



Victorian Audit of Surgical Mortality

ANNUAL REPORT 2011

SUMMARY





Chairman's Report

The death of a patient can be a learning experience.

The Victorian Audit of Surgical Mortality (VASM) has now been actively collecting and reviewing deaths associated with surgery for four years. This is our fourth annual report and we have produced three case note review booklets. We have contributed to two national case note review booklets and two national reports, some of which are pending publication. In this report we present the outcomes of review of 2,013 deaths.

These might qualify as some measure of success, but there is nothing like getting a reality check on one's perceptions. To achieve some objectivity we need to stand back and let a team of independent external observers assess the various criteria others might feel important. Such an external review was conducted in the second half of 2011. The full report can be found on www.surgeons.org/VASM. In brief, VASM was felt to have achieved its goals efficiently and effectively and gained credibility with Victorian Fellows. Although such reports are important, the true value lies in recognising future opportunities. The input from a wide range of stakeholders has provided us with valuable suggestions to take us forward. I wish to thank all those who contributed to the review for their help. The learning from, and the outcomes of, this survey will benefit all regional audits of surgical mortality.

The review confirmed the importance of addressing prominent failings in clinical management. This is congruent with our goal of education. We and other states have identified delay in implementation of definitive care as an ongoing major issue. Recognising clinical deterioration is a major facet of this problem. VASM, in conjunction with the Victorian Surgical Consultative Council (VSCC) and the Victorian Managed Insurance Authority, ran a seminar on this topic in late February 2012.

In the latter half of 2011 we successfully commenced recruitment of the private hospital sector into the audit. We thank these 80% of private hospitals that have already come on board.

Although the information presented in this report is still a relative snapshot of surgical deaths in Victoria, some positive trend data is emerging. Most importantly, there is a downward trend in the frequency of significant criticism generated over clinical management of audited cases.

The success of VASM is really down to Claudia Retegan and the other members that make up the VASM team. Their attention to detail and adherence to protocol is the solid foundation on which the audit is built. With their help, and the support we receive from many others, I can only remain confident about the future of VASM. The support of the State Government, the Victorian Department of Health and VSCC have enabled and facilitated VASM's inception and progress. The Royal Australasian College of Surgeons provides much of the skeleton on which the audit has functioned.

The theme of this Chairman's report has been about 'taking stock'. This is influenced by the fact that this is my last, as I will stand down at the end of this May. I wish to thank all who have helped us to get where we are; it has been a challenge I needed and a pleasure I have enjoyed.

Colin Russell
VASM Chairman



Summary

The Victorian Audit of Surgical Mortality (VASM) commenced auditing surgical mortality in Victorian public hospitals in January 2008. This report represents data collected to the end of June 2011. The many rate-limiting steps in the audit process mean we have only completed the audit process in half of these cases.

Audit participation

There has been increasing participation in VASM by Victorian Fellows. Intention to participate has risen from 60% in 2008 to 87% in 2011. This increase in intention to participate is supported by evidence of actual participation. The return of case record forms, a pivotal step in the audit process, varies between 75% and 80%. This appears to have reached a steady state and is similar to other regions. Compliance in completing all necessary data fields (data quality) has improved, but is still less than satisfactory. The treating consultant rather than a junior member of the team has provided the information in 83% of the audited cases. This indicates an ongoing high level of personal involvement by participating surgeons.

All public hospitals with relevant surgical activity continue to participate and provide notifications of death associated with surgery. Since our last report, funding has been increased to recruit the private sector to the audit. This is an important step to ensure that all surgical mortality undergoes peer review.

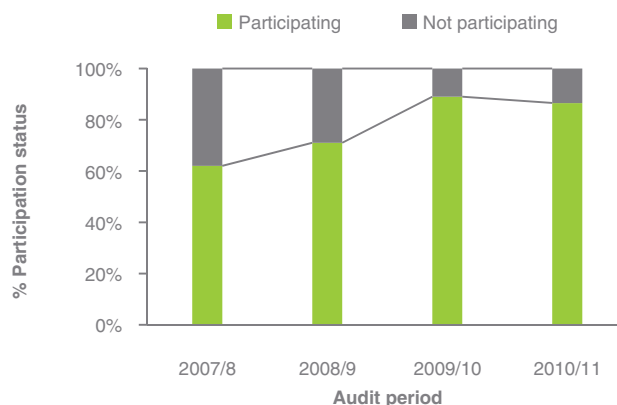
Private hospital participation has reached 80% and continues to improve.

The majority of hospital deaths do occur in the public sector. This is not a reflection on the level of care provided in the public sector, but is a result of the less complex casemix generally receiving care in the private hospital sector.

From 1st July 2010 to 30 June 2011, in total 277,422 patients underwent surgical procedures in Victoria, while the number of deaths attributed to surgery over the entire three-and-a-half-year audit period was only 4,177. This is a very small percentage compared with the number of patients who actually underwent surgery over the same period. When the number of deaths is compared with the Victorian Admitted Episode Dataset figures for the same period, we are capturing an increasing percentage of recorded state deaths (83%).

Of the 4,177 deaths, 2,013 (48%) had proceeded to and completed the audit process by the census date. The clinical information from these 2,013 cases forms the basis of this report. The remaining 2,164 cases were not included in the audit for the following reasons: excluded due to admission for terminal care, inappropriately attributed to surgical care, treated by non-participating surgeons or had not completed the audit process by census date. This latter group of 998 cases should of course be available by the next census date.

Figure 1: Surgeon agreement to participate as percentage of eligible College Fellows in Victoria



Note: Total n=1,050.

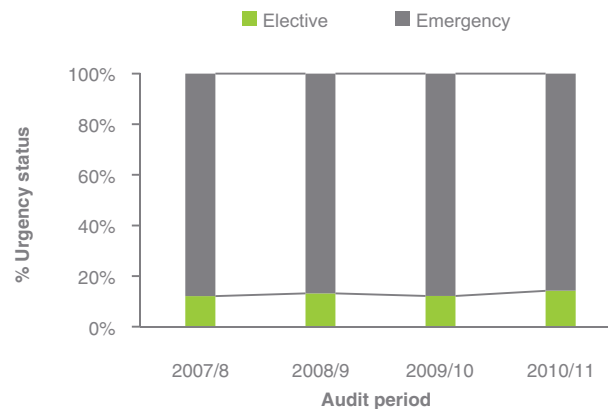


Demographic and risk profile

Review of the demographic and risk profiles of the 4,177 deaths reported to VASM confirms the trends described in previous reports. Of the 2,013 cases which have been peer-reviewed, the majority of surgical deaths occurred in elderly patients with underlying health problems, admitted as an emergency with an acute life-threatening condition often requiring surgery (see Figure 2). The actual cause of death was often linked to their pre-existing health status, in that the

cause of death frequently mirrored the pre-existing illness. Death was most often adjudged to be not preventable, and to be a direct result of the disease processes involved rather than of the treatment provided. The most common causes of death reported are cardiac and respiratory failure. This is congruent with the most common comorbidities in this series of patients.

Figure 2: Urgency status of deceased over sequential audit periods



Note: Total n=2,013.

Missing data n=24 (1%).

Risk management

Risk management strategies for this generally elderly, sicker group of patients are especially important. The audit looks at three parameters: venous thromboembolism (VTE) prophylaxis to reduce the likelihood of pulmonary embolus, use of critical care facilities and fluid balance management.

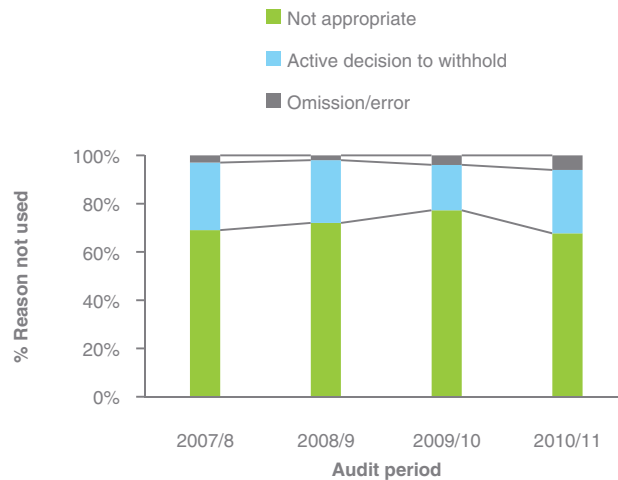
- **VTE prophylaxis:** prophylaxis was provided in over two thirds of audited deaths. A conscious decision to withhold prophylaxis was the reason given for non-provision for most of the remaining cases.

This was generally necessitated by some clinical contraindication to prophylaxis. Inadvertent omission of prophylaxis was rare, only occurring in 3% of cases.

When the appropriateness of withholding prophylaxis was reviewed, there was generally agreement by assessors that the decision was correct. However, in 4% of cases where it was withheld, assessors felt the decision was questionable, although the decision did not affect the final outcome.



Figure 3: Reasons given by treating surgeon for not providing VTE prophylaxis



VTE: venous thromboembolism.

Note: Number of patients not receiving prophylaxis was 527 in a total of 2,013 patients.

Missing data n=64 (3%).

- **Use of critical care facilities:** the utilisation of critical care support has significantly increased from 45% in 2008 to 54% in 2010–11 ($p<0.001$).

The review process looks at the deaths where patients did not receive such support. The peer-review process (first and second-line assessment) suggested that only 7% of patients who did not receive critical care support would have benefited from critical care support. The reasons why support was not provided or initiated by the treating team are a recent addition to the clinical information gathered, and data is not yet available for analysis.

- **Fluid balance during treatment:** this may have been an issue of management in only 5% of cases reviewed.

Operative profile

Twenty-one percent of the 2,013 patients had no operative interventions. This was most commonly an active decision not to proceed and usually occurred in patients admitted as an emergency for an irretrievable clinical problem. A total of 1,687 separate episodes of surgery occurred in 2,013 patients.

In these surgical episodes, 2,641 operative procedures were recorded. The most frequent operative procedures described were for trauma or acute abdominal pathology. This reflects the high percentage of patients admitted as emergencies (86%) in this series. A consultant performed the surgery in 54% of instances and made the decision to proceed to surgery in 68%.

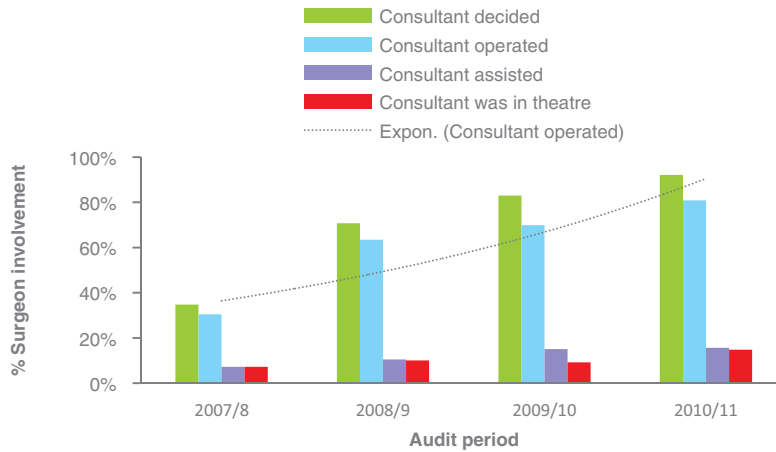
There was an unplanned return to the operating room (OR) in 231 (12%) of the 2,013 patients who underwent a surgical procedure.

Unplanned return to the OR is often, but not always, necessitated by a complication of the initial procedure and is associated with increased risk of death. Consultant involvement in such cases is highly desirable. Direct consultant involvement in such cases has risen from around 30% in 2007–08 to 81% in 2010–11. This recognition of the need for direct consultant involvement is to be commended.

The demand for time in the operating room to manage emergency cases remains a significant problem for hospitals. The issue is well recognised in this and other countries.⁽¹⁾



Figure 4: Seniority of surgeons performing unplanned procedures



Note: Total n=231.

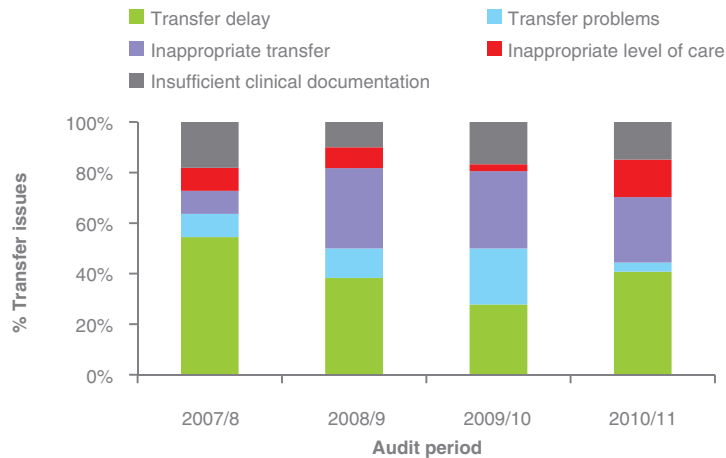
Note: The consultant operated exponential trendline is curved which highlights considerable rise in consultant involvement.

Inter-hospital transfers

Twenty-one percent of cases in the audited series required inter-hospital transfer. Such transfers are usually necessitated by the need for higher levels of care.

Issues of patient care related to transfer were raised in a third of these cases. The most common criticism was that transfer occurred at an inappropriately late point in the course of the patient's illness.

Figure 5: Care of patient during transfer to another hospital



Note: Total n=420 of the 2,013 audited cases.

Missing data: n=31 (7%)

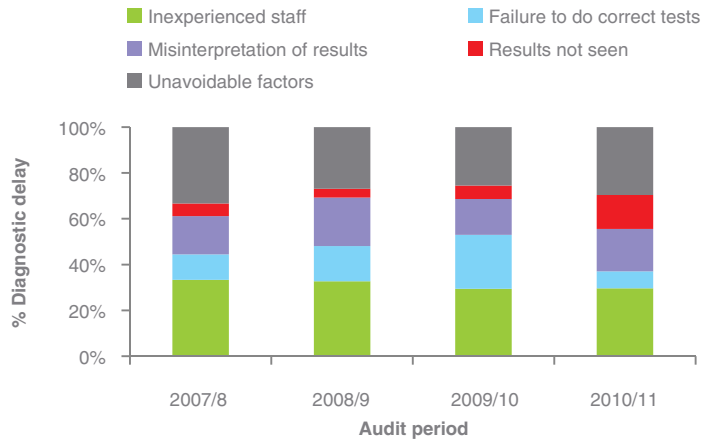


Delay in diagnosis

The treating surgeons identified delays in establishing the diagnosis in 173 (9%) of the 2,013 audited cases. This rate has remained relatively constant over time. When cases were submitted to first or second-line peer-review process, the incidence of delay in establishing a diagnosis rose to

18%. Delay in establishing a diagnosis is one facet of the concerning rate of delay in implementing definitive treatment shown later. It is important to note that such delays are not always attributable to the surgical team.

Figure 6: Perceived delays in establishing a diagnosis



Note: Total n=173 issues identified in 2,013 audited cases.



Peer review outcomes

Assessors involved in the audit process appraise the appropriateness of the clinical care provided to each case reported to VASM. All cases undergo first-line assessment.

- **Second-line assessments (SLA):** the frequency of need for SLA could be seen as an indirect measure of quality of care. SLAs are requested for cases in which the clinical care needs to be looked at more closely or the treating surgeon did not provide sufficient information to reach a conclusion. Such assessments were required in 10% of audited cases. This rate is similar to other states. Importantly the rate has decreased from 18% in 2007–08 to 10% in 2010–11.

SLA was most commonly required because the clinical information provided by the treating surgeon was inadequate, which is disappointing but remediable with further education.

The need for SLA was similar among surgical specialties, and metropolitan and rural hospitals.

- **Clinical management issues:** assessors use a standard spectrum of criticism to convey their perceptions of appropriateness of care. These are described in detail in section 3.2 of the full VASM report.

In 85% of audited deaths no, or only minor, issues of patient care were perceived. However, in 15% of cases more major issues of care were identified (areas of concern and/or adverse events). Over the audit period (2008–11) there has been a significant decrease in the frequency with which assessors are identifying clinical management issues. The incidence of more major criticisms of clinical care is similar among the surgical specialties. There has been a significant reduction

($p < 0.001$) in the frequency of more severe criticism of surgical care (adverse event, area of concern) over the entire audit period.

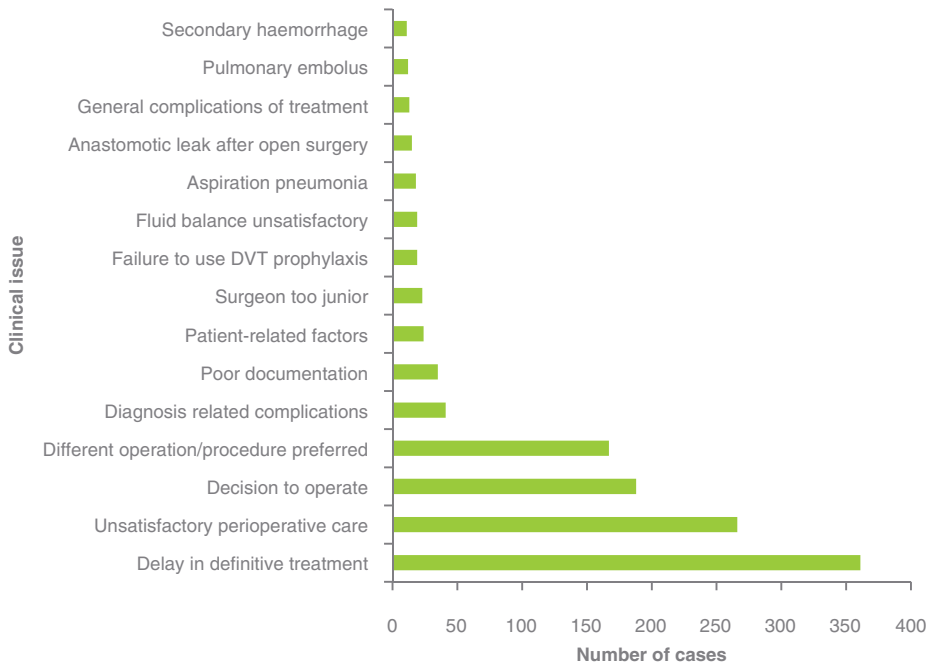
There is no evidence that specific hospitals or surgical specialties have attracted higher rates of criticism than others. It is important to remember that criticism of clinical care is not always attributable to the surgical team. A third of the issues identified were attributed to other speciality areas.

- **Perceived impact of identified issues on clinical outcome:** there was a perception that the clinical management might have been better in 713 (35%) of the 2,013 audited deaths. In only 126 (6%) of these 2,013 patients the clinical management was deemed likely to have contributed to the adverse outcome. The perceived relationship of clinical management to outcome was less clear in the remaining cases.
- **Frequency of specific issues of clinical management:** the most common clinical issue among the 713 specific issues identified was delay in delivery of definitive care. This occurred at multiple levels in the care pathway. The underlying problem is usually delay in establishing the true diagnosis leading to late referral and delay in implementing definitive treatment.

A similar pattern has been reported in recent reports by the Western Australian Audit of Surgical Mortality and the South Australian Audit of Perioperative Mortality. The recent case note review booklet published by VASM features clinical cases that exemplify this problem. Patients with the clinical risk profile demonstrated in this audited series do not tolerate such delays in treatment.



Figure 7: Frequency of specific clinical issues of management



DVT: deep vein thrombosis.

Note: Total n=1,212.

Data quality

Data quality is an essential component of this and other audits. We have looked at the frequency of missing data in this audit. The volume of missing data is most prevalent in a few sections; however, this has slightly improved from our

previous analysis since we have reformatted two of these problem sections such as critical care and VTE prophylaxis management to make them more user-friendly.



Recommendations

Many of our previous years' recommendations have been implemented. Collaboration between the Department of Health, Victorian Surgical Consultative Council (VSCC), Coroner's Office, Fellows, hospitals and health services continues to facilitate our progress.

Objectives for the coming year are:

- Improve the return rate of case record forms and increase surgeon participation.
- Continue to collaborate with VSCC and other agencies like the Coroner's Office.

- Continue to disseminate important messages emanating from the audit.
- Enhance the electronic interface to allow Fellows to complete assessments online.
- Facilitate communication and information sharing with other state mortality audits.
- Contribute to the development of a national mortality audit report.
- Implement recommendations that resulted from the external evaluation of the audit program.

Conclusions

The audit process is designed to highlight system and process errors, and identify trends in mortality associated with surgical care.

A significant and positive trend in direct consultant involvement in patients with post-operative complications

requiring unplanned return to the emergency has been demonstrated. This is reversal of a trend identified in earlier reports. There have been no adverse trends identified.

Data quality remains a concern. The volume of incomplete sections of clinical data may mask identifiable trends.



Establishment of external evaluation

In 2011, VASM conducted an external evaluation of the entire audit process. This aimed to ascertain the extent to which VASM is achieving its objectives.

The scope of the evaluation included:

- Review of the effectiveness of processes used to collect, analyse, maintain and report the VASM data.
- Qualitative analysis of the effectiveness of communication between VASM and health services/clinicians, with recommendations arising from the audit process.
- Qualitative analysis of the effectiveness of the relationship and governance arrangements.

The major outcomes of evaluation were focused upon: identifying strengths and areas for improvement in relation to the scope of activities undertaken by VASM, the efficiency and effectiveness of current program operations, and future development to improve the impact of VASM activities.

In summary, findings from the review indicated that VASM has operated effectively and efficiently within its contracted terms of reference to deliver a peer-review audit process that is acceptable to surgical Fellows. High rates of hospital participation and surgeon commitment to the audit process have been achieved.

Audit coverage across the private hospital sector is now increasing. Methods of case reporting, case assessment and feedback to a range of stakeholders have been subject to continuous quality improvement to maximise relevance and minimise burden (within the operational constraints imposed upon audit operations). The audit has now achieved a level of maturity in data capture and processing.

VASM is now in a position to build upon current achievements, by:

- Maintaining surgical trust and commitment.
- Streamlining a range of processes.
- Extending analysis of data.
- Promoting integration of information across the health system, and targeting messages identified through the audit to a range of different audiences.

By focusing upon these activities, VASM will demonstrate its relevance and strengthen its capacity to positively impact upon changes in the quality and safety of patient management. The full report of the independent Aspx Consulting evaluation can be found on <http://www.surgeons.org/vasm>.

References

1. Victorian Department of Health, *Good practice in management of emergency surgery: a literature review*, Victorian Department of Health, Melbourne, 2010, [cited 2012 February 23]; Available from: [http://docs.health.vic.gov.au/docs/doc/99AC54616F27F3CCCA25792800148FC2/\\$FILE/good_practice.pdf](http://docs.health.vic.gov.au/docs/doc/99AC54616F27F3CCCA25792800148FC2/$FILE/good_practice.pdf).



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- Participating Victorian hospitals
- Participating Victorian Fellows and IMGs
- Assessors, in particular the dedicated and specialty-specific first-line assessors
- Surgeons who have acted as assessors, for the time and effort providing detailed and valuable casenote reviews
- Hospital medical records departments
- Victorian Surgical Consultative Council
- Western Australian Audit of Surgical Mortality
- The Australian Central Territory Audit of Surgical Mortality
- The Northern Territory Audit of Surgical Mortality
- Tasmanian Audit of Surgical Mortality
- The National Coroners Information System
- South Australian Audit of Perioperative Mortality
- Queensland Audit of Surgical Mortality
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