

Royal Australasian College of Surgeons

ANNUAL REPORT 2010





ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

Contact

Royal Australasian College of Surgeons
Tasmanian Audit of Surgical Mortality
c/o Royal Australasian College of Surgeons
147 Davey Street
Hobart TAS 7000
Australia

Telephone: 03 6223 8848

Facsimile: 03 6223 5019

Email: tasm@surgeons.org

Website: www.surgeons.org/tasm

The information contained in this annual report has been prepared under the auspices of the Royal Australasian College of Surgeons Tasmanian Audit of Surgical Mortality Management Committee, which is a declared quality assurance committee under the *Health Act 1997* (Tas).

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



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

Contents

Chairman’s Report	5
Abbreviations	6
Executive summary.....	7
1. Introduction	9
1.1 Background.....	9
1.2 Project governance and confidentiality.....	9
1.3 The audit process.....	10
1.4 Reporting conventions.....	12
2. Audit 2010.....	14
2.1 Overview of TASM 2010.....	14
3. Results	15
3.1 Surgeons	15
3.2 Hospitals	17
3.3 Patients.....	19
3.4 Classification of cases.....	23
3.5 Clinical incidents	26
3.6 Cases with clinical incidents.....	28
4. Audit comparisons	29
5. Audit limitations.....	30
6. Conclusions	31
Acknowledgements	32
TASM Management Committee Membership	33
Appendices	34
References.....	35

ANNUAL REPORT 2010





Tables

Table 1: Grade of surgeon completing the SCF	16
Table 2: Grade of surgeon operating	16
Table 3: Delays in main surgical diagnosis.....	18
Table 4: Use of ICU or HDU	19
Table 5: Patients by specialty of surgeon	20
Table 6: ASA grade definitions	21
Table 7: Types of comorbidities present by frequency (2006-2010).....	22
Table 8: Minimal-risk patients (cause of death).....	22
Table 9: Postoperative complications.....	23
Table 10: Need for improvement in management of cases	25
Table 11: Preventability of areas of concern and adverse events	27
Table 12: Cases with clinical incidents.....	28
Table 13: Audit comparisons (2008, 2009 & 2010)	29

Figures

Figure 1: Governance structure of the Royal Australasian College of Surgeons, ANZASM and TASM....	9
Figure 2: Regional audit governance structure	9
Figure 3: The Tasmanian Audit of Surgical Mortality (TASM) methodology	11
Figure 4: Populated flow chart for 2010	14
Figure 5: Specialty of participating surgeon.....	15
Figure 6: Number of deaths notification by specialty.....	16
Figure 7: Emergency and elective admissions	17
Figure 8: TASM operative and non-operative cases.....	18
Figure 9: Time in hospital before death	19
Figure 10: Age distribution by gender	20
Figure 11: American Society of Anesthesiologists grades (n=147)	21
Figure 12: Types of comorbidities present by frequency.....	22
Figure 13: Risk of death distribution (%).....	23
Figure 14: DVT prophylaxis.....	25
Figure 15: Preventability of areas of concern and adverse events (n=14).....	26



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

Chairman's Report

This is the fifth annual report of the Tasmanian Audit of Perioperative Mortality (TASM), covering data from 1 July 2010 to 30 June 2011. During this period the audit has consolidated significantly and steadily. The audit now covers all the public and private hospital sites in Tasmania, with all surgeons now participating in the audit process. As you are aware, the College perceives that participation in clinical audit is an essential facet of continuing professional development (CPD). Commencing in 2010, the College Council has mandated participation in one of the state audits of surgical mortality as an essential component of recertification. I would like to personally thank all of you for helping us to achieve the highest level of participation.

The audit system works well to maintain confidentiality and provide a third party assessment of clinical care. It also provides a state-wide overview of surgical care within Tasmania. The TASM audit is part of a national network of similar audits, coordinated through the Royal Australasian College of Surgeons by the Australian and New Zealand Audit of Surgical Mortality (ANZASM). Furthermore, both the Northern Territory and the Australian Capital Territory have started participating in the national audit process.

The Fellows Interface system, providing online access for surgeons to enter their data, has been a great success in Tasmania. It has certainly streamlined the processes of data submission and assessment via electronic means. I encourage my colleagues to continue to use this system, and to consider using it if they have not done so yet.

Particular areas from this report that are still an issue include:

- intensive care unit/high dependency unit use and availability
- pre- and postoperative care, rather than operative management
- delays in diagnosis and operation.

Our management committee has been very supportive and continues to provide good advice and constructive ideas on how to monitor, analyse and report trends associated with potentially preventable surgical mortality. The TASM mortality audit is firmly established as part of the surgical landscape now, and we encourage all surgeons and hospitals to continue to participate and support the process.

I hope that this report will be of interest to all practising surgeons, and as always I would welcome feedback about the process. I would like to thank the surgical community for cooperation in the audit and particularly the first- and second-line assessors, whose reports have been very helpful, and the College, which supports the process, most especially in the person of the Project Manager, Ms Lisa Lynch. Furthermore we would also like to acknowledge the cooperation of the quality and health information management departments in all participating hospitals, and the financial support of the Tasmanian Department of Health and Human Services.

Rob Bohmer

Chairman

TASM



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

Abbreviations

ANZASM	Australian and New Zealand Audit of Surgical Mortality
ASA	American Society of Anaesthesiologists
CPD	continuing professional development
DHHS	Department of Health and Human Services
DVT	deep vein thrombosis
HDU	high dependency unit
ICU	intensive care unit
IMGs	international medical graduates
NSW	New South Wales
Obs & Gynae	obstetrics and gynaecology
RAAS	Research, Audit and Academic Surgery Division
RACS	Royal Australasian College of Surgeons
SCF	surgical case form
SPSS	Statistical Package for Social Sciences
TAS	Tasmania
TASM	Tasmanian Audit of Surgical Mortality
WAASM	Western Australian Audit of Surgical Mortality



Executive summary

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 is funded by the Tasmanian Department of Health and Human Services (DHHS) and has statutory immunity under both state and federal legislation. In 2005 the Royal Australasian College of Surgeons (the College) took responsibility for oversight of the Western Australian Audit of Surgical Mortality (WAASM) project. Subsequently the College established the Australian and New Zealand Audit of Surgical Mortality (ANZASM). Similar mortality audits have been established in South Australia, Queensland, Victoria, Australian Capital Territory and Northern Territory. New South Wales (NSW) provides comparable data to ANZASM but is independently managed by the Clinical Excellence Commission of NSW.

Findings:

Surgeons

- 100% of consultant surgeons in Tasmania are participating in TASM.
- 181 surgical case forms were returned to TASM (8 remain outstanding). The return rate is 96%.
- Hospitals (data from 181 returned proformas)
- 13 Tasmanian private and public hospitals participate in TASM.
- 90% of admissions were emergencies.
- 65% of emergency admission patients had an operation within 30 days of death.
- 94% of elective admission patients had an operation within 30 days of death.
- 33% of all patients had no operation.

- 12% of patients had unplanned return to theatre.
- 19% of patients were transferred from one hospital to another.

Patients

- 189 deaths were reported to TASM in 2010 compared to 163 in 2009.
- 57% were male.
- The median age was 79.
- 92% of cases presented with at least one significant comorbidity.
- 160 cases were assessed (these cases provide the data for this report).
- 21 cases were terminal care and therefore not included.
- 15% of cases were referred for second-line assessment (case note review).
- Nationally the rate is between 10-17%
- 63% of cases had an ASA grade of 4 or above.

Cases with clinical incidents

- 17 cases were associated with areas of concern or adverse events.
- 7 cases were associated with an adverse event which caused the death of the patient.
- 1 case was associated with an adverse event which caused the death and was considered definitely preventable.

Main messages:

- The majority of patients reported in this audit were elderly and in general:
 - > had several pre-existing comorbidities
 - > were at considerable risk with surgery
 - > had undergone emergency surgery.



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

- There are several recognised characteristics associated with high risk of death at surgery. Many patients in this audit had more than one high-risk factor at the time of surgery. For example:
 - > 92% of patients had at least one serious comorbidity.
 - > 75% of patients were at least 71 years or older.
 - > 14% of patients had unplanned admissions to the intensive care unit (ICU) following surgery.
 - > 12% of patients had unplanned return to theatre following the first operation.
- The lack of use of ICU was identified by assessors as a key issue. This was also identified in the TASM 2009 Annual Report.
- Management could have been improved in preoperative and postoperative care, according to assessors, but rarely was there a problem in intraoperative care area.
- Timing issues in surgical management (delays in surgery, delay to diagnosis) was another issue that could be improved.

1. Introduction

Key points:

- The Tasmanian Audit of Surgical Mortality (TASM) audits surgically-related deaths in Tasmania.
- This report covers the period 1 July 2009 to 30 June 2010.
- The TASM process involves self-reporting by surgeons and peer review by first and second-line assessors.
- TASM exists to inform, educate, facilitate change and improve practice. It achieves this by providing feedback to surgeons, hospitals and the community.

1.1 Background

The Tasmanian Audit of Surgical Mortality (TASM) is an external and independent peer-review audit of the process of care associated with deaths occurring during surgical admissions in Tasmania. The audit is funded by the Department of Health and Human Services (DHHS) Tasmania and its methodology is based on the Scottish Audit of Surgical Mortality.

The Royal Australasian College of Surgeons oversees, manages and provides infrastructure support to the audit. In 2005 the College formed the Australian and New Zealand Audit of Surgical Mortality (ANZASM) with the purpose of extending mortality audits to all Australian states and territories, which has been achieved in 2010.

The TASM 2010 Annual Report includes data collected from 1 July 2009 to 30 June 2010. As this audit is a work in progress, some assessments from 2009 were returned to TASM during 2010. Therefore, this report also includes finalised data from the TASM 2009 Annual Report.

1.2 Project governance and confidentiality

The governance structure of ANZASM is illustrated in Figure 1. The regional TASM governance structure is illustrated in Figure 2.

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).

Figure 1: Governance structure of the Royal Australasian College of Surgeons, ANZASM and TASM

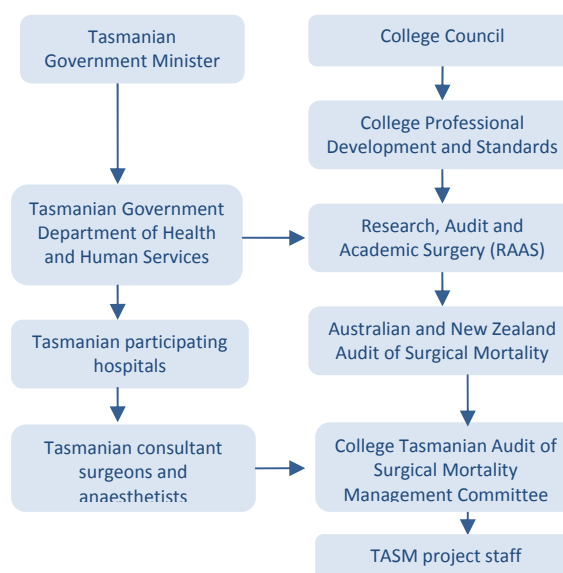
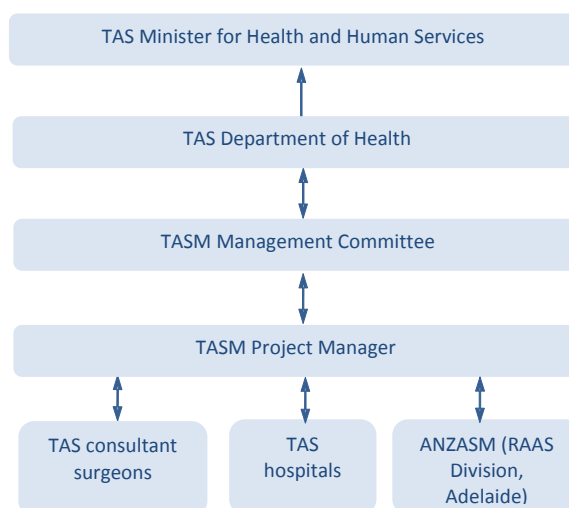


Figure 2: Regional audit governance structure





ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

1.3 The audit process

1.3.1 Notification of deaths

TASM audits public and private hospital deaths that occurred when a surgeon was involved in the management of a patient (i.e. where the patient was admitted under a surgeon or transferred to the surgeon's care during that admission), whether or not the patient underwent a surgical procedure.

The medical records departments of the participating hospitals, both public and private, notify TASM of all surgically-related deaths. Each participating hospital is aware of TASM's inclusion criteria (see 1.3.4) and reports those deaths weekly or monthly (via secure email).

1.3.2 Methods

TASM receives notification of a surgically-related death (via password-protected email) from participating hospitals, enters that data in a secure database, and then sends a surgical case form (SCF) to the consultant surgeon for completion. Events associated with the death are reported by the surgeon on the SCF against the following criteria:

- *area for consideration* — where the clinician believes an area of care could have been improved or different, but recognises that there may be debate about this
- *area of concern* — where the clinician believes that an area 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
 - > lead to temporary or permanent impairment or disability of the patient at the time of discharge, or
 - > contribute to or cause death.

The consultant surgeon is responsible for the completion of the SCF and returns it to TASM.

The SCF is then de-identified and sent to a different surgeon for peer review or first-line assessment. The first-line assessor is a consultant surgeon of the same specialty who may be from a different hospital to the original surgeon.

The first-line assessor determines whether the case should undergo further assessment (second-line assessment), which involves reviewing the medical records of the case. The first-line assessor may also close the case at this stage. The first-line assessor may find no clinical incidents, or may find clinical incidents which do not need further assessment.

Cases undergo a second-line assessment if:

- an area of concern has been identified or an adverse event is thought to have occurred during the clinical care of the patient **that warrants further investigation**
- there is **insufficient information** on the surgical case form for the assessor to reach a conclusion
- a report could usefully draw attention to '**lessons to be learned**', either for clinicians involved in the case, or as part of the collated case note review booklet, for wider distribution within the surgical community.

The second-line assessor is a senior consultant surgeon of the same specialty but from another hospital to the original surgeon. On rare occasions, there is a lack of assessors in a particular specialty so a process of interstate assessments is practised for those cases, under the umbrella of ANZASM.

1.3.3 Providing feedback

Surgeons receive written feedback from first-line assessors about each of their cases through TASM. They also receive extensive reports after each second-line assessment.

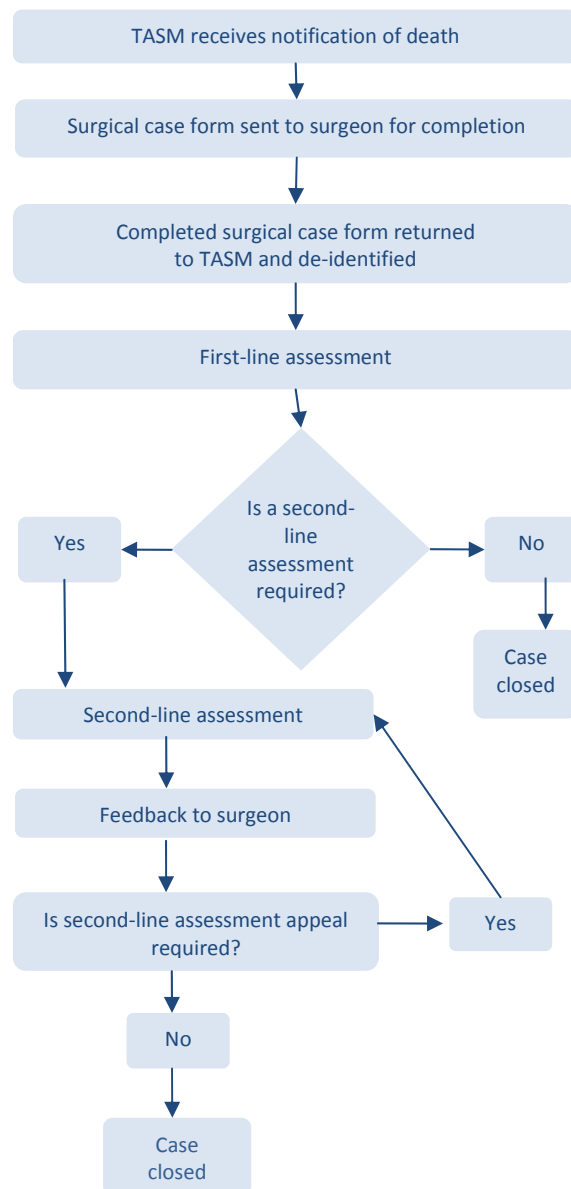
In addition, aggregated feedback in the form of annual reports and case note review booklets are disseminated to all surgeons and hospitals via the College website. The public can access the annual report only via the website. This aggregated feedback and related clinical events are not linked to individual patients, surgeons or hospitals. The process is managed by the TASM Project Manager following ANZASM guidelines and is coordinated through a secure database.

TASM's role is to inform, educate, facilitate change and improve practice by providing feedback.

TASM provides feedback in the following ways:

- Surgeons receive written feedback from first- and second-line assessors (de-identified) on their TASM cases.
- Hospitals participating in TASM may request reports on aggregated, de-identified data relating specifically to their hospitals and comparing them to the averages of other hospitals.
- Annual reports and case note review booklets are available to the surgical community on the TASM website at <http://www.surgeons.org/tasm> (see the reports and publications page).

Figure 3: The Tasmanian Audit of Surgical Mortality (TASM) methodology



1.3.4 Audit inclusion and exclusion criteria

TASM includes all deaths that occurred in a participating hospital when:

- the patient was under the care of a surgeon (surgical admission), whether or not an operation was performed
- the patient was under the care of a physician (medical admission), and subsequently underwent a surgical procedure.

(Note: Terminal care cases are excluded from the full audit process.)



If a case does not fulfil either of the above criteria, it is excluded from the audit by the notifying hospital. If TASM is notified of a death and decides it does not fall within the inclusion criteria, the death is excluded.

TASM also includes cases that fall under the care of specialists from the following colleges:

- The Royal Australasian College of Dental Surgeons
- The Royal Australian and New Zealand College of Obstetricians & Gynaecologists
- The Australian and New Zealand College of Anaesthetists
- The Royal Australian and New Zealand College of Ophthalmologists.

1.4 Reporting conventions

1.4.1 Terminology

Surgeons and assessors are asked to:

- give their opinion as to whether the incident was preventable, under the categories:
 - > definitely
 - > probably
 - > probably not
 - > definitely not

For this report, both the categories of 'definitely' and 'probably' are referred to as being preventable.

- indicate who the incident was associated with, categorising this information as:
 - > audited surgical team
 - > another clinical team
 - > hospital
 - > other
- report on the impact of the incident on outcome, on whether the event:
 - > made no difference to outcome
 - > may have contributed to death

- > caused the death of a patient who would otherwise have been expected to survive.

1.4.2 Assessor opinion

The areas for consideration, areas of concern and adverse events contained in this report were events ascribed to the case by either the first-line assessor or the second-line assessor (referred to as 'assessors').

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

1.4.3 Focus of reporting

TASM reports focus primarily on areas of concern and adverse events (see 1.3.2).

Areas for consideration are excluded from this analysis because they usually make no difference to outcome and are simply an indication that there were different options. However, areas for consideration are included in the data collection process to facilitate reporting of 'less serious' events, which is important for improving overall patient care.

Some cases were associated with more than one clinical incident. In this situation, where analysis of clinical incidents was reported by case, the most serious incident was ascribed to the case.

1.4.4 Missing data

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 different sections of the analysis varies.

1.4.5 Data analysis

This report covers deaths notified to TASM from 1 July 2009 to 30 June 2010.

Due to the audit process and the timing of return of forms, some cases reported to TASM during 2010 will, at the time of analysis, still be undergoing review. These cases will be included in the next annual report. Similarly, cases which were not complete for the previous report have been finalised and included for analysis in this report.

TASM analysed areas of concern or adverse events ascribed to each case by assessors.

Data is encrypted in the database with Secure Sockets Layer certificates. This data is sent to and stored in a central Structured Query Language server database which includes a reporting engine. All transactions are time stamped. All changes to audit data are written to an archive table enabling a complete audit trail to be created for each case.

An integrated workflow rules engine supports the creation of letters, reminders and management reports. This system is designed and supported by Alcidion Corporation (Adelaide).

The Project Manager enters all data from each TASM form.

The most frequent data-entry difficulty is found at question 9 on the SCF. Question 9 is a free-form question and contains at least a paragraph of handwritten information, which can sometimes be difficult to read and interpret.

Data are downloaded from the secure database into Microsoft Excel 2003 spread sheets and then analysed using Statistical Package for Social Sciences (SPSS) Version 15.0.

Data are cleaned using logic testing before analysis. Variables are checked for extreme or illogical values and corrections are made to the original data. Once cleaned, the data are downloaded again before analysis. Twelve tables are downloaded and copied into SPSS. There is a key variable used that is common to all tables.

Generally, simple frequencies and cross tabulations are used after selecting for the correct criteria for the particular analysis.

When indicated, data are checked against the original surgical case forms and assessment forms. Medical records departments, surgeons, the Coroner's Office reports and the Chairman are all resources used by TASM to maintain data integrity.

Qualitative analysis is done using standard techniques. The Project Manager and Chairman independently classify all qualitative information into groups. These groupings are then compared and any differences discussed, until consensus is reached.

2. Audit 2010

2.1 Overview of TASM 2010

Key points:

- 189 surgically-related deaths were reported to TASM from 1 July 2009 to 30 June 2010.
- The number of deaths under the care of a surgeon showed a slight increase from the previous report.
- 125 (100 %) of all Tasmanian consultant surgeons are involved in the audit process. TASM's process is consistent with all ANZASM audits and allows for independent peer review of all cases.

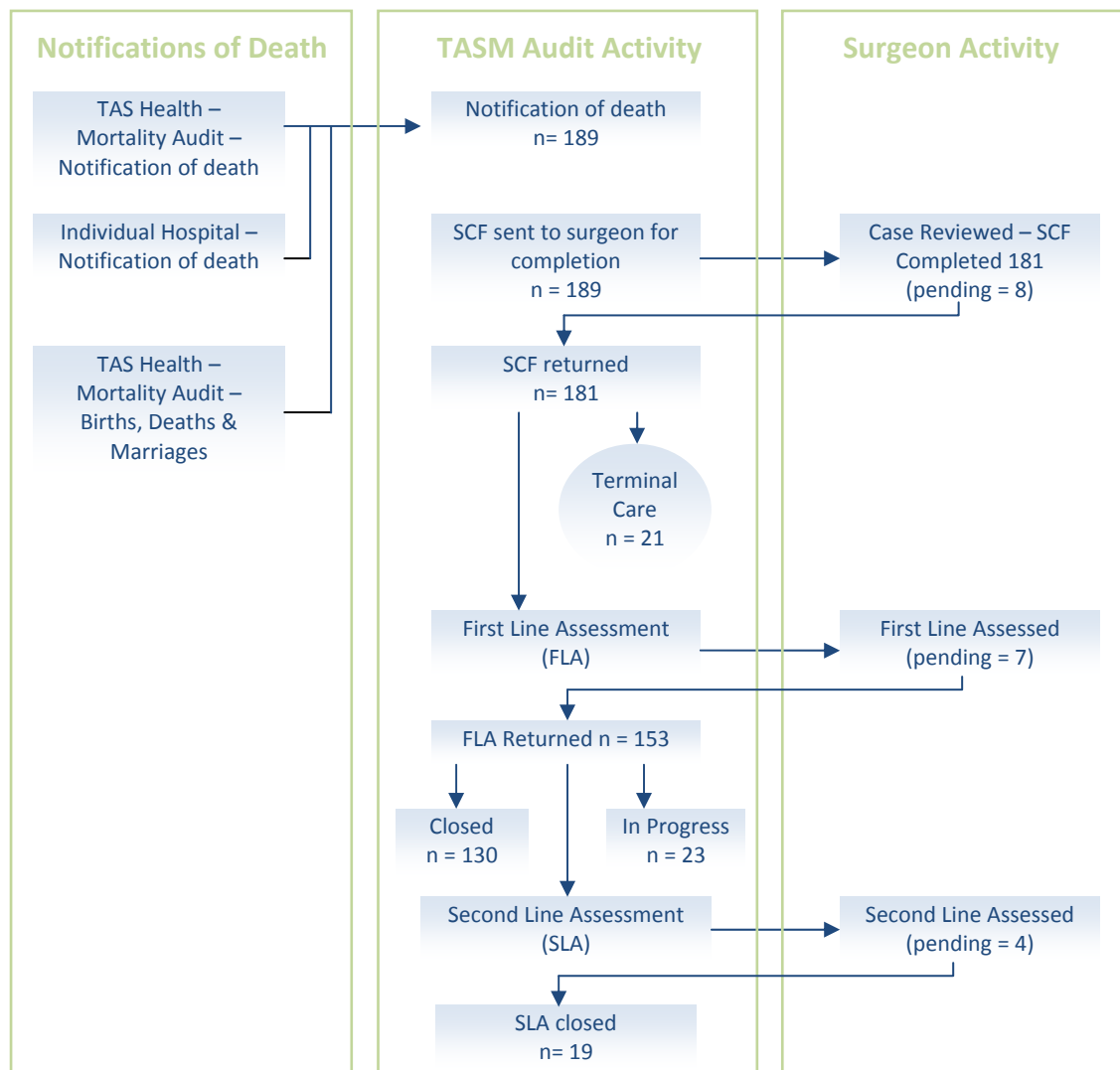
- As all Tasmanian surgeons are participating, where possible cases were assessed by a surgeon who did not work in the hospital in which the patient died.

At the end of the reporting period:

- Eight surgical case forms are pending.
- Seven first-line assessments are pending.
- Four second-line assessments are pending.

There will always be TASM forms pending. This reflects the continuous nature of the audit with surgeons interacting with TASM on a regular basis.

Figure 4: Populated flow chart for 2010



TAS = Tasmania; SC = surgical case; SCF = surgical case form.

3. Results

3.1 Surgeons

TASM's role is to inform, educate, facilitate change and improve practice by providing feedback to surgeons.

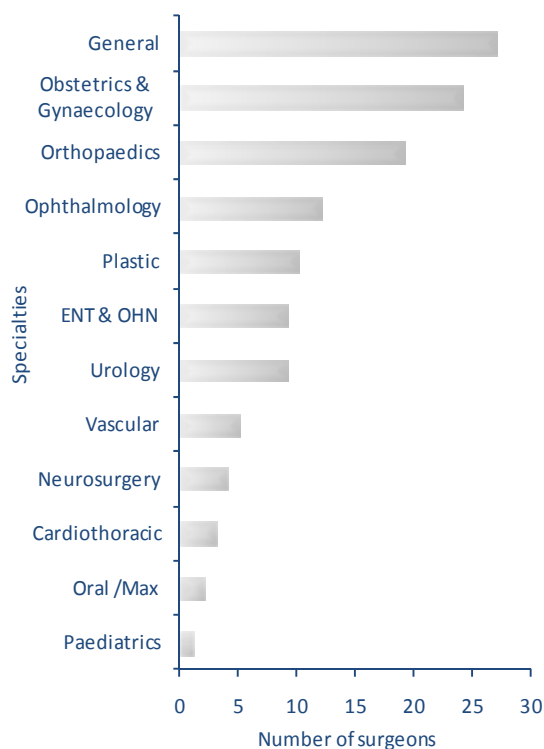
Key points:

- 100% (125/125) of Tasmanian consultant surgeons are participating in TASM.
- Agreement to be a first- and/or second-line assessor in the audit has continued to increase.
- 66% (83/125) of assessors are Fellows of the Royal Australasian College of Surgeons.
- Participation in the audit is now considered mandatory for CPD recertification when a death is reported by a participating hospital.
- The other surgeons are made up of :
 - > 34% (42/125) obstetricians and gynaecologists, ophthalmologists and international medical graduates (IMGs) 'area of need' specialists on short- and long-term contracts.
 - > Participation is now mandatory in most hospitals in Tasmania as part of their credentialing process.

3.1.1 Surgeon participation by specialty

The specialty distribution of participating surgeons is seen below in Figure 5.

Figure 5: Specialty of participating surgeon



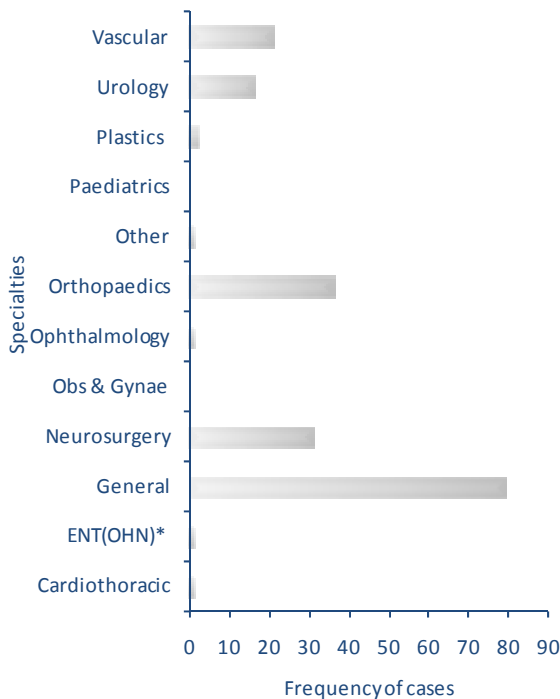
Comment:

Surgeons are considered to be participating when they submit a surgical case form or submit an agreement of consultant participation form.

Many of these surgeons have never been involved with a surgical death which meets the TASM criteria. Due to visiting surgeons on short-term contracts or locum appointments, numbers will fluctuate. Numbers in Figure 6 only relate to the reporting period.



Figure 6: Number of deaths notification by specialty



3.1.2 Surgeon completion of surgical case forms

The surgeons' return rate of SCF is high compared to the national average (63%) in 2009. From July 2009 to June 2010, 96% (181/189) of surgical case forms were returned by the end of December 2009.

3.1.3 Grade of surgeon completing the surgical case form

Table 1 outlines the grade of surgeon completing the SCF. It is pleasing to note that advanced surgical trainees are exposed to the TASM process; however, it is equally important to ensure that there is 'signoff' by the consultant surgeon involved.

Table 1: Grade of surgeon completing the SCF

Grade of surgeon completing form	2010
Consultant	95%
Advanced surgical trainee	3%
Service registrar	1%
Basic surgical trainee	1%

3.1.4 Grade of surgeon operating

(Source: surgical case forms)

Table 2 highlights the proportion of consultants operating on TASM cases.

Table 2: Grade of surgeon operating

	Deciding	Operating
Consultant	92%	72%
AST*	2%	19%
Service registrar	1%	1%
BST**	0%	1%
Missing	5%	7%

*AST = advanced surgical trainee;

**BST = basic surgical trainee.

3.1.5 In retrospect

(Source: surgical case forms)

When surgeons were asked, 'In retrospect, would you have done anything differently?', 22/157 (14%) surgeons answered that they would have done something differently.

Surgeons' answers were analysed using standard qualitative analysis procedures. The most common responses were:

- change the technique or the operation (x 4)
- earlier operation or earlier reopen/operation (x 4)
- surgeon said would have done differently but no supporting text (x 3).
- made different decision to operate (x 3)
- transfer care of patient earlier to medical team
- only commence procedure if ICU bed available
- improved communication between surgeon and nursing staff
- altered medical management
- made appropriate imaging request following procedure
- change in surgical approach
- change in intraoperative technique
- deep vein thrombosis (DVT) prophylaxis

3.2 Hospitals

Staff from patient information management services and medical records departments notify TASM of all surgically-related deaths. Each participating hospital is aware of TASM's inclusion criteria (see 1.3.4) and reports those deaths weekly or monthly (via password-protected email).

3.2.1 Hospital participation

(Source: surgical case forms)

Key points:

- 4 public and 9 private Tasmanian hospitals participate in TASM.
- 19% (29/154) of all cases were transferred from one hospital to another. (There were no data about transfers for 35 cases, which includes the pending cases).

Participating hospitals

13 Tasmanian public and private hospitals are currently participating:

- Calvary Health Care Tasmania
 - > Lenah Valley Campus
 - > St John's Campus
 - > St Luke's Campus
 - > St Vincent's Campus
- Hobart Day Surgery
- Hobart Private Hospital
- Launceston General Hospital
- Mersey Community Hospital
- North West Private Hospital
- North West Regional Hospital
- Royal Hobart Hospital
- St Helen's Private Hospital
- The Eye Hospital.

3.2.2 Transfers

Patient transfer to centres with surgical capability is fundamental to good patient care in a regionalised state such as Tasmania

During 2010:

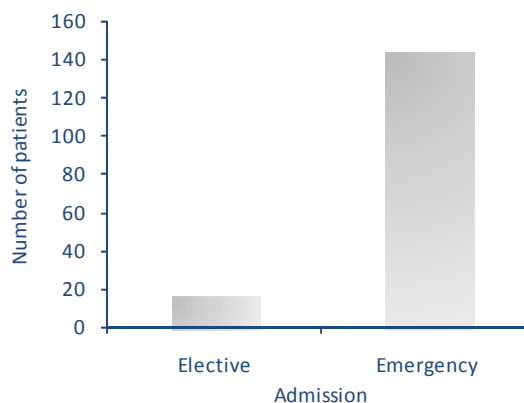
- 19% (29/154) of all cases were transferred from one hospital to another. (There were no data about transfers for 35 cases.) (Source: surgical case forms)
- 70% (133/189) of all deaths occurred in two hospitals, reflecting high volumes of surgery that occur in these hospitals. (Source: hospital notifications)
- The largest hospitals have tertiary facilities – The Royal Hobart Hospital and the Launceston General Hospital.
- All transfers were between TASM hospitals.
- The median distance transferred was 200 km.

3.2.3 Hospital admissions

(Source: surgical case forms total n=189)

- 90% (144/160) were emergency admissions. This is up from 78% in the 2009 report. (There were no admission data on 29 cases.)
- 65% (93/144) of emergency admissions had operations.
- 10% (16/160) of cases were elective admissions.

Figure 7: Emergency and elective admissions





3.2.4 Delays in main surgical diagnosis

Table 3: Delays in main surgical diagnosis

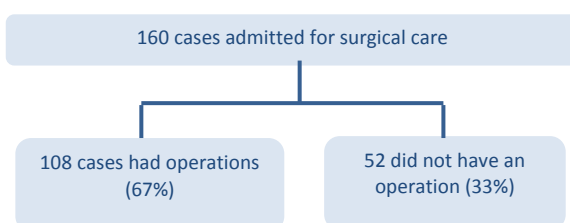
Year	No. delays
2006	10 cases
2007	18 cases
2008	13 cases
2009	12 cases
2010	6 cases

- In two cases there was a delay to surgery due to unavoidable factors; these were as result of a change in the patient's condition, leading to the need to stabilise the patient, therefore delaying time to surgery.
- In one case with delay, there were unfavourable factors relating to the general medical unit.
- In one case with delay, it was due to misinterpretation of results by the surgical unit.
- In one case there was delay associated with transport from the emergency department.
- In one case there was delay associated with operation findings.

3.2.5 Cases with operations

Figure 8 shows the proportion of cases that had an operation. In total, 160 cases were audited by TASM. Some had more than one operation.

Figure 8: TASM operative and non-operative cases



Emergency admissions

(Source: surgical case forms)

65% (93/144) of **emergency** admissions underwent operations. Of those patients:

- 28% (26/93) had scheduled emergency operations (> 24 hours after admission)
- 42% (39/93) had an emergency operation (< 24 hours).
- 20% (19/93) had an immediate operation (< 2 hours).
- 10% (9/93) underwent elective operations. (There was a change in their admission status.)

Elective admissions

(Source: surgical case forms)

94% (15/16) of elective admissions underwent operation.

On one case the elective procedure was cancelled on preoperative review by the anaesthetist.

3.2.6 Cases where surgery was not performed

(Source: surgical case forms)

- 32% (52/160) of all cases had no operation. (21 Terminal care admissions)
- In 10 cases information was missing.
- There was no operation in 35% (51/144) of emergency admissions cases.
- There was no operation in 6% (1/16) of elective admission cases.
- The reasons for not having an operation were:
 - > An active decision was made by consultant surgeon not to operate (n=38).
 - > A decision was made to limit treatment (n=30).
 - > Not a surgical problem (n=7).
 - > Patient refused the operation (n=7).
 - > Rapid death (n=17).

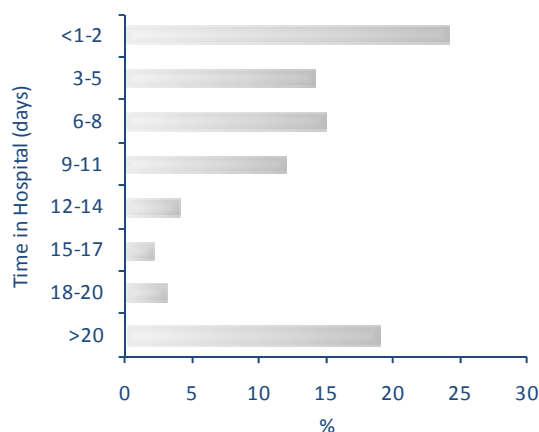
Two or more answers may be assigned to a case in the above stated reasons.

3.2.7 Time in hospital before death

(Source: notifications from hospitals)

- The median length of stay in hospital was six days with the range <1 day to 182 days (n=189).
- 24% (45/189) of patients were in hospital for <1 to 2 days.

Figure 9: Time in hospital before death



3.2.8 Use of intensive care or high dependency units

(Source: surgical case forms and assessment forms)

The treating surgeons and assessors were asked, 'was ICU/HDU used?', and 'if not, should it have been used?' Table 4 outlines the key responses.

Table 4: Use of ICU or HDU

Was ICU/HDU used? Surgeons stated:	% of cases
ICU/HDU was used	77%
If not, should ICU/HDU have been used? Assessors' opinions:	% of cases
ICU should have been used	5%
HDU should have been used	4%

3.3 Patients

The patients whose deaths were audited by TASM were predominantly elderly, with multiple and significant comorbidities, and they had been admitted for emergency surgery.

The patient characteristics in 2010 are similar to the patient characteristics stated in the 2009 Annual Report. Further details are presented below.

3.3.1 Demographics

(Source: hospital notifications and assessment forms)

- 189 deaths were reported to TASM in the study period (Source: hospital notifications).
 - > 181 (96%) surgical case forms have been completed to June 2010 (Source: assessment forms).
 - > 79 years was the median age at death.
 - > 57% were males.
 - > 63% had an American Society of Anesthesiologists (ASA) grade of at least 4.
- 92% had at least one significant comorbidity that surgeons considered could contribute to death.

3.3.2 Age distribution

(Source: hospital notifications)

Figure 10 displays the age distribution of patients for cases notified by hospitals (n=189).

- The median age in 2010 was 79 years, with a range of 3 years to 99 years.
- The age mode (the most frequent age) was 78 years, down from 83 years in the 2009 Report.
- There were 19 patients aged between 91 and 99 years.

Figure 10: Age distribution by gender

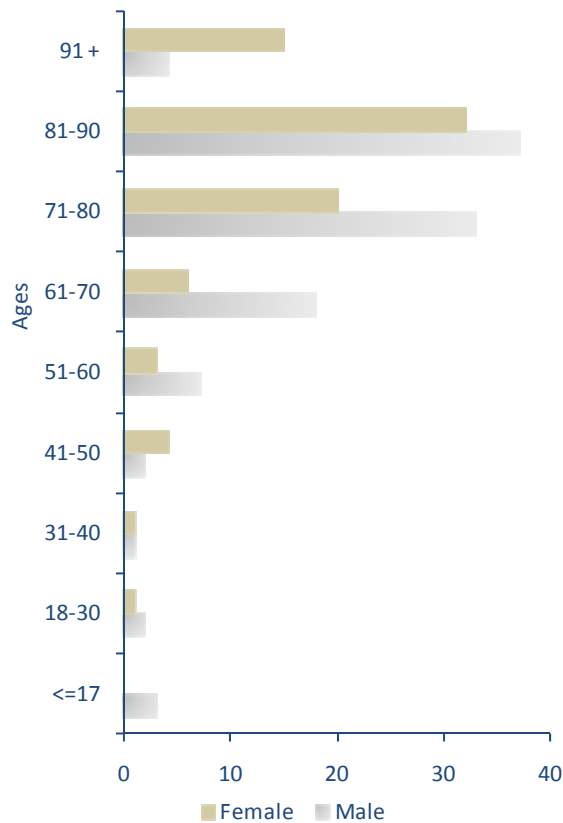


Figure 10 indicates the age and sex distribution of all reported cases. Patients between the age of 71 and 90 years account for approximately 65% of all cases. The 81-90 year range remains the predominant group in the sample. Males had the highest number of deaths in the 51-90 age range whereas females had the most number of deaths in the 80 plus year age range.

3.3.3 Gender distribution

(Source: hospital notifications, n=189)

- 57% were male.
- 43% were female.

3.3.4 Patients by specialty of surgeon

(Source: hospital notifications)

Table 5 shows the proportion of patients treated by surgeons of different specialties.

Table 5: Patients by specialty of surgeon

Specialty	Frequency	%
Cardiothoracic surgery	1	0.5
ENT(OHN)*	1	0.5
General surgery	80	42
Neurosurgery	31	16
Obs & Gynae*	0	0
Ophthalmology	1	0.5
Orthopaedic surgery	36	19
Paediatric surgery	0	0
Plastic surgery	2	1.5
Urology	16	9
Vascular surgery	21	11
Total	189	100

* ENT=ear, nose and throat;

Obs & Gynae= obstetrics and gynaecology;

OHN=oral, head and neck.

General surgery, neurosurgery and orthopaedic surgery reported the most deaths, and these specialties also have the highest workloads due to the correlation with the number of surgeons within that specialty.

3.3.5 American Society of Anesthesiologists (ASA) grades

(Source: surgical case forms)

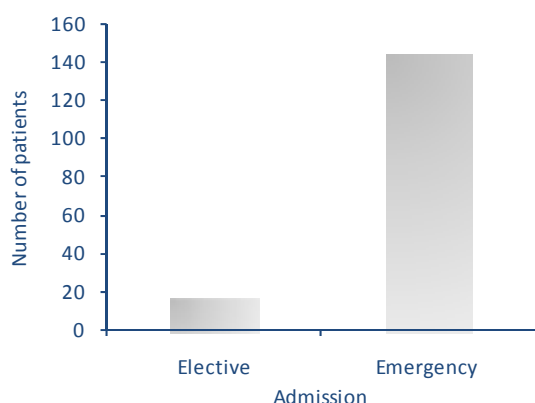
The American Society of Anesthesiologists (ASA) grade (see Table 6) is an internationally recognised classification of perioperative risk. An ASA grade is assigned to a Tasmanian-hospital patient before an operation.

Table 6: ASA grade definitions

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

Figure 11 profiles the ASA grade of all TASM cases. Seventy per cent (103/147) of all patients who died had an ASA grade of 3 or higher. (There were no data for 13 cases.)

Figure 11: American Society of Anesthesiologists grades (n=147)



Anaesthetic-associated deaths

4% of deaths were reported by the surgeon to be associated with the anaesthetic and 6% were reported to be possibly associated with the anaesthetic.

The Tasmanian Audit of Surgical Mortality links these deaths with the anaesthetist and completes a similar audit process to that described above. These results are reported to the National Mortality Committee of ANZCA, which publishes a triennial report based on mortality data forwarded from each state.

3.3.6 Malignancy

(Source: surgical case forms)

- Malignancy was present in 21% (34/160) of all the cases. This is down from 31% in the 2009 report. (There were no data available for 2 cases.)
- Malignancy contributed to death in 15% (19/126) of those cases. (Malignancy did not contribute to the death in 80% of cases and it was unknown if it contributed in 6% of cases.)
- Malignancy was present in 28% (30/108) of all cases who had operations.
- Malignancy was present in a higher proportion of **elective** cases having operations: 40% (6/15) compared with 26% (24/93) of emergency cases having operations.

3.3.7 Comorbidities

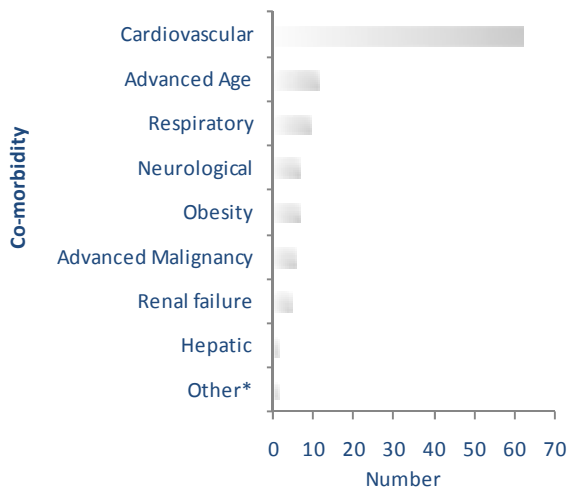
(Source: surgical case forms)

93% (148/160) of all (emergency and elective) cases admitted for surgical care had comorbidities that increased the risk of death before surgery. This is up from 83% in the 2009 report.

Only 12 cases had no comorbidities. In Figure 12 the types of comorbidities are presented by frequency. (The most common comorbidity present was cardiovascular disease, found in 48% of all cases. See appendix 1 for 'other' comorbidities.)



Figure 12: Types of comorbidities present by frequency



* 'Other' comorbidities ranged from sepsis, malnutrition, alcohol abuse, dementia, motor neurone disease, HIV and rheumatoid arthritis.

Table 7: Types of comorbidities present by frequency (2006-2010)

	2006	2007	2008	2009	2010	Total
Cardio	82	78	97	78	91	426
Respiratory	11	13	17	12	13	66
Renal	2	5	2	3	6	18
Hepatic	1	4	0	3	1	9
Neuro	6	3	6	8	10	33
Advanced malignancy	3	6	5	10	7	31
Diabetes	3	0	1	0	0	4
Obesity	0	1	2	1	1	5
Age	4	4	9	9	16	42
Other*	8	4	2	0	2	16

*Other includes sepsis, malnutrition, alcohol abuse, dementia, motor neurone disease, HIV and rheumatoid arthritis.

The 8% (12/160) who did **not** have comorbidities present but who died were predominantly:

- neurosurgical patients
- males
- emergency admissions
- at considerable or expected risk of death
- in hospital for an average of 5 days.

3.3.8 Risk of death before surgery

(Source: surgical case forms)

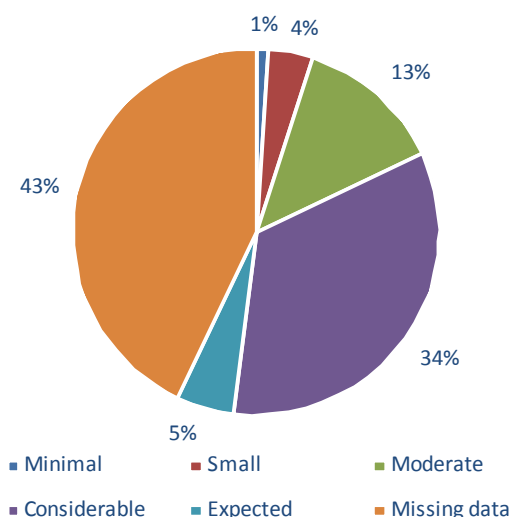
Surgeons were asked to rate the overall risk of death (before any surgery) for each patient:

- 68% were at considerable or more risk, according to the admitting surgeons.
- 10 patients were recorded as being at minimal or small risk. These patients are listed in Table 8.

Table 8: Minimal-risk patients (cause of death)

Cause of death
1. Acute myocardial infarction
2. Hypovolemic arrest, patient a Jehovah's Witness
3. Hypoxic brain injury x 2
4. Haemorrhage
5. Invasive transitional cell carcinoma
6. Pulmonary embolism
7. Cardiac arrest
8. Malignant left pleural effusions
9. Acute myocardial infarction secondary to blood loss

Figure 13: Risk of death distribution (%)



The overall risk of death before any surgery was given for 108 cases (surgeons' views – missing data in 1 case). See Figure 13 for the risk of death distribution.

3.3.9 Typical patient

(Source: surgical case form)

The 'typical patient' who died after surgically-related care in hospital:

- was male
- was approximately 79 years of age
- was in hospital for two days
- had no malignancy present
- had an incapacitating disease that was a constant threat to life on admission to hospital
- had DVT prophylaxis
- had an operation
- did not have a postoperative complication
- did not need improvement in management before, during or after the operation.

3.4 Classification of cases

3.4.1 Postoperative complications

(Source: surgical case forms)

Table 9: Postoperative complications

Postoperative complications	2006 %	2007 %	2008 %	2009 %	2010 %
Post-operative complications	38	38	46	39	41
Delay to recognise complications	10	17	16	10	14
Return to theatre	13	11	15	13	12
Unplanned admission to ICU	18	13	17	14	14
Hospital readmission	9	8	3	2	5
Fluid balance issue	8	5	7	7	6

Unplanned actions postoperatively

Unplanned postoperative complications are strong predictors of death.

- 14% (23/159) of cases had **unplanned admission to ICU**. (There was no data available for 1 case.)
- 12% (19/159) of cases had an **unplanned return to theatre**. (There was no data available for 1 case.)
- 6% (9/159) of cases had **fluid balance issues**. (There was no data available for 6 cases.)
- 5% (8/159) of cases had **unplanned readmission to hospital**. (There was no data for 1 case.)

Complications

- **No postoperative complications** occurred in 59% of cases.
- 41% (44/108) of all cases had postoperative complications (only 108 operative cases).
- In 86% of cases, there was **no delay** in recognising the complication.



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

- Several cases had more than one postoperative complication.
- 44 postoperative complications were recorded:
 - > procedural related sepsis 4
 - > significant postoperative bleeding 10
 - > endoscopy perforation 3
 - > colorectal anastomotic leak 1
 - > pancreatic/biliary anastomotic leak 1
 - > tissue ischaemia 1
 - > other 24, including: aspiration pneumonia, acute myocardial infarction (AMI), Pneumonia, congestive cardiac failure (CCF), brain stem infarction, Broncho pneumonia, caecal perforation, cardiac arrest, cerebral infarct, endocutaneous fistula, general deterioration secondary to sepsis, hygroma, respiratory failure, ischaemic stump, liver failure, massive AMI. Medical ischaemic heart disease (IHD), myocardial infarction, heart attack, inadequate overnight observations overnight, intra operative fat embolus, pulmonary embolus, sepsis source uncertain, severe necrotizing pancreatitis.

3.4.2 Prophylaxis of thromboembolism

(Source: surgical case forms)

- 74% (113/153) of **all cases** had DVT prophylaxis. (There were no data on 36 cases.)
- 26% (40/153) of all cases did not have DVT prophylaxis. (There were no data on 36 cases.)
- 85% (91/107) of **operated cases** had DVT prophylaxis. (There was no data on 1 case.)
- 15% (16/107) of operated cases either did not have DVT prophylaxis or the surgeon did not know whether the patient had DVT prophylaxis.

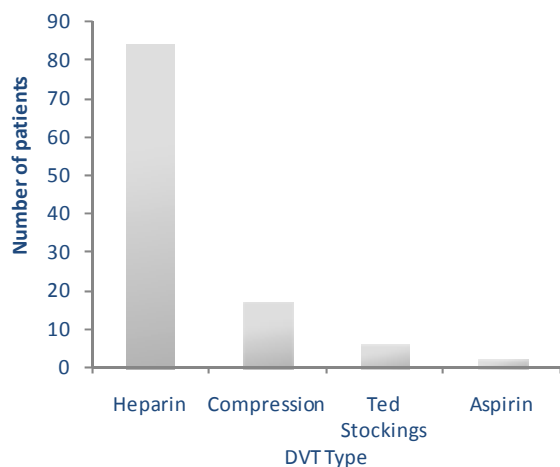
Of those patients who did not have DVT prophylaxis (n=16 who answered the question), the reason for this was:

- actively bleeding
- coagulopathy due to sepsis/cirrhosis
- extensive haemorrhage from lacerations and developed coagulopathy
- normally routine in fractured neck of femur (FNOF) cases and no clear reason for withholding, so likely medical omission
- patient actively bleeding on admission
- presented with an elevated international normalised ratio (INR)
- routinely not used in conjunction with cranial operation especially haemorrhage
- severe bleeder
- severe gastrointestinal bleed
- was due to commence at time of death
- six cases where no reason was given apart from not appropriate



Figure 14 indicates the number of patients who had DVT prophylaxis, according to the method used.

Figure 14: DVT prophylaxis



3.4.3 Post-mortem

(Source: surgical case forms)

- 10% (15/158) of cases had a post-mortem performed by the coroner.
- 65% (103/158) of cases did NOT have a post-mortem performed.
- 3% (5/158) of cases had a post-mortem performed by the hospital.
- 1% (2/158) of deaths had post-mortems refused.
- For 21% (33/158) of cases the post-mortem status was unknown.

3.4.4 Management of cases

(Source: surgical case forms & assessment forms)

In cases that had clinical incidents, **surgeons and assessors** felt that care sometimes **could have been improved** in particular areas (see Table 10).

Most commonly, improvement could have occurred in non-operative areas (decision to operate, preoperative care and postoperative care and timing of operation), and within those areas preoperative care improvements and timing of operation were the most commonly cited.

Table 10: Need for improvement in management of cases

Area	Surgeons (n=108) %	First-line assessors (n=153) %	Second-line assessors (n=23) %
Preoperative management	3	10	30
Decision to operate	5	7	7
Choice of operation	2	5	4
Timing of operation	7	7	30
Intraoperative care	4	6	9
Experience of surgeon deciding	0	1	4
Experience of surgeon operating	1	1	0
Postoperative care	6	7	17



3.5 Clinical incidents

This section describes clinical incidents beyond the context of the individual case. It is important to have an epidemiological overview of clinical incidents and their levels of importance.

The limitation in this data is that no numbers could be obtained for source populations. Therefore comparisons are difficult. The data is therefore simply observational.

TASM hopes that in the future this will be rectified, so that more meaningful and therefore more useful information can be obtained.

3.5.1 Clinical incidents

(Source: assessment forms)

There were 17 areas of concern and adverse events (not cases) reported by assessors. This is down from 29 events in the 2009 report. Of the 17 reports, 59% were areas of concern and 41% were adverse events.

These were:

- using a coda balloon outside a graft can rupture an artery
- aspiration
- bleeding post bladder tumour resection and surgeon not notified
- colonoscopic perforation
- delay in diagnosing cause of the patients deterioration after orthopaedic surgery
- failure to prescribe anticoagulants may have contributed to brain stem infarct
- failure to recognise misplaced nasogastric tube may have contributed to aspiration pneumonia and death
- hypotension during the procedure
- ureteral (JJ) stent removal with stone untreated in patient with recurrent urinary tract infection
- lack of ICU beds
- pancreatitis
- pulmonary embolus

- surgical registrar failure to review elderly patient overnight with ischaemic gut.
- delay between presentation and diagnosis
- trans-operation aspiration
- delay to diagnosis.

3.5.2 Associations for areas of concern and adverse events

- 24% (4/17) of areas of concern or adverse events were associated with another clinical team.
- 65% (11/17) of areas of concern or adverse events were associated with the surgical team.
- 'Other' associations with areas of concern or adverse events were:
 - > 12% (2/17) cases associated with the hospital.

Note that some areas of concern and adverse events had multiple associations.

3.5.3 Preventability of areas of concern and adverse events

(Source: assessment forms)

- 83% (14/17) of all areas of concern and adverse events (not cases) were preventable (probably and definitely) (see Figure 15).

Figure 15: Preventability of areas of concern and adverse events (n=14)

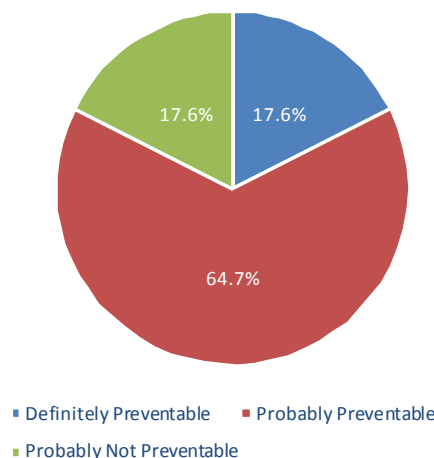


Table 11: Preventability of areas of concern and adverse events

(2006, 2007, 2008, 2009 and 2010)

Preventable issue	2006 (n=9)	2007 (n=10)	2008 (n=16)	2009 (n=12)	2010 (n=14)	Total
Perforation of small bowel during endoscopic operation	0	0	0	1	0	1
Adverse factors in management	0	0	0	2	0	2
General complications of treatment	1	1	0	0	0	2
Aspiration pneumonia after anaesthetic	0	0	0	0	1	1
Pulmonary embolus	0	0	0	1	1	2
Abdominal abscess	1	0	0	0	0	1
Perforation of colon after open surgery	0	0	0	0	1	1
Anastomotic leak from colon after open surgery	0	0	1	0	0	1
Intraoperative bleeding during open surgery	1	0	0	0	0	1
Anastomotic leak after open surgery	0	0	1	0	0	1
Lower GI complication of laparoscopic operation	1	0	0	0	0	1
Vascular complication of endoscopic operation	0	0	0	0	1	1
Intraoperative bleeding related to endoscopic operation	0	1	0	0	0	1
Hypotension complicating general anaesthetic	0	0	0	0	1	1
Equipment-related complication	0	0	0	0	1	1
Diagnosis-related complications	0	0	0	0	1	1
Delays	0	1	2	0	0	3
Delay in transfer to surgeon by general practitioner	0	0	1	0	0	1
Delay in transfer to surgeon by physicians	0	0	0	1	0	1
Delay to surgery (i.e. earlier operation desirable)	1	1	3	1	1	7
Delay to operation caused by missed diagnosis	0	0	1	0	0	1
Delay in investigating the patient	0	0	1	1	1	3
Delay to reoperation	0	0	1	0	0	1
Surgeon too junior	1	0	0	0	0	1
Poor communication between physician and surgeon	1	0	0	0	0	1
Incorrect/ inappropriate therapy	0	0	2	1	1	4
Postoperative care unsatisfactory	1	0	1	1	0	3
Fluid balance unsatisfactory	0	1	0	0	0	1
Monitoring problems	0	1	0	0	0	1
Assessment problems	0	0	0	1	0	1
Preoperative assessment inadequate	0	1	0	0	0	1
Better to have done different operation or procedure	0	1	0	0	0	1
Delay in diagnosis	0	0	1	0	3	4
Decision to operate	0	2	1	2	0	5
Poor communication between nursing and surgical staff	0	0	0	0	1	1
Foreign object left in body during surgical operation	1	0	0	0	0	1

GI = gastrointestinal.

Note: due to the very small numbers of events under each heading, great care needs to be taken in interpreting changes from year to year.



3.6 Cases with clinical incidents

(Source: assessment forms)

This section provides the clinical context of the incidents noted by the assessors:

- 160 cases were sent to assessment by first-line or second-line assessors or both in 2010.
- 11% (17/149 closed cases) had at least one area of concern or adverse event.
- 5% (7/149) of all cases had at least one adverse event.

Table 12: Cases with clinical incidents

Cases with:	No. (%)
At least one area of consideration	28 (62)
At least one area of concern and adverse event	17 (38)
At least one adverse event	7 (16)
An adverse event that:	1
<ul style="list-style-type: none"> • caused death • was definitely preventable • was associated with the hospital 	

3.6.1 Adverse events

An adverse event is defined as:

An unintended 'injury' caused by medical management, rather than by the disease process, that is sufficiently serious to lead to prolonged hospitalisation, or lead to temporary or permanent impairment or disability of the patient at the time of discharge, or have contributed to or have caused death.

There were seven cases with adverse events (0 preoperative, 3 intraoperative and 4 postoperative). Therefore, 57% (4/7) of adverse events occurred outside the operating theatre.

Preoperative (n=0)

Intraoperative (n=3)

- perforation of bowel during procedure
- peri-operative aspiration
- operative procedure causing arterial rupture

Postoperative (n=4)

- post-operative liver failure
- necrotising pancreatitis post Whipples resection
- communication failure between surgeon and nursing staff
- delay in diagnosing postoperative perforated caecum

3.6.2 Areas of concern

An area of concern is defined as:

An incident where the clinician believes that an area of care SHOULD have been better.

There were 10 cases with 12 areas of concern (6 preoperative, 2 intraoperative, 4 postoperative). Therefore, 83% (10/12) of areas of concern occurred outside the operating theatre.

Preoperative (n=6)

- delay to surgery
- preoperative patient review inadequate
- preoperative management of patient
- delay to correct diagnosis (3)

Operative (n=2)

- change of operative procedure
- surgical technique not ideal

Postoperative (n=4)

- communication between anaesthetist and surgeon
- delay commencing DVT prophylaxis
- management of acute medical condition
- postoperative medical management



4. Audit comparisons

A baseline for most aspects of surgical care has been constructed and comparisons can be made (see Table 13).

Table 13: Audit comparisons (2008, 2009 & 2010)

	2008	2009	2010
Notifications of death	189	163	189
Males	53%	52%	57%
Median age	79 years	79 years	79 years
ASA grade \geq 4	56%	65%	63%
At least one significant comorbidity	90%	92%	92%
Elective admissions	17%	22%	10%
Delay in main surgical diagnosis	10%	8%	3%
No operation	31%	32%	43%
Cases with unplanned return to theatre	15%	13%	12%
Cases with unplanned admission to ICU	17%	14%	14%
Fluid balance an issue	7%	7%	6%
All cases DVT prophylaxis used	66%	72%	74%
Operated cases DVT prophylaxis used	79%	86%	85%
Cases assessed	78%	80%	93%
Second-line assessment requested	21%	15%	14%
Assessed cases with areas of concern or adverse events	17%	14%	11%
Assessed cases with adverse events that caused death	3%	5%	5%
Assessed cases with adverse event that caused death & definitely preventable	0%	1%	0.5%

Overall there has been little change in the pattern of findings.



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

5. Audit limitations

(Source: audit statistician)

As an audit, the data are collected for that purpose, rather than for academic research. However, in audit terms, the data are of a high quality because every case had external peer review.

The data are self-reported and a certain level of bias may be present, but an independent assessor makes their own assessment on the facts presented. The accuracy of the notifications of deaths to TASM cannot be guaranteed.



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

6. Conclusions

(Source: TASM Chairman)

- 1 The audit has had wide acceptance and cooperation from the surgeons.
- 2 The use of all TASM-registered assessors, rather than a small panel of assessors, has spread the workload and involved as much of the workforce as possible.
- 3 TASM has approached other states for first-line assessments and second-line assessments of small specialities and this process is in place.
- 4 Surgeons who disagree with their second-line assessment have the right of appeal and can obtain another assessment from a different surgeon in that specialty. This has only happened on one occasion (not in this reporting period).
- 5 The case note review booklet containing about 12 illustrative cases is produced twice a year for distribution to surgeons and trainees (where requested). The cases are based on assessors' comments and all have a clinical message. This has been well received by the surgical community.
- 6 The use of DVT prophylaxis in patients was similar to previous years and there was one case where it was likely to have been a medical omission. TASM will continue to monitor DVT prophylaxis usage.
- 7 TASM had contributed to the inaugural national Surgical Mortality Report. The electronic web-based interface was released in the third quarter of 2010. A growing number of surgeons have elected to use this system which allows them to enter their own surgical case and first-line assessment forms electronically.
- 8 The launch of the electronic Fellows Interface allows surgeons to access and submit information on surgical case and first-line forms completed.



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

Acknowledgements

The Tasmanian Audit of Surgical Mortality acknowledges the support and assistance of many individuals and institutions that have helped in the continuation and development of this project, including:

- 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 Tasmanian Department of Health for funding and ongoing support
- the Project Managers of the Victorian and Queensland Audits of Surgical Mortality
- the Royal Australasian College of Surgeons, Division of Research, Audit & Academic Surgery staff, particularly
 - > Professor Guy Maddern
Chair, ANZASM Steering Committee
 - > A/Prof Wendy Babidge
Director, RAAS Division
 - > Mr Gordon Guy
ANZASM Manager.

TASM Management Committee Membership

Mr Rob Bohmer Chairman
MBChB, FRACS – *General Surgeon*

Mr Robert Linacre Vice Chairman
FRCS(Ed), FRACS – *General Surgeon*

Mr Peter Stanton
BMedSci(Hons), MBBS(Hons), PhD(Glas)
FRCPSG, FRACS – *General Surgeon*

Dr Roald Fullerton
MBBS, FRCOG, FRANZCOG – *Gynaecologist*

Mr Stephen Brough
MBChB, MSc, FRCS(Urol.), FRACS – *Consultant Urologist*

Dr Margaret Walker
MBBS (Hons), F.A.N.Z.C.A. – *Anaesthetist*

Dr Helen McArdle
BMedSci, MBBS, MPH, FOEM, FRACMA, FAICD
Medical Adviser - Safety & Quality DHHS

Mr James Roberts –Thomson
B.Med.Sc, MBBS, FRCS, FRACS – *General Surgeon*

Ms Lisa Lynch
RN – *Project Manager – TASM*



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

ANNUAL REPORT 2010



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

Appendices

Appendix 1 –‘Other’ comorbidities present in 2010

Anaemia

Wide spread emboli

Marrow dysplasia

References

- 1 Tasmanian Audit of Surgical Mortality, TASM Annual Report 2009, Royal Australasian College of Surgeons, Hobart, 2009, <http://www.surgeons.org/TASM>.



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

ANNUAL REPORT 2010



Telephone: 03 6223 8848
Facsimile: 03 6223 5019
Email: tasm@surgeons.org
Address: 147 Davey Street
Hobart TAS 7000
Web: www.surgeons.org/tasm

