



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS



ANNUAL REPORT 2009

SAAPM

South Australian Audit
of Perioperative Mortality



Government
of South Australia

Department of Health





Contact

Royal Australasian College of Surgeons
Ground Floor, 51-54 Palmer Place
North Adelaide SA 5006
PO Box 3115, Melbourne Street
North Adelaide SA 5006

Clinical Director
Mr Paul Dolan
Phone: 08 8239 1144
Fax: 08 8239 1244
Email: saapm@surgeons.org

Project Manager
Ken Lang
Phone: 08 8239 1144
Fax: 08 8239 1244
Email: saapm@surgeons.org

Project Officer
Heather Martin
Phone: 08 8239 1144
Fax: 08 8239 1244
Email: saapm@surgeons.org

Telephone: +61 8 8239 1144
Facsimile: +61 8 8239 1244
Email: saapm@surgeons.org
Website: www.surgeons.org

- The information contained in this Project Report has been prepared by the Royal Australasian College of Surgeons South Australian Audit of Surgical Mortality Management Committee.
- SAAPM is a confidential project with legislative protection at a state level under the *SA Health Care Act 2008* under Part 7 (Quality improvement and research) and Part 8 (Analysis of adverse incidents).
- The Australian and New Zealand Audit of Surgical Mortality (ANZASM), including the South Australian Audit of Perioperative Mortality, is protected as a 'quality assurance' activity under the Commonwealth Qualified Privilege scheme, Part VC of the *Health Insurance Act 1973* (Gazetted 6 November 2006).







Contents

Contact	3
Contents	5
Tables	6
Figures	6
Chairman's report	7
Abbreviations	8
Executive summary	9
Recommendations	10
1. Introduction	11
1.1 The audit process and methodology	11
1.2 Categories of deaths investigated	12
1.3 Categorising clinical incidents	12
Health Organisation Activity	13
2 Audit Participation	13
2.1 Overview of participation	13
2.2 Surgeon participation	14
2.3 Hospital participation	14
2.4 Surgical case form completion	14
2.5 Assessments	15
3 Results	16
3.1 Age and sex distribution	16
3.2 ASA grade	16
3.3 Surgical diagnosis	16
3.4 Co-morbidities	17
3.5 High dependency and intensive care units	17
3.6 Clinical incidents	17
3.7 Admission type	19
3.8 Operative and non-operative data	20
3.9 Grade of surgeon operating	20
3.10 DVT prophylaxis	20
3.11 Fluid balance	21
3.12 Post-mortem	21
Acknowledgements	22



Tables

Table 2.1	Hospital status	14
Table 2.2	Cases which have undergone assessment (2005- 2009)	15
Table 3.1	ASA classification	16
Table 3.2	The most frequently reported surgical diagnosis	17
Table 3.3	Assessor's views on appropriate use of HDU or ICU	17
Table 3.4	Patient outcome associated with areas of consideration, concern or adverse events reported by assessors	18
Table 3.5	Preventability of event associated with areas of consideration, concern or adverse events reported by assessors	18
Table 3.6	Responsible unit associated with areas of consideration, concern or adverse events reported by assessors	18
Table 3.7	Clinical incident rates (2005 – 2009)	18
Table 3.8	The areas of consideration reported by assessors in emergency and elective cases	19
Table 3.9	The areas of concern reported by assessors in emergency and elective cases	19
Table 3.10	The adverse events reported by assessors in emergency and elective cases	19
Table 3.11	Clinical incident and admission status	19
Table 3.12	Number of operative and non-operative cases by specialty	20
Table 3.13	Reasons cited by surgeons for non-use of DVT prophylaxis	21
Table 3.14	Postmortem examinations in cases identified by surgeons	21

Figures

Figure 1.1	Project governance structure	11
Figure 1.2	SAAPM audit process	11
Figure 2.1	Deaths reported to SAAPM between 1 July 2008 and 30 June 2009	13
Figure 2.2	Number of surgeons completing one or more surgical case forms	14
Figure 2.3	Proportion of surgical case forms completed by hospital	14
Figure 2.4	Number of surgical case forms sent out by specialty	15
Figure 2.5	Number of surgical case forms completed by specialty	15
Figure 3.1	Age and sex distribution	16
Figure 3.2	Comparison of ASA Grade (05/06 – 08/09)	16
Figure 3.3	Co-morbidities in completed cases	17
Figure 3.4	Reasons for non-operation	20
Figure 3.5	Grade of surgeon operating	20
Figure 3.6	Types of DVT prophylaxis used	20



Chairman's report

This is the 4th annual report for the South Australian Audit of Perioperative Mortality (SAAPM). Analysis performed in this report is from data collected from 1 July 2008 to 30 June 2009.

During this reporting period three private hospitals and 12 public hospitals joined the audit. This takes the total number of participating hospitals to 21 public and 6 private hospitals. With the growing rate of surgeon and hospital participation across the state, there has been a 9.5% increase in the number of notified cases. The surgical community is strongly supporting the audit, and I would like to thank my colleagues for their continuing participation. In the current reporting year, 99% of the surgeons who had a death notified to the audit have agreed to participate.

The overall results of the audit show that surgical care is being provided at a high standard, but there are always areas for improvement. The areas of concern and adverse events noted by the assessors show some recurring themes.

In the preoperative period the decision as to whether or not a patient should undergo an operation is critical, and this clearly involves a thorough assessment of the patient's associated medical issues.

When patients undergo surgery it is vital that appropriately experienced surgeons are available to perform procedures or to supervise junior colleagues in training. Laparoscopic surgery, while attractive to patients and surgeons, has its own specific risks, and demands a high degree of expertise for advanced procedures.

In the postoperative phase, the assessors note some recurring issues with the management of anticoagulation, deep vein thrombosis (DVT) prophylaxis and fluid management. Postoperative haemorrhage, while very uncommon, can be difficult to recognise and must always be considered a possibility.

As always in surgery, attention to detail is the key to success. The South Australian mortality audit allows us to collect and pool experience from surgeons across the state with the aim of providing better care for our patients. In the coming year we look forward to contributing to the first National Surgical Mortality Audit Report which is being collated by the Australian and New Zealand Audit of Surgical Mortality (ANZASM) of the Royal Australasian College of Surgeons. Furthermore the South Australian audit is also working with the national audit office of the College on the development of an electronic web-based IT system (Fellows' Interface) which will allow surgeons to enter their own surgical case forms and first-line assessments online. This is due for release shortly.

I would like to take this opportunity to thank all surgeons for their participation, particularly our assessors whose contributions are invaluable. I am also highly indebted to our project office staff for their daily efforts in making the audit a success.

Paul Dolan

SAAPM Chairman



Abbreviations

ANZASM SC	Australian and New Zealand Audit of Surgical Mortality Steering Committee
ANZCA	Australian & New Zealand College of Anaesthetists
AST	Advanced Surgical Trainee
CVA	cerebrovascular accident
DVT	deep vein thrombosis
ENT	ear, nose and throat
HDU	high dependency unit
ICU	intensive care unit
RACDS	Royal Australasian College of Dental Surgeons
RACP	Royal Australasian College of Physicians
RANZCOG	Royal Australian & New Zealand College of Obstetricians & Gynaecologists
SA	South Australia
SAAPM	South Australian Audit of Perioperative Mortality
SA Health	South Australian Department of Health





Executive summary

This is the fourth report developed by the South Australian Audit of Perioperative Mortality (SAAPM). From the inception of SAAPM (July 2005), there have been 2083 notices of death received to the end of June 2009.

SAAPM continues to function under the administration of the Royal Australasian College of Surgeons through funding from the South Australian Department of Health and in association with the Australian and New Zealand College of Anaesthetists (ANZCA).

Death notifications

During this reporting period there were 579 deaths reported to SAAPM by the Department of Health and participating hospitals. This represents an increase of 6.2% from the 2007/2008 report when 545 deaths were reported and a 17% increase from the 2006/2007 report when 493 deaths were reported.

Hospital participation

The number of private and public hospitals participating in the audit increased by 15 during the reporting period: 3 private and 12 public, from both regional and metropolitan South Australia. This brings the total number of participating hospitals to 27, consisting of 21 public and 6 private.

Surgeon participation

The 579 deaths notified during the reporting period were associated with 150 surgeons. Of these, 149 surgeons agreed to participate. This represents a participation rate of 99%.

Surgical case form completion

During the period 1 July 2008 to 30 June 2009, 579 surgical case forms were sent to surgeons. Of these, 451 (78%) were returned by the closure date and therefore included in the data analysis for this reporting period.

Assessments

From the 451 returned surgical case forms there were 36 cases excluded as terminal care cases and 40 cases excluded for a variety of reasons, usually in cases where the patient was transferred to a palliative care team or other medical unit, or in some cases where the hospital data systems could not identify the appropriate treating doctor.

The remaining 375 cases were sent to first-line assessment and of those 17 cases (4.5%) were recommended for second-line assessment. At the time of data closure for the reporting period, 25 (6.7%) cases had not been returned from first-line assessment.

Patient demographics

Patients between the ages of 71 and 90 years account for approximately 63% of all cases. In this age group, 58% (131/226) of patients had at least three co-morbidities while 77% (175/226) of patients had two or more co-morbidities, while 19% (43/226) of patients had two co-morbidities. The 81-90 year age range remains the predominant group in the sample.

Operative and non-operative data

Of the 350 cases which completed first-line assessment, 65% (229/350) underwent a surgical procedure and 35% (121/350) did not. Of those cases where a surgical procedure was performed, the most common diagnosis was intracranial haemorrhage.

Grade of surgeon operating

The rate for consultant involvement for the first and second operations compare favourably with last years report; however, the consultant involvement in the third operation has dropped notably and is of concern. Consultant involvement is 51% for a first operation, 69% for a second operation and 47% for a third operation. It should be noted, however, that only 15 cases were recorded in this last group.

Use of HDU and ICU

The assessors indicated that there was an appropriate use of high dependency units (HDU) and intensive care units (ICU) in over 96% of cases. In the assessors' opinion there were 3 cases (1%) where ICU was not used when it should have been and there were 10 cases (3%) in which the assessors indicated that HDU would have been beneficial but was not used.

Clinical incidents

There were 64 cases (18%) in which assessors reported a clinical incident categorised as an area of consideration, an area of concern or an adverse event. This is a slight increase from the incident rate of 16% reported in the 2008 SAAPM Annual Report. In this report 9% of cases were rated in the more serious categories as either areas of concern or adverse events compared with 11% last report.

DVT prophylaxis

Of the 350 cases that completed first-line assessment in this reporting period, surgeons reported that some form of DVT prophylaxis was used in 222 cases (63%). This figure compares to the previous annual report (2008) where the rate was 65%.

Post-mortem

The rate of post-mortem for this reporting period was 11%. The rate of post-mortem examination remains low, with 15% recorded for 2007/2008 and 12% reported for 2006/07. All post-mortem examinations during the reporting period have been carried out by the Coroner's office. As noted in the previous report, there continues to be a delay for the treating clinicians to obtain feedback on the findings of Coronial autopsies.



Recommendations

Notifications

Improve hospital data systems to allow accurate tracking of the clinician responsible for an individual patient. This would ensure that a minimal number of cases would be excluded from the report due to incorrect identification of the treating surgeon.

Hospital participation

Engage all remaining non-participating private hospitals, and revisit those public hospitals which are participating but not currently sending in notifications of death.

Surgeon participation

Encourage the participation of all surgeons in the audit process in light of the recent changes to the College Continuing Professional Development Program effective from January 2010. This means that audit participation would be mandatory for those surgeons working in participating hospitals.

The College Standards Committee to review with a view to increasing the allocation of CPD points for the completion of both first and second-line assessments. This should improve surgeon participation in the audit process.

Surgeon feedback

Provide individual reports to surgeons annually, including total number of cases, case form completion rates and assessment status.

Assessment process

Formalise interstate first and second-line assessments for specialties with small numbers of consultants, such as neurosurgery and cardiothoracic surgery.

Clinical management

Continue to monitor DVT prophylaxis, particularly in relation to reasons for not using prophylaxis during a patient admission.

ICU/HDU

Continue monitoring ICU/HDU use, to assess whether current bed allocation practices are appropriate.

Reporting

Collect denominator data for total numbers of surgical admissions (elective and emergency) across South Australia (SA) to put mortality rates into context.

Participate in the National Surgical Mortality Audit Report.

Develop yearly trend analysis as data becomes available.

Continue development of the web-based electronic interface to allow surgeons to input case forms online.



1. Introduction

Background

The South Australian Audit of Perioperative Mortality (SAAPM) is a peer-review audit of surgically-related deaths. The project is funded by the South Australian Department of Health (SA Health) and is administered by the Royal Australasian College of Surgeons (the College).

SAAPM commenced data collection on 1 July 2005 and falls under the governance of the Australian and New Zealand Audit of Surgical Mortality Steering Committee (ANZASM SC). The committee is an overarching body which ensures that mortality audits in Australia and New Zealand use standardised assessment protocols and collect a common dataset across regions to allow bi-national reporting of surgically-related deaths. The project governance structure is illustrated in Figure 1.1.

Figure 1.1 Project governance structure



Confidentiality

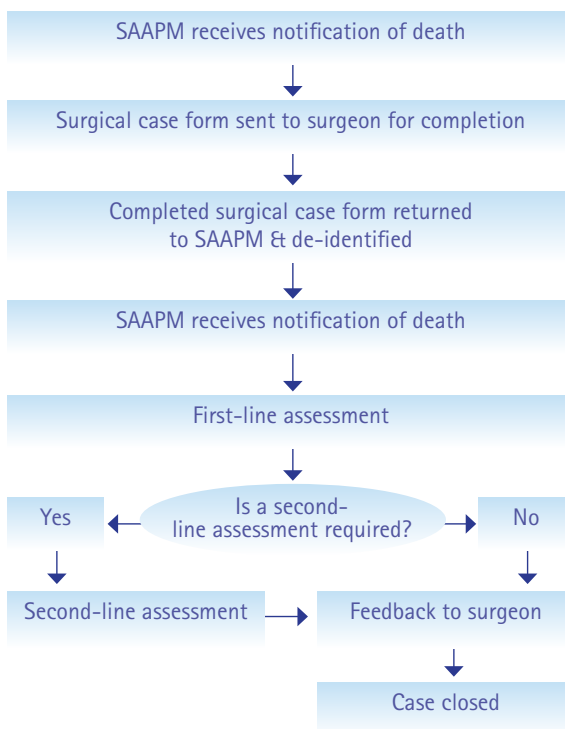
SAAPM is a confidential project with legislative protection at a state level under the Health Care Act 2008 under Part 7 (Quality improvement and research), in addition to federal coverage under ANZASM through the Commonwealth Qualified Privilege Scheme, Part VC of the Health Insurance Act 1973 (gazetted 6 November 2006). This protection covers SAAPM staff as well as surgeons acting in the capacity of First and Second line Assessors

1.1 The audit process and methodology

The audit process begins when the SAAPM Office is notified of the death of a patient who was under the care of a surgeon in a participating hospital. This notification occurs from the medical record department or safety and quality unit of the hospital, or directly from SA Health.

A surgical case form is sent to the consultant surgeon under whom the patient was admitted. Figure 1.2 indicates the various pathways a case may take through the audit process.

Figure 1.2 SAAPM audit process



First-line assessment

The surgeon's completed surgical case form is received by the SAAPM office, all identifiers are removed and the form is sent to a member of the SAAPM first-line assessment group. Surgical case forms are assigned to first-line assessors according to the specialty of the surgeon involved in the case. The first-line assessor completes a first-line assessment 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 about the case, or if there appear to be factors that warrant further investigation, a second-line assessment is recommended.

Second-line assessment

A second-line assessment involves a detailed review of a patient's case notes. The SAAPM office will request case notes from the relevant hospital and these are forwarded with the surgical case form to a second-line assessor. Second-line assessors will assess cases relevant to their own specialty from a hospital in which they do not practise. The assessor provides a summary on the case management and the level of care provided to the patient.



Feedback

A primary objective of SAAPM is education through feedback. Feedback is provided directly to the treating surgeon upon completion of a first- or second-line assessment. In addition, the audit publishes an annual case note review booklet for surgeons, containing a selection of de-identified cases, which highlight various management issues. In the broader sense this state-wide annual report contains analyses of data and commentaries covering all specialties, to provide an overview of the project to surgeons and the wider community.

1.2 Categories of deaths investigated

Deaths currently included in SAAPM are classified into two categories:

- **Category 1: Operative deaths** A death that occurs when a patient is admitted under a surgeon, and has an operation/procedure during his or her last admission regardless of the length of stay in the hospital or medical facility.
- **Category 2: Non-operative deaths** A death that occurs when a patient is admitted under a surgeon, does not have an operation/procedure and dies during his or her last admission regardless of length of stay in the hospital or medical facility.

Cases which fall under the care of specialists from the following colleges are excluded from the audit:

- The Royal Australasian College of Dental Surgeons (RACDS)
- The Royal Australasian College of Physicians (RACP)
- The Royal Australian and New Zealand College of Obstetricians & Gynaecologists (RANZCOG).

Deaths which are identified as terminal care cases by the reporting surgeon are recorded but are excluded from further assessment in the audit. Terminal care is nominated by the surgeon on the surgical case form and cannot be identified from the notification of death information sent to the SAAPM office.

1.3 Categorising clinical incidents

First and second-line assessors are responsible for categorising patient death into one of two categories:

- **Cases related to disease process:** In these cases patient death occurred due to the disease process despite appropriate care, and assessors found no issues with patient management.
- **Cases with clinical incidents:** In these cases clinical incidents were identified that may have impacted on patient management. These events are divided into one of three categories:

- **Area of consideration:** This is an area of care that an assessor believes could have been improved or different but recognises that it may be an area for debate.
- **Area of concern:** This is an area of care that the assessor believes 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 at the time of discharge, or which contributes to or causes death.

Assessors also evaluate the impact and preventability of the clinical incident as well as determine which associated clinical team may have been responsible. Overall the assessors must decide if the impact of the clinical incident either:

- made no difference to the patient's outcome
- may have contributed to the patient's death
- caused the death of a patient who would otherwise have been expected to survive.

Assessors must also give their opinion as to whether the clinical incident was either:

- definitely preventable
- probably preventable
- probably not preventable
- definitely not preventable.

Assessors must also indicate who was primarily associated with the clinical incident:

- the audited surgical team
- another clinical team
- the hospital
- other.

It is important to note that the analyses contained in this report are based on the opinions subscribed to cases by either first- or second-line assessors.

2 Audit Participation

2.1 Overview of participation

Participation in SAAPM is directed at Fellows of the Royal Australasian College of Surgeons and is currently undertaken on a voluntary basis:

Surgeons register to participate by signing a participation agreement form sent by the SAAPM office.

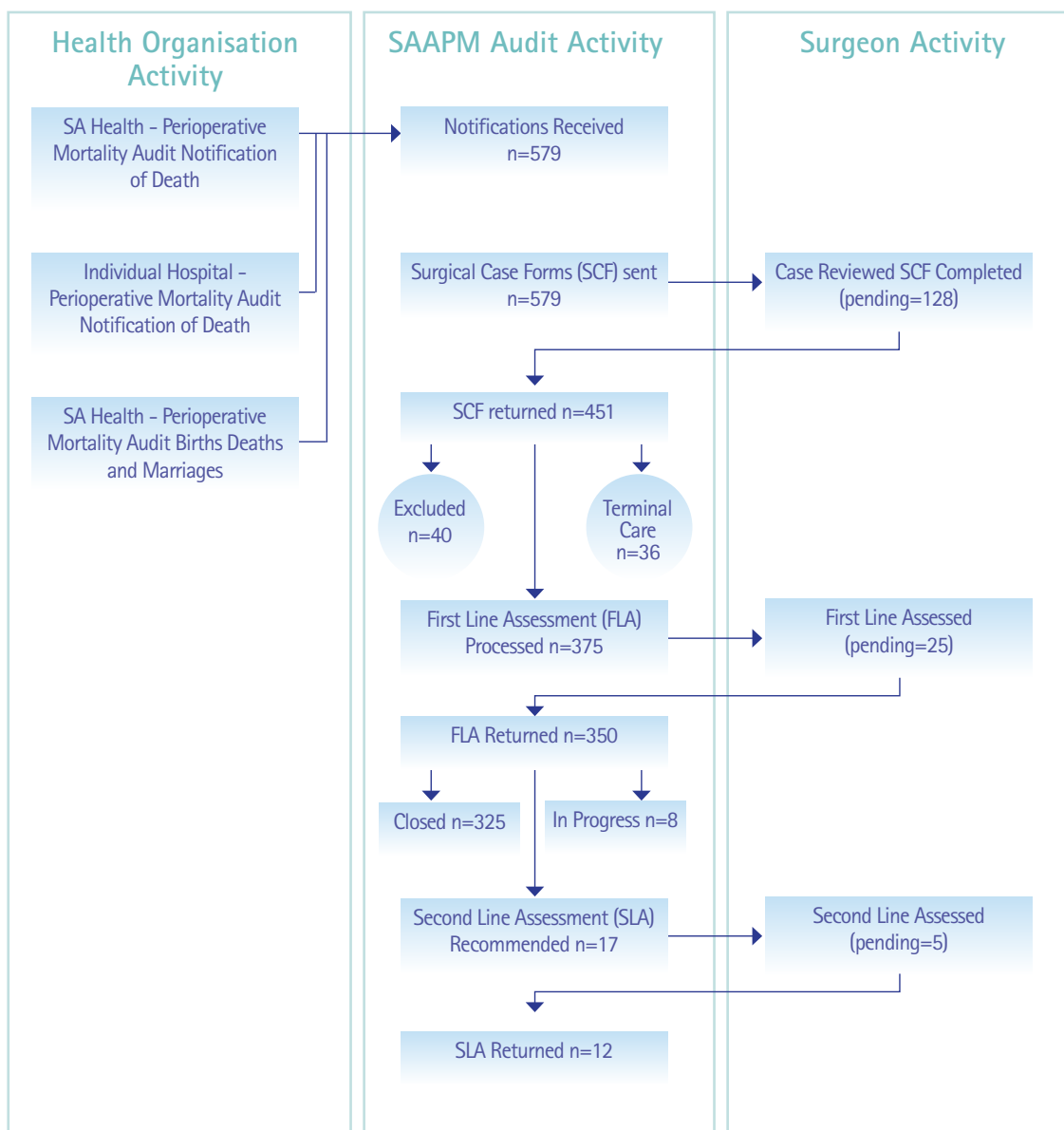
On notification from a hospital that a death has occurred, a surgical case form is forwarded to the responsible surgeon

unless the SAAPM office has had specific notification of a surgeon's refusal to participate.

During this reporting period SAAPM has recruited 3 private metropolitan hospitals and 12 public hospitals. Hospital participation requires timely notification of deaths and, where necessary, that case notes are made available.

Within this report, the number of particular cases is represented by the letter (n). Figure 2.1 describes the number of deaths and the surgical case form return and assessment rate, indicating the number of cases which have completed the audit process.

Figure 2.1 Deaths reported to SAAPM between 1 July 2008 and 30 June 2009



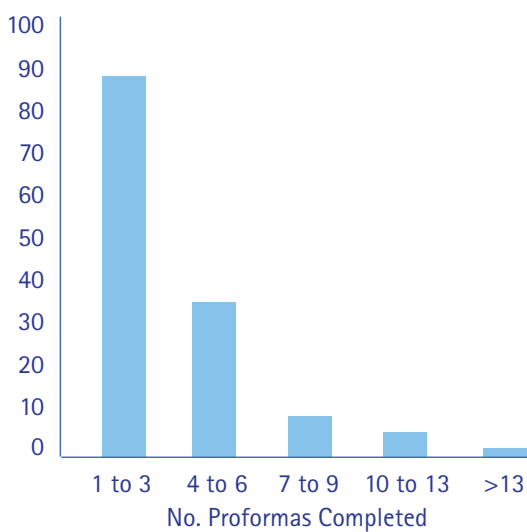


2.2 Surgeon participation

At the present time, surgeon involvement in SAAPM is voluntary. Surgeons are defined as participating by either actively agreeing to participate through a signed consent form or having had a notifiable death for which they have completed and returned a surgical case form.

In the 2008/2009 audit period, there were 579 deaths reported associated with 150 surgeons. Of these, 149 surgeons agreed to participate (99%). This is a 2% increase from the 2008 participation rate of 97%. The number of surgeons completing one or more surgical case forms is summarised in Figure 2.2.

Figure 2.2 Number of surgeons completing one or more surgical case forms



As indicated in the above graph, there are a small number of surgeons who have completed more than 10 surgical case forms. These surgeons work in specialities with a high number of emergency admissions in the main teaching hospitals with a major trauma load. As a result, these hospitals contribute the largest volume of cases.

The surgeons working in the major teaching hospitals tend to contribute a larger number of cases to the audit, due to the patient population they are required to treat. The small regional hospitals tend to refer the more complex patients to the major centres, and these patients are more likely to have a fatal outcome. The interstate mortality audits have found a similar pattern.

2.3 Hospital participation

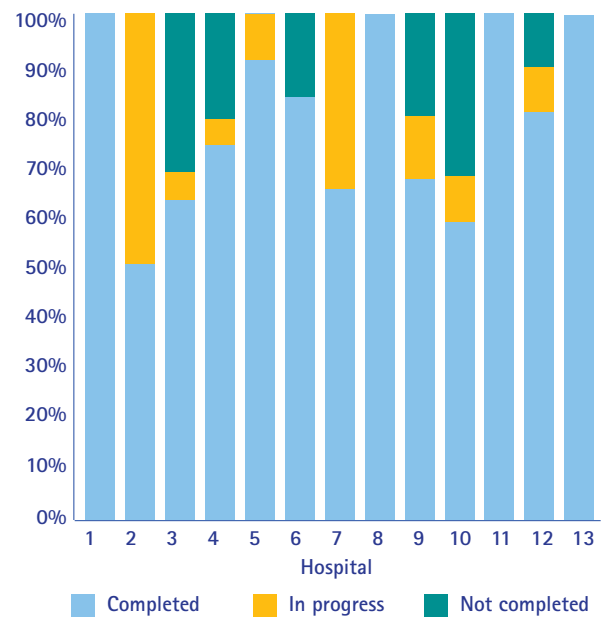
Table 2.1 displays the geographical location and hospital status of the participating hospitals. During this reporting period 3 private hospitals and 12 public hospitals joined the audit. This takes the total number of participating hospitals to 21 public and 6 private hospitals.

Table 2.1 Hospital status

Hospital status	Metro	Regional
Public	6	15
Private	6	0

Figure 2.3 illustrates the distribution of surgical case forms amongst participating hospitals and the status of cases. The most serious cases are generally transferred to a larger metropolitan teaching hospital for specialist care.

Figure 2.3 Proportion of surgical case forms completed by hospital



Note – Not all participating hospitals reported eligible deaths in the 2008/2009 audit year.

2.4 Surgical case form completion

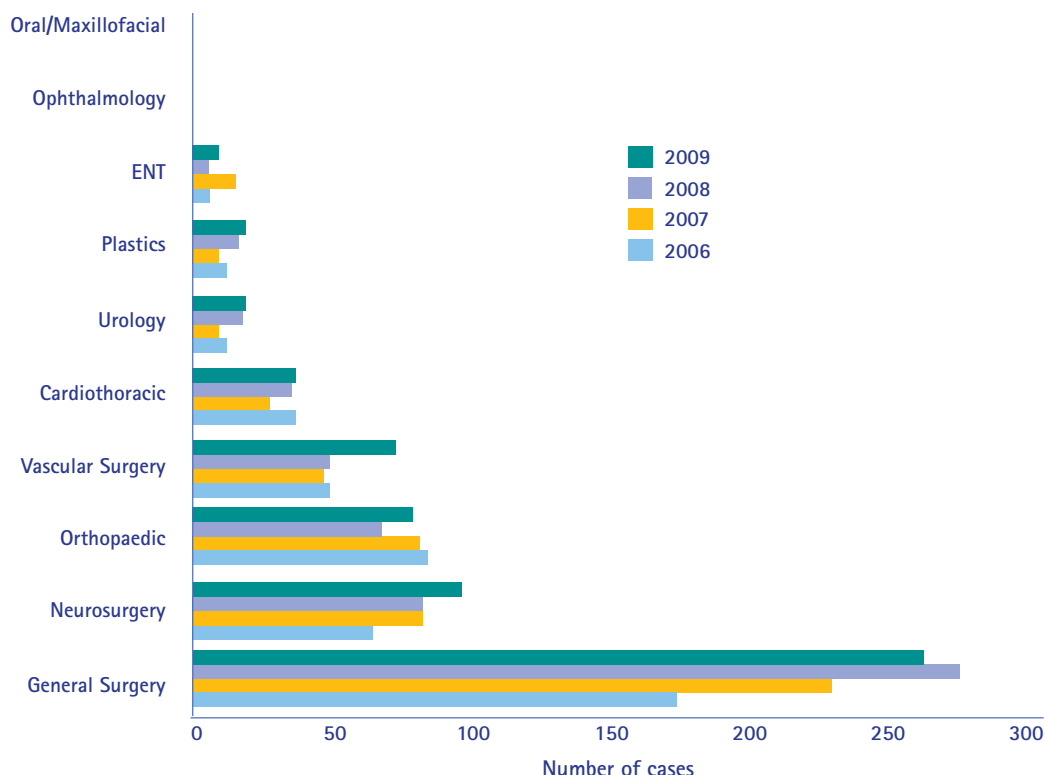
During the period 1 July 2008 to 30 June 2009, 579 surgical case forms were sent to surgeons. Of these, 451 (78%) were returned by the closure date for this reporting period for data analysis. This return rate is comparable to previous return rates of 77%, 74% and 81% respectively in the previous three years of data collection.

Thirty six (36) cases were excluded as these patients were admitted for terminal care and therefore did not proceed through the audit. There were 128 surgical case forms outstanding at the time of report writing.

Figure 2.4 provides data on the total number of surgical case forms sent to surgeons by specialty during the audit period and records changes across the reporting periods.

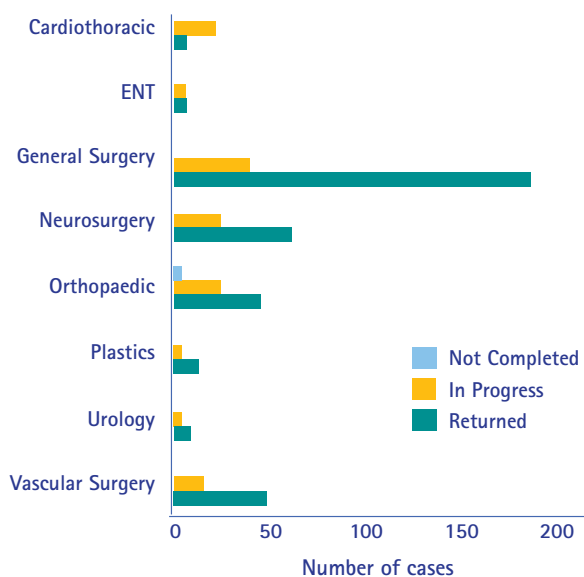


Figure 2.4 Number of surgical case forms sent out by specialty



The number of surgical case forms completed by specialty for the current audit year is illustrated in Fig 2.5. Where SAAPM has received a notification of a death under a surgeon who has chosen not to participate, the case is recorded as 'closed - non participant'.

Figure 2.5 Number of surgical case forms completed by specialty



2.5 Assessments

During the audit period there were 451 surgical case forms returned. From this total, 375 eligible cases were sent to first-line assessment. Seventy six (76) returned cases were not sent to first-line assessment as they were excluded from the audit as discussed in the executive

summary. Following first-line assessments, 17 cases (4%) progressed to second-line assessment. As can be seen in the table below the number of second-line assessments is comparable to the previous year.

Table 2.2 provides data on cases which have undergone first- and second-line assessment.

Table 2.2 Cases which have undergone assessment (2005- 2009)

	Jul 05 to Jun 06	Jul 06 to Jun 07	Jul 07 to Jun 08	Jul 08 to Jun 09
	n (%)	n (%)	n (%)	n (%)
Returned surgical case forms	328	387	418	451
First-line assessment completed	296 (90)	329 (85)	362 (87)	350 (78)
Second-line assessment recommended	37 (11)	26 (7)	17 (4)	17 (4)

Across the four years of data collection there has been a steady decline (from 11% to 4%) in the number of cases that require further scrutiny through second-line assessment.

Some specialties, such as neurosurgery and cardiothoracic surgery have only small numbers of practising surgeons. This can make anonymous assessment difficult, and so interstate assessors are used when needed to ensure a fair process.

3 Results

SAAPM has completed four years of data collection (1 July 2005 – 30 June 2009). In the current audit cycle (1 July 2008 – 30 June 2009) 451 surgical case forms were returned and 375 were eligible for assessment. Thirty six (36) cases were considered to be terminal care by the reporting surgeons and therefore excluded from further audit assessment. A further 40 cases were excluded due to insufficient information to identify the treating specialist or where details around the case were not able to be established. Twenty five (25) cases were in the process of first-line assessment and five cases were in the process of second-line assessment at the time of data analysis.

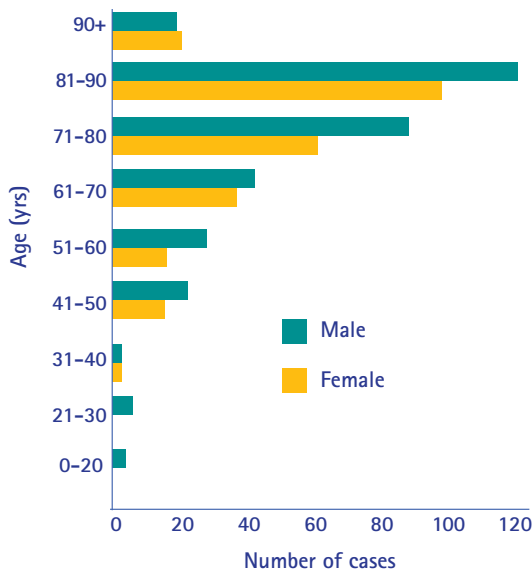
3.1 Age and sex distribution

In the current reporting period, there were 579 reported deaths. This group was made up of 331 (57%) males and 248 (43%) females.

Figure 3.1 indicates the age and sex distribution of the reported cases. Patients between the ages of 71 and 90 years account for approximately 63% of all cases.

The 81-90 year age range remains the predominant group in the sample. In the 71 – 80 and 81-90 year age groups, males had the highest number of deaths at 59% and 54%, respectively.

Figure 3.1 Age and sex distribution



3.2 ASA grade

Figure 3.2 provides data on the ASA grade of patients since July 2005. The most frequently reported preoperative ASA grade of cases audited over all years was Grade 4. These are patients who have one or more chronic underlying medical conditions which significantly increase their risks during anaesthesia and surgery.

Figure 3.2 Comparison of ASA Grade (05/06 – 08/09)

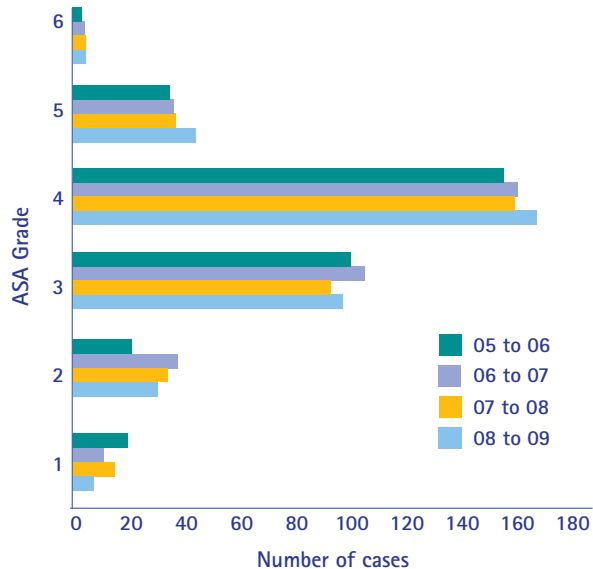


Table 3.1 ASA classification

ASA grade	Characteristics
1	A normal healthy patient
2	A patient with mild systemic disease
3	A patient with severe systemic disease which limits activity, but is not incapacitating
4	A patient with an incapacitating systemic disease that is a constant threat to life
5	A moribund patient who is not expected to survive 24 hours with or without an operation
6	A brain dead patient for organ donation

3.3 Surgical diagnosis

The main surgical diagnoses reported by surgeons are provided in Table 3.2. The 10 categories detailed, totalling 269 cases, represent 72% of all confirmed surgical diagnoses reported in the 375 returned surgical case forms. Unlike the previous annual reports, intracranial haemorrhage was the most frequent diagnosis in this reporting year.

Table 3.2 The most frequently reported surgical diagnosis

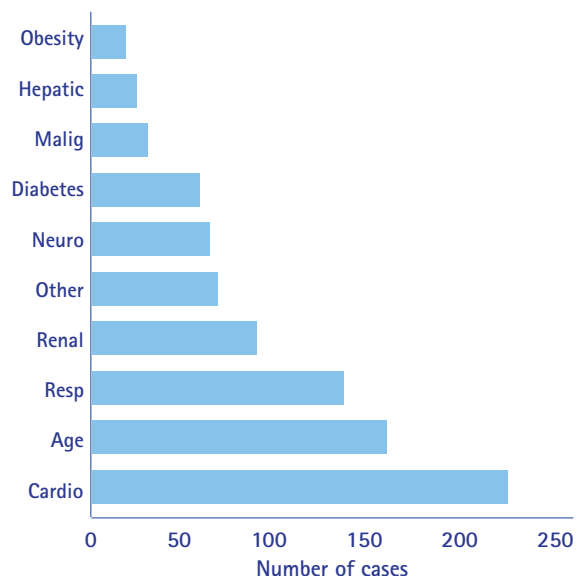
Surgical diagnosis	n	Percentage of total surgical case forms returned (n=375)
Intracranial haemorrhage (ICH, SDH, SAH)	45	12%
Malignancy (GI 16, non GI 18)	39	10%
Fractured neck of femur	34	9%
Bowel obstruction	30	8%
Ischaemic gut	26	7%
Acute abdomen (peritonitis/perforation)	22	6%
Peripheral vascular disease	22	6%
Biliary tract disease	20	5%
Abdominal aortic aneurysm (AAA)	19	5%
Sepsis	12	3%
Total	269	

Note: (ICH –intracerebral haemorrhage, SDH –subdural haemorrhage, SAH –subarachnoid Haemorrhage).

3.4 Co-morbidities

Co-morbidities reported by surgeons are reflected in Figure 3.3. Cardiac problems, advanced age and respiratory disease remain the most frequently occurring factors and this finding is consistent with the Queensland, Tasmanian and Victorian Mortality Audit reports.

Figure 3.3 Co-morbidities in completed cases



As previously discussed, patients in the 71–90 year age group are the most frequently occurring in the 2008/2009 SAAPM dataset. In this age group, 58% (131/226) of patients had at least three co-morbidities while 77% (175/226) of patients in this age range had two or more co-morbidities, while 19% (43/226) of patients had two co-morbidities.

3.5 High dependency and intensive care units

Table 3.3 provides data on the assessors' views of HDU and ICU use. In the assessors' opinion there were 3 cases (1%) where ICU was not used when it may have been beneficial. There were 10 cases (3%) in which the assessors indicated that HDU would have been beneficial but was not used.

These figures show a slight increase from the 2008 report, when assessors noted inadequate ICU/HDU use in 2% of patients (6 of 362). This area of care will continue to be monitored by the audit.

Table 3.3 Assessor's views on appropriate use of HDU or ICU

		n (%)
ICU not utilised	First-line assessor	2 (1)
	Second-line assessor	1 (<1)
HDU not utilised	First-line assessor	9 (3)
	Second-line assessor	1 (<1)
Total		13/350 (4)

3.6 Clinical incidents

Of the 350 cases which have completed assessment, 82% of deaths were related to the disease process, and there were no clinical incidents noted by the assessors.

There were 64 cases (18%) in which assessors reported a clinical incident categorised as an area of consideration, an area of concern or an adverse event. An incident rate of 16% was reported in the previous SAAPM 2008 report. As indicated in the table below, 33 (9%) of cases in the current report were rated in the more serious categories as either areas of concern or adverse events.

Of the 350 cases which have undergone assessment:

- 286 (82%) were related to the disease process
- 64 (18%) were cases with clinical incidents, of which:
 - > 31 (9%) cases were associated with an area for consideration
 - > 21 (6%) cases were associated with an area of concern
 - > 12 (3%) cases were associated with an adverse event.

Tables 3.4, 3.5 and 3.6 relate clinical incidents to patient outcome, preventability and the responsible clinical unit. The majority of incidents noted (81%) were not classified as adverse events. However, 12 incidents have been categorised as adverse events. Of these events, 10 have been assessed as 'may have contributed to death' while a further two were deemed to have caused death in a patient expected to survive.



Table 3.4 Patient outcome associated with areas of consideration, concern or adverse events reported by assessors

Clinical incident	Made no difference to outcome	May have contributed to death	Caused the death of a patient who would otherwise be expected to survive	No response	Total
Area of consideration	13	17	0	1	31
Area of concern	3	17	1	0	21
Adverse event	0	10	2	0	12
Total	16	44	3	1	64

Table 3.5 Preventability of event associated with areas of consideration, concern or adverse events reported by assessors

Clinical incident	Preventability					Total
	Definitely	Probably	Probably not	Definitely not	Missing data/No response	
Area of consideration	2	13	15	0	1	31
Area of concern	5	14	2	0	0	21
Adverse event	2	7	3	0	0	12
Total	9	34	20	0	1	64

Nine cases were considered definitely preventable while 20 cases were deemed probably not preventable.

Table 3.6 Responsible unit associated with areas of consideration, concern or adverse events reported by assessors

Clinical Incident	Associated with					Total
	Surgical team	Clinical team	Hospital	Other	Missing data/No response	
Area of consideration	19	3	4	5	0	31
Area of concern	11	6	1	3	0	21
Adverse event	7	4	0	1	0	12
Total	37	13	5	9	0	64

Concern in just over half of the cases were attributed to the surgical team.

Table 3.7 Clinical incident rates (2005 – 2009)

Reporting year	Clinical incident rate (%)
2005/2006	20%
2006/2007	19%
2007/2008	16%
2008/2009	18%

The reported clinical incident rates during the last four years of SAAPM have not exceeded 20%.

The following three tables provide details regarding the areas of consideration, concern and adverse events as determined by the assessors.



Table 3.8 The areas of consideration reported by assessors in emergency and elective cases

Admission type	Areas of consideration	Frequency
Emergency	Decision to operate	5
	Delayed decision for surgery	1
	Preoperative assessment issues	3
	Delayed transfer to surgical unit	2
	Junior surgeon	3
	Delay to access theatre / equipment	4
	Postoperative	
	• Anticoagulation	2
	• HDU/ICU use	1
	• Fluid management	2
• Medical management	4	
	Delayed diagnosis of complication	2
	No post mortem result available	1
Elective	Fluid management	1
Total		31

Table 3.9 The areas of concern reported by assessors in emergency and elective cases

Admission type	Areas of concern	Frequency
Emergency	Delays	
	• Diagnosis / referral	2
	• To surgery	3
	Communication problems from referring hospital	2
	Preoperative management (diabetes, respiratory problems)	3
	Operative issues	
	• Junior surgeon	1
	• Alternative procedure preferable	2
	Postoperative	
	• HDU not used	1
• Anticoagulation monitoring	1	
• Aspiration	1	
• Fluid overload	1	
Elective	Decision to operate	1
	Junior surgeon	1
	HDU not used	1
	Fluid management	1
Total		21

Table 3.10 The adverse events reported by assessors in emergency and elective cases

Admission type	Adverse events	Frequency
Emergency	Delayed diagnosis	
	• Arterial occlusion	1
	Laparoscopic surgery	
	• Colonic injury	1
	• Postoperative duodenal leak	1
	• Postoperative arterial occlusion	1
	Postoperative	
	• Anticoagulation contributing to CVA	1
	• Postoperative haemorrhage (open surgery)	1
	• Haemorrhage after radiology procedure	1
Elective	Postoperative	
	• Colonic fistula after open surgery	1
	• Postoperative haemorrhage open surgery	1
	• Drain tube removed too early - further procedure required	1
	• Anastomotic leak	1
	• Postoperative cerebrovascular accident	1
Total		12

3.7 Admission type

The admission status in relation to clinical incidents is described in the table below. Of the 350 cases, 315 (90%) were emergency admissions, of which 17% (54/315) were associated with a clinical incident. Elective admissions made up 9% (32/350) of all cases, of which 31% (10/32) were associated with a clinical incident. Admission type was not specified in 3 cases (1%).

Table 3.11 Clinical incident and admission status

Clinical Incidents	
Admission type	Yes (n)
Emergency	54 (17%)
Elective	10 (31%)



3.8 Operative and non-operative data

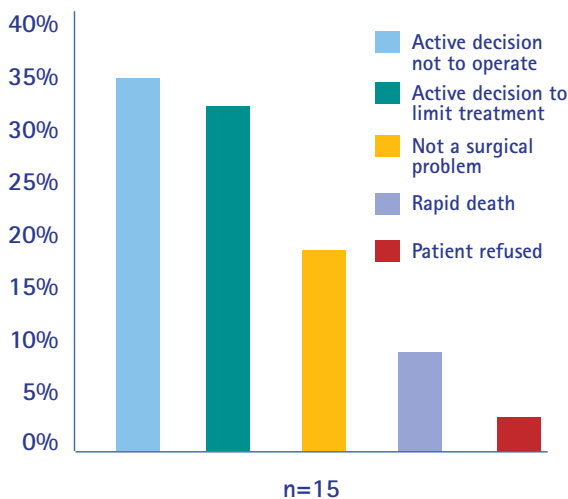
Of the 350 cases which completed assessment, 65% (229/350) of cases underwent a surgical procedure and 35% (121/350) did not.

Table 3.12 Number of operative and non-operative cases by speciality

Speciality	Operation				Total
	Yes	(%)	No	(%)	
General	118	67%	57	33%	175
Neurosurgery	36	59%	25	41%	61
Orthopaedics	31	76%	10	24%	41
Vascular	28	57%	21	43%	49
Cardiothoracic	6	86%	1	14%	7
Urology	2	33%	4	67%	6
Plastic	7	70%	3	30%	10
ENT	1	100%	0	0%	1
Total	229	65%	121	35%	350

Figure 3.4 shows the reasons given by surgeons for no operation being performed. In some cases surgeons recorded more than one response. On review of the data, in 70% of cases where surgery was not performed an active decision was made not to operate, or to limit treatment due to the patient's poor prognosis.

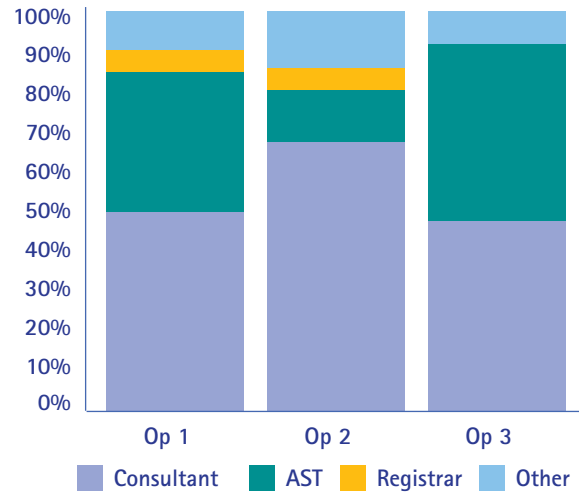
Figure 3.4 Reasons for non-operation



3.9 Grade of surgeon operating

Data from the current reporting period, displayed in Figure 3.5, shows that consultant surgeons were the primary surgeon in 51% (120/234) of first procedures and 69% in second procedures.

Figure 3.5 Grade of surgeon operating



Note: AST – Advanced Surgical Trainee

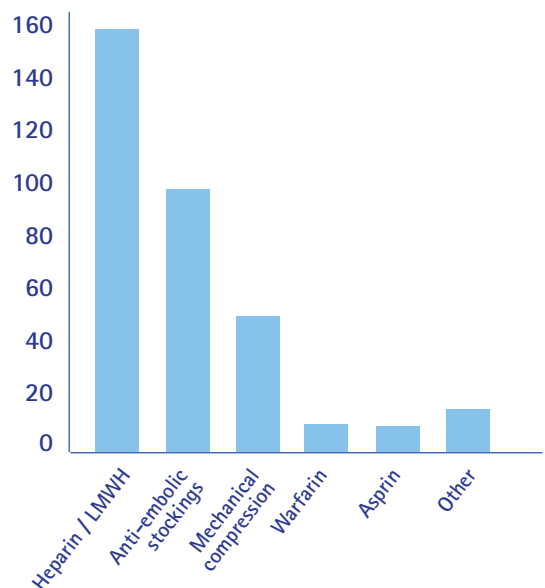
In the previous 2008 SAAPM report, the consultant involvement rates in first, second and third procedures were 51%, 56% and 60% respectively. In this report, the rates for consultant involvement are 51%, 69% and 47% respectively. The consultant involvement in the third operation is of concern although only 15 cases were recorded in the group.

In a number of cases however, the third operation consisted of radiologically-guided procedures, which would normally be undertaken by interventional radiologists, rather than by the consultant surgeons

3.10 DVT prophylaxis

Of the 350 cases that have been assessed, surgeons reported they had used a form of DVT prophylaxis in 222 (63%) of cases. This figure compares to the previous annual report where the rate was 65% (2008), and remains an improvement on earlier reports where the rate was below 60%. The bar graph below displays the specific types of DVT prophylaxis used.

Figure 3.6 Types of DVT prophylaxis used





In 33% (116/350) of cases, surgeons reported they did not use DVT prophylaxis. The use of prophylaxis may not always be appropriate depending on the patient's clinical presentation. In some cases mechanical compression (TED stockings) may assist when chemical measures are not indicated.

In cases where the surgeon reported no DVT prophylaxis use, some of the reasons cited for non-use include that 4% (5/116) of patients were being treated with palliative measures only, 16% (18/116) were coagulopathic and 10% (12/116) presented with a haemorrhage, while 7% (8/116) had a rapid death on arrival at hospital. Some patients had multiple medical reasons for not using prophylaxis. Table 3.13 provides data on the reasons given by surgeons for not using DVT prophylaxis. In 57 cases no reason was given as to why DVT prophylaxis was not used.

The surgical case form is currently being modified to allow collection of more data about the reasons for non-use of DVT prophylaxis and these trends will be followed in future reports.

Table 3.13 Reasons cited by surgeons for non-use of DVT prophylaxis

Reason	Number of cases
Coagulopathy	18
Presented with haemorrhage	12
Already on treatment	10
Rapid death	8
Conservative / palliative patient	5
Other	6
Total	59

Note - Not all surgeons reported reasons for not using DVT prophylaxis

Further analysis of the 350 assessed cases shows that the use of DVT prophylaxis was considered inappropriate by assessors in 3 (<1%) cases and 'unknown' in 2 (<1%) cases. In 24 cases, the question relating to DVT prophylaxis was not completed by the assessor.

3.11 Fluid balance

In the current reporting period there were 43 cases in which the treating surgeon or the assessor felt that fluid management was an issue. This represents 12% of the total cases assessed, an increase over the figure of 7% for the 2007/2008 report.

This is an area of care which is normally the responsibility of junior staff, and consultant surgeons may need to recognise that this is an area where improvements could be made.

3.12 Post-mortem

The rate of post-mortem for this reporting period is 37/350 (11%). The rate of post-mortem examination remains low, with a slight decrease from 15% recorded for 2007/2008 and 12% reported for 2006/07.

As shown in the table below, all of these examinations are carried out by the Coroner's office. As noted in the previous report, there continues to be a delay in obtaining feedback from the treating clinicians.

Table 3.14 Post-mortem examinations in cases identified by surgeons

Post-mortem performed	Yes		No	Refused	Unknown
	Hospital	Coroner			
	0	37	224	1	88





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 of Health for funding and ongoing support:
 - > Public Health and Coordination, Clinical Systems Division
 - > Health System Management, Information and Communication Technology Services
- the South Australian Royal Australasian College of Surgeons, Division of Research, Audit & Academic Surgery (RAAS) staff, particularly
 - > **Professor Guy Maddern**
Chair, Professional Development and Standards Board; Chair ANZASM SC
 - > **Dr Wendy Babidge**
Director, RAAS Division
 - > **Ms Nicola Robinson**
Deputy Director, RAAS Division
 - > **Mr Gordon Guy**
ANZASM Manager
- the South Australian Audit of Perioperative Mortality Group members:-
 - > **Mr Paul Dolan**
SAAPM Clinical Director & General Surgery Representative
 - > **Mr David Walsh**
General Surgery Representative
 - > **Mr Adrian Anthony**
General Surgery Representative
 - > **Mr Andrew Chew**
General Surgery Representative
 - > **Mr Michael Eaton**
General Surgery Representative
 - > **Dr Cindy Molloy**
Neurosurgical Specialty Representative
 - > **Mr Rob Fitridge**
Vascular Specialty Representative
- > **Mr Michael Berce**
Vascular Specialty Representative
- > **Dr Linda Ferris**
Orthopaedic Specialty Representative
- > **Mr Alan Stapleton**
Urological Specialty Representative
- > **Dr John Russell**
Anaesthetist Representative
- > **Dr Marie Gould**
Anaesthetist Representative
- > **Mr Graeme Smith**
SAAPM Project Manager
- > **Ms Heather Martin**
SAAPM Project Officer
- the South Australian Audit of Perioperative Mortality Steering Committee members:
 - > **Mr Paul Dolan**
Clinical Director,
SAAPM Chair,
Surgical Representative
 - > **Mr David Walsh**
Surgical Representative
 - > **Mr Glenn McCulloch**
Surgical Representative
 - > **Dr John Russell**
Anaesthetist Representative
 - > **Dr Marie Gould**
Anaesthetist Representative
 - > **Dr Stephen Christley**
South Australian Department of Health
 - > **Ms Michele McKinnon**
South Australian Department of Health
 - > **Mr Graeme Smith**
SAAPM Project Manager



Notes



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

ANNUAL REPORT 2009



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS



Government
of South Australia
Department of Health

SAAPM

South Australian Audit
of Perioperative Mortality

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

Fig. 3

