

Victorian Audit of Surgical Mortality (VASM)

Annual Report 2008



Royal Australasian College of Surgeons



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The information contained in this annual report has been prepared by the Royal Australasian College of Surgeons Victorian Audit of Surgical Mortality Management Committee, which is a declared quality improvement activity. The Australian and New Zealand Audit of Surgical Mortality, including the Victorian Audit of Surgical Mortality, also has protection under the Commonwealth Qualified Privilege Scheme under Part VC of the *Health Insurance Act 1973* (Gazetted 6 November 2006).



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Chairman's report

The death of a patient can be a learning experience.

Victoria is the last of the states to establish a mortality audit. A contract between the Victorian Department of Human Services and the Royal Australasian College of Surgeons was signed in May 2007. This contract provides funding for running the Victorian Audit of Surgical Mortality (VASM).

VASM became operational in December 2007, and staff were recruited over the next six months. Our principal goal in this first year has been to establish the necessary systems and to recruit hospitals and surgeons to report on mortality associated with surgical care.

Despite the early challenges implicit in establishing any new project like ours, recruitment of surgeons, hospitals and health services has progressed and notification of deaths from a number of sources has commenced. These have been audited and form the basis of this report. We know from the experiences of other well-established audits like the Scottish and Western Australian audits that enrolment and participation increase with time. I encourage review of the Western Australian and Scottish audit web sites (<http://www.surgeons.org/waasm> and <http://www.sasm.org.uk/> respectively) to see what can be achieved over time.

Support for the project by Victorian Fellows is evidenced by 437 Fellows enrolling to participate in the audit process in our first five months. This represents 46% of Victorian Fellows.

In Victoria our major concern has been around interpretation of the privacy legislation protecting patient information. Unlike in other states, the names of deceased patients will not be released to VASM. Notification of a death in other states triggers a request to the treating surgeon to provide information on their patient's treatment. The patients are identified by their name, hospital number and date of birth. In Victoria our request to treating surgeons for clinical information will have the hospital unit record number and date of birth as the primary identifiers. As this is not how surgeons recognise patients, we are concerned this could affect participation as surgeons will need to access hospital records to establish the true identity of the patient. College resources have been directed at clarifying this apparently unique interpretation of privacy legislation. At the time of writing this report, the inability to release patient names remains.

The Victorian Surgical Consultative Council (VSCC) has, since its establishment by the State Government in 2001, reviewed causes of avoidable mortality and morbidity associated with surgery. Early discussions with the Chairman of the VSCC on the commonality of goals established that VASM would assume primary responsibility for reviewing surgical mortality, while the VSCC would continue to investigate causes of surgical morbidity and would review some mortality cases referred from VASM. A close working relationship has been established and the Chairman of the VSCC is part of the VASM committee. I would like to thank the Chairman of the VSCC, Mr Jonathan Rush, for facilitating the forging of this relationship.

I would like to thank those who are participating and especially those who are completing first- and second-line assessments. I would also like to acknowledge the cooperation of the health information management departments in all participating hospitals.

Our management committee has been very supportive and provided many constructive ideas. Among these is the issue of quality control of first- and second-line assessments.



It is difficult to ensure 100% objectivity in evaluation of processes like patient care, which are still liberally sprinkled with subjectivity. We have developed broad guidelines to give assessors some baseline for the standard of care they might expect. As all cases perceived to have issues of management associated with their care will have a second opinion (second-line assessment by different surgeon) and with the facility for a third opinion where there is ongoing dispute, observer bias should not be a relevant issue.

I thank the committee and the VASM staff for their advice and support and look forward to the future with optimism.

A handwritten signature in black ink, appearing to read 'Colin Russell'.

Colin Russell
VASM Chairman



Executive summary

The Victorian Audit of Surgical Mortality (VASM) was established in May 2007 to promote further improvement in surgical care in Victoria. VASM became operational in December 2007. The report represents data collected to the end of April 2008.

VASM identified 126 public hospitals that perform elective surgery in Victoria. By the end of April 2008, 39 (40%) of the 126 hospitals had agreed to participate in and provide regular notification of deaths associated with surgical care. Of these 39 hospitals, 23 (59%) are currently providing notifications of death.

In December 2007 an invitation to participate in VASM was sent to 955 Victorian surgeons. By the end of April 2008, 437 (46%) surgeons had notified VASM of their intentions to participate. Only 64 (6.7%) surgeons intimated they would not participate, 35 (55%) of these because they have ceased clinical practice. This means 454 (48%) surgeons had not notified VASM of their intentions; a further invitation to participate was sent to these surgeons. VASM continues to solicit support from surgeons and hospitals.

VASM received 37 notifications of death and has completed the first- and second-line assessment processes on 7 (19 %) of these notifications. There are 23 (62%) cases where VASM is still awaiting a response from either the treating surgeon or the first-line assessor, 5 (14 %) cases identified as being terminal care and 2 (5%) as non-surgical deaths. This means only 7 cases were reviewed by a first-line assessor. Only 1 (14%) of the 7 cases was deemed to require a second-line assessment.

In this small sample of 7 cases, the assessors have reported an area of consideration in 3 (43%) instances. These reports suggested that preoperative investigations and intensive care management could possibly have been better but did not contribute to the outcome.

Recommendations

- Continue to encourage maximal participation by hospitals and surgeons
- Seek to overcome issues that discourage participation (e.g. inability to use patient name as the primary identifier) and develop strategies to minimise any adverse effects
- Continue to foster the important relationship with Victorian Surgical Consultative Council
- Publish and review a set of guidelines for first-line and second-line assessors
- Update VASM hospital guidelines as necessary
- Develop VASM public information packs
- Develop VASM web page
- Develop an electronic interface to allow Fellows to complete assessments online
- Facilitate communication and information sharing with other state mortality audits
- Establish a facility to perform interstate first- and second-line assessments where local issues might prejudice outcomes
- Facilitate availability of Coroner's reports to VASM through liaison with the Coroner's Court of Victoria

With the small sample available, it is not possible to comment on individual facets of surgical care in Victoria. As the volume of cases reported to VASM increases, emerging trends in mortality will be identified.



Introduction

Background

The Victorian Audit of Surgical Mortality is part of the Australian and New Zealand Audit of Surgical Mortality (ANZASM), a bi-national network of regionally-based audits of surgical mortality that aim to ensure the highest standard of safe and comprehensive surgical care.

A similar program has been successfully operating in Western Australia (WAASM) since 2001, based on an established and successful model in Scotland (SASM). All Australian states have gradually adopted the program, with Victoria the most recent to be established.

Objectives

The objective of the audit is '*peer review of all deaths associated with surgical care*'.

This includes:

- Deaths that occur in hospital following a surgical procedure.
- Deaths that occur in hospital whilst under the care of a surgeon, even though no procedure was performed.

If VASM receives notifications of deaths that have occurred following discharge from hospital but within 30 days of a procedure or inpatient stay under a surgical unit, these cases will also be reviewed.

The audit process is designed to highlight system and process errors. It is intended as an educational rather than a punitive exercise.

Structure and governance

The audit is managed by the Research, Audit and Academic Surgery (RAAS) Division of the Royal Australasian College of Surgeons and is supported and funded by state governments. ANZASM oversees the implementation and standardisation of each regional audit. This is to ensure consistency of the processes associated with the audit and its governance structure across all of the jurisdictions involved.

Participation by surgeons is voluntary; however, involvement in a peer-reviewed surgical audit is an annual requirement of the College's Continuing Professional Development (CPD) program. Participation in VASM provides CPD credits towards recertification.

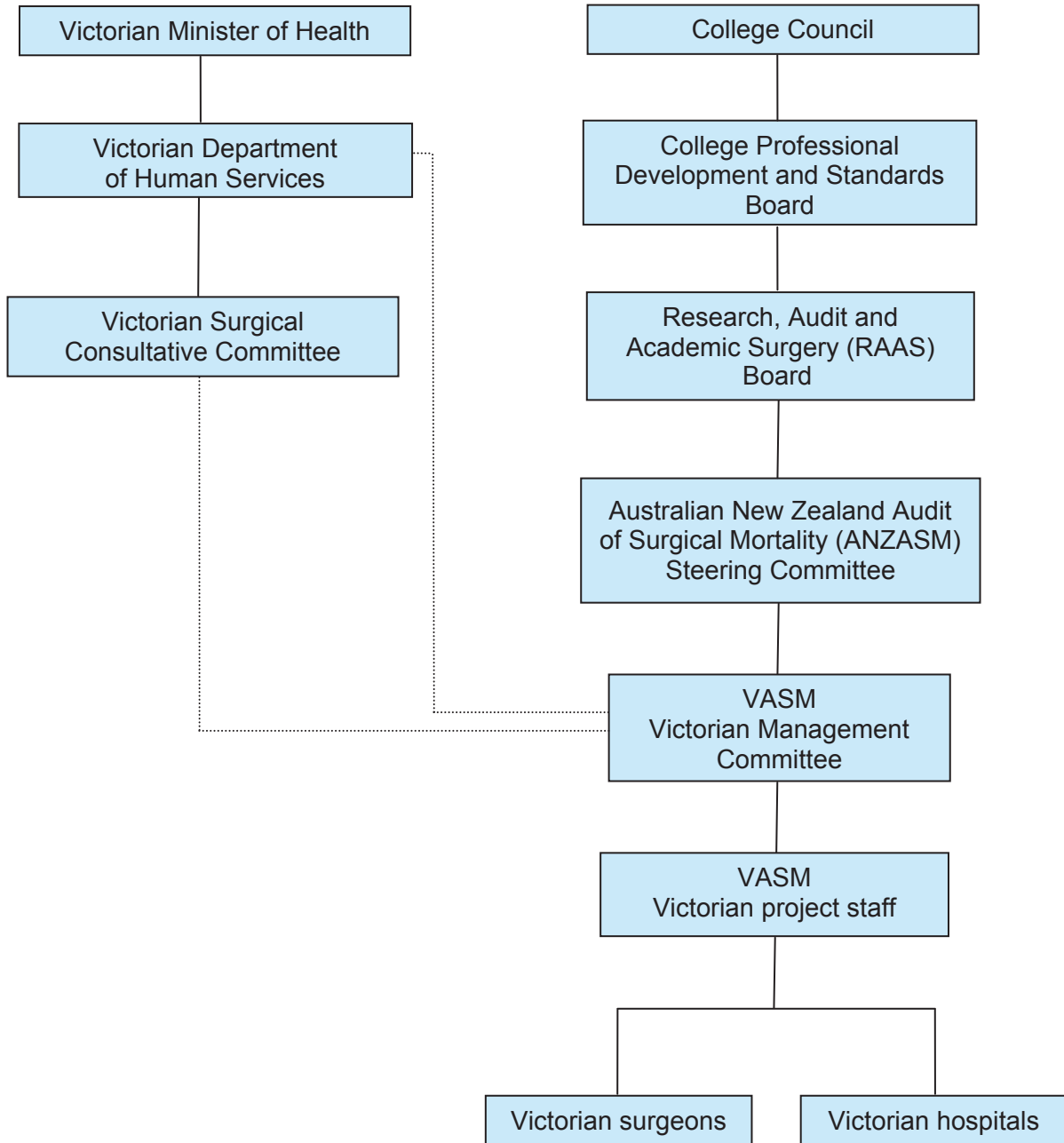
The project has been funded by the Statewide Quality Branch of the Victorian Department of Human Services (DHS). VASM works closely with the Victorian Surgical Consultative Council (VSCC) and VASM reports to the VSCC, hospitals and DHS.

The VSCC was established by the state government in 2001 to review causes of avoidable mortality and morbidity associated with surgery and to provide feedback to the medical profession on any systemic issues identified. VASM staff will inform the VSCC of trends in surgical mortality and assist with the development of processes to enable the surgical community and healthcare providers to address system issues.

The VSCC will be forwarded de-identified individual reports and annual aggregated reports from VASM which summarise all cases reviewed. The VSCC will inform the surgical community about important issues arising out of the collection and analysis of mortality and morbidity data. Along with the VSCC, VASM aims to support further improvements in patient care in Victoria.



Figure 1: VASM governance structure





Methods

The audit process

The process is triggered by the notification to the VASM office of a death associated with surgery. This notification of death can come from two potential sources - directly from surgeons (self-reporting) or through regular reports on mortality supplied by health services or individual hospitals. These methods are complementary. VASM staff will contact the treating surgeon responsible for the care of the deceased, to request their participation in the audit by completing the structured surgical case form.

All deaths fulfilling the criteria, other than cases identified as terminal care, are peer-reviewed by at least one independent surgeon. This first-line assessor will be from the relevant specialty, and will be unaware of the identity of the deceased, the surgeon responsible for the care of the patient and the hospital at which the death occurred. A structured format is used for all reviews.

Following first-line assessment, there are two possible outcomes:

- Adequate information has been provided by the surgical team to conclude that there are no problems associated with the management of the case and no further review is required. VASM will provide this feedback to the treating surgeon and close the case.
- A more extensive review (second-line assessment) is felt to be warranted. This is recommended when insufficient information has been provided to reach any conclusion, or there is a perception that aspects of patient management may have contributed to the adverse outcome.

The second-line assessment is conducted in the same manner as the first-line assessment and by another independent surgeon. A copy of the case notes of the deceased are required for this more extensive review. Information relating to the identity of the deceased, the treating surgeon, and hospital where the death occurred are removed from the case notes prior to the review process.

Following second-line assessment, there are two possible outcomes:

- No problems perceived to have contributed to the death of the patient are identified.
- There is a perception that issues of patient management may have contributed to the death.

First-and second-line assessors report perceived clinical incidents in relation to the following criteria:

- **area of consideration** where an assessor believes an area of care **could** have been improved but recognises that it may be an area for debate
- **area of concern** where an assessor believes an area of care **should** have been better
- **adverse event** where an unintended injury was **caused** by the medical management, rather than the disease process

In addition assessors determine the potential impact of any perceived management issues on the outcome, that is, whether the issue:

- probably had no impact on outcome
- may have contributed to death, or
- was perceived to be a significant factor in the death of the patient



Assessors comment on whether the adverse outcome was preventable:

- definitely
- probably
- probably not
- definitely not

When issues of management are identified the team likely to have contributed to that outcome are suggested, for example:

- the surgical team responsible for the patient's management
- another clinical team associated with the patient's management
- hospital system issue
- other area

Deficiencies of care are those identified by assessors as 'areas of concern' or 'adverse events'. 'Areas of consideration' often reflect a difference in opinion rather than a major deviation from a well-defined, evidence-based approach to care.

All cases which are classified as being an area for concern or involving an adverse event are reported to the VSCC.

Providing feedback

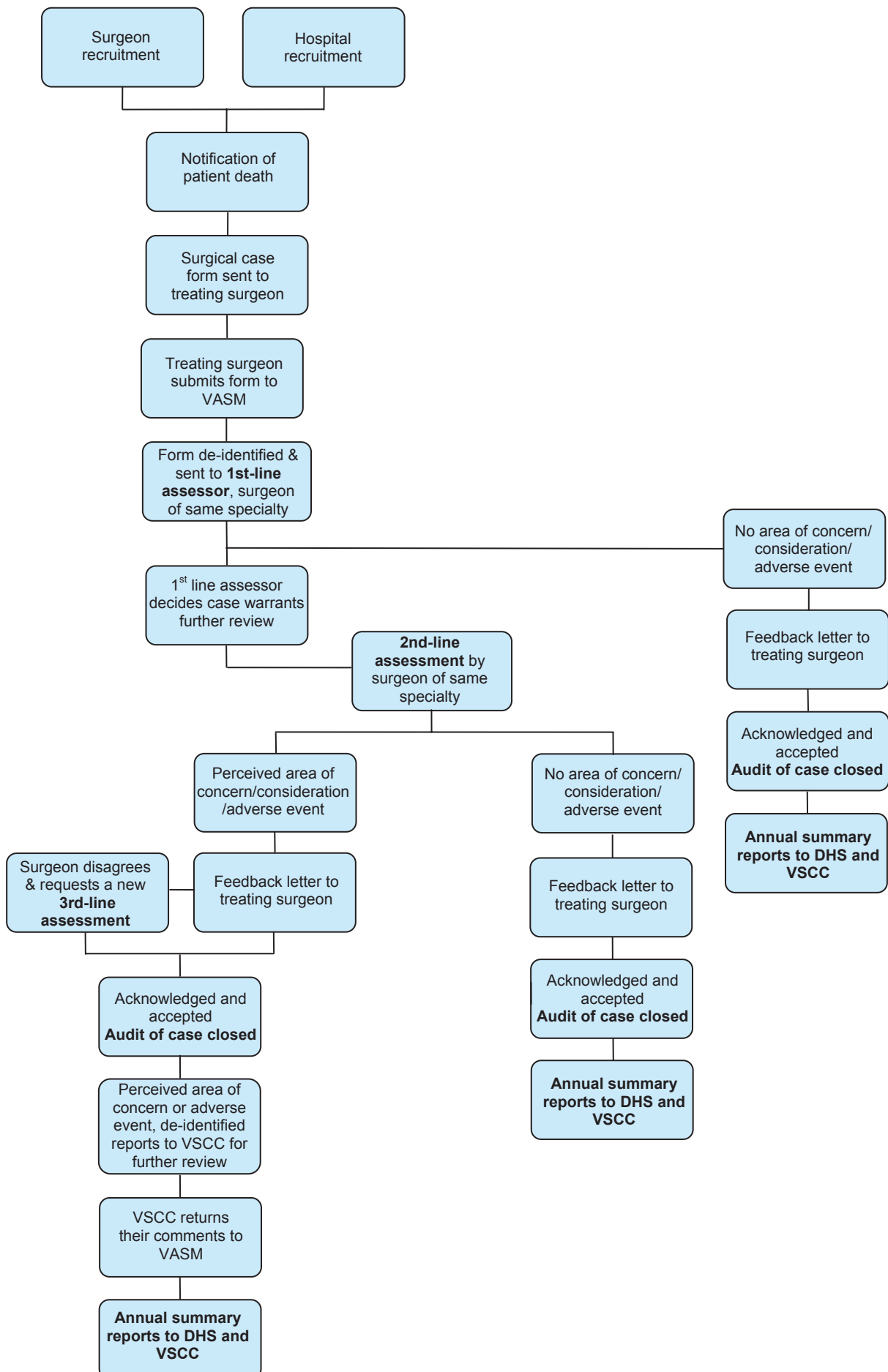
All assessments are communicated directly to the treating surgeon to fulfil the core purpose of informing and educating clinicians of potential improvements to patient care.

If the treating surgeon is dissatisfied with the outcome of the second-line assessment, he or she can request that another (third-line) assessment be undertaken.

A graphic representation of the audit process is shown in Figure 2 (VASM Audit Process).



Figure 2: VASM audit process





Data analysis

Data from the VASM database is analysed using descriptive statistics which include frequencies of categorical variables and medians of continuous variables and their inter-quartile range.

Database security

All data are adequately safeguarded to protect patient confidentiality for the purposes of the audit. All data collection complies with protocol and medical research regulatory requirements.

Interaction between the desktop application and the server is encrypted using the industry standard secure sockets layer (SSL). Data on the server is encrypted using the NetLib Encryptionizer software.

Within the VASM department, the data management process is directed by data management standard operating procedures and adheres to Good Clinical Practice Standard Operating Procedures (SOPs).

Data management processes emphasise good data collection, cleaning, statistical preparation and archiving standards. The SOPs were devised to control data capture, processing, maintenance and integrity. The SOPs detail data collection, checking, verification, queries, auditing and the security procedures applied to maintain confidentiality. VASM also addresses the issues associated with privacy guidelines and the Health Privacy Principles that commenced on 1 July 2002.

Access to all computer files is under password control and is restricted to VASM personnel.

Every data revision generates an audit trail. This trail is archived in the system detailing the date and form details changed, identifying the user, taking account of the user making the changes. To support this electronic audit system a paper trail is used as supporting documentation for the amendments.

All staff employed by VASM must undergo a training session on the subject of confidentiality. VASM staff members are bound by the Privacy Code of Practice of the Section 124Y, Health Insurance Act 1973 and the Royal Australasian College of Surgeons code of practice.

The ANZASM Manager authorises a log of all personnel involved in the VASM management process and their duties.

Open disclosure and confidentiality

The VASM process is strictly confidential. Confidentiality of the audit is provided under the Australian Government's Qualified Privilege Scheme because VASM is a certified quality assurance activity. This authorisation covers VASM staff as well as surgeons acting in the capacity of first-and second-line assessors. The Qualified Privilege Scheme ensures confidentiality of all identifying patient and hospital information.

Disclosure of confidential or privileged information gained from audit activities to anyone other than the surgeon involved in the case or the surgeons specifically assigned to provide a peer-reviewed assessment of the case constitutes a breach of confidentiality. A person who discloses information stemming from the declared activity either indirectly or directly to another person or a court of law faces a possible penalty of up to two years imprisonment (Section 124Y, Health Insurance Act 1973).



Dissemination of audit outcomes

VASM's qualified privilege status dictates the level of detail we can provide to hospitals, surgeons, the VSCC and the DHS in our annual report. This is also congruent with the desire for VASM to be an educational process that attracts participation from a majority of surgeons. On an annual basis VASM will provide a report with aggregated, de-identified data on outcomes of mortality reviews. This will be sent to all stakeholders.

Hospitals will be shown how to identify their own figures from within these reports. Over time, trends in mortality and any systemic issues involved will become evident and be highlighted in reports. The Western Australian Audit of Surgical Mortality (WAASM) has been running since 2001, and has detected some trends and developed strategies to address these.

The VSCC will receive de-identified, aggregated mortality data from VASM on a yearly basis. In addition, following changes to VASM qualified privilege, de-identified copies of second-line assessments will be sent to the VSCC for further review. Trends in surgical mortality identified by VASM will be notified to the VSCC. VASM and the VSCC will collaborate to develop strategies to address any system issues and to inform the surgical community of such trends. Along with the VSCC, VASM aims to support further improvements in patient care in Victoria.

Identification of surgeons perceived to be 'outliers' is a potential outcome of any structured surgical audit. Identification of such outliers to individual employers/hospitals is not possible under the ANZASM Commonwealth Qualified Privilege Scheme.

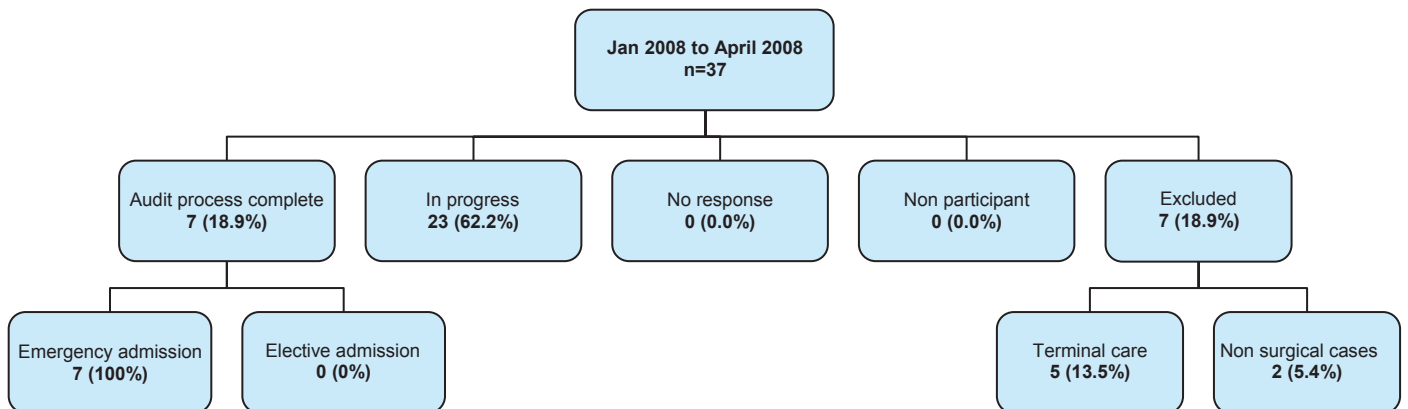
The College acknowledges that the issue of 'outliers' needs to be addressed; therefore ANZASM will develop a policy to integrate with the College 'Guidelines for Managing an Outlier Through Structured Audit Processes'.



Results

The principal goal in this first year has been to recruit hospitals and surgeons to report on mortality associated with surgical care and to establish the necessary systems to ensure privacy and data integrity within the audit. Due to the short reporting period and the small database, trends in surgical mortality were not expected to emerge in the first year.

Figure 3: Summary of deaths reported to VASM from January 2008 to April 2008



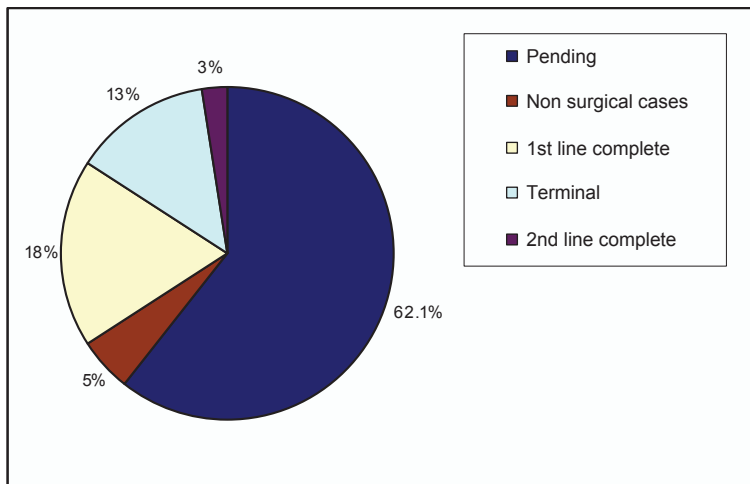
Data summary

VASM received 37 notifications of death between January and April 2008. The audit process is in progress in 23 (62.2%) of these cases, that is, the case report has not been completed by the treating surgeon or the case is still awaiting the first-or second-line assessor’s report. Seven (18.9%) cases have completed the assessment process and seven (18.9%) were excluded from analysis as they did not meet the inclusion criteria (five patients were admitted for terminal care and two patients were not treated by surgeons). (Figure 3)

Of the seven cases analysed, four (57.2%) cases were admitted under general surgery units, two (28.6%) cases under an orthopaedic unit, and one (14.2%) case under a plastic surgery unit.

From the completed cases, one case (14.2%) had undergone second-line review (Figure 4)

Figure 4: Status of deaths reported





Participation

Key point: Hospital and surgeon participation in VASM is voluntary.

Hospital participation

Currently 39 hospitals have agreed to participate in VASM; however, only 21 (53.8%) have fully implemented the processes necessary for providing notifications of death to the VASM office.

From the pool of participating hospitals 10 are defined as metropolitan and 29 as rural as represented in Table 1 and Figure 5.

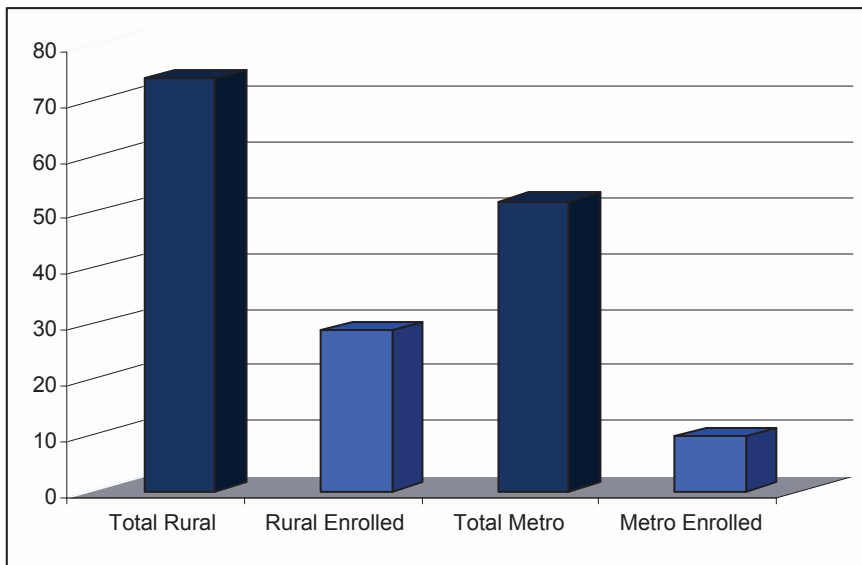
Table 1: Hospitals enrolled (list of all hospitals)

Hospital Id	Surgeon Compliance	Area
130	73.30%	Metro
205	100%	Metro
197	Not reporting	Metro
180	No deaths	Metro
129	Not reporting	Metro
281	Not reporting	Metro
282	Not reporting	Metro
157	Not reporting	Metro
176	Not reporting	Metro
135	No deaths	Metro
212	No deaths	Rural
219	No deaths	Rural
220	No deaths	Rural
233	No deaths	Rural
240	No deaths	Rural
247	No deaths	Rural
255	No deaths	Rural
260	No deaths	Rural
261	No deaths	Rural
264	No deaths	Rural
265	No deaths	Rural
266	No deaths	Rural
270	No deaths	Rural
203	Not reporting	Rural
206	Not reporting	Rural
210	Not reporting	Rural
213	Not reporting	Rural
221	Not reporting	Rural
223	Not reporting	Rural
224	Not reporting	Rural
230	Not reporting	Rural
232	Not reporting	Rural
234	Not reporting	Rural
263	Not reporting	Rural
244	Not reporting	Rural
209	Pending	Rural
242	Pending	Rural
268	Pending	Rural
271	Pending	Rural

Participation by hospitals and surgeons is increasing with time. VASM continues to seek increased participation.



Figure 5: Participating hospitals (metro vs rural)

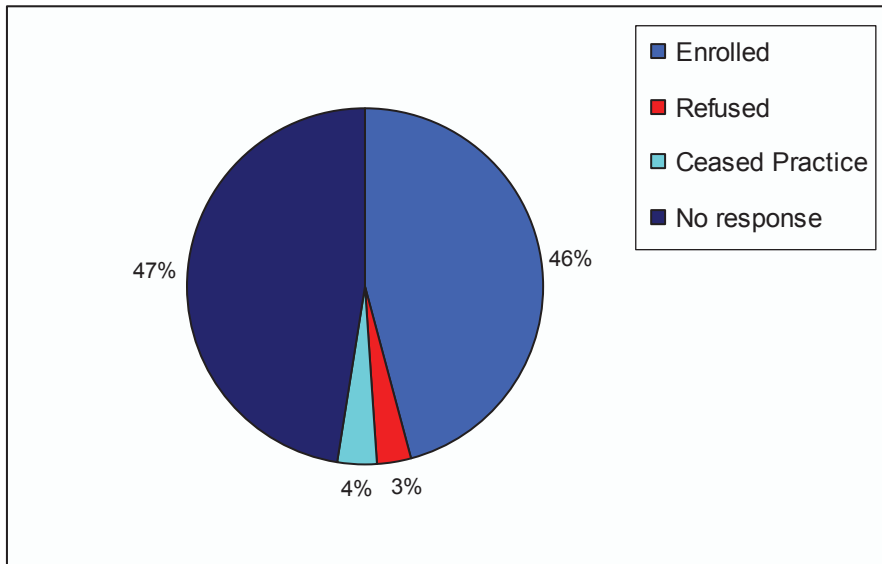


Surgeon participation

In December 2007, 955 Victorian surgeons were contacted, provided with information on the VASM processes and invited to participate and assist with first-and second-line assessments. The initial responses have been encouraging, with 437 (45.7%) surgeons agreeing to participate, including seven International Medical Graduates. (Figure 6)

Further invitations have been sent to the 454 surgeons who have not yet responded.

Figure 6: Surgeon participation



Of the 437 surgeons enrolled, 247 (56.5%) have agreed to be first-line assessors and 265 (60.6%) have agreed to be second-line assessors (Figure 7).



Figure 7: First-and second-line assessors

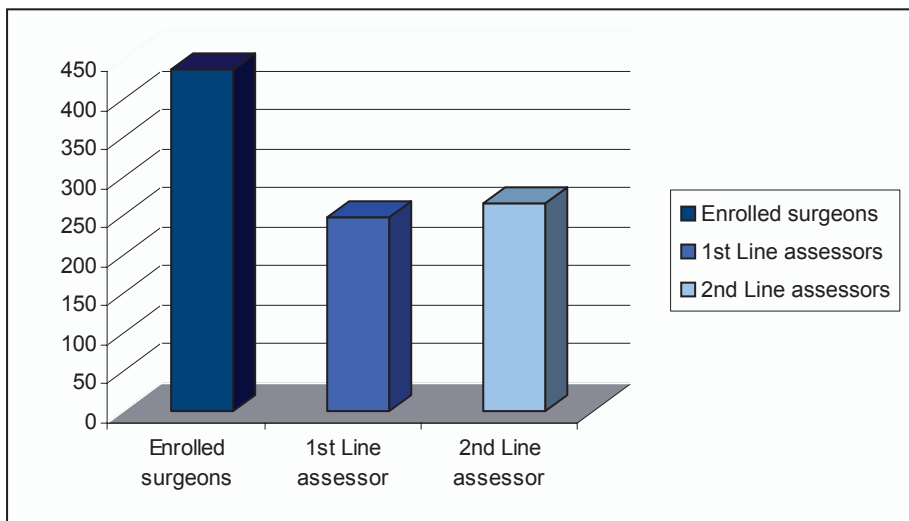


Figure 8: Surgeons participation by speciality

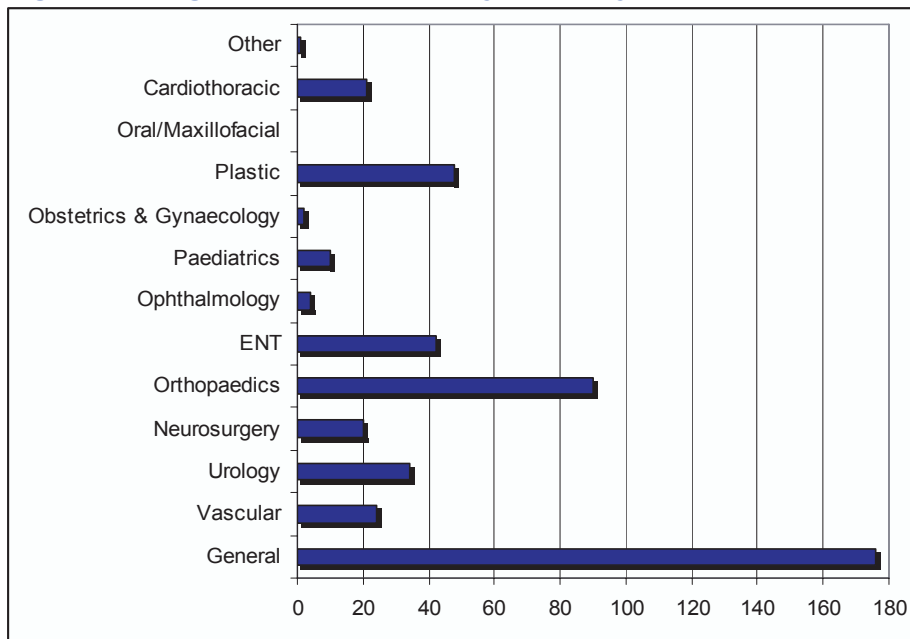


Figure 8 demonstrates participation by speciality group. There are also seven International Medical Graduates included in this breakdown.

First-and second-line assessments

Fourteen (37.8%) out of 37 cases of surgical mortality referred to VASM have completed the audit process and been closed. Five (35.7%) of these 14 cases required no assessment as they involved patients admitted for terminal care and two (14.2%) cases were excluded as they were under a medical unit and inappropriately referred to VASM. Currently 23 (62.2 %) cases are still pending completion of the review process.

First-line assessment

Seven cases were sent for review. One (14.2%) of these cases was referred for second-line assessment. The other six cases were closed with no adverse findings reported.



Second-line assessment

The one case requiring second-line assessment identified a possible area of consideration only. There were no areas of concern or adverse event identified.

Patient demographics

For the completed cases (n=7), the median age overall was 79 years. The median age for males and females was 87 and 68.3 years respectively (Figures 9, 10).

Figure 9: Age range

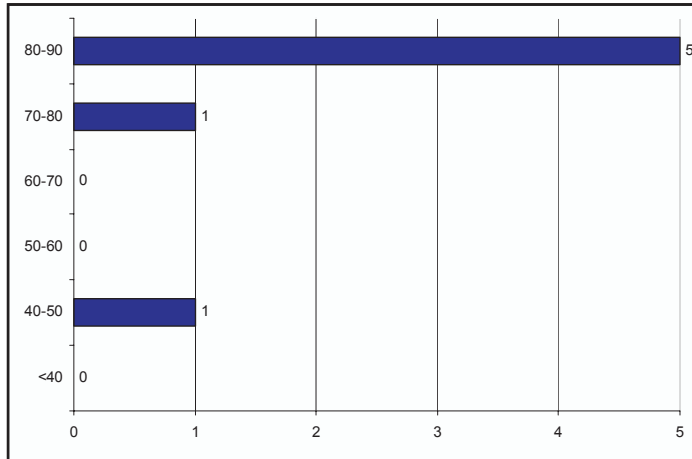
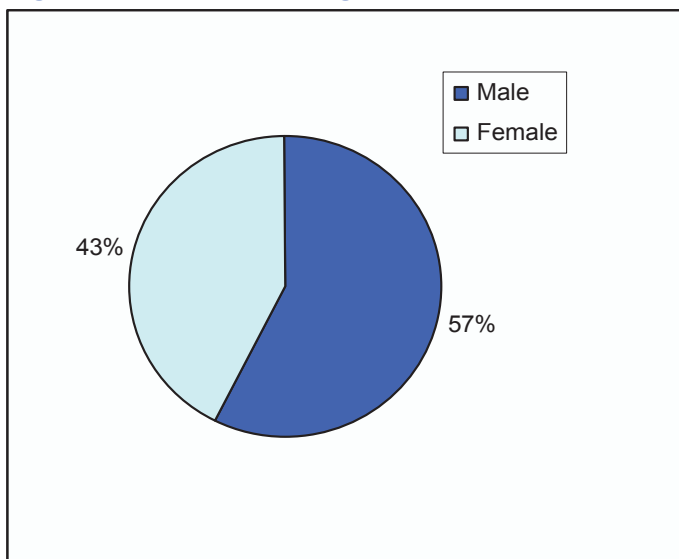


Figure 10: Patient demographics



The American Society of Anaesthesiologists (ASA) grades

The ASA grading system is an internationally-recognised physical status classification system for assessing a patient before surgery. It consists of six grades as follows:

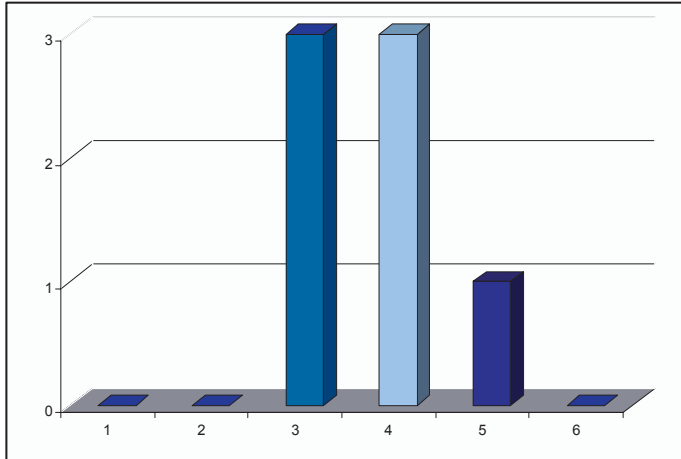
ASA grade characteristics

1. a normal healthy patient
2. a patient with mild systemic disease and no functional limitation
3. a patient with moderate systemic disease and definite functional limitation
4. a patient with severe systemic disease that is a constant threat to life
5. a moribund patient unlikely to survive 24 hours, with or without an operation
6. a brain dead patient for organ donation



Over half of the analysed cases (57.1%) had an American Society of Anaesthesiologists (ASA) grade of four or more (Figure 11). In all our analysed cases, at least one case had a significant co-morbidity considered to have contributed to the death of the patient. All seven cases were classified as emergency admissions.

Figure 11: ASA scores



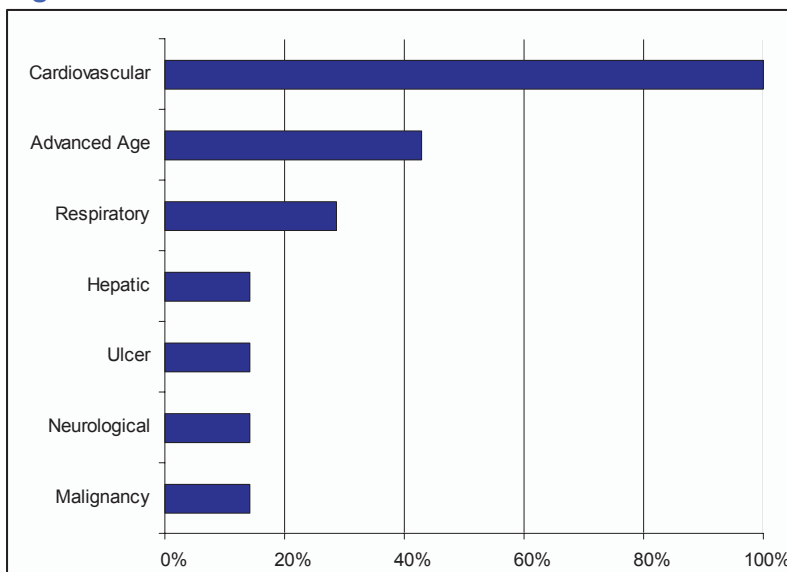
The Intensive Care Unit (ICU) support was used for 28.5% patients (ASA score greater than 4).

A copy of the coronial postmortem performed in one (14.2%) of the seven cases reviewed was made available to the assessor and was acknowledged as contributing relevant supporting documentation to the assessment process.

Cause of death

Ventricular fibrillation proceeding to cardiac arrest, respiratory failure, haematemesis, septic shock, acute myocardial infarction and multi-organ failure due to advanced carcinoma were identified as the causes of death. In all seven cases, cardiovascular co-morbidities were identified as a contributing factor. Respiratory disease, malignancy and advanced age were identified as contributory factors in 28.7%, 14.2%, 42.8% and 14.2% respectively (Figure 12).

Figure 12: Co-morbidities





Areas of consideration, concern and adverse events

In three of the seven (42.8%) cases analysed an area of consideration was identified. In two of these cases more timely preoperative investigations were suggested but were felt not to have impacted on the outcome. In one case the ICU management was questioned. Again this was not felt to have contributed significantly to the death of the patient.

No areas of concern or adverse events were identified.

Terminal care

There is no one approach to caring for someone whose death is impending. Although several surgical and/or medical strategies and interventions are implemented for such patients, the death remains unavoidable.

Terminal care cases do not undergo the full audit process. Of the cases of surgical mortality referred to VASM, five (13.5%) patients were admitted for terminal care and were excluded from the full audit process.



Acknowledgments

The Victorian Audit of Surgical Mortality would like to acknowledge the support and assistance of the many individuals and institutions that have helped in the development of this project, including:

- participating Victorian hospitals
- participating Victorian Fellows & International Medical Graduates
- assessors, in particular the dedicated specialty specific first-line assessors
- consultant surgeons who did second-line assessments, for their voluntary time and effort in providing detailed and valuable case-note reviews
- hospital medical records departments
- Victorian Department of Human Services, for funding the project
- Victorian Surgical Consultative Council
- Royal Australasian College of Surgeons, in particular the Research, Audit and Academic Surgery Division, the Australian and New Zealand Audit of Surgical Mortality Management Committee and the Victorian Management Committee
- Western Australian Audit of Surgical Mortality
- Tasmanian Audit of Surgical Mortality
- South Australian Audit of Perioperative Mortality
- Queensland Audit of Surgical Mortality
- Royal Australasian College of Medical Administrators

VASM Management Committee

Colin Russell	Chair and Clinical Director, Victorian Audit of Surgical Mortality
Jonathan Rush	Chair, Victorian Surgical Consultative Council
Steven McConchie	Manager, Clinical Information & Knowledge Management Statewide Quality Branch, Department of Human Services
Michael Dobson	Chair, Victorian State Chair Committee
Andrew Cochrane	Australasian Society of Cardiac and Thoracic Surgeons
Peter Thomson	Australian Society of Otolaryngology, Head and Neck Surgery
Bruce Waxman	Colorectal Surgical Society of Australia and New Zealand
Keith Stokes	Australasian Association of Paediatric Surgery
Dr Lee Gruner	Censor in Chief, Royal Australasian College of Medical Administrators
Christos Kondogiannis	Australian Orthopaedic Association
Jocelyn Shand	Dental Practice Board of Victoria
Alex Babarczy	Australian and New Zealand College of Anaesthetists
Ivan Kayne	Consumer Representative
Christine Griffiths	Consumer Representative

VASM staff

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Claudia Retegan	Project Manager
Deirdre Mansell	Project Officer
Jessele Vinluan	Project Officer
Shannon Leake	Administration Officer



Abbreviations

ASA	The American Society of Anaesthesiologists Grades
ANZASM	Australian and New Zealand Audit of Surgical Mortality
CPD	Continuing professional development
DHS	Department of Human Services
ENT	Ear, nose and throat
ICU	Intensive care unit
IMG	International Medical Graduates
PM	Postmortem
SAAPM	South Australian Audit of Peri-operative Mortality
SASM	Scottish Audit of Surgical Mortality
TASM	Tasmanian Audit of Surgical Mortality
VASM	Victorian Audit of Surgical Mortality
VSCC	Victorian Surgical Consultative Council
WAASM	Western Australian Audit of Surgical Mortality



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