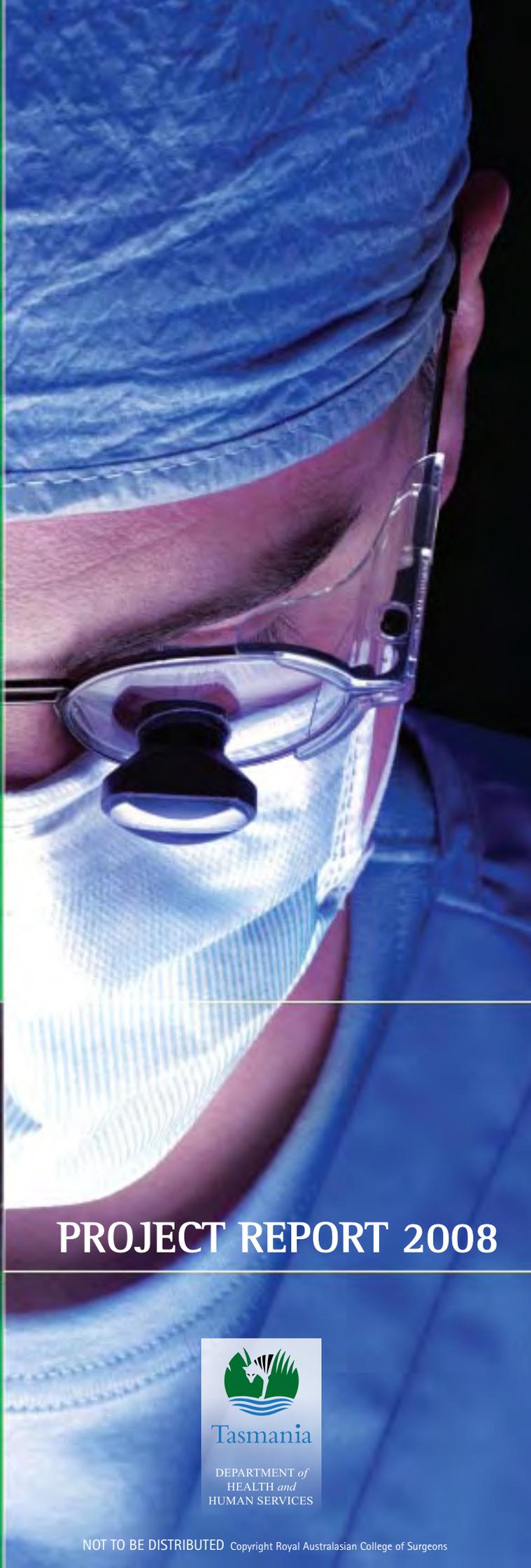




ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS



PROJECT REPORT 2008







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The information contained in this Project Report has been prepared by the Royal Australasian College of Surgeons Tasmanian Audit of Surgical Mortality Management Committee, which is a declared quality improvement committee under the Health Act 1997 (Tas). The Australian and New Zealand Audit of Surgical Mortality, including the Tasmanian Audit of Surgical Mortality also has protection under the Commonwealth Qualified Privilege Scheme under Part VC of the Health Insurance Act 1973 (Gazetted 6 November 2006).





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Chairman's report

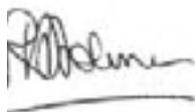
This report covers the period since the Tasmanian Audit of Surgical Mortality (TASM) was established until 2008. Over 600 deaths have now been reported, making information gathered and lessons learnt more useful.

The Australian and New Zealand Audit of Surgical Mortality (ANZASM) has further expanded and all states now have a surgical mortality audit. Participation is still voluntary and the audit is owned by surgeons, however the surgical community needs to continue to embrace audit and strongly encourage all private hospitals to participate. The involvement of private hospitals has been a problem in some other states, but in Tasmania all private hospitals are involved.

In Western Australia mortality review is mandatory through the Western Australian Review of Mortality (WARM). As mentioned in the WAASM Chairman's Report, the next big change will be outcome measurements. Publication of outcome data has become accepted in the United Kingdom (UK) particularly for cardiac surgeons, and is available through the National Health Service (NHS) website. Aneurysm and joint replacement surgery will soon be added. Politicians and the public are increasingly requiring outcome data to justify ongoing funding, as the UK Payment for Results (PbR) system demonstrates. Surgeons in Australia will need to get ready for more comprehensive complication audits and data outcome publications. TASM is only a start.

Participation in TASM and return of proforma are excellent. Deep vein thrombosis (DVT) prophylaxis appears to be a problem, with nearly one third of patients reported as not having received appropriate prophylaxis. The use of high dependency units (HDU) appears to be declining, but it is not obvious if this is due to lack of access or of requests. Overall the number of adverse events is reassuringly low but delay in diagnosis remains a problem.

I wish to thank all participants and assessors, and of course our project manager.



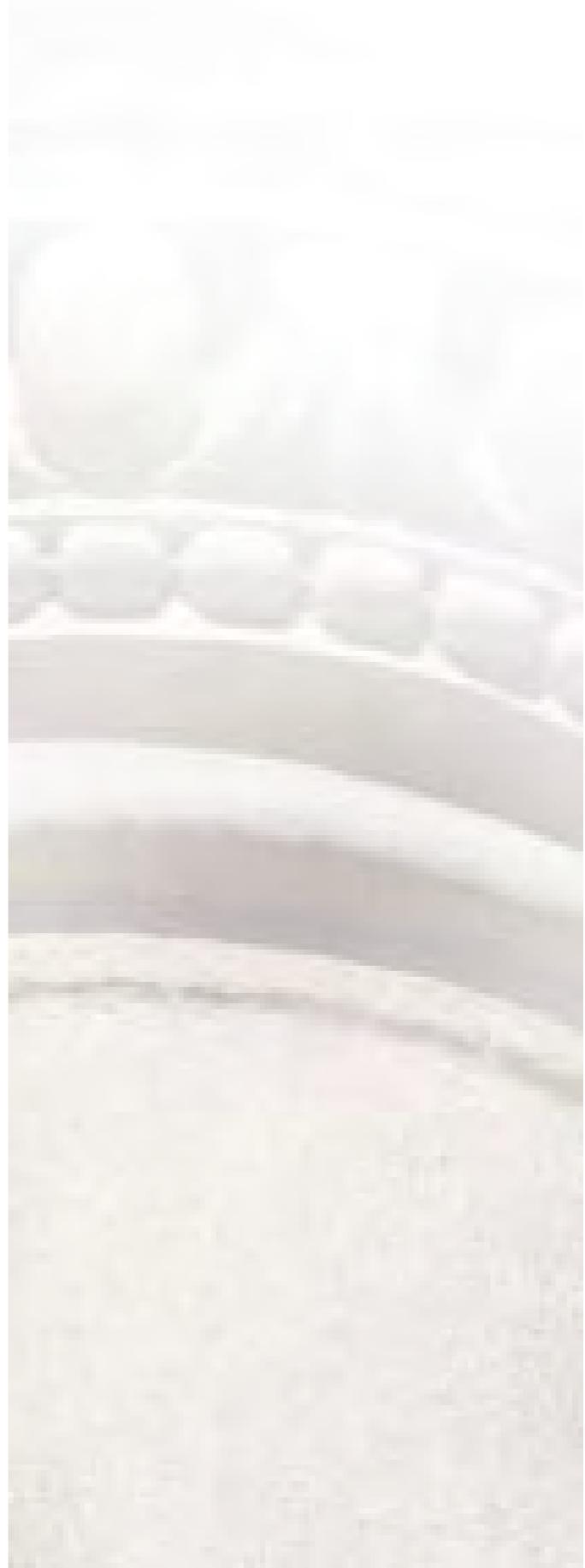
Rob Bohmer

Chairman



Abbreviations

ANZASM	Australian and New Zealand Audit of Surgical Mortality
ASA	American Society of Anesthesiologists
CPD	Continuing Professional Development
DHHS	Department of Health and Human Services
DVT	Deep Vein Thrombosis
HDU	High Dependency Unit
ICU	Intensive Care Unit
RAAS	Royal Australasian College of Surgeons Research, Audit and Academic Surgery Division
RACS	Royal Australasian College of Surgeons
RHH	Royal Hobart Hospital
SAAPM	South Australian Audit of Peri-operative Mortality
TAS	Tasmania
TASM	Tasmanian Audit of Surgical Mortality
UK	United Kingdom
UTAS	University of Tasmania
VASM	Victorian Audit of Surgical Mortality
WA	Western Australia
WAASM	Western Australian Audit of Surgical Mortality
WARM	Western Australian Review of Mortality



Executive summary

The Tasmanian Audit of Surgical Mortality (TASM) is an external, independent, peer-review audit of the process of care associated with all deaths in which a surgeon was involved in the management of the patient. TASM is funded by the Tasmanian Department of Health & Human Services (DHHS) and is part of the Australian and New Zealand Audit of Surgical Mortality (ANZASM). TASM has qualified privilege under State and Commonwealth legislation.

The results presented in this report relate to data collected since the audit was commenced in September 2004 up to 30 June 2008.

Audit process

The TASM office is notified of deaths under a surgeon's care by all public and private hospitals in Tasmania. The associated consultant surgeon is sent a proforma for completion on the process of care associated with the patient. This is peer-reviewed by another consultant surgeon (first-line assessment). Approximately 13% of cases have a detailed case note review requested (an increase from 10% in the previous project report). This is undertaken by another consultant surgeon from the same specialty as the surgeon who was responsible for the patient's care. All surgeons are sent feedback from the peer-review process.

Participation

Participation in TASM is voluntary. In 2008, 99% of surgeons associated with reported deaths in Tasmania participated in TASM, compared to 96% in 2007. At the time of analysis, 600 of 683 proforma (88%) had been completed by surgeons and returned to TASM. Results are based on the accumulated data.

Analysis of completed cases

Of the cases that completed assessment, sixty (9%) terminal care cases were excluded from further analysis, resulting in a final sample size of 623 for this report. Fifty-three percent of cases were male, and the median age of all patients was 76 years. Over 73% of completed cases were associated with one or more significant comorbidities and 58% of cases had a recorded ASA grade of 4 or higher. Public hospital admissions accounted for 82% of cases.

Areas for consideration, of concern or adverse events

Assessors reported areas of concern or adverse events in 43 (7%) audit cases. The proportion of cases associated with areas for consideration, of concern and adverse events all decreased over the total audit period. There were six cases (11%) where assessors concluded that an area of concern or adverse event had contributed to death.

Admissions

There were a greater number of emergency than elective admissions in the cohort (81% vs 19%). Elective admissions

were associated with a significantly higher proportion of areas of concern or adverse events than emergency admissions (10% vs 6%). Ninety percent of elective admissions underwent an operative procedure compared with 66% of emergency admissions.

Operative and non-operative deaths

Of the completed cases, 69% underwent one or more operations. A further 27 (7%) cases had operations that were abandoned on encountering a situation where there was a poor prognosis and palliation was more appropriate. Cases in which an operation was performed were associated with a significantly higher proportion of areas for concern or adverse events when compared to those cases in which an operation was not performed (11% vs 3%).

Grade of surgeon – teaching hospitals

Over 84% of operations conducted in teaching hospitals were performed by consultant surgeons. This percentage increased slightly when the patient was returned to theatre, where 88% of procedures were undertaken by consultant surgeons.

DVT prophylaxis

Over the audit period, 69% of patients received appropriate deep vein thrombosis (DVT) prophylaxis as stated by the surgeon. In a number of cases, assessors noted that the use of DVT prophylaxis should have been greater.

Use of ICU and HDU

Intensive Care Unit (ICU) was used in 33% and High Dependency Unit (HDU) in 6% of audited cases. Previously, TASM recommended that increased use and availability of ICU and HDU beds should be considered. This audit has subsequently revealed a decrease in the use of ICU beds. This issue should be investigated further to determine whether the trend continues and whether there are clear reasons for it.

Fluid balance

In 4% of cases assessors reported problems with management of fluid balance; this is a decrease from the previous reporting period.

Post-mortems

A post-mortem was conducted in 66 (9%) of audited cases. Of these, the majority (52 cases) were conducted under the auspices of the Coroner. A further 32 surgeons indicated that they would have preferred a post-mortem where none had been performed. In 22 cases, a post-mortem was refused.

Other issues

The second-line assessment by surgeons based interstate has been improved by the introduction of a cross-jurisdictional interstate assessor tracking system.



Recommendations

- The value of the audit would be improved if all proforma were returned, if return was more timely, and more details were provided on the forms with legibility improved. It is important to note, however, that the return rate continues to rise.
- TASM will seek to improve communication with other states and territories participating in mortality audits to share findings and recommendations.
- The issue of improvements in the management of fluid balance will be disseminated to surgeons participating in the audit in the first instance, as well as to other audits in ANZASM.
- The TASM, the DHHS and the Coroner's Office will work together to ensure that post-mortem results are routinely returned to surgeons. Due to workload the results of coronial findings tend to be significantly delayed.
- Falls are reported as a leading cause of adverse events in South Australian and Western Australian audits but have not been linked to adverse events in Tasmania. Surgeons should consider falls as adverse events and report them as such.
- Delay in transferring to theatre is one of the most frequently reported causes for an area of concern or adverse event. The audit does not currently collect reasons for delays and the proforma will be modified to include these in the future.
- Consultant surgeon attendance if a patient returns to theatre is viewed as important and will continue to be monitored.
- The use of ICU or HDU should be increased, according to assessors. The reason for not using these facilities when they are required needs to be investigated. If it is due to lack of beds or nursing staff this will have an impact on future hospital planning.
- The appropriate use of DVT prophylaxis has not improved yet, and needs to be continually stressed in feedback to surgeons.

Efforts will continue to ensure that all surgeons in Tasmania participate in the audit. The audit has recently been expanded to include anaesthetists and the uptake by this group has been very pleasing with 72 involved.



Performance overview

The previous TASM annual report listed recommendations for the coming year. The following section summarises the recommendations from the last annual report and indicates progress that has been made in each area.

Increased participation in TASM.

The number of surgeons participating in TASM has steadily increased since the beginning of the project. It is now 99% although participation is still currently voluntary; the Royal Hobart Hospital (RHH) has made it a mandatory requirement for ongoing credentialing.

Review commitment of surgeons to become more accurate in completing data entry of the audit proforma.

There are still problems with some surgeons not completing all sections of the proforma. If more detailed information was provided it would result in fewer cases going to second-line assessment. Legibility is also a problem and the project manager is working with the College to implement electronic completion of the proforma to overcome this issue. Sections will be made mandatory fields in an electronic version which should improve the accuracy and completeness of the proforma.

Increased communication with other states and territories where similar audits are in progress.

TASM is in communication with the Western Australian Audit of Surgical Mortality (WAASM), the South Australian Audit of Peri-operative Mortality (SAAPM), the Victorian Audit of Surgical Mortality (VASM) and the Queensland Audit of Surgical Mortality (TASM). These are managed through ANZASM. The New South Wales audit, known as the Collaborative Hospitals Audit of Surgical Mortality (CHASM), is managed by the Clinical Excellence Commission. CHASM maintains a close partnership with the other College audits within ANZASM through the sharing of the same data forms and audit process, as well as having representation on the bi-national ANZASM Steering Committee.

Interstate second-line assessment is now established.

ANZASM has successfully amended its original QP application to allow for interstate assessors to be used in cases where either the sub-speciality numbers are small or if there is some concern that a fair assessment cannot be undertaken within the home state.

TASM will provide participating surgeons with their commencement date of participation in the audit for the College and Continuing Professional Development (CPD) records, and for submission to hospitals for clinical governance and accreditation purposes.

This information is available from the TASM project

manager on request and over recent months the requests for this information have increased significantly. A surgeon's progress report which summarises the surgeon's involvement in TASM for CPD purposes will be available in the proposed 'Fellows' interface on the Web System.

Areas of concern and adverse events that were considered preventable should be reviewed and recommendations made as to future action required to rectify practices.

These areas are reviewed through the second-line assessment and the information is then made available to the participating surgeon. It is then up to the surgeon to review and learn from any issues arising from that second-line assessment. De-identified case note review booklets, containing cases which illustrate certain lessons to be learned, are distributed to all surgeons in order to disseminate this information at a broader state-wide level.

Increased use and the availability of HDU/ICU beds should be considered.

Low level of use of HDU/ICU beds may be due to limitations of the resource rather than a conscious decision not to use the beds. However the aim should be for 100% use where this is clinically indicated.

DVT prophylaxis should be reviewed.

The proportion of cases where assessors indicated that DVT prophylaxis was appropriate has increased over the audit period; however, there is still a concern that it is not used in 100% of cases in which it would be beneficial.

The grade of surgeon operating at second operation should be reviewed.

Eighty-four percent of operations in teaching hospitals were performed by consultant surgeons; however, when patients were returned to theatre this figure increased to 88%. There is still room for improvement, albeit limited in some specialties with low consultant numbers.



Introduction

Background

The Tasmanian Audit of Surgical Mortality (TASM) is an external, independent, peer-review audit of the process of care associated with surgically-related deaths in Tasmania. TASM commenced data collection in September 2004 and is part of the Australian and New Zealand Audit of Surgical Mortality (ANZASM) which was formed by the Royal Australasian College of Surgeons in 2005. TASM is funded by the Tasmanian Department of Health and Human Services (DHHS) and is managed by the Management Committee.

Project Governance

The Royal Australasian College of Surgeons Tasmanian Audit of Surgical Mortality Management Committee has been gazetted as a Quality Assurance Committee under the Tasmanian *Health Act 1997* and also has protection under the Commonwealth Qualified Privilege Scheme under Part VC of the *Health Insurance Act 1973* (Gazetted 6 November 2006).

Figures 1 and 2 illustrate the College and regional governance structures surrounding this audit. An ANZASM Steering Committee oversees the functioning and strategic directions of the regional audits, and provides input into national reporting. Members of the Management Committee include the Chair of the Research, Audit and Academic Surgery Division (RAAS) of the College and all regional Clinical Directors (or designated proxies), with support from RAAS Divisional staff.

Figure 1: Governance Structure of the Royal Australasian College of Surgeons, ANZASM

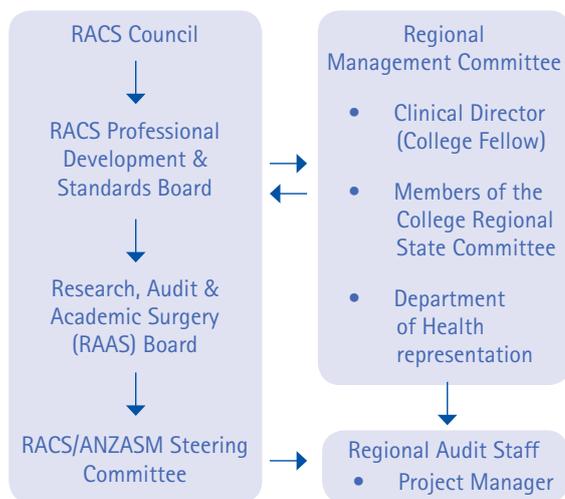
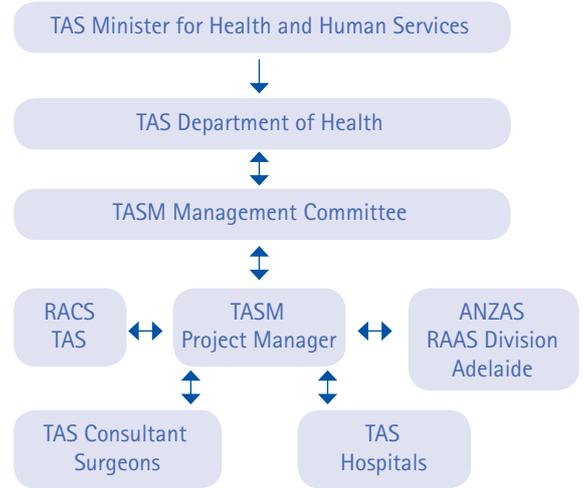


Figure 2: Regional Audit Governance Structure



The audit process

Notification of deaths

The medical records departments of the hospitals notify TASM of deaths that occur in patients under the care of surgeons in private and public hospitals throughout Tasmania.

Participation

Participation in TASM is voluntary. Surgeons consent to participate in the audit and separately elect to act as first- and/or second-line assessors. Surgeons who indicate that they do not wish to participate (non-participants) are not sent TASM proforma.

Methods

After TASM is notified of a death by the hospital, the associated consultant surgeon is sent a proforma for completion. The proforma is returned to the TASM office, de-identified and then anonymously assessed by a first-line assessor who is another consultant surgeon in the same craft group. He/she will determine if the case should undergo a second-line assessment. In the second-line assessment case note reviews are undertaken by another surgeon from the same specialty as the surgeon responsible for the patient's care. Second-line assessment is requested when possible deficiencies of care are thought to have occurred during the pathway of care before death, or when a review could usefully draw attention to lessons that might be learned, either for clinicians involved in the case or as part of collated assessments for wider distribution. Second-line assessment is also progressed when insufficient information is provided for review. Surgeons receive assessor feedback on their cases through the audit process. Feedback that is disseminated to surgeons, hospitals or the public is aggregated and de-identified. Issues are not linked to patients, surgeons or hospitals in an identifiable manner. The process is managed by the TASM Project Manager and co-ordinated through an extensive database. More detailed information on the audit process can be found in Appendix 1.

- Individual surgeons receive feedback on their cases from the reviewing surgeon.
- TASM reports results annually. Information is aggregated and anonymous. No identified or specific information is available on individual patients, surgeons or hospitals.
- All surgeons receive summaries of selected second-line reviews, newsletters and copies of annual reports.

Audit inclusion / exclusion criteria

TASM audits all deaths that occur in hospital whilst under the care of a surgeon, irrespective of whether an operation was performed. If a patient is admitted under the care of a physician and subsequently undergoes an operative procedure, the case is included in the audit process. Terminal care cases are excluded.

Definitions

Assessment outcomes

Surgeons and assessors report clinical incidents in relation to the following criteria:

- **Area for consideration:** where the clinician believes areas of care could have been improved or handled differently, but recognises that it may be an area for debate.
- **Area of concern:** where the clinician believes that areas of care should have been better.
- **Adverse event:** an unintended 'injury' caused by medical management rather than by the disease process, 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.

Surgeons and assessors determine the impact of the incident on the outcome as to whether it:

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

Surgeons and assessors give their opinion as to whether the incident was preventable:

- definitely
- probably
- probably not, or
- definitely not.

The surgeon and assessors indicate with whom the incident was associated, i.e.

- audited surgical team
- another clinical team

- the hospital, or
- other.

Providing feedback

The core purpose of TASM is to collect information to inform, educate and facilitate change and improve practice. TASM provides feedback in the following ways:

- Individual surgeons receive feedback on their cases from assessors.
- Aggregated feedback is disseminated to all surgeons and hospitals.
 - This feedback is not linked to patients, surgeons or hospitals.
 - This process is managed by TASM and is coordinated through a secure database.

Reporting conventions

Deficient care is primarily categorised as either an 'area of concern' or an 'adverse event'. Therefore, areas for consideration have been excluded from analysis because these events are often found to make no difference to the outcome, and often reflect a difference of opinion rather than a firm, evidence-based conclusion that the care should have been different.

Some cases were associated with more than one event. Where there was more than one 'event' identified in the analysis of any one case, the most serious event was ascribed to the case.

Numbers in parentheses in the text (n) represent the number of cases analysed. Not all data were complete; therefore, the total number of cases used in the analysis varies.

The analyses contained in this report are of events ascribed to the case by either the first- or second- line assessor.

The categorisation of the severity of the event, the effect on outcome, and the team or location the event was associated with is the opinion of the assessors.

This report covers deaths reported to TASM from 1 September 2004 to 30 June 2008. Due to the time lag associated with the review process, some cases reported to TASM during 2008 will, at the time of analysis, still be undergoing the audit process. These cases will be included in the next annual report. Similarly, figures in previous annual reports will vary from figures in this report, because cases completed after the return date are included in the dataset. Data were entered and stored in a Microsoft Access database and analysed using Microsoft Excel.

Audit participation and assessment

Key points

TASM participation is voluntary.

- Number of non-participating surgeons has decreased from 11 surgeons at audit inception to one in 2008.
- 683 cases were reported to TASM from 1 September 2004 to 30 June 2008.
- At the time of analysis, 600 surgical case forms (88%) had been returned, an excellent result for an audit.

Overview of participation

Over the audit period (Sept 2004 to June 2008), 683 deaths were reported to the TASM, of which the peer-review process was completed in 88% (600/683) of cases (Table 1). The audit is a multi-step process with an associated time lag. The median time to receiving the completed proforma was 29 days. If second-line assessment is required, the average time to complete the assessment is 54 days.

Table 1: Deaths reported to TASM (n=683)

	1/09/04 - 06/05	1/07/05 - 6/06	1/07/06 - 6/07	1/07/07 - 6/08	Total
Total deaths reported	162	164	168	189	683
Cases completed	116	128	147	149	540
Cases in progress (include non-participant)	30	24	0	29	83
Excluding terminal care	16	12	21	11	60

Figure 3: Status of proforma by year

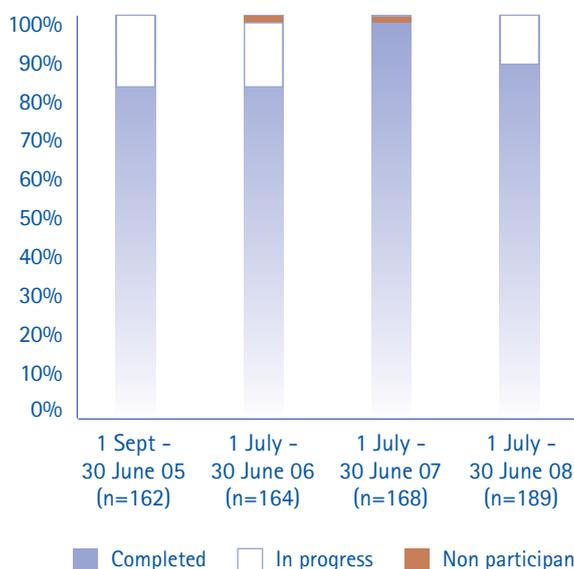


Figure 3 shows the proforma completion rate by year and includes cases still awaiting assessment ('in progress') and cases associated with non-participants (e.g. surgeons who have indicated they do not wish to participate in TASM). Over this time period, the number of cases attributed to non-participating surgeons has decreased as more surgeons are participating. As surgeon participation increases, proforma may be completed for previous years. Of the 683 deaths reported to TASM over the audit period, 600 surgical proforma (88%) have been completed and returned to TASM, an increase of 15%. This is the accumulative return rate as reported over the previous project report of 2007.

Surgeon participation

Over the 4-year audit period, surgeon participation has increased overall. Table 2 provides more information on this trend with this data broken down by year. Overall, the proportion of participating surgeons associated with the audited cases has increased from 68% to 99%. In total, there are 134 participating surgeons, many of whom have never been involved in a surgical death which meets the TASM criteria. They participate none the less through being first- and second-line assessors. Surgeon participation levels vary in Tasmania due to short term contracts and periodic changes in locum positions.

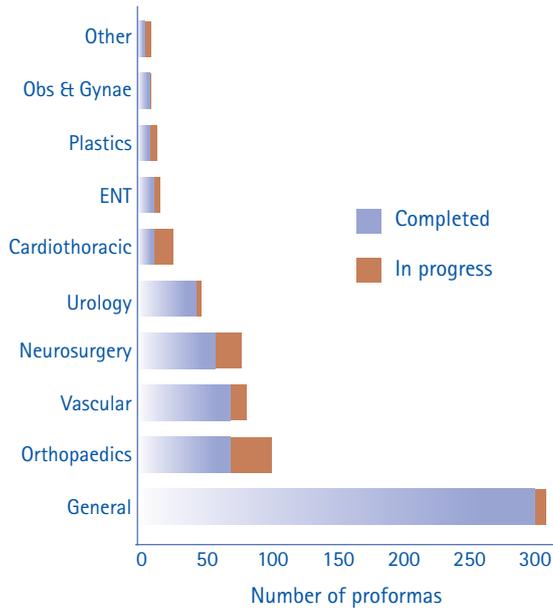
Table 2: Number of individual surgeons associated with cases by year

	Total number	Associated surgeons (n)
Sep 04 - 30 Jun 05	162	49
Jul 05 - 30 Jun 06	164	54
Jul 06 - 30 Jun 07	168	56
Jul 07 - 30 Jun 08	189	56
Total	683	

Participation by specialty

Over 45% (n=304) of audited cases were general surgical admissions and 98% of the proforma sent to consultant general surgeons were returned to TASM. Figure 4 illustrates the number of proforma completed by each specialty and reports an overall case completion rate of 88%, compared with 73% for the previous period. As these are accumulated data and some surgeons were not participating for the full duration of the audit, we would expect the proportion of non-completed proforma to gradually decrease.

Figure 4: Number of proforma returned by specialty (n=683)



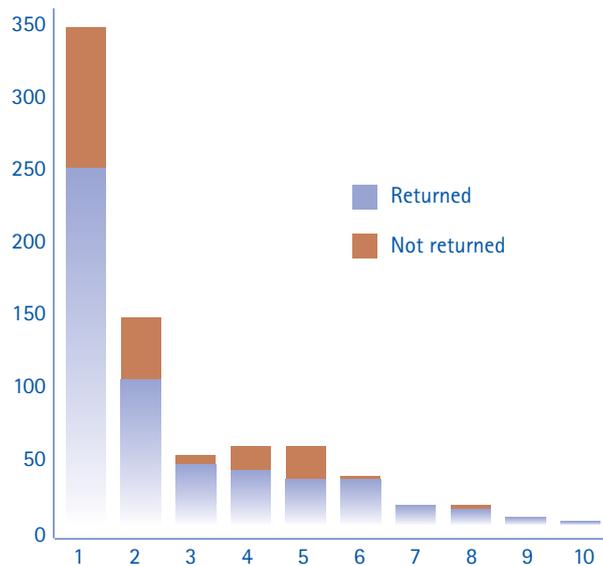
Other includes Ophthalmology, Oral maxillo-facial surgery and Colorectal surgery

Hospital participation

From September 2004 to June end 2008, 683 deaths were reported to TASM from 10 hospitals.

Hospitals in Tasmania range from small district hospitals to larger regional hospitals in Launceston, Latrobe, Burnie and Hobart. There are large public teaching hospitals in both the north and south of the state. Sixty-eight percent of hospital admissions were from two hospitals, the same percentage as reported in the previous report (Figure 5).

Figure 5: Reported deaths associated with 10 hospitals in Tasmania in which surgical procedures take place (n=683)



Please note that Hospital 10 has one surgical case form outstanding.



Results

Key points

- There were 600 cases that completed the audit cycle from Sept 2004 to July 2008.
- Over 73% of audited cases had one or more significant comorbidities that were judged to have contributed to the death.
- Fifty seven per cent of audited cases had a recorded ASA score of 4 or more.
- The majority of cases were public patients (75%).

Completed cases – September 2004 to June 2008

Of the 683 notifications of death reported from September 2004 to June 2008, 600 (88%) completed assessment (Table 1). This figure includes 60 terminal care cases (Table 3).

Table 3: Excluded terminal care cases

	Sep 04 – Jun 05	July 05 – June 06	July 06 – June 07	July 07 – June 08
Notifications received	162	164	168	189
Excluded term care	16	12	21	11
Cases assessed %	81%	85%	100%	85%

More notifications have been received in the last reporting year. However, a lower proportion of cases have completed assessment due to the time lag associated with cases undergoing either first- or second-line assessment.

Patient sample demographics

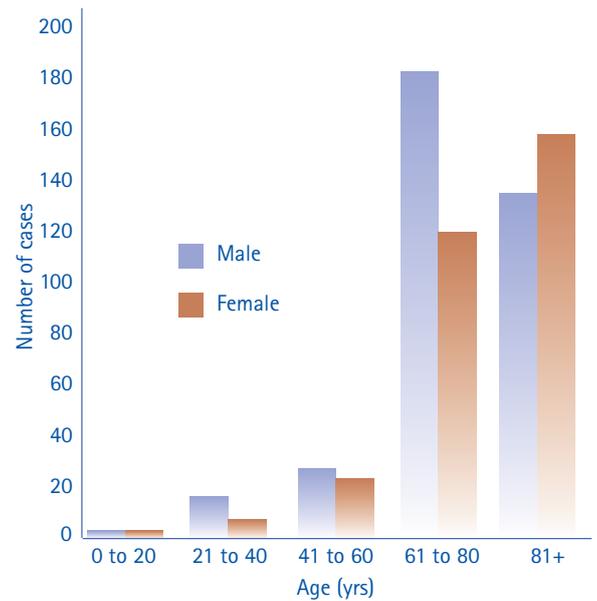
There were more male patients (53%) than female patients (47%) in the audit (Table 4). The median age of the females in the sample is slightly higher at 78 years.

Figure 6 details the distribution of the sample by age decade, subdivided by gender, which shows a higher proportion of males under the age of 80 than females.

Table 4: Gender distribution (n=683)

Gender	n	%	Median Age (yrs)	Min	Max
Male	364	53	74	0	99
Female	319	47	78	3	102
Total	683				

Figure 6: Age distribution of audited deaths by sex (n=683)



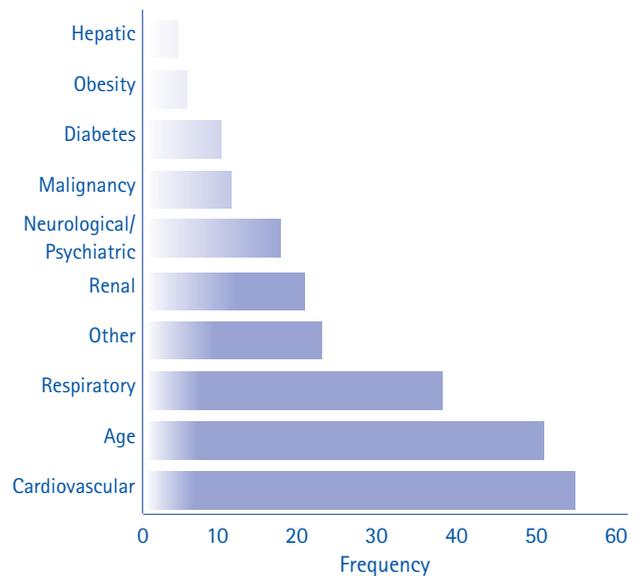
Comorbidity

Over 73% of audited cases were reported as having at least one significant comorbidity that was considered to have increased the risk of death (Figure 7). This compares with 90% for the previous report.

Surgeons reported:

- malignancy was present in 149 (22%) cases
- malignancy contributed to death in 108 (16%) cases
- significant comorbidities contributed to death in 496 (73%) cases.

Figure 7: Reported comorbidities in audited cases (n=683)



* Other – alcoholism, gastro-intestinal bleeding, malnutrition, genetic syndrome, on anticoagulants

ASA grade

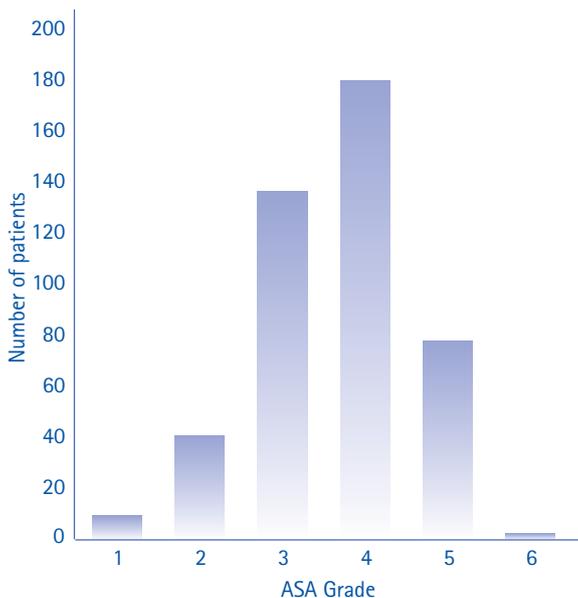
The American Society of Anesthesiologists grade (ASA grade) (Table 5) is an internationally recognised gross predictor of overall peri-operative outcome and is assigned to the patient pre-operatively.

Table 5: ASA grades

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

The ASA grades of 461 cases were recorded. The distribution of grades is shown in Figure 8. There were 264 (58%) cases with a recorded ASA grade of 4 or more.

Figure 8: ASA grade of audited cases (n=461)



Hospital and patient status

The majority (58%) of completed cases were public patients. Table 6 details the patient sample by patient admission status.

Table 6: Patient status (private, public, veteran) (n= 683)

	n
Public	366
Private	95
Veteran	30
Missing Info	192

There were a large number of cases (n=192) in which this information related to patient status was missing on the surgical case form.

Of the 545 cases in which hospital status was known, the majority of patients (82%) were admitted to public hospitals (Table 7).

Table 7: Hospital status (private/public) (n=545)

	n
Public	445
Private	100

There were 91 cases in which the surgical case form did not record the hospital status.

Clinical incidents

Key points

- The clinical incident analysis approach has changed this year to take into account the comments from both the first- and second-line assessors
- There were 38 cases associated with either adverse events or areas of concern.
- The proportion of cases associated with areas for consideration, of concern or adverse events has increased over the audit period.
- There were 6 cases (11%) where an area of concern or adverse event was considered to have caused death.
- The use of DVT prophylaxis was considered appropriate in 69% of cases as reported by assessors

Surgeons and assessors indicate whether, in their opinion, the care of the audited case was associated with areas for consideration, of concern or adverse events.

Table 8 details the frequency of areas of consideration, concern or adverse events that were reported by assessors. Most fall into the category of 'consideration' meaning that an incident was noted by the assessor but it could not be designated as inappropriate care.

Table 8: Numbers of deaths associated with areas for consideration, of concern or adverse events (as reported by assessors where any level of concern was raised)

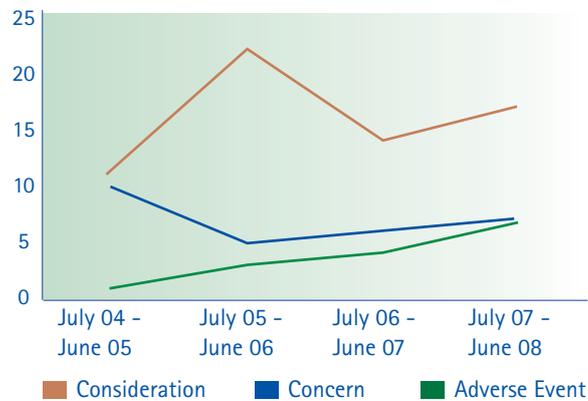
	Frequency	Percentage
Consideration	70	65%
Concern	24	22%
Adverse Event	14	13%

The overall proportion of adverse events has increased over the TASM audit period from 14% to 16%.



Figure 9 plots the three categories of clinical incident by year. An increase in adverse events has occurred between the last two reporting years.

Figure 9: Proportion of areas for consideration, of concern and adverse events by year



Assessors reported on the contribution that the event made to the death of the patient, and whether the incident was preventable (Tables 9 and 10). Some deaths were associated with more than one event. In Table 10, only the most significant event was ascribed to the case.

Table 9: Number of deaths associated with areas for consideration, areas of concern or adverse events as reported by first- and second-line assessors.

	Made no difference to outcome	May have contributed to death	Caused death
Area of consideration	31	53	3
Area of concern	6	31	1
Adverse event	2	8	5
Total	39	92	9

Table 10: Preventability of clinical incidents (as judged by assessors)

	Was the event preventable?			
	Consideration	Concern	Adverse event	Total
Definitely	5	6	4	15
Probably	33	26	5	64
Probably not	40	5	6	51
Definitely not	4	1	0	5
Total	82	38	15	135

Admissions

Key points

- Eighty one per cent of audited cases were emergency admissions.
- Elective admissions were associated with a significantly higher proportion of areas of concern or adverse events when compared to emergency admissions (10% vs 6%)
- Ninety per cent of elective admissions underwent operation compared to 66% of emergency admissions.

Figure 10 shows that a higher proportion of completed cases (n=501) were emergency admissions (81%) than elective admissions (19%). There were 178 cases with no information as to the type of admission. A higher proportion (90%) of elective admissions underwent operation than emergency admissions (Table 11).

Figure 10: Admission type (elective/emergency)

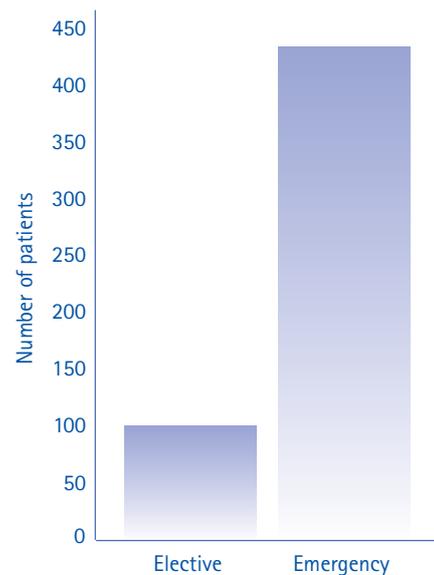


Table 11: Type of admission and whether an operation was performed

Admission	Operation	No operation	Total
Elective	80 (90%)	9 (10%)	89
Emergency	261 (66%)	135 (34%)	396
Total	341	144	485

The proportion of elective admissions undergoing an operative procedure (90%) differed when compared to emergency admissions (66%). This was not unexpected as in elective cases a firm diagnosis and requirement for surgery had been established before admission. In only 485 of the 600 completed cases both the admission and operative statuses were known.

Table 12 outlines cases associated with either an area of concern or adverse event by elective or emergency admission type. The results indicate that elective admissions are associated with more clinical incidents. There has been a reduction in areas of concern or adverse events since the previous TASM annual report, while the emergency percentage remains unchanged.

Table 12: Elective and emergency admissions that were associated with areas of concern or adverse events

Admission	Cases associated with area of concern or adverse event	Total cases
Elective	15 (10%)	143
Emergency	28 (6%)	491
Total	43 (7%)	634

Elective admissions were associated with a higher proportion of areas of concern or adverse events (10%) when compared to emergency admissions (6%). These events are detailed in Table 13.

Table 13: Reported areas of concern or adverse events associated with elective and emergency audited cases (n=43)

Elective admissions (n=143)	n
Postoperative obstruction by balloon at the pylorus	1
No postoperative fluid balance charts and immediate postoperative renal function blood tests recorded	1
Intra operative bleeding	1
Postoperative management	1
Death from untreated small bowel obstruction	1
Failure to laparoscope patient prior to laparotomy - would have led to palliation	1
Failure to diagnose haemorrhage in the recovery room the major cause of death	1
Development of strangulated small bowel through laparoscopic port site hernia requiring secondary laparotomy and resection	1
Early restarting of full-dose anti-coagulation after the first procedure. There would seem to have been a communication issue between medical and surgical teams	1
Decision to operate - poor decision in view of age and comorbidity	1
Trainee doing surgery in a complicated case	1
Delay in diagnosing post operative collection - did the patient have a postoperative CT?	1
Respiratory arrest	1
Delays in treatment	1
Probable aspiration (possibly associated with a paralytic ileus - was a nasogastric tube used?)	1
Total	15

Emergency admissions (n=491)	n
Poor clinical notes; particularly no mention of any clinical examination	1
Pre-operative delay in diagnosis	1
Postoperative care unsatisfactory	2
Probable cause of death septic shock. Earlier surgery and earlier transfer to ICU may have helped	1
Postoperative management	1
Decision to anastomose bowel in presence of ischaemia at 1st operation	1
Monitoring of patient	1
Decision to operate	1
Perforation of rectum consequence of posterior vaginal repair operation with insertion of Apogee Mesh	1
Decision to perform colonoscopy in a patient with likely / impending perforation of colonic CA	1
It is very likely this patient had a surgical correctable SBO which was not relieved in a timely way. The outcome appears unavoidable by the time the patient was seen by a surgeon but could almost certainly have been avoided with quicker referral.	1
Aspiration pneumonia after anaesthetic	1
Why it took 17 days to return to theatre for redo laparotomy	1
Nasogastric tube passed trans bronchial into the chest cavity	1
Decision re-operation - failing to perform earlier procedure or not to perform at all	1
Operating with radiation enteropathy - choice of surgery on 1st operation	1
Failure to operate following complication and hypotension	1
Delay in investigating patient	1
Unexpected death	1
Decision to operate rather than percutaneous drain in elderly patient	1
Postoperative ICU	1
Intravenous fluid management	1
If emergency vascular surgery is to be performed at a hospital than it is essential that the necessary grafts and instruments are available to avoid unnecessary delay in surgery.	1
Involvement of family in decision not to proceed	1
It is difficult to know if there was a delay in identifying the lower limb ischaemia which probably was a significant factor in the death	1
Biliary tree/ duodenal perforation associated with ERCP and stent placement	1
Anaesthetic problems; did the patient have a NGT	1
Total	28



Operative and non-operative cases

Key points

- Sixty nine per cent of total completed cases underwent an operation.
- In 27 cases the operation was abandoned on finding a terminal situation where the disease process was too advanced: radical surgery was not appropriate and palliative care was preferable.
- Cases in which an operative procedure was performed were associated with a significantly higher proportion of areas of concern or adverse events (11%) when compared to non-operative admissions (3%).

Over this audit period, 341 (69%) cases underwent an operation where information was provided.

Of the 341 cases in which an operation was performed, surgeons reported that in 27 (7%), the operation was abandoned on finding a terminal situation. Surgeons also indicated the reason why an operation was not performed.

Figure 11 outlines the split between operative and non-operative cases by audit year. Although numbers of cases has steadily increased, the proportion has remained relatively the same.

Figure 11: Number of audited cases in which an operation was performed

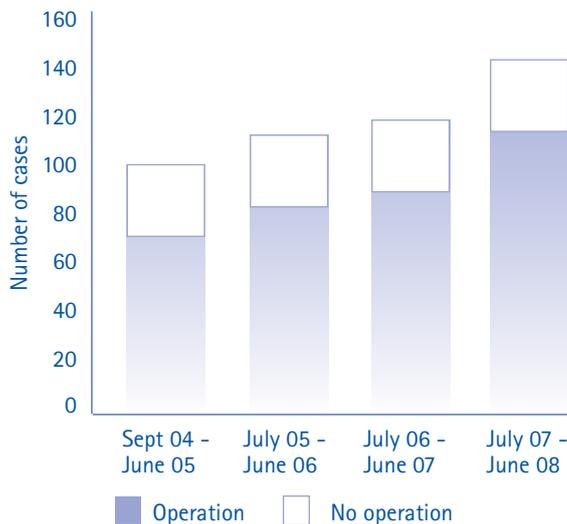


Figure 12 shows the number of operations performed by specialty. The majority of audited operations were performed by general surgeons.

Figure 12: Number of operations performed by specialty

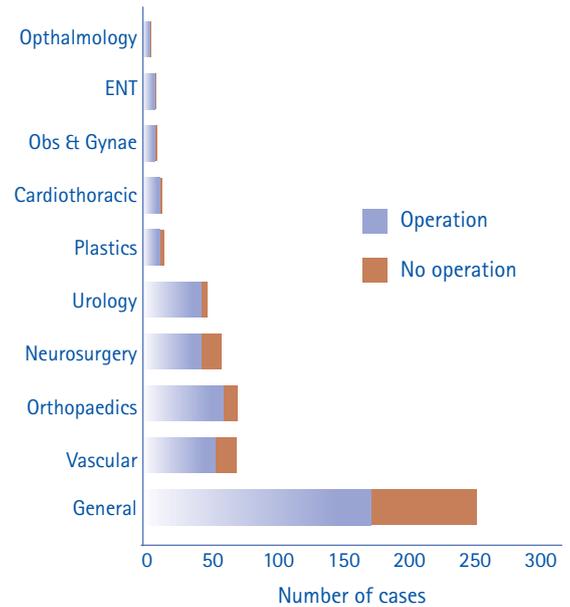
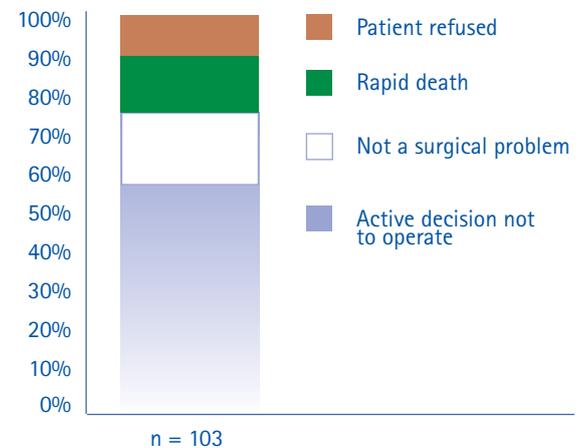


Figure 13 details the reasons behind the decision not to operate. In the majority of these cases, the surgeon made an active decision not to operate in consultation with the patient and/or family members.

Figure 13: Reasons for no operation



Cases in which an operative procedure was performed (n=341) were associated with a significantly higher proportion of areas of concern or adverse events (11%) when compared to cases in which no operation was performed (3%).

Table 14: Proportion of areas of concern or adverse events associated with operative and non-operative cases (where information available)

	Associated with area of concern or adverse event	Total
Operation performed	40 (11%)	341
No operation	5 (3%)	151
Total	45 (9%)	492

Grade/status of surgeon – teaching hospitals

Key points

- Over 84% of operations undertaken in teaching hospitals were performed by consultant surgeons.
- When patients were returned to theatre, over 88% of procedures were performed by consultant surgeons.

Of the 341 audited cases in which operative procedures were performed, 273 (80%) of these were undertaken in teaching hospitals. Information on the grade/status of surgeon undertaking the first operative procedure was available in 273 cases (Figure 14). In both the first operation and subsequent operations, over 84% of operative procedures were undertaken by consultant surgeons (Figure 14).

Figure 14: Grade/status of surgeon performing first and subsequent operations (teaching hospitals)

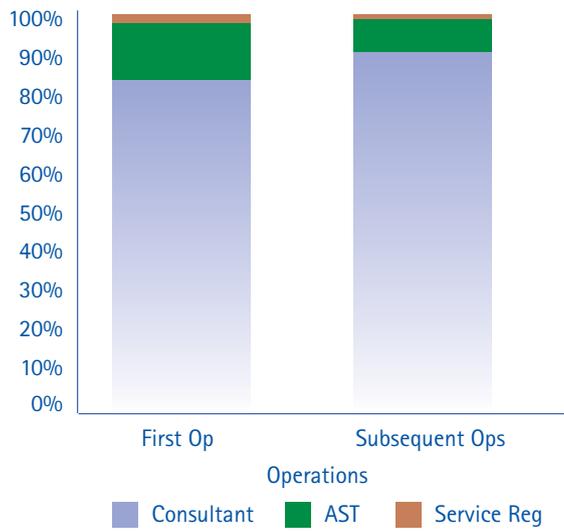


Table 15: Number of cases that underwent one, two or more operations at all hospitals

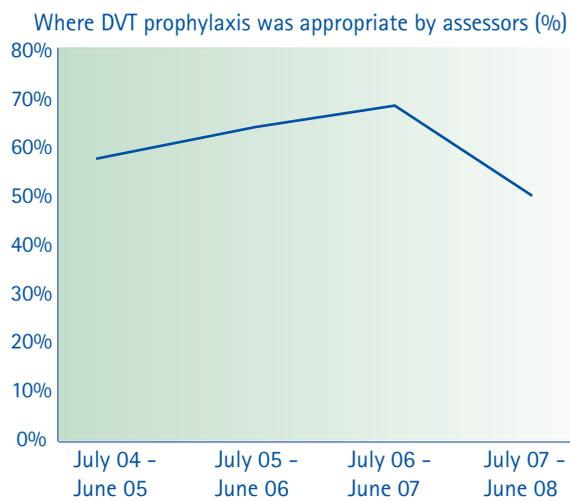
Number of operations performed	1	2	3	Total
Cases	344	58	24	426

Table 15 outlines the numbers of cases where one or more operations occurred across all hospitals for the period from 1 September 2004 until 30 June 2008. Fourteen percent of all patients in TASM underwent more than one operative procedure.

Prophylaxis and thromboembolism

Surgeons reported on the use of DVT prophylaxis including the reasons it may have been withheld. At case review, assessors indicated whether they thought that the decision on the use of DVT prophylaxis was appropriate. Figure 15 shows the proportion of assessors by year who indicated that the use of DVT prophylaxis was appropriate.

Figure 15: Proportion of assessors by year indicating appropriate use of DVT prophylaxis.



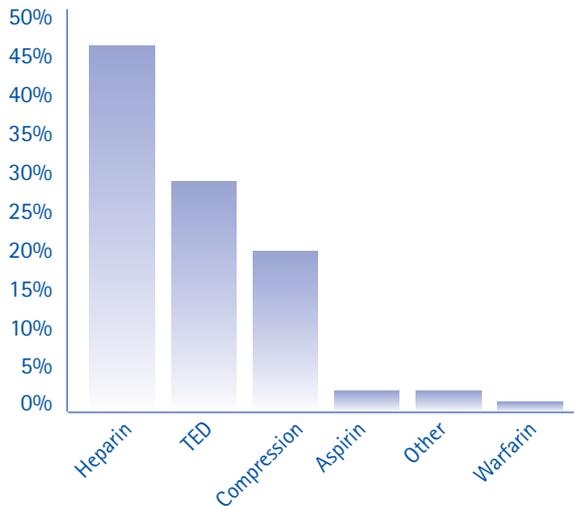
Cases (n)	Jul 04 - Jun 05	Jul 05 - Jun 06	Jul 06 - Jun 07	Jul 07 - Jun 08
Where DVT prophylaxis was appropriate (n)	92	104	113	96
Where DVT prophylaxis was appropriate (%)	57	63	67	51
Total (n)	162	164	168	189

Surgeons reported in 69% of cases that DVT prophylaxis had been given to patients where it was indicated. Thirty one percent said that DVT prophylaxis was not used.

Information on the appropriateness of DVT prophylaxis was supplied by assessors. The last reporting period shows a drop of 16% after three periods of an upwards trend. The type of DVT prophylaxis used is outlined in Figure 16.



Figure 16: Type of DVT prophylaxis used



Other = Clopidogrel

Use of ICU and HDU

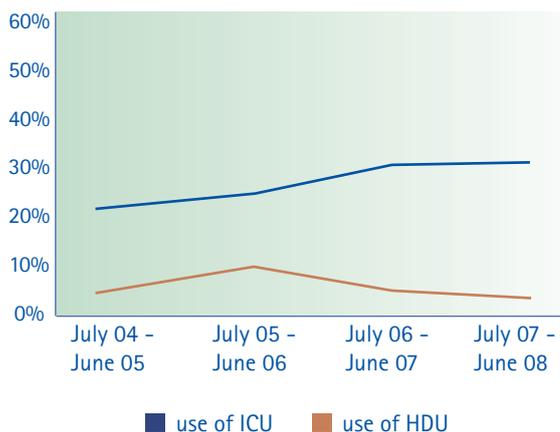
The previous TASM report recommended increased use and availability of HDU/ICU beds in Tasmanian hospitals offering surgical services. Table 16 details those cases in which ICU and HDU was used as well as those cases where the assessors determined that these hospital resources should have been used, if available.

Table 16: Use of ICU and HDU (Assessors' response) (n=324)

	n (%)
ICU used	225 (33%)
HDU used	43 (6%)
ICU should have been used	23 (3%)
HDU should have been used	33 (5%)

There was an overall reduction in the usage of ICU and HDU in audited cases, and also an overall reduction of 1% in assessments that ICU and HDU should have been used in cases in which they were not called upon. The proportion of audited cases in which ICU was used increased slightly from 2005 to 2006 and has remained unchanged for the period 2007 to 2008. There has been a continual decline in the use of the HDU from 2006 to 2008. (Figure17).

Figure 17: Proportion of audited cases in which ICU or HDU were used



Fluid balance

Surgeons and assessors were asked whether there were problems with management of fluid balance. In 27 of the 683 cases (4%) cases, surgeons or assessors indicated that this was a problem.

Post-mortems

Sixty six (9%) of the 683 cases underwent post-mortem examination (Table 17).

Table 17: Post-mortems conducted (n=683)

Hospital post-mortem	14 (2%)
Coronial post-mortem	52 (7%)
No post-mortem conducted	326 (48%)
Post- mortem refused	22 (3%)
Consultant did not know if post-mortem conducted	67 (10%)
Missing information	202 (30%)
Total	683

Of the 481 cases in which this information was available, twenty surgeons indicated that they had read the post-mortem report related to the patient. In five of these cases, surgeons would have preferred more information, if it had been available. In 32 cases, surgeons stated a preference to have ordered a post-mortem when one was not undertaken for that particular patient.



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- participating surgeons
- first-line assessors and, in particular, the second-line assessors for their (voluntary) time and effort in providing detailed second-line case note reviews
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- the Royal Australasian College of Surgeons (the College), in particular the Research, Audit and Academic Surgery Division and the College ANZASM Steering Committee for their infrastructure and oversight support of this project
- medical record departments and staff in all participating hospitals.

TASM Management Committee Membership

Mr Rob Bohmer Chairman	MBChB, FRACS - <i>General Surgeon</i>
Mr Robert Linacre Vice Chairman	FRCS(Ed), FRACS - <i>General Surgeon</i>
Mr Peter Stanton	BMedSci(Hons), MBBS(Hons), PhD(Glas) FRCPSG, FRACS - <i>General Surgeon</i>
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Ms Claudia Duenow	<i>Policy Officer, Safety & Quality DHHS</i>
Ms Lisa Lynch	RN - <i>Project Manager, TASM</i>

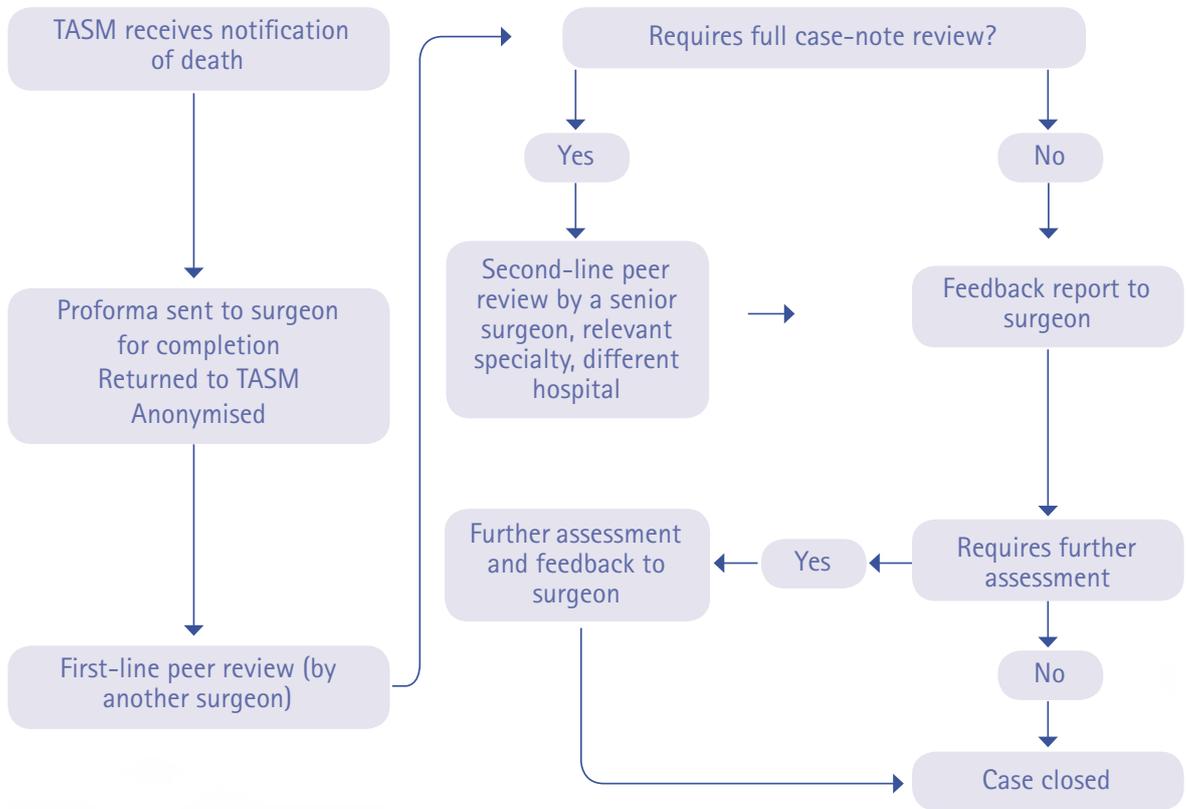
TASM Staff

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APPENDIX 1 - TASM Methodology





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