Department of Health
Government of Western Australia

# Report on WA Data collected by the Australian Incident Monitoring System (AIMS)

## 1 January 2006 to 31 March 2006

*Office of Safety and Quality in Health Care*

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# EXECUTIVE SUMMARY

Data for this report were extracted on 3rd May 2006, and covers all incidents reported to AIMS from 1 January 2006 to 31 March 2006. Readers are reminded to note the limitations to the data, outlined in the caveats section at the end of this report.

***WA Trends***

- Falls and medication continue to remain the two most common types of reported incidents.
- Most fall incidents do not result in any injury to the patient. Some result in minor injuries or pain, and only a small percentage of falls result in serious outcomes.
- The majority of fall incidents occur in the elderly population (75+ years).
- Most of the medication incidents do not result in any serious injury to the patient.
- Omission remains the most common type of reported medication incident.
- Incidents classified as behaviour, other and nutrition have the greatest proportion of incidents with a more serious outcome (Level 6, 7 or 8). Please note that serious outcome levels do not necessarily mean that the patient was seriously injured. A level 6 or 7 outcome could indicate that significant resources were required to manage the incident (i.e. constant supervision).

# RESULTS

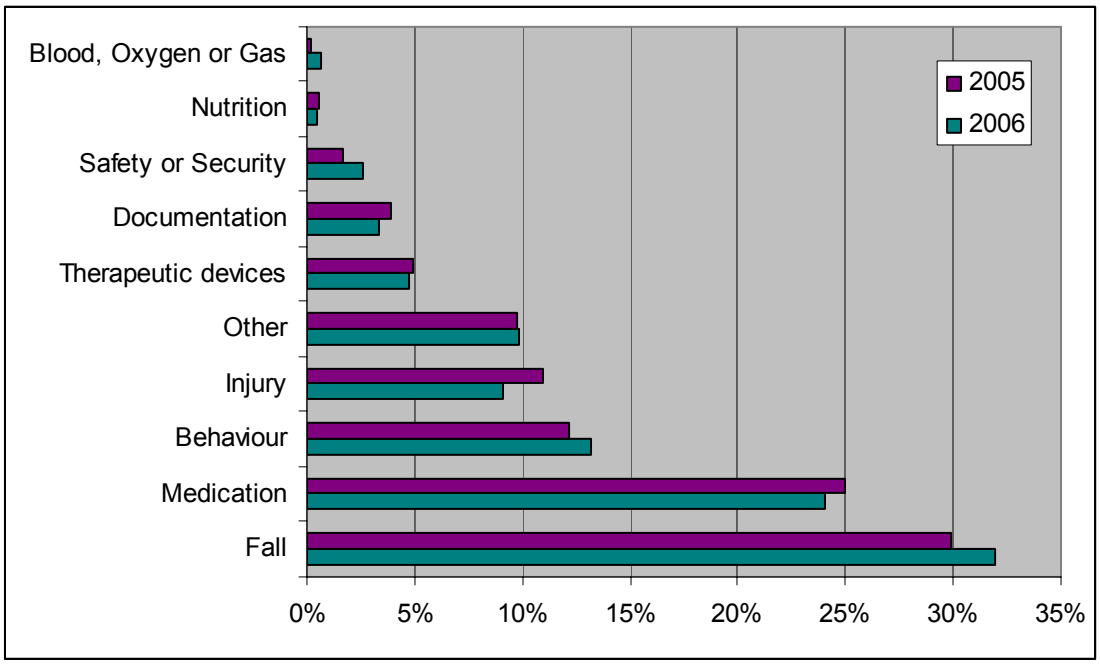
At 3rd May 2006, more than 100 000 incidents had been coded into the AIMS database. During the January to March 2006 quarter, 5435 incidents were coded. Figure 1 shows a breakdown of the incidents reported to AIMS by de-identified health service for the January to March quarters for 2005 and 2006. The reduction in the number of incidents observed for several health services can be attributed to the coding backlog at several sites. The increased number of incidents at several sites reflects increased reporting of incidents during this period. It does not indicate that a larger number of incidents occurred during this period.

## *Principal Incident Type (PIT)*

Figure 1 shows that *falls* and *medication* continue to remain the most commonly reported incident types to AIMS. Compared to the corresponding quarter for the previous year, the January to March 2006 quarter has seen a slight increase in the

number of reported *fall* incidents, and a slight decrease in the number of reported incidents involving *medicatio*n.

**Figure 1: All reported incidents by Principal Incident Type, January to March 2005 and January to March 2006**




The Principal Incident Type category: 'Other' consists of the following:

- no or delayed admission, inappropriate bed or ward (11%);
- no, wrong or delayed diagnosis (11%);
- no, wrong or delayed procedure, treatment or assessment (64%);
- medical emergency (2%);
- poor discharge planning (4%);
- hospital acquired infection (3%);
- wrong patient or body part or side (1%); and
- 'other' (eg. post operative or procedural complications, specimen not transported as requested, premature discharge, 13%).

Note: One incident can be classified with more than one subtype.

### *Incident Outcomes*

Each incident is assigned an incident outcome level ranging from 1 to 8. Levels 1 to 2 represent potential incidents (i.e. near misses) and Levels 3 to 8 represent actual incidents. Table 1 provides a definition of the outcome levels. As can be seen in Table 1, most incidents (62%) resulted in no injury to the patient (Level 2 or 3) or a

minor outcome such as extra observation (Level 4) during the January to March 2006 quarter. A small percentage (3%) of incidents resulted in a significant outcome (level 7) during this time period.

**Table 1 : All Reported Incidents by Outcome Level, January to March 2005 and January to March 2006**

| | January to March 2005 (% of incidents) | January to March 2006 (% of incidents) | Outcome Definition |
|---|---|---|---|
| 1 | 0% | 0% | A dangerous state or the possibility of harm occurring. |
| 2 | 1% | 1% | An event occurred but was intercepted prior to causing harm. |
| 3 | 29% | 35% | An event occurred with no adverse outcome. |
| 4 | 27% | 26% | An event occurred resulting in a minor outcome (eg. extra observation). |
| 5 | 26% | 22% | An event occurred resulting in a moderate outcome (eg. minor diagnostic investigations or treatment). |
| 6 | 12% | 13% | An event occurred resulting in a moderate outcome (eg. diagnostic investigations, surgical intervention, or treatment with another medication). |
| 7 | 4% | 3% | An event occurred resulting in significant outcome (eg. hospital admission, increased length of stay, morbidity which continued on discharge). |
| 8 | 0% | 0% | An event occurred resulting in permanent disability or death. These are sentinel events and should be reported as such. |

Figure 2 shows all incidents displayed by Primary Incident Type, according to outcome level for the January to March quarter. As can be seen below, the *behaviour, nutrition,* and '*other*' incidents had a greater proportion of incidents that resulted in a moderate to significant outcome (level 6 to 8).

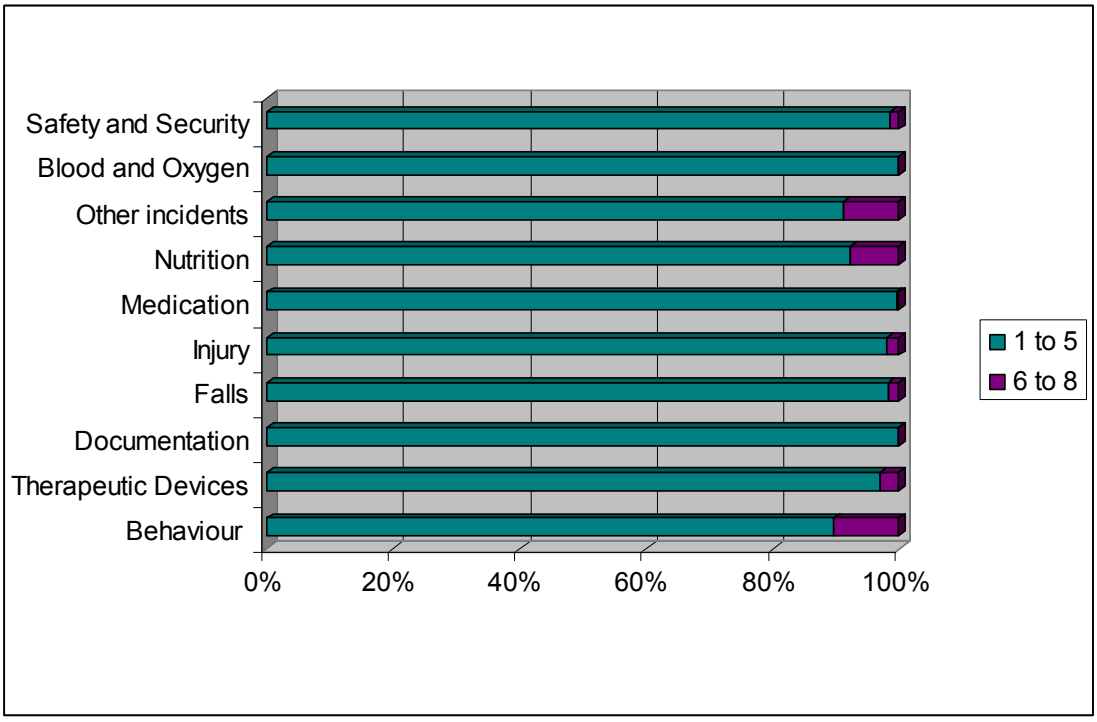
Examples of *behaviour, nutrition* and *other* incidents include:

- patient physically aggressive towards staff;
- patient attempts to harm self using a noose fashioned out of bedding;
- patient inflicts injuries on self by punching wall;
- patients physically aggressive towards other patients;
- nil by mouth patient consumes a glass of water immediately before surgery;
- patient with dentures chokes on solid food;

- Total Parenteral Nutrition bag empties undetected;
- patient transferred to different department without a handover;
- patient is discharged from hospital without wearing shoes; and
- patient observations were not taken for an extended period of time.

Incidents that result in outcomes of Level 6 and 7 typically result in additional care, including increased length of stay, and thus are costly to the health system.

**Figure 2: All incidents (PIT) by outcome level 1 to 5 and 6 to 8, January to March 2006**

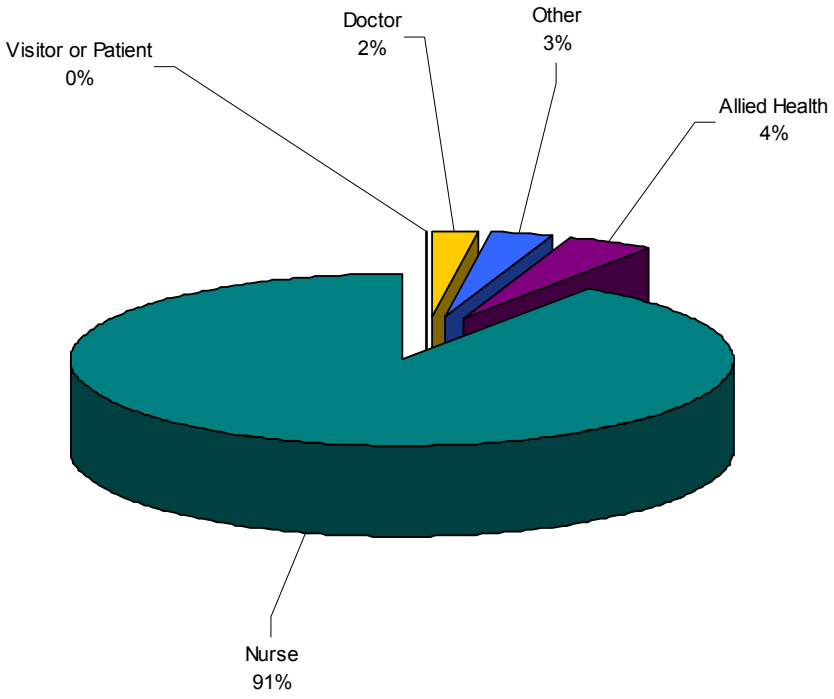



### *Reporter Classification*

Figure 3 shows the proportion of incidents reported by health care professionals and non-health care professionals. As can be seen below, nurses continue to report the majority (91%) of incidents. A small percentage of incidents were reported by Allied health professionals (4%) and doctors (2%).

Nurses typically reported *falls, medication* and *behaviour* incidents. Allied health professionals generally reported *documentation* incidents and doctors tended to report 'other' incident types (eg. no, wrong or delayed diagnosis, procedure, treatment or assessment). As noted previously, the incidents classified in the 'other' Principal Incident Type tend to result in more serious harm and increased cost to the health system.

**Figure 3: All incidents by reporter classification, January to March, 2006**




## *Fall Incidents*

Analysis of *falls* data for the January to March 2006 quarter reveals the following:

- The majority of reported *falls* (75%) occur in the elderly population (70 years +). *Falls* were highest in the 75 to 84 age group, comprising 37% of all reported *falls*.
- The greatest proportion of *falls* occurred on the same level (31%). Falls occurring on the same level have increased slightly compared to the same time last year (26%).
- The number of *falls* from beds and cots (12%) is similar to the same quarter last year (13%). There was slight decrease in the number of falls that occurred while the patient was going to and from the toilet (9% in 2006 compared to 11% in 2005).
- Nearly half (47%) of all reported fall incidents resulted in a level 4 outcome (i.e. extra observations or a minor injury that does not require treatment). One quarter (25%) of all reported fall incidents resulted in a level 5 outcome (i.e. minor treatment such as a bandaid or a cold pack applied). A serious to significant outcome (Level 6 or 7 or 8) occurred in approximately 12% of falls.
- Over half (52%) of reported fall incidents resulted in no injury to the patient. A large proportion (22%) of incidents resulted in abrasions, lacerations or skin tear.

A small percentage of reported fall incidents resulted in bruised, swollen or reddened area (10%), or pain (10%).

- Over half (57%) of patients who fell were dependent on staff for mobility. A quarter of patients who fell (28%) were dependent on mobility aids and 14% were independent. Of those who fell, 53% had been risk assessed, and a further 38% of these had had risk strategies implemented.

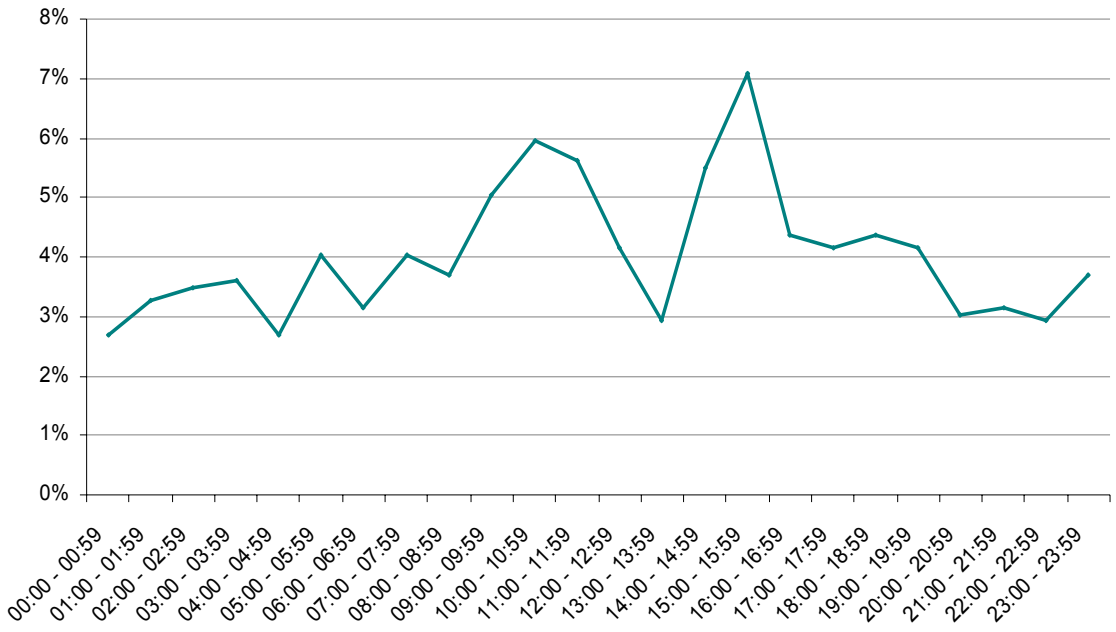
Analysis of **contributing factors** reveals that the most frequent patient contributing factors to reported fall incidents included:

- pathophysiological factors (51%);
- physical impairments (47%);
- 'other' (35%);
- failure to follow advice or instructions (27%);
- confusion or disorientation (24%); and
- dementia (19%).

Readers should note that one incident can be classified with one or more contributing factors, and thus the total of contributing factors will often exceed 100%.

Figure 4 shows the number of *fall* incidents according to the time of the day. As can be seen below, fall incidents increase at approx. 9.00 am, decrease between 1:00-2:00pm, and peak again to the highest level between 3:00 and 4:00 pm.

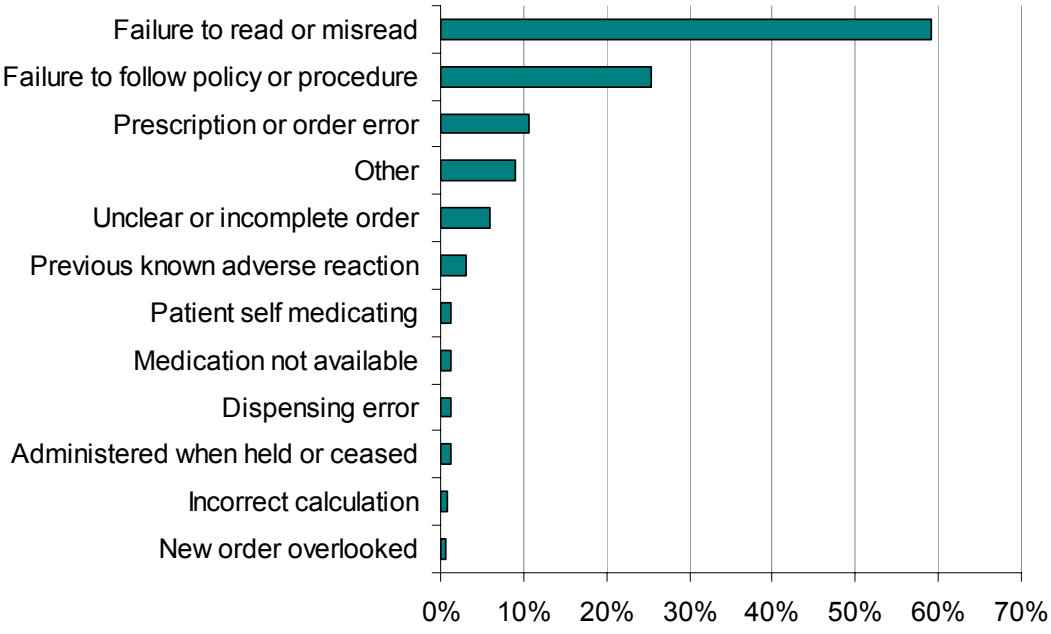
**Figure 4: All fall incidents according to time of day, January to March, 2006**



### *Medication Incidents*

Figure 5 shows the causes of reported medication incidents for the January to March 2006 quarter. As can be seen below, failure to read or misreading labels or documentation remained the most common cause of medication incidents (59%). Failure to follow policy or procedure was another leading cause of medication incidents (25%).

**Figure 5: All reported medication incidents by cause of incident, January to March, 2006.**




**Omissions**

- Omission was the most frequent type of medication incident, and accounted for 40% of medication incidents. The following medications were the most common medications involved:
    - metoclopramide hydrochloride (antiemetic medication; 7%).
    - nystatin (Oral antifungal medication; 5%);*
    - enoxaparin sodium (anticoagulant medication; 4%); and
    - metformin hydrochloride (Diabetic medication; 4%);**

*All of the nystatin incidents involved several instances of omission for the same two patients.

**The majority of the metformin hydrochloride incidents involved several incidents of omission for the same patient.

**Over dosage**

Over dosage was the second most frequently occurring medication incident, and accounted for 17% of all reported *medication* incidents. The most common medications involved in over dosage incidents are as follows:

- paracetamol*
- amiodarone hydrochlorine ** (antiarrhythmic agent);
- enoxaparin sodium (anticoagulant medication);
- frusemide*** (diuretic medication); and
- morphine.

* Many of the paracetamol incidents involved several instances of over dosage for the same patients.

** Over half of amiodarone incidents involved several instances of over dosage for the one patient.

*** All frusemide incidents were several instances of over dosage for the one patient.

**Outcome Level**

Medication incidents typically resulted in a minor outcome. Most *Medication* incidents resulted in a Level 3 (65%) or Level 4 (19%) outcome. Analysis of data by result of incident reveals that 86% of all reported *medication* incidents resulted in no injury to the patient.

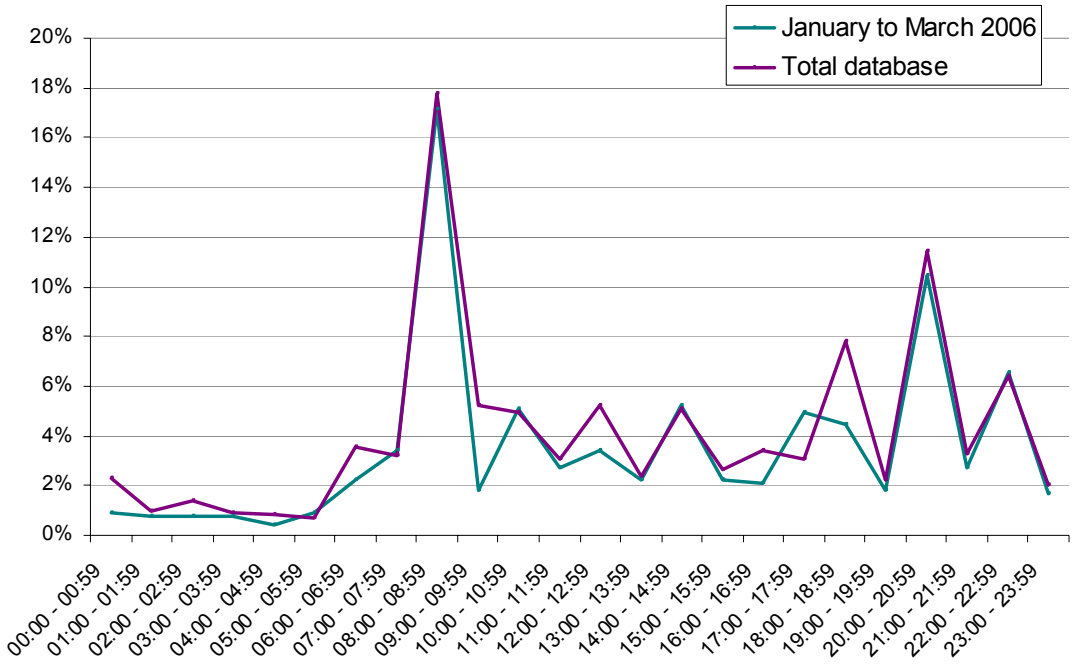
**Contributing factors**

Staff misreading or not reading documentation is the most common staff contributing factor (65%). Other factors include failure to follow policy or procedure (34%) and inadequate knowledge or inexperience (18%).

**Medication Incidents according to the time of the day**

Figure 6 shows all reported medication incidents according to the time of day that they occur. As can be seen below, there is a sharp increase in medication incidents occurring between 8:00 and 9:00 AM, and another smaller spike between 8:00 to 9:00 pm which coincides with the administration of medicines at this time. Comparison of the data from the January to March quarter to all of the medication incidents in the database shows that this is a pattern that has been occurring for some time.

**Figure 6: All reported medication incidents according to the time of the day, January to March 2006, and all incidents to date.**




### *Injury Incidents*

There were lower numbers of reported injury incidents reported during the January to March 2006 quarter compared to the same period last year. Thus, these results should be interpreted with caution, and in light of the caveats mentioned earlier in the report.

#### Cause of Injury

Figure 7 shows the cause of reported injury incidents. As can be seen in figure 8, the largest proportion (31%) of reported injury incidents were pressure ulcers.
A sizable proportion (22%) of reported injury incidents were the result of an impact or collision (for example, injury resulting from the impact of a moving object or patient's limbs getting caught in the cot side). Many of the injury incidents (19%) of reported *injury* incidents were classified as 'other.' Examples of these injury incidents include:

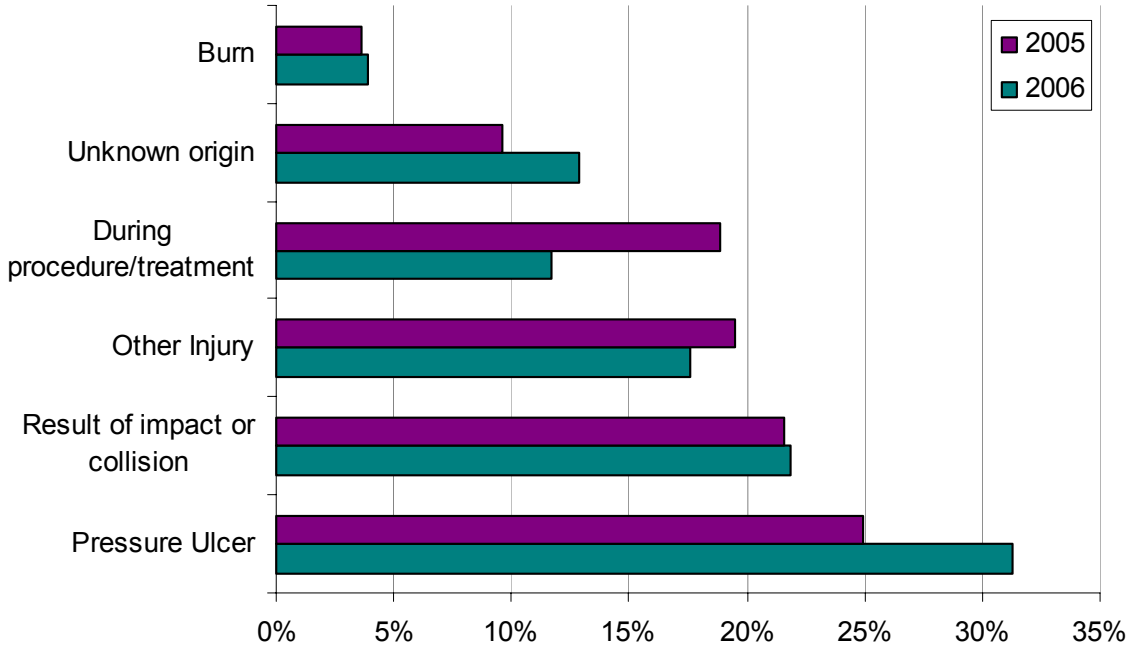
- patient hits or punches another patient;
- patient resists staff assistance and scratches self with own fingernail; and
- patient steps on broken glass and cuts skin on foot.

A smaller percentage (12%) of reported *injury* incidents were the result of unintended injury during procedure or treatment. Some examples of injuries sustained during a procedure or treatment include:

- bowel perforated during colonoscopy;
- laceration sustained to baby's face/head during delivery;

- leak in insulation of hook diathermy instrument causes slight burn to patient's liver;
- patient's skin cut during removal of dressings; and
- bladder perforation during vaginal wall repair procedure.

**Figure 7: All reported injury incidents by cause of incident, January to March 2006**




**Outcome Level**

- The largest proportion (67%) of reported injury incidents resulted in a level 5 outcome (i.e. extra observations, minor diagnostic intervention such as a blood test, or minor treatment such as a bandaid).
- A sizable proportion (20%) of incidents resulted in a level 4 outcome (i.e. no harm or minor harm that did not require treatment).
- A small percentage (4%) of injury incidents resulted in 'no outcome' (no detectable injury could be observed by staff or the patient).
- There were few (9%) injury incidents that resulted in level 6 or 7 outcomes (i.e. diagnostic or surgical intervention, increased length of stay in hospital). There were no level 8 outcomes reported.

**Result of Incident**

- The largest proportion (40%) of injury incidents resulted in abrasions or lacerations or skin tear.

- A large percentage of injury incidents were classified as 'other.' Further investigation revealed that these most frequently involved pressure ulcers.
- 11% of injury incidents resulted in bruises, swelling or reddening of the area. A small percentage (9%) of injury incidents did not result in any injury.

### Contributing factors

#### Patient contributing factors to injury incidents

- Pathophysiological factors constitute 53% of reported injury incidents. Physical impairments also contributed to injury incidents in 33% of incidents.
- A number of incidents (24%) were classified under 'other' contributing patient factors. Further investigation revealed factors including diminished mobility, dementia, physical impairments, mental disorders, failure to follow staff advice or instructions, obesity, affected by medication and confusion.
- The frailty, illness and debilitation of the patient involved was a contributing factor in11% of reported injury incidents.
- Dementia was a contributing factor in 11% of reported injury incidents.

#### Staff contributing factors to injury incidents

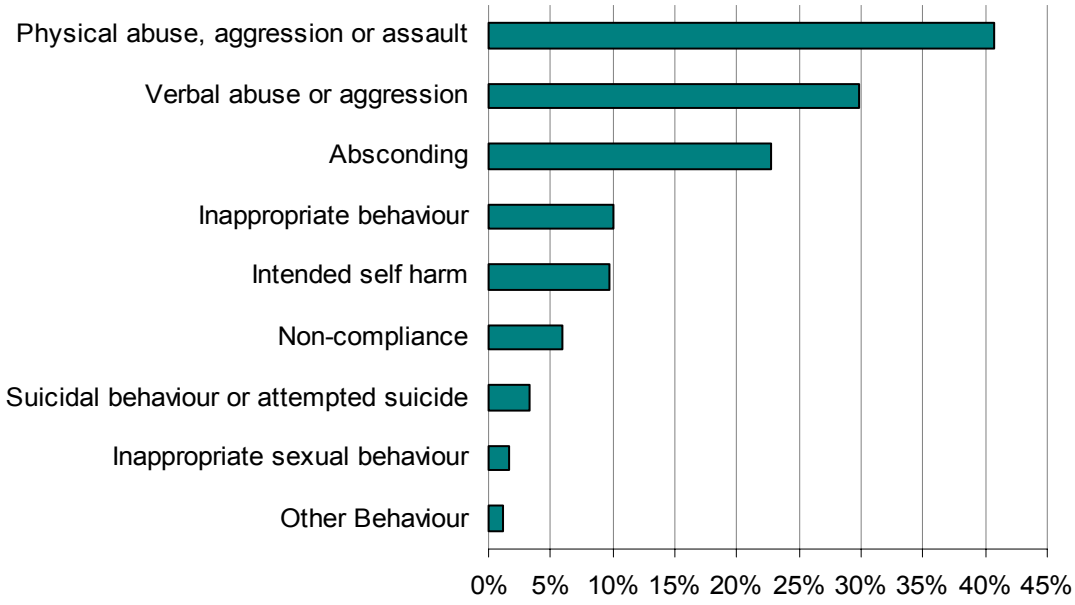
- Staff distraction or inattention was the most frequently reported staff contributing factor to injury incidents (3% of all reported injury incidents).
- Failure to follow policy or procedure was also a contributing factor to injury incidents (2% of all reported injury incidents).
- Communication problems between staff were also contributing factors to injury incidents (2% of reported injury incidents).

## *Behaviour Incidents*

### Behaviour problem

Figure 8 shows all reported behaviour incidents according to the behavioural problem. As can be seen below, the largest proportion (41%) of behaviour incidents were physical abuse, aggression or assault. Verbal abuse or aggression accounted for 30% of reported behaviour incidents. Absconding behaviour was another frequently reported behaviour problem, accounting for 23% of reported behaviour incidents.

**Figure 8: All reported behaviour incidents by behaviour problem, January to March, 2006**




### Outcome level

Most behaviour incidents (54%) resulted in a minor outcome (level 3, 4 or 5). However, a large percentage (46%) of behaviour incidents resulted in a moderate to significant outcome (level 6, 7 or 8). The largest proportion (36%) of reported behaviour incidents resulted in a level 6 outcome. This outcome level indicates a moderate injury such as minor fractures, or increased diagnostic or surgical intervention. A small percentage (11%) of behaviour incidents resulted in a serious outcome (level 7 or 8).

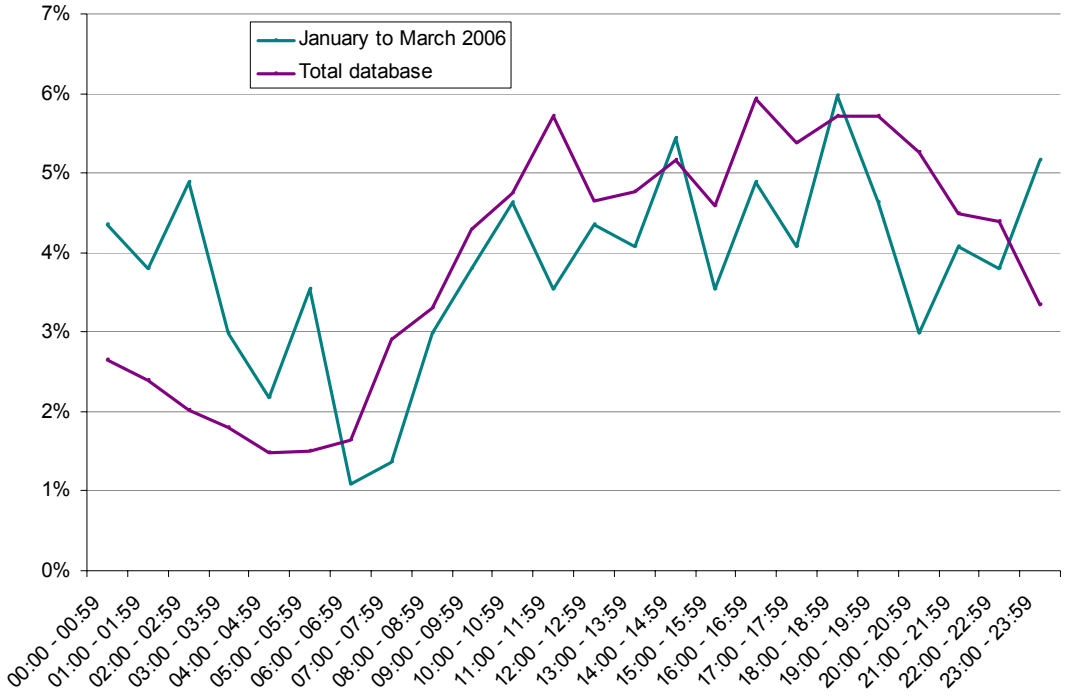
### Age of patient

The largest proportion of *behaviour* incidents involved teenagers and young adults aged between15 and 34 years (38%).

### Time of Day

Figure 9 shows all reported behaviour incidents according to the time of the day that they occurred. As can be seen in figure 9, behaviour incidents were highest between the hours of 10:00 AM and 6:00 PM.

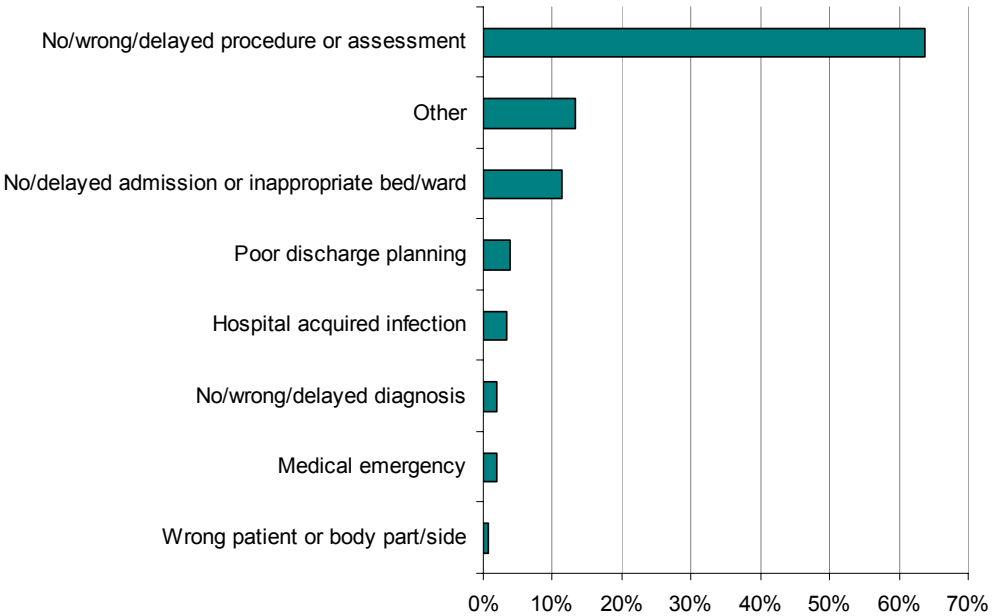
**Figure 9: All reported behaviour incidents by time of day, January to March, 2006, and the total database to date.**




### *'Other' Incidents*

Figure 10 shows all reported 'other' incidents according to incident type. As can be seen below, most (64%) incidents classified as 'other' incidents were due to the absence of, delayed or wrong procedure, treatment or assessment being conducted.

**Figure 10: All reported 'other' incidents by 'other' incident type, January to March, 2006**



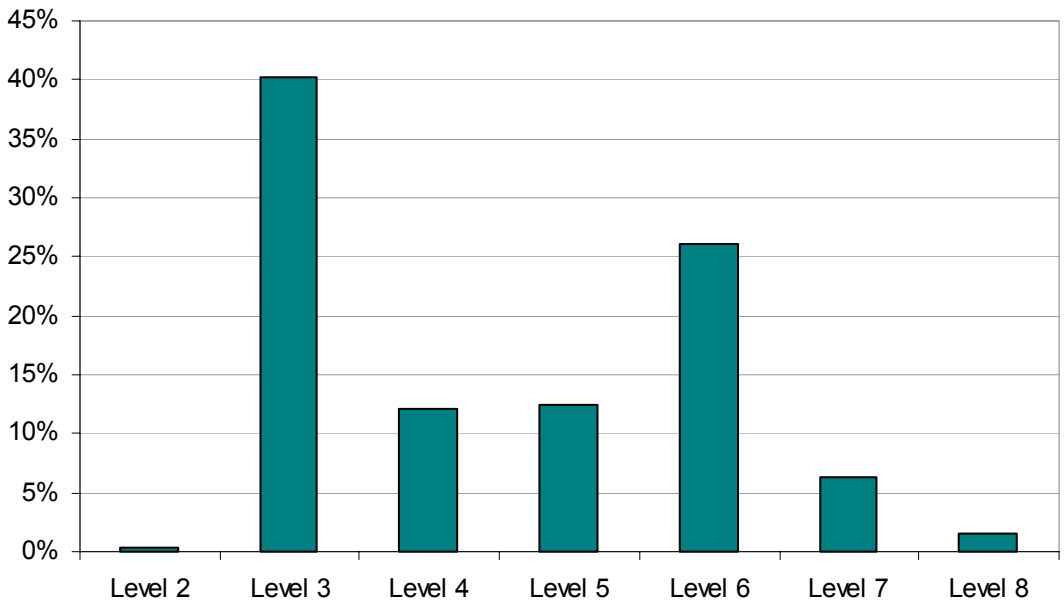
As can be seen above, a sizable proportion of 'other' incidents were classified as 'other'. Examples of these incidents include:

- Gastric ulcer perforation;
- Post partum haemorrhage;
- Inadequate handover of an unstable patient;
- Patient recovering after surgery was unable to sleep due to noise level;
- Excess patients on ward resulted in a reduction in quality of care;
- Staff discuss procedure with the patient within earshot of other patients;
- Ambulance arrives without staff awareness that the ambulance was incoming;
- Poor communication between staff;
- Bloods not tested/ blood results lost; and
- Undetected urinary retention.

**Outcome Level**

Figure 11 shows the outcome level of incidents classified as 'other.' As can be seen below, most 'other' incidents resulted in a minor or no outcome (level 2, 3, 4, or 5). Just over a quarter of incidents resulted in a level 6 outcome. A level 6 outcome indicates a moderate outcome (i.e. a rib fracture) which required minor diagnostic or surgical intervention (i.e. IV/IM analgesia). A large percentage of 'other' incidents were classified as level 3 (no harm occurred, and no extra resources were required to manage the incident). A small percentage of 'other' incidents (8%) resulted in a significant or severe outcome (level 7 or 8).

**Figure 11: Outcome Level of 'Other' Incidents, January to March, 2006**




Examples of level 6 outcomes classified as 'other' include:

- post partum haemorrhage;

- 3rd degree tears sustained during childbirth;
- fasting patient given food, resulting in cancellation of procedure; and
- post partum bleeding; and
- medication change was noted on patient's chart, but the existence of another medication chart for the patient resulted in the patient receiving the wrong medication.

Examples of level 3 outcomes classified as 'other' include:

- On-call/duty staff not forthcoming when contacted by other staff;
- Staff failure to pass information to other staff;
- Excess patients on ward resulted in a reduction in quality of care;
- Breakdown in communication between staff;
- Surgical site not marked on patient's body;
- Inadequate/no handovers between staff; and
- An interpreter was not booked on admission of a non-English speaking patient.

# APPENDIX ONE

Readers of this report are advised to note the following limitations to the data collected by AIMS. Firstly, the literature suggests that approximately 10% of patients admitted to acute care hospitals experience some kind of iatrogenic injury. The Australian Patient Safety Foundation, developers of AIMS, estimates that only one to two percent of all incidents is reported. Consequently, we cannot assume that the data is representative of all incidents. Secondly, AIMS has been implemented across the state however not all health services (particularly some rural sites) are using the system to full capacity. Thirdly, there is a time lag between data collection, data entry and coding.

**Duplicate reports**

There are a number of safety nets in the AIMS process to minimise or avoid duplicate records entering the system:

- The person raising the form puts a note in the medical record advising that an AIMS form has been raised. This reduces the risk for a duplicate if the medical record is checked.
- The AIMS forms are usually investigated by a small number of involved staff, Senior Staff, or Departmental Heads before the form is signed. It is likely that these staff would recognise a duplicate case.
- One person usually performs data entry duties. This person is likely to recognise a duplicate when entering the data.
- Different coders input codes for specific sites. This presents a final opportunity to identify a duplicate for the same patient.

The likelihood of duplicate records being entered into the system, while slim, is not impossible. In the event that duplicate records enter the system, they would not compromise the integrity of the data due to the volume of data in the database.

**Medication reports**

Please note the following when analysing AIMS data regarding medication incidents:

- Medication incidents are coded using a generic MIMS medication list. Therefore, when coding an incident involving panadeine, the coders select codeine phosphate and paracetamol in the MIMS list. A report will therefore represent this as one incident involving codeine phosphate and one incident involving

paracetamol. Unfortunately there is no way of linking these drugs back to their original trade name, other than by reviewing the description of the case using the case ID. This applies to any medication where more than one component is involved.

- Text searches on medication names may give different results to a medication report based on the coded medication name (as above), because reporters often give the trade name as opposed to the generic name from MIMS. A recent example involved a text search (through the case narrative) for the word 'adrenaline' giving fewer results than a top 25 medication list report or individual medication search. This is because reporters may have named epipen, rectinol, scandinest, xylocaine *or* adrenaline in the report, but this is then represented as adrenaline in an individual medication report (plus other components).

The central AIMS coders are available to assist metropolitan non-teaching and rural hospitals and health services with interpretation on medication incidents. Staff at metropolitan teaching hospitals are requested to contact their own AIMS coders for assistance with interpretation of data.