Scottish Audit of Surgical Mortality
Summary Report
2003 Data

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Key points

- **The adverse event rate causing or contributing to death shows an overall fall over time.**
- **The number of patients who died following surgical admission remains very low (total 1.5%, elective - 0.27%, emergency - 2.19%).**
- **The vast majority (89%) of patients who died under surgical care did so following an emergency admission. Substantial impact on surgical mortality will require particular focus on this aspect of care.**
- **The commonest causes of surgical death, fractured neck of femur, aortic aneurysm and colorectal cancer may require specific tailored initiatives to improve outcomes in these areas.**
- **Highlighted, once again, is the issue of the placement and care of patients with a non-surgical condition, requiring terminal care within acute surgical units.**
- **Compliance with the audit remains very high with the number of surgeons who did not return a substantial number of reports falling markedly.**

Introduction

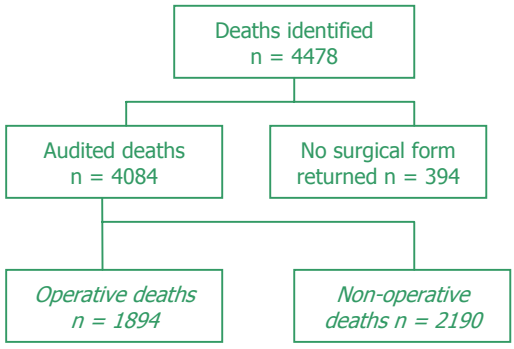
Ensuring the trust of patients and the public is a key issue for the medical profession and the Health Service. This can be achieved by enhancing patient safety and through improving the quality of care delivered by clinicians and institutions.

The Scottish Audit of Surgical Mortality (SASM) aims to act as a mirror that can be held up for clinical teams, Health Boards and the Scottish Health Department to demonstrate accountability, to foster trust and to improve the quality of health care.

Summary

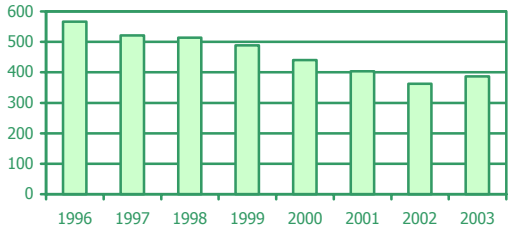
This report summarises the SASM data for patients who died under surgical care during 2003. A fuller analysis of the 2003 data is available at www.sasm.org.uk.

There were 4478 patients who died under surgical care in 2003. This was 1.5% of the 295,034 total surgical admissions in Scotland in 2003.



Over the period 1996-2003 the number of deaths following elective admissions for inpatient treatment has fallen, save for a minimal rise in 2003.

Number of deaths reported to SASM which followed elective surgical admission, by year



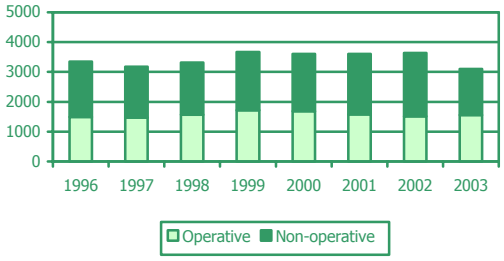
A total of 387 (11%) deaths followed an elective admission to a surgical ward. The mortality rate for elective inpatients under

surgical care in Scotland was 0.27%. This is based on a total of 153,306 patients and takes account of both elective admissions and transfers. In order to compare the 2003 data with previous years, the 85 deaths reported to SASM which were elective admissions for terminal care, are excluded.

% of elective surgical admissions who died under surgical care in Scotland, by year

3098 (89%) deaths followed an emergency admission. An additional 514 patients were emergency admissions for terminal care. There has been a fairly stable number of deaths where the patient had an operation after an emergency admission to a surgical ward. There has however been a fall in the number of patients who did not have an operation and died in a surgical ward following an emergency admission to hospital.

Number of deaths reported to SASM which followed emergency surgical admission, by year



In 2003, 2.19% of all 141,728 patients admitted as an emergency in Scotland died under surgical care.

% of emergency surgical admissions who died under surgical care in Scotland, by year

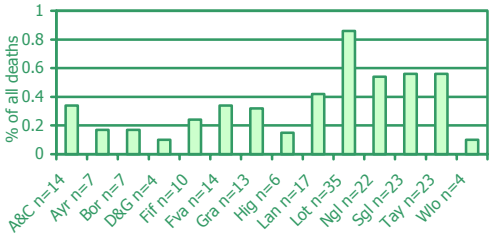
Areas of concern

In 2003, the categories of areas of concern or for consideration were changed slightly. The statement regarding "made no difference to outcome" was divided into "areas for consideration" and "areas of concern". No comparison can therefore be made with previous years' data in these two categories. However, the number of deaths where an area of concern was considered to have caused death was 10 in 2003 (12 in 2002).

Statement of assessor	Number of deaths
Areas for consideration but they made no difference to eventual outcome	418
Areas of concern but they made no difference to eventual outcome	83
Areas of concern which may have contributed to death	189
Areas of concern which caused death in patients who would have been expected to survive	10

The percentage of cases with areas of concern in management which contributed to or caused death, is shown below for each Trust.

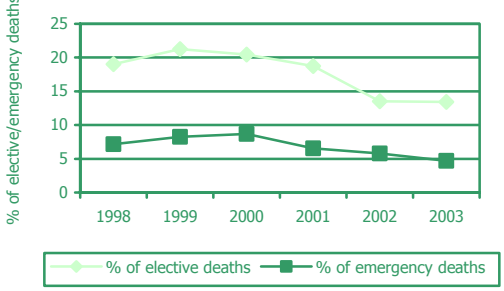
Areas of concern statements "caused death" or "contributed to death" by either surgical or anaesthetic assessors



A key to the abbreviation of Trust names appears on the back page of this report.

Analysis of areas of concern which caused or contributed to death by year shows a sustained reduction over 5 years.

Areas of concern statements "caused death" or "contributed to death" by either surgical or anaesthetic assessors, by year



Pathway of care – deaths following operation

The most common initial surgical diagnoses in patients who died after an operation are shown, in order of frequency, in the table below.

- Fractured neck of femur
- Colorectal cancer
- Occlusive peripheral arterial disease
- Aortic aneurysm
- Mesenteric ischaemia
- Peptic ulceration
- Diverticulitis

These conditions predominantly lead to admission as an emergency and the list has not changed with time.

In addition to the cause for their surgical admission, 88% of patients also suffered significant ongoing medical conditions (56% cardiovascular, 35% respiratory and 16% neurological/ psychiatric).

In specialities with the largest number of deaths (general, vascular, orthopaedic and urological surgery), 30-50% of deaths occurred within 7 days of operation and 15-30% over 4 weeks after operation.

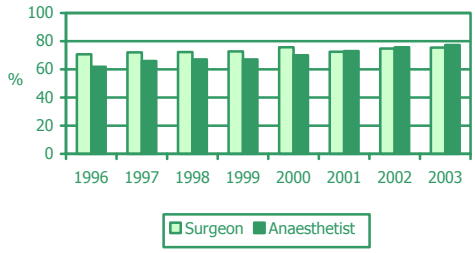
Management before operation has improved with time. The percentage of cases where the assessors felt that the quality of pre-operative care could have been improved decreased to 10% (15% in 1997). The commonest pre-operative area of concern was delay to surgery, with the next commonest being delay by physicians in transferring patients to the care of surgeons.

The decision to operate was taken by a consultant surgeon in 98% of cases before both elective and emergency surgery (this represents no change from 2002).

In 2003 a consultant surgeon operated or assisted in 75% of cases (92% of elective operations and 72% of emergency operations). Assessors criticised the seniority of the surgeon present in theatre for 19 patients (1%) compared with 26 (1.5%) in 2002.

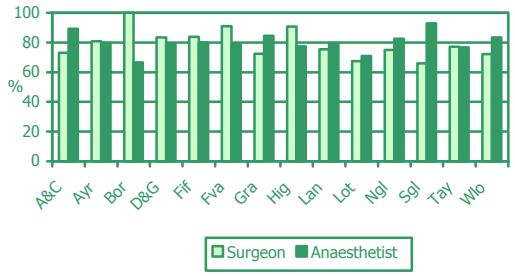
The percentage of operations where the anaesthetic consultant was present in 2003 was 77% (89% of elective and 75% of emergency operations), which continues the upward trend from 62% in 1996. Assessors criticised the seniority of the anaesthetist for 82 patients (4.3%). This figure cannot be compared with 2002 data, as this question was asked of the anaesthetic assessors for the first time during 2003.

Consultant presence at operation, by year



Analysis of consultant presence at operation is shown below by Trust, where the death occurred within 7 days of the operation, in order to focus on issues which are more likely to be related to peri-operative care. (This excludes Neurosurgery as not all Trusts had a Neurosurgical Unit.)

Consultant presence at operation where the patient died within 7 days of operation



In 765 (40%) patients there was a significant post-operative complication, but of these 679 (89%) were medical rather than surgical, mirroring the high prevalence of co-existing severe non-surgical conditions. There was no delay in recognising the complication in 96% of these patients.

The most frequent area of concern about the post operative period was a failure to use HDU facilities. The number of instances of failure to use HDU or ITU, either by omission or non-availability was 43 in 2003 (1.1% of audited cases). This is an increase from the 2002 figure of 21 (0.53%).

Overall, post-operative management issues have not changed from 2002 when SASM reported an improvement from previous years.

The number of deaths where assessors described an area for consideration or of concern shows a further decline.

Statement of assessors	Number of operative deaths
Areas for consideration but they made no difference to eventual outcome	331
Areas of concern but they made no difference to eventual outcome	55
Areas of concern which may have contributed to death	168
Areas of concern which caused death in patients who would have been expected to survive	10

Deaths of patients who did not have an operation

In 2003, for the first time, patients who were admitted to surgical wards for palliative care and subsequently died there, were subject to review. The following analysis includes these deaths.

Some 2,190 (55%) patients who died under surgical care did not undergo an operation. Of these, 857 (39%) were considered to have died of a condition not thought to be surgical in nature.

The most common diagnoses leading to admission under a surgical team, in patients who did not have an operation and subsequently died, are shown in order of frequency.

- Fractured neck of femur
- Aortic aneurysm
- Occlusive peripheral arterial disease
- Intestinal obstruction
- Colorectal cancer
- Oesophageal cancer
- Pancreatic cancer

In 20 cases (1%) assessors believed an operation should have been done.

Where there was a decision not to operate, this was taken by a consultant in 92% of cases (987/1077).

Only three specialities had sufficient numbers for meaningful analysis of the time from admission to death in the case of patients who did not undergo an operation. In general surgery 56% of patients who did not proceed to operation died within 7 days (vascular surgery 57%, urology 30%), and 11% died after 4 weeks (vascular surgery 8%, urology 23%).

The number of areas of concern identified in the non-operative group remains small. The commonest area of concern in this group of patients was hospital admission to the wrong ward or specialty.

Statement of assessors	Number of non-operative deaths
Areas for consideration but they made no difference to eventual outcome	87
Areas of concern but they made no difference to eventual outcome	28
Areas of concern which may have contributed to death	21
Areas of concern which caused death in patients who would have been expected to survive	0

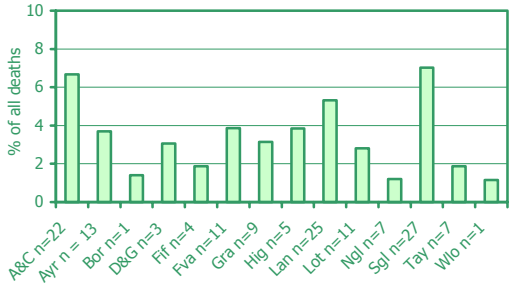
Terminal care

In 2003, for the first time, patients who were admitted to surgical wards for palliative care and subsequently died there, were subject to review.

During 2003, a total of 146 (3.6%) patients defined as having been admitted for terminal care, were believed by clinicians reporting to SASM to be inappropriately placed.

This problem is spread varyingly across Health Boards.

Percentage of cases not appropriately placed for Terminal Care, by Trust



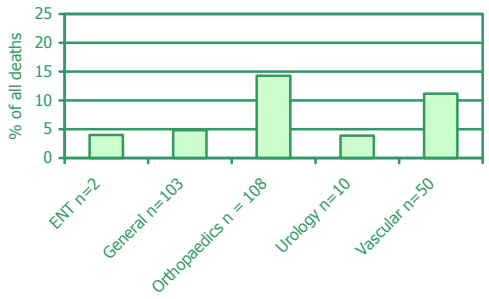
Hospital acquired infection

Hospital acquired infection (HAI) is a cause of much concern. In 2003 SASM introduced specific questions in the data collection forms to address this topic.

Of the 4084 audited deaths in hospital under surgical care, 344 (8.4%) had developed a hospital-acquired infection (HAI).

In 127 (3.1%) patients the infection related to the surgical site. The other patients developed sepsis elsewhere (usually a chest infection). All of these cases have been reviewed and further detailed questions about the occurrence of MRSA have been introduced for subsequent inquires.

Percentage of deaths who devleoped a HAI, by specialty



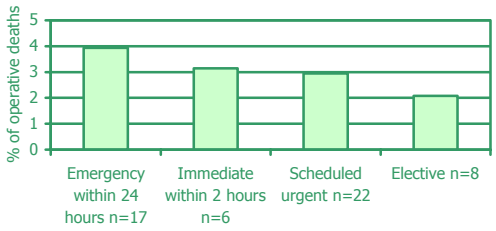
There were variations in rates between specialties and areas, with orthopaedics and vascular surgery showing the highest percentages of patients who developed an HAI. This requires further investigation and specific national infection control projects are underway to monitor and improve infection control throughout Scotland.

Imaging

Radiological imaging is used extensively in the diagnosis and management of all patients. Timely access to imaging has been identified as an issue by participants and in the 2003 Audit, specific questions were asked about the availability of imaging and any effects on outcome.

Delays in obtaining imaging information were noted in 70 patients who died. In only 17 cases was this delay thought to have had any impact on outcome. Areas of concern associated with delays in imaging were principally in relation to delays to surgery. Although numbers were small, delays in imaging of emergency patients were twice as common as delays in elective patients.

Timing of operation where there was a pre-operative delay to appropriate imaging



Health Boards should examine the provision of emergency imaging facilities.

Compliance

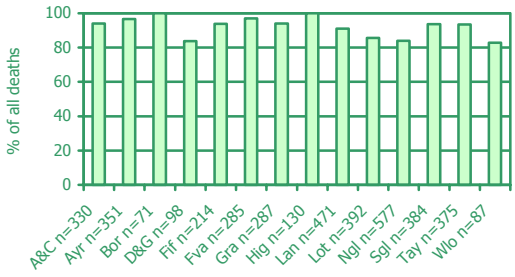
The overall compliance with the Audit increased in 2003, with 4084 (91.2%) forms having been returned for assessment (90% in 2002).

The mean time taken from the SASM office sending out the forms to return of the surgical forms was 79 days. 74% of consultant surgeons returned 100% of their forms. Fourteen consultant surgeons did not submit any reports for review (46 deaths).

In 2002, 28 consultants who had 10 or more deaths in their practice did not return 85% of them. In the audit year 2003 only 2 surgeons with 10 or more deaths under their care did not submit at least 85% of their cases for review (21 cases).

Compliance with the audit by Trust is shown below.

Percentage of forms returned (compliance), by Trust



SASM process

Many of the adverse events identified by SASM relate to the hospital systems and

the process of care in contrast to the perception that technical or intra-operative errors by individuals are common.

The Audit will further strengthen this partnership for improvement of patient care. In the first half of 2005, surgeons in Scotland will receive a pilot 'Individual Annual Report' that contains a range of data, individual, institutional and national. This will empower clinicians in a two-way conversation within the appraisal process.

SASM is expanding the scope of the audit with a project to examine patients who died within 30 days of an operation but had either been discharged or were under the care of another speciality. The Audit will also include thoracic surgery with a first stage project in 2005.

SASM is also assisting with the development of a pilot project to allow nurses to examine nursing issues surrounding the death of patients under surgical care.

Chairman's comments

Surgical care in Scotland remains a very safe process. Almost 300,000 people received surgical care in 2003. The rigorous review of the Scottish Audit of Surgical Mortality found only ten instances (0.003%) in which it was considered that a different approach to management would have avoided a fatal outcome. Although every death is a cause for regret, the report for 2003 shows again that this occurred predominantly in people who were admitted as an emergency, had a complex array of medical problems and did not actually undergo an operation.

Assessors' most frequent expressions of concern were over patients' journeys through the overall system and process of care, rather than about specific operative or other clinical actions. Eighty nine percent of deaths occurred in patients who had been admitted as an emergency. Scrutiny of the care of this group may provide the main source of potential for future improvement, but provision of staffing for emergencies is particularly threatened by changes in work patterns. The large number of patients dying in an acute surgical unit but who did not undergo an operation, is notable. There should be other routes of access to hospital care, especially for those who were admitted primarily for terminal care.

The production of the Audit is the result of an immense effort by many people. A key factor is the voluntary participation of individual clinicians. It is, therefore, extremely pleasing to see the overall increase in the rate of return of reports to SASM and the steep drop in the number of consultant teams from which a large proportion of reports is outstanding.

Providers and receivers of surgical care in Scotland owe much to the many people who give freely of their time to assess case reports and to contribute to SASM through the Liaison Group, the Management Committee and Board of Management. Representatives of the public make influential contributions. The staff engaged in the Audit are to be congratulated on their very high standard of work.

SASM has established a world leading position in assessing the quality of surgical care. It ensures that lessons learned from past experiences can contribute to even safer arrangements in the future. The information that the Audit provides makes organisations in Scotland uniquely well placed to respond to the challenge of the increasing, and proper, internal and external scrutiny that is the essence of clinical governance. Participation in the Audit also makes surgeons in Scotland well equipped to provide the information that the General Medical Council will soon require to be made available to support their revalidation and licence to practice.

Professor Graham M Teasdale
Chairman, SASM Board and
President, Royal College of Physicians and Surgeons of Glasgow

What is SASM?

The Scottish Audit of Surgical Mortality ensures that the circumstances surrounding the death of any patient who is under the care of a surgeon are subjected to an anonymous assessment by a consultant in the same specialty from a different Trust. The review considers both clinical, hospital and resource concerns. The results are fed back to the surgeon and anaesthetist. The audit is entirely voluntary and depends on the co-operation of all the participants in ensuring that confidentiality is maintained.

SASM assesses the patient's last journey of care, not simply the role of a single clinician or clinical team. Identification of deaths uses the consultant surgeon in charge as a proxy for the secondary care system. The Audit covers all deaths under surgical care in Scotland (including private hospitals) except for cardiac surgery and obstetric deaths, which are, at present, audited separately. The legal opinion of this process, assessed as sound by the Central Legal Office in Scotland, is available on the SASM website.

The non-clinical administration and organisation of the audit are under the aegis of the Healthcare Information Group of NHS National Services Scotland. The staff are bound by very strict confidentiality rules to preserve the integrity of the audit.

SASM organisation

The SASM Board, which sets out the policy for the audit, is chaired in turn by either the President of the Royal College of Surgeons of Edinburgh or the President of the Royal College of Physicians and Surgeons of Glasgow. Its membership includes representatives from other colleges, active clinical co-ordinators, NHS Scotland, NHS National Services Scotland and the public.

The SASM Management Committee ensures the smooth running of the audit and is chaired by the lead clinician. Its membership includes the clinical co-ordinators who are democratically elected from the speciality groups.

The SASM Liaison Group represents the interests of the members of the professions participating in the audit. Its membership includes nominated representatives from the surgical and anaesthetic specialty associations.

Full details of the present members of these groups can be found at the SASM website – www.sasm.org.uk

Abbreviations

Trusts (at time of data collection period)

A&C	Argyll and Clyde	Hig	Highland
Ayr	Ayrshire and Arran	Lan	Lanarkshire
Bor	Borders	Lot	Lothian
D&G	Dumfries and Galloway	NGl	North Glasgow
Fif	Fife	SGl	South Glasgow
Fva	Forth Valley	Tay	Tayside
Gra	Grampian	Wlo	West Lothian

Other abbreviations

HDU	High Dependency Unit	ITU	Intensive Therapy Unit