



CLINICAL
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CLINICAL FOCUS REPORT

FROM REVIEW OF ROOT CAUSE ANALYSIS AND/OR INCIDENT
INFORMATION MANAGEMENT SYSTEM (IIMS) DATA



FALLS

This report was prepared by the Clinical Excellence Commission (CEC) Patient Safety Team.

The information contained has been de-identified and analysed in accordance with the Incident Information Management System (IIMS) datasets and where relevant, the agreed root cause analysis (RCA) report classification sets used by the RCA Review Committees which it supports.

It should be noted that all reviews of incident data, including root cause analysis, are retrospective and can reflect both hindsight and outcome bias. Such reviews are conducted to better understand the impact which patient, system and human factors may have on the provision of clinical care and to facilitate ongoing improvement across the health system.

This report is intended to provide a snapshot of issues to be further explored. It has been prepared by the Patient Safety Team, including Margaret Scrimgeour, the CEC Falls Prevention team, Dr Tony Burrell and Bronwyn Shumack, in consultation with Area Health Service (now LHD) staff. It was first released within the NSW Health system in 2010.

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Background

Falls are one of the most commonly reported clinical incidents notified within the Incident Information Management System (IIMS). People who fall in hospital often have more than one chronic condition, may be taking medication, and may be frail. Impaired thinking and disorientation caused by dementia or confusion can also increase the likelihood of a fall. Falls are also of concern in the general community, particularly as the risk of falling increases as the population ages. Reducing falls and fall injury are important components in improving patient safety.

In 2005 NSW Health implemented Policy Directive PD2005_353 Fall Injury Among Older People – Management Policy to Reduce Falls in NSW¹ which outlines strategies and actions to reduce the incidence of fall-related injury in older people in the community, supported and acute care settings. Falls risk screens are now included in the admission processes across the State and many active falls prevention committees are working to reduce the incidence and impact of patient falls. A generic hospital falls policy based on best practice has been adapted by each Local Health District.

It is acknowledged that reducing the likelihood of falls requires a multifaceted approach that includes addressing environmental and patient factors, so that preventative measures can be put in place. Trying to predict which patient's are most at risk of falls has been the impetus for screening all patients on admission to hospital, which has now become an expected part of the admission process for all patients aged 65 or older. Reassessing falls risk if a patient's condition changes, however, may not occur until after that patient has had a fall or near-miss.

Reducing the risk of falls should take into consideration a patient's right to personal autonomy and the need to encourage mobility. All falls require investigation and appropriate management, even if no injury results. They can also indicate a change in a patient's underlying condition (Oliver 2009).

A review of a number of root cause analysis (RCA) reports of SAC1² fall incidents prompted discussion and agreement that it may be timely to further analyse fall incidents which had an adverse outcome.

¹ Updated Policy Directive PD2011_029 Falls - Prevention of Falls and Harm from Falls Among Older People: 2011-2015

² The Severity Assessment Code (SAC) is used to rank the outcome for the patient when an incident occurs. SAC1 indicates a serious outcome, such as a procedure involving the wrong patient or an unexpected death. SAC4 indicates there was minimal or no harm and includes near-miss incidents.

Method

Data was extracted on 12 May 2009 under the following categories:

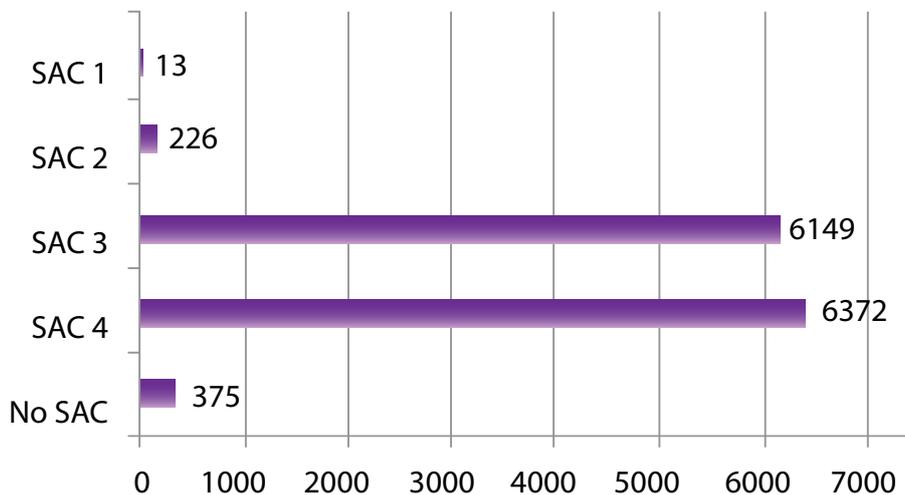
- RCA reports for all SAC1 clinical incidents under the principal incident type (PIT) of “fall”, for which reportable incident briefs (RIBs) were received by NSW Health between 1 July and 31 December 2008. Thirteen RCAs were identified and all were included in the review.
- All SAC2 IIMS notifications, with the PIT of “fall” and date of incident between 1 July and 31 December 2008. A total of 234 SAC2 incidents were extracted, however, 8 incidents were excluded from the review as follows:
 - ◆ three incidents were identified as duplicates
 - ◆ three incidents pertained to fall in the patient’s home
 - ◆ two incidents related to a suspected suicide/accident external to a health facility.

Only SAC1 & SAC2 incidents were reviewed for this focus report, however the SAC ratings for all “fall” PIT (from the Statewide data extraction for the public report) are included in Figure 1. It should be noted that the analysis of these incidents is limited by the data available in the RCA reports (SAC1) and IIMS notifications (SAC2), the former being, in general, a more detailed source.

Findings

There were 13,135 incidents with a principal incident type: Fall, during the period 1 July - 31 December 2008. While the majority of these falls have a SAC of 3 or 4, with no adverse outcome, they should alert care providers to the risk of serious injury for these patients, who are likely to fall again.

Figure 1: PIT Fall by SAC Rating July-December 2008



SAC1 Incident Review

Thirteen SAC1 incidents were reviewed. Data was considered under the following:

- Clinical stream/specific service
- Peer group of hospital
- Patient age
- Patient activity at the time of the fall
- Other factors identified in the review
- Type of injury sustained
- Time of fall
- Classification attributed by RCA Review Committee
- Summary of recommendations made by RCA teams.

Patient location at time of fall

Table 1: Incidents by Clinical Stream/Specific Service

Service	SAC1	Service	SAC1
Cardiology/Respiratory Medicine	1	Rehabilitation	1
Medical wards	6	Surgical – general	2
Mental Health/D&A	2	Surgical – orthopaedic	1

Hospital service level (sac1 only)

Rural/district (4)

Regional (3)

Metropolitan – small (1)

Metropolitan – major (3)

Tertiary (2)

Time of fall

More than half of the falls which resulted in patient deaths occurred overnight, when patients may be sedated, restless or confused (when waking in a strange environment). There are normally fewer staff available during these times to monitor and assist patients going to/from the toilet.

Table 2: Time of Fall

	0700-1500	1500-2300	2300-0700
Number	3	3	7

Age of patient (SAC1 incidents)

Not surprisingly, the highest number of falls resulting in serious injury occurred amongst patients aged 75 or older. This is also reflected in the SAC2 data (see Figure 2)

Table 3: Age of Patients in SAC1 Fall Incidents

Age of patient	35-44	45-54	55-64	65-74	75-84	85-94	95 or older
Number	0	2	0	0	9	2	0

Patient activity at time of fall – SAC1

In all 13 of the RCAs reviewed the patient's fall was not witnessed.

Most occurred at or near the patient's bedside, most commonly during the night. In one case, the patient was using a bed pan and fell out of bed. While it is reasonable to assume that most of these patients may have been attempting to go to the toilet, this is not indicated in any of the RCA reports. One patient fell in a day room, one outside on the grass, having left his room and one was found in a bathroom.

Patient injury and post-fall management

While the post-fall management of patients was reported by RCA teams to have largely been appropriate, there was little information in the RCAs about the existence and application of post-fall management guidelines. In one case, they were indicated to be a component of the falls policy, but were not widely known/followed. In nine of the RCA reports, there is insufficient information to draw any conclusion. Most patients in this group of incidents did, however, receive a medical review +/- MET (medical emergency team) call following their fall.

Ten of the patients sustained a closed head injury, most commonly a sub-dural haematoma and all died. CT scans were done, or planned to be done, in nine of these cases. In at least two of the RCAs, it was unclear whether the patient had collapsed due to another cause, including a suspected undiagnosed acute coronary syndrome and a possible choking on food.

Table 4: Patient injury sustained (SAC1 falls)

Type of injury sustained	Closed head injury	Upper limb fracture	Lower limb fracture incl. NOF	Neck/spinal fracture	Other
Number	10	0	0	0	3

Table 5: Care provided after the patient's fall

Care Provided	Medical review	MET/PACE call	CT done or ordered	Increased observations - general	Increased neurological observations	Surgery	Transfer to higher level care
Number	10	2	10	1	5	1	6

Other factors identified in the review.

The RCAs were reviewed to identify other factors related to assessment and management of patients' falls risk, application of falls policy and post-fall management. There was variation in the amount of data able to be extracted as some RCAs focussed only on the clinical management of the patient and did not include any information about falls risk assessment or management strategies. Where information was provided, it is included in Table 3.

Table 6: Factors Identified in SAC1 Fall RCAs (n=13)

Factor (where identifiable)	Frequency
System Factor	
Falls risk tool fully completed on admission	5
Falls risk tool partially or inaccurately completed on admission	4
Falls risk assessment not done/not considered	3
Falls risk re-assessed as recommended (i.e., if patient condition changed, patient fell or was transferred to a new clinical area).	0
Falls risk reduction strategies applied for patient (incl. equipment/environment, additional staff, patient location in ward)	3
Falls policy fully implemented at site/unit*	2
Bed rails raised on one or more sides	5
Systems for post-fall management	
Evidence in report that post-fall management guidelines were known/applied	1
Patient Factor	
Patient was on anti-coagulant or anti-thrombolytic medication	7
Patient had confusion/delirium or dementia	7
Patient sedation/narcotic pain relief in previous 24 hours noted in incident report	2
Other patient factors/comorbidities which may increase risk of falls**	10
No clear advanced care directive/not for resuscitation orders in place prior to fall	2
Not for resuscitation order initiated after fall	8

* *current policy exists, available and known by staff*

** *includes medication changes/side effects, postural/mobility issues, substance misuse*

*** *More than one risk factor may be present in each fall*

Falls risk screens

The most commonly used falls risk screening tool evident in the RCAs was the Ontario Modified Stratify Falls Risk Screen. This is one of the few which has been validated in the hospital setting. Such tools are designed to identify the patient's level of risk of falling, not his/her risk of fall injury, which can be quite different. If the screening process identifies a patient as being "at risk" of falling, it is recommended that a more detailed falls risk assessment occurs. Appropriate strategies to address the patient's specific risk factors can then be put into place.

The SAC1 RCAs indicate that patients who are taking VTE³ prophylaxis or anticoagulant medications are at higher risk of serious injury if they fall. Ideally, additional precautions would be considered for these patients, particularly if risk screening identifies falls risk.

Case studies

The following are examples of incidents identified during the review.

INCIDENT 1 (SAC1)

A 52 year-old patient was admitted to hospital after a fall in the community. Although his injuries were primarily bruising and lacerations, he was admitted for investigation of jaundice. As part of his alcohol-withdrawal treatment, he was given diazepam, antibiotics and vitamins, in accordance with protocol. He was noted to be confused at times and to have a postural drop in blood pressure, requiring assistance to mobilise. He was found on the floor around midnight following an unwitnessed fall, was assessed for injuries and returned to bed. Neuro observations were commenced. By 6.00 a.m. he was noted to have deteriorated neurologically and was transferred to the high dependency unit (HDU). The physician consulted a neurosurgeon during the morning and a palliative approach was recommended. The patient died that afternoon. There was no evidence within the RCA that the patient's risk of falling was considered in his management plan.

INCIDENT 2 (SAC1)

A 76-year old patient had his great right toe amputated, having ceased his routine anticoagulant therapy prior to admission. On admission to the emergency department, he had been identified as "at risk" of falls due to his pain and unsteady gait, however when transferred to the ward he was (possibly incorrectly) scored as being at low risk. The RCA report notes that with the Ontario Modified Stratify screen, patients without cognitive impairment may have a lower than expected risk score, unless it is documented that they have been instructed not to walk without assistance. The patient sustained a skin tear in an unwitnessed fall nine days after his toe amputation. His routine anticoagulant therapy was recommenced five days later. He had a second unwitnessed fall four days after this, resulting in a sub-dural haematoma. Although he underwent a successful craniotomy to drain the haematoma, his general condition deteriorated after the surgery and he died. There was no evidence that the fall injury risk for this patient was considered in his management plan.

INCIDENT 3 (SAC2)

A confused patient, whose primary language was not English, fell on the way to the toilet. He did not call for assistance, despite being "constantly reminded" to do so by nursing staff. He had fallen previously with no injury. The patient sustained a fractured neck of femur.

INCIDENT 4 (SAC2)

An elderly confused patient was found face-down at the end of her bed. She was noted to be "non-compliant" and unable to follow instructions to call for assistance and to wear a spinal brace when out of bed. Her bed rails were down. She sustained a fractured wrist in the fall.

SAC2 Incident Review

Two hundred and twenty-six (226) SAC2 incidents were identified as fitting the criteria for further review. Their analysis is based on the information within IIMS report only. The variation in the level of detail within these reports impacts on the findings. For example, it was not possible to determine the type of injury/outcome in a number of incidents reviewed. The limitation of this analysis is therefore acknowledged.

The SAC2 fall incidents were reviewed according to:

- specific service
- patient age
- time of fall
- outcome for patient (where recorded)
- other factors, including patient cognitive status, completion of falls risk assessment

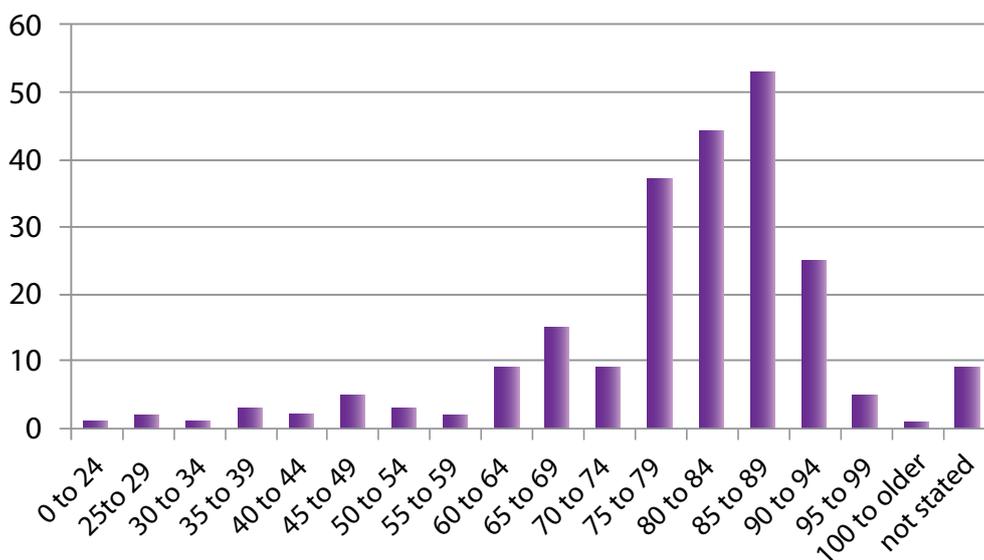
Sac2 fall incidents by service

Falls reported as SAC2 incidents for the period occurred predominately in aged care/geriatric (54) general medical (35) and rehabilitation wards (18), with the remainder occurring in a variety of locations.

Age of patients involved in SAC2 incidents

The following graph provides information on the age range for in-hospital falls. The information supports the widely accepted view that patients aged 75 or older are more at risk of falls.

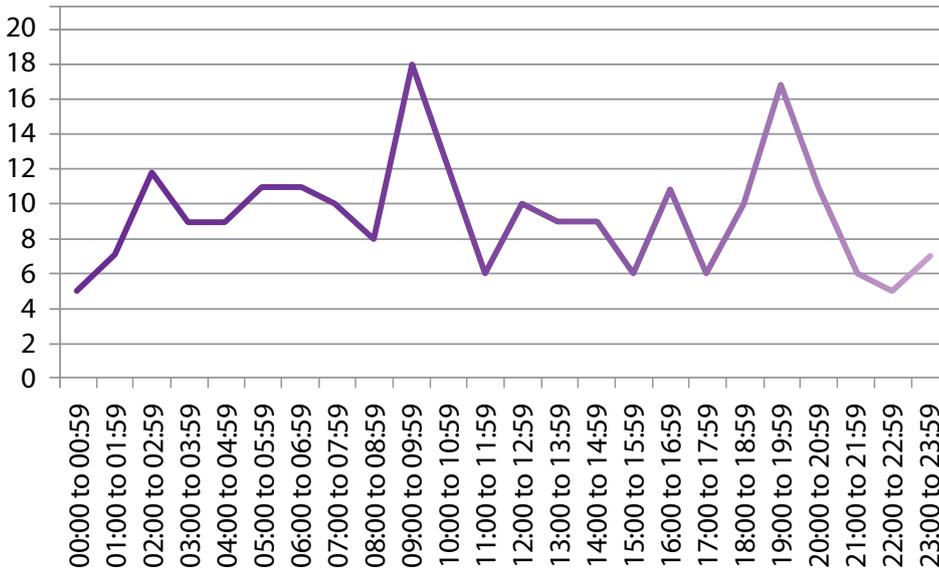
Figure 2: SAC2 Falls by Age Group (July – December 2008)



Time of day when patients fell (SAC2 Incidents)

High-risk periods for falls in this cohort would seem to be 0900 to 1100, which may in part be related to activity around showering/toileting. There was insufficient information in incident reports to draw any conclusion, although there is some evidence that toileting was a factor.

Figure 3: SAC2 Falls by Time of Day (July – December 2008)

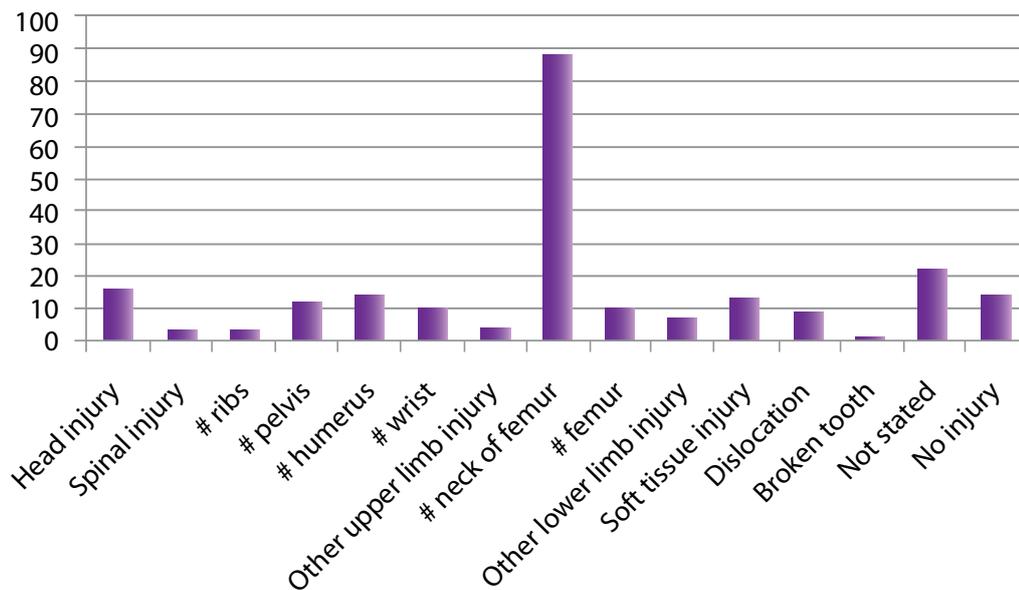


Note: The time of one fall was not stated

SAC2 fall injuries

Fall injuries were classified where possible. Some patients sustained more than one injury. Each injury has been counted in the following graph.

Figure 4: SAC2 Fall Incidents by Type of Injury



Notable in the above graph, is the number of patients who sustained a fractured femur, the majority being a fractured neck of femur (88 of 98). The impact of these injuries in terms of morbidity and mortality may be significant.

A study published in the British Medical Journal (Goldacre et al 2002), suggests that the death rate within one year of fractured neck of femur is typically reported as between 20 and 35 per cent. This is based on analysis of “in-hospital mortality” death during the initial admission for the fracture. These statistics were then linked to death registration data in one health region from 1994 to 1998. There is no evidence to suggest this has changed substantially in recent years.

Using IIMS data alone, as in this review, it is not possible to provide information about the long-term outcome for these patients. The SAC2 incident reports indicated the outcome for ten patients was death, however, the classification sets in IIMS do not discriminate between cases where the death was unexpected (e.g. attributed to a fall) or where the patient may have collapsed and died due to an underlying illness. This is done by allocating SAC ratings, with all incidents where death is directly attributable to an incident being required to be reported as SAC1 and undergo RCA. Based on the information documented, a reasonable assumption could be made that for six of the patients, the fall was a major contributing factor in the death. Two incidents were falls related to cardiac events. One of these was a patient who was transferred from the emergency department two hours previously with a history of untreated atrial fibrillation.

Other factors identified

The factors which may have contributed to the fall incident were also examined. Thirty-five per cent of incidents reviewed had documented evidence that the patient had some degree of cognitive impairment. Twenty per cent indicated that the patient used some type of walking aid and 24 per cent indicated that a fall risk screening had occurred before the fall. Only a small number reflected that fall prevention strategies were in place prior to the fall.

The cost of treating injuries sustained in inpatient falls must also be recognised. Data supplied by NSW Health Episode Funding Unit indicates that in 2006/2007, the cost of treating a fractured femur ranged from just under \$3,000 to over \$33,000 with an (additional) average length of stay of 4-23 days. The impact on the system of unplanned transfer to a higher level of care (documented in 15 per cent of incidents), operating theatre and in many cases rehabilitation is significant for both the system and the patient.



Conclusion

Falls are the most commonly-reported incident type in the NSW public health system. They are recognised as posing a significant risk to the well-being and expected clinical outcomes for patients. If each of the 88 patients who sustained a fractured neck of femur in the SAC data above, fell into the diagnosis-related group (DRG) 103B (hip replacement with severe complications, average cost \$18,929), the cost to the public health system would be \$1,665,752. This does not include hidden costs such as home modifications, support services or transfer to supported accommodation for patients who were previously living independently at home.

The findings of this report highlight the need to consider the risk of fall injury, not just the risk of falling. Screening tools such as the Ontario Modified Stratify are effective when applied as intended and can be enhanced by staff considering the additional risks posed by common comorbidities, anticoagulant or sedating medications and medication with side-effects such as delirium or confusion.

Much good work is being done to identify patients most at risk of falling while in hospital. Reporting of fall incidents is also commended, however these actions alone have no impact on reducing the rate of falls and fall injury.

Thorough patient assessment and implementation of strategies to reduce fall risk on an individual basis is the intended outcome of screening, but is often a challenge to achieve. Planned acquisition of equipment, resources and personnel (observers etc.) needs to occur to reduce fall injury risk in our ageing population. Many hospitals have successfully used volunteers and additional specially trained staff to supervise patients at risk of falling, but maintaining these strategies in times of financial constraint can be a challenge.

Recommendations

1. Consideration be given during care planning of increased fall injury risk for patients on anticoagulant therapies.
2. Consideration be given to screening for delirium for all patients over 75, in accordance with the National Delirium Guidelines available at: <http://www.health.gov.au/internet/main/publishing.nsf/Content/delerium-guidelines.htm>
3. Promulgate the Essentials of Care Project components related to increased nursing time at the bedside, routine rounds and toileting to ensure that patients' basic needs are addressed routinely.
4. Ensure Local Health District fall risk management programs and policy include clear guidelines for post-fall management, based on available resources such as the CEC NSW Falls Prevention Program guidelines. Hospital package available at: <http://www.cec.health.nsw.gov.au/programs/falls-prevention/falls-resources>
5. Consideration be given to identifying and promulgating sustainable patient supervision programs for patients identified to be at risk of falling due to delirium, confusion, dementia or unpredictable behaviour.

References and articles of interest

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