform an audit from the EMR looking at compliance of falls risk assessments on all days of the week (no just Wednesdays), and analysis of times the assessments are being completed. • Provide feedback on appropriate completion of falls risk assessments and use of the over-ride option.	• Education session (as above) • Nurse informatics to perform EMR audit and analyse and distribute results.	• Education delivered (as above) • Audit conducted and results distributed hospital wide and discussed in appropriate senior nurse forums, ward meetings & focus groups.
Existing method of "flagging" high risk falls patients was often invisible and ineffective	• Implementation of 'green' initiatives including ➢ High risk fall sign above bed ➢ Inserts to place in bedside folders ➢ Post fall stickers to be placed in patient records • Documentation of falls risk assessment score on electronic handover • Falls assessment score included in all clinical handovers • Agreement of dedicated "High visibility beds" on each ward – with placement of "Flagged" high risk patients into such beds • Development of a ward based "Falls Resource Manual" • Provide feedback on appropriate "flagging" of high risk patients	• Executive support / NUM /CNE & clinician engagement • Supply of green paper/laminating materials /folders • Computer / printer	• "Green" bed signs, folder inserts, and post fall stickers all produced and implemented as routine practice for high risk patients. • Falls risk assessments and high risk falls patients labeled /documented on electronic handover and verbalised in handover at each point of transfer. • Each ward identified "high visibility beds" within their units and placed high risk falls patients in these beds. • Feedback and discussion of "flagging" processes discussed at focus groups.
Limited range of educational materials for falls prevention strategies available for patients and carers	• Source, copy and distribute appropriate fall educational materials and engage consumer representative regarding appropriateness of material. • Source multi-lingual patient/carer falls education material. • Inform nurses of range of educational material and encourage to distribute to patients and carers as a strategy to educate regarding falls prevention. • Development of a ward based "Falls Resource Manual"	• Internet access / access to the Clinical Excellence Commission (CEC) Falls prevention website • Computer / printer / photocopier / folder • Consumer representative • Executive support / NUM /CNE & clinician engagement	• An extensive range of 17 falls prevention education brochures for patients and consumers available in 7 different languages sourced and available for distribution to patients and carers. • Nurses distributing educational material to patients and carers as a best practice strategy. • Development of a falls resource manual has occurred and is being utilised.
No appropriate falls risk prevention strategy / management plan documentation structure to record targeted interventions in patient health care records	• Make essential practice changes to documentation via implementation of a Falls Risk Assessment & Management Plan (FRAMP) [17] form-falls care plan that highlights individual patient risk factors and records actions implemented • To provide nurses with education regarding use of newly implemented	• Executive support / NUM /CNE & clinician engagement • Source and supply of FRAMP forms • Education session (as above) • FRAMP compliance evaluation tool	• FRAMP implemented successfully allowing systematic documentation of targeted interventions according to individual patient risk factors. • Post implementation compliance audit completed.

	FRAMP[17] • Development of a ward based "Falls Resource Manual" • Provide feedback on appropriate completion of FRAMP[17]		• Development of a falls resource manual has occurred and is being utilised.
Reluctance of nurses to participate in the project due to increased workload and competing pressures	• Engage the multidisciplinary team – within each ward • Use a practice development approach, to explore staff opinions and use their advice and ideas regarding implementation of best practice/patient centered care. • Provide positive feedback and encouragement to improve fall prevention practices • Make communication channels available • Participate in interactive discussion & open communication • Provide feedback on ward based falls rates per month	• Project team members • All nursing staff and stakeholders • Regular meetings/focus groups	• Staff feel valued and given a sense of ownership of the project and falls prevention strategies and management.

Providing education to the clinicians was selected by the project team as the highest priority and the most feasible strategy to implement as a means of bringing best practice falls prevention strategies in the hospital more in line with best practice. A working party was formed, led by the project leader, to collaboratively develop, distribute and deliver a 'Falls Prevention and Management' education package incorporating best practice strategies and practical application.

To further build upon falls prevention awareness, an overview of falls risk factors, impact of falls, and falls incidents (case studies) that had occurred at the facility over the past 2 years were presented to a hospital wide nursing audience via the facility Nursing & Midwifery Grand Rounds and analysis of falls incident reports were discussed at ward levels.

The project team also engaged with clinicians and enabled essential practice changes to the documentation of targeted falls prevention strategies via implementation of a Falls Risk Assessment Management Plan (FRAMP) Form [17].

In addition, the hospital had patient / carer falls brochures in six different languages, however they needed updating and were very low on stock. The project leader sourced, copied and distributed the NSW CEC endorsed falls educational materials and engaged consumer representatives regarding appropriateness of this material. As a result, multi-lingual patient/carer falls education material on 17 different falls related topics was made available to the bedside clinicians and they were informed via the 'Falls Prevention and Management' education package of the range and location of educational material. Clinicians were encouraged to distribute such material to patients and families as a strategy to provide education regarding falls prevention.

Follow-up Audits

Cycle 1

The percentage of compliance for the audit criteria found in the follow-up Cycle 1 audit together with the results from the baseline audit are displayed in Figures 1 (neurosurgical ward), 2 (aged care ward) and 3 (aggregated). Looking at the results of the follow up audit, compared with those in the baseline audit, there has been an overall improvement in compliance of implementing best practice falls prevention recommendations.

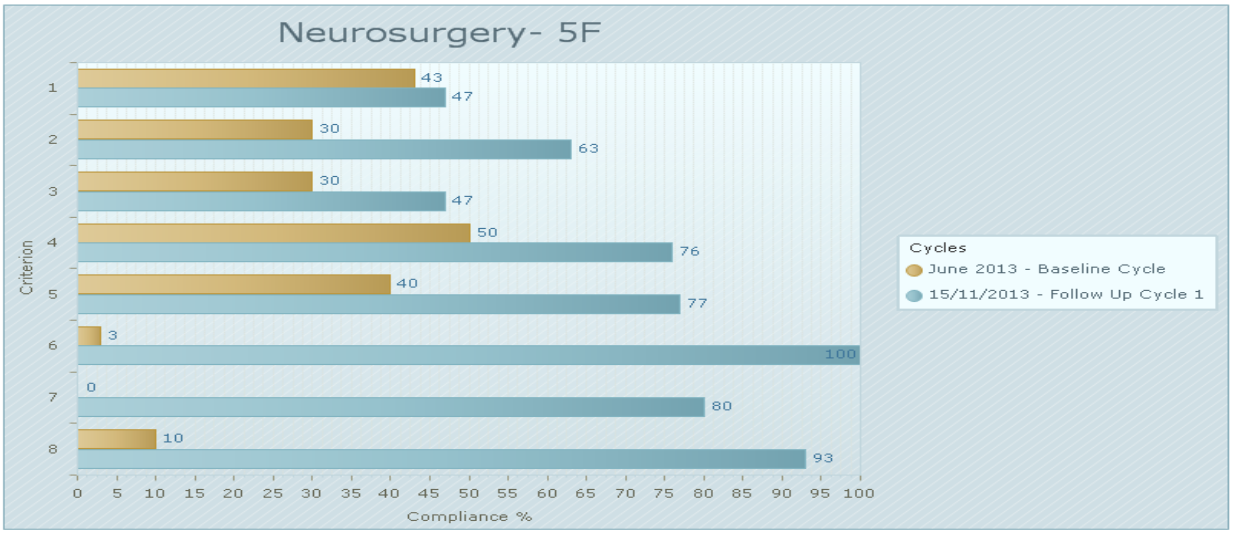

Figure 1 – Baseline and Follow-up Cycle 1 audit results for the neurosurgical ward

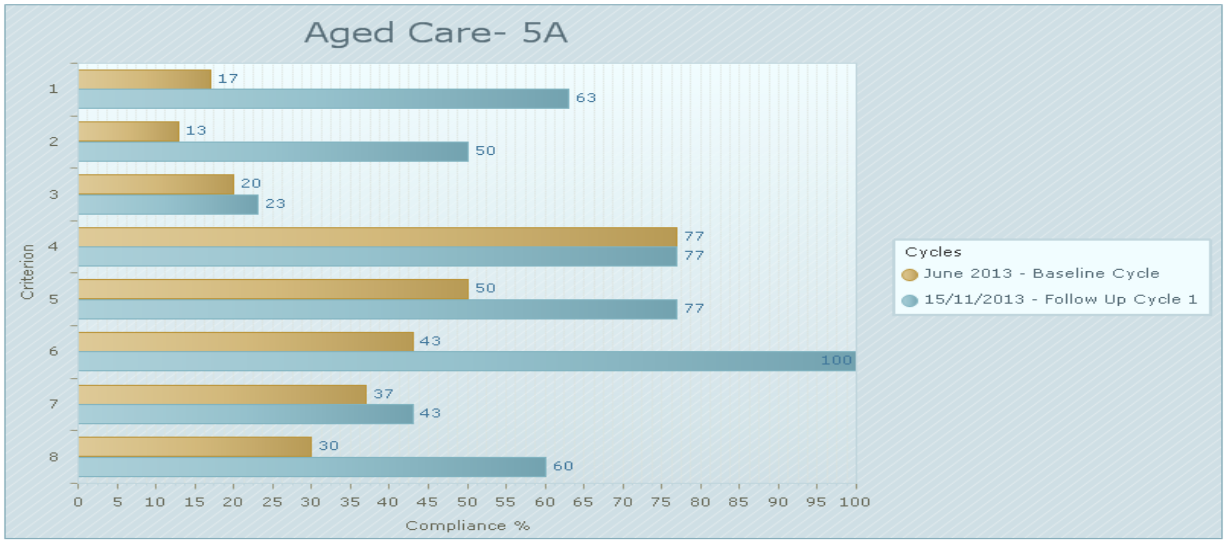

Figure 2- Baseline and Follow-up Cycle 1 audit results for the aged care ward

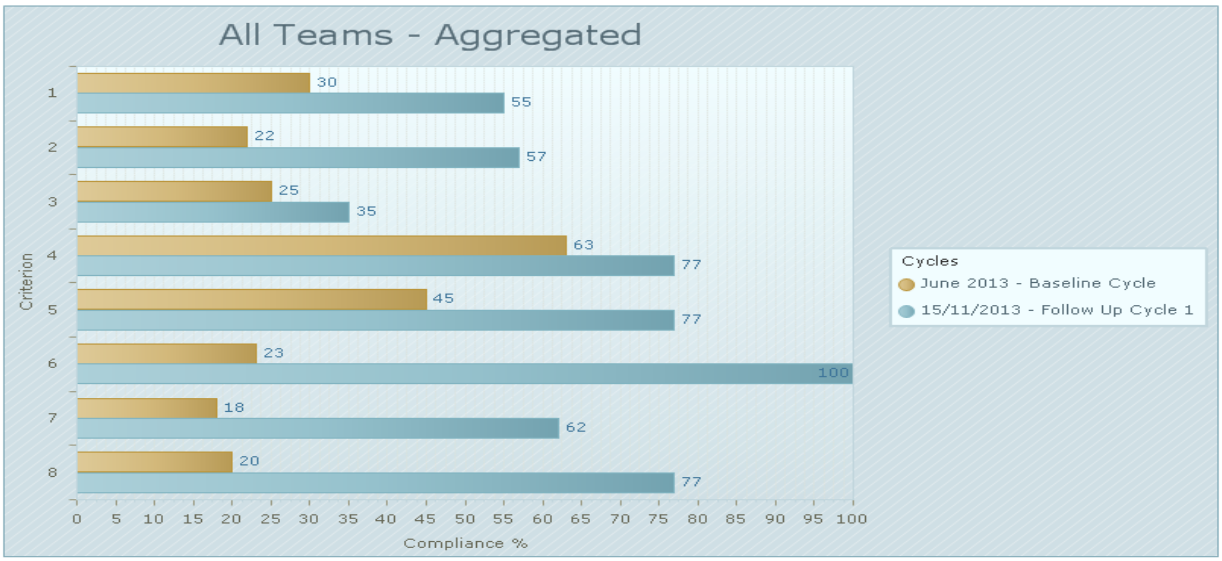

Figure 3 – Aggregated baseline and Follow-up Cycle 1 results (Combined neurosurgery & aged care wards)

The results suggest that whilst there has been an emphasis on staff education, this translated only partly into implementation in practice for some criteria. For the neurosurgical sample, the criterion for performing a fall risk assessment upon admission (Criterion 1) remained reasonably static, however the remaining seven criteria showed improvements. The criteria measuring if healthcare professionals had received education regarding falls assessment and prevention strategies (Criterion 6), if there was documented evidence that patient and family education was carried out for patients at risk of falls (Criterion 7), and if there was evidence that patients had targeted interventions implemented according to risk factors (Criterion 8) showed the largest increase in compliance over baseline with improved changes of up to 97%.

For the aged care sample, the criteria for reassessment of falls risk occurring when there is a change in condition or following a fall (criterion 3), patients who have experienced a fall are considered at high risk for future falls (criterion 4), and patient and family education being carried out for patients at risk of falls (Criterion 7) remained reasonably static, however the remaining five criteria showed improvements. The criteria measuring if healthcare professionals had received education regarding falls assessment and prevention strategies (Criterion 6) showed the largest increase in compliance over baseline with improvements of 57%, followed by improvements with performing the fall risk assessment upon admission (Criterion 1) and transfer (Criterion 2). Overall, the aggregated data displayed improvements in all criteria; the biggest impact being on healthcare professional education.

Table 2 shows the barriers to best practice falls prevention strategies that emerged from the project team discussions after the phase 3- cycle 1 results were analysed. It also shows resources identified as being required to implement these further strategies and the outcomes.

Table 2 – GRIP (Identified barriers to best practice and strategies to overcome them)

Barriers	Strategies	Resources	Outcome
Continued lack of awareness and understanding across some health care staff of the evidence base for falls prevention strategies among	• Overview of falls risk factors, impact of falls, falls incidents and phase 3-cycle 1 results, and FRAMP utilisation to be presented to	• Secure a session on the Nursing & Midwifery Grand Rounds schedule, and with	• Overview session presented at Nursing & Midwifery Grand Rounds and as repeated inservices

in-patients	participating units as well as a hospital wide nursing audience via the Nursing & Midwifery Grand Rounds. • Build and promote awareness via continued education sessions provided to ➢ CNE & Falls Champion Master class ➢ Allied Health ➢ Night duty & weekend staff ➢ Non-clinical staff (targeted at ward orderlies, ward clerks, technicians etc) ➢ Consumer representative group ➢ April Falls Forum – one day workshop for Falls Champions focused on falls prevention strategies ➢ Medical Grand Rounds (targeted at medical students and all medical staff) • Analysis of falls incident reports at ward and organisational level – present & communicate analysis to widespread committee groups and discuss findings and ongoing strategies. • Participate in interactive discussion, open communication & action planning	participating units • Evaluation tool • Access to incident management system • Education sessions / meeting room • PowerPoint – LCD projector / audiovisual • Executive support / NUM & clinician engagement	on participating units • Sessions positively evaluated • Copy of presentations provided to participating units and placed on hospital intranet. • Staff aware of falls rates and patterns within ward groups. • CNE & Falls Champion, allied health, night duty & weekend staff, non-clinical staff and consumer representative education sessions presented and positively evaluated. • April Falls Forum one day workshop conducted in collaboration with the Centre of Education & Workforce Development • Falls Management presented a Medical Grand Rounds

Providing further education to the clinicians as well as education to non-nursing staff groups was selected by the project team as the next step and an organisational approach in bringing best practice falls prevention strategies in the facility more in line with best practice.

To further build upon falls prevention awareness, an overview of falls risk factors, impact of falls, and falls incidents (case studies), and results of the Phase 3-Cycle 1 results were presented to participating units via a series of in-services, and a hospital wide nursing audience via the facility Nursing & Midwifery Grand Rounds. In addition, specific education was delivered to Clinical Nurse Educators (CNEs) and nominated ward Falls Champions in the form of a master class. The project team also continued engagement with clinicians and enabled essential practice changes to the documentation of targeted falls prevention strategies via implementation of the Falls Risk Assessment Management Plan (FRAMP) Form [17].

Furthermore night duty and weekend nursing staff, as well as medical, allied health, non-clinical staff groups, and consumer representatives were also provided with targeted education.

An analysis and discussion of falls incidences were broadened beyond the participating ward level to organisational wide. Falls incidences and prevention and management strategies were regular agenda items tabled at all committee meetings throughout the hospital, from the organisational executive patient safety committee to unit based falls working groups.

Cycle 2

The percentage of compliance for the audit criteria found in the follow-up Cycle 2 audit together with

the results from the baseline audit are displayed in Figures 4 (neurosurgical ward), 5 (aged care ward) and 6 (aggregated). Looking at the results of the follow up Cycle 2 audit, compared with those from the baseline audit, overall improvement in compliance of implementing best practice falls prevention recommendations has been maintained for most criteria.

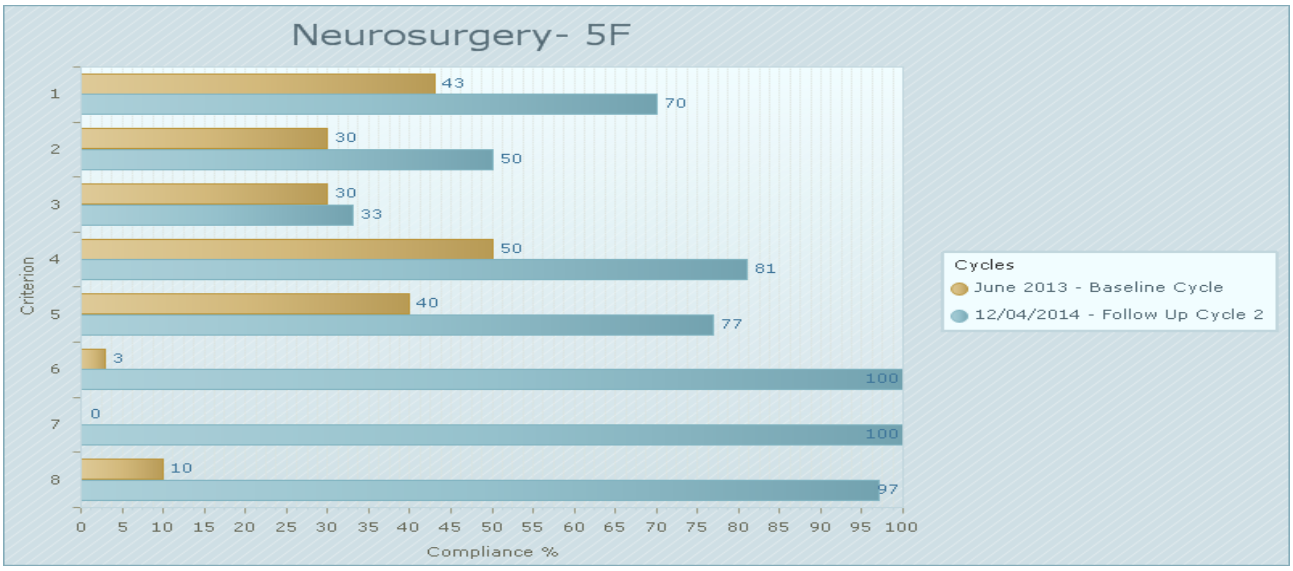

Figure 4 – Baseline and Follow-up Cycle 2 audit results for the neurosurgical ward

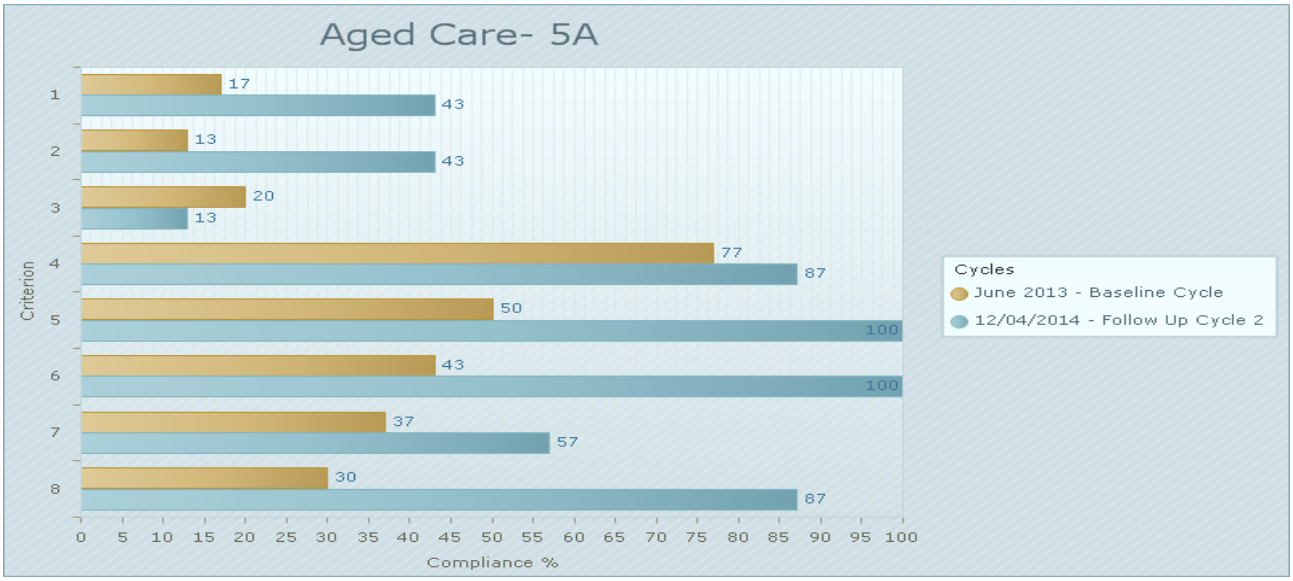

Figure 5 - Baseline and Follow-up Cycle 2 audit results for the aged care ward

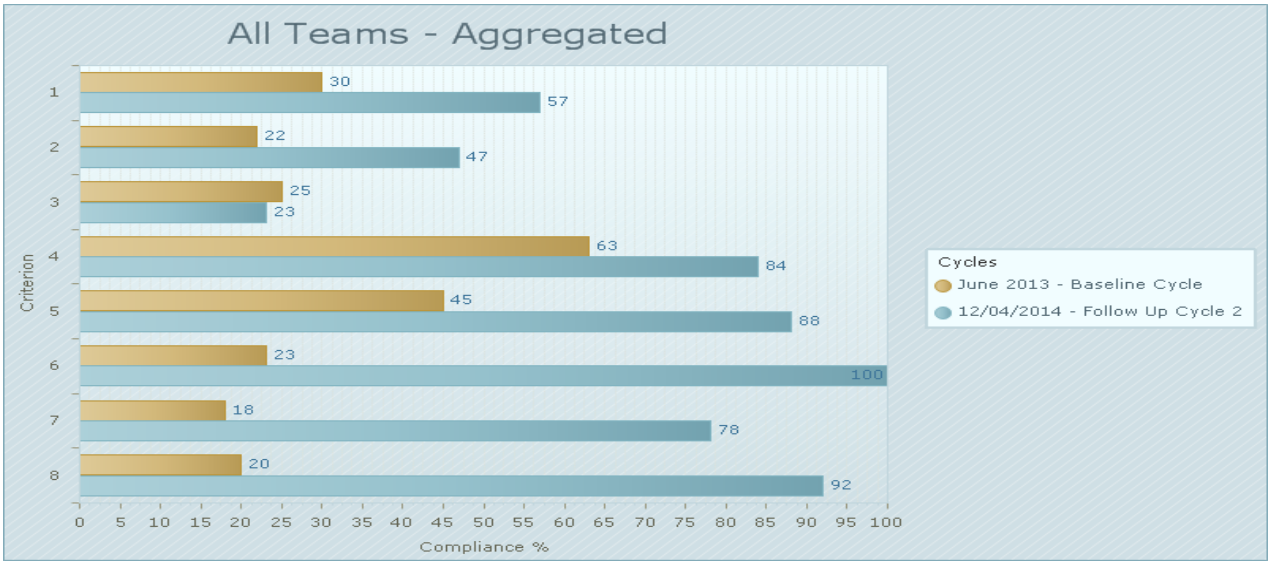

Figure 6 – Aggregated baseline and Follow-up Cycle 2 results (Combined neurosurgery & aged care wards)

The Cycle 2 follow up results suggest that improvements in compliance demonstrated in the Cycle 1 follow up audit were maintained or further improved upon for most criteria when the re-audit occurred 3 months later. For the neurosurgical sample, the criterion measuring if fall risk assessment was done accurately using a falls assessment tool (Criterion 5), and the criterion measuring if healthcare professionals had received education regarding falls assessment and prevention strategies (Criterion 6) remained static, however the criteria for reassessment of falls risk occurring when the patient has been transferred (Criterion 2) and when there is a change in condition or following a fall (Criterion 3) slightly decreased. The remaining four criteria including performing the fall risk assessment upon admission (Criterion 1), deeming patients who have experienced a fall considered at high risk for future falls (Criterion 4), if there was documented evidence that patient and family education was carried out for patients at risk of falls (Criterion 7), and if there was evidence that patients had targeted interventions implemented according to risk factors (Criterion 8) showed further increases in compliance in the cycle 2 follow up audit with improved changes further increasing up to 23%.

For the aged care sample, the criterion measuring if healthcare professionals had received education regarding falls assessment and prevention strategies (Criterion 6) remained static, however performing the fall risk assessment upon admission (Criterion 1), the criteria for reassessment of falls risk occurring when the patient has been transferred (Criterion 2) and when there is a change in condition or following a fall (Criterion 3) decreased in compliance, the greatest decrease by 22%. The remaining four criteria showed further improvements in the Cycle 2 follow up audit. The criteria measuring if there was evidence that patients had targeted interventions implemented according to risk factors (Criterion 8) showed the largest increase in compliance in cycle 2 with improvements of a further 27%, followed by improvements with patients who have experienced a fall being considered at high risk for future falls (Criterion 4), measuring if fall risk assessment was done accurately using a falls assessment tool (Criterion 5), and if there was documented evidence that patient and family education was carried out for patients at risk of falls (Criterion 7).

Overall, the aggregated data displayed further improvements in cycle 2 for criterion 1, 4, 5, 7 and 8, with Criterion 6, healthcare professional education, remaining stable at 100% compliance. Reassessment of falls risk occurring when the patient has been transferred (Criterion 2) and when there is a change in condition or following a fall (Criterion 3) slightly decreased compliance in the

cycle 2 follow up audit (10% and 12% respectively) with Criterion 3 dropping 2% below baseline results.

Discussion

This best practice implementation project achieved improvements in compliance in all eight best practice recommendations across the two nominated wards over the nine month period. These practices however had a more widespread impact on falls prevention and management across the organisation because strategies were adopted and supported across the hospital and had the underpinning support of the executive and governance structures. Medical governance was obtained and was imperative to the success of this project, particularly in regards to medical aspects such as medication reviews, diagnosis and management of delirium and treatment of orthostatic hypotension. This support is reflected in the improvement in compliance with the audit criteria and changes in practice.

The 'Falls Prevention and Management' education package incorporating best practice strategies and practical application was an effective strategy. The content of the package was divided into three sections and included principles in line with the best practice recommendations including how and when to do the falls risk assessment on the electronic medical record, implementation and documentation of targeted management strategies via the FRAMP[17], engaging in patient education and post fall management. It also included a case study to highlight each section of the education package which could be modified to suit any clinical specialty. The package gave the staff the knowledge needed to prevent falls and to help their patients stay safe and was designed to be administered as a presentation in a one hour block, or could be given section by section in 20 minute timeframes for clinical areas that had difficulty releasing staff for extended education. Executive support was obtained, attendance was deemed mandatory and the education package was delivered across the facility initially over six consecutive sessions capturing 500 nursing staff.

Due to difficulties capturing all staff, clinical nurse educators within the facility were engaged in the education process and were given the education package as a PowerPoint presentation so it could be delivered to after hours and weekend staff. In addition, they were empowered to take informal and formal opportunities to teach their ward colleagues to amplify and personalise the learning and make it ward specific. As a result, clinical staff across the facility received tailored education and are more aware of the best practice recommendations for falls risk management and how to incorporate this into their clinical practice. Further education strategies and continued education at a ward and organisational level resulted in an additional 500 staff undergoing falls prevention and management education, hence by the conclusion of the project 1000 staff had received targeted falls education.

Improvements in practice is evidenced by weekly "snap shot" falls risk assessment compliance scores across the organisation improving from 76% at the beginning of the project to an all time high of 93.5% compliance within one month of the education package delivery.. Furthermore falls rates for the neurosurgical and aged care wards have remained static throughout the study period however severity assessment codes of falls have improved across these high risk inpatient areas.

The successful implementation of the FRAMP[17] impacted on targeted falls prevention interventions organisation-wide. This tool incorporates a care plan that highlights individual patient risk factors and systematically records and evaluates the targeted actions that have been implemented. This meant that many more patients received individual assessments and care that is essential to preventing falls in hospital. The FRAMP[17] and its utilisation was introduced to clinicians via the 'Falls Prevention and Management' education package as well as one to one education administered at the bedside. Despite initial resistance and comments such as "not more paperwork" it was embraced by all clinical areas of the hospital once its usefulness had been established and the form utilisation has become embedded into the nursing admission process and ongoing practice.

Some best practice recommendations improved to a lesser degree in the follow up audits than others. The performance of a falls risk assessment upon transfer of a patient, and change in condition warrants ongoing attention. The primary resource required to improve these areas of practice is clinician time for re-assessment, and hence, this may partly be explained by clinicians feeling that their workload is too high to spend the additional time required to repeat the falls risk assessment when it may have only been recently performed. Falls prevention is one of a number of initiatives competing for staff and managerial time and with large, busy wards with a high turnover of patients and staff, problems with fulfilling some of the best practice criteria was challenging for the bedside clinicians. Furthermore, documented evidence is required for some criteria to be achieved. It is thought that through the awareness strategies implemented via this project that clinicians may have improved their practice in relation to falls management strategies, but do not always document their care hence the practice change is not recognised at any point of the audit. A lack of documentation does not necessarily indicate a lack of care, skill or knowledge and a future strategy will be to raise awareness of falls prevention related documentation and reporting of practice in patients' medical records.

The reduction and prevention of falls is a quality imperative that is directly related to the National Standards. It is a priority for the facility to keep the focus on falls in its efforts to improve patient safety and continue to meet this standard. Implementation of the evidence through this project will be sustained by continued analysis and distribution of falls data, falls tally boards, environmental checks and measles charts in clinical units. Facility policies and procedures have been revised to reflect changes in practice as a result of this project and dedicated "Falls Champions" who have undergone specific falls champion training via a one day workshop have been appointed in each ward. Ongoing engagement with the Falls Prevention Committee will continue and the audit will be repeated annually.

Conclusion

It is indisputable that patient falls and patient fall related injuries are considered an indicator of quality nursing care and are currently one of the most worrying clinical issues amongst clinicians. Preventing falls and harm from falls has been recognised as a standard that must be met by the National Safety and Quality Health Service (NSQHS) Standards. A high priority needs to be given to the prevention of in-hospital falls in order to avoid poor patient outcomes.

The purpose of this project was to increase staff compliance with falls prevention best-practice within an acute hospital setting. This included an audit of in-hospital falls prevention practices, implementation of evidence-based best practice, and assessment of the effects of implemented strategies in a Neurosurgical and an Aged care ward in a large tertiary hospital. The project succeeded in achieving the objectives as all criteria used to audit practice improved after a 'Falls Prevention and Management' education package incorporating best practice recommendations and various other strategies were implemented. While it is suggested that the implementation of evidence based best practices will improve patient care and outcomes, this cannot be assured on the basis of this project alone. Some criteria measured in this project did not improve to a great degree with increases in compliance minimal, leaving plenty of room for improvement. By the end of the project however, attitudes to falls prevention on the two wards and across the facility had been 'transformed' from passive acceptance of falls, to active engagement in falls prevention and minimisation of injury.

Identification of time limitations within a nurse's daily role and often poor documentation practices were two of the main barriers underpinning the gaps between best practice recommendations and actual practice. Identification of these barriers facilitated understanding why for some of the audit criteria performance improved only minimally. This has highlighted the importance of future education initiatives targeted at clinicians including a focus on this aspect of care.

Although it is acknowledged that a focus on falls tends to increase the number of reported falls on a ward, potential long term benefits such as a reduction in the overall hospital, and individual

neurosurgical and aged care ward falls rates will be measured over a longer study period. Future audits are planned to ensure changes are sustained and improved with the aim that the hospital not only prevents falls and harm from falls but can give a patient centred approach and instil confidence in our patients and their carers that the hospital is doing all it can to prevent such events.

Nil conflicts of interests are declared.

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Nursing assessment and strategy utilization for falls prevention among medical and orthopaedic patients in an acute public hospital setting: A best practice implementation project.

Brooke Dench, BN, *Griff,* GCertClinNurs *ACU,* GDipPsych *CSU,* RN, JP(Qual) *Mater Health Services, Clinical Safety Officer.*

Jonaelle Lucas, Mater Health Services, Process Excellence.

Charlotte Perkins, Mater Health Services, Registered Nurse.

Glenis Diver, Mater Health Services, Clinical Nurse.

Primary Contact
Brooke Dench
brooke.dench@mater.org.au

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Executive Summary

Background: Falls are one of the highest reported of adverse events across Australia and much of the world. Implementing targeted, multidisciplinary falls prevention strategies to address risk is considered the cornerstone in falls prevention.

Objectives: This project aimed to identify gaps in current practices against international best practice standards and overcome these gaps by identifying barriers and implementing effective practice change with an aim to reduce hospital falls rates.

Method: This project utilised the Joanna Briggs Institute's Practical Application of Clinical Evidence System and Getting Research into Practice methodology.

Results: There were numerous gaps identified across the organisation, many of which were addressed successfully as part of this process. Follow up audit revealed increased compliance towards best practice standards compared with baseline, which were sustainable across two audit cycles. This did not however, change the rate of falls on the wards.

Conclusions: In conclusion, this was an effective process in identifying best practice gaps throughout the organisation and on the wards and implementing effective practice change. However, the best practice literature itself has some gaps that need to be addressed to combat in hospital falls both nationally and internationally.

Keywords: Falls prevention, best practice implementation, JBI PACES, GRIP, Australia

Background

One of the leading causes of morbidity and mortality for the elderly is fall related injuries.[1] Within the acute hospital setting, the risk of falling for this group is increased. [2] Literature on the rates of falls within the acute hospital setting are varied, ranging between 2-5%,[3] with a higher rate of falls experienced in public hospitals opposed to private hospitals.[4] The health service targeted in this project experienced 720 falls across the seven hospitals that make up the service in 2012, which translates to a rate of 2.5% falls per occupied bed day. Twenty of these falls were classified as falls with harm resulting in fractures, subdural haematomas or other injuries. Specifically, the public hospital within this health service has a falls rate of 4.2%. The acute medical ward had 73 falls, while the surgical orthopaedic ward had 28 falls, equating to a rate of 6.99% and 3.33% respectively.

Whilst most individuals who experience an in-hospital fall don't injure themselves, there are still many falls that do result in a serious injury. Falls can have an impact on hospital resources including increased lengths of stay, costs relating to additional diagnostic and interventional procedures and decreased patient satisfaction.[5, 6] The greatest impact though, is on the individual who experienced the fall and their family. Many patients who experienced a fall that resulted in injury will have a diminished quality of life,[7] suffer psychological effects including depression, fear of repeat falls and many are institutionalised into residential homes losing large amounts of independence.[1, 4]

Predicting falls can be a difficult task. There are many factors that contribute to a patient falling, some of the most commonly cited are having a history of falls, the number and types of medications that a patient is taking, cognitive impairment, environmental factors and the behaviour of clinicians.[8] Hospital fall prevention programs are the cornerstone for reduction in one of the top reported adverse hospital outcomes.[9] Implementation of individualised, targeted multifactorial falls prevention strategies, such as increased supervision, referrals to allied health professionals and patient education, is imperative to a successful inpatient falls prevention program.[10] However, expert opinion suggests that clinicians are often confused on what strategies should be implemented for particular patients or overlook strategies that would be appropriate for implementation.

This project investigated compliance to internationally recognised inpatient fall prevention best practice risk screening, education and strategy implementation (ACSQHC, 2009, 2012). The focus was on two wards, one an acute medical ward, the other a surgical orthopaedic ward, within an adult public hospital, located in Brisbane, Australia. It was anticipated that if accurate assessments and appropriately targeted strategies were implemented, then the rate of falls will decrease.

Successful falls prevention programs within the acute care setting will reduce the financial burden facing health services providers and most importantly, ensure that patients have the best possible outcomes during their hospitalisation and return back into their home sooner, maintaining the same quality of life that was expected for them on their admission.

Objectives

The overall aim of this project was to:

- Assess clinician utilisation of best practice fall prevention strategies.
- Identify the barriers that prevent best practice utilisation.
- Implement strategies to improve the utilisation of fall prevention strategies based on the best available evidence.
- Achieve an overall reduction in the rate of falls for these two wards.

Methods

The method that this project utilised was in accordance with the embedded processes of the Joanna Briggs Institute (JBI) Practical Application of Clinical Evidence Systems (PACES) audit program and the Getting Research Into Practice (GRIP) module.[11] This is an online tool that facilitates audit, compliance reporting and feedback and action plan formation. It allows baseline audit and follow up auditing cycles. This project was conducted from May 2013 to March 2014. Ethics approval was gained through the hospital's Human Research Ethics Committee. This project was divided into three phases.

Phase 1

Phase 1 involved identifying an audit topic, establishing a project team, setting up the JBI PACES[11] with appropriate audit criteria, identifying the setting and sample size, and then conducting the baseline audit.

Identification of topic

The topic chosen for the project was falls prevention strategy utilization among acute medical and orthopaedic patients in an acute public hospital.

Establishing a project team

The project team was led by the hospital's Clinical Safety Officer for falls prevention. Falls champions from each of the wards formed the remaining team members and lead the project at ward level.
The project team considered the following stakeholders:

- Nursing Director
- Nurse Unit Managers of medical and orthopaedic wards
- Nurse Educator and Nursing Facilitators of medical and orthopaedic wards
- Process Excellence Coordinator
- Ward nurses
- Head of Clinical Safety, Systems and Strategy
- Allied health professionals including physiotherapists, occupational therapists and pharmacists

Identifying the setting and sample size

The project was conducted in a public hospital setting comprising of an acute medical ward comprising of 30 beds, and an acute orthopaedic ward comprising of 30 beds. The sample size for most of the audit criteria was 30 per audit criteria, selected by convenience sampling of those patients admitted to the ward on the days of audit.
For one of the criteria the sample was by convenience sampling of staff members who were on the ward at the time. Thirty staff from medical, nursing and allied health professions, as well as hotel services, catering services and students from various professions were included.

Setting up JBI PACES

The project leader formulated the details of the audit into JBI PACES[11].
This project utilized eight audit criteria based around the criteria specified by the National Safety and Quality Health Service Standards (NSQHSS)[12], and derived from the best available evidence:
Criterion 1: Falls risk assessment is done upon admission to hospital.
This criterion was considered met if the St Thomas Risk Assessment Tool in Falling Elderly In-patients (STRATIFY)[13] was completed within eight hours of admission.

Criterion 2: Falls risk assessment is done upon transfer.
This criterion was considered met if the STRATIFY[13] was completed within eight hours of intra-hospital transfer.
Criterion 3: Reassessment occurs when there is a change in condition or following a fall.
This criterion was considered met if the STRATIFY[13] was completed within eight hours of a change in condition which is likely to impact the patients falls risk or after a fall.
Criterion 4: Patients who have experienced a fall are considered at high risk for future falls.
This criterion was considered met if the falls history section of the STRATIFY[13] tool is scored.
Criterion 5: Falls risk assessment is done accurately using a falls assessment tool.
This criterion was considered met if details in the patient health record match each of the identified risk criteria in the STRATIFY[13] screening tool and assessment and appropriate risk category had been identified.
Criterion 6: Healthcare professionals have received education regarding falls assessment and prevention strategies.
This criterion was considered met if staff members from any health discipline or hospital department answer yes to the question, "Have you received education regarding falls assessment and prevention strategies in the last two years?"
Criterion 7: Patient and family education is carried out for patients at risk of falls.
This criterion was considered met if there was documented evidence on the strategies sign off section of the falls risk assessment that patients and carers had been advised of their risk status and preventative strategy information.
Criterion 8: Targeted interventions are implemented according to risk factors.
This criterion was considered met if there was documented evidence of appropriate implemented strategies for each of the risk factors identified on the risk assessment tool.

Phase 2

The initial audit results were discussed with project members. Utilizing the GRIP tool, barriers impeding best practice were identified. Strategies and resources were sought to overcome barriers, some of which were implemented. Appendix 1 shows the GRIP strategies identified and those highlighted in bold were implemented. The other strategies were unable to be completed within the project timeframe and will commence or continue to be implemented post project completion. Barriers, strategies and outcomes are described in the results section.

Phase 3

A follow up audit was conducted in November 2013 to investigate the effects that strategy implementation had on compliance to falls prevention documentation. Data was collected using the same methodology as the baseline audit process. Sample sizes for staff and patients remained unchanged, with a convenience sampling method of 30 audit criteria utilized. An additional follow up audit was further conducted in March 2014 to investigate if the changes made had been sustained over time. Data was collected using the same methodology as the baseline audit and follow up audit processes. Sample sizes for staff and patients remained unchanged, with a convenience sampling method of 30 audit criteria utilized.

Results

Phase 1: Baseline Audit

As shown in Figures 1,2 & 3, compliance varied across the criteria and across ward areas. Risk assessment on admission and the accuracy of risk assessment consistently performed well across wards. Risk assessment on transfer and after a change in clinical condition compliance was poor across both ward areas, as was patient and family education. Those who had experienced a fall were consistently considered to be high risk across both wards. Health professional education was varied across wards. Compliance with documented strategies was done extremely well on one ward, but needed significant improvement on the medical ward.

Phase 2: GRIP process (see Appendix 1)

The first barrier that was identified was the lack of non-clinical time that the project team had to analyse and strategize. It was agreed that a funded non-clinical day for the ward project staff would be allocated so that the project team could brainstorm without a patient workload.

Arranging meetings and engaging appropriate key stakeholders also proved difficult. Part time working hours, leave and job commitments hindered the ability to engage stakeholders in a timely manner. To encourage commitment to the project and create accountability, a summary of audit results and areas for improvement was sent to the Nursing Director. The Nursing Director then requested feedback from each ward area on the progress of the report.

For both wards, a lack of knowledge around when risk assessments should occur was identified. Education was provided to overcome this barrier.

In addition, the organisation was due to undertake full organisation wide accreditation in the final weeks of the project. As there were large competing demands for education and practice change, this project needed an incentive to encourage compliance and changes in practice. A ‘well done’ afternoon tea was promised to staff if compliance increased. This was accompanied with a certificate of appreciation and boxes of chocolates for night duty staff.

Also, there were some differences in the rate of progress of the falls prevention program between the wards. On the medical ward, work had begun on trialling a patient education and visual management system in the six months prior to commencing this project.[14] This included placing stars above the bed to alert staff to high risk patients, asking visitors via PA announcement and posters to ensure chairs are replaced on completion of visiting hours and a placemat asking patients to gain assistance was placed on the bedside table. As the surgical ward did not have any formal patient education process, this work was incorporated into the surgical ward also, as part of this project.

On the medical ward, compliance with documentation was poor, despite knowing that this documentation was required. To overcome this, staff were reminded about professional accountability. Coronial findings where falls incidents lead to the death of patients were used to highlight the importance of documentation.

It was further identified that communication around falls events was lacking. To overcome this, staff started to incorporate falls as part of the handover process and included the date of falls onto the handover sheet. The GRIP matrix is tabled in Appendix 1.

Phase 3: Post Implementation Audits

There were clinically significant improvements in most areas following the first follow up audit. As indicated in Figure 1, only on one criterion, patient education, compliance declined on the medical ward. All other criteria, increased across the project time on both wards as indicated by Figure 1 & 2. Overall, an improvement was seen across all criteria as indicated in Figure 3, when results from both wards were aggregated.

Follow up Cycle 1

Medical Ward

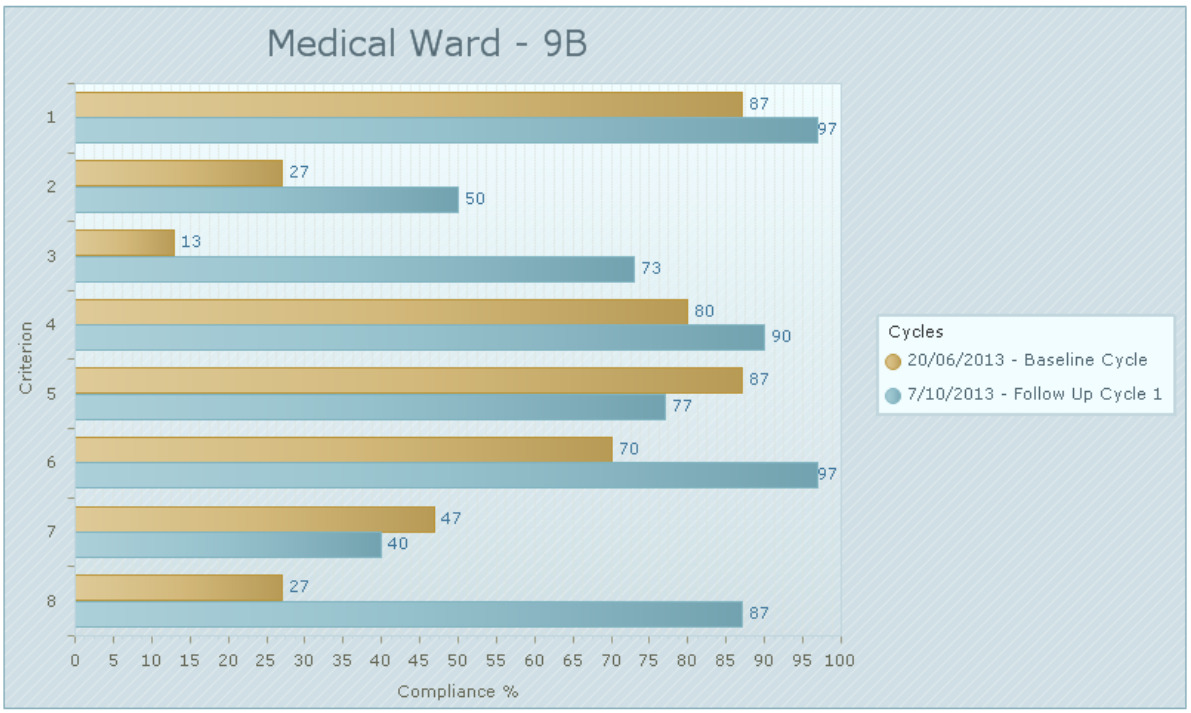

Figure 1: Follow up audit cycle 1 compared with baseline results from acute medical ward

Surgical Ward

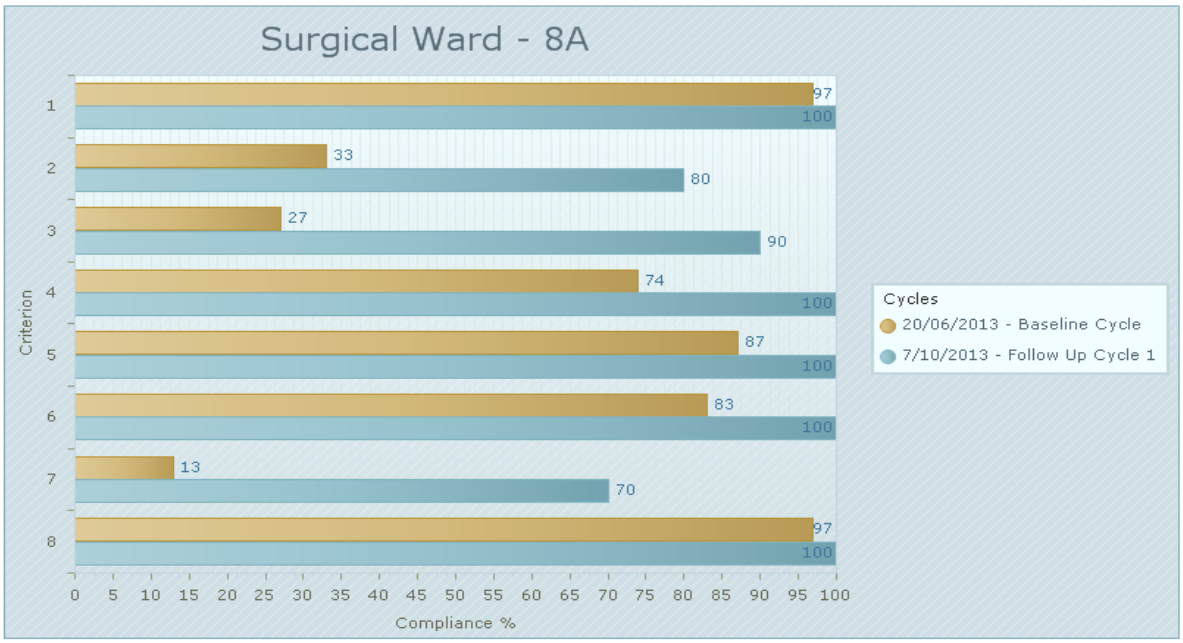

Figure 2: Follow up audit cycle 1 compared with baseline results from acute surgical ward

Aggregated results

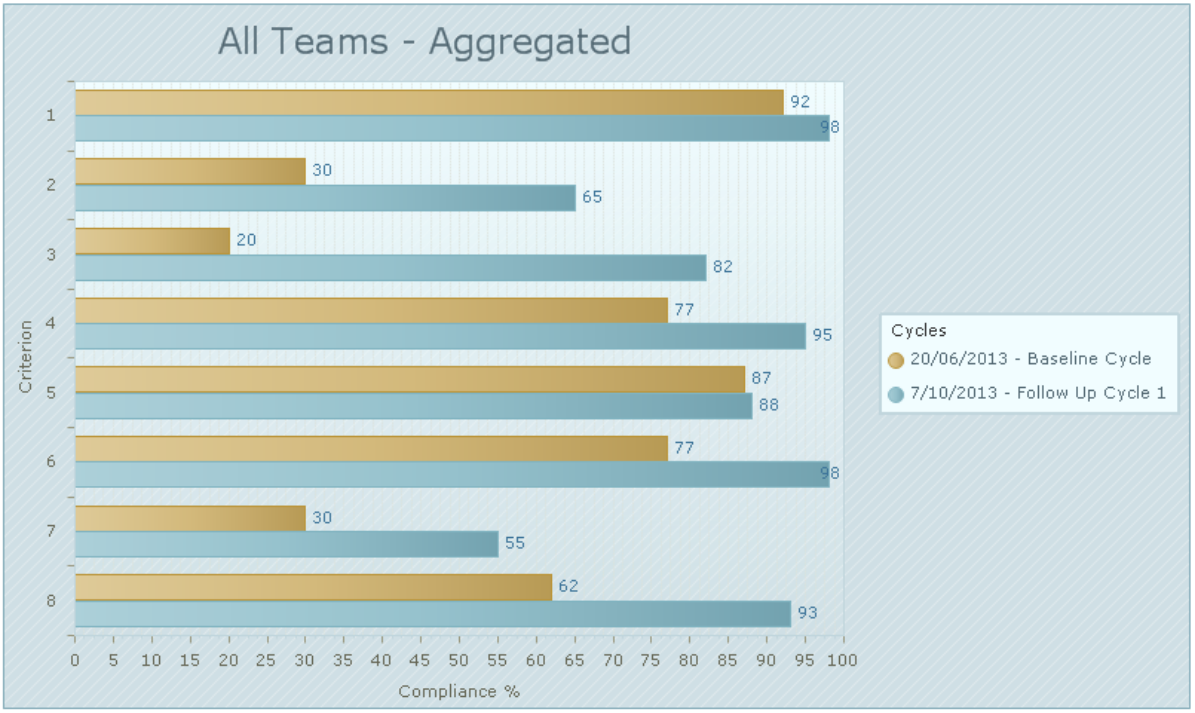

Figure 3: Follow up audit cycle 1 compared with baseline results – both wards aggregated

Follow up cycle 2

The percentage of compliance for the audit criteria found in the follow up cycle 2 with the results from the baseline audit are displayed in Figures 4 (medical ward), 5 (surgical ward) & 6 (both wards aggregated). Overall, compliance to each of the audit criteria remained above the baseline audit results, despite having no new strategies implemented between follow up cycle 1 & 2. The medical ward did see a decline in compliance to audit criteria 7 – Patient and family education is carried out for patients at risk of falls. The possible reasons for this are discussed as part of the discussion section of the report.

Medical Ward

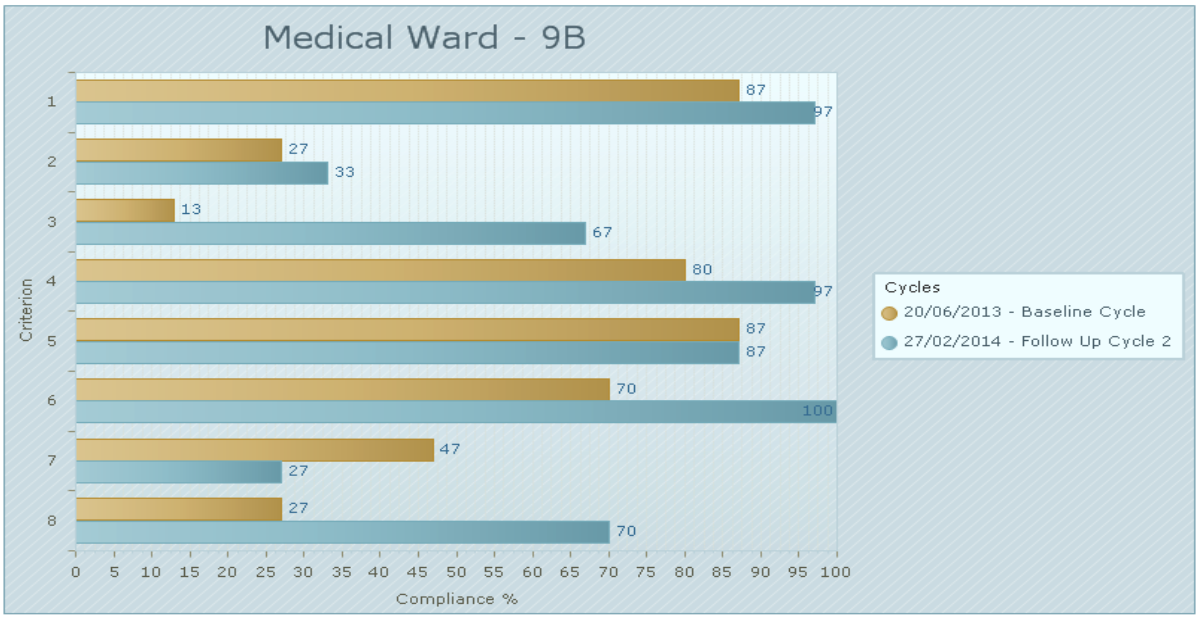

Figure 4: Follow up audit cycle 2 compared with baseline results from acute medical ward

Surgical Ward

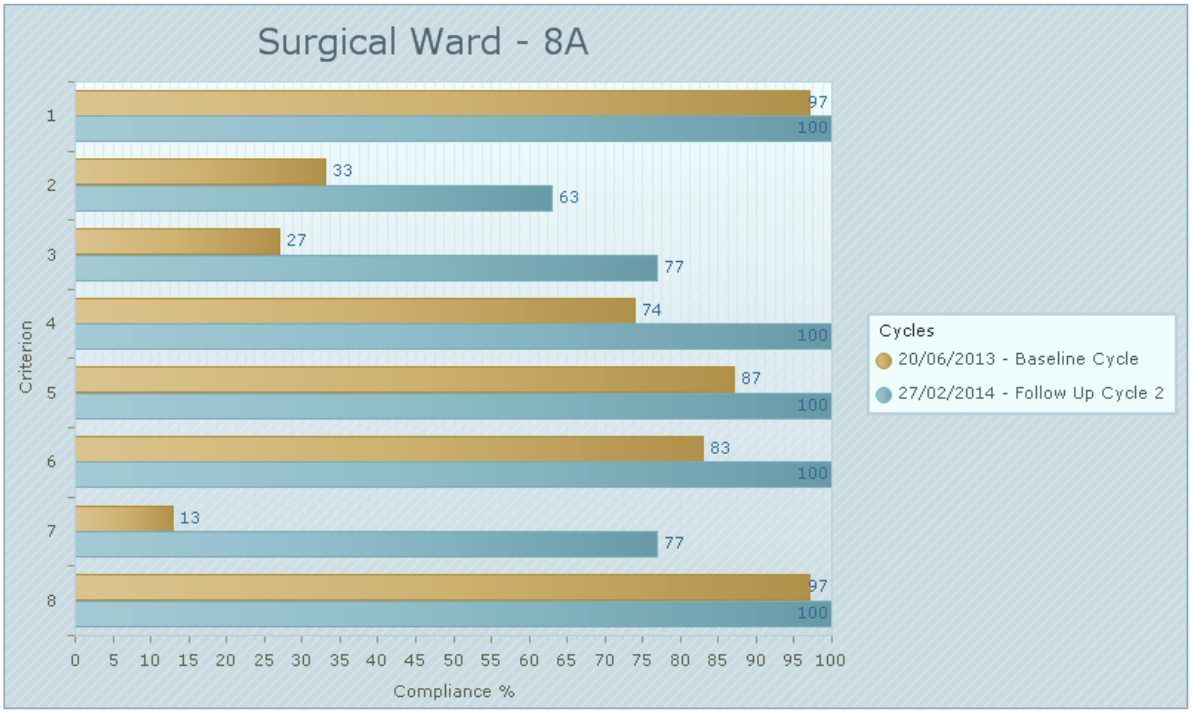

Figure 5: Follow up audit cycle 2 compared with baseline results from acute surgical orthopaedic ward

Aggregated results

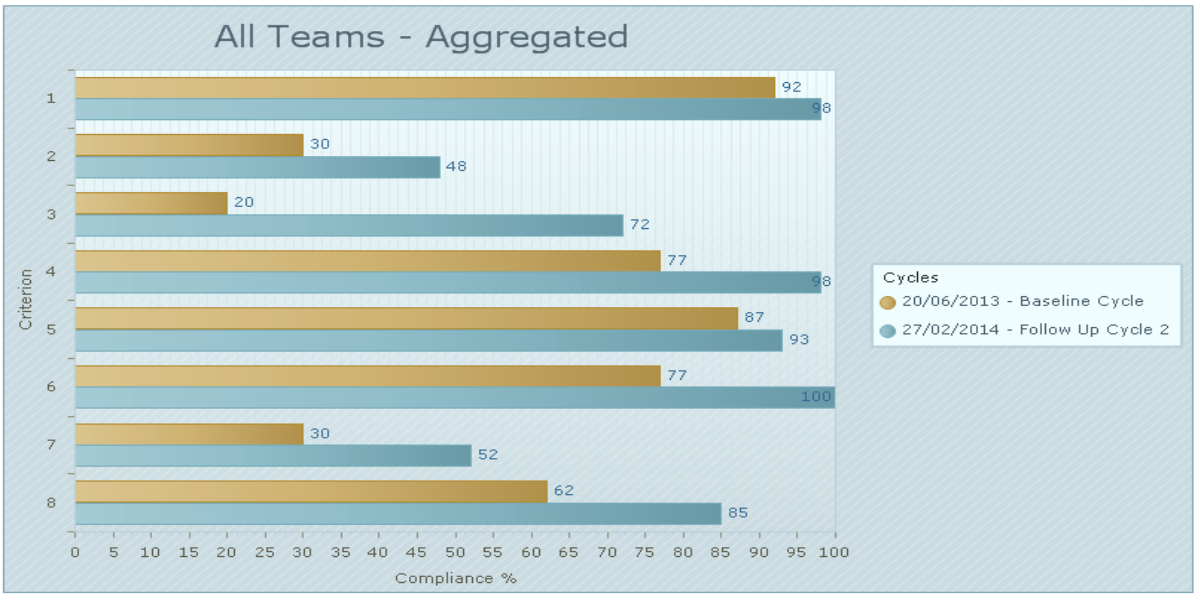

Figure 6: Follow up audit cycle 2 compared with baseline results from both wards

Discussion

Overall, there was an improvement in results on both wards. The medical ward did see a decline on the patient education criterion. This may have been attributed to the number of cognitively impaired patients that were on the ward at the time of the audit, compared with the baseline audit, who may be excluded from receiving the same education as other patients.

The pre-audit results yielded consistencies across the organisation. Another colleague, who conducted the same project within the private hospital of this organisation had similar results, identifying current gaps in knowledge across our organisation. These included when to risk screen, especially on transfer or changes in clinical conditions, and patient education.

Whilst staff education was above 70 percent on the baseline audit, there were some interesting findings that warrant further discussion. Of the nurses that were questioned, the majority answered that they had received some form of education around falls prevention. Those that did not receive education were from agency or the casual pool, indicating that education was organisation dependant and based around permanency of role. Also, several students from multiple disciplines were questioned. Last year Endorsed Enrolled Nursing students stated that they had not received education during their course and medical students felt that falls education was not applicable to them. Physiotherapy students had received falls education as part of their coursework, highlighting interesting distinctions between professions. During the follow up audit cycle 2, only permanent staff were on the wards at the time of the audit, all of which had received education.

In terms of the GRIP strategies, the funded non-clinical day allowed the opportunity to be on the ward, with a focus on the project. It allowed the opportunity for the ward ‘falls champion’ to discuss issues with their colleagues in an open manner. This yielded insights into why compliance on some criteria was so low, that a non-team member would not have gained, with comments such as, ‘I know I am meant to do that, but I sometimes don’t’.

Interestingly, despite both units being under the same organisation leadership, changes and

education were delivered differently at a unit level. On the surgical ward, the project was driven by the Nurse Unit Manager, Educator and the three falls portfolio owners, with very little involvement from the project lead. On the medical ward, the education was conducted by the project lead and driven by the projects ward 'falls champion'. Despite different ownership and leadership, the results indicate that most criterion were sustainable even following the completion of the project.

As for falls rates, comparisons over the project period compared with the previous twelve months, have shown an increase in the rate of falls on the medical ward. The project period saw an average of 7.48 falls per 1000 occupied bed days, compared with an average of 7.16 falls per 1000 occupied bed days in the twelve months prior to the project. The surgical ward had similar falls rates across the two periods, 3.36 prior to the project and 3.31 falls per 1000 occupied bed days during the study period.

This project did have some limitations. The main limitation was the very short time frame to implement practice changes and the coincidental timing of the hospital wide accreditation survey that took place in the final months of the project. It is a credit to the clinicians at the ward level who embraced the project, during such a busy time, to implement the sustainable practice changes. The patient education itself was seen as a further limitation. Whilst consumer feedback was sought on the thoughts of patients towards the design of the posters and placemats, it was not investigated to see the effect on behavioural change. It has not been explored in the falls prevention literature if the education that is provided on falls prevention whilst in hospital leads to patients changing their behaviour. Until effective education is investigated to understand what leads to behavioural change in older adults, falls will not be prevented as patients may not value the education and will continue to disregard safety instructions. Also, the education provided within this project was targeted towards cognitively intact individuals, leaving a knowledge gap for the carers of cognitively impaired patients.

There are numerous future directions that this project has highlighted that need addressing. Firstly, as an organisation there are fundamental gaps in the current falls prevention program, including patient education and timely and accurate assessments. It has also highlighted the lack of knowledge and education for casual and agency staff, and students undertaking work within the hospital.

This point however, seems to be a global problem. As identified by expert opinion, a large knowledge base within undergraduate health professional training is missing around falls prevention. Risk factors and strategies are similar across Australian health organisations, so it is questionable why such a fundamental body of knowledge is missing from these programs. Falls are an international multi-disciplinary problem, inclusion into all health programs is essential to raise the awareness on such a common adverse event.

Conclusion

In conclusion, conducting the JBI PACES audit identified some gaps in best practice for falls prevention across the organisation, some of which were addressed as part of this project. The organisation continues to work towards filling the gaps unable to be addressed as part of this project. Despite the short time frame, practice change was seen. This however, did not have a direct impact on the rates of falls. There seems to a gap in the hospital falls prevention literature on effective patient education that leads to behavioural change and a gap in clinician knowledge bases. Until these gaps are addressed falls rates are unlikely to change, as patients will continue to disregard instructions and the underlying theoretical knowledge on appropriate falls prevention initiatives will be lacking.

Conflict of Interest No conflict of interest is known.

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Appendix 1: GRIP matrix exported from PACES

Barrier (what was the barrier)	**Strategy** (i.e., what was the action to overcome the barrier, for example, development of tool, delivering educational sessions, development of pamphlets, etc.)	**Resources** (i.e., what resources did you use to achieve desirable outcome, for example, tool, charts, educational package, seminars, extra staff, etc.)	**Outcomes** (how was an improvement measured)
Large and non-user friendly form	Redesign form, incorporating consumer involvement and human factors design.	Consultation with consumers and clinicians	Work commenced early 2014
Lack of non-clinical time for project ward staff to analysis and strategize	Allocated non-clinical day to analyze results, gain staff perceptions and strategize	Funding for two non-clinical days for ward staff	Approval of days
Lack of knowledge of when to conduct a risk assessment	Provide education around when to conduct a risk assessment	In-service time	Periodic review of charts to monitor completion
Nurses understanding the need to document strategies, but not completing	Education around professional accountability and coronial findings and the consequences of inadequate documentation	In-service time Coronial findings relating to in-patient falls	Periodic review of charts to monitor completion
Inadequate communication around falls events and lack of inclusion during patients handover	Include dates of falls under risk section of handover sheet	Access to electronic handover sheet	Periodic review of handover sheet

Lack of incentive for practice change	Hold a 'well done' afternoon tea for morning and afternoon staff, boxes of chocolates for night staff and a certificate for the ward	Certificate Food Chocolates	Sated and happy staff
Lack of resources and understanding of what satisfies patient education	Implement patient education already being conducted on the medical ward and provide education around patient education	Posters Placemats	Periodic review of charts to monitor completion and ward walk around to identify the use of posters and placemats
Lack of visual management to identify patients who are at high risk of falling	Implement visual management and provide education to all staff on what this visual management means and behavioural expectations	Stars	Ward walk around to identify the use of stars
Student education (medical, nursing, physiotherapy) lacking around falls and falls prevention	Feedback to relevant education coordinators	Meeting with education coordinators	Still in progress
Lack of ownership by the ward	Provide a detailed report to Director of Nursing on areas needing improvement to increase accountability	Detailed report of both wards	Director of Nursing requested regular updates on project from each ward

Falls risk assessment and falls prevention strategies in private oncology and neurosurgical setting: a best practice implementation project

Cara Joyce Cabilan RN, BN, Master of Applied Science (Research) candidate

Clinical Research Nurse, Nursing Research Centre, Mater Health Services, Brisbane, Queensland, Australia

Email: Cara.Cabilan@mater.org.au

Key Dates
Commencement date: May 2013
Completion date: May 2014

Executive Summary

Background Patient falls are a common occurrence in hospital. However, most of these falls can be prevented. Research evidence indicates that accurate and prompt falls risk assessment and adherence to the best practice in falls prevention strategies can significantly reduce the incidence of falls. This best practice implementation project reinforced the following: accurate falls risk assessment, promptness of risk assessment, and implementation and adherence to falls prevention strategies.

Objectives This project aimed to achieve the following objectives: enable healthcare staff to assess patients for falls accurately and promptly, to promote adherence to the current best practice of falls prevention strategies, and to assess shortfalls in education around falls prevention.

Methods This project utilised a pre- and post-audit method using the Joanna Briggs Institute Practical Application of Clinical Evidence System and Getting Research Into Practice (GRIP). There were 8 criteria for this project, and the sample size was 30 per criterion as per JBI. The project period was May 2013 to May 2014, and was implemented in 4 phases in the 41-bed medical-oncology, and 30-bed neurosurgical departments. The GRIP strategies involved education sessions, “Ask me about falls…” badges, and shift falls champion.

Results First audit aggregated results show low compliance in accurate (28%) and prompt (<20%) falls risk assessments, patient education (27%), and implementation and adherence to falls prevention strategies (27%) in both departments. After implementation of GRIP strategies, we saw improvements in practice in both departments. Accuracy of falls risk assessments, and implementation and adherence to falls risk strategies improved at 68% and 65% respectively. However, we did not see great improvements in promptness of falls risk assessments, and patient education.

Conclusions This project highlighted the importance of best practice in falls risk assessment, and falls prevention strategies. Despite low compliance in promptness of falls risk assessments, and patient education, the project was successful because we saw improvements in accuracy of assessments, and implementation and adherence to falls prevention strategies.

Keywords in-hospital falls, evidence-based practice, falls prevention, falls assessment, education

Background

This project is part of the Joanna Briggs Institute (JBI) multi-site audit of current in-hospital falls prevention practices and assessment of the effectiveness of best practice implementation strategies program. The program required the involvement of public and private hospitals, and required participation of one medical, and one surgical department in each hospital in order to maximize applicability. This evidence-based implementation project took place in medical-oncology, and neurosurgical departments of a large private metropolitan hospital in Queensland. The nursing director of the hospital chose the participation of both departments because they had the highest number of reported falls in 2012.

Patient fall is described as "an event which results in a person coming to rest inadvertently on the ground or floor or other lower level".[1,p.1] Falls can occur anytime during a hospital stay. Most patient falls commonly occur within the bedside area, and in the toilet or bathroom.[2] Falls, consequently, result in adverse outcomes such as fractures, loss of independence, permanent disability, and death. Falls also have economic implications such as added healthcare cost from injury, utilisation of support healthcare services, and prolonged hospitalisation.[3] Not all falls cause adverse outcomes, however falls with no harm or near misses can potentially result in development of anxiety and restriction of activities due to fear of falling.[4]

In 2012, the medical-oncology department had the highest number of reported falls of the entire medical department in the private hospital; simultaneously the surgical department had the highest number of reported falls of the entire private surgical departments. Both departments had a falls prevalence rate in 2012 of 6.51 and 4.89 falls per 1000 bed days respectively. It is yet unknown what specifically contributed to the falls in the departments. However it is known that all patient falls are influenced by intrinsic and extrinsic factors.[5] Intrinsic factors include but are not limited to age, cancer treatment effects, surgery, medication side effects, and altered level of physical and mental functioning. Extrinsic factors involve objects or patient's surroundings that include, but are not limited to inappropriate footwear, clutter, inadequate lighting, and slippery floors. It is important to note that due to cancer and/or treatment effects, patients who are admitted to oncology are most likely to have reduced physical and mental functioning[6,7] therefore the risk of falling is very high in oncology patients.[2] The risk for neurosurgical patients could be accounted to their post-operative condition, post-operative status of their mobility, and effects of anaesthesia.[2]

Recent evidence suggests that accurate assessment and multi-faceted falls prevention interventions can reduce the rate of falls.[8] Our organisation has recently updated the policy for falls risk assessment and prevention strategies according to the recent evidence. The policy[1] mandates staff to assess falls risk and review falls prevention strategies "daily, following a significant event or change in condition, and after a fall".[p.2] Currently, the validated tool STRATIFY (St. Thomas' risk assessment tool in falling elderly inpatients)[9] is being used across the organisation to assess falls risk. As for falls prevention strategies, the following are the outlined standard prevention strategies in the policy[1,p.3]:

- Screen or assess all patients in hospital for their risk of falling.
- Identify high-risk patients by using falls risk alerts.
- Review medications to identify high-risk medications and those that may cause postural blood pressure issues.
- Routine screening of urine to identify urinary tract infections (regular urinalysis).
- Implement a plan of care to maintain bowel and bladder function.
- Routine Physiotherapy review for patients with mobility difficulties.

- Ensure mobility limitations are communicated to staff and patients using verbal, written and visual communication.
- Educate staff, patients and carers about falls risks and falls prevention strategies and record these discussions.
- Encourage participation in functional activities and exercise.
- Ensure that the environment is safe:
    - Orientate the patient to the bed area, facilities and how to obtain help if required,
    - Ensure the use of assistive devices is understood and within reach of the patient,
    - Supervise or assist patient where required. Ensure appropriate footwear is worn,
    - Ensure bed is at appropriate height and the brakes are on,
    - Ensure environment is free from clutter and floor surfaces are clean and dry,
    - Ensure adequate lighting is supplied especially at night,
    - Ensure personal possessions are accessible.
- Minimize the use of restraints and bed rails.

Moreover, the policy aims to ensure accurate falls risk assessment, staff and patient education, effective communication, involvement of a multi-disciplinary team, and timely implementation of falls prevention strategies.

Thus, this project aimed to reinforce the current evidence-based policy in the medical-oncology, and neurosurgical departments in order to improve accuracy of falls risk assessment, and adherence to current falls prevention strategies. Lastly, this project also aimed to address the shortfalls in education around falls prevention.

Objectives

The project aimed to achieve the following objectives:

- To enable healthcare staff to assess patients for falls accurately and promptly
- To promote adherence to the current best practice of falls prevention strategies
- To assess shortfalls in education around falls prevention

Ethical consideration

The conduct of this project was approved by the organisation's Human Research Ethics Committee for low and negligible risk research.

Methods

Phase 1: Preparing for baseline audit

The project is a part of the JBI multi-site audit of current in-hospital falls prevention practices and assessment of the effectiveness of best practice implementation strategies program. The audit criteria were pre-defined by JBI in accordance with the National Safety and Quality in Health Service Standard 10: Preventing Falls and Harm from Falls developed by the Australian Commission on Safety and Quality in Health Care. The following are the audit criteria:

Assessment

1. Falls risk assessment is done on admission.
2. Falls risk assessment is done upon transfer.

3. Reassessment occurs when there is a change in condition or following a fall.
4. Patients who have experienced a fall are considered at high risk for future falls.
5. Falls risk assessment is done accurately using a falls assessment tool.

Education

6. Health care professionals have received education regarding falls assessment and prevention strategies.
7. Patient and family education is carried out for patients at high risk of falls.

Interventions

8. Targeted interventions are implemented according to risk factors.

This project used a convenience sampling method. A sample size of 30 per criterion was determined by JBI. The project was set in the medical-oncology, and neurosurgical department.

Moreover, a meeting was organized with the hospital nursing director, nurse unit managers (NUM) and clinical facilitators from each department in order to gain their support, and aid the process of evidence-based implementation.

Phase 2: Baseline Audit

The first audit was conducted from June to August 2013 until the sample size was fulfilled. An 8-item audit tool (Appendix 1), based on the audit criteria, was used to measure compliance on falls assessment, and implementation of falls prevention strategies.

Phase 3: Dissemination of baseline audit results, identification of practice barriers, and strategies to overcome barriers

We allocated a period of three weeks to deliver 15 to 20-minute education sessions in both departments in order to capture all staff members. The nursing director, unit managers, and clinical facilitators attended one of the sessions. The purpose of the education session was to present the falls prevalence in their department, baseline audit results, discuss the current falls risk assessment tool and falls prevention strategies or 'falls tool', and identify practice barriers and strategies to overcome it. We utilised projected presentation slides for enhanced viewing, and provided staff with hard copies of the falls tool and audit results to aid learning.

The following were the identified barriers and the strategies used to overcome barriers:

Barrier 1: Insufficient falls risk assessment and prevention education provided to staff. The 15 to 20 minute education sessions were used to provide staff with information about how to use the tool, and the importance of implementing and adhering to the individualized falls prevention strategies. A small number of staff members were not able to attend the education sessions. For those who were not able to attend the session, we designed a written learning material that included a case study, and falls tool. Based on the case study, staff performed a falls risk assessment and identified appropriate falls prevention strategies using the falls tool provided.

Moreover, the clinical facilitator of each department had put an education focus for staff on Patient Falls for the month of July/August 2013. All staff members were required to read the Patient Falls learning package and answer a 10-item quiz; and update their knowledge of hospital policy on falls

risk assessment and prevention.

Barrier 2: Inadequate delivery of falls prevention education to patient and carers. The hospital has a patient falls brochure available to be provided to patients. Staff members were required to provide written (pamphlet) and verbal information to patients and carers about in-hospital falls prevention. Staff members were also required to wear 'falls badges' that states, *"Ask me about Falls Risk Assessment"* and *"Ask me about Falls Prevention".* The aim of the badges were to facilitate falls discussion between patients, and also to serve as reminders to other staff members about completing falls risk assessments and adhering to the falls prevention strategies in place.

Barrier 3: Incompliance with documentation requirement of falls prevention strategies. We decided to have a 'shift falls champion' (every shift) to remind staff members during their shifts about documenting falls risk assessments and prevention strategies, and most importantly adhering to the falls prevention strategies in place. The nurse in-charge of the shift, and the team-leader from each nursing team automatically becomes the shift falls champion. The specific role of the shift falls champion was discussed in the education session.

Barrier 4: Change of NUM, and clinical facilitators (neurosurgical department). It is likely that the change of leadership, and clinical facilitators significantly affected the consistency of practice improvement. The new NUM, and clinical facilitator were briefed about the project aims, and their responsibilities.

Barrier 5: Lack of committed time spent in scheduled education sessions due to workload issues. The education sessions was scheduled according to the department's convenience, thus the time of the sessions was decided by the NUM. There were a few occasions where staff couldn't attend the scheduled sessions due to staffing and workload issues on the day, therefore the sessions were re-scheduled to suit staff members.

Phase 4: Follow-up Audit

The follow-up audit was conducted from October to December 2013 until the sample size was fulfilled.

Results

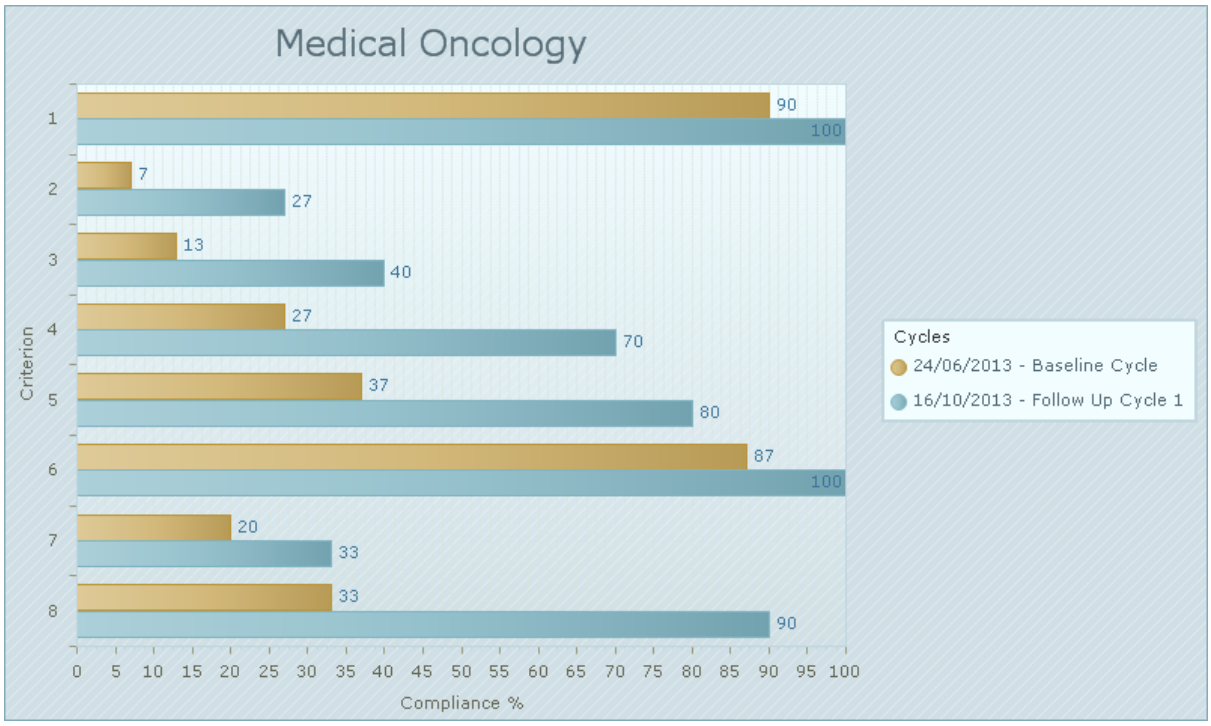

Figure 1. Baseline and follow up cycle 1 audit results: Medical Oncology

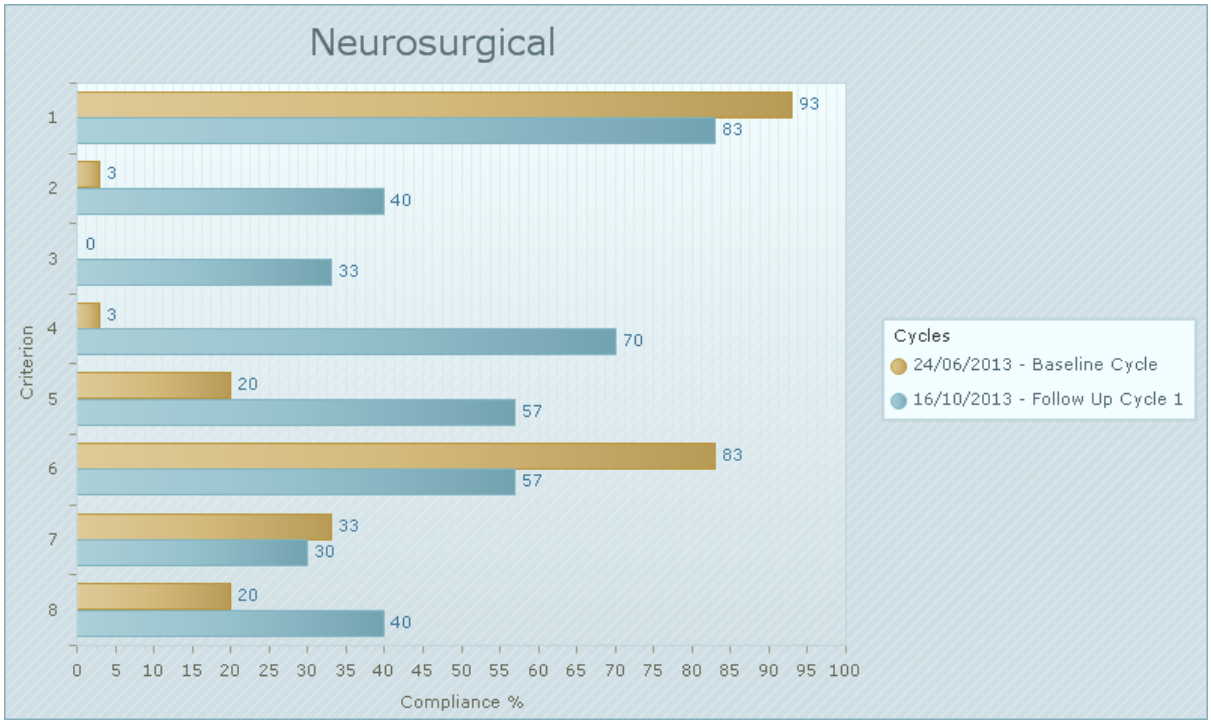

Figure 2. Baseline and follow up cycle 1 audit results: Neurosurgical

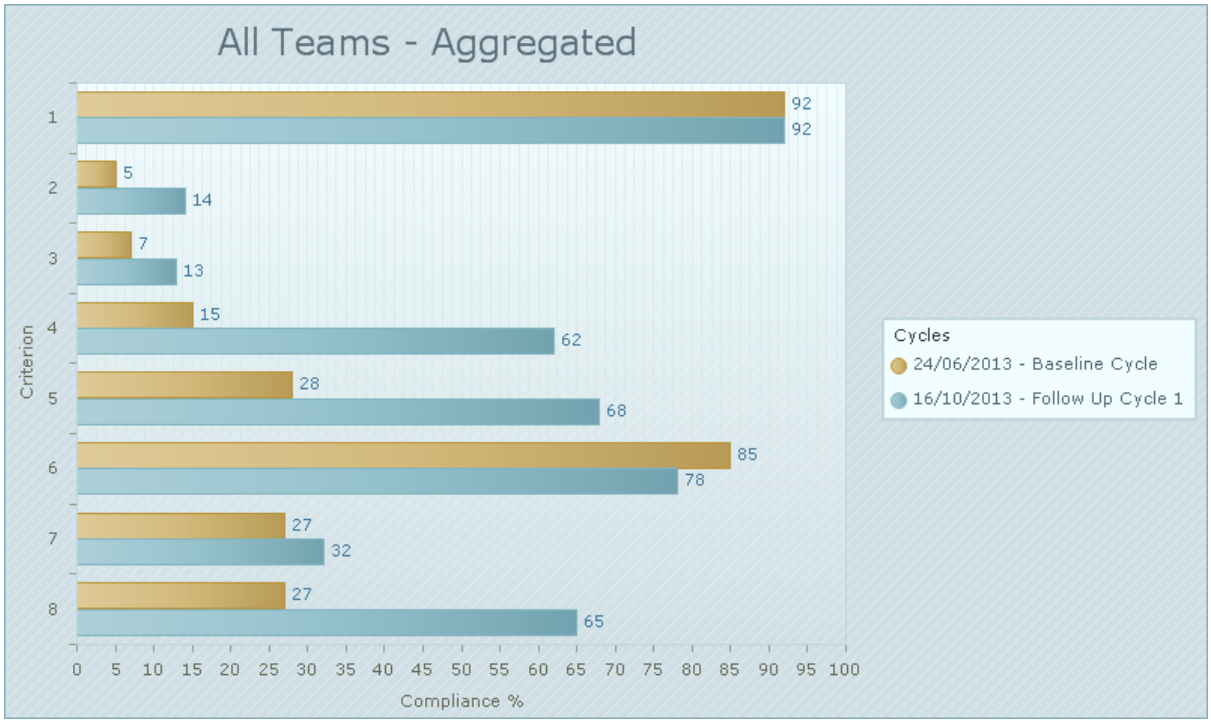

Figure 1. Aggregated baseline and follow up cycle 1 audit results

Audit Results

- **Falls risk assessment is done within 8 hours of admission.** Both departments had similar compliance in the first audit, medical-oncology: 90%; NS: 93%. In the follow-up audit, compliance decreased to 83% in neurosurgical, while medical-oncology achieved 100% compliance.
- **Falls risk assessment is done within 8 hours of transfer.** It is evident that assessment on transfer is not a common practice in both departments during the first audit, having both departments achieving <10% compliance. In the follow-up audit, medical-oncology improved practice at 27%, while neurosurgical is at 40%.
- **Reassessment occurs within 8 hours of change in condition or following a fall.** In the first audit, no reassessments were done in neurosurgical, while medical-oncology achieved 13%. Both departments improved in the follow-up, neurosurgical improved by 33%, while medical-oncology improved by 27%.
- **Patients who have experienced a fall are considered at high risk for future falls.** Both departments had low compliance in this criterion in the first audit, medical-oncology: 27% ; neurosurgical: 3%. Large improvements were seen in the follow-up audit, both departments improved compliance at 70%.
- **Falls risk assessment is done accurately using a falls assessment tool.** Please note that in the first audit, although the compliance of falls risk assessments on admission is high in both departments, the accuracy of most assessments is poor (medical-oncology: 37% ; neurosurgical: 20%). A common mistake that affected the accuracy of assessments is the failure to consider the STRATIFY score (2 or more), patient's age, and clinical condition as a high risk factor for patient falls. This mistake was highlighted in the first audit, thus became one of our major educational focus. After several education sessions in both departments, accuracy of assessments improved

significantly in the follow-up audit, medical-oncology: 70% ; neurosurgical: 57%.

- **Health care professionals have received education regarding falls assessment and prevention strategies.** This criterion was measured differently in the first, and follow-up audit. In the first audit, results were based on staff response about receiving education from the organisation regarding patient falls in the past two years; the follow-up audit on the other hand was based on staff attendance of the education session the author provided in both departments. Compliance on patient falls education in the first audit was high in both departments, medical-oncology: 87% ; neurosurgical: 83%. However based on attendance (follow-up audit), neurosurgical attendance is lower compared to medical-oncology (medical-oncology: 100% ; neurosurgical: 57%).
- **Patient and family education is carried out for patients at high risk of falls.** The first audit highlighted that patient and carer education regarding falls needed to be improved. Patient and carer education is a vital aspect of falls prevention,[2,3] therefore it is also one of our major educational focus. First audit results, medical-oncology: 20% ; neurosurgical: 33%. The follow-up audit results did not render favourable results, medical-oncology: 33% ; neurosurgical: 30%. This indicates that compliance of patient and family education needs to be improved further.
- **Targeted interventions are implemented according to risk factors.** In the first audit, results show that adherence to falls prevention strategies was low in both departments, medical-oncology: 33% ; neurosurgical: 20%. In the follow-up audit, neurosurgical only slightly improved practice by 20%, while medical-oncology had better results; they improved their compliance by 57%.

Phase 5: Has practice been sustained: second follow-up audit

The second follow-up audit was conducted over 6 weeks from April 2014. For medical-oncology criteria 2, 3 and 4 has not yet been fulfilled; and criterion 4 is on-going in neurosurgical. Preliminary results reveal continuous improvement in both departments. The results are as follows:

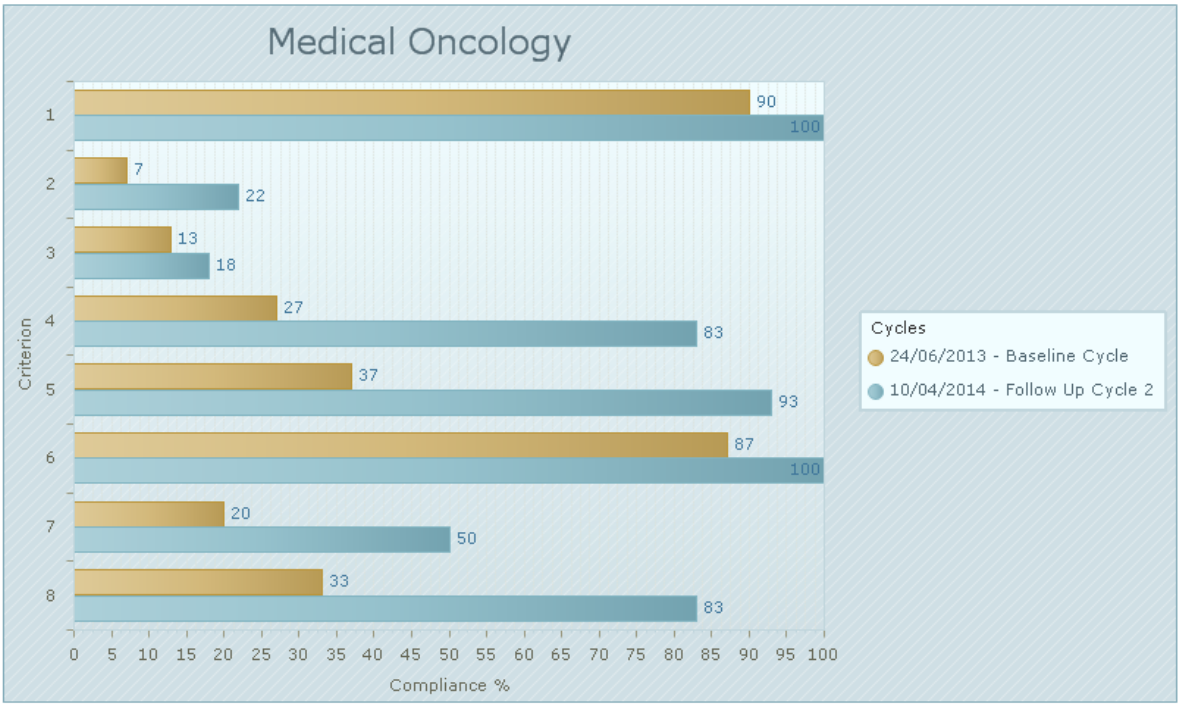

Figure 4. Baseline and follow up cycle 2 audit results in medical-oncology.

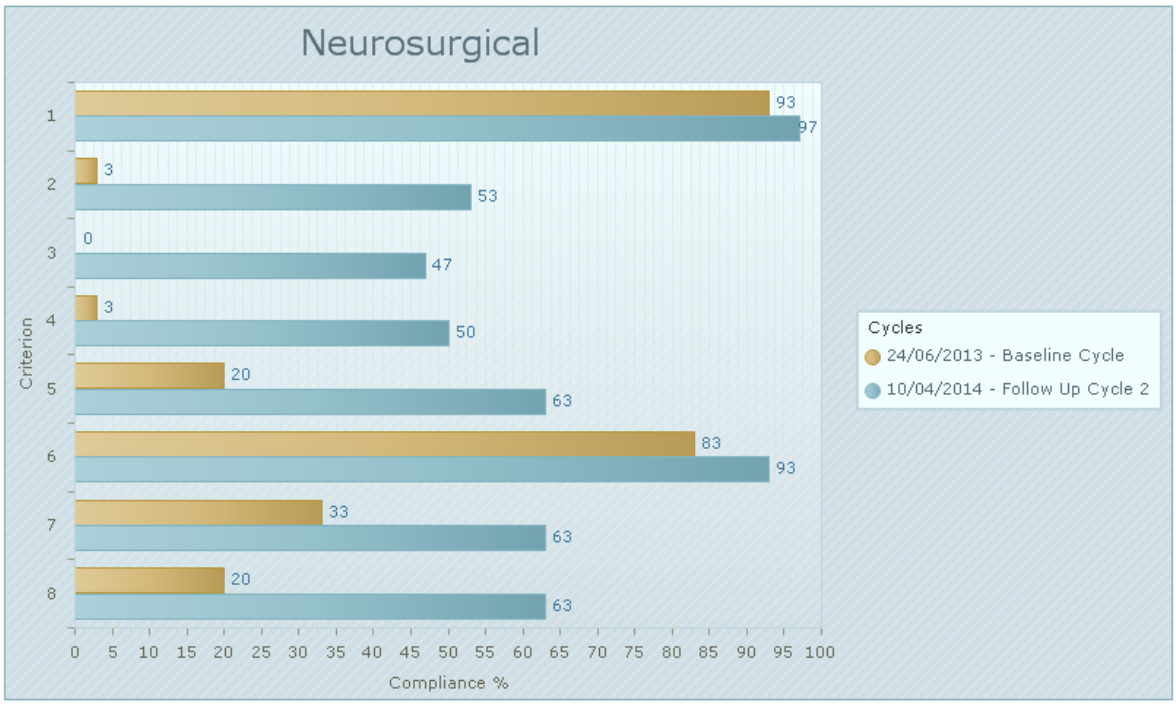

Figure 5. Baseline and follow up cycle 2 audit results in neurosurgical.

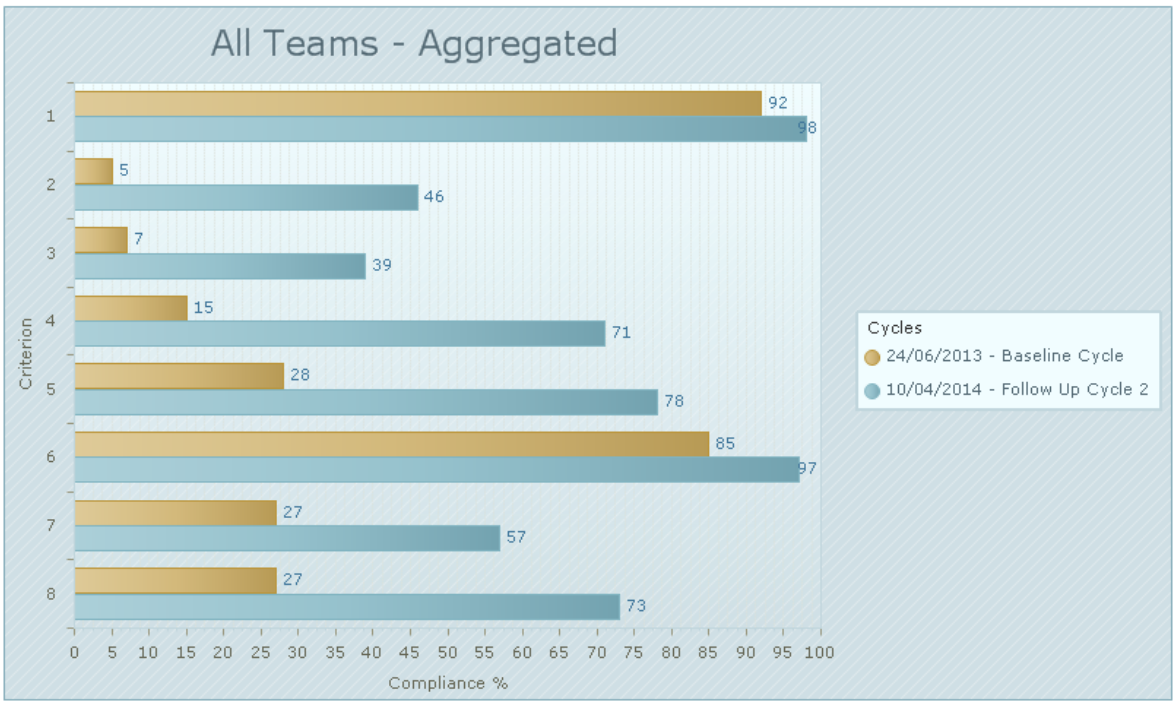

Figure 6. Aggregated baseline and follow up cycle 2 results

Table 1. Falls before and after the project period.

Falls numbers (rate per 1000 bed days) before and after the project

	Medical-Oncology	Neurosurgical
May 2012 to April 2013	79 (5.82)	44 (4.71)
May 2013 to April 2014	67 (5.40)	41 (5.27)

Discussion

This project highlighted the importance of prompt and accurate falls risk assessments, patient education, and implementation and adherence to falls prevention strategies in both departments. Both departments displayed success through great improvements in accuracy of falls risk assessments, and adherence to falls prevention strategies. We believe that the dedicated education sessions, and education materials provided to staff substantially contributed to the improvement of practice.

Furthermore, small improvements in compliance of reassessments within 8 hours of transfer, and change of health status (e.g. post-operative period, hypotension, side effects of chemotherapy/immunosuppression treatment, change in mobility, and altered level of consciousness) were also seen in both departments. Reports from staff indicated that falls risk assessment is not a priority when patients' health status change. Staff explained further that when such an event occurs, the priorities are to monitor and stabilise patients' vital signs, notify the physician, and carry out ordered interventions (if any).

We expected that the compliance of delivery of patient education to doubly improve in the follow-up audit; results were however not as expected. Anecdotal reports from staff showed that patient education is delivered on a daily basis such as encouraging patients to seek supervision or assistance, providing mobility instructions, and highlighting the importance of wearing appropriate footwear; however this is not reflected on the patient's clinical record. The two strategies (falls badges, and shift falls champion) we trialled proved unsuccessful in this project. The lack of adherence to the strategies could also be accounted to the leadership inconsistencies of falls champions, lack of clarity about roles and responsibilities, and lack of cooperation by staff members.

As reported in the results, the attendance of neurosurgical staff members in education sessions was low compared to medical-oncology staff. Staffing and workload issues mainly affected the attendance. Education sessions were rescheduled instead, in order to capture the staff members who could not attend. However, there were few occasions where staff were still unable to attend the rescheduled sessions due to staffing and workload issues. The neurosurgical department also experienced a temporary change of leadership (NUM and clinical facilitator). Our team believed the new leaders were still adapting to their new roles, therefore the support they could provide was limited.

In the medical oncology department, falls numbers and falls rate per 1000 bed days decreased marginally. The neurosurgical department however had a small decrease in falls numbers, and an increase in falls per 1000 bed days which was possibly influenced by a reduction in total bed days in the department.

Conclusion

This project highlighted the importance of best practice in falls risk assessment, falls prevention strategies. Despite low compliance in promptness of falls risk assessments, and patient education, the project was successful because we saw improvements in accuracy of assessments, and implementation and adherence to falls prevention strategies. Staff education contributed to the progress of this evidence-based implementation project. However for the progress to be sustained, it is vital that leaders and staff members fulfil their project responsibilities inherent to their role. We believe that leaders must facilitate improvement and provide the appropriate support the team members need. Lastly, staff members must also support their leaders, and fully cooperate throughout the process of any evidence-based implementation project.

Conflict of Interest

None known.

Acknowledgements

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- Joanna Briggs Institute for the academic support and training;
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- Neurosurgical department nurse unit manager, clinical facilitator, and team members;
- Medical oncology department nurse unit manager, clinical facilitator, and team members; and
- the Nursing Director

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Appendix 1: Audit Tool

Audit Tool: A multi-site audit of current in-hospital falls prevention practices and assessment of the effectiveness of best practice implementation strategies

DATE	CRITERIA	Yes	No	N/A	Comments
ASSESSMENT	[1] Falls risk assessment is done on admission				This criterion will be considered met if the case notes show a risk assessment completed within 8 hours of admission. Sample: 30 medical patients at admission, 30 surgical patients at admission
	[2] Falls risk assessment is done accurately using a falls assessment tool				This criterion will be considered met if the case notes suggest the fall risk assessment was done accurately. If the accuracy of the risk assessment is not clear from the notes, then the patient can be visited to determine the accuracy of the assessment. Sample: 30 medical patient assessments, 30 surgical patient assessments
	[3] Falls risk assessment is done upon transfer				This criterion will be considered met if the case notes for patients that have been transferred (intra-hospital transfer) show a risk assessment completed within 8 hours of transfer. Sample: 30 medical patient transfers, 30 surgical patient transfers
	[4] Patients who have experienced a fall are considered at high risk for future falls				This criterion will be considered met if by looking at case notes for patients who have a history of falls, they are assessed as high risk for future falls according to the risk assessment. Sample: Risk assessments for patients who have experienced a fall: 30 medical patients, 30 surgical patients

Appendix 1: Audit Tool (page 2)

	CRITERIA	Yes	No	N/A	Comments
ASSESSMENT CONT.	[5] **Reassessment occurs when there is a change in condition that changes their falls risk status or following a fall.**				This criterion will be considered met if the case notes for patients who have had a change in clinical condition (that affects their falls risk status) or experienced a fall include a reassessment performed within 8 hours of this event. Sample: 30 medical patient events, 30 surgical patient events
EDUCATION	[6] **Healthcare professionals have received education regarding falls assessment and prevention strategies**				This criterion will be considered met if staff members in the participating wards report that they have received education in the last 2 years. Question: "Have you received education regarding falls assessment and prevention strategies in the last 2 years?" This is by convenience sampling, please record the professions of the healthcare staff questioned e.g. nurse, clinician, physiotherapist, pharmacist, etc. Sample: 30 healthcare staff from medical ward, 30 healthcare staff from surgical ward
	[7] **Patient and family education is carried out for ALL patients**				This criterion will be considered met if from the case notes, for patients at risk of falls, patient and family education is documented as being done. Sample: 30 at risk medical patients, 30 at risk surgical patients
INTERVENTION	[8] **Targeted interventions are implemented according to risk factors**				This criterion will be considered met if it is documented in the case notes for patients assessed as at risk, that there has there been implementation of targeted interventions to address every identified risk factor. Sample: 30 at risk medical patients, 30 at risk surgical patients
	[9] **If yes, does/do the documented intervention/s is/are adhered to in practice?**				

AUDITOR NAME AND SIGNATURE: CJ Cabilan

Appendix 2: GRIP matrix exported from PACES

Barrier	Strategy	Resources	Outcomes
Insufficient falls risk assessment and prevention education provided to staff.	• Provided education sessions, and designed written learning package for staff who could not attend the sessions • Monthly education focus: Patient Falls	• Audio-visual resources • Written information • Nurse Unit Manager (NUM), Nursing Director, and Clinical Facilitator	• Education compliance increased • Accuracy of falls risk assessment, and adherence to falls prevention strategies improved
Inadequate delivery of falls prevention education to patient	• Included Patient Falls brochure as part of an admission pack • Falls badges to facilitate falls discussion with patients	• Written information • Badges • NUM, Nursing Director, and Clinical Facilitator	• Promoted awareness regarding the importance of educating patient and carers regarding falls risk status and prevention strategies
Incompliance with documentation of falls prevention strategies	• Shift Falls Champion	• Clinical Nurses, and Team team-leaders	• Documentation improved in some criteria including assessment accuracy, and adherence to falls prevention strategies
Change of NUM, and clinical facilitators (surgical)	Re-orientate new leader, and clinical facilitator	Written information	Limited involvement by the NUM, and clinical facilitator that could have affected the consistency of practice improvement
Lack of committed time spent in education sessions due to workload issues	• Consulted NUM about education session schedules • Re-organized education session time to accordingly fit with workload	• Audio-visual resources • Written information • NUM, and clinical facilitator	• Delivered education sessions to 100% of regular staff members (except for staff on leave) in Medical Oncology • Surgical: Low attendance in education sessions

Falls prevention practices amongst nurses and physiotherapists in an orthopaedic unit, within the acute care setting in Sydney: a best practice implementation project

Ingrid Tartu RN OHS Dip MN PM Dip JBI Clinical Fellow STTI DHlth Candidate
1. St Vincent's Private Hospital, Sydney, Australia.

Primary Contact
Ingrid Tartu
Email itartu@stvincents.com.au

Key Dates
Commencement date: 28 May 2013
Completion date: 14 April 2014

Executive Summary

Background

Nurses play a key role in the prevention of falls and harm from falls for acute care orthopaedic in-patients at St Vincent's Private Hospital, Sydney (SVPHS).

Objectives

The aim of the project was to review the hospital's Falls Management System and improve falls prevention practices in order to reduce the number of patient falls and the harm from falls.

Methods

The Joanna Briggs Institute evidence based audit tool was used to conduct a baseline audit of sixty patient records. The audit data was evaluated, the evidence based best practice literature review was appraised, an education package was developed for the clinical staff based on strategies and interventions and two follow-up audits were conducted to measure changes in practice.

Results

The results from the three audits varied. Comparison between the criteria in each of the three audits demonstrated improvement in patient education and the implementation of targeted interventions. These two improvements of importance were attributable to the nurses and physiotherapists annotations in the orthopaedic patient progress notes.

Conclusions

The project highlighted the multifactorial nature of falls prevention and the prevention of harm from falls in the orthopaedic patient population. Sustaining these outcomes is challenging, as it requires nurse to nurse collaboration, and also collaboration between the nurses and physiotherapists. A consistent commitment from nurses and physiotherapists to assess, manage and communicate a patient's falls risk must be embedded into routine patient care.

Keywords

nurses, physiotherapists, audit, falls prevention, falls risk assessment, orthopaedic, evidence based practice, multifactorial approach, implementation.

Background

In-patient falls rates across Australian hospitals have not decreased substantially despite various healthcare practices that include the use of risk assessment tools and the implementation of intervention strategies.

Falls and falls related injury in the aging in-patient population is a cause of morbidity and mortality and consequently a common healthcare concern. The hospitals falls data provides evidence that older patients fall more frequently than younger patients, and they are also more likely to sustain an injury as a result of a fall. For people aged 65 years and over, falls are responsible for more than 80% of injury-related admissions to hospital.[1] For the elderly, the risk of falling is increased in the hospital setting.[2] There are a number of factors that can contribute to in-hospital falls, including patient characteristics, staff behaviour and the hospital environment.[3]

Evidence based best practice recognises patient preferences, the context of healthcare and the judgement of clinical staff.[4] The Joanna Briggs Institute (JBI) Model of Evidence Based Health Care provided the structure for the project. The cycle included: searching for the best available evidence, identifying gaps between practice and evidence, barriers to evidence utilisation and strategies to promote evidence utilisation.

The prevention of falls and harm from falls for acute care orthopaedic in-patients is an ongoing challenge in private healthcare facilities. The JBI evidence based implementation project facilitated the study of the falls prevention practices amongst nurses and physiotherapists in the 50 bed orthopaedic unit in a 270 bed acute care private hospital.

The hospital's falls governance complies with the requirements of the National Safety and Quality Health Service Standard 10, Preventing Falls and Harm from Falls.[5] The hospital's peak committee, the Safety & Quality Committee, governs and oversees the progress of work for compliance with all the standards. Patient falls, a Nurse Sensitive Indicator (NSI), are reviewed as a standing agenda item at each unit's monthly meeting.

The hospital submits data related to falls and harm from falls to the Australian Council on Healthcare Standards (ACSHS) Hospital-wide Indicator Set: HOSW C1 4.1; 4.2; 4.3 and 4.4. Although the hospital's ACHS falls aggregate is below the benchmark there was an imperative to further reduce the number of falls and harm from falls.

The Director of Nursing & Clinical Services, the Nurse Unit Manager (NUM) of the orthopaedic unit and the project leader, the hospital's Clinical Risk Manager, selected the unit for the project. The orthopaedic patient population has a high risk of falls primarily due to compromised mobility. Initially the project was to be implemented within two separate units (both medical and surgical), however this was not possible as the hospital is predominantly surgical and patients are designated according to the unit specialty. Another factor of influence for selection of the orthopaedic unit was the well-established, collaborative relationships between the nurses and physiotherapists which created a strong foundation for the project. The orthopaedic nurses would lead the project which would be implemented as the falls prevention program throughout the hospital.

Objectives

- To use the Joanna Briggs Institute Practical Application of Clinical Evidence System (PACES) falls assessment and intervention tool to conduct a baseline audit.
- To use the Joanna Briggs Institute Getting Research Into Practice (GRIP) process to examine barriers to improve practice, plan action and implement improvements.
- To conduct two follow-up audits.

Methods

The JBI Project was discussed at a preliminary meeting with colleagues of the Nursing Executive Council in April 2013. A notification was completed to the SVPHS Practice Development & Research Council (PDRC) and a Site Specific Assessment (SSA) was submitted and approved by the St Vincent's Hospital Human Research Ethics Committee.

The JBI Clinical Fellowship first intensive week was conducted in May 2013, providing the framework for the project, followed by a second clinical fellow's week in November 2013.

The project methodology involved conducting a baseline audit using the JBI PACES data program. The clinical audit process provided a systematic method for the assessment of current practices for falls prevention by the project leader. The JBI developed a best available evidence summary of the effectiveness of acute in-hospital falls prevention strategies for adult patients.[6] The evidence summary generated project team discussions and enabled the team to objectively appraise the hospital's falls management system. The system was reviewed in relation to data findings; the evidence based literature was applied utilising the Getting Research Into Practice (GRIP) process and reauditing enabled the examination of practice changes. Two follow-up audits were conducted using the eight criterion in the programmed PACES tool.

Phase 1

Meetings were conducted with the Nurse Unit Manager (NUM), Associate NUM, Clinical Nurse Educators (CNEs) of the orthopaedic unit and the Manager of the Physiotherapy Department following the first Clinical Fellowship week in May. We discussed the objectives and phases of the project and agreed that the baseline and follow up audits would be conducted by the project leader as this would provide inter-rater reliability.

The baseline audit was conducted over a three week period in July and August 2013 using the JBI PACES tool. Patients with a length of stay (LOS) greater than 2 days were selected prospectively and retrospectively from the patient condition lists. The patient's electronic records were accessed. The medical record number, number of admissions, gender, date of birth, date of admission, date of procedure, patient history, falls risk assessment, manual handling risk assessment and progress notes were examined. Sixty patient records were audited for each of the three audits. PACES data was summarised and entered into the JBI PACES system.

The hospital's Pre Admission Centre provides a comprehensive history and risk assessments for 70 percent of the hospital's patients; the remaining 30 percent are completed on the units. Patient falls

risk is determined from multiple sources of information such as the patient history, the Falls Risk assessment and the Manual Handling assessment tool which includes the Red Dot mobility status. The Red Dot system involves the dynamic identification of mobility status related to the assistance and the mobility aids required for safe patient mobility. The status is scored using one to four Red Dots which are displayed above each patient's bed. Nurses use these sources of information collectively to complement their clinical judgement when ascertaining the patient's falls risk.

The following evidence based audit criteria from PACES:

Audit Criteria

1. Falls risk assessment is done upon admission (60 samples)
   This criterion was considered as met if the case notes showed a risk assessment was completed within eight hours of admission.

2. Falls risk assessment is done upon transfer (60 samples)
   This criterion was considered as met if the case notes for patients that had been transferred, unit to unit, showed a risk assessment had been completed within eight hours.

3. Re-assessment occurs when there is a change of condition or following a fall (60 samples)
   This criterion was considered as met if the case notes for patients who had a change in clinical condition (affecting their falls status) or experienced a fall, included a reassessment performed within eight hours of this event.

4. Patients who have experienced a fall are considered a high risk for future falls (60 samples)
   This criterion was considered as met by looking at the case notes for patients who have a history of falls; and are assessed as high risk for future falls according to the risk assessment.

5. Falls risk assessment is done accurately using a falls assessment tool (60 samples)
   This criterion was considered as met where the case notes suggest that the falls risk assessment was done accurately.

6. Healthcare professionals have received education regarding falls assessment and prevention strategies (62 samples)
   This criterion was considered as met if the staff members in the participating units report that they have attended education in the last two years.

7. Patient and family education is carried out for patients at risk of falls (60 samples)
   This criterion was considered as met if the case notes, for the patients at risk of falls, documented that patient and family education was completed.

8. Targeted interventions are implemented according to risk factors (60 samples)
   This criterion was considered as met if the documentation that targeted interventions for risk factors have been implemented, in the case notes for patients assessed as at risk.

The audit was conducted over a three week period.

Phase 2

Implementing Best Practice

The project leaders reviewed and analysed the results of the baseline audit report. The EBBP literature summary influenced the planning and development of the 'Getting research into practice' (GRIP) phase. The project team considered the practice improvements that were required to meet each of the criteria. (See Table 1).

Phase 3

Two follow up Audits

The baseline audit was replicated in November 2013: Follow up cycle 1 (see Figure 1) and March 2014: follow up cycle 2 (see Figure 2).

Results

Baseline Audit

The electronic audit data was obtained during a three week period over July and August 2013. The results are presented in Figure 1 and are as follows:

Criteria Legend

1	1. Fall risk assessment is done upon admission. (60 of 60 samples taken)
2	2. Fall risk assessment is done upon transfer. (60 of 60 samples taken)
3	3. Reassessment occurs when there is a change in condition or following a fall. (60 of 60 samples taken)
4	4. Patients who have experienced a fall are considered at high risk for future falls. (13 of 60 samples taken)
5	5. Fall risk assessment is done accurately using a falls assessment tool. (60 of 60 samples taken)
6	6. Healthcare professionals have received education regarding falls assessment and prevention strategies. (0 of 60 samples taken)
7	7. Patient and family education is carried out for patients at risk of falls. (60 of 60 samples taken)
8	8. Targeted interventions are implemented according to risk factors. (60 of 60 samples taken)

Criterion:

1. Fall risk assessment was completed on admission using the falls tool with 52% compliance. In 48% of the records the tool was not completed in the specified

timeframe, within 8 hours of admission.

2. Falls risk assessment is done on transfer. Ward to ward, ICU to ward, post recovery care unit (PACU) to ward, 74% were completed. The patient's Red Dot mobility status of four, implying bed rest, was commonly completed by the nurses on transfer to indicate an immediate falls risk status.

3. Reassessment occurs when there is a change of condition or following a fall. 77% were completed. Three of the sixty audited patients had a fall.

4. Patients who have experienced a fall are considered at high risk of future falls. The Hospital's current falls tool does not include history of falls. The electronic history was examined. 62% compliance was found in patients who scored a high risk of falls.

5. Falls risk is done accurately using the falls tool. 87% compliance.

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. The criterion was scored as 0 due to the fact that staff education was incorporated into unit based education and was not stand alone education. Provision for other elements of feedback and education such as Red Dot audit results and falls reviews at unit meetings were not included in the criterion.

7. Patient and family education is carried out for patients at risk of falls. 50% compliance was achieved. The provision of education for patient and family was not well documented although it may have occurred.

8. Targeted interventions are implemented according to risk factors. 68% compliance.

GRIP strategy

The nursing staff identified high risk activities and interventions to mitigate these risks. Tailored risk mitigation interventions included the supervision of high risk patients, particularly to/from the bathroom, monitoring post-operative hypotension and regular agreed rounding times. Staff meeting and education sessions were scheduled for the nurses and physiotherapists in October 2013. A web icon power point presentation included the findings of the JBI evidence summary[6], graphs of the falls data from the risk management reporting system, the assessment tool used to conduct the audit and the results of the baseline audit. A project poster summarised the key messages and practice requirements.

Table 1 GRIP strategies

Barrier	Strategy	Resources	Outcomes
Staff belief about falls prevention	Revise education program and include EBBP	Review education package content by falls project team	Audit of documentation demonstrates

			compliance
Allocate suitable meeting times to engage Physiotherapists as project partners	Negotiate meeting sessions	Staff education package and posters reviewed, documentation requirements determined	Physiotherapist's documentation includes patient education
Insufficient emphasis on need to communicate falls risk to high risk patients	Purposeful patient engagement and agreement to use advised strategies	Staff document discussions	Patient engagement, intervention strategies are communicated and documented
Staff to staff communication	Falls prevention focus, target high risk patients, in handover & documentation	Staff handover and documentation in patient reports includes targeting high risk patients	High risk patient falls are reduced by 10% by December 2014

Follow-up Audit 1

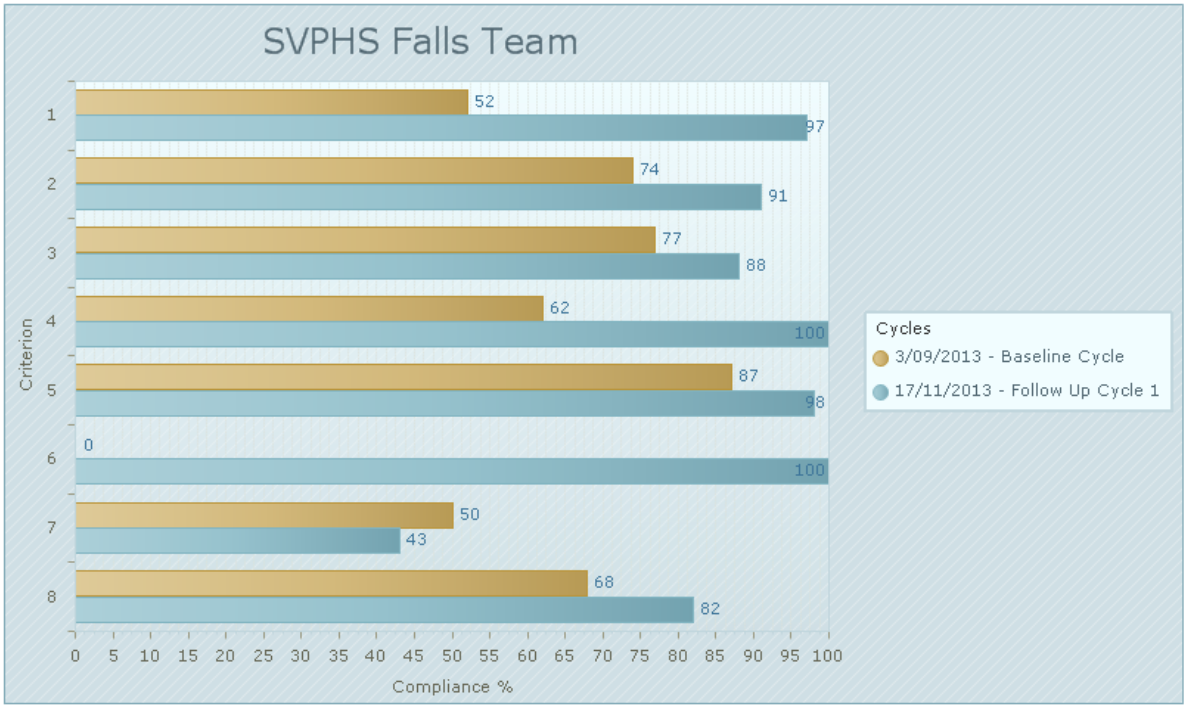

Figure 1: Baseline and follow up cycle 1 audit results for the orthopaedic unit

The electronic audit data was obtained during the period October 2013.

Criterion:

1. Fall risk assessment was completed on admission using the falls tool. 97% compliance a great documentation improvement.

2. Falls risk assessment is done on transfer. Ward to ward, ICU to ward, post recovery care unit (PACU) to ward, 91% compliance.

3. Reassessment occurs when there is a change of condition or following a fall. 88% were completed.

4. Patients who have experience a fall are considered at high risk of future falls. The Hospital's current tool does not include history of falls. The electronic history was examined. 100%. Falls reports during the audit period included three patients, who were assessed as high risk.

5. Falls risk is done accurately using the falls tool. 98% compliance.

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. 100% as 62 staff members attended the education session, the remaining 8 staff were on either annual leave or maternity leave, provision has been made for education on return.

7. Patient and family education is carried out for patients at risk of falls. 43% documentation compliance was found. Documentary evidence of patient and family education was not found in the majority of the records audited.

8. Targeted interventions are implemented according to risk factors. 82% compliance.

Follow-up Audit 2

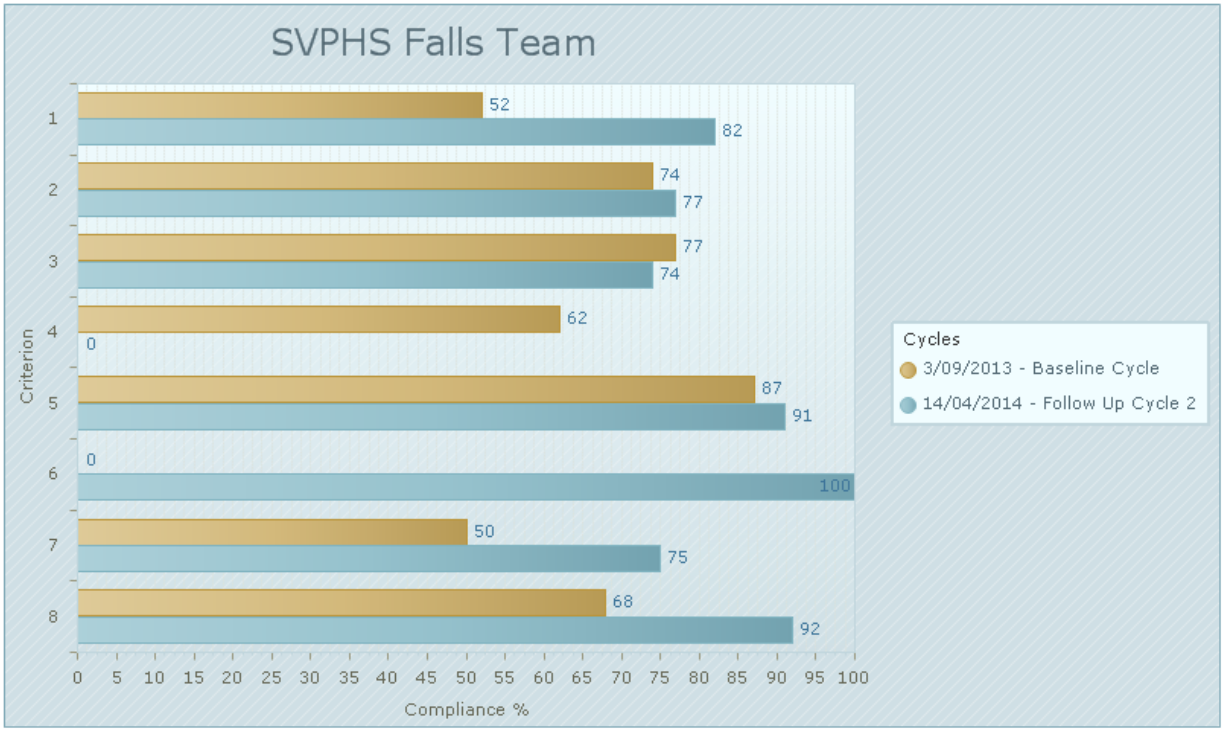

Figure 1: Baseline and follow up cycle 2 audit results for the orthopaedic ward

The electronic audit data was obtained during the period March to April 2014.

Criterion:

1. Fall risk assessment was completed on admission using the falls tool. 82% compliance.

2. Falls risk assessment is done on transfer. Ward to ward, ICU to ward, post recovery care unit (PACU) to ward, 77% compliance.

3. Reassessment occurs when there is a change of condition or following a fall. 74% were completed.

4. Patients who have experience a fall are considered at high risk of future falls. The Hospital's current tool does not include history of falls. There were no patient falls during the audit period.

5. Falls risk is done accurately using the falls tool. 91% compliance.

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. 100% as 62 staff members had attended the education sessions according to the criterion.

7. Patient and family education is carried out for patients at risk of falls. 75% documentation compliance was found.

8. Targeted interventions are implemented according to risk factors. 92% compliance. The results reflect evidence found in the documentation of the progress reports.

Discussion

The project enabled a review of the hospital's falls management system using the JBI cycle of baseline audit, utilisation of evidence, the GRIP process, and follow-up audits to measure practice changes. This systematic approach provided a valuable examination of the hospital's systems and processes associated with falls prevention and management. The key stakeholder group consisted of experienced researchers, senior nurse educators, nurses and physiotherapists who provided ongoing knowledge, advice and feedback.

The literature refers to the benefits provided by a multifaceted approach to fall prevention.[6] Our audit data supported this finding. Multiple sources of information, found in the patient history, and in the criterion of the falls and manual handling tools, provided the most comprehensive falls risk assessment. Patient profile details, such as, a history of osteoarthritis, impaired balance / gait, history of falls, previous stroke, hypertension and cognitive impairment, were identified in the patient history.

The falls tool provided data such as mobility, elimination, high risk medications, sensory status, mental status and age range. The manual handling tool determines the requirement of mobility aids and the assistance required for the patient is indicated by the Red Dot panel above each patient's bed. However, falls tools are static instruments with predetermined measures that may be insensitive to subtle changes of condition and the early detection of increased risk.

Nurses use these sources of information to complement their clinical judgement when ascertaining the patient's falls risk. The unit trialled and promoted a 24hr falls risk target for patients at high risk of falling.[6] The patient's risk factors, and the documented nursing interventions and actions were communicated at handover. The nurses and physiotherapist's documented interventions included statements such as: Red Dot 2, assisted to bathroom; patient requires supervision, patient reminded and agreed to use call bell; patient understands that they are presently at risk of a fall; first time out of bed, unsteady on feet stand by assistance provided; supervise to and from bathroom.

A whiteboard, for each patient room on the wall at the foot of the bed, were also implemented during the project. Information documented on the whiteboard included: the nurse's name; time of physiotherapy session; any procedures for the day and the agreed to interventions, i.e. 'agreement to use nurse call bell today'. Regular rounding times by the Assistants in Nursing (AINs) and nurses for the targeted patients were an additional strategy. This reinforced the importance of a nurse - patient collaborative approach to falls prevention.

Conclusions

The project facilitated a valuable review of the components of the hospitals falls management system. It confirmed the multifactorial nature of falls risk assessment and the imperative to comprehensively assess and manage that risk. There are many factors of influence that require consideration, factors such as the patient history, comorbidities, patient behaviours and the nurse's clinical judgement. The falls tool is a static instrument and must be used in conjunction with clinical judgement. The documentation of clinical decisions and the use of targeted intervention strategies provided strong evidence of the improved understanding that patient falls can be reduced. Documentary evidence of targeted interventions and patient engagement will be incorporated into future audits. The falls project will be implemented hospital wide in July, 2014.

Partnering with the patient and families; promoting engagement in the assessment and acknowledgment of falls risk and fostering a willing commitment by the patient to engage in intervention strategies, is foundational to the success of falls prevention. Sustaining these outcomes is challenging and time is required to embed these progressive practice changes into the culture.

Conflict of Interest

Nil Identified

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The prevention of falls in a General Medical and Orthopaedic Surgical ward within an acute care setting: a best practice implementation project

Laura Zammit, Registered Nurse,

Acting Associate Nurse Unit Manager, Box Hill Hospital, Eastern Health
Email: laura.zammit@easternhealth.org.au

Key Dates

Commencement date: 20 May 2013

Completion date: 30 May 2014

Executive Summary

Background

Falls are an ongoing problem within the acute clinical setting and can have a detrimental effect on the patient. Falls are however preventable with appropriate intervention. This falls prevention project focused on this issue; to address the need of preventative interventions. The focus group involved a large acute metropolitan hospital. The wards chosen were two 30 bed wards; a General Medical ward and an Orthopaedic Surgical ward. They were selected by the Director of Nursing largely attributing to their falls' rates.

Objectives

The aim of this project was to audit current practice of falls prevention within the acute clinical setting, to improve practice in the prevention of falls in accordance to the best available evidence, to implement interventions according to the findings; to improve compliance, accuracy and sustainability, and to re-audit to identify further change.

Methods

There were three phases within the method. This included forming the project team and conducting the baseline audit, using the PACES (Practical Application of Clinical Evidence System); developing the interventions from identified gaps through GRIP (Getting Research into Practice); and the post implementation audit/follow-up audit using the PACES audit criteria. There was also an additional follow-up audit conducted to assess the sustainability of the implementation strategies.

Results

The baseline audit showed a number of gaps, which allowed for a number of interventions to be implemented. The follow-up audit showed improvement in the completion of the falls risk assessment tool (FRAT) compliance, improved staff education of the FRAT and staff acting on the falls risk result by implementing the appropriate strategies. There was however disappointing results where the

FRAT was not completed accurately, and that patients and families did not receive education about the patients' falls' risk. This continued to be evident in the results of the second follow-up audit, which showed further disappointing results.

Conclusions

The findings showed a generally positive result at the initial follow-up audit phase; staff education levels increased and more appropriate action was taking place within the clinical setting. However due to barriers out of the control of the falls team, there were less positive results in the second follow-up audit. However with more support, time, and resources the compliance of implementation strategies may be sustainable, and falls within the acute clinical setting could be prevented and better health outcomes achieved.

Keywords

Falls, acute care, clinical setting, prevention, implementation, intervention, best practice.

Background

Falls are defined within the literature as an event where a person lands on the ground or from a higher place to a lower place which may, but does not exclusively involve the loss of consciousness. [1] Falls are an ongoing problem within the acute clinical setting and can result in higher instances of injury and even death, particularly within the older population. Falls rates within the older population is markedly higher within the hospital setting and can lead to harmful outcomes, where more treatment and care needs to be provided. [2] Injury from falls alone within the acute clinical care setting for people over the age of 65 is 80% of admissions. [3]

Falls can occur for a number of different reasons such as mental state, age, treatments and medication prescribed to patients, as well as physical impediments and reduced functioning, where in some cases falls are associated with patients conditions such as continence issues. [1, 4]

Falls can have a detrimental effect on the patient themselves; their sense of self and quality of life can be altered, where they can feel more vulnerable. [1] Falls also affects the organisation/hospital, and is a bigger burden on the healthcare system. Within the acute hospital setting there are reports of 2-5% of recorded falls, and as high as 46% of patient falls have occurred while in hospital. [5] During 2010-2011, a massive 22, 000 falls were recorded to have occurred within the Australian health care setting resulting in harm. [6]

Within the literature there have been numerous preventative interventions suggested, such as using care plans that are specific to the patient, improving the safety of the hospital environment, monitoring medications, and managing patient conditions more effectively, which involve risk assessment tools. [1]

This falls prevention project in turn focussed on the prevention of falls within the acute clinical setting. This project concentrated on a large, acute metropolitan hospital within Melbourne's Eastern suburbs. The wards chosen were a 30 bed General Medical ward and a 30 bed Orthopaedic Surgical ward. This sample size was selected through convenience sampling as directed by the hospital's Director of

Nursing, and due to the wards falls rates. The best practice falls risk assessment within the hospital is the Falls Risk Assessment Tool (FRAT), which was the main source that was used in the auditing process (see Appendix 1).

The number of falls during the period from May 2012 to April 2013 within the hospital overall were 417. The number of falls within the General Medical ward was 67, and 15 within the Orthopaedic Surgical ward.

The current and ongoing issue faced within this clinical care setting is the high percentage of the older population admitted into the wards. Other issues that occurred were specifically related to the falls risk assessment tool. The main issues were that staff had not received education for an extensive period of time, that staff were not filling out the FRAT accurately, and were not acting on the results found; for example a patient would have a result indicating that they had a high falls risk, however strategies were not put in place to prevent the patient from having a fall. This project was in turn a vital opportunity to explore and identify the issues, to implement appropriate and patient-centred interventions and make sustainable changes for the future; to encourage safer practices, with the hope of reducing falls rates within this acute care setting.

Objectives

- To assess current practice of falls prevention within the acute clinical setting.
- To improve local practice in the prevention of falls within the acute clinical setting.
- To ensure the practice of fall prevention is in accordance with the best available evidence.
- To improve compliance of practice in the use of the hospitals falls assessment tools.
- To improve accurate completion of falls assessment tools within the healthcare setting.
- To increase staff awareness regarding best practice on falls prevention.

Method

The project utilized the Joanna Briggs Institute (JBI) Practical Application of Clinical Evidence System (PACES), involving three phases. The first phase involved forming the project team, and conducting a baseline audit, using PACES. The second phase involved the formation of interventions, formed where gaps were identified. The interventions were designed through the Getting Research into Practice framework (GRIP). The third phase involved the post implementation audits, where the initial audit was repeated; using all of the PACES falls' assessment audit criteria.

Phase 1

The project team consisted of those who were involved or who supported this project. The team were from within the hospital; the hospital's Director of Nursing (DON), the Nurse Unit managers (NUMs), the General Medical ward Educator, the hospitals research assistant, and the project leader. The project leader rolled out the interventions and performed the auditing process. The support team met for regular meetings to discuss the progress of the project. Other multidisciplinary healthcare professionals were not actively involved in the project, however were aware of it and supported it. Allied health staff; particularly the physiotherapists were interested during the implementation phase and gave advice and suggestions, and were interested in the projects outcome.

The baseline audit was conducted using the PACES falls assessment criteria, which were generated

from a structured literature search for the best available evidence from the JBI (Joanna Briggs Institute) PACES criteria. The eight evidence based audit criteria were categorized into three groups; assessment, education and intervention. Decisions were made in collaboration with the project team, to determine how each criterion would be measured, and detailed in the following:

Fall assessment and intervention audit criteria

Assessment

1. Fall risk assessment is done upon admission

This criterion will be considered met if the case notes show a risk assessment completed within 8 hours of admission.

2. Fall risk assessment is done upon transfer

This criterion will be considered met if the case notes for patients that have been transferred (intra-hospital transfer) show a risk assessment completed within 8 hours of transfer.

3. Reassessment occurs when there is a change in condition or following a fall

This criterion will be considered met if the case notes for patients who have had a change in clinical condition (that affects their falls risk status) or experienced a fall include a reassessment performed within 8 hours of this event.

4. Patients who have experienced a fall are considered at high risk for future falls

This criterion will be considered met if by looking at case notes for patients who have a history of falls, they are assessed as high risk for future falls according to the risk assessment.

5. Fall risk assessment is done accurately using a falls assessment tool

This criterion will be considered met if the case notes document that the fall risk assessment was done accurately. If the accuracy of the risk assessment is not clear from the notes, then the patient can be visited to determine the accuracy of the assessment.

Education

6. Healthcare professionals have received education regarding falls assessment and prevention strategies

This criterion will be considered met if staff members in the participating wards report that they have received education in the last 2 years. Question: “Have you received education regarding falls assessment and prevention strategies in the last 2 years?” This is by convenience sampling, with the various professions of the healthcare staff questioned e.g. nurse, doctor, physiotherapist, pharmacist, etc.

7. Patient and family education is carried out for patients at risk of falls

This criterion will be considered met if from the case notes, for patients at risk of falls, patient and family education is documented as being done.

Intervention

8. Targeted interventions are implemented according to risk factors

This criterion will be considered met if it is documented in the case notes for patients assessed as at risk, that there has there been implementation of targeted interventions to address every identified risk factor.

Baseline audit

The baseline audit was conducted by the falls project leader; auditing both the 30-bed General Medical ward and the Orthopaedic Surgical ward (see Figure 1 and 2). The audit was conducted over the period of one day; set aside to specifically undertake the auditing process, focusing half a day on each ward to allow accuracy in data collection. The initial proposed timeframe for implementation strategies was 28th June -7th October 2013. Implementing best practice with the assistance of the project team proved challenging, due to work pressures of others within the project team. The falls leader conducted a lot of the project alone, however support and time was provided to facilitate the project. The initial plan was to complete the baseline audit within the first two weeks in June, shortly after the program had commenced. However, a new FRAT was being rolled out in August throughout the whole organisation. This meant that the time allocated to the project was shortened by a few weeks.

The data was collected through reading the in-patient documentation (patients that were staying within the 30 bed wards). This involved reading through patient histories; nursing notes, patients medical charts and their FRAT; and investigating whether or not the audit criteria was being met to the extent detailed in the documentation provided. The falls leader also did a general inspection of the wards to see if the documentation, nursing notes and FRAT matched up with the clinical environment; for example; if a FRAT showed that a patient were a high falls risk, and it was documented that strategies were in place to prevent falls, that there were actually strategies in place such as bed cards warning staff and visitors that the patient was at risk of falling.

Ethics approval was not required as the project was considered a quality improvement initiative, and patients were not directly involved within the auditing process.

Phase 2: Strategies to overcome the barriers

The second phase of the project involved the project team meeting together to discuss the results from the baseline audit, and determine which evidence-based strategies could be implemented within our clinical setting. Within the literature there had been numerous preventative interventions suggested, such as using care plans that are specific to the patient, improving the safety of the hospital environment, monitoring medications, and managing patient conditions more effectively which involve risk assessment tools. [1]

Phase 3

Post implementation audits

There were two post implementation audits completed in the same way as the baseline, with JBI

PACES using the eight initial criteria. Follow up cycle 1 was conducted in October 2013, and follow up cycle 2 in March 2014. These audits, like the baseline audit took one full day to complete, auditing the same sample size; two 30-bed wards (General Medical and Orthopaedic surgical).

Results

Phase 1: Baseline Audit

Baseline compliance graphs demonstrate compliance with the audit criteria for the medical ward (Figure 1), surgical ward (Figure 2), as well as aggregated data for both wards (Figure 3). As the graphs demonstrate, there was much room for improvement in all areas for both the General Medical ward and the Orthopaedic Surgical ward. Particular areas for improvement for both wards were education of staff, education of patients/families, as well as patient re-assessments when their condition changes or after a fall. To a lesser extent, but still requiring room for improvement were risk assessments done upon transfer. These criteria demonstrated the lowest compliance results and in turn were a major focus in the implementation phase of the project.

Phase 2: GRIP Strategy

Following the baseline audit, the project team discussed the gaps in practice and developed strategies to overcome these barriers (Table 1).

Table 1: GRIP matrix (identified barriers to best practice and strategies to overcome them)

Barrier	Strategy	Resources	Outcomes
Lack of staff education	> Education sessions and on the run education/reminders to staff > Posters	> Project leader	> Staff were educated and more aware of how to fill out the assessment tools
Lack of patient and family education	> Education sessions and on the run education > Develop patient and family specific poster & brochure	> Project leader > Posters & Brochures	> Staff were educated but could not measure the effectiveness > The organisations posters were displayed but unable to measure as could not get feedback from families
Negative attitudes of staff of the new falls risk assessment tool	> Staff meetings to openly discuss concerns, frustrations, etc.	> Project leader > Nurse Unit Manager	> Staff to an extent were more satisfied after staff meetings, however due to other issues/barriers the negative attitudes were not resolved

Lack of falls risk assessment of patients upon transfer	> Education sessions and on the run education > Posters	> Project leader	> Staff were educated and more aware of how to fill out the assessment tools more accurately – to reassess patients on transfer
Staff not using the falls risk assessment tool accurately	> Education sessions and on the run education > Posters	> Project leader – provided education	> Staff were educated and more aware of how to fill out the assessment tools more accurately
Lack of patient reassessment when the patient's condition changes or following a fall	> Education sessions and on the run education > Posters	> Project leader – provided education	> Staff were educated about the importance of reassessing their patients when their condition changed or following a fall
Staff not using the new fall risk assessment tool	> Education sessions and on the run education > Discarding the old assessment tools & replacing it with the new version	> Project leader – provided education	> Staff were educated and aware of the new assessment tool, they stopped using the old tool and started using the updated version
Falls risk assessment tool difficult to locate	> Place assessment tools in one easy to find location & informed staff > Ensured ward clerk placed assessment in same location	> Project leader > Ward Clerk	> Assessment tool was easy to find – all in the same location
Lack of targeted interventions implemented when patients are assessed as being a high falls risk	> Education sessions and on the run education	> Project leader – provided education > Falls prevention resources e.g. bed cards, bed alarms	> Staff were educated/reminded about the resources available. Staff used more appropriate strategies & were more proactive in initiating strategies

Barrier: Lack of staff education on the falls risk assessment tool

Strategy: The project leader provided education sessions and on the run education/reminders to staff on how to accurately complete falls risk assessment tools, and how to prevent falls. The focus was on emphasising the current policy and reminding staff about the available strategies and resources within the clinical setting.

Posters were also designed by the project leader and displayed within the clinical setting to help remind staff about the available targeted interventions within the ward, specific to the needs of patients, as well as reminding them to fill out the falls risk assessment tools appropriately and accurately (on admission to the wards, upon transfer, when the patient's condition changes or following a fall, and, if relevant, weekly).

Barrier: Lack of patient and family education regarding falls risk for the patient.

Strategy: The project leader provided education sessions and on the run education; reminding staff to educate patients and their families about their risk of falls. Patient and family specific posters were also available (displayed in the family waiting room) to patients and their families about falls, the risk of falls while in hospital and simple ways to keep safe/prevent falls. A brochure for patients and families was also designed, however due to time constraints the brochure could not be published as it required approval from the hospital's board of approval.

Barrier: Negative attitudes of staff regarding the new falls risk assessment tool.

Strategy: The project leader, with the assistance of the Nurse Unit Manager held staff meetings to openly discuss concerns, frustrations, etc. This allowed staff to provide feedback, express their opinions and allowed the project leader to explain the importance of the new falls risk assessment tool.

Barrier: Lack of falls risk assessment of patients upon transfer.

Strategy: The project leader provided education sessions and on the run education; reminding staff to re-assess patients on transfer to the ward. Posters were also designed by the project leader and displayed within the clinical setting to help remind staff to re-assess patients when transferred.

Barrier: Staff not using the falls risk assessment tool accurately.

Strategy: The project leader provided education sessions and on the run education; reminding staff to fill out the fall risk assessment tool accurately. Posters were also designed by the project leader and displayed within the clinical setting to help remind staff to fill out the falls risk assessment tool accurately.

Barrier: Lack of patient re-assessment when the patients' condition changed or following a fall.

Strategy: The project leader provided education sessions and on the run education; reminding staff to re-assess patients when their condition changed or following a fall. Posters were also designed by the project leader and displayed within the clinical setting to help remind staff to re-assess their patients when their condition changes or following a fall.

Barrier: Staff not all using the new fall risk assessment tool.

Strategy: The project leader provided education sessions and on the run education; reminding staff to use the new/updated version of the falls risk assessment tool. The project leader also ensured both wards were using the correct/updated version of the falls risk assessment tool.

Barrier: Falls risk assessment tool was difficult to locate.

Strategy: The project leader replaced old fall risk assessments with the new/updated version within the clinical setting, to ensure that the new/updated assessment tool was being used, notified staff where it was located, and ensured that the ward clerk placed the falls risk assessment tool in the same location.

Barrier: Lack of targeted interventions implemented when patients are assessed as being a high falls risk.

Strategy: The project leader provided education sessions and on the run education; reminding staff of the importance of implementing targeted interventions to patients assessed as being a high falls risk, as well as reminding staff to use the available resources within the clinical setting.

Phase 3: Post Implementation Audit

The audit compliance rates are displayed for the baseline and follow up cycle 1 audit for the Medical ward (Figure 1), Surgical ward (Figure 2) and aggregated results (Figure 3).

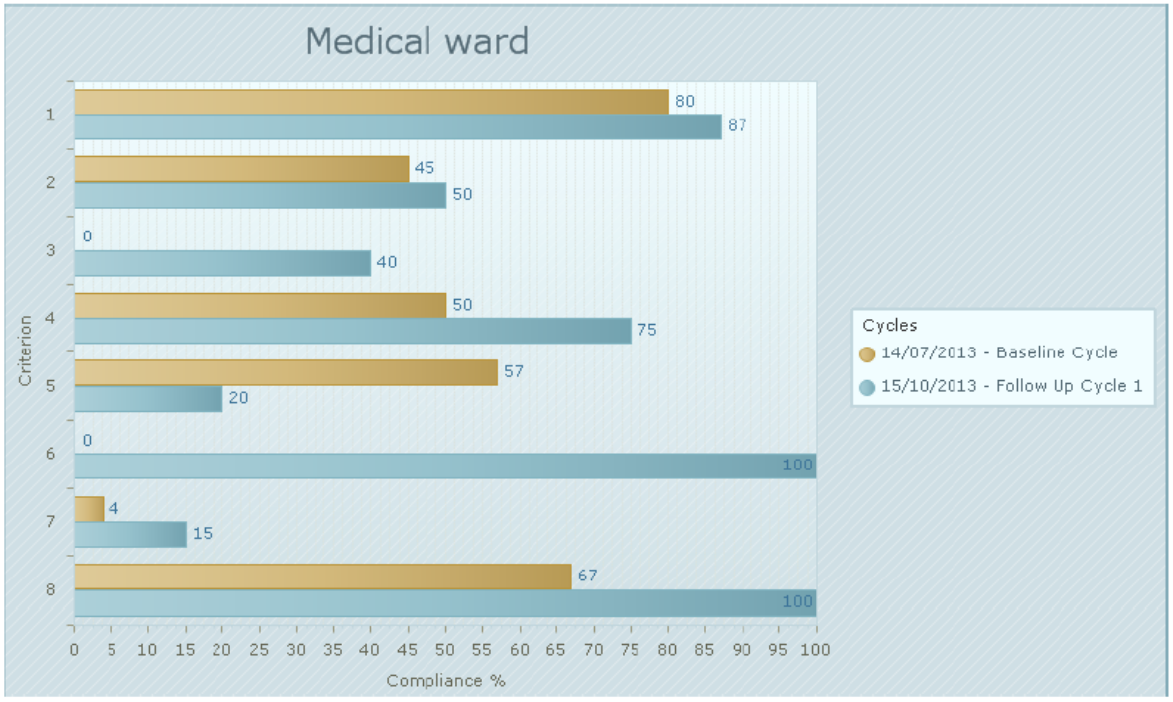

Figure 1: Baseline and follow-up cycle 1 audit results for the medical ward

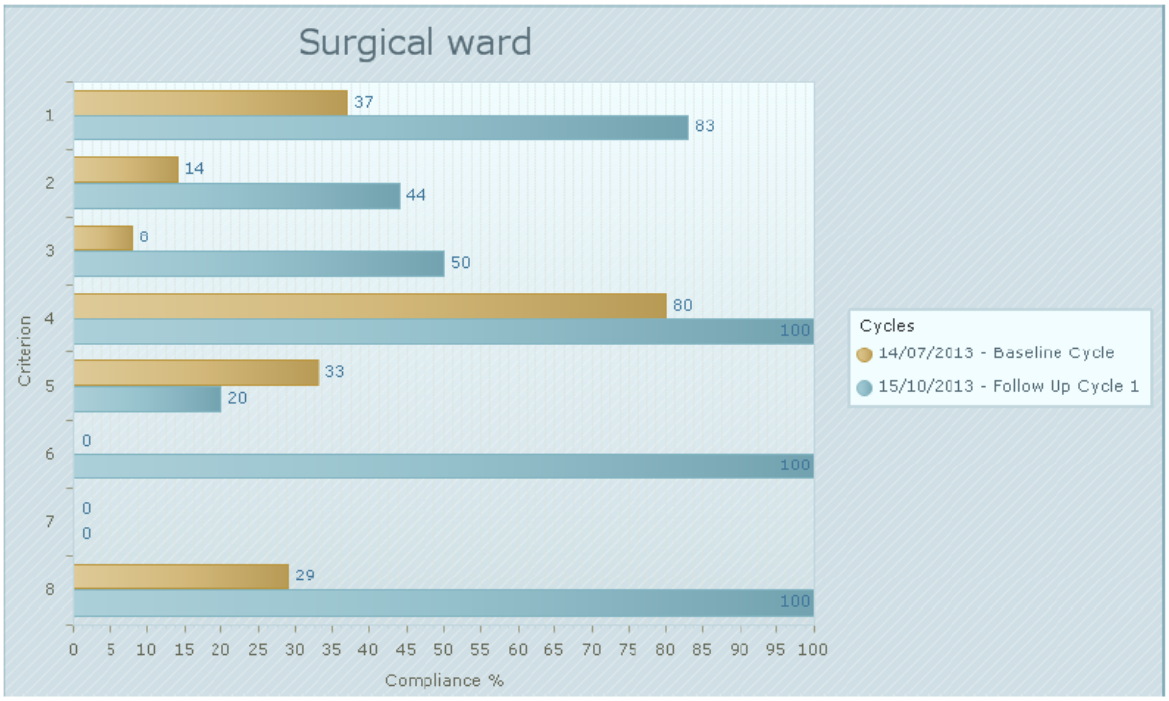

Figure 2: Baseline and follow-up cycle 1 audit results for the surgical ward

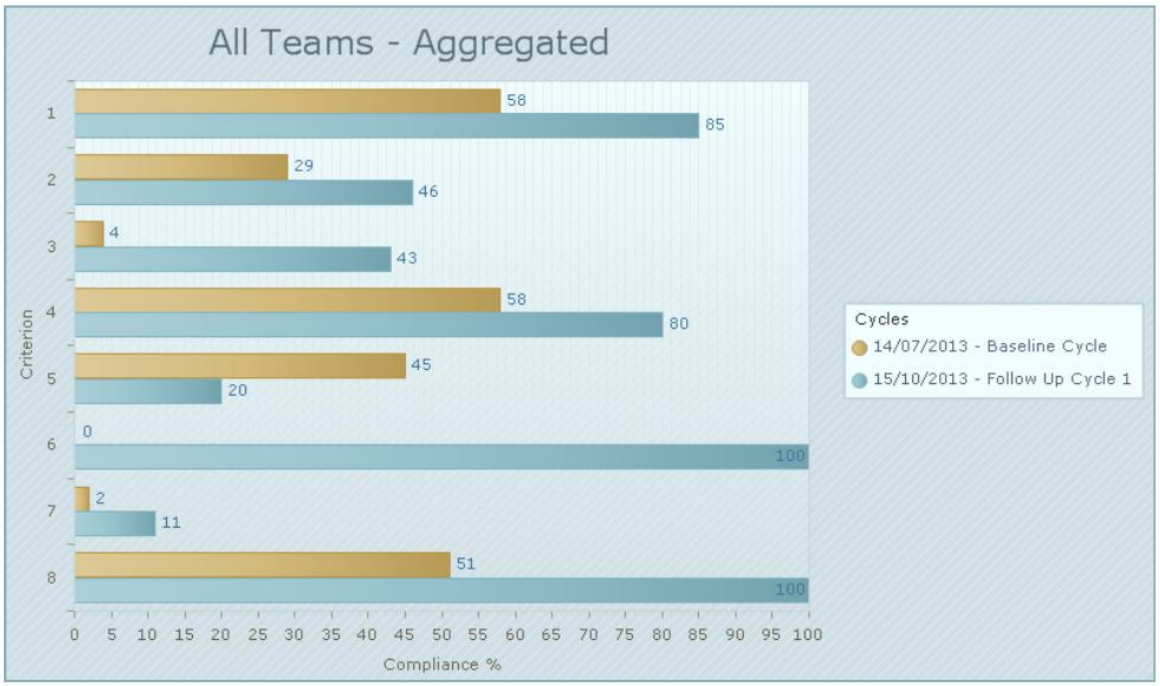

Figure 3: Aggregated baseline and follow-up cycle 1 results (combined medical and surgical wards)

Criteria Legend

1	1. Fall risk assessment is done upon admission. (30 of 30 samples taken)
2	2. Fall risk assessment is done upon transfer. (30 of 30 samples taken)
3	3. Reassessment occurs when there is a change in condition or following a fall. (30 of 30 samples taken)
4	4. Patients who have experienced a fall are considered at high risk for future falls. (30 of 30 samples taken)
5	5. Fall risk assessment is done accurately using a falls assessment tool. (30 of 30 samples taken)
6	6. Healthcare professionals have received education regarding falls assessment and prevention strategies. (30 of 30 samples taken)
7	7. Patient and family education is carried out for patients at risk of falls. (30 of 30 samples taken)
8	8. Targeted interventions are implemented according to risk factors. (30 of 30 samples taken)

Follow-up cycle 1 audit did show improved results in both wards for all but two criteria. The greater improvements included criteria 3, 6 and 8. This was most likely as a result of poor baseline results and a bigger focus on these areas within the implementation phase. There were however some areas that did not have positive results. Criteria 5 (falls risk assessment done accurately) had a more negative result. This could be due to the FRAT frequently being changed/upgraded through the life of the project, which could have caused confusion or uncertainty on how to fill out the document correctly. Criteria 7 (patient/family education) only has a slight improvement. This could be due to the fact that the intervention created for this criteria had not been successfully developed to allow for better patient/family education. However, as the graphs suggest, there were generally positive results in the follow-up audit.

Discussion

During the time of the baseline audit results, and through the implementation phase there were many challenges and barriers faced, some of which were overcome, and were expressed and identified in the success of the positive results. However there were some barriers that were not able to be resolved for a number of reasons, such as time, and changes and planned programs and events within the organisation that took precedence over this project.

Another barrier faced during this time was that accreditation occurred during the implementation phase of the project. This made initiating strategies more difficult and staff were hesitant and less willing to partake.

Through the course of the implementation project, the FRAT was also upgraded, to a more reliable document as it was a stratified tool, and was a much simpler and easier format to utilise. However there were issues in getting the final copy introduced to the wards. An intermittent draft was supplied to the wards for a short time. This not only confused and frustrated staff but made them less receptive, accepting and compliant in completing the tool accurately, which can explain the poorer results in the follow-up audit of criterion 5. If there had been more time to complete the project it may have left more room to allow staff to accept the changes to the assessment tool, as well as allow more time for implementation strategies such as education, which may have changed the outcome.

The timing of when the new FRAT was introduced was also an issue. The FRAT was introduced weeks into the life of the project; delaying the time spent promoting it. If the assessment tool was introduced at a different time, either at the beginning of the project, or during the implementation process of the project, it may have made more of an impact.

The strategies that were not implemented were largely attributed to limited time to organise education sessions with staff, as well as not enough time to get brochures approved and printed /published for public use (for patients and families), and not enough time to organise formal education on the FRAT.

The biggest positive changes found within the wards were staff being more conscience of the risk of falls and completing the assessment tool, and initiating appropriate implementation strategies.

Most of the strategies were implemented, and to different extents had positive effects on the clinical setting. The more successful strategies were informal staff education/on the run education of the FRAT, with the emphasis on how to accurately fill out the tool. Posters for staff within the clinical setting also appeared to be useful, as a reminder to staff. These strategies will hopefully be sustainable, and can be achieved by the project leader with the ongoing support of the project team.

The most positive outcome for this project was identifying the gaps within the organisation, from the follow-up audit, discussing what was lacking and what still needs to be achieved. There is work currently being undertaken to improve and sustain what has already been achieved from this project, displaying more educational material (poster and brochures) for patients and families in a way to assist them to gain knowledge. They will also be added to the admission package, and formal education for the FRAT is in development. This hopefully will make for a more sustainable future in the prevention of falls within this clinical care setting.

Second Follow-up audit

A second post implementation follow-up audit was conducted in March 2014, to determine the successfulness and the sustainability of the implementation strategies in the prevention of falls within the acute care setting. The audit was completed as previously, through JBI PACES using the 8 initial criteria. This audit, like the baseline and the first follow-up audit took one full day to complete, auditing the same sample size; two 30-bed wards (General Medical and Orthopaedic surgical). No new GRIP strategies were implemented, as the GRIP strategies from the first audit were still being implemented. The rationale being that there was limited time and not all strategies were used; only the more successful ones were focused on, such as education, on the run education, staff meetings/education/refreshers, and the posters/signs. There were no other project team meetings during this time, again due to time constraints, however updates were given via email, and a meeting was held with the DON on the progress of the project, where the project leader was able to give feedback and provide suggestions/improvements for the future.

Results – Follow up cycle 2

The audit compliance rates are displayed for the baseline and follow up cycle 2 audits for the Medical ward (Figure 4), Surgical ward (Figure 5) and aggregated results (Figure 6).

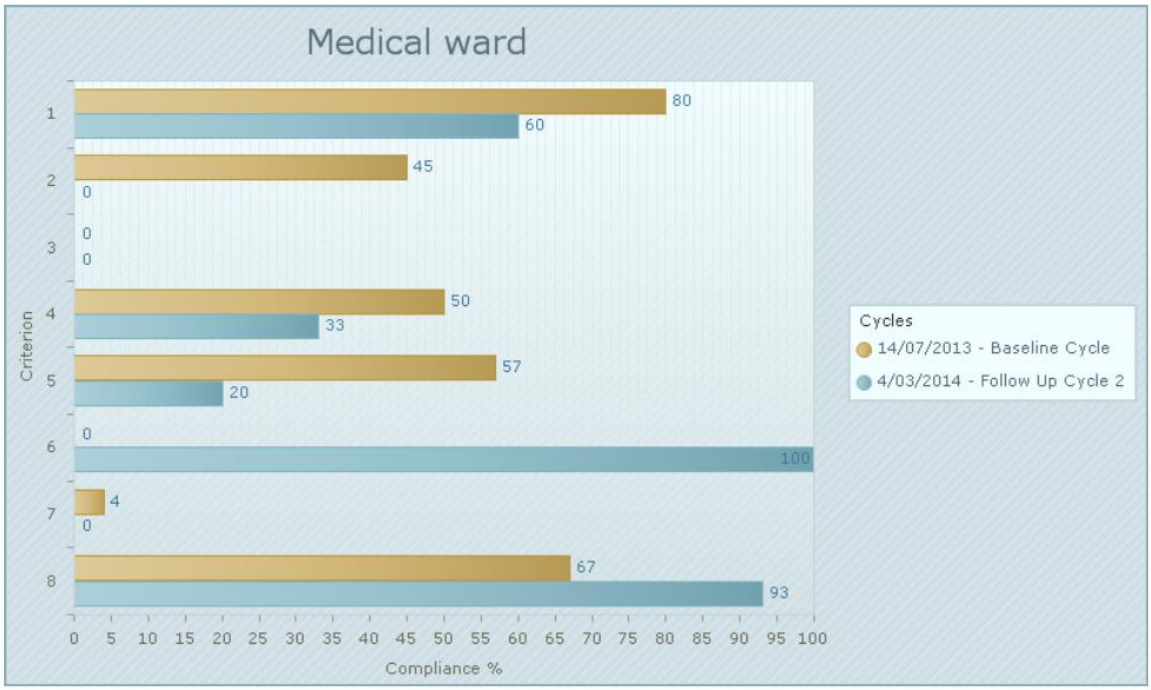

Figure 4: Baseline and follow-up cycle 2 audit results for the medical ward

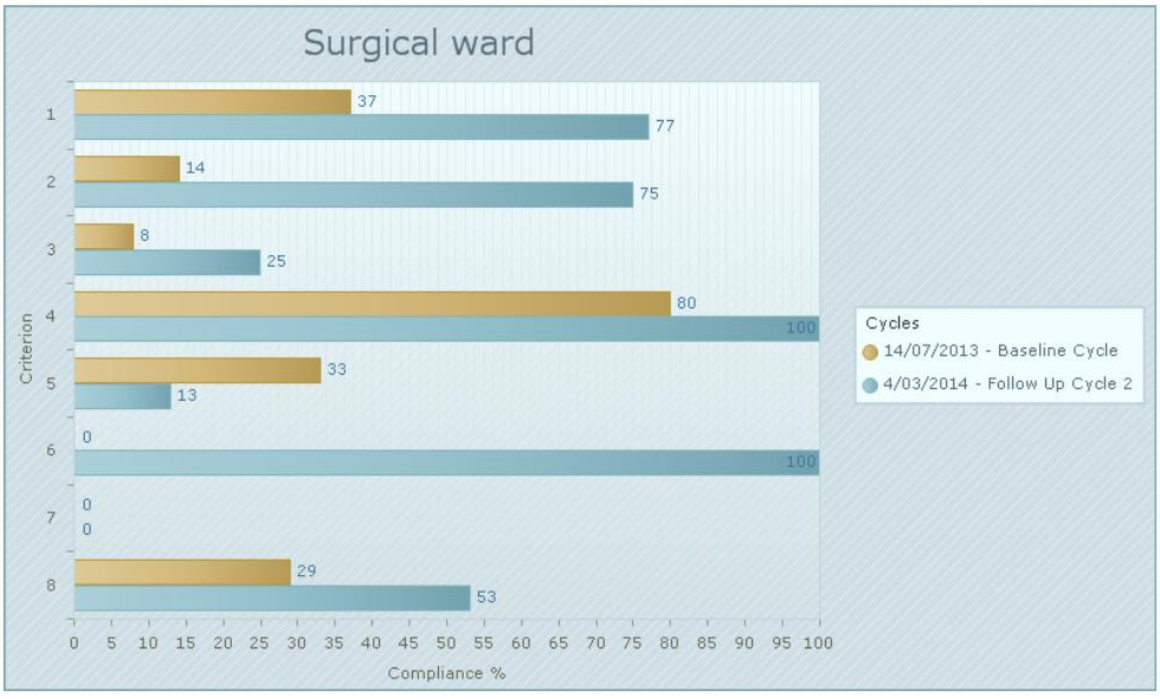

Figure 5: Baseline and follow-up cycle 2 audit results for the surgical ward

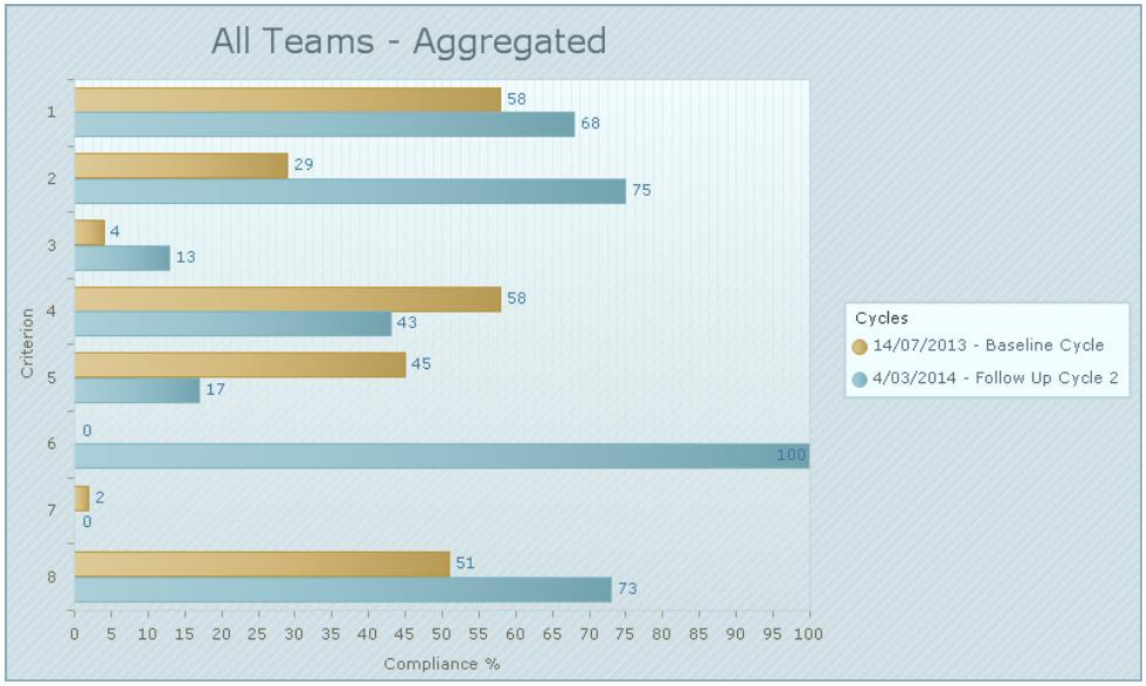

Figure 6: Aggregated baseline and follow-up cycle 2 audit results (Combined medical & surgical ward)

Discussion

The second follow-up audit demonstrated some disappointing results. There was a general decline in the initial positive results for the General Medical ward. The area which stayed the same through both follow-up audits was criteria 6; staff education on falls assessment and prevention; which has remained at 100%. The other areas which had the same results were criteria 5; using the assessment tool accurately; no improvements, but did not get worse. Criteria 2; falls risk assessment upon transfer, appears to be significantly worse than the first follow-up audit. However, this was not the case; it was a poor result because this area of auditing was not applicable at the time of the audit, as patients were directly transferred to the ward from the emergency department, and were assessed when arriving to the ward. Patients are only assessed on transfer if patients have come from another ward, which was not the case at the time of this audit.

For the Orthopaedic Surgical ward, there was also a general decline in positive results. There was one area of improvement; criteria 2; falls risk assessment done on transfer, which showed significant improvement. There were also areas that stayed the same through both the follow-up audit; criteria 4; patients who have had a fall are considered a high falls risk, and criteria 6; staff education on falls assessment and prevention; with both areas remaining at 100%.

The generally disappointing results can be attributed to a few factors. One significant factor for the second follow-up cycle was the time constraint faced. Another major factor was that there was a hospital-wide focus on the preparation for moving to a new hospital site. This meant there was a major focus on education and training of all staff in readiness for the move, therefore a lesser focus on falls risk assessments, prevention and implementation.

Through the course of this project, as mentioned earlier, the FRAT document was regularly upgraded. At the time of the second follow-up audit, yet another new FRAT document was rolled out. This again created confusion, which frustrated staff as paperwork had again changed, and although education of the FRAT was being addressed and was still a focus, it made staff less willing to actively participate in falls prevention, and less focused on completing the FRAT accurately, which in turn is demonstrated with the poor results.

Conclusion

The findings showed generally positive results in the initial follow-up audit, but with room for improvement. Most of the criteria within the audit process were improved as demonstrated in the PACES compliance graphs. The strategies that showed most improvement were staff education about the falls risk assessment tool, and staff undertaking more appropriate action from the result findings within the clinical setting. This was done through formal and informal education sessions. Staff also seemed receptive to posters within the clinical setting as a reminder to them to be more proactive in their fall prevention of patients.

There was however disappointing results, which was more evident in the second follow-up audit where change or improvement was not seen, or improved marginally. The areas still requiring improvement are patient and family education, and completing falls risk assessments accurately. This, as explained before, may be as a result of staff being overloaded with information, and therefore not as receptive to more information being provided. Patient and family education was also an area requiring improvement, as one of the strategies planned could not be implemented into the clinical setting, therefore staff were not able to provide this information to patients and families.

With continued ongoing support, resources, and time, the implementation strategies could be sustainable in improving compliance. Falls within the acute clinical setting can be preventable, falls rates can be reduced and better health outcomes can be achieved.

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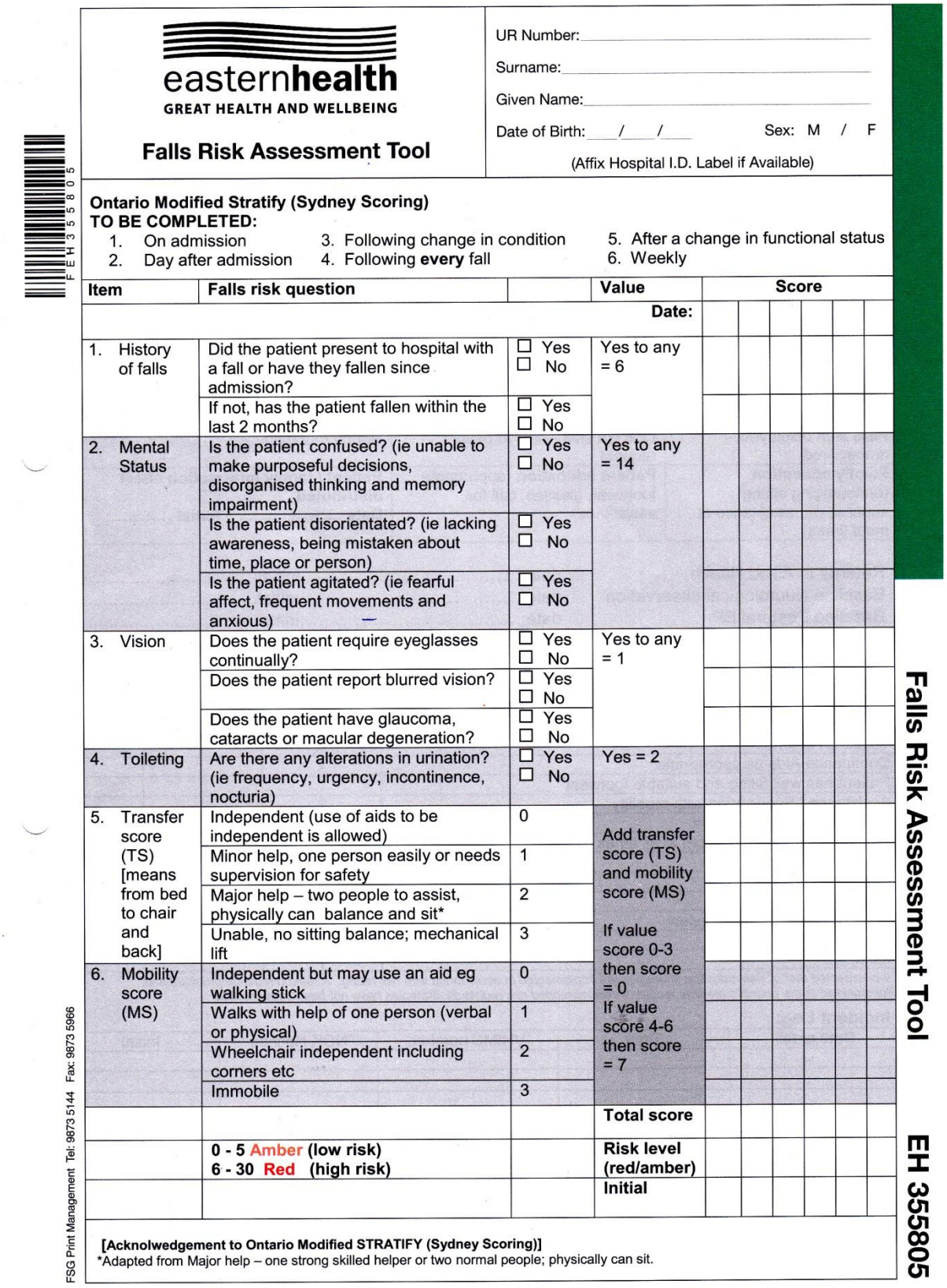
Appendix 1: Final draft of FRAT



easternhealth
GREAT HEALTH AND WELLBEING

Falls Risk Assessment Tool

UR Number:
Surname:
Given Name:
Date of Birth: / / Sex: M / F
(Affix Hospital I.D. Label if Available)

Ontario Modified Stratify (Sydney Scoring)
TO BE COMPLETED:
1. On admission
2. Day after admission
3. Following change in condition
4. Following **every** fall
5. After a change in functional status
6. Weekly

Item	Falls risk question		Value	Score					
				Date:						
1. History of falls	Did the patient present to hospital with a fall or have they fallen since admission?	☐ Yes ☐ No	Yes to any = 6						
	If not, has the patient fallen within the last 2 months?	☐ Yes ☐ No							
2. Mental Status	Is the patient confused? (ie unable to make purposeful decisions, disorganised thinking and memory impairment)	☐ Yes ☐ No	Yes to any = 14						
	Is the patient disorientated? (ie lacking awareness, being mistaken about time, place or person)	☐ Yes ☐ No							
	Is the patient agitated? (ie fearful affect, frequent movements and anxious)	☐ Yes ☐ No							
3. Vision	Does the patient require eyeglasses continually?	☐ Yes ☐ No	Yes to any = 1						
	Does the patient report blurred vision?	☐ Yes ☐ No							
	Does the patient have glaucoma, cataracts or macular degeneration?	☐ Yes ☐ No							
4. Toileting	Are there any alterations in urination? (ie frequency, urgency, incontinence, nocturia)	☐ Yes ☐ No	Yes = 2						
5. Transfer score (TS) [means from bed to chair and back]	Independent (use of aids to be independent is allowed)	0	Add transfer score (TS) and mobility score (MS) If value score 0-3 then score = 0 If value score 4-6 then score = 7						
	Minor help, one person easily or needs supervision for safety	1							
	Major help – two people to assist, physically can balance and sit*	2							
	Unable, no sitting balance; mechanical lift	3							
6. Mobility score (MS)	Independent but may use an aid eg walking stick	0							
	Walks with help of one person (verbal or physical)	1							
	Wheelchair independent including corners etc	2							
	Immobile	3							
			Total score						
	0 - 5 Amber (low risk) **6 - 30 Red (high risk)**		**Risk level (red/amber)**						
			Initial						

[Acknolwedgement to Ontario Modified STRATIFY (Sydney Scoring)]
*Adapted from Major help – one strong skilled helper or two normal people; physically can sit.

FEH355805

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Falls Risk Assessment Tool EH 355805

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GREAT HEALTH AND WELLBEING

Falls Risk Assessment Tool

UR Number:
Surname:
Given Name:
Date of Birth: / / Sex: M / F
(Affix Hospital I.D. Label if Available)

FALLS RISK REDUCTION PLAN

0 – 5 Amber (low risk) - Standard Falls Precautions and additional strategies if required
6 – 30 Red (high risk) - Standard Falls Precautions and team review of additional strategies

Standard Falls Precautions implemented for all inpatients, amber and red risk

Orientation to room	Personal Items including Gait Aid within reach	Bed and chair height adjusted to correct position (feet flat on ground, hips slightly higher than knees)
Bed in low position, wheels locked	Room free of clutter and spills	Adequate lighting and signage
Falls alert displayed – amber / red	One cot side - only at patient request	Hourly rounding
Family education (encouraging sitting supervision, assistance at meal times)	**Patient education** (appropriate footwear, glasses, call for assistance)	**Patient / family information sheet distributed** ☐ **Date**..... **Initial** .....

Referral to Allied Health	☐	date:.....initial.....
Baseline Neurological observation	☐	date:.....initial.....
Baseline Postural BP	☐	date:.....initial.....
Routine screening urinalysis	☐	date:.....initial.....
Team meeting review if Red risk	☐	date:.....initial.....

Additional Risk Reduction Strategies as decided by team for all 'Red' risk patients

Date:						
Toileting Regime						
Continence Aids as appropriate						
Patient has well fitting and suitable footwear						
Assistance / Supervision with mobility						
Bedside commode at night						
Supervision in the bathroom at all times						
High visibility room						
Floor line bed						
Bed / Chair Exit Alarm						
Medication / Pharmacy review						
Hip protectors						
Other …						

It is expected that all risk reduction strategies are implemented in accordance with risk rating. A reason must be provided and documented in the patient's medical records if recommended risk reduction strategies have not been implemented.

Incident Log:

Date of fall	Time	VHIMS number	NOK Notified	Initial

Signature log:

Name	Signature	Designation	Initials

Falls Risk Assessment Tool
EH 355805
Revised July 2013

1. **Complete FRAT Score**
2. **Falls Risk Reduction plan MUST BE completed for ALL inpatients and residents**

FALLS RISK REDUCTION PLAN

It is expected that all risk reduction strategies are implemented in accordance with risk rating. A reason must be provided and documented in the patient's medical records if recommended risk reduction strategies have not been implemented.

ALL IN-PATIENTS AND RESIDENTS:

Standard Falls Precautions (amber and red risk)

Orientation to room	Personal Items including gait aid within reach	Bed and chair height adjusted to correct position (feet flat on ground, hips slightly higher than knees)
Bed in low position, wheels locked	Room free of clutter and spills	**Family education** (encouraging sitting supervision, assistance at meal times)
Falls alert displayed – amber / red	Cot sides down (unless otherwise documented)	**Patient education** (appropriate footwear, glasses, call for assistance)
Adequate lighting and signage	Hourly rounding	**Patient / family information sheet distributed** ☐
All standard falls precautions implemented	**Date:**	**Initials:**

RED (HIGH) RISK PATIENTS/RESIDENTS (6-30):

Additional Risk Reduction Strategies (please initial each strategy implemented)

Date::	Initial Ax	Day 1 Ax					
For all red (high) risk patients/residents consider							
1. Referral to Allied Health							
2. Baseline neurological observation							
3. Baseline postural BP							
4. Routine screening urinalysis							
If confused or anxious consider:							
1. Medical assessment for delirium including medication review							
2. Supervision in the bathroom at all times							
3. Floor line bed							
4. High visibility room							
5. Bed / chair exit alarm							
If continence has changed consider:							
1. Consider abdominal x-ray or bladder scan							
2. Toileting regimen added to rounding							
3. Bedside commode at night							
4. Continence aids as appropriate							
If mobility issues consider:							
1. Assistance / supervision with mobility at all times							
2. Ensure well-fitting and suitable footwear							
Initials							

Incident Log: record details of any falls.

Date of fall	Time	VHIMS number	NOK Notified	Initial

FSG Print Management Tel: 9873 5144 Fax: 9873 5966 Revised August 2013

Falls Risk Assessment Tool **EH 355805**

Ontario Modified Stratify (Sydney Scoring) TO BE COMPLETED:

1. On admission
2. Day after admission
3. Following change in condition
4. Following **every** fall
5. Following change in environment
6. Weekly (Residential monthly)

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GREAT I
Falls I

FEH355805

Item	Falls risk question	Initial Ax Date	Value	Initial Ax Score	Day 1 Ax Date	Day 1 Score	Ax Date
1. History of falls	Did the patient present to hospital with a fall or have they fallen since admission?	☐Y ☐N	Yes to any = 6		☐Y ☐N		☐Y ☐N
	If not, has the patient fallen within the last 2 months?	☐Y ☐N			☐Y ☐N		☐Y ☐N
2. Mental Status	Is the patient confused? (ie unable to make purposeful decisions, disorganised thinking and memory impairment)	☐Y ☐N	Yes to any = 14		☐Y ☐N		☐Y ☐N
	Is the patient disorientated? (ie lacking awareness, being mistaken about time, place or person)	☐Y ☐N			☐Y ☐N		☐Y ☐N
	Is the patient agitated? (ie fearful affect, frequent movements and anxious)	☐Y ☐N			☐Y ☐N		☐Y ☐N
3. Vision	Does the patient require eyeglasses continually?	☐Y ☐N	Yes to any = 1		☐Y ☐N		☐Y ☐N
	Does the patient report blurred vision?	☐Y ☐N			☐Y ☐N		☐Y ☐N
	Does the patient have glaucoma, cataracts or macular degeneration?	☐Y ☐N			☐Y ☐N		☐Y ☐N
4. Toileting	Are there any alterations in urination? (ie frequency, urgency, incontinence, nocturia	☐Y ☐N	Yes = 2		☐Y ☐N		☐Y ☐N
5. Transfer score (TS) [means from bed to chair and back]	Independent use of aids to be independent is allowed	0	Add transfer score (TS) and mobility score (MS) If value score 0-3 then score = 0 If value score 4-6 then score = 7		0		0
	Minor help, one person easily or needs supervision for safety	1			1		1
	Major help – two people to assist, physically can balance and sit*	2			2		2
	Unable, no sitting balance; mechanical lift	3			3		3
6. Mobility score (MS)	Independent but may use an aid eg walking stick	0			0		0
	Walks with help of one person (verbal or physical)	1			1		1
	Wheelchair independent including corners etc	2			2		2
	Immobile	3			3		3
			Total score				
	0 - 5 Amber (low risk) **6 - 30 Red (high risk)**		**Risk level (red/amber)**				
			Initial & Date				

[Acknolwedgement to Ontario Modified STRATIFY (Sydney Scoring)]

*Adapted from Major help – one strong skilled helper or two normal people; physically can sit.

Turn over and complete fall

Improving falls risk assessment among inpatients of the general medical and orthopaedic population at a tertiary hospital: a best practice implementation report

Su Kitchen BSc (Nursing)
Falls Prevention
Clinical Nurse Specialist and Clinical Practice Improvement Coordinator
Work Email: Su.Kitchen@health.wa.gov.au

Key Dates
Commencement date: 28/5/13
Completion date: 4/4/14

Executive Summary

Background

Assessment of a patient's risk factors for falling and putting interventions in place to reduce that risk is vital. Screening and assessment of risk occurs on admission, then reassessment occurs depending on the clinical indicators that include post fall, ward transfer, and change in medical condition. The patient's risk of falling can alter/increase/decrease when these particular events occur in a hospital stay.

Objectives

This project aimed to identify an area of falls assessment and management that required improvement, and successfully implementing key strategies at a local level to improve identified gaps in evidenced based practice.

Methods

A clinical audit that utilized the Joanna Briggs Institute's Practical Application of Clinical Evidence System and Getting Research into Practice tools was undertaken in two wards. 30 patient medical records were audited in the baseline audit, compared with evidence-based criteria, with two follow-up audits conducted once strategies to improve compliance had been implemented.

Results

From the baseline audit, both wards chose an area to improve in deliver of evidence base care and risk assessment. This was f*all risk assessment is done upon transfer.* Ward 1 also chose to address r*eassessment occurs when there is a change in condition or following a fall.* Following intervention, the follow-up audit results showed that in f*all risk assessment is done upon transfer* ward 1 improved by 9% and Ward 2 by 13% . Results for *reassessment occur when there is a change in condition or following a fall*, ward 1 improved by 50%.

Conclusions Despite significant barriers, positive results, and improvements in the delivery of falls management optimal evidenced based care can be achieved from the implementation of simple strategies.

Keywords: falls assessment, falls risk, falls management, interventions, education, patient, audit, evidence implementation.

Background

Preventing falls and harm from falls is essential. Falls can adversely affect the individual patient, their families and carers, causing significant distress to a person and may lead to loss of independence, their family home and possibly death.

Patients' admitted to hospital are often at risk of falls and injurious falls due to intrinsic and extrinsic risk factors. It is known that "….a hospital setting is not a safe place for elderly people but is actually associated with increased risk of falling (page 372)".[1] 40% of hospital patients that have specific clinical problems will fall at least once during their admission[2] and injuries will occur from 30% of these falls.[3]

Falls increase in the older population due to disease and varied impairments. Risk factors for falling are multifarious, multiple and differ for each person. These can be divided into intrinsic and extrinsic factors. Intrinsic risk factors include mobility and balance problems, vision impairment, cognition impairment, elimination problems, medical disease (e.g. Parkinson's disease, Depression, Cerebral Vascular Disease, and Diabetes), medications and foot care.[4] Extrinsic factors include the environment,[5] length of stay in hospital, footwear, and inter-ward or inter-hospital transfers.[4]

Physical injuries that may occur because of a fall include subdural haematomas, fractured hips or other bones, pain, bruising, and lacerations. The number of hip fractures within Australia continues to rise, and 25% of people with osteoporosis who fracture their hip will die within 12 months. This is an increase of 10% in 6 years.[6]

21% and 23% of Australians aged 65 and older who were discharged from hospital following an injurious fall entered Residential Aged Care. This is due to their inability to recover to pre fall functioning level and thus substantial loss of independence occurs.[7]

There are the emotional injuries too. Fear of falling with symptoms of depression, hesitancy, loss of confidence and anxiety can affect 29% to 92% of people who have already fallen, and up to 65% of those that have not .[8]

Economic factors also dictate the necessity to prevent falls. 83,768 falls occurred in Australia in 2009-10, 7% more than in 2008-2009. The cost burden to the health system is estimated at $560 million.[7] There are also the indirect costs borne by family that exceeds a minimum of $1billion per year.[9]

In Western Australia (WA), the number of reported inpatient falls has reduced by 9.8% from 2005/08 to 2009/10,[9] but falls still cost the WA health system $83 million every year. This is expected to increase to $174 million by 2021.[10] The falls rate needs to decrease by 66% in an attempt to control the costs at its current level.[11]

Assessment of a patient's risk factors for falling and putting interventions in place to reduce that risk is vital. Screening and assessment of risk occurs on admission, and then reassessment occurs on the clinical indicators that include post fall, ward transfer and on medical change.[10] The patient's risks of falling can alter/increase/decrease when these particular events occur in a hospital stay.[10]

The introduction of the Australian Commission on Safety and Quality in Healthcare (ACSQHC) National Standards[12] ensures that assessment, intervention, education, and policies must integrate with practice across the health care facility and its services. Ten initial standards cover, for example, governance, consumer partnership, medication safety, and pressure injuries. National Standard 10

titled ‘Preventing Falls and Harm From Falls’[13] provides detailed criteria for the implementation and use of best practice Falls Management.

This best practice implementation project was part of a wider project being undertaken by the Joanna Briggs Institute, titled ‘multisite audit of current in-hospital falls prevention practices and assessment of the effectiveness of best practice implementation strategies’. A clinical audit formed a part of this project, assessing practice against the criterion from National Standard 10. Strategies were then employed to ensure best practice in performance and improvement in key identified areas of Falls Management.

The audit took place in a tertiary teaching public hospital in Western Australia (WA). The hospital provides a comprehensive range of clinical services including trauma, emergency and critical care, orthopaedics, general medicine, general surgery, and cardiac care. It also has a comprehensive Falls Management Programme that includes all health professionals. This incorporates hospital policies, a guideline that outlines the expected assessment/reassessment and care of a falls risk/fallen patient along with education of consumers and staff.

Assessing a patient’s risk of falling is undertaken utilising the WA Falls Risk Management Tool (FRMT).[13] The tool is used to screen and assess the patient’s risk factors. It then recommends interventions to reduce these. It lists thirteen ‘minimum interventions’ that are to be applied for all patients regardless of risk. These include orientation, toileting, and the use of call bell and mobility aids. Patients are reassessed for their risk on ward transfer, post fall and post-medical change and on the clinical judgement of a health professional. Interventions are implemented depending on the identified risks.

Auditing on ‘compliance’ with the FRMT is completed in all inpatient areas, at monthly intervals. The audit examines FRMT completion and minimum interventions in place at the bedside. The clinical area acts on the results with activities to improve any indicated gaps or deficits in practice.

The initial Joanna Briggs clinical audit results demonstrated that there was some disparity between actual practice and evidenced base practice in many areas of Falls Management Assessment. While there are multiple strategies in place for Falls Risk Management within the hospital, having a lead clinician in the local area is essential. This person has intimate knowledge of the clinical area, expectations, workloads, policies, and leadership. They understand the importance of falls prevention, the requirement to reassess on clinical indicators and the impact of falls on the patient and families/carers. They are also able to positively influence their workforce.

Participation in this project with the Joanna Briggs Institute was a further opportunity to identify key areas that required improvement in Falls Management. It would also highlight areas in which performance was optimal.

Objectives

1. Initial audit to identify an area of Falls Assessment and Management that required improvement.

2. Implementation of key strategies at a local level to improve an identified gap in evidence based practice.

3. Follow up audit to identify the improvements made within the area chosen.

Ethics approval for the clinical audit was not sought at the local level as approval had been granted for the larger multisite project.

Methods

The clinical audit project was conducted over a 10-month period (May 2013 to April 2014) and designed to look at the areas of Falls Assessment, Interventions, and Education. It was further divided into 3 phases. These were:

- Phase 1- baseline audit which sought to gather baseline data and indicate areas of Falls Management that require improvement.
- Phase 2 – identification of strategies and the implementation of evidenced based practice in chosen criteria.
- Phase 3 – two follow up audits to determine if the strategies had been successful to improve the delivery of evidenced based practice in key identified areas.

Following an initial training week at the Joanna Briggs Institute, ward leaders were provided with an outline of the clinical audit project and two ward areas volunteered to take part. They were a 28 bed, general medical ward with a 10 bed Delirium Care Unit, and a 28-bed orthopaedic ward. Both areas had average falls rates.

As the clinical audit was part of a wider research project being undertaken by the Joanna Briggs Institute, the sample size was requested to be 30 patients for each criterion. The audit also utilized the Joanna Briggs Institute Practical Application of Clinical Evidence Systems (PACES) and Getting Research into Practice (GRIP) online programmes.

Each ward chose to address one area based on the results of the baseline audit. One ward chose to focus on two areas. It was expected that focusing on one or ywo areas would improve all areas within the audit criteria.

Phase 1

Ward 1 (Medical) is a 28-bed ward that takes general and subacute medical patients. It also contains a 10 bed Delirium Unit. The majority of patients within this area are over 65 years of age and the ward primarily takes transfers from other wards. The falls rates are 5.8 falls per 1000 occupied bed days in 2012/13.

Ward 2 (Surgical) is a 28 bed orthopaedic surgical ward. Patients' ages can range from 14 to 104, but most will have risk factors for falling either at some point during their admission, or at all times. The ward takes very few transfers, indicating that it would be difficult to capture enough data for the audit criterion about falls assessment completed on ward transfer. The falls rates are 4.3 per 1000 occupied bed days.

The Project Team consisted of the Clinical Nurse Specialist (CNS) from each ward and the project lead. In both wards the multidisciplinary team (MDT) work collaboratively to ensure patients are assessed and have appropriate interventions and strategies in place to reduce falls and harm from falls. The ideal scenario would be the inclusion of each discipline onto the Project Team. However,

there were problems in finding time to meet, and keeping people updated to the degree felt necessary within the period and hospital activity. It was then agreed that it would be the ward CNS driving the intervention for this project. They also felt that they could keep the MDT informed more easily. They collaborated with the project lead to ensure that all staff were kept informed regarding the project.

The JBI evidenced based summary [15] had been utilized to develop the audit criteria as part of the overarching JBI research project 'multisite audit of current in-hospital falls prevention practices and assessment of the effectiveness of best practice implementation strategies'. The audit tool was left unaltered.

Audit Criteria

1. **Fall risk assessment is done upon admission -**This criterion was considered met if the case notes showed a risk assessment completed within 8 hours of admission. (Yes/No/ Not Applicable [NA], sample: 30 medical patients at admission, 30 surgical patients at admission)

2. **Fall risk assessment is done upon transfer -** This criterion was considered met if the case notes for patients that had been transferred (intra-hospital transfer) showed a risk assessment completed within 8 hours of transfer.(Yes/No/ Not Applicable [NA], sample: 30 medical patient transfers, 30 surgical patient transfers)

3. **Reassessment occurs when there is a change in condition or following a fall -** This criterion was considered met if the case notes for patients who had had a change in clinical condition (that affects their falls risk status) or experienced a fall included a reassessment performed within 8 hours of this event. (Yes/No/ Not Applicable [NA], sample: 30 medical patient events, 30 surgical patient events)

4. **Patients who have experienced a fall are considered at high risk for future falls -** This criterion was considered met if by looking at case notes for patients who have a history of falls, they are assessed as high risk for future falls according to the risk assessment. (Yes/No/ Not Applicable [NA], sample: Risk assessments for patients who have experienced a fall: 30 medical patients, 30 surgical patients)

5. **Fall risk assessment is done accurately using a falls assessment tool -** This criterion was considered met if the case notes suggested the fall risk assessment was done accurately. If the accuracy of the risk assessment is not clear from the notes, then the patient can be visited to determine the accuracy of the assessment. (Yes/No/ Not Applicable [NA], sample: 30 medical patient assessments, 30 surgical patient assessments)

Education

6. **Healthcare professionals have received education regarding falls assessment and prevention strategies -** This criterion was considered met if staff members in the participating wards reported that they had received education in the last 2 years. Question: "Have you received education regarding falls assessment and prevention strategies in the last 2 years?" This was by convenience sampling, recording the professions of the healthcare staff questioned e.g. nurse, clinician, physiotherapist, pharmacist, etc.

(Yes/No/ Not Applicable [NA], sample: 30 healthcare staff from medical ward, 30 healthcare staff from surgical ward)

7. **Patient and family education is carried out for patients at risk of falls -**This criterion was considered met if from the case notes, for patients at risk of falls, patient and family education was documented as being done. (Yes/No/ Not Applicable [NA], sample: 30 at risk medical patients, 30 at risk surgical patients)

Intervention

8. **Targeted interventions are implemented according to risk factors -** This criterion was considered met if it was documented in the case notes for patients assessed as at risk, that there had been implementation of targeted interventions to address every identified risk factor. (Yes/No/ Not Applicable [NA], sample: at risk medical patients, 30 at risk surgical patients)

The patients in the Delirium Unit of Ward 1 were included in the audit as they were considered at the highest risk of falling. Education for these patients could be complex due to the delirium or cognition impairment, and there is evidence that giving education may increase their risk of falling.[10] The audit was undertaken over two weeks in May and June 2013 at random times and days. 30 patients were audited to reach the criteria sample for each question. The patient's bedside notes and medical progress notes were examined to gather the required data. Health professionals on the ward at the time of the audits were asked if they had received education regarding falls assessment and prevention strategies within the last 12 months.

The results were then entered into the PACES database and a report was collated. This information is presented in the Results section, with the comparative results of the follow-up audit. (see Figure 1,2 and 3)

Phase 2

Following the base line audit of all criteria, the data was presented to the ward CNSs. After discussion, both wards chose to focus on implementing improvement strategies for the following:

A. Reassessment occurs when there is a change in condition or following a fall.

Ward 1 also chose to implement strategies to improve:

B. Fall risk assessment is done upon transfer.

Criteria not addressed by the wards for purpose of this audit will be detailed in Phase 3.

The PACES software was used to generate a GRIP Matrix (Appendix 1).

Strategies that were implemented to address these chosen areas included staff education by the ward CNS and Staff Development Nurse, reminders in the ward meetings and included in the minutes of these, so all staff were able to view the information. Ward 1 chose to give a nurse the responsibility to

remind staff on that shift to check their patients falls risk, reassessment and interventions. Already in place on Ward 1 was the mandatory completion of the hospital approved Falls Management Self Directed Learning Package. Ward 2, in addition to the education and meetings, also considered pyramid teams that would educate each shift. They also focused on the physiotherapist identifying patients improving or deteriorating in mobility, and a short PowerPoint show to put on the staff room television. The latter did not occur due to staff members leaving the ward.

A possible identified barrier at the time for both wards was the implementation of the 10 National Standards, [13] and site accreditation occurring just as the project was finishing. While this project met criteria within the National Standard 10, the staff also needed to manage the implementation of new practices, issuing of new documentation, policies, guidelines, and work towards a sustainable culture associated with all of the Standards. This resulted in an increase in work required from all staff including the ward leaders. It also affected the project lead, who was the identified 'Clinical Lead' for the organisation for National Standard 10. It became very evident through the project that this barrier was significant and increasingly difficult to manage.

Strategies to address this included contact with the wards and CNS as often as possible, along with the CNS continuing to support staff.

Phase 3

Two follow up audits occurred: the first over one week in October 2013, and the second in March 2014, utilizing the same full criteria and methods as in the baseline audit.

Results

Ward 1 Medical Ward

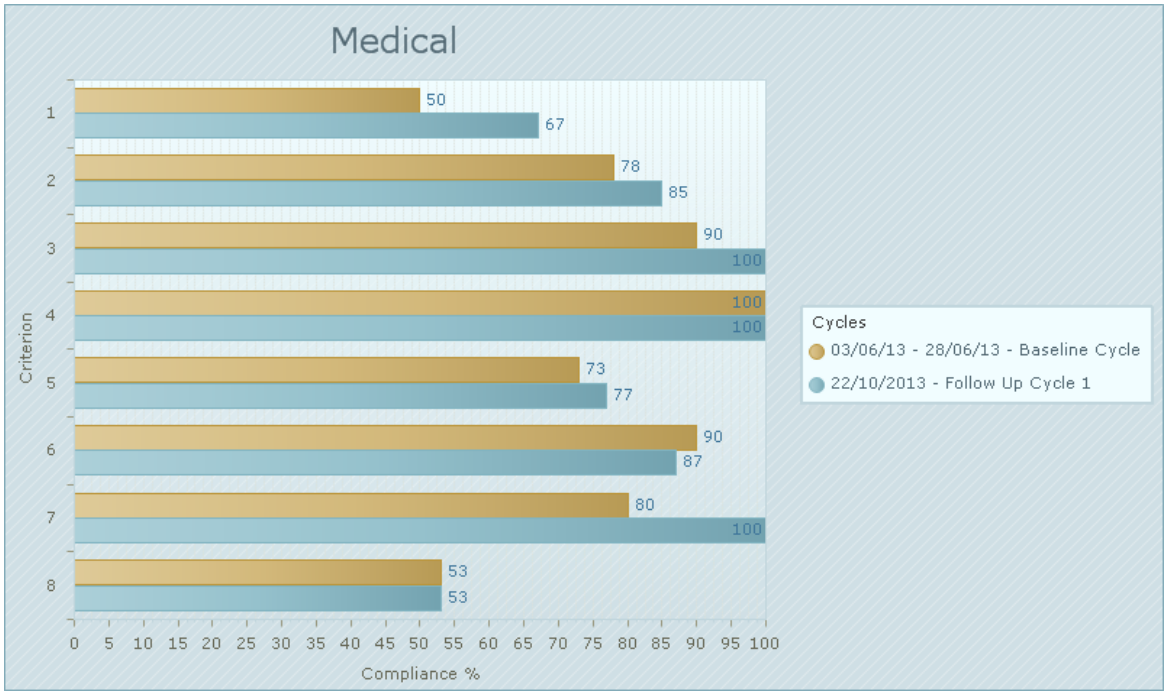

Figure 1: Baseline and follow up cycle 1 results for the medical ward

There are many improvements within all audit criteria.

1. *Fall risk assessment is done upon admission*. There was an improvement of 34% with an increase of 16% from the base line audit. (Not Applicable = 24. This was because they had been transferred into the ward and not as a direct admission. The Falls Risk Assessment on admission would have been completed in another area).

2. *Fall risk assessment is done upon transfer.* There was an improvement of 9% and increase of 7% from baseline auditing. (Not Applicable = 3 as the patients were direct admissions and not transfers).

3. *Reassessment occurs when there is a change in condition or following a fall.* This had already been high (90%) on the baseline audit but improved to 100% on follow-up. (Not Applicable = 9 as these patients did not meet the reassessment criteria).

4. *Patients who have experienced a fall are considered at high risk for future falls.* This remained at 100% for both audits. (Not Applicable = 26 as these patients had not sustained a fall).

5. *Fall risk assessment is done accurately using a falls assessment tool.* This increased by 4% from baseline auditing with an improvement of 5 %.(Not Applicable = 0).

6. *Healthcare professionals have received education regarding falls assessment and prevention strategies.* There was a decrease of 3% from baseline. (Not Applicable = 0).

7. *Patient and family education is carried out for patients at risk of falls.* This was one of the greatest improvements from the baseline audit. There was an increase of 20% from baseline with improvement of 25%. (Not Applicable = 10. These were patients from the Delirium Unit.).

8. *Targeted interventions are implemented according to risk factors.* These results remained identical as the baseline audit. (Not Applicable =0)

Surgical ward

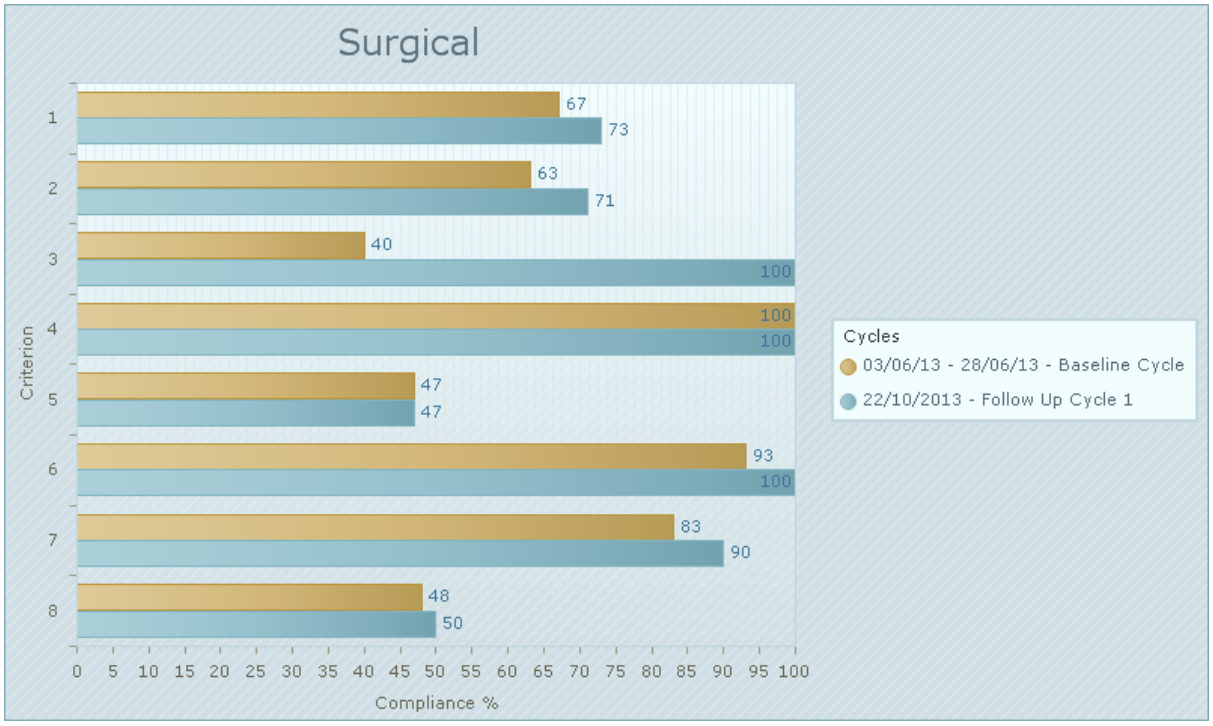

Figure 2: Baseline and follow up cycle 1 results for the surgical ward

There were many improvements within all audit criteria.

1. *Fall risk assessment is done upon admission*. There was an improvement of 9% with an increase of 6% from the base line audit. (Not Applicable = 0).

2. *Fall risk assessment is done upon transfer.* There was an improvement of 13% and increase of 8% from baseline auditing. (Not Applicable = 23 patients who were not transfers in but direct admissions to the area).

3. *Reassessment occurs when there is a change in condition or following a fall.* There has been an improvement of 50% with an increase of 20% from baseline audit. (Not Applicable = 10 patients who had not experienced a fall or change in condition)

4. *Patients who have experienced a fall are considered at high risk for future falls.* This remained at 100% for both audits. (Not Applicable = 23 patients had not experienced a fall).

5. *Fall risk assessment is done accurately using a falls assessment tool.* This remained at 47% for both audits. (Not Applicable = 0)

6. *Healthcare professionals have received education regarding falls assessment and prevention strategies.* There was an increase of 7% from baseline to 100% of staff asked about their education in falls management (Not Applicable = 0)

7. *Patient and family education is carried out for patients at risk of falls.* This improved by 8% with an increase of 7% from baseline audit. (Not Applicable = 0)

8. *Targeted interventions are implemented according to risk factors.* These results increased by 2% from the baseline audit. (Not Applicable =0)

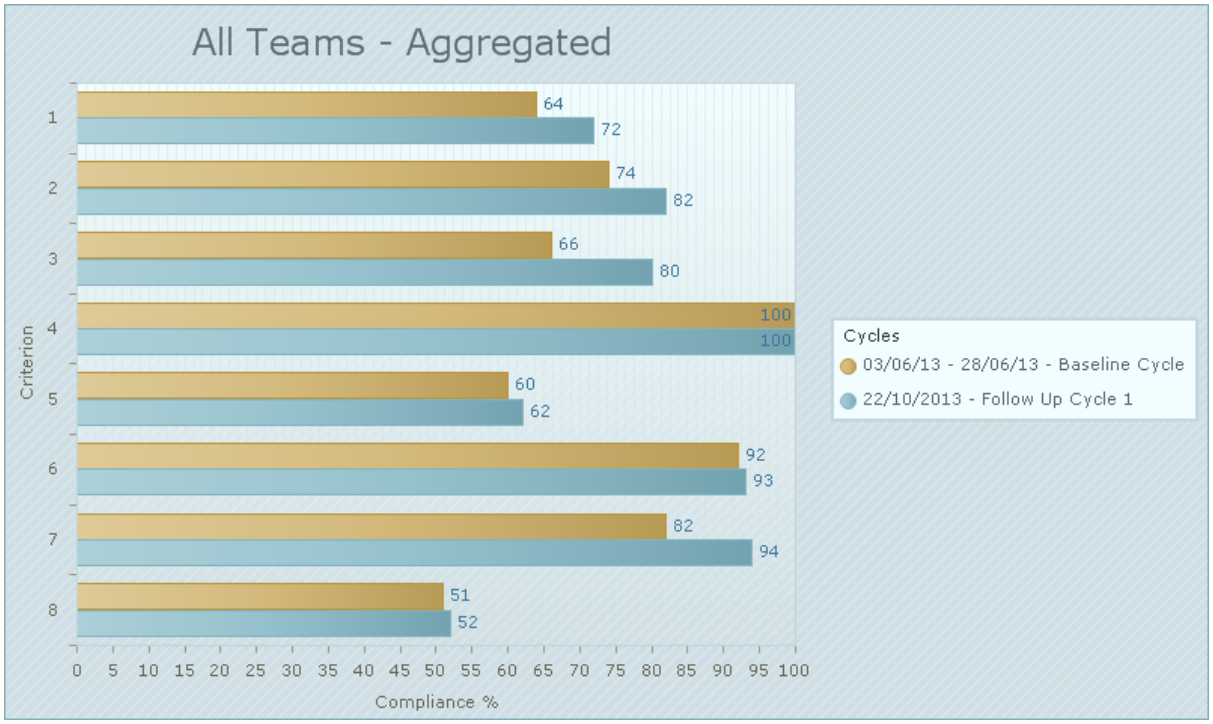

Figure 3: Aggregated baseline and follow up cycle 1 results (combined medical and surgical wards)

Follow up cycle 2

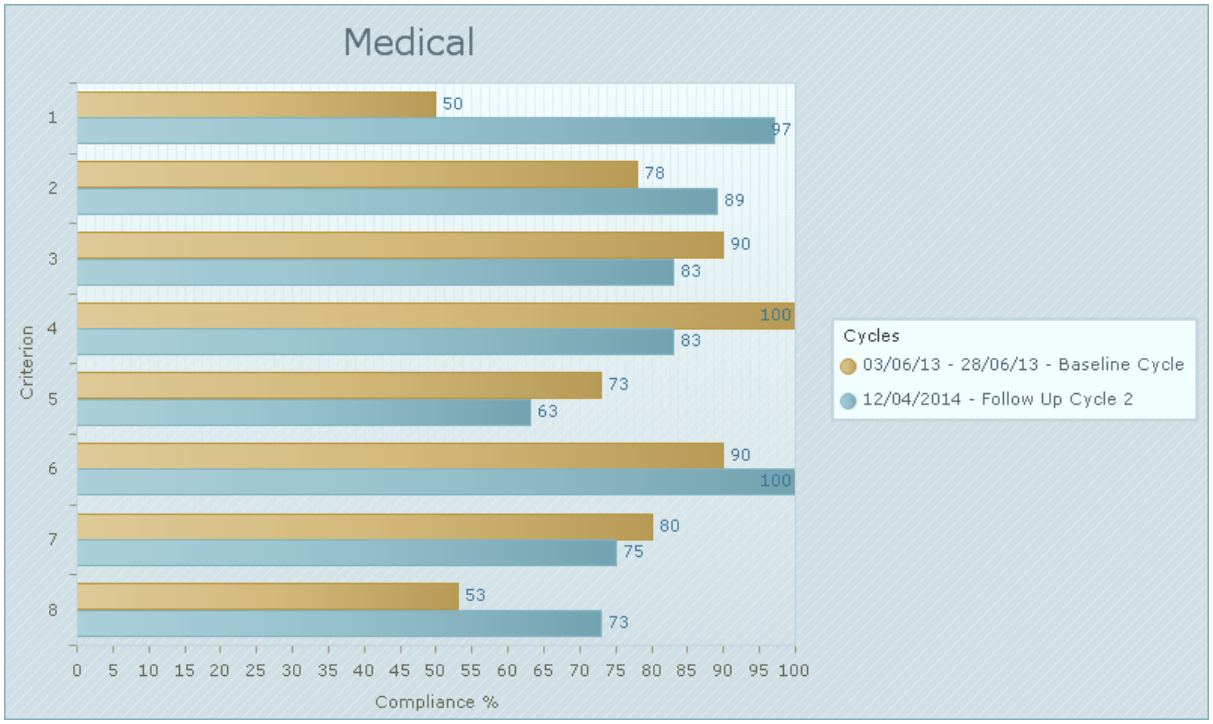

Figure 4: Baseline and follow up cycle 2 results for the medical ward

There are many improvements within some of the audit criteria indicating some sustainability.

1. Fall risk assessment is done upon admission. There was an improvement with an increase of 56% from the base line audit. (Not Applicable = 24. This ward receives more transfer patients than direct admissions).

2. Fall risk assessment is done upon transfer. There was an improvement increase of 10% from baseline auditing. (Not Applicable = 3 patients who were directly admitted to the area).

3. Reassessment occurs when there is a change in condition or following a fall. There has been a decrease of 8% from baseline audit. (Not Applicable = 9 patients who had not experienced a fall or change in condition)

4. Patients who have experienced a fall are considered at high risk for future falls. There was a decrease of 17% in this category. (Not Applicable = 24 patients had not experienced a fall).

5. Fall risk assessment is done accurately using a falls assessment tool. This decreased by 14%. (Not Applicable = 0)

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. There was an increase of 11% (Not Applicable = 0)

7. Patient and family education is carried out for patients at risk of falls. This decreased by 6% from baseline audit. (Not Applicable = 10. These patients were cognitively impaired)

8. Targeted interventions are implemented according to risk factors. These results increased by 38% from the baseline audit. (Not Applicable =0)

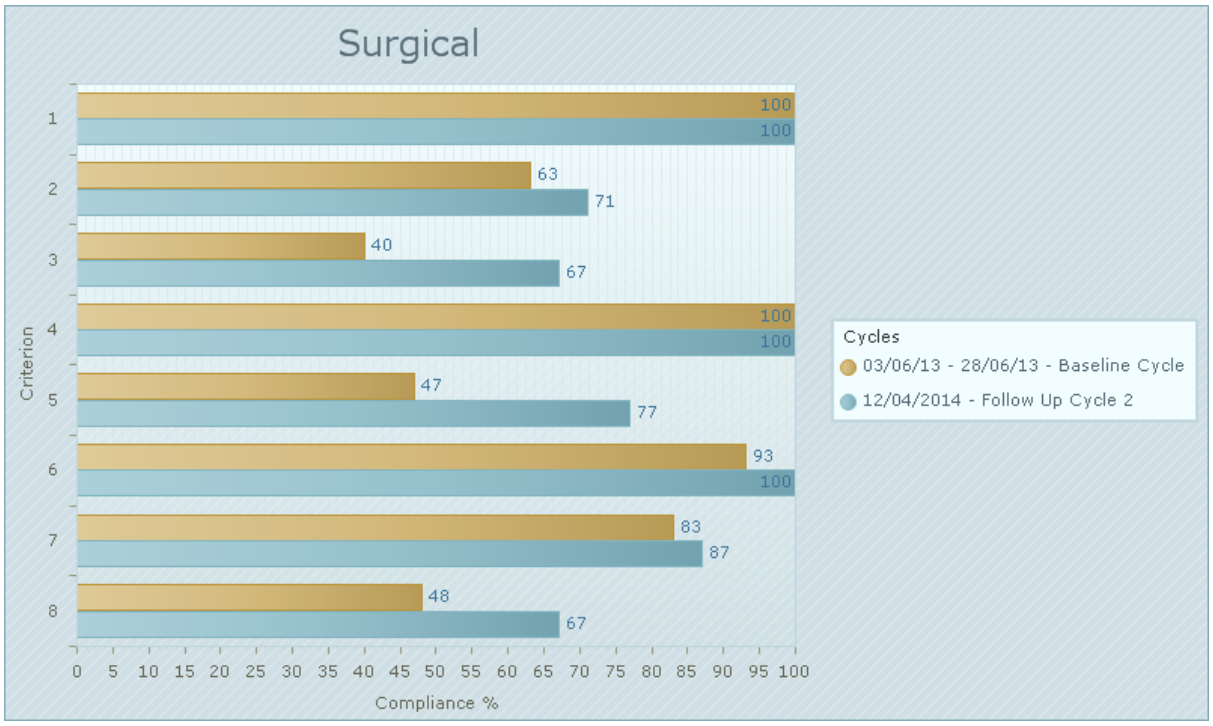

Figure 5: Baseline and follow up cycle 2 results for the surgical ward

There are many improvements within all audit criteria.

1. Fall risk assessment is done upon admission. This remained at 100%. (Not Applicable = 7).

2. Fall risk assessment is done upon transfer. There was an improvement of increase of 13% from baseline auditing. (Not Applicable = 23 patients who were not transfers in but direct admits to the area).

3. Reassessment occurs when there is a change in condition or following a fall. There has been an increase of 50% from baseline audit. (Not Applicable = 12 patients who had not experienced a fall or change in condition)

4. Patients who have experienced a fall are considered at high risk for future falls. This remained at 100% for both audits. (Not Applicable = 26 patients had not experienced a fall).

5. Fall risk assessment is done accurately using a falls assessment tool. This remained at 47%

for both audits. (Not Applicable = 0)

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. There was an increase of 8% (Not Applicable = 0)

7. Patient and family education is carried out for patients at risk of falls. There was an increase of 8%. (Not Applicable = 0)

8. Targeted interventions are implemented according to risk factors. These results increased by 4% from the baseline audit. (Not Applicable =0)

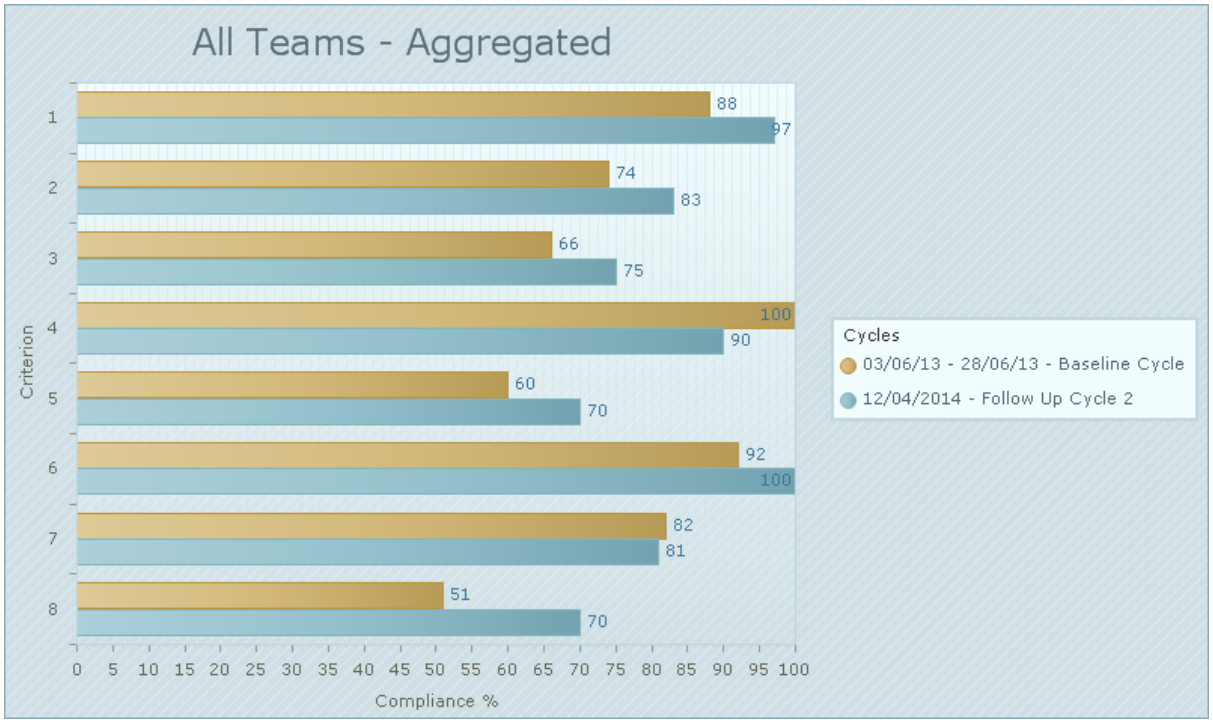

Figure 6: Aggregated baseline and follow up cycle 2 results (combined medical and surgical wards)

There are many improvements within all audit criteria.

1. Fall risk assessment is done upon admission. There was an increase of 10% from the base line audit. (Not Applicable = 28).

2. Fall risk assessment is done upon transfer. There was an increase of 12% from baseline auditing. (Not Applicable = 24).

3. Reassessment occurs when there is a change in condition or following a fall. There has been an increase of 14% from baseline audit. (Not Applicable = 24 patients)

4. Patients who have experienced a fall are considered at high risk for future falls. There was a

decrease of 10%. (Not Applicable = 50 patients had not experienced a fall).

5. Fall risk assessment is done accurately using a falls assessment tool. There was an increase of 17%. (Not Applicable = 0)

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. There was an increase of 8.7% (Not Applicable = 0)

7. Patient and family education is carried out for patients at risk of falls. This had decreased by 1 %(Not Applicable = 2)

8. Targeted interventions are implemented according to risk factors. These results increased by 37% from the baseline audit. (Not Applicable =0)

Discussion

Overall, there has been an increase in compliance in both clinical settings, and all but 2 of the audit criteria. There are clear areas that require improvement including completion of FRMT on admission, accurate assessment of falls risk and implementation of targeted interventions. The FRMT lists simple, evidence based interventions to implement.[14] From the audits of both areas, these interventions generally are not in place. Risk factors that are missing interventions are related to the risk factors of cognition impairment and medication use. This indicates that further work needs to be completed in determining why this is occurring. These reasons will be diverse but need addressing.

Between cycle one and cycle two it was decided that no specific intervention would be put into place. Continuing education that was already in place continued along with ward CNSs driving any other ward-based interventions. These related to proactive discussion with staff, constant encouragement, and reminders about completion of the FRMT and implementation of interventions.

Falls rates did not change on the two wards during the course of this implementation project. With the increased focus on assessment and intervention, it was expected that falls would reduce even further. Investigation for the reasons for this occurrence is required, to determine whether it may be due to individual clinical practice, ward activities, or the ward culture. We remain uncertain as to the reason for the falls rates not reducing despite auditing intervention.

Fall risk assessment is done upon transfer – this improved in compliance from 56% (ward 1) to a continuing 100% (ward 2). Ward 1 had chosen this as a focus area, and was successful in improving this criterion. This area is vital to ensure correct interventions are in place to increase the patient's safety and reduce the risk of falling. Changing environments for patients in hospital increases their risk of falls.[5] The interventions to ensure this best practice initiative was improved included the education of nursing staff, the introduction of a dedicated nurse who discusses falls risks and the FMRT with staff on each shift, and the multidisciplinary organisation wide promotion of falls education for all patients, families and carers.

Reassessment occurs when there is a change in condition or following a fall - improvement in compliance from both wards was 10% (ward 1), and 13% (ward 2). Both areas acknowledged that reassessment following a change of medical condition has poor compliance. Staff may not recognise that a patient's risk factors change following a change in their medical condition. While the strategy of having a local nurse discuss falls risk with nurses on the shift appears to have had some success,

further education continues to be required in this area.

Ward 2 also successfully improved on the criterion of reassessment of falls risk on medical change or post fall with simple strategies despite significant barriers.

Sustainability for both areas is unknown. Education and awareness along with auditing and feedback of results is required.

Falls Rates

Ward 1

May – October 2012 = 34

May – October 2013 = 38

Ward 2

May – October 2012 = 25

May – October 2013 = 25

Discussion of the other criterion results:

Fall risk assessment is done upon admission –this improved in both areas by 44% (ward 2) to 56% (ward 1) . Policy demands that all patients regardless of age need to be screened for falls risk. Both areas require further improvement in this area. By not assessing and putting appropriate interventions in place, then patients may be put at risk of falls. Further intervention to improve this category is indicated.

Fall risk assessment is done accurately using a falls assessment tool – despite education, staff are not recognising all risk factors. This requires further investigation. This also accompanies the criterion *targeted interventions are implemented according to risk factors.* Risk factors can be very easy to find and are detailed on the FRMT alongside appropriate interventions. It may be expected that even staff with minimal experience would be able to recognise the risk factor and implement an appropriate strategy. This requires further investigation.

Healthcare professionals have received education regarding falls assessment and prevention strategies – the organisation has a comprehensive education programme for all disciplines of staff. Falls management is accessible and delivered at multiple portals within the organisation. All staff receives at least one falls education session per year.

*Patient and family education is carried out for patients at risk of falls - a*gain, there has been an organisation wide drive to ensure patients, family and carers receive education, and this seems to be having results. The ward CNS drives these initiatives within their clinical area. The MDT has also improved this area with a patient education drive. Bright green stickers had been implemented for the medical notes indicating that patient/family/carer education had been delivered. This generated inquiries and conversation amongst staff, and had clearly raised awareness. A model of patient

education is due to be released next year and so it is hoped that repeating this audit will show results that are more positive.

Conclusion

Falls risk management is essential to maintain the safety of patients in hospital. Clinical audits seek to improve patient care and outcomes through a systematic review of care against criteria and with the implementation of change strategies. Support for the ward leaders and staff needs to be consistent and ongoing with prominent education and development of resources, along with consideration of significant system and organisational wide events.

Large systemic changes are extremely challenging for all staff, and are recognised as a time of potential anxiety, and there may be a period of some resistance before acceptance occurs. It cannot be underestimated the amount of work that is required when implementing large system changes and the impact it can have. This may impede smaller changes at the local level. However, the results will ensure the optimal care is delivered to the patient and that the appropriate systems are in place to ensure this occurs.

The audit results indicate that the changes can be sustained with local leadership and staff education. There are improvements that can be made and the organisation will look to address these. Despite significant barriers, positive results and improvements in the delivery of optimal evidenced based care can be achieved from simple strategies.

Conflict of Interest – nil

Acknowledgements

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Michele Collins: Clinical Nurse Specialist

Tanya Gawthorne: Director of Safety, Quality & Performance

Sue Davis: Director of Corporate Nursing and Education

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Appendix 1: GRIP matrix

Barrier	Strategy	Resources	Outcomes
Implementation and pending accreditation of the Australian Commission of Health Care Standards was a significant barrier for this project.			
Multiple changes in practice for all staff leading to information overload and significant change fatigue. Because of the system changes the project was unable to be given the required attention by all staff involved.	Continuing support for the ward areas Assistance in education when able	Ward leaders continue to reinforce the project at meetings and handovers	Continued support from ward areas leads to greater compliance with the Falls Risk Assessment.
Project leader implementing Standard 10 across the organisation and with each discipline resulted in less support and education given to the areas taking part in the Audit.			

The identification and management of patients at high risk of falls in the acute care setting: a best practice implementation project

Project Team

Aileen Kitson, RN, Clinical Risk Coordinator, St John of God Geelong Hospital

Frances Jordan, Deputy Director of Nursing, St John of God Geelong Hospital

Andriy Kurtsev, Nurse Unit Manager 3 East, St John of God Geelong Hospital

Raelene Abbott, Associate Nurse Unit Manager 2 South, St John of God Geelong Hospital

Primary contact: Aileen Kitson

email: aileen.kitson@sjog.org.au

Key Dates:
Commencement date: May 20, 2013

Completion Date: May 30, 2014

Executive Summary

Background

Falls are a significant healthcare issue within the acute hospital setting. Admission to hospital is often associated with changes in physical and cognitive condition, which in combination with unfamiliar surroundings contributes to an increased risk of falling in a hospital setting.

Objectives

This project aimed to conduct an evidence based clinical audit, identifying barriers to best practice and implementing strategies to reduce the risk of falls in an acute hospital setting.

Methods

This project utilised the Joanna Briggs Institute's Practical Application of Clinical Evidence System and Getting Research into Practice audit tool for promoting change in healthcare clinical practice. A baseline audit was conducted, and a further two follow-up cycles following implementation of best practice.

Results

The project was very successful in that compliance with all eight criteria improved from baseline audit results over the period of the project. There is still room for improvement as results of the second post implementation audit indicated less improvement as compared with the first post implementation audit.

Conclusion

Whilst the results of the project have seen improved compliance with the eight best practice criteria there is yet to be seen a significant, consistent decrease in falls rates. Ongoing education, measurement and monitoring is required ensure sustainability of practice change.

Key Words: Fall, injury, best practice, risk assessment, implementation.

Background

A fall, as defined by the World Health Organisation, is "an event which results in a person coming to rest inadvertently on the ground, or floor or other lower level". [1] Falls are a significant health care issue with approximately one third of people aged sixty-five years and over suffering at least one fall per year.[2] Admission to hospital is often associated with changes in physical and cognitive condition, which in combination with unfamiliar surroundings contributes to the increased risk of falling amongst this age group in a hospital setting.[3]

Falls come at a high cost for individuals in terms of injuries such as hip and wrist fractures, head injuries and the like.[4] Falls can also lead to a decrease in function and quality of life, and complications such as loss of confidence and fear of falling again. For healthcare facilities, falls may add to the cost of care by increasing length of stay, additional need for diagnostic procedures and even unplanned surgeries.[5]

St John of God Geelong Hospital (SJGGH) is a division of St John of God Healthcare; a catholic, not for profit healthcare provider with private hospital, home nursing, pathology and social outreach and advocacy services throughout Australia, New Zealand and the wider Asia Pacific region. SJGGH is a 184 bed, private hospital situated in the regional Victorian city of Geelong. The hospital has no designated medical or surgical wards, and provides its general surgery, general medicine, oncology and palliative care services in mixed wards.

The hospital wide fall rate for the period May 2012-May 2013 ranged from 0.26-2.90 falls per thousand bed days. However, the two wards chosen for the study had average rates of 3.03 and 3.31 falls per thousand bed days during the same period. On closer analysis of the falls data in both wards, SJGGH through involvement in the St John of God Healthcare Falls Prevention and Management Reference group were looking for evidence based activities aimed at reducing the number of falls and the severity of injuries from falls.

There are a number of factors that can contribute to the risk of a patient falling, some of the most often listed in the literature are a history of falls, confusion, the number and type of medications

prescribed, environmental factors and the behaviour of clinicians.[6] The development and continuous improvement of an 'in hospital falls prevention program' is seen as the most reliable way to reduce the number of in hospital falls, and the severity of injuries from falls.

At the core of any falls prevention program is the need for accurate assessment of a patient's falls risk and the implementation of an individualised, targeted multi factorial falls prevention plan to mitigate the risk.[7]

The Ontario Modified Stratify (Sydney Scoring) Falls Risk Assessment Tool (FRAT) was introduced in June 2012. The FRAT is a validated tool and was selected from the tools recommended in the Preventing Falls and Harm from Falls in Older People: Best Practice Guidelines for Australian Hospitals.[8] The FRAT offered a simple and quick evaluation of falls risk and targeted interventions for the level of risk identified. The FRAT formed the basis of SJGGH's falls prevention and management program.

At the time of the introduction of the tool, an intensive education program was undertaken to inform caregivers of the introduction of the tool, the reasons why a change was necessary and how to use the tool. The group and divisional policies on falls prevention and management were also revised and changes were made to ensure compliance with the guidelines. Auditing to measure compliance with falls risk assessment and targeted intervention had been undertaken and despite increasing compliance, falls rates were rising in the wards chosen for the project.

The aim of this best practice implementation project was to work through the clinical audit process to assess current compliance with identified best practice falls prevention strategies and implement strategies to reduce the falls rate by driving measurable improvement and change at SJGGH.

Objectives

- To audit current practice in relation to identifying and managing patients at risk of falls using the Joanna Briggs Institute (JBI) Practical Application of Clinical Evidence System (PACES) program.
- To develop an action plan based on the findings of the audit using the JBI Getting Research into Practice (GRIP) process.
- To re- audit after the implementation of the action plan to identify changes in practice and inform ongoing work.
- To conduct a further audit to measure sustainability of any changes in practice.

Methods

The topic for the site specific best practice implementation project was decided with input from the Director of Nursing prior to attendance at the JBI Clinical Fellowship program for the initial introduction and training in clinical leadership and clinical audit training, conducted in May 2013.

As this is a multi-site project the audit criteria with some input from program participants were predetermined by JBI, as was the sample size of 30 per ward for each criterion. As both wards in the audit have a mixed medical/surgical population, care was taken to include 15 medical patients and 15 surgical patients on each ward for both the baseline and follow up audits.

Ethics approval was gained through The Royal Adelaide Hospital's Human Research Ethics Committee (HREC). This was used to submit the proposal to the St John of God Healthcare HREC as a low risk application and approval was duly gained.

The best practice implementation project was undertaken in four phases.

Phase 1

The project team members were decided in conjunction with the Deputy Director of Nursing but as there were time constraints and much activity with the approaching accreditation it was decided to conduct the audit and compile the results before calling the project team together.
A baseline audit was conducted by the project lead against the eight predetermined criteria, as located on JBI PACES.

1. Falls risk assessment is completed on admission
2. Falls risk assessment is done accurately using a falls risk assessment tool
3. Falls risk assessment is repeated upon transfer
4. Reassessment occurs when there is a change in condition or following a fall
5. Patients who have experienced a fall are considered at high risk for future falls
6. Healthcare professionals have received education regarding falls risk assessment and fall prevention strategies
7. Patient and family education occurs for patients at risk of falls
8. Targeted interventions are implemented according to risk factors identified

The responses to criteria were determined by examination of the patient record and where necessary, patient interview. Caregiver responses will be sought for criteria six. The audit will be conducted manually and the data entered into the PACES program.

Phase 2

The results of the baseline audit were presented in graph format to the project team. The aims of the Getting Research into Practice (GRIP) were explained to the project team, and of the processes involved and the requirements of the GRIP process were discussed .The project team members examined the data and decided to concentrate on Criteria 6: Healthcare professionals have received education regarding falls risk assessment and fall prevention strategies and Criteria 7: Patient and family education occurs for patients at risk of falls. The project team identified barriers to compliance with these two criteria and decided on an action plan. The barriers and action plan were entered as a table in word rather than the GRIP Tool.

Phase 3

A reaudit of the same 8 criteria was conducted by the project lead during the fortnight ending 31st October 2013. Again the responses to criteria were determined by examination of the patient record and where necessary, patient interview. Caregiver responses were sought for criteria six. The audit was conducted manually and the data entered into the PACES program.

Phase 4

A second post implementation audit was conducted by the project lead using the same process and criteria as in the baseline and 1st post implementation audits. The audit was conducted during the fortnight ending March 31 2014. The purpose of the 2nd post implementation audit was to measure the sustainability of any change in practice demonstrated in the 1st post implementation audit.

Results

Baseline Audit

The percentages for compliance with each audit criterion in the baseline audit for South ward, East ward, as well as aggregated data are shown in Figure 1, 2 and 3.

As can be seen from the results of the Baseline audit, compliance was lowest for criteria 6 and 7 in both wards. The aggregated data shows compliance for caregiver education at 12% and patient education at 18%.Compliance with all other criteria were above 50% on both wards.

The project team met only once. The aims of the project were discussed and the results of the baseline audit were examined. The decision to concentrate on the 2 criteria with the lowest compliance score was made. Barriers, strategies, available resources and desired outcomes were brainstormed and documented. The project lead then created a word document outlining the results of the meeting and sent it out to the project team members. The project lead then led the changes and additions to the divisional fall prevention policy and fall rate reporting and the dissemination of information and education regarding the changes in conjunction with team members and learning and development caregivers.

GRIP strategy

Table 1 shows the barriers and strategies as identified by the project team:

Table 1: GRIP Matrix

Barrier	Strategy	Resources	Outcomes
Availability of and access to a Falls prevention education package. Time factor involved to develop an education package to meet requirements	Review what is available and accessible.	Falls prevention PDA available on intranet (unsatisfactory, too old and contains information contrary to policy) Training tool for the use of the FRAT available on Public drive on each computer E learning site for all mandatory and essential training is being rolled out	Unable to measure access to PDA by caregivers. The PDA does not clearly define the relationship between falls risk factors, evidence based best practice strategies for falls prevention in hospitals and the Falls Risk Assessment Tool(FRAT) No means of measuring number of caregivers who access the tool Unavailable during

		across all the SJG divisions but will not available be at Geelong until October 2013	project
The divisional Falls Prevention policy and procedure was not well known to caregivers.	The addition of a post fall management flow chart to the existing policy provided an opportunity to draw attention to the policy.	Measure access to the policy with a read and sign register.	Awareness to the falls prevention policy and the requirement of caregivers to be actively involved in the prevention of falls and harm from falls was measurably raised
Availability of meaningful data on falls rates per department.	"Excellence Boards" were introduced in each clinical department prior to accreditation. The boards were intended for the display of progress towards compliance with National Standards Falls data can be displayed in each clinical department.	The quarterly Nursing Sensitive Indicator report to be displayed on the Excellence board in each clinical department. Falls prevention introduced as a standing agenda item for the monthly clinical department meetings	The quarterly report is displayed in each clinical department. Caregivers in each department have access to the falls rates and the rate of injuries from falls for their department. Falls rates and falls prevention are discussed at each clinical department meeting.
Competing priorities involved in meeting requirements of all standards to ensure a successful OWS and accreditation and time constraints	Concentrating on caregiver education should lead to improved compliance in each of the other criteria.		Raised awareness of falls risk and the requirement for all caregivers to assess falls risk and implement strategies to reduce the risk of a fall including patient/family education.
Perception of falls prevention as a stand alone issue	Include communication of falls risk as an element of clinical handover and on the handover tool.	Handover tool Alert sheet Identifiers	Adjustment to format of handover tool Include falls as a clinical risk Develop an identifier for caregivers for use on whiteboard of high

	Partnering with Consumers	Caregivers	risk patients. Caregivers include patients and their families in fall prevention planning.
Availability of patient family education materials	"Don't Fall For It" Falls prevention information book sourced from the Commonwealth Government to be made available on the wards to be handed out to all high & very High risk patients and /or their family members	Falls prevention information is included in the Patient Information booklet handed out with admission paperwork for elective patients and the bed side information booklets.	Unable to ascertain if patients have read the pre admission information. Most seem unaware of the information in the bedside booklet until it is pointed out to them "Don't fall for it" has not been widely distributed.

Post Implementation Audits

Follow up Cycle 1:

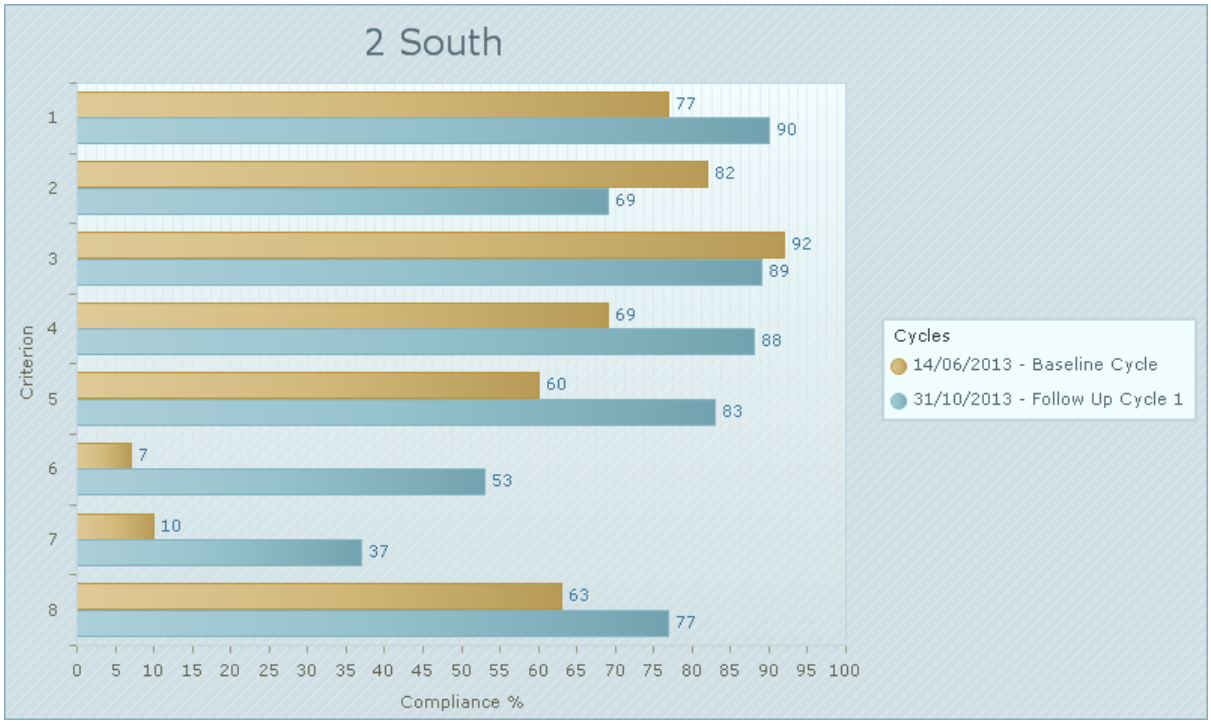

Figure 1: Baseline and follow up cycle 1 for Ward 2 South

1. Fall risk assessment is done upon admission. (30 of 30 samples taken)
2. Fall risk assessment is done upon transfer. (30 of 30 samples taken)
3. Reassessment occurs when there is a change in condition or following a fall. (30 of 30 samples taken)
4. Patients who have experienced a fall are considered at high risk for future falls. (30 of 30 samples taken)
5. Fall risk assessment is done accurately using a falls assessment tool. (30 of 30 samples taken)
6. Healthcare professionals have received education regarding falls assessment and prevention strategies. (30 of 30 samples taken)
7. Patient and family education is carried out for patients at risk of falls. (30 of 30 samples taken)
8. Targeted interventions are implemented according to risk factors. (30 of 30 samples taken)

Note: Criteria 2: There were 17 not applicable responses for this criterion

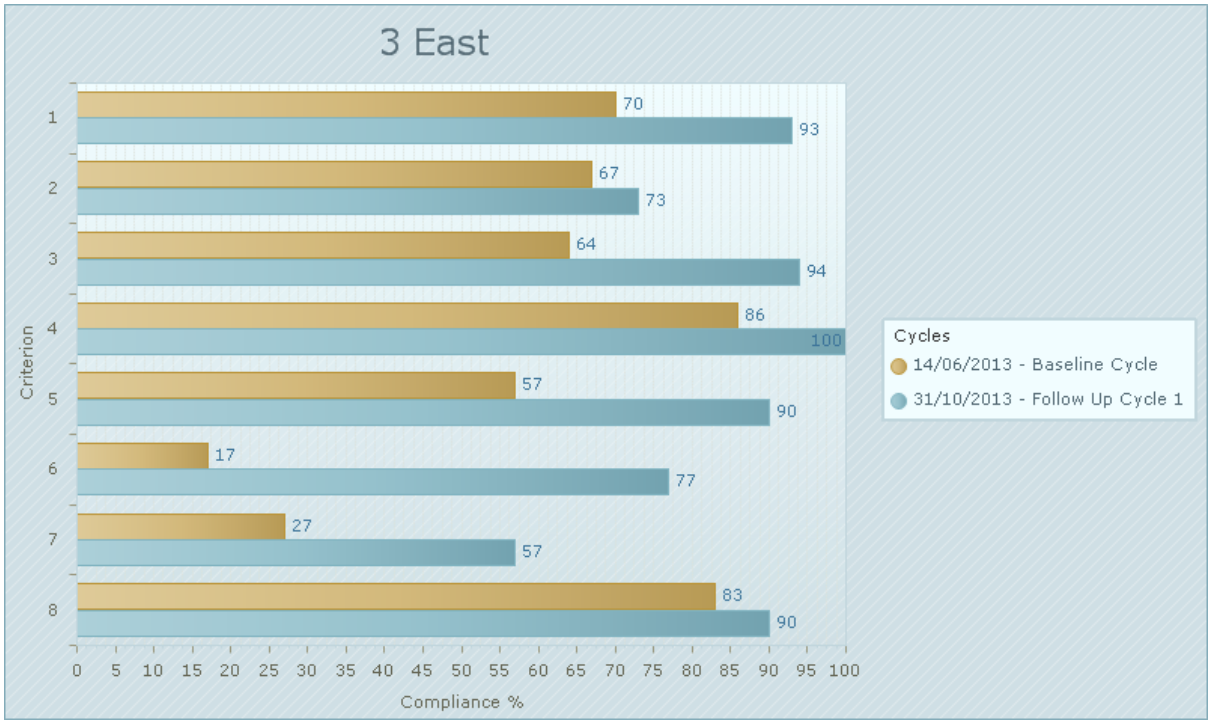

Figure 2: Baseline and follow up cycle 1 for Ward 3 East

Note: Criteria 2: There were 19 not applicable responses for this criterion.

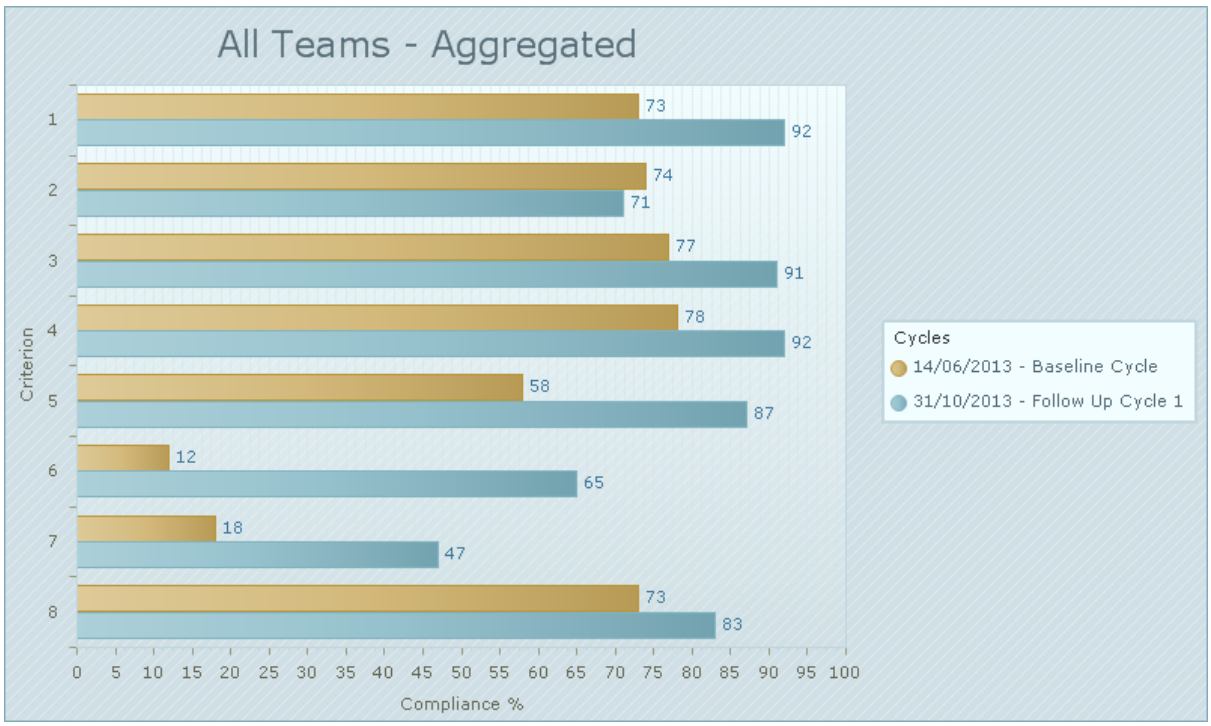

Figure 3: Baseline and follow up cycle 1 results (combined wards)

The results of the first follow up audit were very positive showing improvement in compliance against all audit criteria particularly the criteria targeted in the GRIP process. The aggregated data shows the number of caregivers who received education across both wards increased from a low 12% in the baseline audit to 65% in the follow up audit representing a 53% improvement in compliance. The number of patients who received education also increased by a more modest 29% but was still pleasing.

In the period between the first and second follow up audits, “My Learning” an online platform for all caregiver mandatory and essential training was introduced at SJG Geelong Hospital. The Learning platform has the capacity to record completion rates of training and includes a falls prevention learning package however, caregivers have until June 2014 to complete the package.

Further education around falls prevention was provided by sales representatives for various fall prevention products which were trialled in the hospital during the period between the first and second post implementation audits.

Follow up cycle 2

The percentage of compliance for the audit criteria found in the follow up Cycle 2 when compared to baseline audit are presented in Figures 4 (South ward), Figure 5 (East ward) and Figure 6 (aggregated – both wards combined).

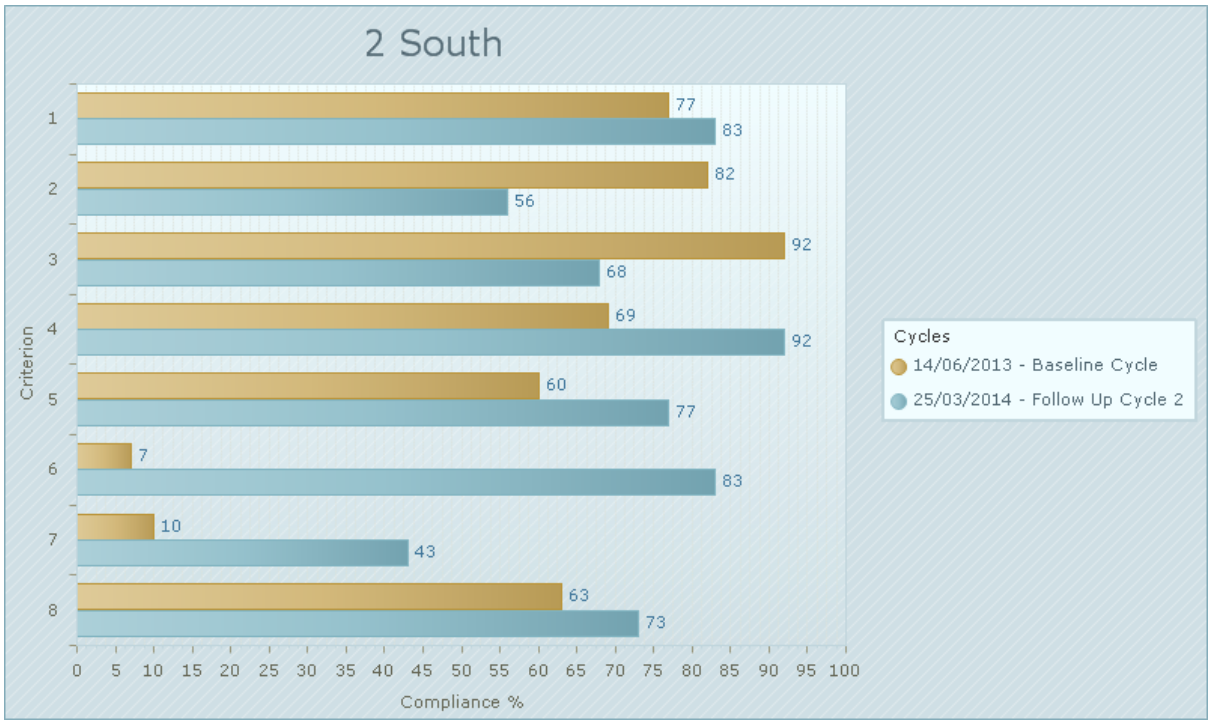

Figure 4: Baseline and follow up cycle 2 for ward 2 South

1. Fall risk assessment is done upon admission. (30 of 30 samples taken)
2. Fall risk assessment is done upon transfer. (30 of 30 samples taken)
3. Reassessment occurs when there is a change in condition or following a fall. (30 of 30 samples taken)
4. Patients who have experienced a fall are considered at high risk for future falls. (30 of 30 samples taken)
5. Fall risk assessment is done accurately using a falls assessment tool. (30 of 30 samples taken)
6. Healthcare professionals have received education regarding falls assessment and prevention strategies. (30 of 30 samples taken)
7. Patient and family education is carried out for patients at risk of falls. (30 of 30 samples taken)
8. Targeted interventions are implemented according to risk factors. (30 of 30 samples taken)

Note: Criteria 2: There were 21 not applicable responses to this criterion in the 2nd post implementation audit.

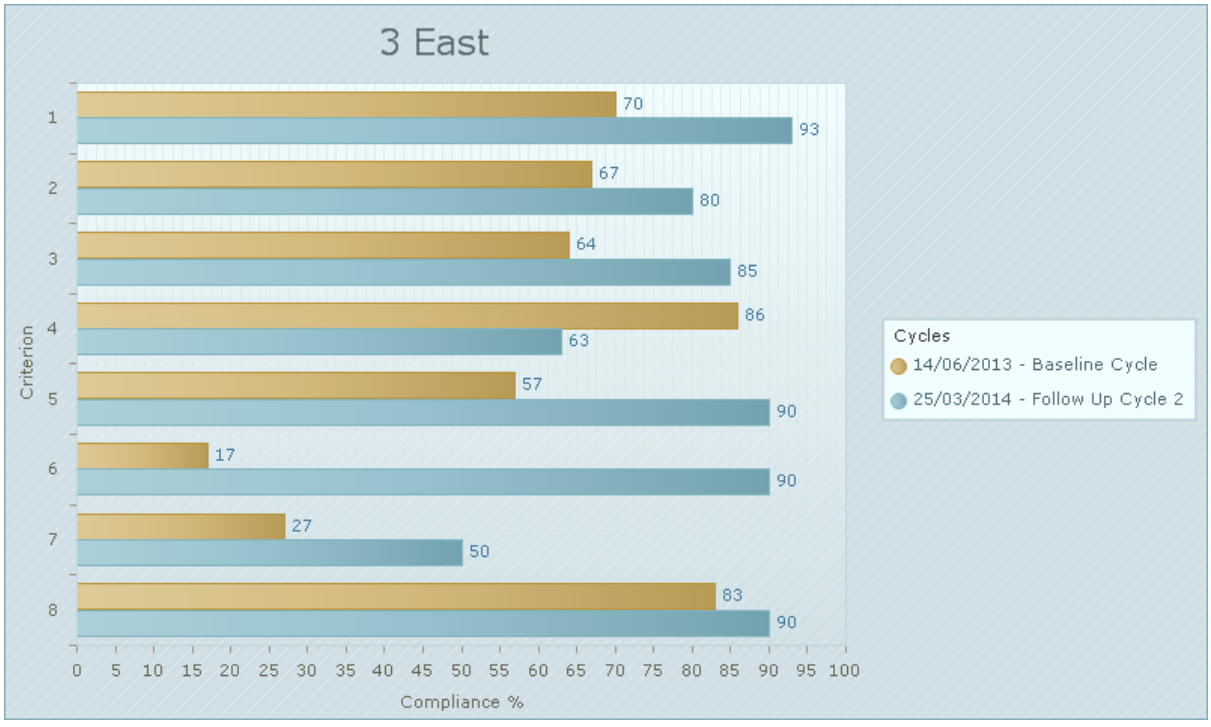

Figure 5: Baseline and follow up cycle 2 for ward 3 East

Note Criteria 2: There were 20 not applicable responses for this criterion in the 2nd post implementation audit.

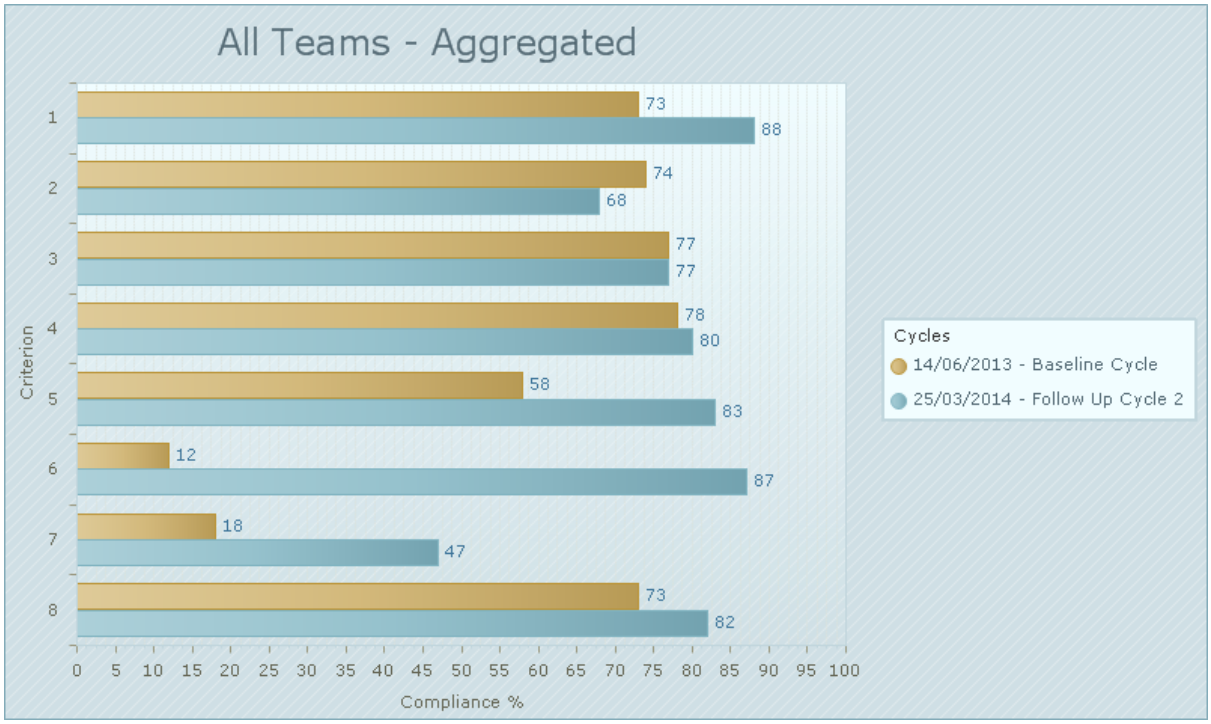

Figure 6: Baseline and follow up cycle 2 results (combined wards)

Discussion

The falls prevention project was undertaken during a period of great activity and change as the hospital worked towards accreditation against the then newly introduced NSQHS Standards. There were many competing priorities and these, whilst deflecting some attention away from the falls prevention project also provided a spotlight on the need for measuring performance and demonstrating continuous improvements in care.

The baseline audit placed a spotlight on the lack of both caregiver and patient/family education. The available educational materials were not of high quality or completely relevant to SJGGH and there was no method of measuring caregiver access to the falls prevention education materials available. An on line education platform is now available with falls prevention education as essential training. Caregivers have till June 30 to complete. Caregiver access is measurable.

The initial improvement in compliance across all 8 criteria was marked despite only specific actions being taken to improve criteria 6 and 7. Improvements were not as obvious in the second post implementation audit and compliance with criteria 3 “reassessment occurs when there is a change in condition or following a fall” decreased on both wards (21% 2 South and 9% 3 East) which may indicate an area for future education.

An audit tool and program has been developed by St John of God Health Care and includes the 8 best practice falls prevention criteria audited against in this project and a number of others. Audits will be conducted six monthly and results reported to the ward and the hospital Quality and Risk Committee. The measurement and display of the falls rates per thousand bed days for the hospital

and individual wards has been seen as a positive and will continue as will the discussion of individual ward results at their ward meetings.

The least improvement was shown in the result for criteria 7 “Patient and family education is carried out for patients at risk of falls” compliance was measured at 43% 2 South and 50% 3 East in the second post implementation audit with an aggregate compliance at 47%. Further work needs to be undertaken to ensure that patients and their families receive falls prevention education and are involved in planning and actions taken to prevent falls in hospital.

Conclusion

The project was very successful in that compliance with all eight criteria improved from baseline audit results (June 2013) over the period of the project. There is still room for improvement as results of the second post implementation audit indicated less improvement as compared with the first post implementation audit.

It is essential that audits continue regularly to monitor compliance with best practice falls prevention activities. The ongoing measurement of falls rates, there timely publication and display in clinical departments is essential as is the timely analysis of falls as they occur to identify possible contributing factors and opportunities for improvement in practice. The ongoing education of caregivers in falls prevention best practice and increased awareness of their role in falls prevention is essential to a successful falls prevention program at St John of God Geelong Hospital. Equally important is the inclusion of patients and their families in fall prevention education and the development of their fall prevention plans an area needing further attention and work.

The results of the project have been very positive in that improved compliance to each of the criteria as a result of actions taken in response to the baseline audit results and the GRIP process. The results of the second post implementation audit whilst still positive did not show the marked improvements of the first post implementation audit. The falls rate has not shown a marked decrease either indicating the need for further work to ensure real and sustainable change.

Conflict of Interest No conflict of interest has been identified.

Acknowledgements

Thank you to the Hospital Contribution Fund (HCF) for providing funding to the Joanna Briggs Institute (JBI) to undertake this project. A further thank you to JBI for providing support and training in the clinical audit programme and falls prevention audit.

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Falls prevention in the acute care setting with a focus on the accurate completion of a falls risk assessment tool: a best practice implementation project

Pip Petrucci, Coordinator Clinical Practice and Policy, St John of God Murdoch Hospital.

Sarah-Jayne Powell, Nurse Manager St Michaels Ward and Falls Coordinator St John of God Murdoch Hospital

Tony Patton, Nurse Manager Thomas Furlong Ward St John of God Murdoch Hospital

Adam Coleman, Director of Nursing St John of God Murdoch Hospital

Christelle Gibson, Manager Clinical Risk St John of God Murdoch Hospital

Rita McIlduff, Manager Quality St John of God Murdoch Hospital

Primary Contact:

Name: Pip Petrucci

Work Email: Paul.Petrucci@sjog.org.au

Key Dates

Commencement date: 20 May 2013

Completion date: 20 June 2014

Executive Summary

Background

Falls can have an impact on hospital resources including pressure on nursing productivity. As part of a wider project under the guidance of the Joanna Briggs Institute, St John of God Murdoch Hospital took part in a project designed to investigate if a falls risk assessment was done accurately and targeted interventions implemented appropriately.

Objectives

The aim of this project was to audit current compliance with falls risk assessment including how accurately it was being completed, the implementation of targeted interventions and compliance with mandatory education.

Methods

An evidence based audit on falls risk assessment, and implementation of targeted interventions.

Results

With better communication in key areas, compliance improved to desired levels.

Conclusions

The results showed that increased communication in key areas can affect outcomes. Reducing the amount of paperwork also improved compliance with risk assessment tools.

Keywords

Falls, risk assessment, education, policy, patient, nurse

Background

Injuries sustained from falls are considered to be one of the leading causes of mortality and morbidity in people aged over 65 in hospitals. [1] The risk of falling for this group increases within the acute hospital setting. [2] Falls rates within the acute hospital setting range between 2-5% [3], with a higher rate of falls experienced in public hospitals versus private hospitals. [4]

Whilst most patients who experience a fall in hospital don't injure themselves, there are still many falls that do result in a serious injury. Falls can have an impact on hospital resources including pressure on nursing productivity and increased length of stay, costs relating to additional diagnostic and interventional procedures and decreased patient satisfaction. The greatest impact though, is on the individual who experienced the fall and their family. Many patients who experienced a fall that resulted in injury will have a diminished quality of life [5], suffer psychological effects including depression and fear of repeat falls and many are institutionalised into residential homes resulting in a loss of all or most of their independence.

Successful falls prevention programs within the acute care setting will reduce the financial burden facing health service providers, whilst ensuring that the patients have the best possible outcomes during their hospitalisation and return back into their home sooner, maintaining the same quality of life that was expected for them on their admission.

Predicting falls can be a difficult task. There are many factors that contribute to a patient falling, some of the most commonly cited are having a history of falls, the number and types of medications that a patient is taking, cognitive impairment, changes to a person's environment and the behaviour of clinicians.[6] In hospital falls prevention programs are the cornerstone for reducing one of the highest reported adverse hospital outcomes. Implementation of individualized, targeted multifactorial falls prevention strategies is imperative to a successful inpatient falls prevention program. [7] However, clinicians are often confused on what strategies should be implemented for particular patients or overlook strategies that would be appropriate for implementation.

St John of God Murdoch Hospital, part of St John of God Healthcare Inc, is a 350 bed acute care private hospital, situated in the Perth Metropolitan area, Western Australia.

This project investigated if a falls risk assessment was done accurately and if targeted interventions appropriate for that individual had been implemented. The audits were conducted in two wards, one an acute medical ward – with the majority of admissions being in the specialties of cardiac and oncology. The other a surgical ward – with the majority of admissions being in the specialties of

neurosurgery and orthopaedics. The decision was made to use these two wards as they had the highest falls rates.

In the 12 months to April 2013 the hospital targeted in this project reported 349 falls, which translates to a rate of 3.8 falls per 1000 bed days. Of these falls, 126 were classified as falls where the patient's condition required intervention, with seven resulting in fractures or closed head injuries. The number of falls occurring in patients 65 years or older was 265 or 76%. Specifically, the acute medical ward being audited had 7.1 falls per 1000 bed days. The surgical ward had 4.9 falls per 1000 bed days.

In 2012, St John of God Healthcare implemented the Ontario Modified Stratify (Sydney Scoring) Falls Risk Assessment Tool (FRAT). A large education program was undertaken among nursing caregivers to introduce the new tool. At the same time, local policy was updated to reflect the requirements of the introduced FRAT, which is a validated tool, covering both risk assessment and education.

Mrs Sarah-Jayne Powell was contacted in her role as Hospital Falls Coordinator, as she had played a key role in introducing the new FRAT to the hospital. Databases kept by the falls coordinator were used to determine the best areas for review. This audit aimed to identify compliance with falls risk assessment at key stages of a patient's hospital journey, as well as the provision of education to patients and their carers, as well as healthcare professionals.

Objectives

- An audit of current compliance with falls risk assessment using the Joanna Briggs Institute (JBI) Practical Application of Clinical Evidence System (PACES) program.
- The development of strategies to improve falls risk assessment and implementation of targeted interventions using JBI Getting Research into Practice (GRiP) process.
- Reaudit to evaluate effectiveness of targeted interventions.

Methods

As part of the JBI's Clinical Fellowship Program, an initial training course was attended at the JBI. As part of this meeting, evidence based audit criteria, put forward by JBI Research Associates were discussed and agreed upon by the Clinical Fellowship participants with minor changes.

Local ethics approval was gained via a low risk ethics application using the Royal Adelaide Hospital Ethics Committee approval already given to the JBI.

This best practice implementation project was undertaken in three phases.

As the audit criteria were predetermined, the Project team did not meet until after completion of the baseline audit, although members of the team had reviewed the audit criteria.

Phase 1

A JBI Falls Prevention Project Team consisting of Coordinator Clinical Practice and Policy, Nurse Manager Medical Ward, Nurse Manager St Surgical Ward and Director of Nursing was established. The managers of clinical risk and quality were also informed of the project's content and timelines.

To reduce the risk of auditor variability, the JBI Clinical Fellowship candidate used a hard copy of the data collection tool and conducted the audit independently. The sample size calculation had been established by the JBI team using the sampling tool within the PACES organisational audit page. For each criterion, 60 samples were used, split equally between the medical and surgical ward.

The baseline audit was conducted in June 2013 and took three weeks to complete, using a review of patient case notes and bedside files. In the case of the criteria pertaining to education, information was gained by questioning patients or staff as applicable. A standardised criteria of yes or no was utilized. To determine accuracy of falls risk assessment, it was considered important to involve patients in the audit process.

Audit Criteria

1. Falls risk assessment is done upon admission (60 of 60 samples taken)

2. Fall risk assessment is done upon transfer (16 of 60 samples taken)

3. Reassessment occurs when there is a change in condition or following a fall (37 of 60 samples taken)

4. Patients who have experienced a fall are considered at high risk for future falls (24 of 60 samples taken)

5. Fall risk assessment is done accurately using a falls assessment tool (60 of 60 samples taken)

6. Healthcare professionals have received education regarding falls assessment and prevention strategies. (60 of 60 samples taken)

7. Patient and family education is carried out for patients at risk of falls (60 of 60 samples taken)

8. Targeted interventions are implemented according to risk factors (60 of 60 samples taken)

Phase 2

Results of the baseline audit were presented to the Falls prevention focus team. Whilst improvement was considered desirable with most of the audit criteria, the group felt that given the requirement to commence the follow up audit within three months, this presented time constraints. The group identified the following 3 criteria as the weakest, and decided to concentrate on these areas.

- Falls risk assessment is done upon transfer
- Reassessment occurs when there is a change in condition or following a fall
- Targeted interventions are implemented according to risk factors

Posters were developed containing a ‘STOP THINK’ theme outlining strategies for improvement including links to policy. The local policy was tabled on the agenda of the Nursing Practice and Policy Committee, as it did not require staff to reassess falls risk in patients who’s environment had been changed. The Group policy did mandate this reassessment so was used to give staff guidance. At clinical handover time, the audit results were given to the nursing staff, who were encouraged to complete a check of falls risk assessment as part of clinical bedside handover. By coincidence, there had been a combined risk assessment document introduced at group level in an effort to streamline the nursing paperwork process.

The introduction of a brochure from the Australian Government Department of Health and Aging – 'A Guide to Preventing Falls For Older People' was also in the process of being introduced to a compendium in each patient room.

Hourly rounding was incorporated into the clinical routine on a daily basis to ensure that patient's needs were met on a regular basis. Safety checks were incorporated into this, including the need to use the toilet and making sure that all essential items were in easy reach.

Phase 3

The first follow up audit was conducted in October 2013 over a two week period. The same criteria and sample size was used. As with the baseline audit, the Clinical Fellowship candidate used a hard copy of the audit tool and conducted the audit independently. A second follow up audited was conducted using the same auditor in April 2014.

Audit Results

Baseline Audit:

The results of the initial audit were considered to be encouraging in some areas, but also highlighted the need for change in others. The audit was discussed with the project team and it was decided to focus on the four weakest areas from the audit. (See Figures 1,2 and 3).

Following review by the project team of the baseline audit, evidence based strategies were discussed, and the following were chosen for implementation.

Table 1: GRIP matrix

Barrier	Strategy	Resources	Outcomes
Time restraints for education due to pressure on productivity	Use of handover time to disseminate information and check risk assessments	• Disseminate policies • Offer incentives to complete education packages	Follow up audit
Gap in nursing policy relating to assessing patients after an intra hospital transfer	Introduction of a more widely used group policy that requires patients to be reassessed when their environment is changed	• Introduction of policy at ward levels • Posters encouraging compliance with policy	Follow up audit
Lack of education for patients and carers	Introduction of an education booklet aimed at patients and carers to be introduced at the time of admission		Follow up audit

Lack of involvement of multidisciplinary team	Discussions about patients with high falls risk at multidisciplinary meetings	• Added to agenda	Patient satisfaction surveys

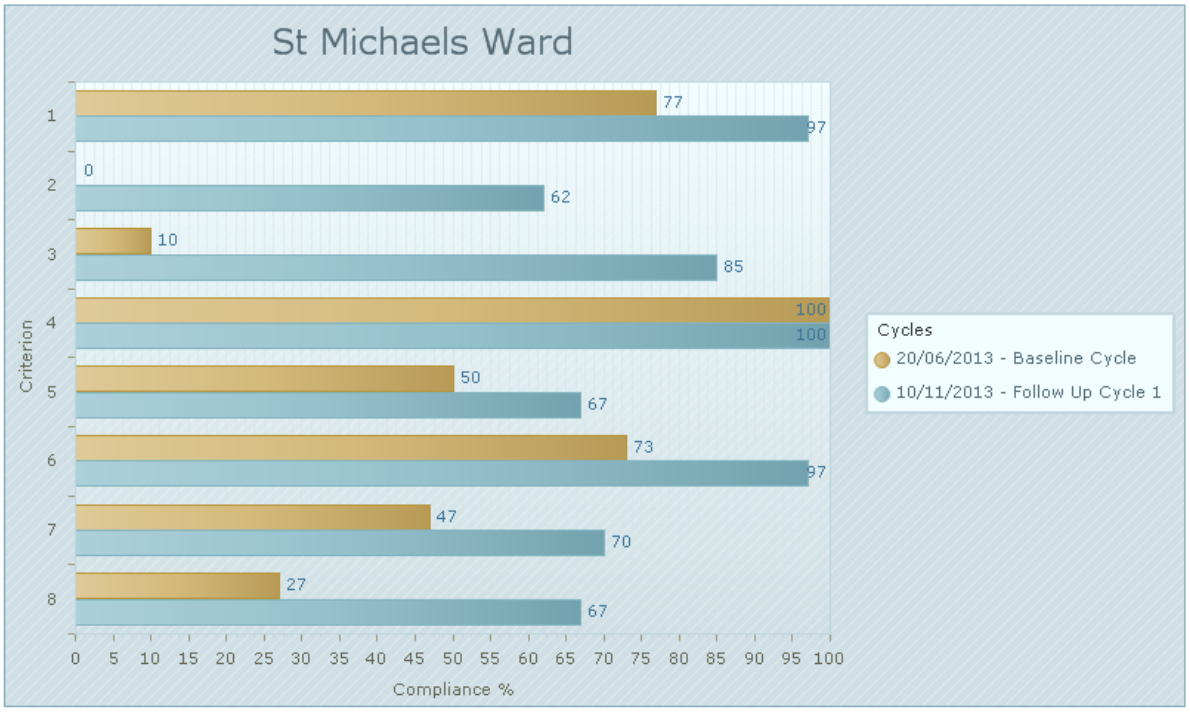

Figure 1. St Michaels Ward (Surgical) Baseline and Follow-up cycle 1

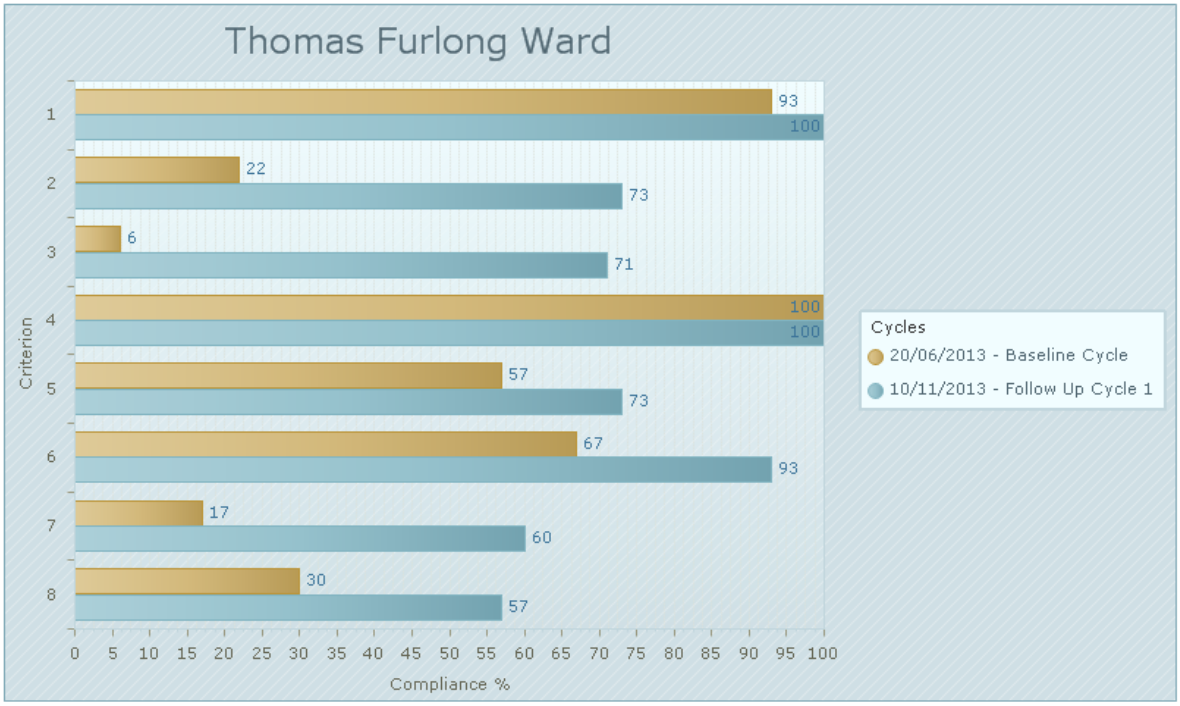

Figure 2. Thomas Furlong Ward (Medical) Baseline and Follow-up cycle 1

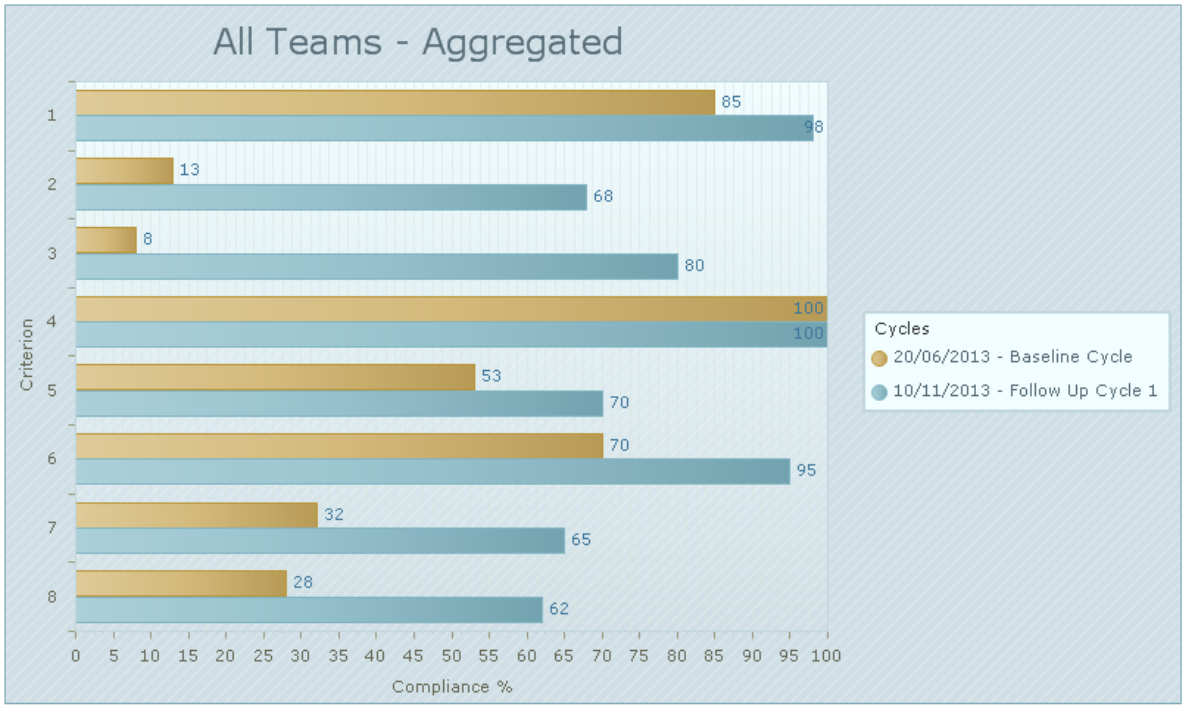

Figure 3. Aggregated baseline and Follow-up cycle 1 results (combined surgical and medical)

The results from follow up cycle one were mostly pleasing. Significant improvements were made across most of the criteria. The most influential factor was considered to be the introduction of the combined risk assessment form. I have not included this in my GRIP strategy as this was a group directive, and would have occurred regardless of this project. The introduction of this form increased overall awareness on the importance of accurate falls risk assessment among the nursing staff. It also generated regular communication among caregivers at all levels around falls, and increased participation in mandatory education programs.

Follow up Cycle 2

Overall, the reuslts for follow up cycle 2 were pleasing. Only minor decreases in compliance were seen across most criteria. The hospital was undergoing a lot of change during the period between follow up cycles one and two and beyond, with major redevelopment and staffing changes happening across the campus. The introduction of hourly rounding for all patients was introduced to the medical ward just after the completion of cycle one. This was done following a major fall in a patient who sustained significant injuries. Early indications are that hourly rounding has significantly reduced falls numbers in this area. In view of this, the initiative has been rolled out to other clinical areas.

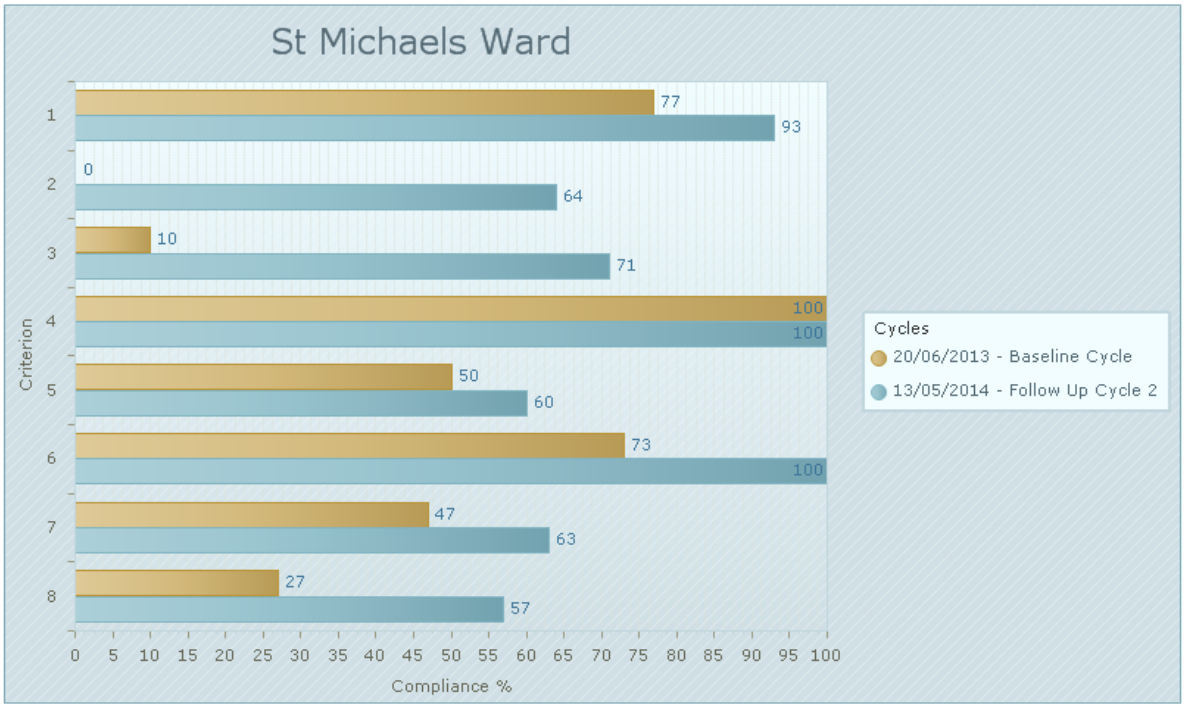

Figure 4. Baseline and Follow-up cycle 2 for surgical ward

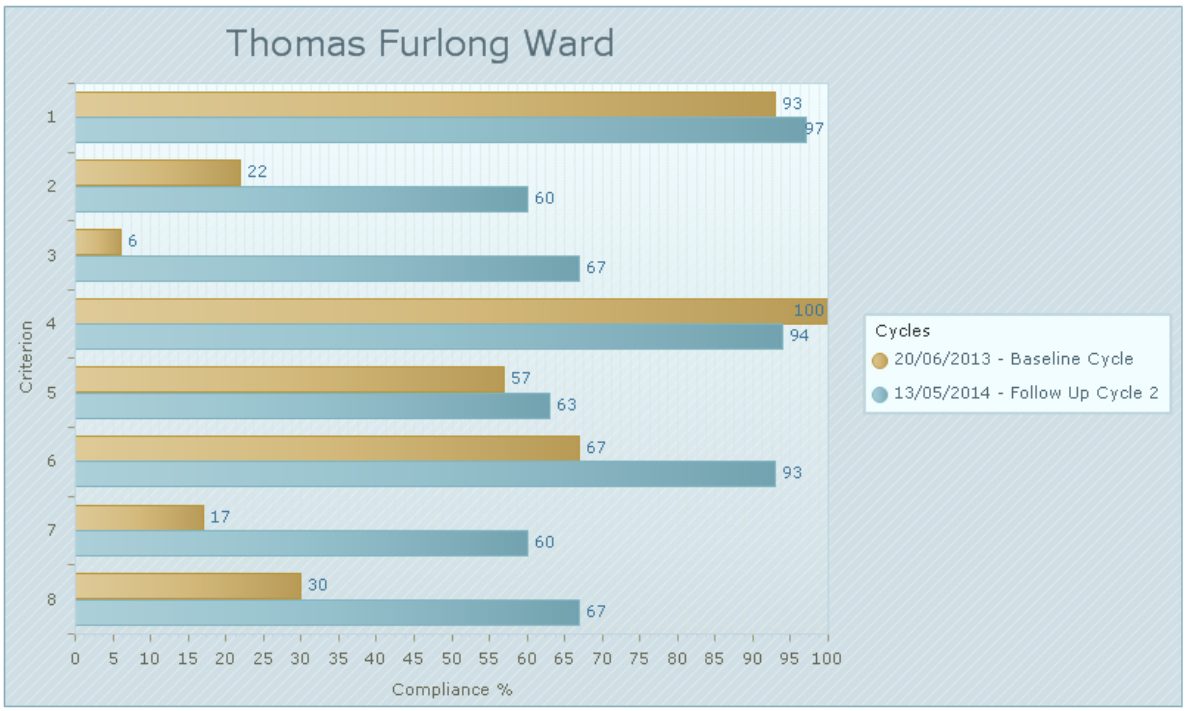

Figure 5. Baseline and Follow-up cycle 2 for medical ward

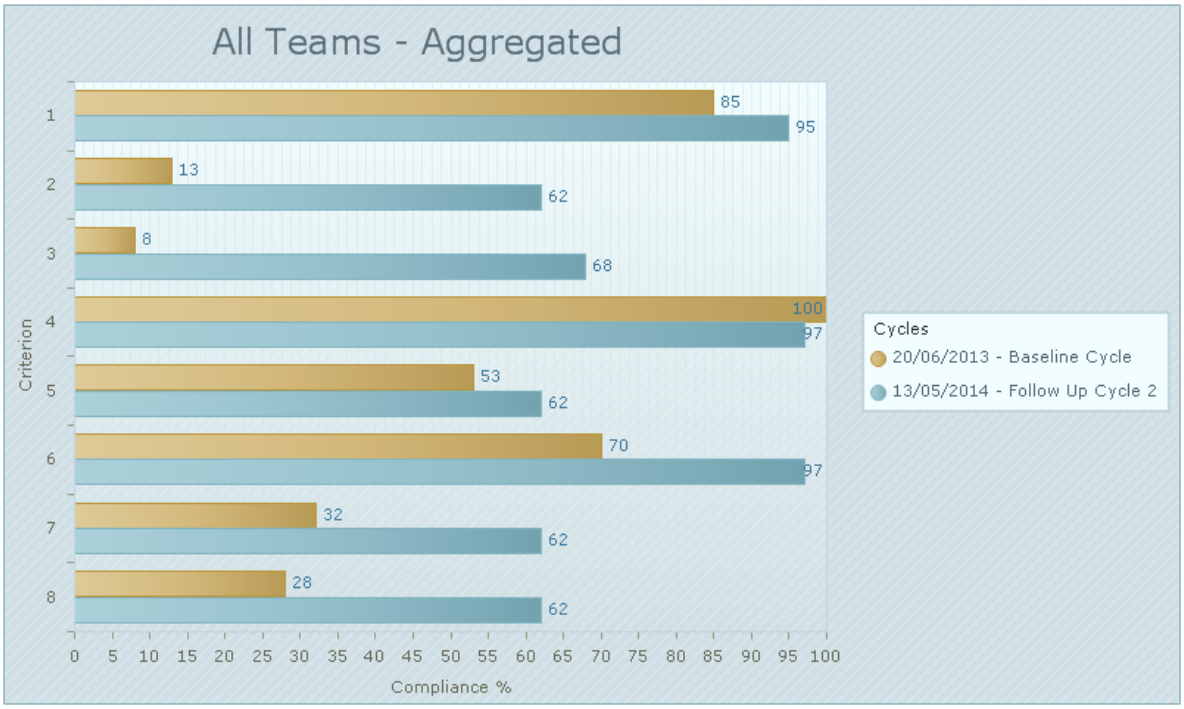

Figure 6. Aggregated baseline and Follow-up Cycle 2 (combined surgical and medical)

1. Falls risk assessment is done upon admission

All samples were gained for this criteria. Both areas performed well in this area as falls risk assessment is included in admission packs.

2. Fall risk assessment is done upon transfer

The sample size was unattainable in all three audit cycles as only a limited number of patients required transfer during each audit period. Results were poor in this area, as the Divisional Falls Policy did not require a reassessment of falls risk after transferring a patient. However, with education, improvements were shown.

3. Reassessment occurs when there is a change in condition or following a fall

Not all patients were identified as having a change in condition. There were limited numbers of falls in each area during the audit period, therefore it was difficult to achieve the sample size in each cycle.

4. Patients who have experienced a fall are considered at high risk for future falls

Falls numbers did not reach 30 during the audit periods. Therefore sample size not achieved. In this category, patient's were audited according to the FRAT criteria. Falls may not have happened during the present hospital stay, but could have fallen in the two months prior to admission.

5. Fall risk assessment is done accurately using a falls assessment tool

In the baseline audit, 53% of falls risk assessments were completed accurately. Falls risk assessment was absent in 15% of sampled patients.

6. Healthcare professionals have received education regarding falls assessment and prevention strategies.

Healthcare professionals were approached by the auditor and asked the question "Have you received education regarding falls assessment and prevention in the last 2 years". The majority of caregivers participating in the question were nurses, with 8 being from "non nursing patient services" and two being physiotherapists. There had been a large education program aimed at the nursing group for the introduction of a new FRAT in the previous 12 months.

7. Patient and family education is carried out for patients at risk of falls

As all patients in this hospital are considered at risk of falls, the sample for this target was reached. During the audit, patients were questioned as to whether they or their carers had received falls education at any time during their hospital stay.

8. Targeted interventions are implemented according to risk factors

The FRAT mandates minimum interventions for all patients. In the baseline audit, less than one third of patients audited had all required interventions implemented, although 70% had at least some of the required interventions implemented.

Discussion

The results of the initial audit in Phase one were better than expected, and the follow up audit showed pleasing improvements in most of the criteria. In most cases, only minor changes were made. The checking of falls risk assessment was made a mandatory part of the clinical bedside handover. Regular checks were done by each area's learning and development facilitator to ensure that all mandatory risk assessments were being completed. The most important factor was thought to be the introduction of a daily risk assessment form that had all of the mandatory risk assessments contained in one document.

In between the baseline and follow up audits, the annual cycle of performance reviews were taking place. Linked to this is the completion of mandatory competency, of which falls education is a component.

Despite the follow up audit showing pleasing improvements, it was suggested that ongoing encouragement was required to embed these changes in a way that was sustainable. Any healthcare facility always has competing requirements for audit and improvement, and with the recent introduction of the national standards this is more evident than ever. The results of the second follow up audit did show that some of the impetus may have receded, but were still significantly better than the baseline audit.

Conclusion

Ensuring the sustainability of change is an ongoing challenge. St John of God Murdoch Hospital is undergoing a major redevelopment and there are significant changes occurring. It will be a requirement of the national standard for falls that compliance with risk assessment and implementation of targeted interventions will be monitored regularly. The organisation has a falls committee which will be responsible for ensuring that changes are sustainable.

Conflict of Interest

Nil conflict of interests are declared.

Acknowledgements

Thank you to the Hospital Contribution Fund for their funding to the Joanna Briggs Institute to undertake this multi-site project. Further acknowledgements to the JBI for hosting the event and taking care to ensure the participants were comfortable. Invaluable support was provided remotely by JBI researchers. Thank you to the Nurse Managers and their teams of the clinical areas that were involved in the audit.

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Accurate falls risk assessment and interventions for preventing falls in patients in the acute care setting within a private hospital in a large capital city: a best practice implementation project

Samara Szymaniak RN

Nurse Unit Manager, Calvary Wakefield Hospital, South Australia

samara.szymaniak@calvarycare.org.au

Key Dates
Commencement date: 20 May 2013
Completion date: 23 June 2014

Executive summary

Background

Falls are a leading cause of adverse events in Australian hospitals. In 2007 Calvary Wakefield Hospital implemented a Falls Minimisation Program requiring routine assessment of all patients admitted using an admission risk screening tool in conjunction with completion of a detailed Falls Risk Assessment Tool (FRAT) when indicated.

Objectives

The aim of this implementation was to review current nursing practice against compliance with the Falls Minimisation Program and also identify areas for improvement with a focus on preventative strategies. This was achieved by completing a baseline audit, implementing a corrective action plan post audit and then re-auditing in three months once strategies had been implemented

Methods

This project utilised the Joanna Briggs Institute's Practical Application of Clinical Evidence System and Getting Research into Practice audit tool for promoting change in healthcare clinical practice. A baseline audit was conducted, and a further two follow-up cycles following implementation of best practice.

Results

The greatest areas of improved compliance were in criteria 6 (improvement of 46%) and criteria 7 (improvement of 43%) which was consistent with overall project team perceptions that a large portion of increased compliance could be achieved with specific education of nursing clinicians and patients and carers.

Conclusions

The main attributor to poor compliance was staff knowledge base (both clinical expertise and compliance with best practice interventions) and also how to engage the patient and carer in reducing their risk for falling.

Keywords

Fall, injury, risk assessment, best practice, implementation.

Background

Calvary Wakefield Hospital (CWH) is a not-for-profit catholic organisation (owned by the Little Company of Mary) situated in Adelaide, South Australia. This organisation has 172 overnight beds with a high acuity case mix of neurosurgical, orthopaedic, cardiology, cardiothoracic, intensive care, angiography, emergency department, day surgery and general surgical and medical presentations (elective and emergency department admissions).

In the twelve month period (May 2012 – May 2013) Calvary Wakefield Hospital averaged 18 falls per month (99% confidence interval). Surgical falls (the departments included in this study) equated for 72 of these incidents and medical (the department included in this study) equated for 29. This gave a combined 101 falls (4.9/1000 overnight beds days) across the three departments being reviewed in this study.

A fall is defined as *"an unexpected event in which the participant comes to rest on the ground, floor, or lower level"*[1] – a demarcation that in the acute hospital setting includes slips, trips, faints, collapses and any patient found on the floor (unwitnessed).

Historically, the data collected and analysed at Calvary Wakefield Hospital highlighted that nursing staff often overlooked key preventative strategies both post fall and prior to the fall, particularly where the patient was identified as high risk of falling using identified screening and assessment tools.

Calvary Wakefield Hospital does have a Falls Minimisation Program that incorporates a number of tools to assist nursing staff to accurately assess their patients' risk of falling in hospital and nursing staff also have access to multifactorial resources (such as physiotherapy, clinical pharmacist, dietician, medical consultants as well as a referral basis for occupational therapy and outpatient falls prevention rehab program). However, there is an obvious deficit around education of staff and how to identify risk factors and once identified how to manage these risk factors, in turn reducing the number of falls within the acute setting.

The evidence currently available to clinicians, suggests that multifactorial assessment and intervention will be more consistently delivered if documented tools are available to prompt staff of key risk factors but that numerical based tools have not demonstrated clinically useful predictive values.[2] The United Kingdom have adopted an approach of "don't count risk factors, do something about them" and these tools are starting to replace numerical based systems.[2] For the purpose of this study a numerical tool has been used as this is current practice within the study setting.

It was also unclear if local falls prevention policies used at Calvary Wakefield Hospital are evidenced based and if this evidence is consistently delivered to the patient identified as at risk of falling.

Injuries related to falls are one of the leading causes of morbidity and mortality in older people and are one of the most common adverse events experienced by patients in hospital. [3]

There is a high prevalence of falls reported globally (estimated one fall per day per 250 beds in the United States of America in 2010[4]) and in Australia in 2010-11, more than 22,000 falls resulting in harm were recorded as occurring in health service areas with a higher rate in public hospitals of 3.3/1000 separations compared with 1.3/1000 separations in the private sector.[5] Predominantly falls

harm older patients (aged >65) [2] whose susceptibility to falling arises from a variety of potential risk factors including (but not limited to) impaired mobility (disease process and post procedurally), dementia, delirium, medication, continence problems, urinary frequency, change in environment and the effect of long term and acute illness. Other factors that can impact on in-hospital falls are staff behaviours and the environment.[6]

Effective interventions to prevent falls are important as they will have significant health benefits for the patient, improve length of stay and ultimately improve financial burden on acute care facilities.[6] Unless effective preventative strategies are utilised, the cost attributable to falls related injury in Australia is estimated to increase three-fold to $1375 million annually by 2051.[7] To minimise falls in the acute setting, identified risk factors must be treated, including medication types, environmental modifications (e.g. rails, lighting, non-slip flooring), appropriate footwear, targeted fall minimisation plans and prompt detection and subsequent treatment of clinical conditions such as delirium, incontinence or visual disturbances.[2] Research trials indicate that assessment and intervention to treat, modify or better manage these underlying risk factors can reduce falls by 20-30%.[2]

To complete this project, a falls assessment and intervention audit tool was developed based on evidence based criteria and utilised using the Joanna Briggs Institute tool PACES. These criteria were completed against patients from both surgical and medical hospital presentations (data was collected from case note review of current inpatients). These patients were isolated from 3 different clinical areas (neurosurgical, orthopaedic, medical) and a sample size of 60 patients was utilised with a case mix of 30 surgical and 30 medical for each component of the audit program.

The overall aim of this implementation project was to identify preventative strategies to minimise falls, amend staff behaviour and in turn improve clinical compliance with employing effective minimisation strategies. These strategies, combined with staff behaviour, should confidently improve patient safety and drive positive outcomes for all patients within the acute hospital setting.

Objectives

The objectives of this implementation project was to identify a number of best practice criteria in which to audit against using the Joanna Briggs Institute Practical Application of Clinical Evidence Systems (PACES) program and successively generate a practicable action plan utilizing the Joanna Briggs Institute Getting Research into Practice (GRIP) program. It was also important that the project complement the National Safety and Quality Health Service Standards (standard 10 – Preventing Falls and Harm from Falls).[8]

The overall objective of this project was to reduce harm to patients within the acute private setting by ensuring our clinicians are accurately assessing all patients for risk of falling and consequently adopting comprehensive, evidence based minimisation strategies. The best outcome from ensuring patients are accurately assessed and managed is to, not only reduce the total number of falls within the clinical setting, but to also reduce the severity of injuries sustained from an inpatient fall.

Methods

The clinical audit was implemented in three phases over a 22 week period (May 2013– November 2013) and engaged the Joanna Briggs Institute Practical Application of Clinical Evidence System (PACES) and the Joanna Briggs Institute Getting Research into Practice (GRIP) programs as primary tools to improve clinical practice. These online tools assist healthcare professionals and/or

researchers to conduct efficient audits in the healthcare setting, combined with a framework for identifying gaps between current clinician practice and best practice and also provides scope for generating strategies to improve practice.

Phase 1: Baseline Audit

In this phase a project team was established with the project lead identified as the nursing unit manager undertaking the clinical fellowship program with the Joanna Briggs Institute. Members of the project team were selected based on clinical roles within the organisation, specific to the areas participating in the study and these included: three nursing unit managers, allied health manager, bed manager and risk, safety, quality project officer. Conducive to this was also the identification of key stakeholders within CWH and how information would be communicated to those stakeholders.

An initial meeting was held with all members of the project team in which the project lead communicated the purpose of the audit, the criteria being audited, current evidence around each criteria, plans for the audit cycle, how the audit would be conducted and what the role of the project team was. In consultation with all project team members it was agreed that the project lead would be the only auditor thus creating a consistent technique for data collection.

The role of the project team members was identified as skilled resources who could be co-opted for auditing assistance (if required), contributors of ideas and feedback during the project and educators/supporters of phase 2 in the clinical setting.

Current evidence suggests that the utilization of a multicomponent inpatient fall prevention program in the acute setting may decrease the risk of falls by up to 30% and that targeting a patient's most important risk factors for falls can reduce the number of falls. Based on this it is crucial that clinicians accurately assess patients and also implement effective strategies based on any risk factors identified.

The audit criteria selected based on current evidence were:

1. Falls Risk Assessment is done on admission
    a. This criterion will be considered met if the clinical record show a risk assessment completed within 8 hours of admission

2. Falls Risk Assessment is done upon transfer
    a. This criterion will be considered met if the clinical record for patients that have been transferred (intra-hospital transfer) show a risk assessment completed within 8 hours of transfer

3. Reassessment occurs when there is a change in condition that changes their falls risk status or following a fall
    a. This criterion will be considered met if the clinical record for patients who have had a change in condition (that affects their falls risk status) or experienced a fall include reassessment performed within 8 hours of this event.

4. Patients who have experienced a fall are considered at high risk for future falls

a. This criterion will be considered met if by reviewing the clinical record for patients who have a history of falls, they are assessed as high risk for future falls according to the risk assessment

5. Falls risk assessment is done accurately using a falls assessment tool
    a. This criterion will be considered met if the clinical record suggests the falls risk assessment was done accurately. If the accuracy of the risk assessment is not clear from the clinical record, then the patient can be assessed by the auditor to determine the accuracy of the assessment.

6. Healthcare professionals have received education regarding falls assessment and prevention strategies.
    a. This criterion will be considered met if staff members in the participating wards report that they have received education in the last two years. Scripting: "Have you received education regarding falls assessment and prevention strategies in the last two years. This is by convenience sampling, and auditors are asked to record the professions of the healthcare staff questioned (e.g. nurse, physiotherapist, pharmacist etc.).

7. Patient and family education is carried out for all patients
    a. This criterion will be considered met if from the clinical record, for patients assessed as at risk of falls, patient and family education is documented as being done.

8. Targeted interventions are implemented according to risk factors.
    a. This criterion will be considered met if it is documented in the clinical record for patient assessed as at risk of falls, that there has been implementation of targeted interventions to address every risk factor identified. NB: auditors were also asked to make notations around those patients with documented interventions as to whether the documented interventions were adhered to in practice.

The audit sample size was 60 patients and this was apportioned into 30 medical patients and 30 surgical patients. For this to be achieved at Calvary Wakefield Hospital, three wards were required to participate in the study with a total number of 58 beds. The accommodation was a mixture of single and twin share and patient confidentiality was maintained at all times during the audit process. During this baseline cycle, 107 patients' clinical records were reviewed to attempt to meet all criteria with definitive answers as opposed to resorting to not applicable results. It was agreed by the project team, that data would be obtained from each individual patients' clinical record and where there was a discrepancy, the auditor could assess the patient themselves.

Phase 2: Design and implementation of strategies to improve clinical practice

Once the baseline audit data was collected using the Joanna Briggs Institute PACES software, the results were printed in the compliance report format for review by the project team. The results were discussed systematically, barriers identified and corrective actions were employed. Ethics approval was not required as this was a quality improvement plan within the organisation.

The results from the baseline audit highlighted that there was opportunity for improvement in all criteria audited.

The baseline audit results were then scrutinised by the project lead. Each criteria was dissected from independent medical and surgical perspectives and then as an aggregate. This emphasized that in eighty-eight (%) of the criteria, surgical patient assessment was inferior to that of medical patient

assessment, however all criteria had capacity for significant improvement. Once the project lead had completed this process, the project team assembled and results were provided to all members as hard copies for analysis and subsequent dissertation.

During this project team meeting, barriers were identified and subsequent actions agreed on to form a corrective action plan. These barriers were entered into GRIP and an action plan with attainable strategies was implemented. Once entered into GRIP the project team re-assembled, reviewed the action plan and agreed with the nominated strategies, resources required and timeframes. The project team also concurred that the baseline audit results would not be delivered to all nursing staff within the designated areas (aim to avoid a culture of blame) rather that phase 2 would be rolled out to staff based on the baseline audit being completed and that areas for improvement had been identified

From the audit criteria, it was evident that all areas had barriers and strategies were required. The barriers identified were

Clinician Education:

The baseline audit emphasized that nursing staff (in both medical and surgical specialties) were lacking formal education pertaining to assessment for risk of falling and what the risk factors were with only 30% of staff identifying that they had completed formal education relating to falls minimization. (Criteria 6). It was also apparent that staff needed further education pertaining to hospital policy to achieve compliance in criterias one, two, three, four and eight.

As a curative solution to the barriers identified, the project team identified three areas for increased education to hopefully improve clinician assessment of patients within the acute setting and in turn improve compliance with local policy. These were:

1. All nursing staff within the designated areas were to complete an on-line tool "Prevention of Falls and Harm from Falls[12]"during the month of August 2013. This on-line training module was well received by staff who had acknowledged to having an educational deficit and also was quite time savvy, taking only 17 – 20 minutes to complete.
2. Review of current local policy pertaining to Falls and Fall Injury Prevention (was the policy current and did nursing staff know how to access the policy?). On investigation a local policy did exist, with current content and resources. In the original GRIP matrix, an additional strategy was to ask nursing staff to sign that they had been able to locate, read and understand the policy however on initial implementation of education strategies and consultation with nursing staff, it was ascertained that nursing staff were familiar with the policy and it's locations so this strategy as per the GRIP matrix was not implemented.
3. Nursing staff were given in-services (informal) by the project lead in regards to completing the Admission Risk Screening Tool and Falls Risk Assessment Tool and written summaries were also made available to all nursing staff for self-directed learning.

Accuracy of Clinician Assessment:

Whilst this criteria scored an aggregated 87% compliance (it is worth noting that compliance was greater in the medical unit than surgical), consideration needed to be given to if the tool being audited was detailed enough to provide accuracy. Currently, nursing staff at Calvary Wakefield Hospital complete the Admission Risk Screening Tool and the response will determine if a detailed Falls Risk Assessment Tool is required. In cases where a detailed Falls risk Assessment Tool is not required, then it is questionable how accurate the assessment can be, however nursing staff were 87% of the time compliant with local processes.

Based on current evidence, it is obvious that all patients presenting to the acute setting are at a risk of

falling hence the project team agreed that a more detailed assessment was required on all patients to ensure accurate clinician assessment was occurring. This was achieved by:

1. All patients admitted in the three clinical areas participating in this study, were to have both the Admission Risk Screening Tool and detailed Falls Risk Assessment Tool completed on admission to ensure all patients were accurately assessed

Patient / Carer Education

Criteria 7 demonstrated very poor compliance by nursing staff to educate patients and carers regarding the patients risk of falling and how to remain safe from falling whilst in the acute setting (see Figure 1,2 & 3). Of the 60 patients audited only 8 had evidence of patient and carer education being given and in 6 of these instances it was by the physiotherapist.

The strategies implemented to improve this were:

1. Implementation and trial of "Safe Steps Program" mobility chart at the bedside of all patients within the study areas. This tool is one part of the Safe Steps Program used within Calvary Rehabilitation Hospital and is a visual cue for all personnel. The chart is placed where patient / carers / clinicians can easily visualize on entering the patient bedspace and is also visible from the bed. The chart is aimed at a 12 year old literacy, is non-verbal (diagrams only) and uses a universal colour coding system of green, orange, red. Each mobility function has a coloured dot attached to indicate level of assistance required for that function.
2. Information pertaining to how patients can reduce their risk of falling whilst in the acute setting was added to Calvary Wakefield Hospitals "Helpful Hints" brochure which all patients receive on admission.
3. For those patients that did experience a fall whilst in hospital and were being discharged home (i.e. not transferred to another institution such as residential care), they were given a pamphlet with information on how to stay safe and free from falling at home.
4. To assist nursing staff with cues for level of support patients / carers may need on discharge when a patient has had a fall in hospital, consideration and recommendations have been made to the Clinical Governance Committee to change the current content of the discharge summary to include a section on falls minimization. Additional content suggestions were to include local medical officer correspondence that the patient had experienced a fall in the acute setting, prompts for referral to community based services such as occupational therapy, physiotherapy and outpatient falls rehabilitation programs.

The corrective actions as outlined above and as per the GRIP matrix were implemented over a three month period (August – October inclusive 2013). Prior to this (July 2013) it was communicated to all nursing staff in each area of the study how the trial period would work and written summaries were available in each clinical area if clarification was required. Throughout the course phase 2, the project lead made regular contact in each clinical area to ensure staff were clear on the process.

Phase 3: Follow up audit post implementation of change strategy

The objectives of the follow-up audit were to assess whether there had been an improvement in compliance with best practice standards pertaining to falls minimization in the acute setting and identify if strategies were attainable and successful in reducing number of falls and/or harm from falling, in the identified areas.

Prior to the follow-up audit, the project team was consulted regarding the re-auditing process and it was collectively agreed that the project lead would again be the only auditor thus creating a consistent technique for data collection that was comparable with the baseline audit cycle.

The same eight audit criteria (as per phase one) were used for the follow up audit cycle however due to a shortened time frame for data collection the sample size was reduced to 56 (27 medical patient reviews and 29 surgical reviews) with 97 clinical records reviewed for data collection to once again attempt to reduce the number of not applicable responses.

The decision was made by the project team to reduce the timeframe for auditing to ensure that there was a viable timeframe for implementing corrective actions and in turn a feasible period for strategies to be effective and to change clinician behaviours. Consequently, the follow-up cycle was completed over two weeks from the 4th November 2013 – 17th November 2013.

Results

The results of the baseline audit (see Figure 1, 2 and 3) identified that seven out of the eight criteria received a greater compliance with best practice and local policy in the medical unit than surgical and that apart from criteria one all areas had substantial room for improvement.

It was apparent that the main attributor to poor compliance was staff knowledge base (both clinical expertise and compliance with best practice interventions) and also how to engage the patient and carer in reducing their risk for falling.

The level of compliance with best practice audit criteria was not unexpected by the project team and was received quite favourably from an ability to successfully implement appropriate strategies.

Of the strategies established in response to barriers identified, six of the eight strategies were implemented. The two strategies not implemented were based on consultation with nursing staff who deemed one strategy unnecessary and another strategy required clinical governance approval which was not achievable in the nominated timeframe.

The six strategies were initiated with relative ease within each unit. This can be credited to the nursing staff within each area as direct flow from the positive leadership shown by each nursing unit manager in the nominated clinical areas.

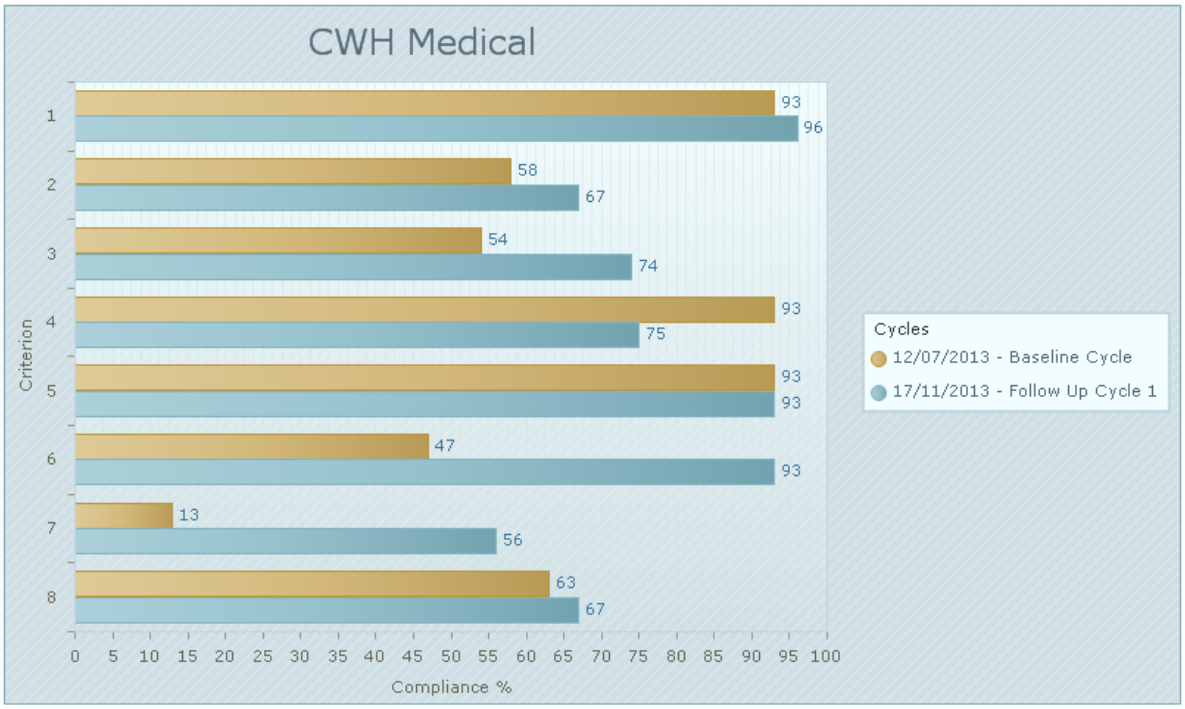

Figure 1 – Baseline and follow up audit best practice compliance – Medical (%)

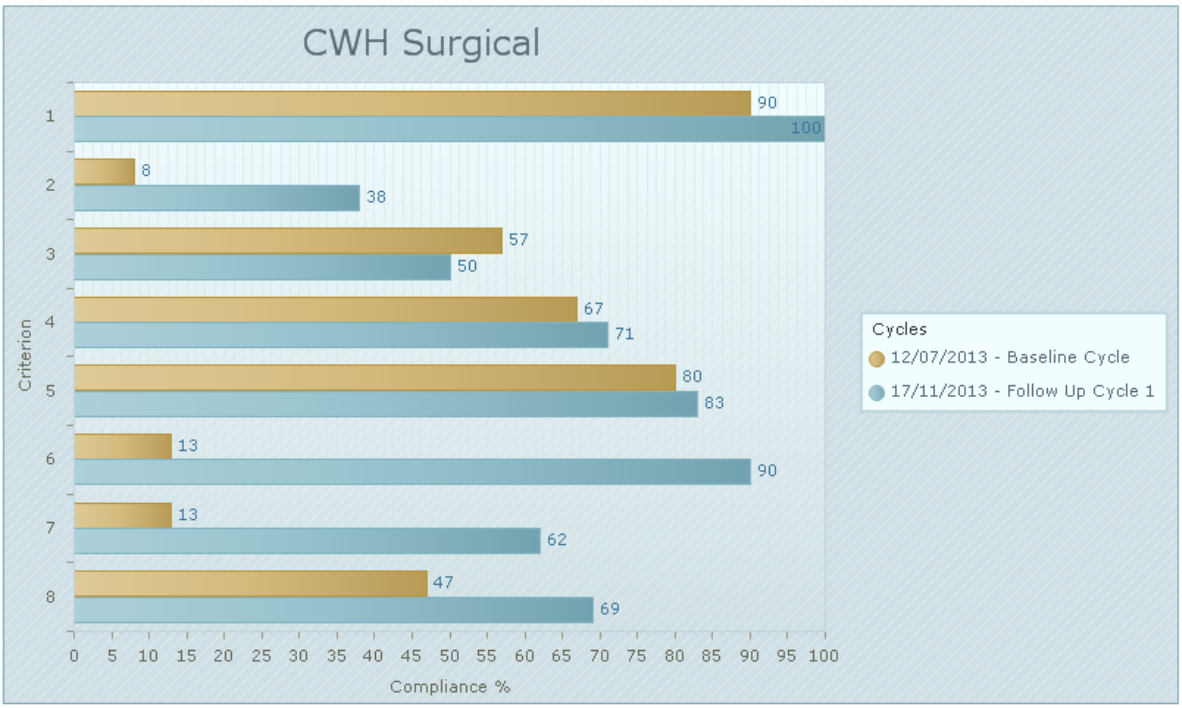

Figure 2 – Baseline and follow up audit best practice compliance – Surgical (%)

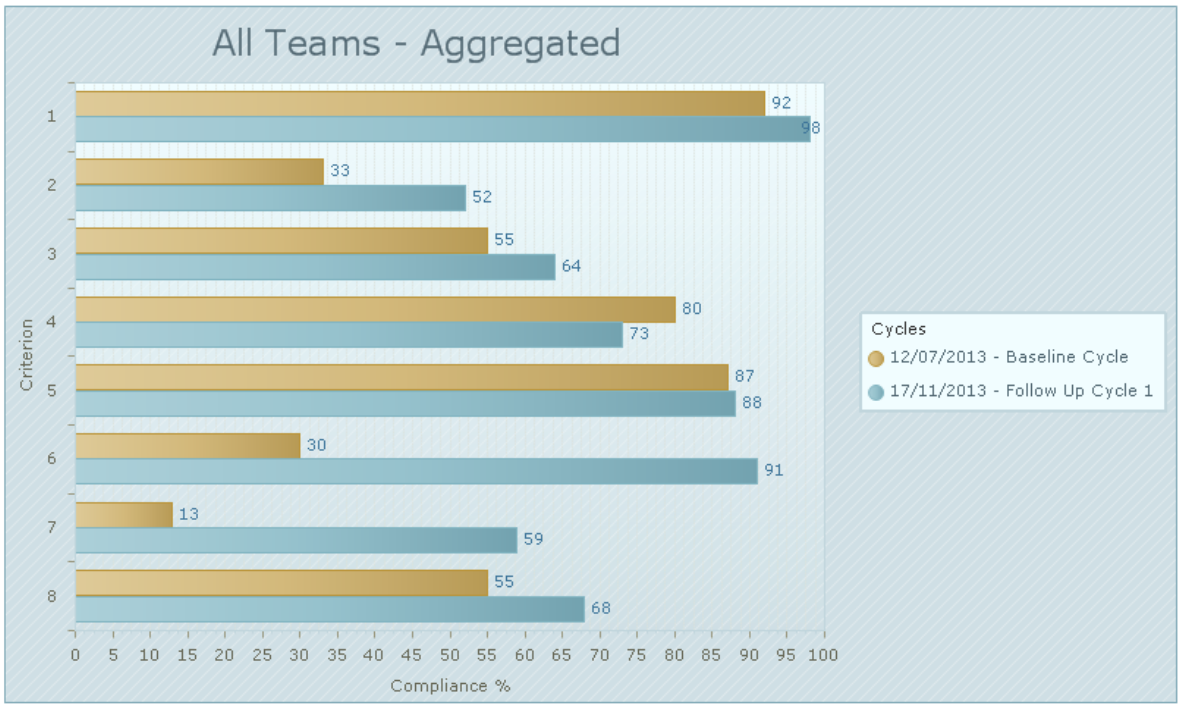

Figure 3 – Baseline and follow up audit best practice compliance – Aggregated (%)

The follow up audit cycle results were pleasing to review as all best practice audit criteria showed an improvement as an aggregated result. It was noted by the project team that criteria four in the surgical follow-up audit cycle reduced by 7% in compliance.

The greatest areas of improved compliance were in criteria 6 (improvement of 46%) and criteria 7 (improvement of 43%) which was consistent with overall project team perceptions that a large portion of increased compliance could be achieved with specific education of nursing clinicians and patients and carers.

Follow-up Cycle 2

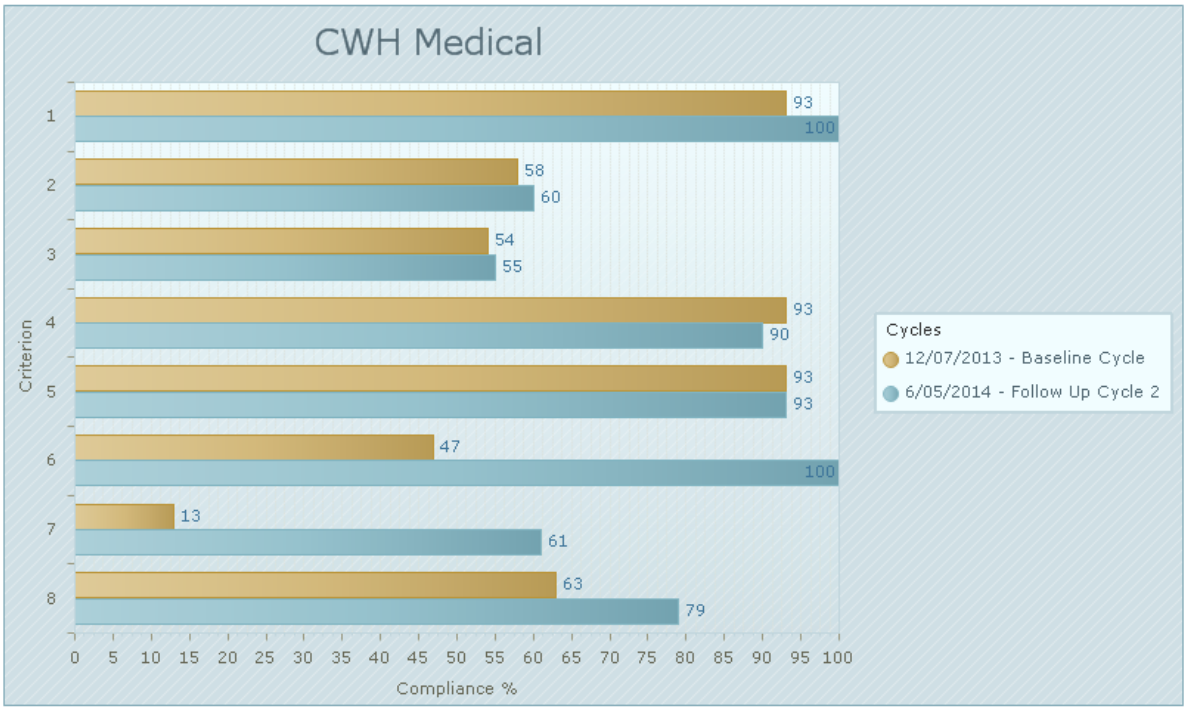

Figure 4 – Baseline and follow up audit cycle 2 best practice compliance – Medical (%)

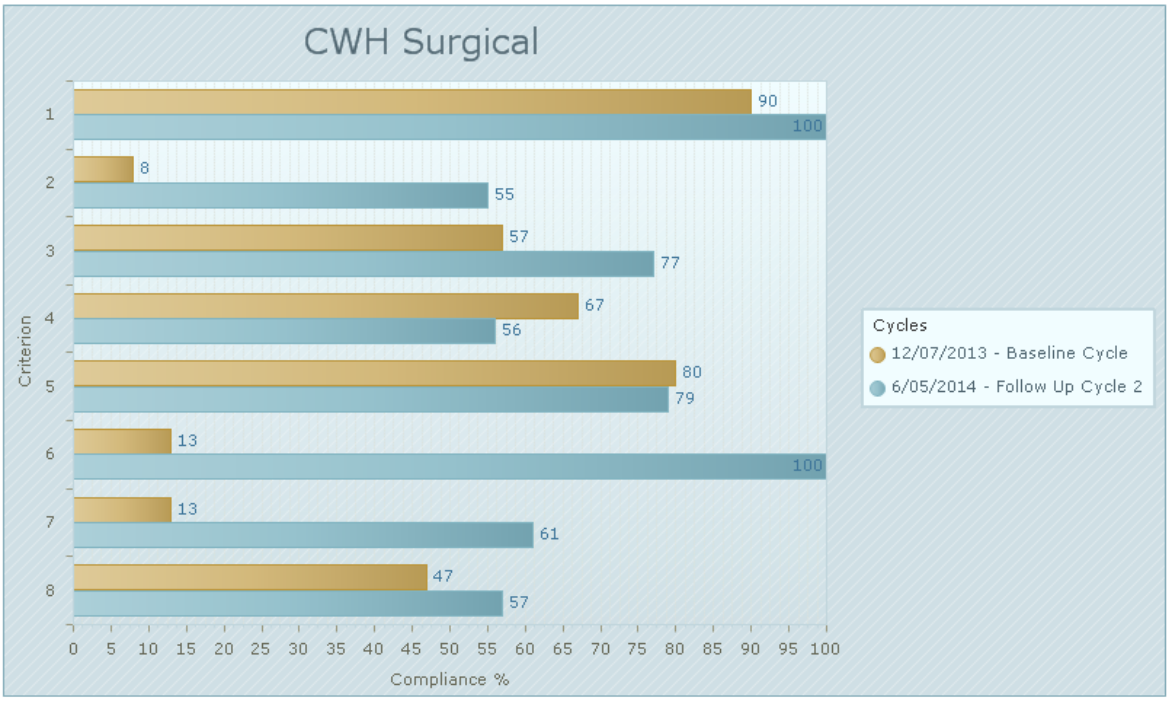

Figure 5 – Baseline and follow up audit cycle 2 best practice compliance – Surgical (%)

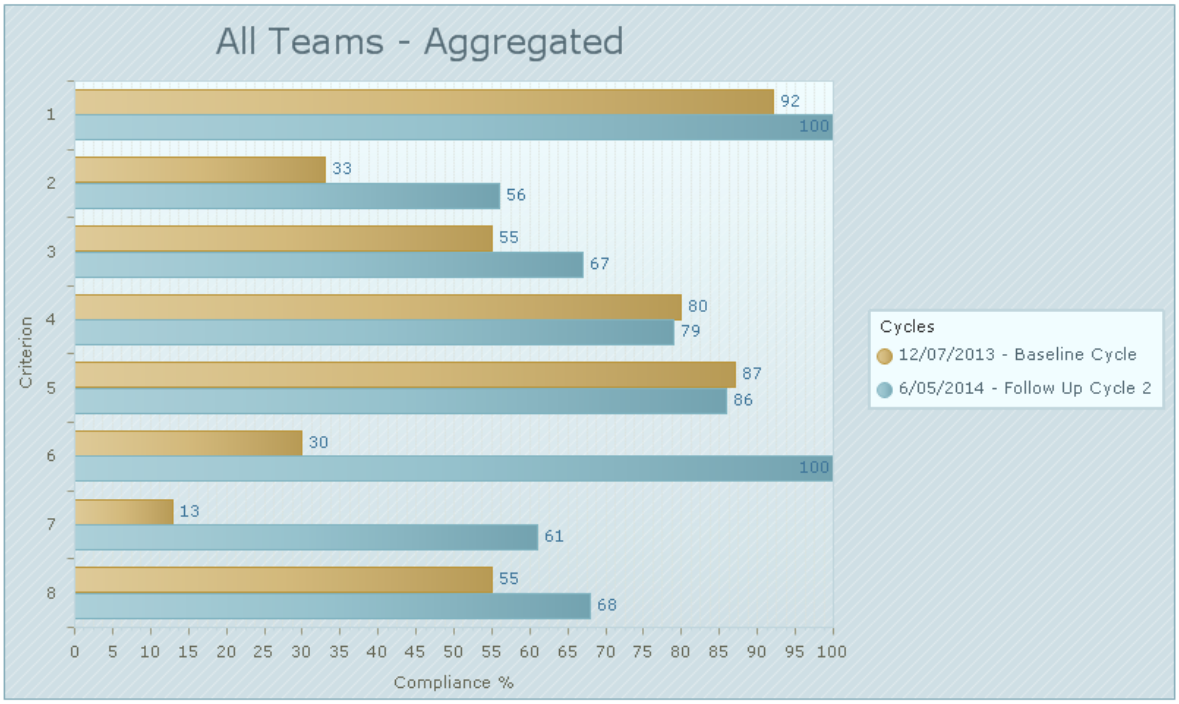

Figure 6 – Baseline and follow up audit cycle 2 best practice compliance – Aggregated (%)

Discussion

The greatest areas of improved compliance were in criteria 6 (improvement of 46%) and criteria 7 (improvement of 43%) which was consistent with overall project team perceptions that a large portion of increased compliance could be achieved with specific education of nursing clinicians and patients / carers.

All the implemented strategies were felt to be achievable, with feedback from staff that these are sustainable. There was no significant improvement in accuracy of assessment from compliance with tools, but improved assessment due to the use of a more detailed tool.

In regards, to total number of falls, from August to October 2012, there were 25 falls in the three areas (3 months prior to this = 25 falls in three areas). From August to October 2013, there were 19 falls in the three areas (3 months prior to this = 26 falls in the three areas).

Conclusion

Involvement in this evidence based implementation project was beneficial, and the results of the project sustainable with ongoing staff education and further clinical audits. It was also important that the project complement the National Safety and Quality Health Service Standards (standard 10 – Preventing Falls and Harm from Falls).

The main attributor to poor compliance was staff knowledge base (both clinical expertise and compliance with best practice interventions) and also how to engage the patient and carer in reducing their risk for falling.

The importance and impact of executive support and positive clinical leadership should not be underestimated.

Conflict of Interest

Nil conflict of interests are declared.

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