

A Prospective Audit of Critical Incidents in Anaesthesia in a University Teaching Hospital

E H C Liu,*^{MPhil, FRCA}, K F Koh,*^{FAMS, M Med (Anaes)}

Abstract

Introduction: We aimed to reduce mortality and morbidity in anaesthesia by identifying common factors contributing to critical incidences and 'near misses'. **Materials and Methods:** We carried out a prospective survey over a 2-year period from May 1999 to April 2001 of all reported critical incidents in patients undergoing anaesthesia. Critical incidents were reported anonymously, using the Anaesthetic Incident Monitoring Study form. This consisted of structured questions with tick box answers. Completed forms were reviewed and after open discussion with the department, preventive strategies and guidelines were developed and introduced. **Results:** A total of 116 critical incidences were reported in 108 patients. These are events that have resulted or could have resulted in an adverse outcome for the patient. Airway incidences were the commonest incidence reported (33.6%), followed by pharmacological problems like wrong drug or dose (28.4%). These occurred most often during maintenance and recovery from anaesthesia largely due to human factors like inattention, haste and failure to check equipment. They were preventable in 76% of cases. As a consequence, 33.6% of incidents resulted in cardiac arrest or major physiological change. There was no adverse outcome in 36.2%. From a review of the critical incident reporting, organisation of manpower was improved to ensure adequate supervision of junior staff. Checking of equipment and drug before use was constantly emphasized. **Conclusion:** Critical incident reporting is a useful tool for quality assurance programmes. It analyses human and systems problems to ensure improved patient care.

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Key words: Contributing factors, Critical incidents, Morbidity and mortality

Introduction

Despite the highest standards of training, practice and equipment, morbidity and mortality due to anaesthesia still occur. These risks are difficult to quantify, and medico-legal considerations may limit any comprehensive study of anaesthetic mishaps. Fortunately, perioperative mortality due primarily to anaesthesia accidents is rare. However, for every accident, there are likely to be several 'near misses' or incidents where patients could have but did not suffer harm.

We carried out this prospective audit to learn more about the occurrence of incidents in our hospital. In particular, we aimed to identify common contributing factors, which may not be noticed from individual incident reports. This allowed us to recommend changes to prevent recurrence of similar incidents.

Materials and Methods

We used the Anaesthetic Incident Monitoring Study (AIMS) form (Appendix) to carry out a 2-year prospective audit from May 1999 to April 2001. Blank forms were left

in all 13 operating theatres in our university teaching hospital. A critical incident is defined as any event that resulted or could have resulted in an adverse outcome for the patient. The completed AIMS form includes a narrative of the incident, and tick boxes answers. The tick boxes provide information on the circumstances of the patient, anaesthetic, type of incident, contributing factors, minimising factors, suggested corrective strategies and outcome. Incidents were classified as circuitry, equipment (other than anaesthetic circuitry), pharmacological or airway incidents.

All anaesthetists were advised to report all incidents, however trivial, as soon as possible after the incident. In the interest of confidentiality, the reporting anaesthesiologist and patient could not be identified from the forms. Completed forms were placed in a locked 'postbox' in the department. These were also used to reconstruct incidents for discussion at department meetings. Respondents often volunteered further information, despite any reservations that they may have had about 'publicly' admitting personal mistakes. After open discussion of

* Consultant

Department of Anaesthesia

National University Hospital

Address for Reprints: A/Prof Koh Kwong Fah, Department of Anaesthesia, National University Hospital, 5 Lower Kent Ridge Road, Singapore 119074.

corrective and preventative strategies, departmental guidelines were formulated.

Results

There were a total of 116 incidents involving 108 patients reported during the study period. Two incidents were reported in 8 patients. During this period, approximately 31,000 anaesthetics were administered. Hence, the rate of reported incidents is approximately 3.74 per 1000 anaesthetic episodes. It was impossible to estimate the true incidence of incidents due to the voluntary and confidential nature of the study.

The types of incidents are shown in Table I. Airway incidents were the most common type of incident, which included 4 incidents of dental trauma, 3 incidents of airway obstruction in the recovery room, and 3 incidents of apnoea after opioid administration in the recovery room. This was followed by pharmacology problems, which included 3 reports of insulin overdosage, and 2 incidents where suxamethonium was administered instead of fentanyl.

Ninety (77.5%) incidents were preventable, as decided by the respondents. Nineteen incidents were not preventable and the respondents were undecided in 7 reports. The proportion of preventable incidents was high in ASA 1, 3, 4 and 5 patients (75 to 85%), but was only 50% in ASA 2 patients.

Most incidents occurred during the maintenance phase, followed by the recovery and induction phases (Table II). They occurred mainly between 0800 and 1659 hours, when most elective work is carried out. Twelve incidents occurred between 1700 and 2359 hours, all involving emergency work. There were no reports of incidents occurring between 0000 and 0800 hours.

Factors contributing to the occurrence of an incident are listed in Table III. All the incidents involved at least 1 contributing 'human' factor. The most frequent was inattention. While errors of judgement and/or faulty technique were factors in 36 incidents, these were associated with inexperience as a co-factor in only 4 incidents. The severity of the patients' illnesses was a factor in 8 incidents, and inexperience was a co-factor in only 1 of these.

TABLE II: PHASE OF ANAESTHESIA IN WHICH INCIDENTS OCCURRED

Phase	No. of incidents (%)
Preinduction	6 (5.7)
Induction	25 (21.6)
Maintenance	43 (37.1)
Emergence	7 (6.0)
Recovery	35 (30.2)

TABLE III: FACTORS CONTRIBUTING TO THE INCIDENTS

Contributing factor	No. of incidents (%)
Inattention	23 (19.8)
Faulty technique	21 (18.1)
Error of judgement	18 (15.5)
Haste	16 (13.8)
Communication problem	13 (11.2)
Inexperience	13 (11.2)
Inadequate preoperative assessment/preparation	11 (9.5)
Surgical team contribution	11 (9.5)
Failure to check equipment	10 (8.6)
Sick patient	8 (6.9)
Pressure to proceed	5 (4.3)
Other factors	18 (15.5)

Of the 44 incidents involving anaesthetic circuitry or other equipment, none were due to a primary malfunction of the equipment. At least 1 'human' factor, such as failure to check equipment, haste, inattention, unfamiliarity with equipment and faulty technique was involved in all incidents. Failure to check equipment was associated with haste or pressure to proceed in 4 incidents, all involving elective operations.

Of the 18 incidents where haste and/or pressure to proceed were factors, only 3 involved patients having 'emergency' surgery. In these 3 reports, the operations were urgent rather than truly emergent on reviewing the narrative. In incidents where inadequate preoperative assessment or inadequate preoperative preparations were contributing factors, none of the operations were truly emergent such that immediate induction of anaesthesia was required.

The factors minimising the adverse effects of the incidents

TABLE I: TYPES OF INCIDENTS AND PREVENTABILITY

Type of incident	No. of incidents			
	Total	Preventable	Not preventable	Undecided
Airway problems	39 (33.6%)	28 (71.8%)	8 (20.5%)	3 (7.7%)
Pharmacology problems	33 (28.4%)	24 (72.7%)	5 (15.2%)	4 (12.1%)
Gas supply, breathing circuit	16 (13.8%)	14 (87.5%)	2 (12.5%)	0 (0%)
Other equipment	28 (24.1%)	24 (85.7%)	4 (14.3%)	0 (0%)
Total	116 (100%)	90 (77.6%)	19 (16.4%)	7 (6.0%)

are noted in Table IV. The good health of the patients was most frequently reported. Where monitor detection was a minimising factor, the pulse oximeter was most frequently specified. 'Good luck', cited in 5 incidents, seemed truly fortuitous on reviewing the narratives.

The immediate and final outcomes are noted in Table V. Seventy-four of the incidents resulted in immediate adverse effects, and 46 resulted in an adverse final outcome. In 39 incidents where the immediate effects were major physiological change or cardiac arrest, 7 patients subsequently died. The causes of death were multifactorial, 5 of 7 incidents were not preventable, and deaths were not due directly and/or solely to the incidents.

Discussion

The critical incidents reporting and review system is now an established part of our department's quality assurance programme. Discussions of the incidents are carried out in a non-threatening atmosphere, and are generally constructive, non-critical and well received. The emphasis is on maximising the education potential from 'near misses', preventing others from making the same errors, and not on assigning blame. However, these discussions tend to focus on clinical techniques. This audit aimed to identify common contributing factors, which are not immediately obvious from individual reports, in a medico-legally safe environment. This may enable better guidelines and preventive measures to be formulated, and foster positive work attitudes.¹

In all ASA categories, the majority of incidents were preventable, and this was most marked in the reports involving ASA 1 patients. In this group, both patients and anaesthetists would least expect to have anaesthetic problems; hence prevention is all the more important. Intuitively, we expected more 'incidents' with ASA 3 and 4 patients, but it is possible that anaesthesiologists pay closer attention to sicker patients.

TABLE IV: FACTORS MINIMISING THE ADVERSE EFFECTS OF THE INCIDENTS

Factors	No. of incidents (%)
Healthy patient	32 (27.6)
Prior experience of anaesthetist	26 (22.4)
Monitor detection	26 (22.4)
Pulse oximetry	12 (10.3)
ECG	4 (3.4)
Skilled assistance	17 (14.7)
Supervision	9 (7.8)
Luck	5 (4.3)
Recheck of equipment	4 (3.4)
Other factors	5 (4.3)

ECG: electrocardiogram

TABLE V: IMMEDIATE EFFECTS AND FINAL OUTCOME OF THE INCIDENTS

	No. of incidents
Immediate effects	
Cardiac arrest	7
Major physiological change	32
Minor physiological change	25
Physical injury	10
No adverse effect	42
Final outcomes	
Death	7 (6.0)
Unplanned ICU or HDU admission	14 (12.1)
Major morbidity	7 (6.0)
Minor morbidity	13 (11.2)
Prolonged hospitalisation	5 (4.3)
No adverse final outcome	70 (60.3)

HDU: high dependency unit; ICU: intensive care unit

TABLE VI: FINAL OUTCOME OF THE INCIDENTS

Final outcome	No. of incidents
Death	7
Unplanned ICU or HDU admission	14
Major morbidity	7
Minor morbidity	13
Prolonged hospitalisation	5
No adverse final outcome	70

HDU: high dependency unit; ICU: intensive care unit

'Human' factors were involved in 100% of incidents, even higher than in other reported audits.²⁻⁵ The most frequent contributing factors – inattention, haste, pressure to proceed, failure to check equipment and communication problems were all preventable. Inattention while not justifiable was understandable in several incidents, for reasons such as the anaesthesiologists carrying out another task, filling the anaesthetic record, and transferring patients to the recovery room. We found that even when no contributing factor was reported, there was likely to have been at least 1 'human' factor involved, when reviewing the narratives.

In incidents involving breathing circuits and anaesthetic equipment, none of the incidents were due to primary equipment malfunction or failure. All were due to incorrect checks and usage. There was nothing in any report to justify haste or failure to check equipment. While this does not mean that a sense of urgency is undesirable, the 'do not rush' type of behaviour needs reinforcing.

Some contributing factors, such as faulty technique and inexperience, can be improved by further training. Better supervision was the most frequently suggested corrective strategy. Organisation of manpower to ensure adequate supervision of trainees has been suggested as 1 strategy to reduce incidents.⁶ Much effort in our department is currently directed towards improving supervision and training of

junior staff to better manage sick patients and complicated procedures. However, in this audit, it was the simplest human errors that were potentially or actually the most damaging, e.g. wrong drug, wrong blood and wrong patient, where simple checks and rechecks (if performed) even by an inexperienced person would have prevented the incidents. Failure to check, haste or pressure to proceed contributed to these 'simple' errors. Interestingly, a previous survey suggested that the same mishaps can occur at any level of experience, and that senior staff were more likely to take short cuts, commit omissions and 'intentional errors'.¹

Our general process for preventing repetition of errors included data collection, interpretation of events and discussion. Guidelines were then drafted and disseminated.

As a result of our audit, we have introduced measures to reduce errors in drug administration. Medications with different dosages were removed from our anaesthetic trolley so that only 1 dose was available. Similar looking ampoules containing different drugs were removed. Those that have labels that are too small or lack sufficient contrast were also rejected. Our labelling system was also rationalised; different size syringes and coloured labels for different classes of drugs.

Among the suggested corrective strategies, checking equipment before commencement of anaesthesia was the second most commonly suggested strategy. Other studies have suggested that provision of additional monitoring, clear equipment checklists may help prevent incidents.^{6,7} However, in our hospital, 'failure to check' leading to equipment incidents occurred despite machine orientation and training sessions, and the provision of a checklist in every anaesthetic machine. Provision of monitors and equipment in our hospital more than fulfils the Safety Guidelines set by our Anaesthetic Society.⁸ However, in several reports, alarms were disabled, had incorrectly set 'limits', were not 'believed' or were ignored. We need to encourage adherence to checklists and correct usage of monitors that are already in place.

Short⁹ found that development of specific protocols did reduce specific errors. However, increasing awareness of incidents due to human error was not effective in reducing this kind of problem. This may be due to difficulty in changing established habits or a lack of an effective penalty system when protocols are violated. Other reasons could include personality types or risk taking behaviour.¹⁰

The main limitation of our audit was compliance with reporting. Attitudes, thresholds and motivation for reporting incidents vary among colleagues. Interpretation of incidents may vary, and what may be deemed as critical or preventable by 1 anaesthetist may be accepted by another as 'normal' practice or non-preventable. It was simply too intrusive,

labour intensive and costly to get a true measure of the incidence of incidents. Hence, we did not limit incidents to those that were preventable and which were definitely due to an error of the anaesthetic team or faulty anaesthetic equipment. Almost certainly there is under-reporting, but it is impossible to quantify the extent, as the true incidence is not known. Previous reporting estimates are of 50% or lower.^{1,11} It was not possible to eliminate bias in the reports, to distinguish between what the reporters 'thought must have happened' versus 'what actually happened'. It was difficult to have immediate reporting to minimise 'memory' bias although we did encourage this as much as possible.

Apart from critical incident reporting, other types of quality assurance tools have been used. Mortality and morbidity review meetings have been an integral part of many anaesthetic departments. Large-scale mortality studies have given us insight into anaesthetic morbidity and mortality, e.g. the effects of age and the importance of preoperative preparation on perioperative deaths.^{12,13} The National Confidential Enquiry into Perioperative Deaths (NCEPOD) is an ambitious ongoing project to improve quality of care by examining all perioperative deaths in the United Kingdom.¹⁴ Recommendations resulting from NCEPOD include proper supervision of junior staff, and reducing and limiting "out of office hour" work to only true emergency cases. The main advantage of mortality studies is the unambiguous end point. However, as only a minority of perioperative deaths are due solely or primarily to anaesthesia,¹⁴ much information may be missed. Another quality assurance tool is analysis of closed claims. However, this can also be misleading, as there is a tendency to link inappropriate care with the injury, making it difficult to evaluate risk factors objectively. Critical incident studies are systematised anecdotes. Because the emphasis is on prevention, the results are constructive and can be implemented promptly. They can help identify latent errors present in an anaesthesia system.

The majority of incidents in our audit were preventable. All the incidents involved 'human' factors, and a significant number of incidents resulted in adverse immediate effects and final outcomes. Though small, our audit suggests that it is not clinical knowledge or equipment standards that need improvement, or even more expenditure. Rather it is behaviour problems such as inattention, haste, failure to check drugs and equipment, and inappropriate response to monitors that need the most attention. We suspect that these may in fact be harder to improve, and that our findings are not peculiar to our department.

REFERENCES

1. Currie M, Pybus D A, Torda T A. A prospective survey of anaesthetic critical events: A report of a pilot study of 88 cases. *Anaesth Intensive Care* 1988; 16:103-71.

2. Cooper J B, Newbower R S, Long C D, McPeck B. Preventable anaesthesia mishaps: a study of human factors. *Anesthesiology* 1978; 49:399-406.
3. Currie M. A prospective survey of anaesthetic critical events in a teaching hospital. *Anaesth Intensive Care* 1989; 17:403-11.
4. Runciman W B, Webb R K, Lee R, Holland R. System failure: an analysis of 2000 incident reports. *Anaesth Intensive Care* 1993; 21:684-95.
5. Craig J, Wilson M E. A survey of anaesthetic misadventures. *Anaesthesia* 1981; 36:933-6.
6. Cooper J B, Newbower R S, Kitz R J. An analysis of major errors and equipment failures in anaesthesia management – considerations for prevention and detection. *Anesthesiology* 1984; 60:34-42.
7. Kumar V, Barcellos W A, Mehta M P, Carter J G. An analysis of critical incidents in a teaching department for quality assurance. *Anaesthesia* 1988; 43:879-83.
8. Singapore Anaesthetic Society. Safety Guidelines in Anaesthesia 1988. Singapore: Singapore Anaesthetic Society, 1988.
9. Short T G. Improvements in anaesthetic care resulting from a critical incident reporting programme. *Anaesthesia* 1996; 51:615-21.
10. Adams A M, Smith A F. Risk perception and communication: Recent developments and implications for anaesthesia. *Anaesthesia* 2001; 56:745-55.
11. Chopra V, Bovill J G, Spierdijk J, Koornneef F. Reported significant observations during anaesthesia: a prospective analysis over an 18-month period. *Br J Anaesth* 1992; 68:13-7.
12. Beecher H C, Todd D P. A study of the deaths associated with anaesthesia and surgery based on a study of 599,548 anaesthetics in 10 institutions 1948-1952, inclusive. *Ann Surg* 1954; 140:2-35.
13. Lunn J N, Mushin W W. Mortality associated with anaesthesia. London: Nuffield Provincial Hospital Trust, 1982.
14. Buck N, Devlin H B, Lunn J N. The report of a confidential enquiry into perioperative deaths. London: The Nuffield Provincial Hospitals Trust and the Kings Fund, 1993.

Appendix

AIMS

ANAESTHETIC INCIDENT REPORT

You are invited to complete this report if an incident occurs during your clinical practice.

Definition	Report any incident, no matter how seemingly trivial, which affects or could affect the safety of the patient. The incident may be preventable or unpreventable.
Anonymity	The identity of the reporter and the patient do not appear on this report. The only person who knows this information is you.
Instructions	Write simply in your own words a description of what happened. Place

	the completed report in the container provided.
Medico-legal	If you have ANY concerns about the medico-legal implications of reporting this incident, DO NOT complete this report.
Coordinator	A nominated anaesthetist in your organization is your local coordinator. Feel free to discuss with him/her any incident or any difficulties which you may encounter with this study.
Detail	It is NOT necessary to be more specific about the date, place or procedure than is required by this form. Please complete all sections so that your data will be more valuable. Note the report number at the top of this page.

ITEM 1: DESCRIPTION OF INCIDENT

In your own words describe the incident. Include details about any factors which you believe may have contributed to, or minimized the incident. Note any measures which might be employed in the future to prevent any such incident. Of particular interest are the following: (1) Monitors in use at the time, and whether or not it was a monitor which first alerted you to the existence of a problem. (2) Drug identification problems.

NB If more than one separate incident occurred ("multiple incident") please fill out a separate report for each incident

Do you think this incident was preventable? ☐ Yes ☐ No ☐ Undecided

ITEM 2: KEYWORDS (to be completed by coordinator)

ITEM 3: WHAT HAPPENED?

CIRCUITRY INCIDENT		EQUIPMENT INVOLVED		PHARMACOLOGICAL INCIDENT	
Dilution of gases	DL	Airway of mouthprop or gag	AW	Allergy phenomenon	AL
Disconnection	DI	Airway pack	AP	Contamination	CT
Leak	LE	Diathermy or cautery or countershock	DI	Inappropriate drug	IP
Misconnection	MI	Equipment malfunction	EM	Interaction	IN
Overpressure	OV	Infusion apparatus	IF	Overdosage	OV
Rebreathing	RE	Intubation aid	IA	Sideeffect	SE
Other circuitry incident		Laryngoscope	LS	Wrong drug	WD
Specify		Monitoring equipment problem	MO	Underdosage	UN
.....	OT	Nasogastric tube	NG	Other drug incident	
Nil	NI	Needle or cannula	NC	Specify	
		Strapping or tape	ST		OT
CIRCUITRY INVOLVED		Syringe	SY	Nil	NI
Absorber	AB	Suction apparatus	SU		
Common gas outlet	CG	Table, trolley or patient support	TA	AIRWAY INCIDENT	
Endotracheal tube or equivalent	ET	Other equipment		Difficult intubation	DI
Flowmeter	FL	Specify		Endobronchial intubation	EB
Gas supply	GS		OT	Extubation	EX
Humidifier	HU	Nil	NI	Failed intubation	FI
Oxygen bypass	OX			Non-ventilation	NV
Patient circuit valve	CV	MULTIPLE INCIDENT		Obstruction (incl vomit or spasm)	OB
Pressure relief valve	PV	(Please circle)		Oesophageal intubation	OI
Scavenging system	SC	Yes	No	Trauma	TR
Tubing or connection	TU	Other incident report numbers		Other airway incident	
Vaporiser	VA			Specify	
Ventilator	VE				OT
Other circuitry involved				Nil	NI
Specify					
.....	OT				
Nil	NI				

ITEM 4: WHY IT HAPPENED

FACTORS CONTRIBUTING TO INCIDENT		FACTORS MINIMIZING INCIDENT		SUGGESTED CORRECTIVE STRATEGIES	
Communication problem	CP	Monitor detection	MD	Additional equipment	AD
Distraction	DI	Specify which monitor FIRST alerted to problem (one only)		Additional monitor	AM
Drug label	DL			Additional training	AT
Error of judgement	EJ			Equipment checking discipline	EC
Failure to check equipment	FC	Healthy patient	HP	Equipment design improvement	ED
Fatigue	FA	High awareness via QA activity	QA	Equipment maintenance discipline	EM
Fault of technique	FT	Prior experience or training	EX	Fatigue alleviation routine	FA
Haste	HA	Re-check of equipment	RE	Improved communication	IC
Inadequate assistance	IA	Relief anaesthetist or staff change	RA	Improved environment	IE
Inattention	IN	Skilled assistance	SA	Improved supervision	IS
Inexperience	IX	Supervision	SU	More manpower	MM
Lack of facility	LF	Other factor		Quality assurance activity	
Lack of monitor	LM	Specify		Specify (eg AIMS/M&M etc)	
Monitor problem	MP		OT		QA
Pre-op patient assessment inadequate or incorrect	PA	Nil	NI	Specific protocol development	SP
Pre-op patient preparation inadequate or incorrect	PP			Other strategy	
Pressure to proceed	PS			Specify	
Relief anaesthetist or staff change	R A				OT
Sick anaesthetist	SA			Nil	NI
Sick patient	SP				
Surgical team contribution	SC				
Unfamiliar environment or equipment	UN				
Other equipment problem					
Specify					
.....	OB				
Other stress					
Specify					
.....	ST				
Other factor					
Specify					
.....	OT				
Nil	NI				

ITEM 5: ANAESTHESIA AND PROCEDURE

PROCEDURE CATEGORY (Can have more than one)	
Cardiothoracic	CA
Cardioversion	CV
Dental	DE
Diagnostic incl imaging/biopsy	DI
Electroconvulsive therapy	EC
Endoscopic	EN
ENT	ET
General surgical	GE
Gynaecological	GY
Haematological	HE
Major multi-disciplinary	MM
Maxillo-facial	MF
Neurosurgical	NS
Obstetric	OB
Oncological	ON
Ophthalmological	OP
Orthopaedic	OR
Plastic or reconstructive	PL
Radiotherapy	RA
Urological	UR
Vascular	VA
Other procedure	
Specify	
.....	OT
Nil	NI
ELECTIVE ADMISSION (Please circle)	
Yes	No
ANAESTHESIA AT TIME (can have more than one)	
General anaesthesia	GE
Infiltration	IN
Regional or nerve block	RB
Sedation	SE
Nil	NI

ITEM 7: PATIENT OUTCOME

IMMEDIATE EFFECTS	
Cardiac arrest	CA
Major physiological change	MA
Minor physiological change	MI
Physical injury	PI
Nil	NI
FINAL OUTCOME (more than one)	
Awareness	AW
Death	DE
Major morbidity	MA
Minor morbidity	MI
Prolonged stay	PS
Unplanned high dependency care	HD
Nil	NI

MONITORS IN USE

Airway pressure gauge	AP
Airway temperature	AT
Auto-disconnect alarm	AD
Manual disconnect alarm	DA
Capnograph	CA
Cardiac output	CO
Central venous pressure	CV
Doppler precordial	DO
Endotracheal cuff pressure	EP
Electrocardiograph	EC
Electro-encephalograph	EE
Intra-arterial pressure	IA
Intracranial pressure	IC
Mass spectrometer	MA
N2O analyser	NO
Other gas analyser	GA
Oximeter or pulse oximeter	OX
Oxygen analyser	OA
Plethysmograph	PL
Peripheral nerve stimulator	NS
Pulmonary arterial or wedge press	PA
Sphygmomanometer:	
Auto	AU
Manual	SP
Spirometer	SR
Stethoscope precordial or oesophageal	ST
Temperature – patient	TP
Other monitor	
Specify	
.....	OT
Nil	NI

ITEM 8: TO WHOM IT HAPPENED

PATIENT CLASSIFICATION (ASA)					PATIENT AGE GROUP	
1	2	3	4	5	Neonate	NE
					Less than 1 year	IN
					1 to 14 years	CH
					Greater than 14 years	AD
EMERGENCY: Yes / No						

ITEM 6: WHEN AND WHERE IT HAPPENED?

Time of day			
	H	H	M
Month			
Year	1	9	
PHASE WHEN ALERTED (ONE ONLY: See “Multiple Incident”)			
Pre-induction	PI		
Induction	IN		
Maintenance	MA		
Emergence	EM		
Recovery	RE		
Post-recovery	PR		
DURATION OF INCIDENT			
Transient (<5 min)	TR		
Prolonged (>5 min)	PR		
LOCATION			
Casualty or emergency room	CA		
Day surgery	DA		
Delivery room	DR		
Dental room	DE		
General ward	GE		
Imaging	IM		
In Transit	TR		
Induction room	IR		
Intensive care	IC		
Operating room	OR		
Other in hospital			
Specify	OI		
Other outside hospital			
Specify	OO		
Recovery area	RE		

Australian Patient Safety Foundation
GPO Box 400, Adelaide SA 5001
Phone: (08) 2245544

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Note:

This form is now called the Anaesthetic Incident Monitoring Study Form and we acknowledge with thanks the Australian and New Zealand Anaesthesia.