Legislative reform: an opportunity to improve data quality in an anaesthetic mortality audit

Context
The Special Committee Investigating Deaths Under Anaesthesia (SCIDUA) is an expert committee whose members are appointed by the Minister for Health under s20 of the NSW Health Administration Act 1982. SCIDUA reviews deaths which occur while under, as a result of, or within 24 hours after the administration of anaesthesia for procedures of a medical, surgical, dental or investigative nature. Information collected for SCIDUA is privileged from subpoena under section 23 of the same Act.

SCIDUA has a long-standing record of mortality reporting and investigation to improve anaesthesia safety. The collection and analysis of mortality data relating to anaesthesia administration and the feedback provided to anaesthetists to facilitate reflective learning and practice improvement is consistent with the core principles of the Australian Safety and Quality Framework for Health Care.

Anaesthetic mortality reporting is a legal requirement in NSW. Before 2010, anaesthesia-related deaths were notified to SCIDUA through the coronial system. Due to changes in the Coroners Act 2009, anaesthesia-related deaths have been made a Category 1 Scheduled Medical Condition in the Public Health Act 1997 to ensure continuity of anaesthetic mortality reporting. This legislative reform provided an opportunity to review and improve the data collection system that has been used to support SCIDUA.

Objective
To improve the quality of data collected for anaesthetic mortality audit.

Key Messages
A review of the data collection system and the collected data revealed disparity between the State notification form and the user interface of the database. This resulted in poor data quality, including missing data and high data errors. In addition, the restricted and cumbersome user functions made the data entry process a difficult experience.

Following consensus by the Committee for a revised minimum data set, the following actions were implemented to improve data quality:

- Redesign of the State form: new data fields added and existing fields logically ordered to assist recall of events and maximise data collection.
- Redevelopment of the database: Related fields aligned and sequenced with those in the State form, and differing field names clarified for consistency. Drop-down menus and calendar tools inserted, rules introduced to enable data quality checks, and enhanced user functions established to improve reporting efficiency.

These actions were supported by the following initiatives to clarify the data collection process, promote continued reporting and improve the quality of notification data:

- The revised State form was published in a departmental policy directive to inform anaesthetists and hospital management about the changed reporting requirements
- Information about the legislative changes and an electronic copy of the redesigned State form was made available for download from the internet to facilitate notification of cases.

Discussion and Conclusions
Accurate data is critical to achieving the aims and benefits of a confidential peer review audit of anaesthesia-related mortality, including:

- Feedback to anaesthetists about their cases, specific risks and trends
- Comparison with other State jurisdictions
- Reassurance to community that anaesthesia-related deaths are examined independently
- Reassurance to community that anaesthesia remains very safe

Redesign and redevelopment of the data collection tools have enabled more efficient management of the minimum data set and successfully improved the quality of self-reported data. This involves:

- Designing a comprehensive and user-friendly notification form for anaesthetists to provide data
- Establishing consistency between the minimum data set, State form and database
- Enhancing database features to minimise data entry error and enable more in-depth data analysis

Since implementation of the revised form, the proportion of cases with missing data has decreased from 63.3% (n=107) in 2009 to 20.9% (n=41) in 2010. In particular, reduction in missing data was demonstrated for the data items of ASA grade, date and time of induction, and pre-operative diagnosis (Table A).

Table A: Frequency and proportion of missing data for selected minimum data set items

<table>
<thead>
<tr>
<th>Data Item</th>
<th>2009 (n=169)</th>
<th>2010 (n=197)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA Grade</td>
<td>44 (26.6%)</td>
<td>3 (1.5%)</td>
</tr>
<tr>
<td>Surgery type</td>
<td>15 (8.9%)</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>Location of death</td>
<td>17 (10.1%)</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>Patient date of birth</td>
<td>10 (5.9%)</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>Date of induction</td>
<td>41 (24.3%)</td>
<td>17 (8.6%)</td>
</tr>
<tr>
<td>Time of induction</td>
<td>48 (28.4%)</td>
<td>24 (1.2%)</td>
</tr>
<tr>
<td>Pre-operation diagnosis</td>
<td>79 (46.7%)</td>
<td>12 (6.1%)</td>
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</tbody>
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* The denominator (n) used for calculation of percentage is the number of cases reported to SCIDUA in a calendar year

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