

The Australian Incident Monitoring Study in Intensive Care: AIMS-ICU. An Analysis of the First Year of Reporting

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Intensive Care Units participating in the AIMS-ICU project#

SUMMARY

The AIMS-ICU project is a national study set up to develop, introduce and evaluate an anonymous voluntary incident reporting system for intensive care. ICU staff members reported events which could have reduced, or did reduce, the safety margin for the patient. Seven ICUs contributed 536 reports, which identified 610 incidents involving the airway (20%), procedures (23%), drugs (28%), patient environment (21%), and ICU management (9%). Incidents were detected most frequently by rechecking the patient or the equipment, or by prior experience. No ill effects or only minor ones were experienced by most patients (short-term 76%, long-term 92%) as a result of the incident. Multiple contributing factors were identified, 33% system-based and 66% human factor-based. Incident monitoring promises to be a useful technique for improving patient safety in the ICU, when sufficient data have been collected to allow analysis of sets of incidents in defined "clinical situations".

Key Words: INTENSIVE CARE: incident monitoring, quality assurance, patient safety

The potential contribution of incident monitoring to Quality of Care (QOC) and patient safety in the Intensive Care Unit (ICU) has been outlined elsewhere in this issue together with a description of the development and initial evaluation of the AIMS-ICU project¹ which drew on the past experience of some of the investigators^{2,3}. The second phase of the AIMS-ICU project is described here. The aim was to develop and evaluate a tool suitable for use at a national level to systematically identify and analyse incidents in the intensive care environment.

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#A joint project of the Australian and New Zealand Intensive Care Society and the Australian Patient Safety Foundation. Seven units contributing data:

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Intensive Care Unit, Liverpool Hospital, Liverpool, N.S.W.
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MATERIALS AND METHODS

An incident was defined as any event which could have reduced, or did reduce, the safety margin for the patient. It may or may not have been preventable and may or may not have involved an error on the part of the health care team.

The initial development of the AIMS-ICU project is described elsewhere in this journal¹. A new incident report form was designed for use in the ongoing national study (Figure 1) in light of the findings of the pilot study. Seven Australian ICUs contributed data to the AIMS-ICU project during the first year of reporting.

A "starter pack" was prepared and given to representatives of ICUs wishing to join the project. This included a local coordinator information form, instructions for the local coordinator, guidelines for the completion of the AIMS-ICU form, and an AIMS-ICU report form. Each unit was advised to form a local team to encourage and oversee the participation of staff members in incident reporting. A single person was to be nominated as the "local coordinator" in each unit, for the purpose of liaising with the national coordinator. The concepts of QOC and incident monitoring were introduced by tutorial sessions, group discussions and during ward rounds. Each local coordinator was encouraged to organize regular review sessions for all interested staff


 <p>ANZICS</p>	<p>LOCAL REPORT # : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>ICU CODE: <input type="text"/> <input type="text"/> <input type="text"/></p> <p>CENTRAL REPORT #: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>
<p>Australian and New Zealand Intensive Care Society</p>	
<p>APSF</p>	
<p>The Australian Patient Safety Foundation Inc.</p>	
<p>A.I.M.S - I.C.U</p>	
<p>Australian Incident Monitoring Study - Intensive Care</p>	
<p>INCIDENT REPORT</p>	
DEFINITION	<p>An Incident is any unintended event or outcome which could have, or did, reduce the safety margin for the patient. It may or may not have been preventable and may or may not have involved an error on the part of the health care team.</p>
AIM	<p>To improve Quality of Care in the Intensive Care Unit by accumulating experience of incidents that may affect patient safety. The focus is on problems with the SYSTEM, not individual staff members. A team approach is required.</p>
METHOD	<p>Although most incidents and accidents have some component of human error ("active failures"), most would not have occurred had there not been one or more deficiencies in the system ("latent failures"). Identification of these will allow effective preventive strategies to be developed. Regular feedback will be provided.</p>
IMMUNITY	<p>All information is immune from subpoena under new Federal legislation.</p>
COORDINATOR	<p>A nominated staff member in your ICU is your local coordinator. Feel free to discuss with him/her any incident or any difficulties which you may encounter with this study.</p>
<p>INSTRUCTIONS</p>	
<ol style="list-style-type: none"> 1. Narrative Section: Write simply in your own words a description of what happened. 2. Other Sections: Tick AT LEAST one box in each section. Please complete ALL sections. 3. Place the completed report in the container provided. 	

FIGURE 1: Incident Report Form.

SECTION 1: NARRATIVE:	
<p>In your own words describe the incident. Include details about any factors which you believe contributed to, or limited the impact of the incident. Attach a separate page if further space is required.</p>	
<p>What measures might be employed in the future to prevent any such incident?</p>	
SECTION 2: KEYWORDS (To be completed by the Central Coordinator)	
<div style="border: 1px solid black; height: 20px;"></div>	

FIGURE 1 continued

SECTION 3: PATIENT AND PERSONNEL INVOLVED:

INCIDENT INVOLVED A SINGLE PATIENT: YES 01 NO 02: **GO TO: 3B**

3A: PATIENT FACTORS: ICU PATIENT 01 OR PROCEDURE PATIENT only 02

PATIENT ACUITY: (Tick ALL choices applicable to the patient at the time of the incident.)

Intubated: ETT	<input type="checkbox"/> 01
Trachy	<input type="checkbox"/> 02
Ventilated	<input type="checkbox"/> 03
CPAP	<input type="checkbox"/> 04
Invasive Monitoring	<input type="checkbox"/> 05
Multiple Infusions	<input type="checkbox"/> 06
Isotropes	<input type="checkbox"/> 07
Dialysis	<input type="checkbox"/> 08
IABP	<input type="checkbox"/> 09
ICP Monitoring	<input type="checkbox"/> 10
Non-compliant Patient / Restless / Confused	<input type="checkbox"/> 11
Other:	<input type="checkbox"/> 12

PATIENT AGE: (choose one box)
 0 - 28 days 01 1 - 14 yrs 03
 29 days - 1 year 02 > 14 yrs 04

PATIENT OUTCOME (may choose > 1 / column)

	IMMEDIATE	LONG TERM
Nil	<input type="checkbox"/> 01	<input type="checkbox"/> 01
Minor physiol. change	<input type="checkbox"/> 02	<input type="checkbox"/> 02
Major physiol. change	<input type="checkbox"/> 03	<input type="checkbox"/> 03
Physical injury	<input type="checkbox"/> 04	<input type="checkbox"/> 04
Psychological injury	<input type="checkbox"/> 05	<input type="checkbox"/> 05
Death	<input type="checkbox"/> 06	<input type="checkbox"/> 06
Patient/relative dissatisf.	<input type="checkbox"/> 07	<input type="checkbox"/> 07
Prolonged hospital stay	<input type="checkbox"/> 08	<input type="checkbox"/> 08
Unknown	<input type="checkbox"/> 09	<input type="checkbox"/> 09

3B: STAFF FACTORS: (choose 1 per column)

STAFF MEMBER	PRECIPITATED INCIDENT	DETECTED INCIDENT
Bedside Nurse	<input type="checkbox"/> 01	<input type="checkbox"/> 01
Nurse in Charge	<input type="checkbox"/> 02	<input type="checkbox"/> 02
Relieving Nurse	<input type="checkbox"/> 03	<input type="checkbox"/> 03
Casual Nurse	<input type="checkbox"/> 04	<input type="checkbox"/> 04
RMO/Registrar	<input type="checkbox"/> 05	<input type="checkbox"/> 05
SenReg/Specialist	<input type="checkbox"/> 06	<input type="checkbox"/> 06
Other Health Professional	<input type="checkbox"/> 07	<input type="checkbox"/> 07

IS THIS STAFF MEMBER:
 ICU TRAINED: YES NO YES NO

SECTION 4: WHEN AND WHERE INCIDENT HAPPENED

DATE: Month: Year:
TIME: Day: (7am - 7pm) 01 Night: (7pm - 7 am) 02 Weekend/P.H.: 03

INCIDENT OCCURRED DURING:

Admission Intervention	<input type="checkbox"/> 01
Ongoing Care	<input type="checkbox"/> 02
Emergency Intervention	<input type="checkbox"/> 03

HOW INCIDENT WAS DETECTED:

Routine	<input type="checkbox"/> 01
Non-routine/incidental	<input type="checkbox"/> 02

TIME BEFORE DETECTION:

< 1 min	<input type="checkbox"/> 01
1-5 min	<input type="checkbox"/> 02
5min-1hr	<input type="checkbox"/> 03
1hr-1day	<input type="checkbox"/> 04
> 1day	<input type="checkbox"/> 05
Unsure	<input type="checkbox"/> 06

METHOD OF DETECTION:

Visual checking of:

Patient	<input type="checkbox"/> 01
Chart	<input type="checkbox"/> 02
Equipment	<input type="checkbox"/> 03
Monitor detection	<input type="checkbox"/> 04

Which monitor?

WHERE INCIDENT OCCURRED:

Within ICU	<input type="checkbox"/> 01
Procedure Room	<input type="checkbox"/> 02
Transportation within Hospital	<input type="checkbox"/> 03
Transportation outside Hospital	<input type="checkbox"/> 04
Other:	<input type="checkbox"/> 05

FIGURE 1 continued

SECTION 5: FACTORS CONTRIBUTING TO INCIDENT (tick all appropriate choices).

SYSTEM-BASED FACTORS		HUMAN FACTORS	
Physical environment / infrastructure		Knowledge-based error	
Lack of space/room	<input type="checkbox"/> 01	Lack or faulty knowledge	<input type="checkbox"/> 01
Lack of facility	<input type="checkbox"/> 02	Error of:	
Excessive noise	<input type="checkbox"/> 03	Judgement	<input type="checkbox"/> 02
High unit activity level	<input type="checkbox"/> 04	Problem recognition/anticipation	<input type="checkbox"/> 03
Staff mealtime	<input type="checkbox"/> 05	Diagnosis	<input type="checkbox"/> 04
Handover/ward round	<input type="checkbox"/> 06	Treatment decision	<input type="checkbox"/> 05
Lack of support staff	<input type="checkbox"/> 07	Use of investigation procedures	<input type="checkbox"/> 06
		Timing of investigation procedures	<input type="checkbox"/> 07
		Omitting intended treatment	<input type="checkbox"/> 08
		Incorrect charting	<input type="checkbox"/> 09
		Incorrect prescription	<input type="checkbox"/> 10
		Incorrect interpretation of information	<input type="checkbox"/> 11
		Information not sought	<input type="checkbox"/> 12
		Information not available	<input type="checkbox"/> 13
Equipment (including monitors)		Rule-based error	
Unavailable equipment	<input type="checkbox"/> 01	Patient assessment inadequate	<input type="checkbox"/> 01
Inadequate equipment	<input type="checkbox"/> 02	Patient preparation inadequate	<input type="checkbox"/> 02
Poor design	<input type="checkbox"/> 03	Failure to check equipment	<input type="checkbox"/> 03
Poor maintenance	<input type="checkbox"/> 04	Misuse of equipment	<input type="checkbox"/> 04
Equipment failure	<input type="checkbox"/> 05	Unfamiliar equipment	<input type="checkbox"/> 05
Inadequate inservice	<input type="checkbox"/> 06	Unfamiliar environment	<input type="checkbox"/> 06
		Unfamiliar patient	<input type="checkbox"/> 07
		Failure to follow protocol	<input type="checkbox"/> 08
		Use wrong protocol	<input type="checkbox"/> 09
		Labelling error	<input type="checkbox"/> 10
		Calculation error	<input type="checkbox"/> 11
Work Practices / Policies / Protocols		Skill - based error	
Communication problem	<input type="checkbox"/> 01	Distraction/Inattention	<input type="checkbox"/> 01
Inadequate assistance	<input type="checkbox"/> 02	Fatigue	<input type="checkbox"/> 02
Lack of supervision	<input type="checkbox"/> 03	Haste	<input type="checkbox"/> 03
Inadequate training	<input type="checkbox"/> 04	Stress	<input type="checkbox"/> 04
Inadequate protocol	<input type="checkbox"/> 05		
Insufficient staff	<input type="checkbox"/> 06	Technical error	
Unable to contact staff	<input type="checkbox"/> 07	Fault of technique	<input type="checkbox"/> 01
Inapprop. staff / patient allocation	<input type="checkbox"/> 08	Inexperience	<input type="checkbox"/> 02
		Uncooperative patient	<input type="checkbox"/> 03
		Difficult patient body habitus	<input type="checkbox"/> 04
		Patient physiological factors	<input type="checkbox"/> 05
Other System-based Factors		Other Human Factors	
.....	<input type="checkbox"/> 01	<input type="checkbox"/> 01
CHANCE			
Unforeseeable problem			
Allergic reaction	<input type="checkbox"/> 01		
Unanticipated response	<input type="checkbox"/> 02		
Other	<input type="checkbox"/> 03		
SECTION 6: FACTORS LIMITING EFFECT OF INCIDENT			
Use of correct protocol	<input type="checkbox"/> 01	Skilled assistance	<input type="checkbox"/> 05
Rechecking patient	<input type="checkbox"/> 02	Prior experience / training	<input type="checkbox"/> 06
Rechecking equipment	<input type="checkbox"/> 03	QA activity	<input type="checkbox"/> 07
Supervision	<input type="checkbox"/> 04	Other	<input type="checkbox"/> 08
SECTION 7: FOLLOW-UP OF INCIDENT REPORTED (To be completed by Local Coordinator)			

FIGURE 1 continued

members to participate in the discussion of recently reported incidents. The ICU management and hospital administration were advised of the unit's participation in the national study

Data Collection

Staff members in the participating ICUs were encouraged to report on the AIMS-ICU incident report form any event that did or could potentially affect patient safety. The forms were available at all times in a convenient place in the ICU. Each form was labelled with a specific unit code and local report number. The local coordinator and other key persons answered any difficulties with filling out these forms and encouraged participation. Completed forms were deposited in a locked box. The local coordinator reviewed the forms regularly, kept them in a safe place, and discussed particular local concerns at the regular staff review sessions. Any follow-up information was added to the form by the local coordinator after the review session, prior to forwarding the report forms to the national coordinator.

Data Handling and Analysis

Incident report forms were reviewed by the national coordinator. Any identifying information that had inadvertently been included was erased. Key words describing the incident type were assigned after reading the narrative. In the Multiple Choice Section (MCS), where contextual information was elicited, any missing data was added and any incorrect data edited by the chief investigator (UB) if this information was included in the narrative. The incident reports gathered during the pilot study were included in the ongoing national database. To allow incorporation of these incident reports, the multiple choice section of these reports were re-coded. A central computerized database was established. Descriptive analysis was undertaken to show the types of errors and their frequency. Frequency distributions and proportions of incident types reported were described as were their predisposing and minimizing factors, staff and patient factors, patient outcomes and suggested corrective strategies.

Ethical and Legal Implications

Patient and staff confidentiality was ensured by excluding personal identification from the report forms. This study was not intended to compete with the established hospital compulsory reporting of incidents. Staff members' choice to participate in this study, by reporting incidents on the report form, was taken to imply consent. This study was declared a

specific Quality Assurance Activity under the Health Insurance (Quality Assurance Confidentiality) Amendment Act 1992.

RESULTS

Participating Intensive Care Units. By the end of June 1994, 33 ICUs had requested information about the AIMS-ICU study. Of these, 24 ICUs had registered as participating units and seven ICUs had submitted data. Six of these seven units were classified as general intensive care units and one unit as a surgical unit. The number of beds per intensive care unit ranged from six to 15. One unit cared exclusively for children, one unit for both children and adults, and the remaining five usually cared for adults. The seven units who submitted data for this project commenced collection of data between May 1993 and March 1994.

Incident types. Incident types, by five major categories, are given in Table 1. Six hundred and ten incidents were identified in the 536 reports: airway/ventilation 124 (20%), drugs/therapeutics 169 (28%), procedures/lines/equipment systems 140 (23%), patient management/environment 125 (21%) and unit management 52 (9%).

TABLE 1
Incident categories (including national and pilot study)

ICU Code	Airway	Drugs	Proc.	Envir.	Manage.	Total
A	40	46	36	47	30	199
B	41	43	45	41	13	183
C	18	22	17	2	2	29
D	6	11	10	6	2	35
E	14	24	9	17	1	65
F	2	6	4	5	3	20
G	3	17	19	7	1	47
Total	124	169	140	125	52	610

Airway = Airway/ventilation
 Drugs = Drugs/therapeutics
 Proc. = Procedures/Lines/Equipment systems
 Envir. = Patient management/Environment
 Manage. = Unit management

Patient category. Of the total 536 incident reports, 512 (95%) involved single patients and 24 (5%) related to ICU management matters. Therefore only these 512 reports were used to calculate patient factors. Five hundred and five patients were inpatients in an ICU at the time of the incident, six were "procedure only patients" and one patient was not related to the Intensive Care Unit directly.

Patient age. Two patients (<1%) were 0 to 28 days old, 20 (4%) were 29 days to 1 year, 27 (5%) were one to 14 years, and 449 (88%) were over the age of 14

years at the time of the incident. In 14 cases the age group was not reported.

Patient acuity. ICU intervention data was either not applicable or not available for the six reports dealing with procedure patients, the 128 reports re-coded from the pilot study, or for the reports collected by one of the seven ICUs contributing data. Of the 287 reports that included data about interventions at the time of the incident, three or more interventions were present in 70%, and four or more in 53%. A total of 994 selections were made, giving an average of 3.5 selections per report.

Patient outcome. In Figure 2, the selections made for immediate and long-term patient outcomes due to the incident are given. In the majority of reports, "no adverse outcome" or "minor physiological change" was selected. The category "morbidity" included physical and psychological injuries, prolonged hospital stay, and patient or relative dissatisfaction.

Staff member precipitating incident. Nursing staff were identified in 58%, medical staff in 20%, and other health professionals in 12% of incidents reported. In 10% the incident was not precipitated by a staff member. Fifty-two per cent of the staff members precipitating an incident were ICU trained, 48% were not.

Staff member detecting incident. Nursing staff detected 83% of incidents, medical staff 15%, and other health professionals 2%. These data were not available in < 1% of reports. Ninety per cent of the staff members who detected an incident were ICU trained.

Date and time of incident occurrence. The reported incident occurred during the day (7 am-7 pm) in 306 (57%) cases, during the night (7 pm-7 am) in 181 (34%), and during a weekend or public holiday in 26 (5%). These data were not available in 23 (4%) of reports.

Phase during which the incident occurred. Sixty-two (12%) incidents occurred during "admission intervention", 405 (85%) during "ongoing care", and 11 (2%) occurred during "emergency intervention". For 6 (1%) incidents the phase during which the incident occurred was "unknown".

Time before detection. Seventy-four (14%) incidents were detected in < 1 minute, 81 (15%) within 1-5 minutes, 118 (22%) within 5 minutes-1 hour, 198 (37%) within 1 hour-1 day, and 43 (8%) > 1 day after the estimated onset of the incident occurrence. In 16 (3%) cases the reporter was unsure of the time before detection.

Where the incident occurred. The incident occurred "within the ICU" in 485 (91%) reports, in the "procedure room" in 7 (1%), during "transportation with-

in the hospital" in 23 (4%), during "transportation outside the hospital" in 3 (1%), and in "other" locations in 18 (3%).

How the incident was detected. The incident was detected during routine checking in 299 (56%) reports. In 234 (44%) the incident was a non routine/incidental finding. In one report these categories were not applicable.

Method of detection. Multiple selections in this category were possible and 730 selections were made, giving an average of 1.4 selections per report (Figure 2). Visual checking of equipment or the patient were most commonly reported.

Contributing factors. A total of 1896 selections were made, an average of 3.5 selections per report. Of the selections made, system-based factors constituted 620 (33%) choices, human factors 1256 (66%), and chance 20 (1%). The proportions of the major sub-categories are given in Figure 2, as are the most frequently selected individual factors.

Limiting factors. A total of 1016 selections were made, giving an average of 1.9 per report. The details of the selections made are listed in Figure 2. No selection was made in 14 (3%) reports.

DISCUSSION

Human errors are a pervasive and normal part of life. When they lead to incidents it has been traditional to investigate them. However, accident investigation is limited in its usefulness because of faulty recall, medicolegal factors and outcome bias^{4,5}. Incident monitoring elicits contextual information that gives insight into underlying human and system failure that can be used to prevent or minimize the effects of accidents. Incident monitoring may yield data that is more useful than that available from currently used methods, such as compulsory incident reporting, audits and mortality/morbidity reviews. Anonymity and medicolegal safety are key factors, as staff members are more inclined to describe the episode frankly when the report is anonymous and no effort is made to apportion blame. The system is assessed, not individual staff members. In this study, most incidents reported caused either no harm or only minimal harm. Therefore, outcome bias should be less of a problem than in accident investigations.

The AIMS-ICU data represent the spectrum of incidents which individual staff members working in the ICU setting felt motivated to report. It is likely that participants are more inclined to report unusual, interesting or particularly dangerous incidents than mundane events, especially when there is a delay between incident occurrence and reporting⁶. Here,

FIGURE 2
THE FREQUENCIES OF METHODS OF DETECTION, CONTRIBUTING FACTORS, LIMITING FACTORS AND TYPES OF PATIENT OUTCOME

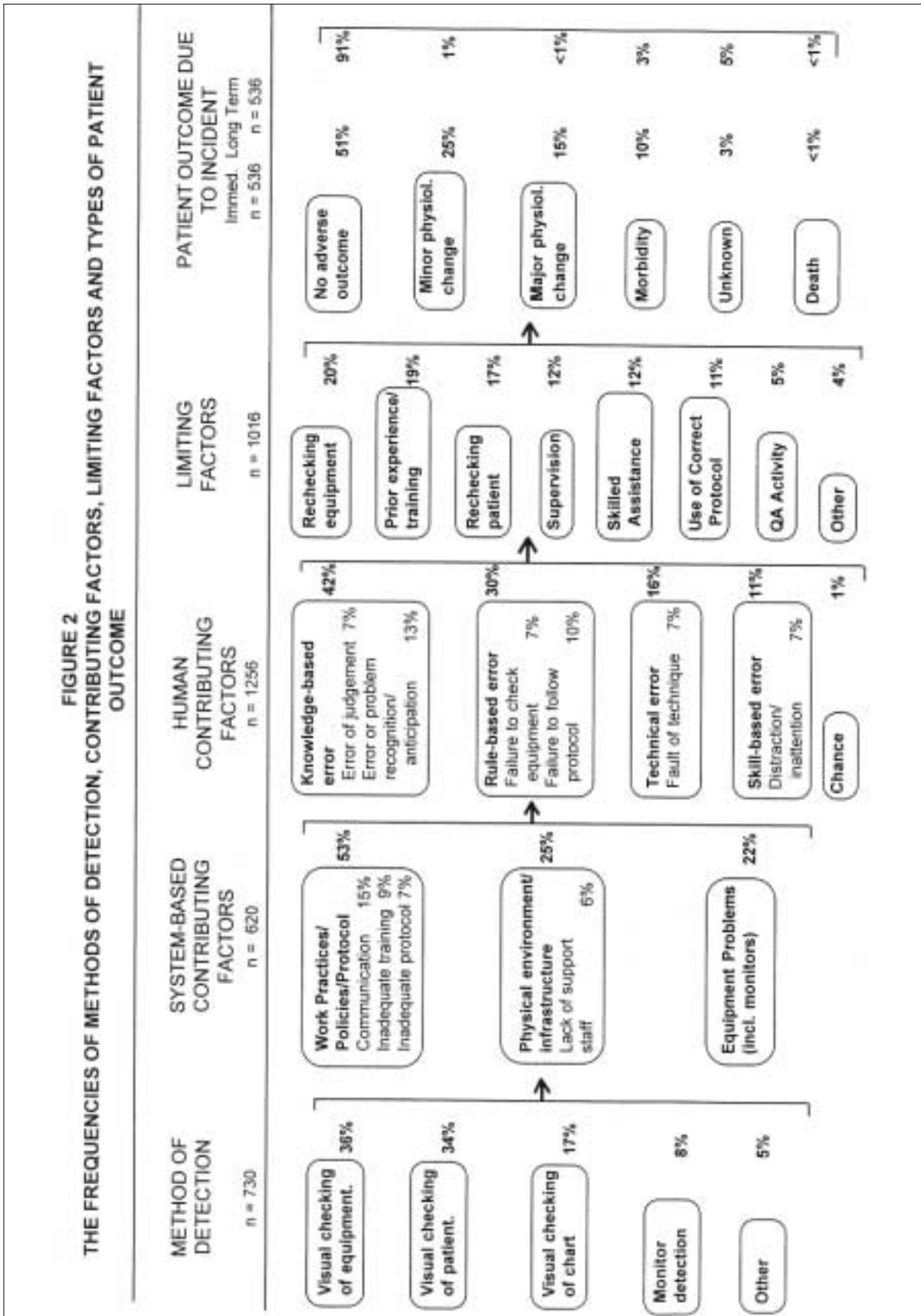


FIGURE 2: The Frequencies of methods of detection, contributing factors, limiting factors and types of patient outcome.

participants were encouraged to report an incident as soon as possible after detection. The possibility of volunteer bias or selection bias needs to be considered for both the ICUs electing to join the study as well as for individual staff members choosing to participate. Participants may differ from non-participants, and some incidents worth investigating may be missed. Direct assessment of this bias is not possible with an anonymous reporting system. However, in the future an investigation of all staff members in a given ICU, using anonymous questionnaires, may help to elucidate this issue.

Although the results obtained so far are summary in nature only, it may be worthwhile to review and compare them to those of the AIMS Anaesthesia project² and the only ICU study published to date³. The ICUs that submitted data during the first year of this project may not be representative of all Australian ICUs. However, as more units participate, a comprehensive representation of the different incidents in current clinical practice in intensive care may be built up. The distribution of incidents among the five incident categories varied among the participating ICUs. This variation in distribution may have site-specific causes which may be explored in future studies. It may also be worthwhile for individual units to follow reporting patterns over time and to compare them to national data. In contrast to the AIMS Anaesthesia experience², a wider range of incident categories are seen in the intensive care setting, where patient management/environment and unit management issues are more significant.

The patient age distribution appears to be representative of the patient population in the participating units. In the future, it may be worthwhile identifying incidents occurring in specific age groups. In more than 60% of reports the patient was receiving multiple interventions at the time of the incident; this may be an indicator of risk for incident occurrence. Most of the incidents resulted in no adverse outcome to the patient or minor physiological change only, and were of short duration. These findings are similar to those of the other two incident monitoring studies^{2,3}. Information on which group of staff members precipitated or detected the incident was gathered only to allow the direction of future preventive strategies, not to apportion blame.

The majority of incidents were detected by visually checking the equipment, the patient, or the chart. Monitor detection was selected in only 8% of reports. This is different from the AIMS Anaesthesia setting², where monitor detection accounted for 36% of factors minimizing outcome. This difference may be due to different incidents or clinical situations

encountered in anaesthesia versus intensive care.

The information regarding contributing factors gathered in this type of reporting system represents the opinion of the reporter and does not necessarily prove a cause-and-effect relationship. A more complete picture may evolve when analysing similar clinical situations reported by different observers. Two-thirds of all contributing factors were human-based (active errors), with the remaining being system-based (latent errors) 32% or chance 1%. The proportion of active versus latent errors was similar to that found in the AIMS Anaesthesia study² and by other error investigators^{3,7}. Also, the distribution among the sub-categories of active errors was similar between this and the two other incident monitoring studies^{2,3}, suggesting underlying common patterns of human failure and system design in these complex settings. Problems caused, for example, by rule-based error may be influenced quite rapidly by appropriate administrative changes. Approximately 60% of all system-based contributing factors fell into only five groups. Distribution among the groups of limiting factors was again very similar between the three studies.

The contextual information gathered by incident monitoring will become much more useful, when specific incidents can be analysed, using a framework for apportioning the various contributing factors (latent errors), behavioural factors (active errors) and chance. A knowledge of the relative frequency of occurrence of the most important contributing factors and of the potential impact of each problem will allow appropriate preventive strategies to be devised, and will facilitate the setting of priorities². The next phase of this study will involve 30-40 units. When at least 2000 incidents have been collected and analysed it is likely that there will be sufficient detail about various "clinical situations"^{2,7} to allow practical preventive strategies to be developed. Follow-up of incidents and preventive strategies may then link incident monitoring to improvements in QOC in the intensive care environment.

It is hoped that in the future this national database will provide a wealth of qualitative information about actual problems that are currently occurring during the care of patients in ICUs in Australia and New Zealand, giving an outline of how problems are presenting as well as how they are being handled. This information, when categorized into clinical situations or incident categories^{2,7}, should be helpful when designing both prospective studies and preventive strategies, and when planning continuing education programs for ICU staff.

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