Activities of the Special Committee Investigating Deaths Under Anaesthesia – 2008

Report to the Minister
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Foreword

The Special Committee Investigating Deaths Under Anaesthesia (SCIDUA) is the longest serving anaesthetic committee in the world, providing reports to the Minister on mortality after anaesthesia in NSW. The Committee is appointed by the Minister, and its deliberations are subject to privilege under the Health Administration Act 1982. This Act requires that the committee inform the Minister of the results of its deliberations, at least annually. In 2004 the Committee was moved into the domain of the Clinical Excellence Commission.

Of course, any such committee needs inspired leadership to be sustained and effective. I would like to recognise the work of Dr Chris Borton over the last few years, who has retired for personal health reasons. Dr David Pickford has been medical secretary for a number of years and takes particular responsibility for communications to and from the committee, and expert contributions by each of the other members.

The vision for this committee was largely that of Professor Ross Holland, who established the committee over forty years ago. We have been especially pleased to note the return of Professor Holland to active leadership of the committee for the last two years. His passion remains unremitting!

This report is an aggregated report of the detailed analysis of each individual case reported to the committee. This detail underpins the work of the committee and enables it to act as a "jury of peers"; whose opinions can be provided in a confidential format to each of the notifying anaesthetists. It is this learning environment that is the strength of this committee. However, the report also has a public function, informing the community and the Minister of the results of anaesthesia throughout NSW. Furthermore, the aggregated report provides each anaesthetist with a benchmark against which they can compare their practice. This report truly has an educational focus and will drive clinical practice improvement. The report fulfils the requirement of the Clinical Excellence Commission to inform the Minister and the community. We expect that it will provide confirmation that clinicians (in this case anaesthetists) do wish to constantly review their performance, evaluate outcomes and apply their learning to patient care.

I commend this report to you.

Clifford F Hughes AO
CLINICAL PROFESSOR
CHIEF EXECUTIVE OFFICER
Executive Summary

This report to the Minister on anaesthetic mortality is required under the terms of reference of the Special Committee Investigating Deaths Under Anaesthesia (SCIDUA). The report is aggregated de-identified data and it summarises deaths which occurred during or within 24 hours of anaesthesia (and surgery) and reported to SCIDUA during 2008.

It is important to realise that deaths occurring during 2008 are not all reported, nor able to be assessed during that same year. The remaining 2008 deaths will be reviewed in 2009 as information on these deaths becomes available.

During the 2008 reporting period, SCIDUA received 185 notifications of death. Notifications of death do not always arrive within the review year, especially those deaths occurring toward the end of the period. This means that the number of deaths notified in the reporting period and the number of deaths reviewed in that period do not tally.

During the reporting period 194 deaths were reviewed. Of these, 125 were reviewed by the triage sub-committee and 69 were reviewed by the full SCIDUA committee. Following review, 165 deaths were classified while 29 remain outstanding. Feedback was provided to individual anaesthetists through the SCIDUA Committee. Each case reviewed generates a confidential report to the notifying anaesthetists. This feedback is the essential educational purpose of this Committee.

The number of deaths partly or wholly attributable to anaesthesia has declined from 41 to 39, and no patient in this category was under 60 years of age.

This report is of relevance to anaesthetists, surgeons, health managers, clinicians and quality improvement coordinators in the NSW health system.
1. Preamble

The following information relates to SCIDUA’s activities for the calendar year 2008.

This Ministerial committee was established in 1960, and with a brief interruption while its confidentiality status was restored, has been in continuous operation to the present day. It is the longest running study of its type in the world, and enjoys an international reputation.

Its terms of reference are to subject all deaths occurring within 24 hours of anaesthesia to peer review so as to identify any area of clinical management where alternative methods could have led to a more favourable result.

The results of its deliberations are communicated in confidence to the anaesthetist involved.

2. Membership

Committee members are appointed by the Minister on the advice of professional organisations and/or the Chair.

Specific areas of clinical practice (such as paediatrics, cardiac surgery, intensive care etc) are represented. A forensic pathologist is also a member.

Current membership is at Appendix A.

3. Administrative Arrangements

SCIDUA was re-established under section 20 of the Health Administration Act 1982.

SCIDUA is empowered with special privilege under section 23 of the same Act to protect the confidentiality of the data collected by SCIDUA.

The Terms of Reference of SCIDUA requires the Committee to report annually to the Minister for Health. This report has been prepared to meet that requirement. The current Terms of Reference are at Appendix B.

4. Methodology

Data are captured via the coronial mechanism which requires that all deaths occurring “during, as a result of, or within 24 hours of anaesthesia” are reported. A copy of the Form B “Report of Death Associated with Anaesthesia/Sedation” required by the Coroner should be simultaneously sent to the Committee by the hospital. A copy of the Form B is reproduced at Appendix C.
The Form B is reviewed by the triage sub-Committee, which either classifies the death as not resulting from the anaesthetic or requests the anaesthetist to complete a questionnaire in cases requiring further information.

When the questionnaire is received, information in this document is de-identified, copied and distributed to members of the Committee prior to its meeting to discuss the case and arrive at a classification, according to a nationally recognised system (see Appendix B).

The work of SCIDUA is principally disseminated in three ways. A confidential reply by the Chair is sent to the anaesthetist explaining the Committee’s decision. Reports are provided to the Minister annually and to the National Committee on Anaesthetic Mortality, the latter on a triennial basis. From time to time papers on matters of importance are published in peer reviewed professional journals.

5. Results

During the 2008 reporting period, SCIDUA received 185 notifications of death. Notifications of death do not always arrive within the review year, especially those deaths occurring toward the end of the period. This means that the number of deaths notified in the reporting period and the number of deaths reviewed in that period do not tally.

During the reporting period 194 deaths were reviewed. Of these, the Triage sub-Committee reviewed 125 deaths and sent 35 questionnaires to anaesthetists requesting further information. The remaining 69 deaths were reviewed by the full SCIDUA Committee over nine meetings.

Following review, 165 deaths were classified (Table 1) while 29 were unclassified (Table 2). Feedback was provided to individual anaesthetists through the SCIDUA Committee. Each case reviewed generates a confidential report to the notifying anaesthetists. This feedback is the essential educational purpose of this Committee.

<table>
<thead>
<tr>
<th>TABLE 1 – ALL DEATHS CLASSIFIED IN 2008</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I Deaths entirely due to anaesthesia</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Category II Deaths mostly due to anaesthesia, but other factors contributory</td>
<td>6</td>
<td>3.6</td>
</tr>
<tr>
<td>Category III Deaths due to both anaesthesia &amp; surgery</td>
<td>30*</td>
<td>18.2</td>
</tr>
<tr>
<td>Category IV Deaths entirely due to surgery</td>
<td>7</td>
<td>4.2</td>
</tr>
<tr>
<td>Category V Inevitable deaths due to severity of disease or injury</td>
<td>109</td>
<td>66.1</td>
</tr>
<tr>
<td>Category VI Unexpected death from other cause</td>
<td>7</td>
<td>4.2</td>
</tr>
<tr>
<td>Category VII Unable to classify despite adequate data</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Category VIII Unable to classify due to inadequate data</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>Total Classified Cases</strong></td>
<td><strong>165</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Regarding “Category III Deaths due to both anaesthesia & surgery”, 21 of these deaths would not have occurred at that time had the patient not been subjected to surgery and anaesthesia. However, the Committee was unable to identify any way in which alternative management by the surgical and anaesthetic team could have resulted in a better outcome.

The number of deaths partly or wholly attributable to anaesthesia has also declined (from 41 to 39) but those patients who might have survived with different management were unchanged at 18. Although such deaths are by definition avoidable, many were patients with serious concomitant disease.

Table 2 shows those cases referred to the Committee and not yet finalised due to non-response to questionnaire and need for further information. At the time of writing this report, 22 questionnaires are outstanding. This reflects the normal lag time between a request and the return of the questionnaire.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred by SCIDUA pending further action</td>
<td>7</td>
<td>24.1</td>
</tr>
<tr>
<td>Awaiting responses to questionnaire</td>
<td>22</td>
<td>75.9</td>
</tr>
<tr>
<td><strong>Total Unclassified Cases</strong></td>
<td>29</td>
<td>100.0</td>
</tr>
</tbody>
</table>

6. Non-Anaesthetic, Non-Surgical Causes of Death

As can be seen from Table 1, many deaths are inevitable despite competent anaesthetic and surgical management. A considerable proportion of these are due to untreatable trauma, despite the patient having been resuscitated sufficiently out of hospital to reach an emergency room still technically alive.

A similar number of non-trauma patients also survive to reach the operating room, but are found at surgery to have a non-survivable medical condition. Unfortunately unsuccessful attempts to save these patients consume huge resources in staff, facilities and consumables – not the least of which are blood or blood products.

The Committee is concerned that in some of these unsuccessful exercises, earlier decisions could have been made to offer palliative care to a doomed patient, rather than embark on a prolonged and expensive procedure with no prospect of success.

7. Discussion

The total number of deaths notified to SCIDUA in 2008 fell markedly from the previous year (185 as against 292). This appears to have been due to two factors:
(a) It appears that the time taken to report deaths to SCIDUA has improved: a number of deaths notified in 2007 had occurred in previous years, whereas in 2008, almost all deaths had occurred in either 2007 or 2008.

(b) There has been a range of issues which has hampered the data collection process, due in part to misunderstanding by hospitals of their obligations to forward copies of Form B to SCIDUA

It is also possible that there has been a real decline in the number of perioperative deaths occurring within 24 hours. Analysis of the disease processes leading to deaths not attributable to anaesthesia reveals that there has been a substantial fall in deaths following operations for abdominal aortic aneurysms. New techniques for the management of this condition and a more realistic assessment of a patient’s chances of survival may be responsible for some cases not being subjected to a surgical intervention with a negligible likelihood of a positive outcome.

In fact no patient in this category was under 60 years of age. The number should also be viewed in the light of:

(a) The population at risk
(b) The number of anaesthesia administrations

The population at risk is known from demographic data maintained by the Australian Bureau of Statistics, and is estimated at 0.26 per 100,000. This compares favourably with international rates.

The number of administrations has been estimated, and this ratio has been expressed in a range of ways i.e. deaths attributable per 10,000 administrations (the usual international ratio) is 0.07, or in more easily comprehended terms, one preventable death per 130,000 anaesthetics. Putting this into perspective, a very busy anaesthetist is unlikely to administer more than 1,000 anaesthetics per year. In the Special Commission of Inquiry (Garling Report) it was reported to be in the vicinity of 2.5 million episodes of anaesthesia per year

Of the cases where death may have been prevented, the numbers are too small to draw definite conclusions, but a trend is apparent in the kind of surgery undertaken in these cases. Whereas at one time death within 24 hours rarely followed orthopaedic operations, such procedures have now become the most common surgical specialty in cases referred to the Committee. This issue is the subject of a peer-reviewed journal article, currently being finalised for publication.

Moreover, the Committee is concerned that the present wording of the Coroners Act 1980 leaves out any reference to procedures being performed under “sedation”. The drugs used to “sedate” patients during endoscopic, dental and radiological procedures are in many instances the same as those which produce anaesthesia. The threshold between the sedated condition and unconsciousness is easily crossed, especially if the patient is seriously ill and/or the person administering the drugs is not sufficiently aware of their potential. Such deaths are not legally required to be reported at this time.
8. What Happens Next

When a death is classified in Category I, II or III, i.e. is attributable in whole or part to the anaesthetic management, the Committee identifies one or more factors which were causative. The anaesthetist who reported the case to the Committee receives a confidential letter advising him or her of the Committee’s decision. These letters are composed and signed by the Chair, who (apart from the medical Secretary) is the only Committee member who is aware of the anaesthetist’s identity.

The outcome of the Committee’s deliberations is de-identified (to preserve its confidentiality) and the de-identified results passed on to the National Committee on Anaesthetic Mortality, which publishes a triennial review. By this means the anaesthetic community is informed of those factors which have been involved in preventable mortality from anaesthesia.

9. Can Anaesthesia Always Be Completely Safe?

Despite continuous improvements in pre- and post-anaesthetic care, as well as the more gradual introduction of agents with greater margins of safety, absolute guarantees cannot be given that all patients will survive anaesthesia and surgery. When the disease process for which operation is required is extensive and advanced, the task may be insurmountable. There are also rare genetic and allergic conditions, not predictable in advance, which are unmasked or precipitated by anaesthesia, the outcome of which may be fatal despite skilful management.

Professor R. Holland
Chair, SCIDUA
APPENDIX A: SCIDUA Membership

Special Committee Investigating Deaths Under Anaesthesia (SCIDUA)

Membership (1 September 2008 to 31 August 2013)
- Professor Ross Beresford Holland (Chairman)
- Dr David R Pickford (Secretary)
- Dr Frances Evelyn Smith
- Dr Michele Anne O'Brien
- Professor John Millar Napier Hilton
- Professor Arthur Barrington (Barry) Baker
- Dr Michelle Janice Mulligan (New member)
- Dr Matthew Ronald Crawford (New member)
Appendix B: SCIDUA Terms of Reference

1. To register, investigate and classify deaths occurring during or within 24 hours of a procedure performed under anaesthesia or sedation.

2. To determine whether further information is required to complete the above investigation, and if so to request such information under guarantee of confidentiality from the attending practitioner(s).

3. To examine information acquired and identify any issues of management which were instrumental in the patient’s death.

4. To report the Committee’s findings confidentially to the practitioners involved in the patient’s care.

5. To report annually to the Minister for Health, drawing attention to any matters which require action to improve the safety of anaesthesia and sedation in New South Wales.

6. To acquaint the medical profession in general and anaesthetists in particular with any matters to which special attention needs to be paid to ensure the safety of anaesthesia and sedation.

7. To submit for publication in appropriate peer-reviewed journals the results of the Committee’s investigations in such a way as to preserve undertakings of confidentiality given to respondents.

8. To make available the expertise of its members to the Clinical Excellence Commission in pursuit of systemic improvements to patient care in the fields of anaesthesia and sedation.

July 2008
Appendix C: Form B - Report of Death Associated with Anaesthesia / Sedation
Appendix D: Glossary of Terms – Case Classification

**A Deaths Attributable to Anaesthesia**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Where it is reasonably certain that death was caused by the anaesthesia or other factors under the control of the anaesthetist.</td>
</tr>
<tr>
<td>2</td>
<td>Where there is some doubt whether death was entirely attributable to the anaesthesia or other factors under the control of the anaesthetist.</td>
</tr>
<tr>
<td>3</td>
<td>Where death was caused by both surgical and anaesthesia factors.</td>
</tr>
</tbody>
</table>

**Explanatory Notes:**
- The intention of the classification is not to apportion blame in individual cases but to establish the contribution of the anaesthesia factors to the death.
- The above classification is applied regardless of the patient's condition before the procedure. However if it is considered that the medical condition makes a substantial contribution to the anaesthesia-related death subcategory H should also be applied.
- If no factor under the control of the anaesthetist is identified which could or should have been done better subcategory G should also be applied.

**B Deaths In Which Anaesthesia Played No Part**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Surgical death where the administration of the anaesthesia is not contributory and surgical or other factors are implicated.</td>
</tr>
<tr>
<td>5</td>
<td>Inevitable death which would have occurred irrespective of anaesthesia or surgical procedure.</td>
</tr>
<tr>
<td>6</td>
<td>Incidental death which could not reasonably be expected to have been foreseen by those looking after the patient, was not related to the indication for surgery and was not due to factors under the control of anaesthetist or surgeon.</td>
</tr>
</tbody>
</table>

**C Unassessable Deaths**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Those that cannot be assessed despite considerable data but where the information is conflicting or key data is missing.</td>
</tr>
<tr>
<td>8</td>
<td>Cases which cannot be assessed because of inadequate data</td>
</tr>
</tbody>
</table>

**CAUSAL OR CONTRIBUTORY FACTORS IN CATEGORY A DEATHS**

*Note that this is common for more than one factor to be identified in the case of anaesthesia attributable death.*

**SUB-CATEGORIES**

**A. Pre-operative**

<table>
<thead>
<tr>
<th>(i) Assessment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>This may involve failure to take an adequate history or perform an adequate examination or to undertake appropriate investigation or consultation or make</td>
</tr>
</tbody>
</table>
adequate assessment of the volume status of the patient in an emergency. Where this is also a surgical responsibility the case may be classified in Category 3 above.

(ii) Management

This may involve failure to administer appropriate therapy or resuscitation. Urgency and the responsibility of the surgeon may also modify this classification.

### B. Anaesthesia Technique

| (i) | Choice or Application | There is inappropriate choice of technique in circumstances where it is contra-indicated or by the incorrect application of a technique which was correctly chosen. |
| (ii) | Airway Maintenance Including Pulmonary Aspiration | There is inappropriate choice of artificial airway or failure to maintain or provide adequate protection of the airway or to recognise misplacement or occlusion of an artificial airway. |
| (iii) | Ventilation | Death is caused by failure of ventilation of the lungs for any reason. This would include inadequate ventilator settings and failure to reinstitute proper respiratory support after deliberate hypoventilation (e.g. bypass). |
| (iv) | Circulatory Support | Failure to provide adequate support where there is haemodynamic instability, in particular in relation to techniques involving sympathetic blockade. |

### C. Anaesthesia Drugs

| (i) | Selection | Administration of a wrong drug or one which is contra-indicated or inappropriate. This would include 'syringe swap' errors. |
| (ii) | Dosage | This may be due to incorrect dosage, absolute or relative to the patient’s size, age and condition and practice is usually an overdose. |
| (iii) | Adverse Drug Reaction | This includes all fatal drug reactions both acute such as anaphylaxis and the delayed effects of anaesthesia agents such as the volatile agents. |
| (iv) | Inadequate Reversal | This would include relaxant, narcotic, and tranquillising agents where reversal is indicated. |
| (v) | Incomplete Recovery | E.g. prolonged coma. |

### D. Anaesthesia Management

| (i) | Crisis Management | Inadequate management of unexpected occurrences during anaesthesia or in other situations which, if uncorrected, could lead to death. |
| (ii) | Inadequate Monitoring | Failure to observe minimum standards as enunciated in the ANZCA Professional Documents or to undertake |
additional monitoring when indicated e.g. use of a pulmonary artery catheter in left ventricular failure.

<table>
<thead>
<tr>
<th>(iii) Equipment Failure</th>
<th>Death as a result of failure to check equipment or due to failure of an item of anaesthesia equipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(iv) Inadequate Resuscitation</td>
<td>Failure to provide adequate resuscitation in an emergency situation.</td>
</tr>
<tr>
<td>(v) Hypothermia</td>
<td>Failure to maintain adequate body temperature within recognised limits.</td>
</tr>
</tbody>
</table>

**E. Post-operative**

<table>
<thead>
<tr>
<th>(i) Management</th>
<th>Death as a result of inappropriate intervention or omission of active intervention by the anaesthetist or a person under their direction (e.g. Recovery or pain management nurse) in some matter related to the patient’s anaesthesia, pain management or resuscitation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Supervision</td>
<td>Death due to inadequate supervision or monitoring. The anaesthetist has ongoing responsibility but the surgical role must also be assessed.</td>
</tr>
<tr>
<td>(iii) Inadequate Resuscitation</td>
<td>Death due to inadequate management of hypovolaemia or hypoxaemia or where there has been a failure to perform proper cardiopulmonary resuscitation.</td>
</tr>
</tbody>
</table>

**F. Organisational**

<table>
<thead>
<tr>
<th>(i) Inadequate supervision, inexperience or assistance</th>
<th>These factors apply whether the anaesthetist is a trainee, a non-specialist or a specialist undertaking an unfamiliar procedure. The criterion of inadequacy of supervision of a trainee is based on the ANZCA Professional Document on supervision of trainees.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Poor Organisation of the Service</td>
<td>Inappropriate delegation, poor rostering and fatigue contributing to a fatality.</td>
</tr>
<tr>
<td>(iii) Failure of interdisciplinary Planning</td>
<td>Poor communication in peri-operative management and failure to anticipate need for high dependency care.</td>
</tr>
</tbody>
</table>

**G. No Correctable Factor Identified**

Where the death was due to anaesthesia factors but no better technique could be suggested.

**H. Medical Condition of the Patient**

Where it is considered that the medical condition was a significant factor in the anaesthesia related death.
Appendix E: ASA Physical Status Classification

AMERICAN SOCIETY OF ANAESTHESIOLOGISTS (ASA)

PHYSICAL STATUS CLASSIFICATION

P-1
A normal health patient

P-2
A patient with mild systemic disease

P-3
A patient with severe systemic disease

P-4
A patient with severe systemic disease that is a constant threat to life

P-5
A moribund patient who is not expected to survive without the operation

E
Patient requires emergency procedure

Website address:  www.asahq.org/clinical/physicalstatus.htm
Excerpted from American Society of Anaesthesiologists “Manual for Anaesthesia Department Organization and Management 2003-04”
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