



SAAPM
South Australian Audit
of Perioperative Mortality

2013 ANNUAL REPORT



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS



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of South Australia

SA Health

South Australian Audit of Perioperative Mortality
Royal Australasian College of Surgeons
199 Ward Street
North Adelaide SA 5006
PO Box 3115, Melbourne Street
North Adelaide SA 5006

Clinical Director

Mr Glenn McCulloch
Phone: +61 8 8239 1144
Fax: +61 8 8239 1244

Project Manager

Ms Sasha Stewart
Phone: +61 8 8239 1144
Fax: +61 8 8239 1244

Project Officer

Ms Kimberley Cottell
Phone: +61 8 8239 1144
Fax: +61 8 8239 1244

Email: saapm@surgeons.org

Website: www.surgeons.org/saapm

- The information contained in this annual report has been prepared by the Royal Australasian College of Surgeons South Australian Audit of Perioperative Mortality Management Committee.
- The South Australian Audit of Perioperative Mortality is a confidential project with legislative protection at a state level by the Health Care Act 2008 under Part 7 (Quality improvement and research) and Part 8 (Analysis of adverse incidents) (gazetted 23 June 2011).
- The Australian and New Zealand Audit of Surgical Mortality (ANZASM), including the South Australian Audit of Perioperative Mortality, also has protection under the Commonwealth Qualified Privilege Scheme under Part VC of the Health Insurance Act 1973 (gazetted 23 August 2011).

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CHAIRMAN'S REPORT

This is the 8th Annual Report issued by the South Australian Audit of Perioperative Mortality (SAAPM). It describes issues that continue to be identified as areas of concern each year – whether the decision to operate was appropriate, delays in diagnosis and the quality and appropriateness of the postoperative care provided; these are all areas which should be amenable to further improvement. SAAPM has a role to play in bringing about such improvements, through educational initiatives such as workshops, case note reviews and individualised feedback provided by assessors to treating surgeons.

A recurrent issue is the lack of 100% reporting by treating surgeons. Full participation has been achieved in Tasmania so there is no reason why the same cannot be achieved in South Australia. Completing a surgical case form only takes a few minutes of the surgeon's time and provides an opportunity to receive valuable feedback from peers, whether to confirm that the quality of care was appropriate or to offer advice on how it could be improved. Some surgeons do not seem to realise the seriousness of non-compliance. The Medical Board of Australia has indicated that in 2014 they will audit 15% of practitioners regarding CPD compliance. Involvement in SAAPM is a requirement for all operating surgeons – otherwise the RACS cannot issue a CPD certificate. It is very disappointing to see that only 87% of surgical case forms had been returned as of the census date, a figure that has remained stable in recent years.

Regarding hospital participation, I am very pleased to report that 100% of South Australian hospitals that perform surgery have now agreed to participate in SAAPM, following the recent decision of the last remaining non-participant to be involved.

It is also encouraging to note that the proportion of cases with serious deficiencies of care identified by assessors continues to decrease, from 16% in 2010/11 to 7% in this reporting period (2012/2013); preliminary analysis of the data suggests that the reduction will be maintained in 2013/14. This finding is an important indicator of the value of SAAPM in monitoring, improving and maintaining the quality of patient care.

Please read this report and note the lessons. I encourage all surgeons to complete the surgical case forms that are generated from their activities. I also thank the many First-Line Assessors and Second-Line Assessors who have helped us in 2012-13. I acknowledge the dedicated work by Sasha Stewart as project manager and Kimberley Cottell as project officer.

Glenn McCulloch FRACS
SAAPM Clinical Director and Chairman

Background

The South Australian Audit of Perioperative Mortality (SAAPM) is an external, independent, peer-reviewed audit of the process of care associated with surgically-related deaths in South Australia. SAAPM commenced data collection on 1 July 2005 and is funded by the South Australian Department for Health and Ageing. The SAAPM project falls under the governance of the Australian and New Zealand Audit of Surgical Mortality Steering Committee and has protection at a state level under the Health Care Act 2008 (Part 7: Quality improvement and research) (gazetted 23 June 2011), in addition to federal coverage under the Australian and New Zealand Audit of Surgical Mortality through the Commonwealth Qualified Privilege Scheme, Part VC of the Health Insurance Act 1973 (gazetted 23 August 2011).

Audit process and reporting conventions

SAAPM is notified of deaths in all participating hospitals where a surgeon was involved in the care of the patient. SAAPM provides either a paper-based or electronic surgical case form to the surgeon for completion to obtain the full clinical picture. Surgeons are asked to report against the following criteria:

- *area of consideration*: where care could have been improved or different, but may be an area of debate;
- *area of concern*: where care should have been better managed;
- *adverse event*: an unintended injury, caused by medical management rather than by disease, which is sufficiently serious to lead to prolonged hospitalisation or to temporary or permanent impairment or disability of the patient, which contributes to, or causes, death.

The completed surgical case form is de-identified and reviewed by another consultant surgeon from the same specialty: this process is referred to as first-line assessment (FLA). The assessor completes an FLA form, providing comments on the case management and level of care provided to the patient. If the first-line assessor considers that there is insufficient information on the surgical case form to come to a conclusion, or if there are factors that warrant further investigation, a second-line assessment (SLA) is recommended. SAAPM provides the surgeon involved with feedback from the assessor(s).

Audit participation

Following the recent recruitment of the single remaining non-participating hospital, all eligible hospitals (54) now participate in SAAPM. The number of participating hospitals is lower than that reported in 2011/12 (61) due to eight hospitals no longer performing surgical procedures and therefore not being eligible to participate. All participating hospitals have provided notifications of surgical deaths for the 2012/13 reporting period. The majority of surgical deaths occur in public hospitals (84%), reflecting the higher number of complex procedures and high-risk patients treated in the public system.

In terms of participation among surgeons, all practising RACS surgeons (344 at the time of reporting) have provided signed consent to participate in the audit.

The number of deaths reported to SAAPM in this reporting period was 638, identical to the number of deaths reported in 2011/12. To provide some context, according to the most recent figures published by the Australian Institute of Health and Welfare, there were 189,959 surgical separations in South Australia in 2010/11.¹ The number of surgically-related deaths reported to SAAPM in 2010/2011 represents 0.29% of the total number of surgical separations during the same period.

The proportion of surgical case forms returned to SAAPM has remained steady. At the time of writing, 87% of surgical case forms had been returned for this audit period, identical to the return rate reported in 2011/12. A high proportion of SCFs were completed by the consultant (76%), with the remainder completed by a SET trainee (13%), Fellow (6%), Service Registrar (4%) or International Medical Graduate (1%).

Assessments

Of the 638 surgical case forms sent to surgeons during the reporting period 1 July 2012 to 30 June 2013, 557 (87%) were returned by the census date. Of the cases returned, 41 (7%) were excluded because the patient was admitted for terminal care and 26 (5%) cases were still undergoing FLA. The remaining 490 (88%) cases had FLA completed and of those, 12 cases (2%) were referred for SLA, which is considerably lower than for the 2011/12 reporting period (26 cases; 5%).

¹Australian Institute of Health and Welfare 2012. Australian hospital statistics 2010–11. Health Services Series no.43. Cat. no. HSE 117. Canberra: AIHW.

Cases for analysis

Data analysed for this report covered cases reported to SAAPM from 1 July 2012 to 30 June 2013.

Patient sample demographics

Of the 638 patients who died, the majority were elderly, had pre-existing health problems and were admitted as emergencies for acute life-threatening conditions. Emergency admissions accounted for 89% of all cases, the balance being made up of elective admissions (Figure 1). This was similar to the 86% emergency and 14% elective admissions reported in 2011/2012. The median age at death was 80.5 years (interquartile range 69.4–87.4) and 54% were male. Of the cases in which the surgical case form was returned, 53% of patients had an American Society of Anesthesiologists (ASA) grade of four or more (ASA four representing a severe systemic disease that is a constant threat to life) and 91% had at least one significant comorbidity that increased the risk of death. The most frequently occurring comorbidities were cardiovascular problems (22%), advanced age (22%) and respiratory disease (13%), reflected in the most common causes of death which were respiratory and cardiac failure (Figure 2).

Figure 1: Admission status of cases 2009/10 to 2012/13

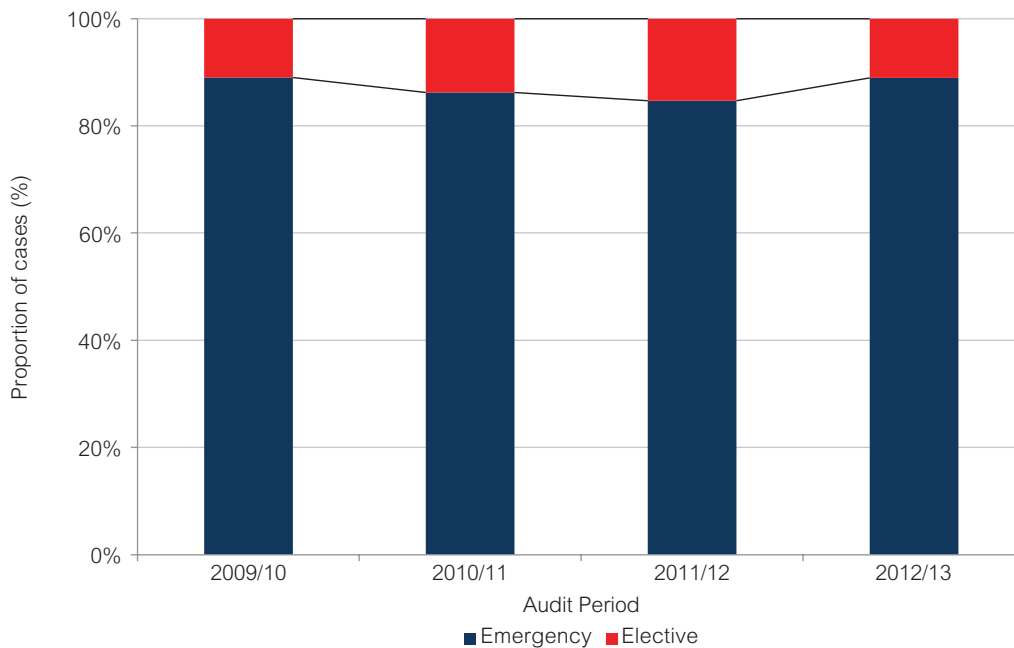
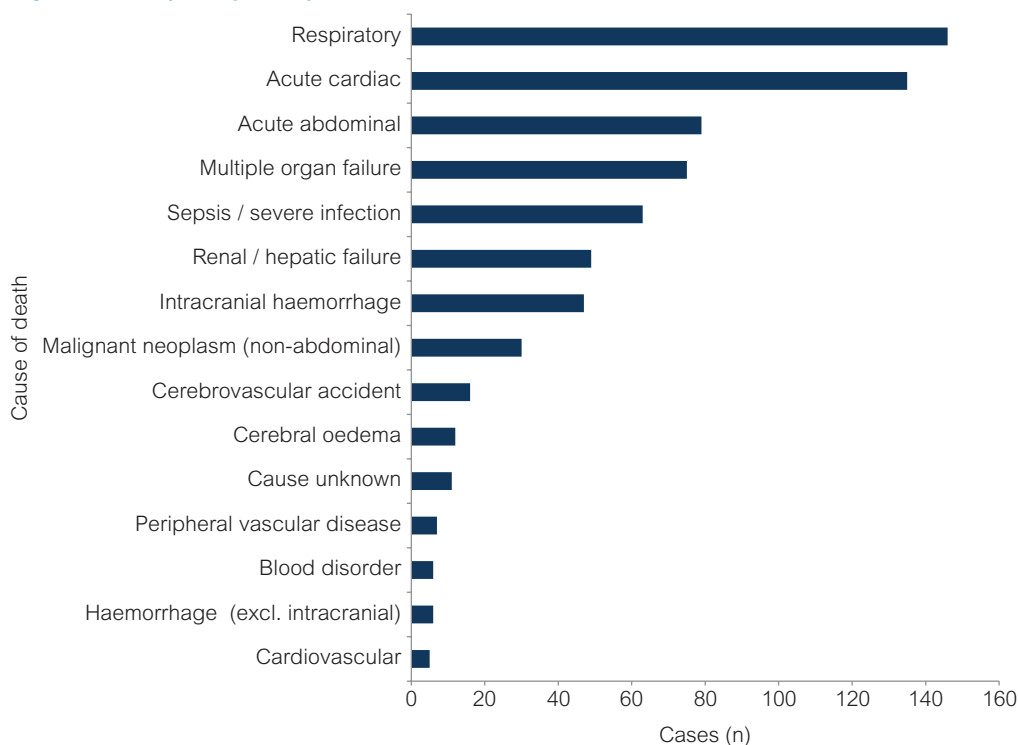


Figure 2: Frequency of reported causes of death

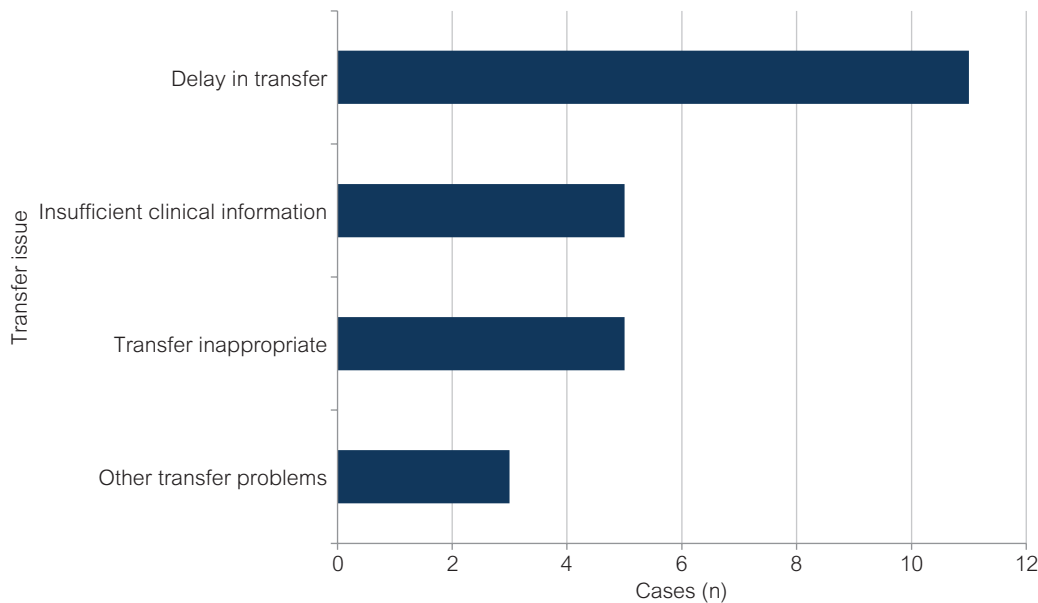


Note: cause of death included for $n \geq 5$.

Transfers

The treating surgeon reported that preoperative transfer between hospitals occurred in 26% of audited cases. Such transfers were in response to the need for higher levels of care or specific expertise. Concerns were raised about patient care relating to the transfer in 16% of these cases. Figure 3 shows the frequency of each type of transfer issue (note: some cases had more than one transfer related issue); delay in transfer was the issue most frequently reported (9% of transfers where data was available). The level of care during transport was considered appropriate in 100% of cases (data not shown).

Figure 3: Transfer issues identified by treating surgeon



Risk management

The audit collects data relating to aspects of patient care that are particularly important for high-risk surgical patients: utilisation of (and level of satisfaction with) critical care units, deep vein thrombosis (DVT) prophylaxis, and fluid balance management.

Utilisation of critical care units: critical care facilities were utilised in 66% of cases. In the cases in which the patient did not receive critical care, the assessors considered that five patients (3%) would have benefited from critical care.

DVT prophylaxis: surgeons reported that DVT prophylaxis was used in 76% of cases, which was slightly higher than the 74% recorded for the previous reporting period. In most of the cases in which DVT prophylaxis was not used there was an active decision to withhold it and/or it was not considered appropriate (96%); in the remaining 4% of cases prophylaxis was not considered. Assessors identified three cases where DVT prophylaxis was not used when it should have been and three cases where its use was considered inappropriate.

Fluid balance management: the treating surgeon reported that fluid balance was an issue in 50 cases (10%), similar to the proportion reported in 2011/12 (11%). Fluid balance issues were equally common among operative (11%) and non-operative (10%) cases.

Operative and non-operative deaths

In 28% of audited deaths, no operation was performed. In half of these cases (51%), surgeons made an active decision not to operate.

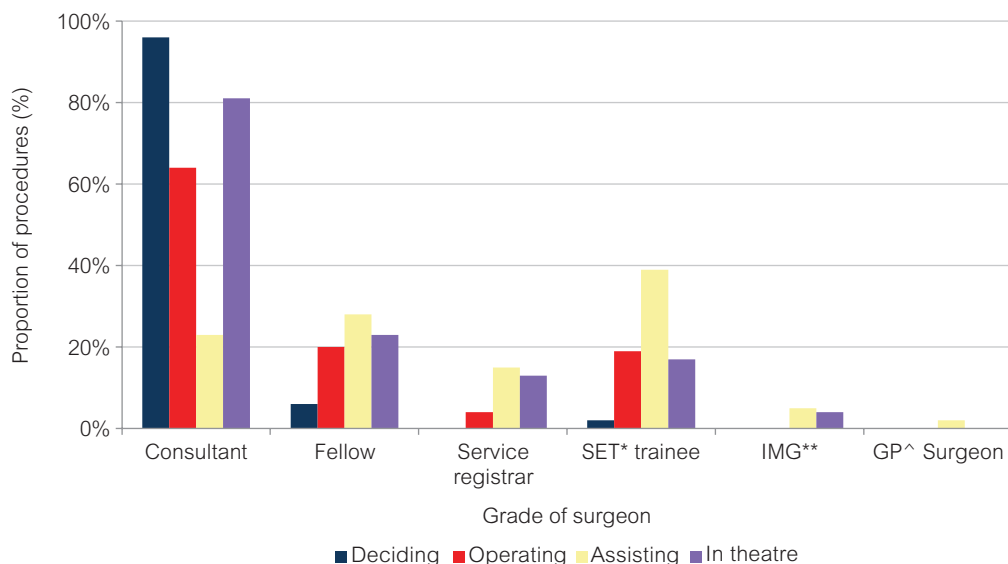
A total of 532 procedures for 369 patients were reported. In 105 cases, the patient underwent two or more operations. The more operations performed in each case, the greater the likelihood of an area of concern or an adverse event. In 7% of operative cases the operation was abandoned because a terminal situation was found, and in 18% of operative cases the surgeon reported an unplanned return to theatre.

A consultant surgeon operated in 64% of the reported procedures and made the decision to proceed to surgery in 96% (Figure 4). When a patient underwent multiple operations, the proportion of subsequent operations with consultant

involvement remained unchanged, marking a change from previous reports in which consultant involvement declined with subsequent operations.

Postoperative complications are considered to be a major source of mortality in surgical patients. In 2012/13, 32% of operative patients had a postoperative complication, comprising 133 complications among 113 patients. The most frequently occurring postoperative complications were tissue ischaemia, procedure-related sepsis, and postoperative bleeding.

Figure 4: Grade of surgeon involved in the operative process



*Surgical Education and Training

**International Medical Graduate

^General Practitioner

Preoperative diagnostic delays

A preoperative delay in diagnosis was identified by the treating surgeon in 6% of cases; one third of these cases (30%) were reported to be associated with the surgical unit.

The most frequently cited causes of diagnostic delays were unavoidable factors (n=6), followed by incorrect diagnostic tests (n=4) and inexperienced staff (n=3).

Deficiencies of care identified by assessors

For each case reported to SAAPM, first-line assessors are asked to identify and describe deficiencies of care. In a small proportion of cases (2%), a more comprehensive assessment (case note review) was completed by a second-line assessor. This occurs when the first-line assessor considers that there is insufficient information provided on the Surgical Case Form, or if there are factors that warrant further investigation; in these cases, the SLA rather than the FLA has been used in the analysis.

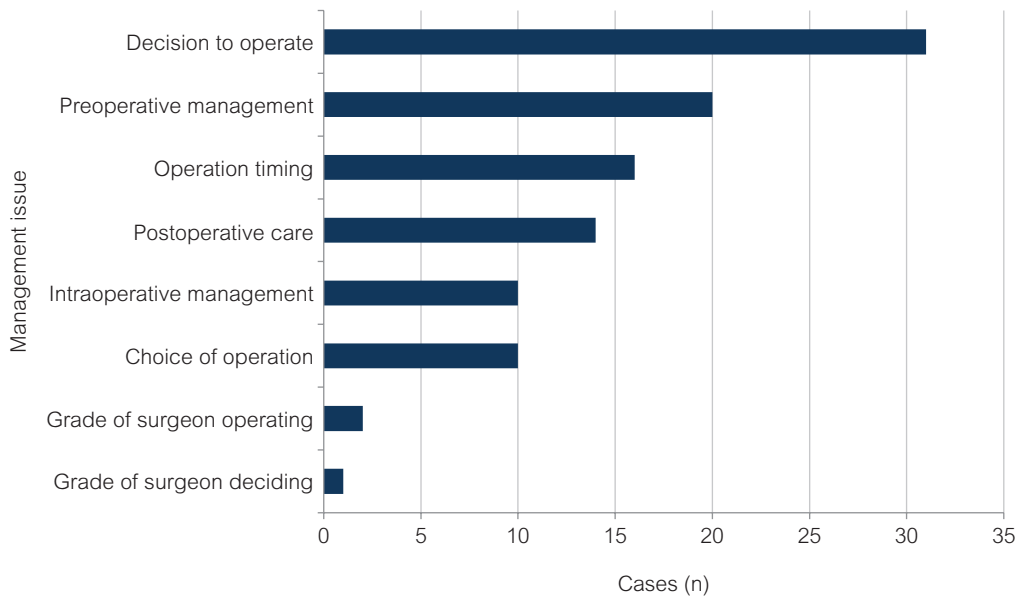
Deficiencies of care are identified by assessors in two ways:

1. For operative cases, by indicating (yes or no) whether there were any concerns about specified categories of patient management.
2. By identifying and describing any perceived deficiencies of care in the management of the patient (both operative and non-operative cases).

Management issues – operative cases

The patient management issue most frequently identified by assessors was the decision to operate (8% of cases). Figure 5 shows the number of cases in which each of the issues was identified.

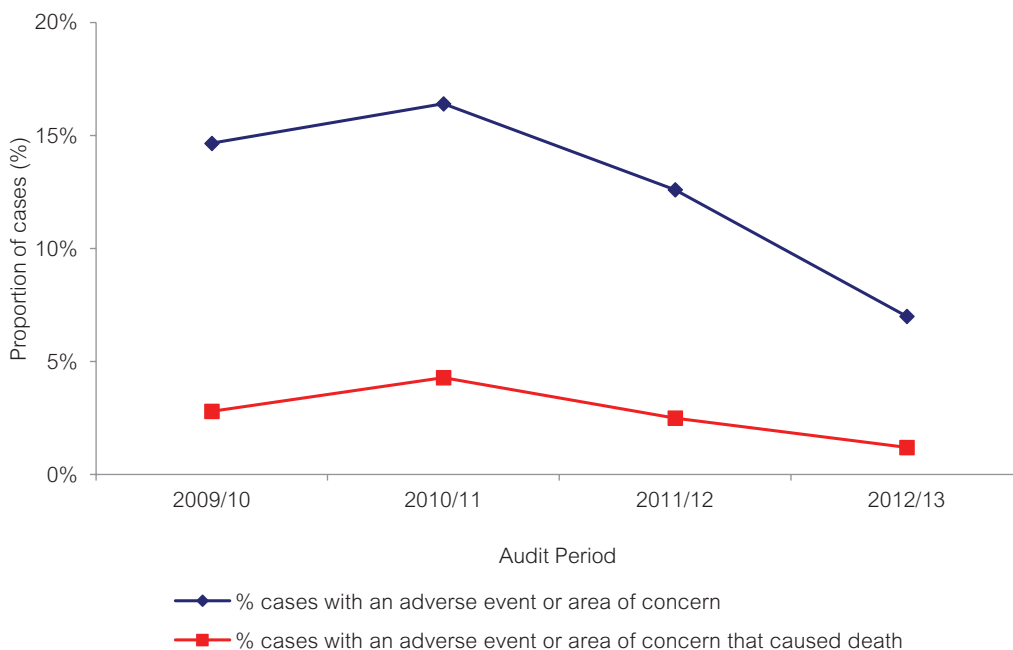
Figure 5: Management issues identified by assessor



Deficiencies of care – all cases

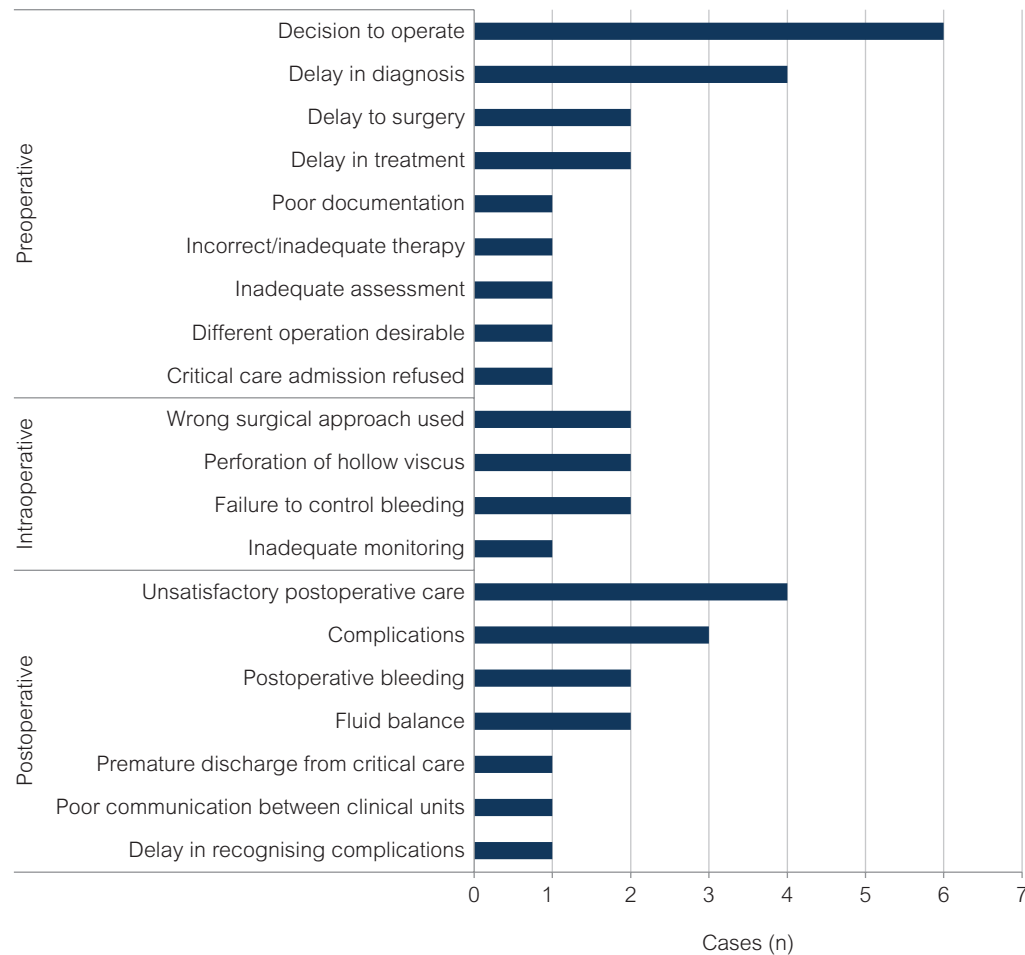
In 93% of audited cases, no serious deficiencies of care were identified and death was a result of the disease process or unavoidable complications in the presence of a high prevalence of comorbidities. The proportion of cases for which areas of concern or adverse events were identified (7%) was lower than the proportions reported in 2011/12 and 2010/11 (13% and 16% respectively). A total of 26 areas of concern and 17 adverse events were identified (note: some cases had more than one incident). Since the audit commenced, there has been a considerable decrease in the proportion of cases with serious deficiencies identified (Figure 6).

Figure 6: Cases with a serious deficiency of care (2009/10 to 2012/13)



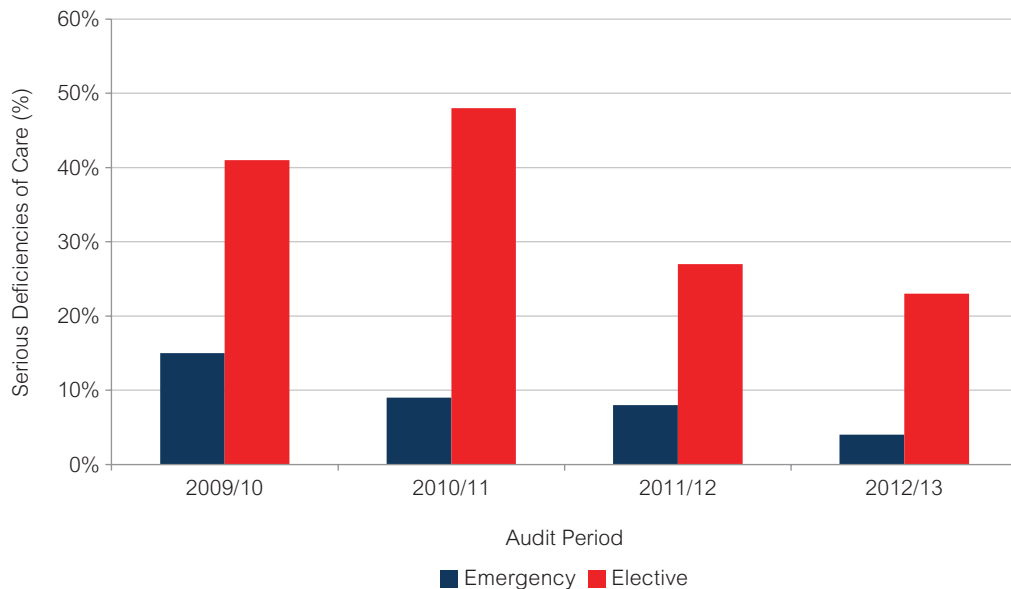
The type and frequency of serious deficiencies are shown in Figure 7. Incidents at the preoperative stage were the most commonly reported. Regarding the most serious category of deficiency, assessors found that an adverse event caused the death of a patient in four of the 487 (<1%) cases for which data were available, compared with 11 of 484 (2%) cases in the previous year. Assessors found that three of the six cases with an adverse event or area of concern that caused the death of the patient were thought to be definitely preventable, while a further two of those cases were probably preventable. The most frequently reported deficiencies in the category 'adverse event' were postoperative complications.

Figure 7: Serious deficiencies of care identified by assessors – all cases



As reported in previous years, serious deficiencies of care were more common in elective cases (23%) than emergency admissions (4%). Figure 8 shows that, while the proportion of cases with serious deficiencies continues to decrease within both admission groups, cases with deficiencies are becoming more strongly associated with elective admissions.

Figure 8: Serious deficiencies of care by admission status 2009/10 to 2012/13



In terms of responsibility for serious deficiencies of care, assessors attributed 71% to the audited surgical team and 34% to another clinical team (note: more than one attribution can be selected). Only one deficiency of care was attributed to the hospital.

Recommendations

The focus of the recommendations continues to evolve as earlier recommendations have been achieved and the audit matures. For many of the following recommendations, SAAPM, RACS, the South Australian Department for Health and Ageing, hospitals and surgeons all have a role to play. Based on the current status of the audit, SAAPM aims to focus efforts in the following key areas:

- Increase the rate of return of surgical case forms (from the current rate of 87%). This should be facilitated in part by an increase in the proportion of surgeons submitting cases online through 'Fellows Interface'.
- Contribute to the enhancement of 'Fellows Interface' to maximise efficiency and usability.
- Improve the timely submission of Notification of Death reports by hospitals through closer monitoring of delays, follow-up and escalation. Introducing the option for surgeons to self-generate notifications should also contribute to reducing delays.
- Build on relationships and improve collaboration with hospitals; this includes contributing to a hospital report currently being developed by ANZASM, the regional audits and healthcare quality and safety representatives.
- In consultation with relevant stakeholders, review strategies for making best use of audit data with existing resources.
- Continue to learn from and share information with other regional audits.
- Continue to contribute to the national mortality audit report and case note review booklets.
- Consider developing more targeted recommendations and educational initiatives, for example, specialty- or procedure-specific.

Acknowledgements

The South Australian Audit of Perioperative Mortality wishes to acknowledge the contribution and support provided by the following individuals and institutions:

- all participating surgeons
- all first-line assessors
- all second-line assessors
- medical records, safety and quality, and risk management departments in all participating hospitals
- the South Australian Department for Health and Ageing for funding and ongoing support:
 - Public Health and Coordination, Clinical Systems Division
 - Health System Management, Information and Communication Technology Services
- the South Australian State Committee of the Royal Australasian College of Surgeons
- staff in the Research, Audit and Academic Surgery (RAAS) Division of the Royal Australasian College of Surgeons, particularly

- Professor Guy Maddern	Chair, ANZASM Steering Committee
- Assoc.Prof. Wendy Babidge	Director, RAAS Division
- Mr Gordon Guy	ANZASM Manager
- Ms Pip Coleman	Business and Development Manager
- members of the South Australian Audit of Perioperative Mortality Management Committee:

- Mr Glenn McCulloch	Clinical Director, SAAPM Chair and Surgical Representative
- Mr David Walsh	Surgical Representative
- Mr Paul Dolan	Surgical Representative
- Dr Roy Watson	RANZCOG Representative
- Dr Simon Jenkins	Anaesthetist Representative
- Dr Stephen Christley	The South Australian Department for Health and Ageing
- Ms Michele McKinnon	The South Australian Department for Health and Ageing
- Ms Elaine Golding	Community Representative
- Mr Peter Subramaniam	SA Regional Committee Representative
- Ms Sasha Stewart	SAAPM Project Manager
- the regional audits of surgical mortality:
 - Australian Capital Territory Audit of Surgical Mortality (ACTASM)
 - Collaborating Hospitals' Audit of Surgical Mortality (CHASM)
 - Northern Territory Audit of Surgical Mortality (NTASM)
 - Queensland Audit of Surgical Mortality (QASM)
 - Tasmanian Audit of Surgical Mortality (TASM)
 - Victorian Audit of Surgical Mortality (VASM)
 - Western Australian Audit of Surgical Mortality (WAASM)

Appendix: SAAPM - The story so far

SAAPM is now in its ninth year, and we thought that it was time to reflect on what has been achieved and how the audit has evolved.

More than 4000 surgical deaths audited

From commencement of the audit to the end of February 2014, almost 4,500 cases of surgical death had been reported to the audit and approximately 4,300 of these cases had completed the full audit process.

Feedback provided to treating surgeons

While the reports and educational activities provided by SAAPM are often highlighted, the value of the feedback component of the audit should not be underestimated. As part of the audit process, an assessor (a consultant from the same specialty) reviews the relevant details of each case. If it is determined that any aspect of patient care falls below best practice, the feedback mechanism allows for the treating surgeon to be provided with recommendations on improving the quality of patient care. In cases in which no deficiency of care is identified (the majority of cases), feedback confirming that the death was unavoidable and management was appropriate may serve as valuable reassurance. To our knowledge, Australia is the only country in which surgical deaths are audited in such a comprehensive and standardised way. Assessors' feedback has been provided to the treating surgeon in all 4,300 fully audited cases. In 164 cases (4%), a second-line assessment was deemed necessary and a detailed report, based on a comprehensive review of case notes, was provided.

Development of audit process and systems

ANZASM has developed a customised database, the Bi-national Audit System (BAS), designed to securely store all of the data associated with each case and facilitate analysis. BAS also allows the project staff to see, at a glance, how cases are progressing through the process and identify any bottlenecks, that is, stages in which the process is being delayed, which greatly enhances efficiency.

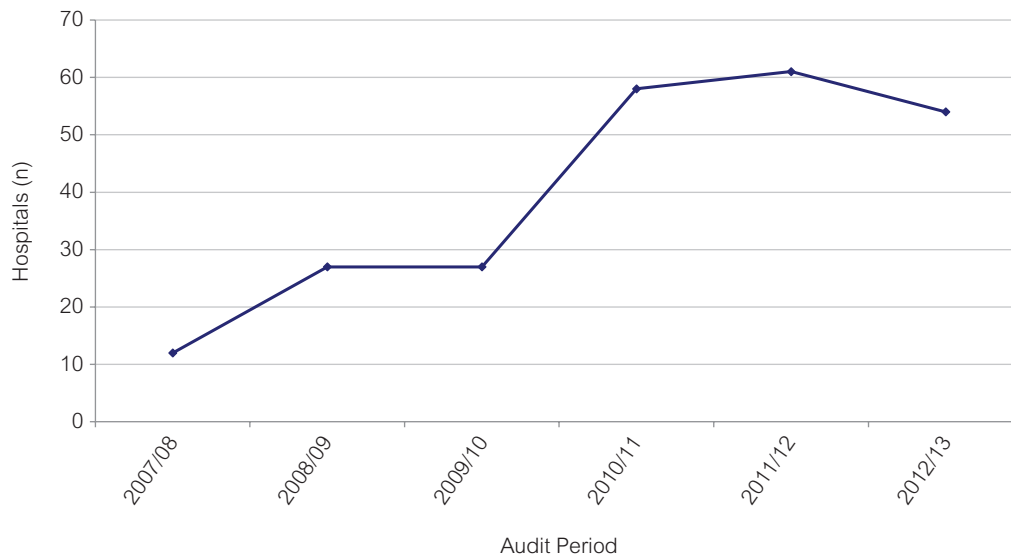
Another notable initiative was the introduction of 'Fellows Interface' in 2010, which allows reporting surgeons and first-line assessors to complete forms online. This web-based system offers a higher level of data security with data only being accessible by reporting surgeons and SAAPM staff (assessors are only able to access the de-identified surgical case forms).

As a result of increased promotion by SAAPM, the usage of Fellows Interface has increased considerably in the last year; 91% of first-line assessors and 59% of treating surgeons now submit online. Efforts to increase the level of online submission continue. To improve the efficiency of the process and accessibility and ease of use for surgeons, enhancements to the system are ongoing and will include the option for surgeons to generate notifications of death themselves (rather than relying on hospital notifications which can be delayed).

Participation

In South Australia, all eligible public and private hospitals are now participating in the audit. Figure 9 shows the increase in hospital participation since 2007/8 (no data were available for 2005/6 and 2006/7).

Figure 9: Number of hospitals participating in SAAPM 2007/8 to 2012/13



Note: the number of participating hospitals has decreased since 2011/12 due to eight hospitals no longer performing surgical procedures and therefore not being eligible to participate.

Regarding surgeon participation, SAAPM has received signed agreement from all active RACS Fellows to participate in the audit. To achieve such a high level of participation, gaining the trust and support of hospitals and surgeons has been critical. The ability to protect the confidentiality of the information through the Qualified Privilege declaration has been a key factor in achieving this. In addition, participation in the audit has now become a mandatory component of the RACS CPD certification process.

Audit findings

Annual Reports: an aspect of the data that is always of particular interest as an indicator of the quality of care is the proportion of cases with serious deficiencies. As shown in Figure 6 of the current report, the proportion of cases with identified deficiencies of care is less than half the level recorded in 2010/11, having decreased from 16% to 7% of cases. This is a very encouraging trend that will be monitored closely over coming years.

Another positive finding is the high level of consultant involvement in operations, that is, the proportion of operations in which the consultant decided to proceed to surgery, operated, or was in theatre (see Figure 3 in the current report). During 2012/13, the consultant was responsible for decision-making in almost every operative case (96%), which is higher than the national figure for all operative cases since 2009 (86%). The consultant was in theatre in 81% of cases and operated in 64%.

Individual surgeons report: each year, SAAPM provides an individual report to each surgeon who had a surgical death audited in that year. These reports present comparative data (all surgeons and by specialty) relating to return of forms, number of deaths and clinical incidents. Information is also provided on the surgeon's own cases, including details of each case (excluding identifying information such as name/URN) and a description of any clinical issues identified by the assessor. These reports were first produced in 2011 and feedback has been very positive (92% of respondents to an evaluation survey indicated that they would like to continue to receive the reports).

Publications: the audits (both ANZASM and regional audits) have published a number of articles in peer-reviewed journals. SAAPM is currently working on an article analysing serious deficiencies of care in neurosurgery, based on 136 deficiencies reported nationally since 2009.

Educational

Case Note Review booklets: compiled by ANZASM, these booklets describe selected cases drawn from the national pool and from a range of specialties, with a focus on the clinical lessons that can be learned. Feedback from surgeons on the value of this publication has been positive; a survey of surgeons conducted by SAAPM found that 76% of respondents either agreed or strongly agreed that this publication contributes to improving the quality of surgical care.

Workshop: SAAPM conducted a workshop in February 2012 entitled 'Recognising the Deteriorating Patient'. The workshop was well-attended, with an audience comprising surgeons, surgical trainees and nurses. Presentations included 'Identifying the high risk surgical patient', 'Mistakes an ICU consultant has to handle', 'The deteriorating patient' and 'Postoperative pitfalls', delivered by a variety of persons including nurses, surgeons and intensive care specialists. In a post-workshop evaluation, the majority of attendees (87%) felt that they were better able to pick up the signs of a deteriorating patient after attending the workshop and 92% indicated that they would be interested in attending a similar event in the future. A number of successful educational workshops have been conducted by other regional audits and further workshops are planned, subject to securing future funding.

In summary - what have we achieved?

Throughout the first eight years of SAAPM, the audit process has been continually developed and improved. The type of data collected has been refined in consultation with stakeholders. The audits now have a sophisticated, tailored database that stores all of the data associated with each case, from recording of notifications of death to data analysis, as well as an interface that allows surgeons to enter data electronically. For both the surgical community and the health administration authorities, peer review of surgical deaths is vitally important to inform, educate and improve the care of patients. Findings have been disseminated through annual reports and articles, and the education role has included individual reporting to the treating consultant surgeon, workshops and case note review booklets.

The audits will maintain a continuous improvement approach to maximise efficiency and best meet the needs of surgeons and other stakeholders. At the same time, now that the systems and processes have reached the current level of maturity and high levels of participation and support have been achieved, more attention can be focused on how best to utilise the valuable information gained, in collaboration with stakeholders.



SAAPM
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Telephone: +61 8 8239 1144
Facsimile: +61 8 8239 1244
Email: saapm@surgeons.org
Address: PO Box 3115, Melbourne St.
North Adelaide SA 5006
Web: www.surgeons.org/saapm



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