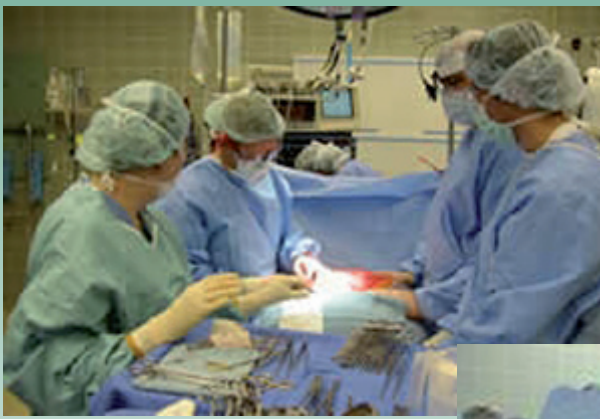


# Scottish Audit of Surgical Mortality

## Annual Report

### 2005 data



# Scottish Audit of Surgical Mortality

2005 data



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## All deaths

Table 1 **Number of deaths by admission type**

	<b>Elective</b>	<b>Emergency</b>	<b>Urgent</b>	<b>Unknown</b>
Number of deaths recorded	310	2,653	479	705
Number of audited deaths	310	2,653	479	256

Figure 1

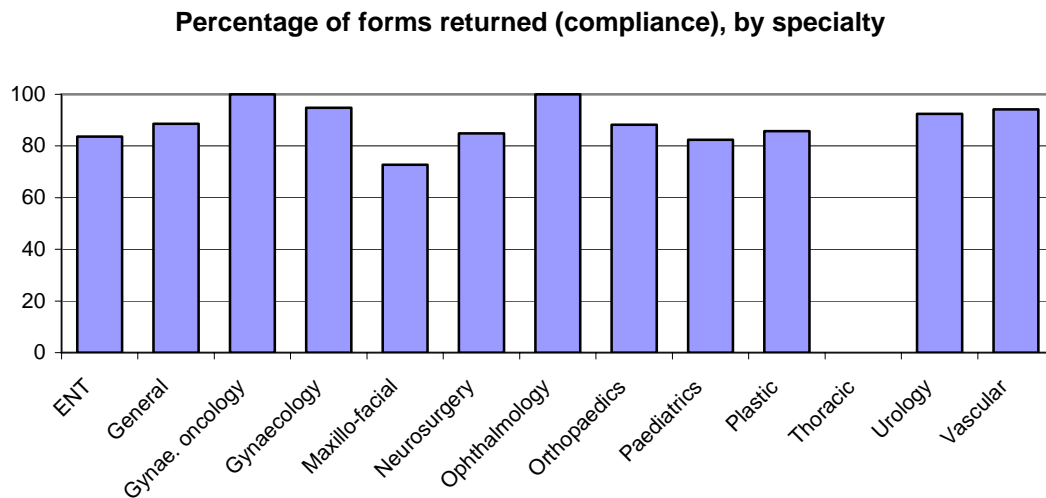
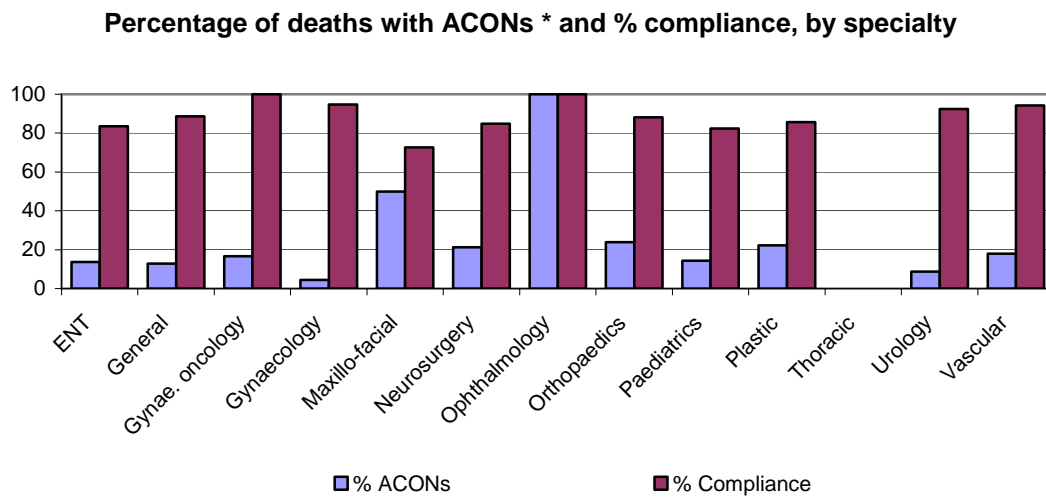


Table 2 **Forms returned (compliance), by specialty**

<b>Specialty</b>	<b>Number of forms returned</b>	<b>Total deaths</b>	<b>Percent</b>
ENT	51	61	83.61
General	2,129	2,403	88.60
Gynae. oncology	6	6	100.00
Gynaecology	90	95	94.74
Maxillo-facial	8	11	72.73
Neurosurgery	146	172	84.88
Ophthalmology	1	1	100.00
Orthopaedics	591	670	88.21
Paediatrics	14	17	82.35
Plastic	18	21	85.71
Thoracic	0	2	0.00
Urology	219	237	92.41
Vascular	425	451	94.24

Figure 2



\* See definitions on page 26

Table 3 **Deaths and compliance, by specialty**

<b>Specialty</b>	<b>Number of deaths with an ACON</b>	<b>Number of returns</b>	<b>% ACONs</b>	<b>Number of Returns</b>	<b>All deaths</b>	<b>% Compliance</b>
ENT	7	51	13.73	51	61	83.61
General	272	2,129	12.78	2,129	2,403	88.60
Gynae. oncology	1	6	16.67	6	6	100.00
Gynaecology	4	90	4.44	90	95	94.74
Maxillo-facial	4	8	50.00	8	11	72.73
Neurosurgery	31	146	21.23	146	172	84.88
Ophthalmology	1	1	100.00	1	1	100.00
Orthopaedics	141	591	23.86	591	670	88.21
Paediatrics	2	14	14.29	14	17	82.35
Plastic	4	18	22.22	18	21	85.71
Thoracic	0	0	0.00	0	2	0.00
Urology	19	219	8.68	219	237	92.41
Vascular	76	425	17.88	425	451	94.24

Figure 3

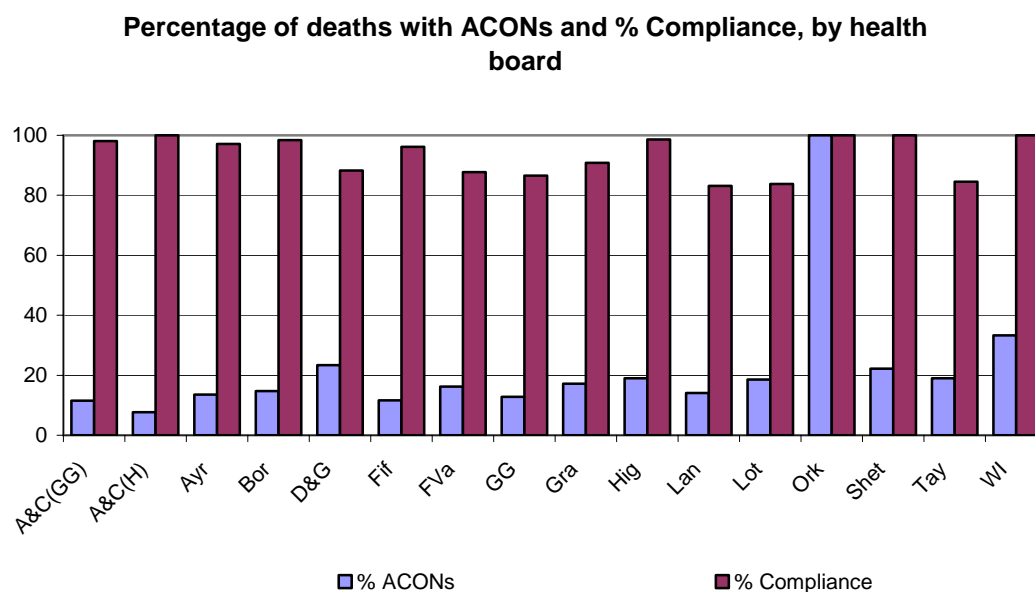


Table 4 **Quality of completion of forms, by surgical assessor**

<b>Surgical assessor:</b>	<b>Count</b>	<b>Total audited deaths</b>	<b>Percent</b>
Poorly completed forms	123	3,698	3.33
Illegible forms	24	3,698	0.65
Inconsistencies between surgical and anaes forms	58	3,698	1.57

Table 5 **Quality of completion of forms, by anaesthetic assessor**

<b>Anaesthetic assessor:</b>	<b>Count</b>	<b>Total audited deaths</b>	<b>Percent</b>
Poorly completed forms	73	3,698	1.97
Illegible forms	14	3,698	0.38
Inconsistencies between surgical and anaes forms	100	3,698	2.70

## Operative deaths

Figure 4

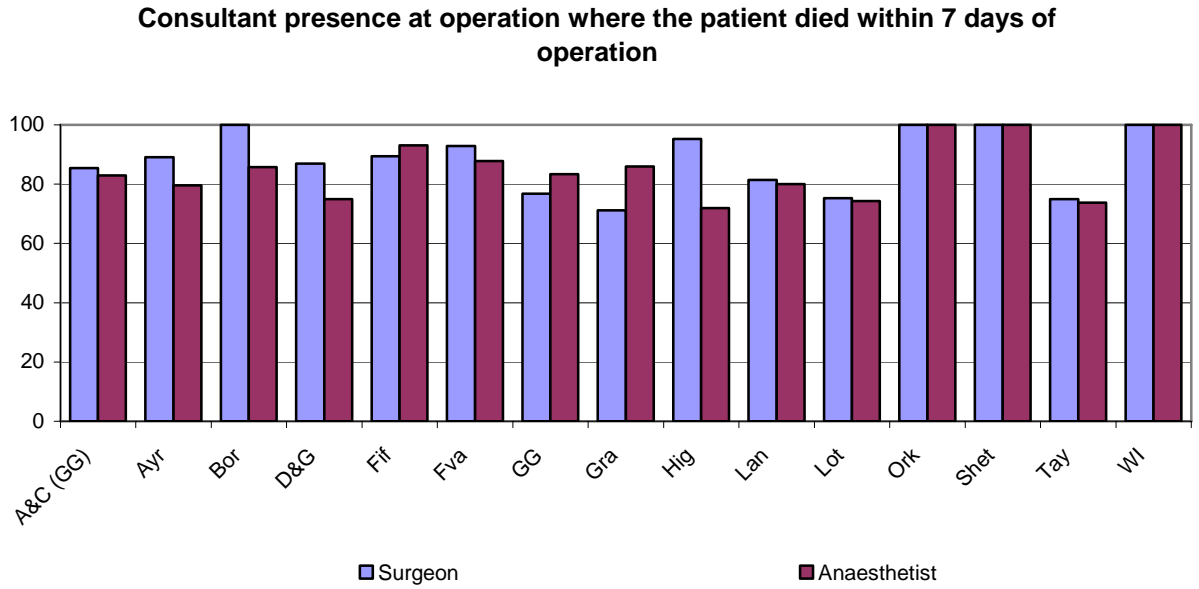
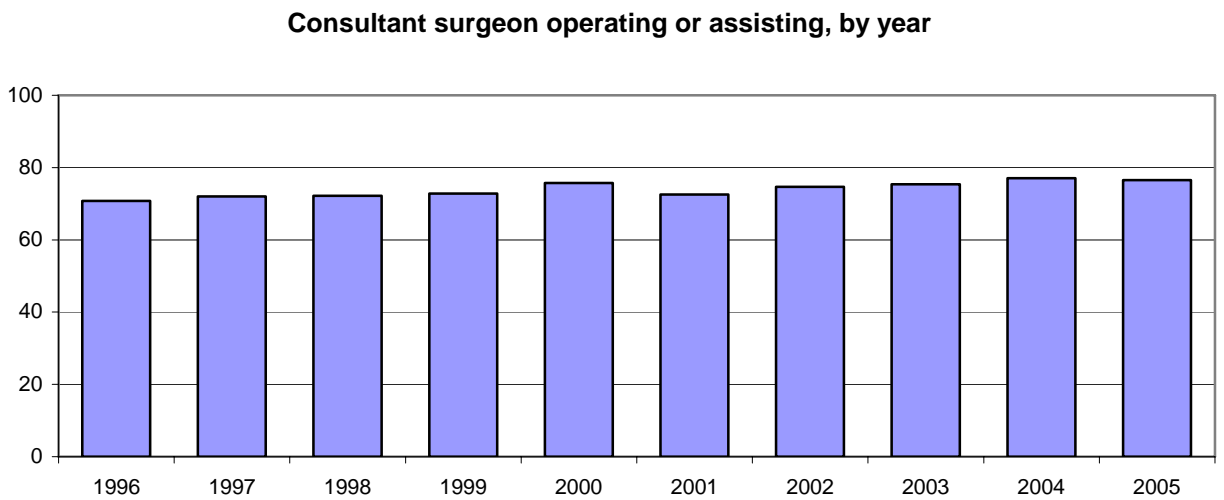


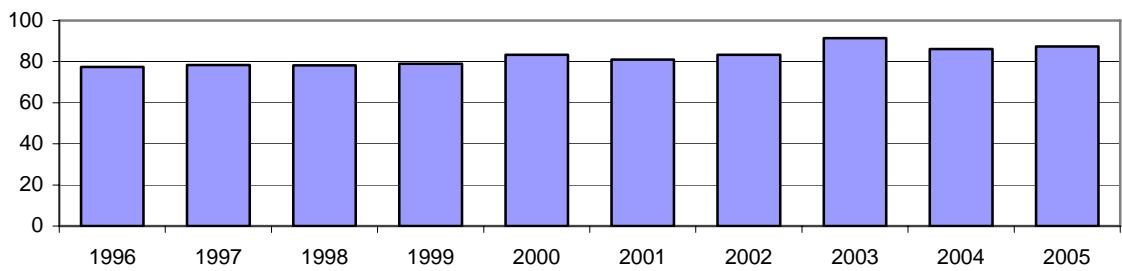
Figure 5



\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Figure 6

**Consultant surgeon operating or assisting (General and Vascular only),  
by year**



\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Figure 7

**Consultant surgeon operating or assisting, by health board**

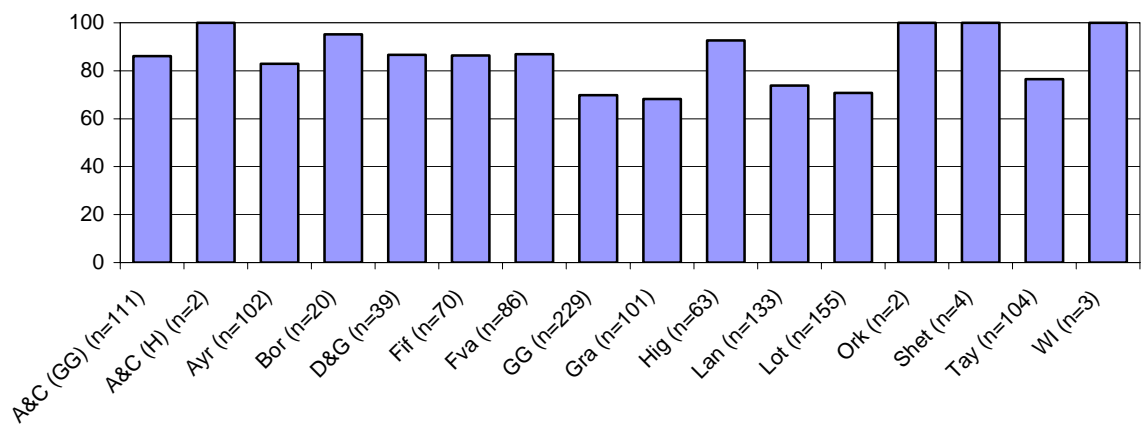


Figure 8

**Consultant surgeon operating or assisting, by health board (excluding  
neurosurgery)**

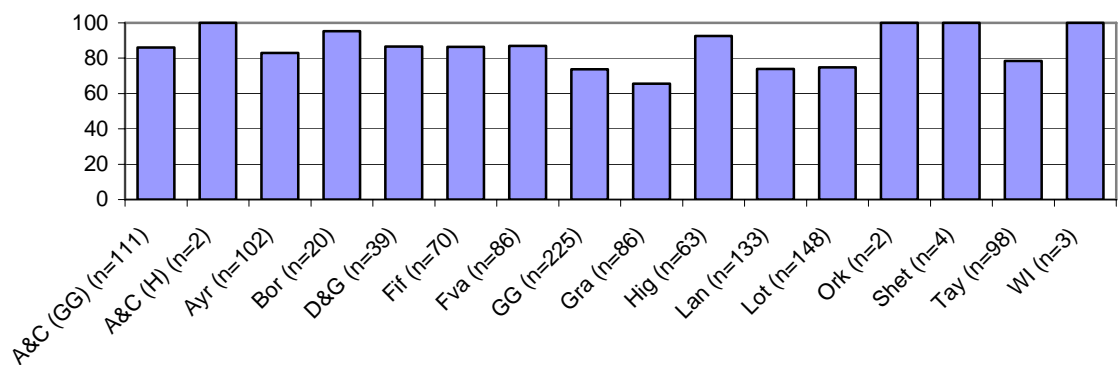
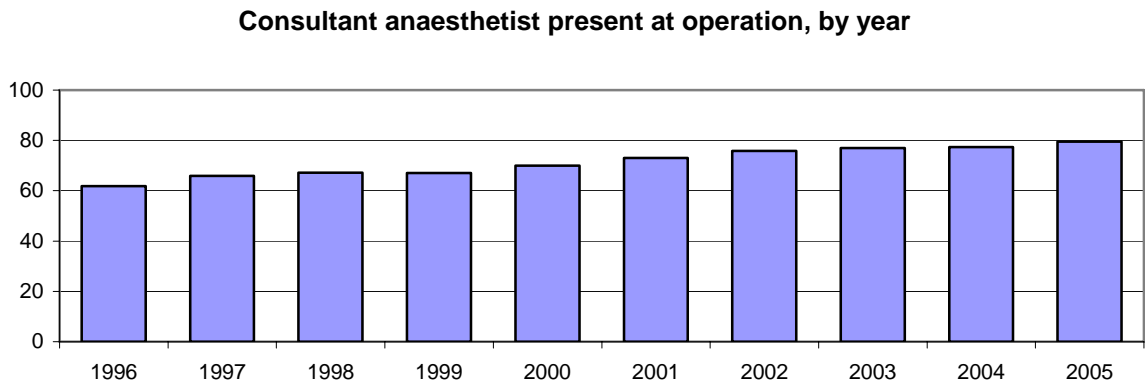


Figure 9



\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Figure 10

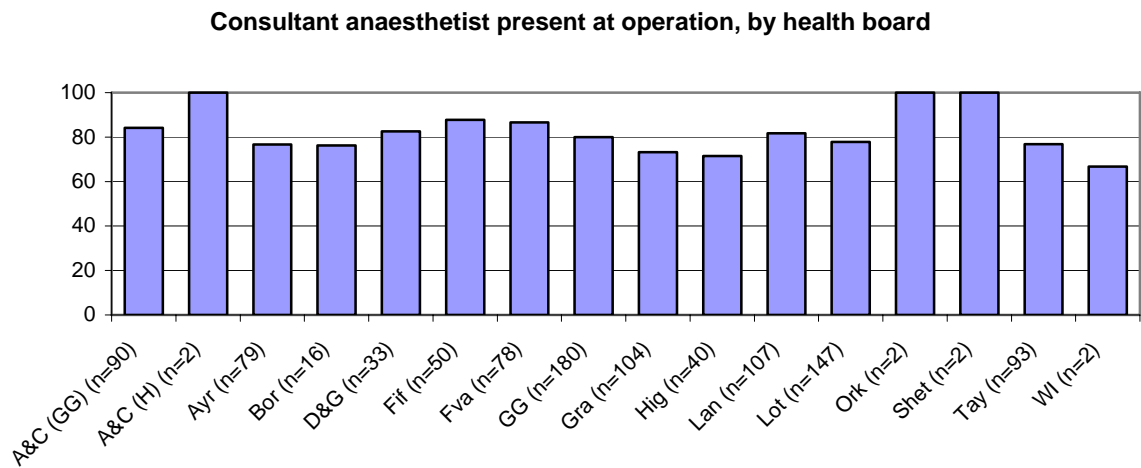
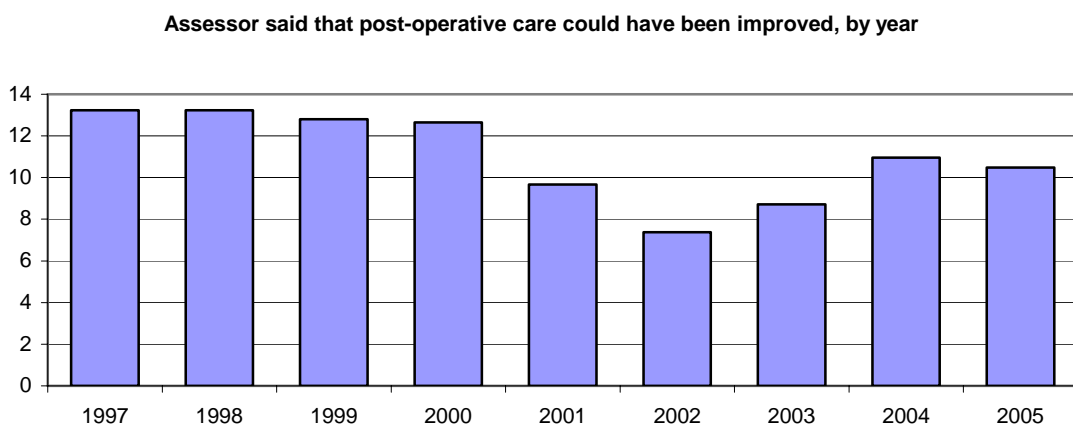


Figure 11



\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Table 6 **Median age and number of days to death where post-operative care could have been improved**

<b>Specialty</b>	<b>% of cases where post-op care could have been improved</b>	<b>Median age of patients where post-op care could have been improved</b>	<b>Median days to death where post-op care could have been improved</b>
ENT	11.11	66.50	40.50
General	7.35	74.50	10.00
Gynaecology	4.55	85.00	1.00
Maxillo-facial	16.67	74.00	2.00
Neurosurgery	9.88	64.00	5.50
Ophthalmology	100.00	66.00	4.00
Orthopaedics	16.12	84.00	7.00
Urology	6.67	76.00	12.00
Vascular	7.50	73.00	4.00

Figure 12

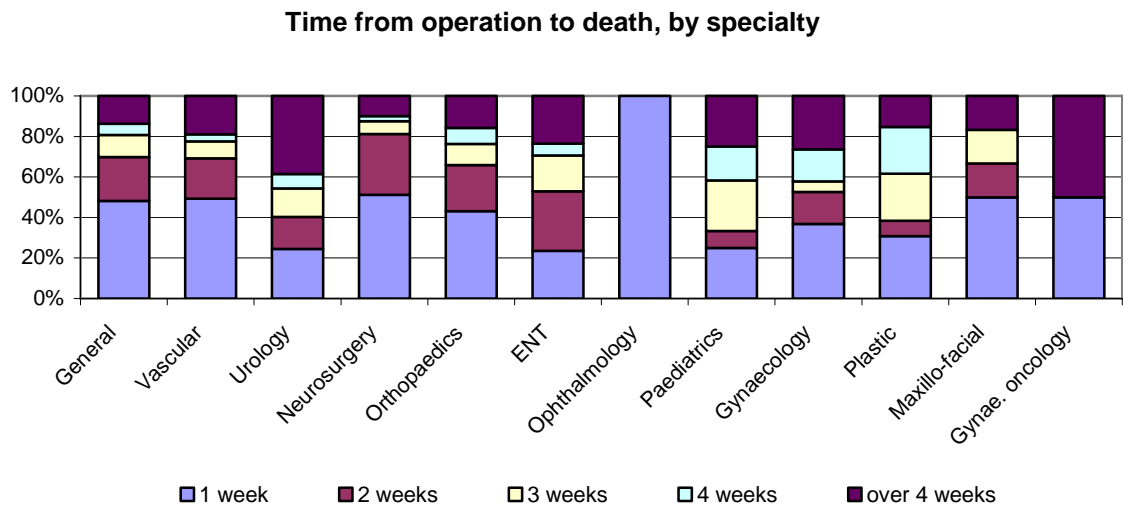


Table 7 **Most common ACONs where post-operative care could have been improved, orthopaedic cases only**

<b>Code</b>	<b>Total</b>	<b>Description</b>
WE4	13	Unsatisfactory medical management
WE5	10	Hospital admission to wrong ward or specialty
WC5	9	Poor documentation
WD1	9	Failure to use HDU
WB0	6	Failure of junior surgeon to seek advice
W70	5	Reaction to drugs
WA6	5	Delay to surgery ie earlier operation desirable
W0N	3	Miscellaneous complication
W50	3	General anaesthetic complications
WC4	3	Post-operative instructions ignored
WC6	3	Failure to communicate with senior staff
W51	2	Regional anaesthetic complication
W75	2	Drug omission
WB2	2	Surgeon too junior
WB9	2	Lack of nursing supervision
WC0	2	Failure of communication - unspecified
WE2	2	Operation should not have been done or was unnecessary
WG0	2	Inadequate monitoring
WH0	2	Pre-operative assessment inadequate
W04	1	Respiratory tract
W0L	1	Wound problem
W40	1	Nervous system complication of radiological operation
W71	1	Wrong drug used
W85	1	Delay in giving blood
W86	1	Delay in giving blood products
WA9	1	Delay in recognising complications
WAC	1	Delay in investigating the patient
WAG	1	Delay starting medical treatment
WB	1	PROBLEMS WITH APPROPRIATE STAFFING
WB3	1	Anaesthetist too junior
WCC	1	Pre-operative investigations either not seen or confused
WE	1	INCORRECT/INAPPROPRIATE THERAPY
WEB	1	Duration of operation too long
WEF	1	Premature withdrawal of treatment
WF2	1	Transfer should have occurred
WH1	1	Inadequate post-operative assessment
WK5	1	Injury caused by fall in hospital

Figure 13

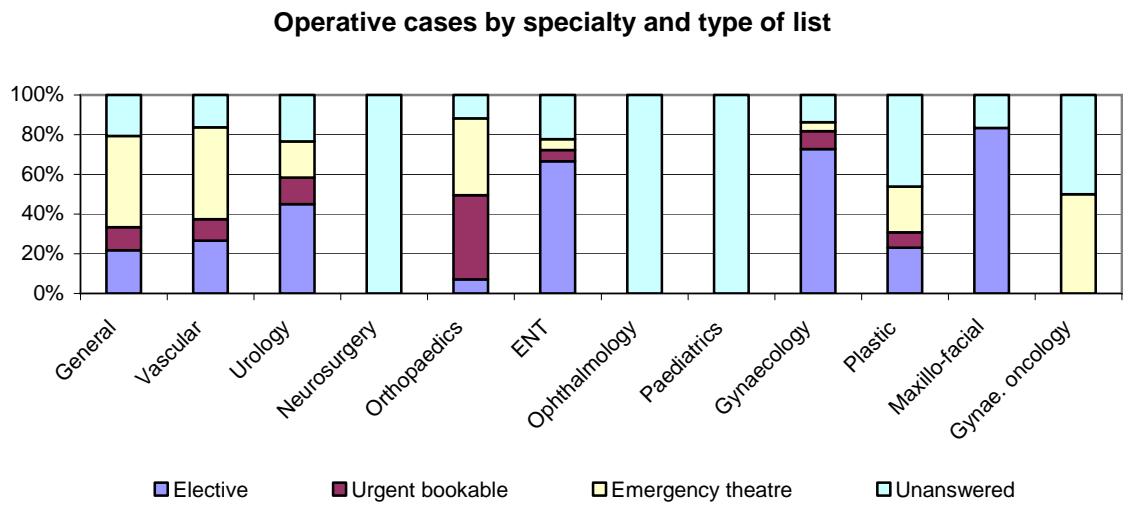


Table 8 **Anaesthetic cases with failure/omissions in pre-operative patient assessment/preparation**

	Count	Total anaesthetic cases	%
Failure or omissions in pre-operative patient assessment	32	1,328	2.41
Failure or omissions in pre-operative patient preparation	40	1,328	3.01

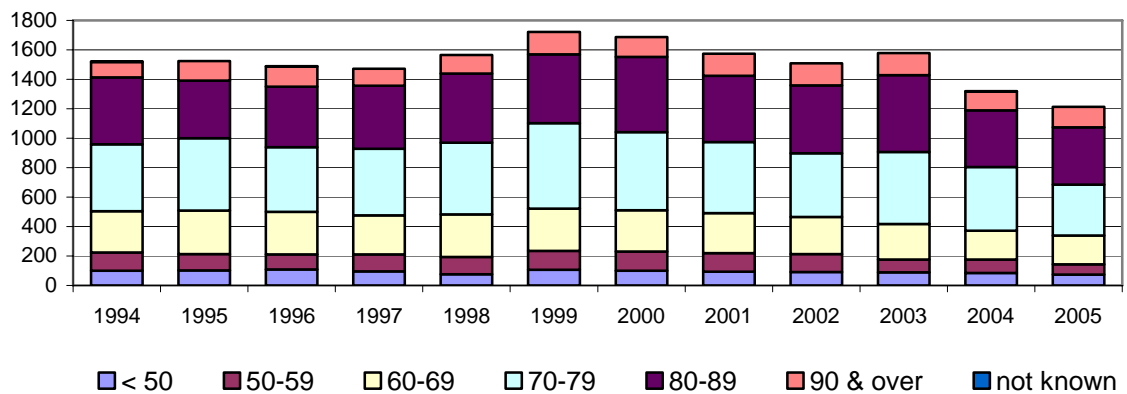
## Emergency Admissions

Table 9 **Surgical admissions (excluding day cases) in Scotland, by type of admission and year (data courtesy of ISD)**

Year	Elective	Emergency
1996	188,197	152,748
1997	178,646	154,564
1998	176,251	152,766
1999	166,458	153,215
2000	153,552	155,488
2001	147,233	153,976
2002	137,763	148,309
2003	132,210	142,539
2004	127,265	135,387
2005	130,397	133,291

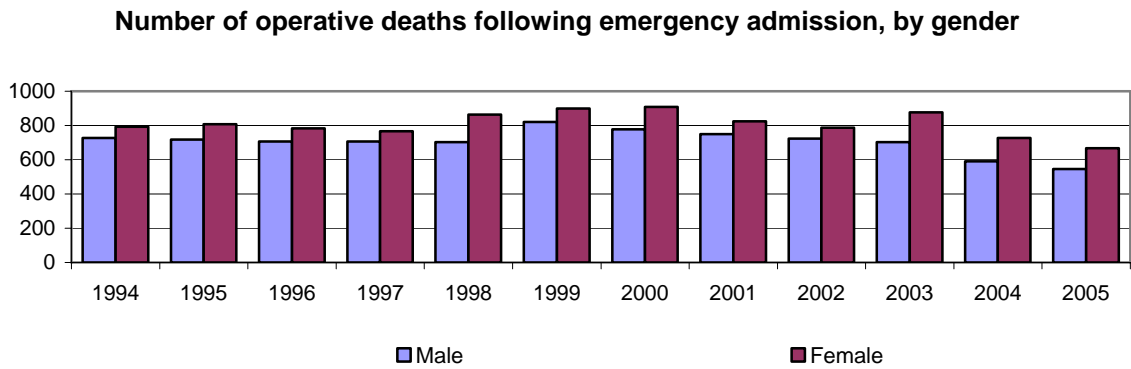
Figure 14

**Number of operative deaths following emergency admission, by age**



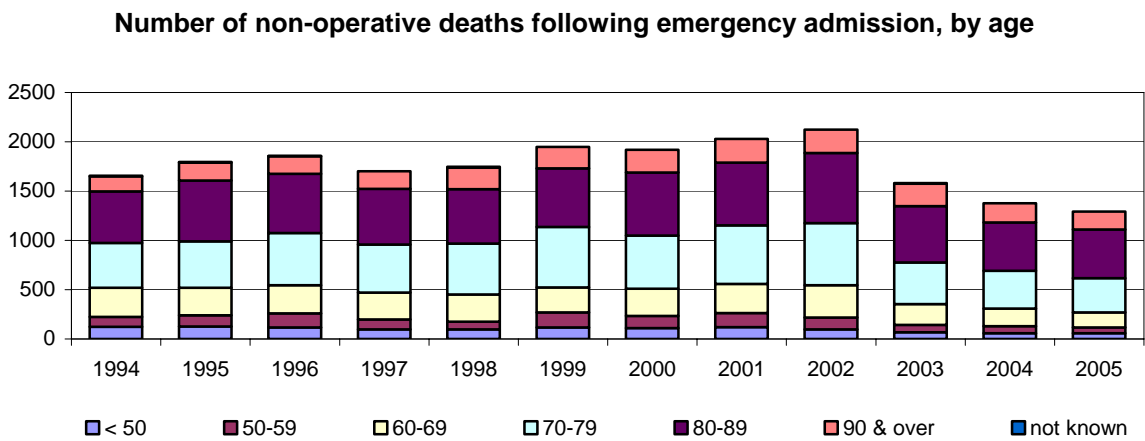
\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Figure 15



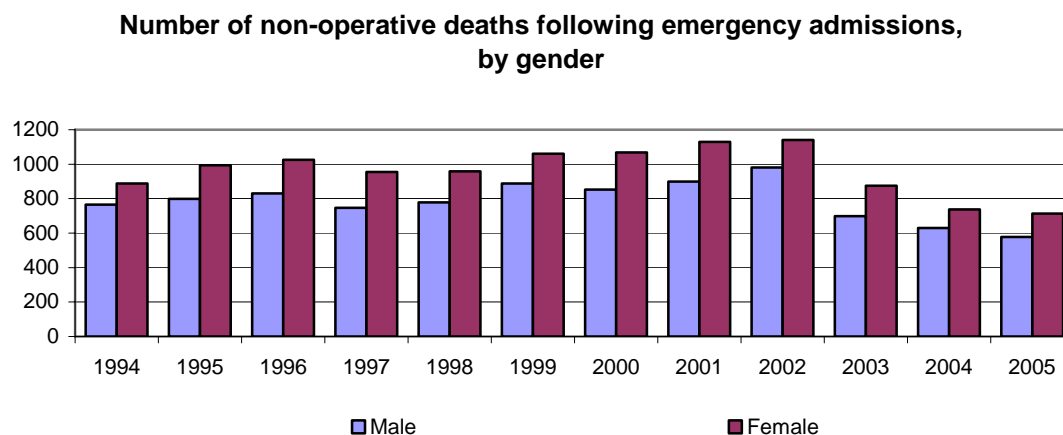
\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Figure 16



\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Figure 17



\* This analysis excludes Terminal Care deaths to allow a comparison to be made over time

Table 10 **Most common ACONs for emergency admissions**

Code	Total	Description
WA6	68	Delay to surgery ie earlier operation desirable
WC5	56	Poor documentation
WE5	49	Hospital admission to wrong ward or specialty
WE4	41	Unsatisfactory medical management
W0N	35	Miscellaneous complication
WE2	29	Operation should not have been done or was unnecessary
WA2	22	Delay in transfer to surgeon by physicians
WAC	19	Delay in investigating the patient
WA0	17	Delay in transfer to surgical unit
WAF	17	Delay to diagnosis
WD1	17	Failure to use HDU
WC0	16	Failure of communication - unspecified
WF1	15	Transfer should not have occurred
WB0	14	Failure of junior surgeon to seek advice
W50	13	General anaesthetic complications
W92	13	Diagnosis missed by surgeons
WB2	13	Surgeon too junior
WG0	11	Inadequate monitoring
WH0	11	Pre-operative assessment inadequate
WD0	10	Failure to use ITU
WE0	10	Wrong operation performed
W04	9	Respiratory tract
WA9	9	Delay in recognising complications
WK0	9	Patient refused treatment
W17	8	Lower GI complication of open surgery
WC6	8	Failure to communicate with senior staff
W90	7	Diagnosis missed - unspecified
W70	6	Reaction to drugs
WB3	6	Anaesthetist too junior
WH2	6	Failure to investigate or assess patient fully

WH4	6	Failure to recognise severity of illness
W0L	5	Wound problem
W16	5	Upper GI complication of open surgery
WAG	5	Delay starting medical treatment
WJ0	5	Resuscitation inadequate
W51	4	Regional anaesthetic complication
W72	4	Wrong dose of drug used
WA1	4	Delay in transfer to surgeon by General Practitioner
WC1	4	Poor communication between anaesthetist and surgeon
WD4	4	Failure to use DVT prophylaxis
WD6	4	Failure to use a specialist centre
WF5	4	Problems before transfer
WH3	4	Pre-optimisation should have been used
W1M	3	Peri-op bleeding problems after open surgery
W71	3	Wrong drug used
W85	3	Delay in giving blood
W94	3	Diagnosis missed by medical unit
WA8	3	Delay in obtaining blood products, xmatch or typing
WB1	3	Failure of junior anaesthetist to seek advice
WCC	3	Pre-operative investigations either not seen or confused
WD7	3	Failure to obtain a post mortem
WDJ	3	Hospice not used
WDQ	3	Failure to obtain CT scan
WE	3	INCORRECT/INAPPROPRIATE THERAPY
WK5	3	Injury caused by fall in hospital
W00	2	Central nervous system
W08	2	Other abdominal complication
W1A	2	Vascular complication of open surgery
W76	2	Drug continued in presence of renal failure
WA7	2	Delay in patient presenting
WAJ	2	Delay in transfer to HDU
WAL	2	Delay in referring from ICU to other staff
WB	2	PROBLEMS WITH APPROPRIATE STAFFING
WB4	2	Inadequate anaesthetic assistance
WB7	2	Anaesthetist should have been involved in preparation and resuscitation
WB9	2	Lack of nursing supervision
WBD	2	Overworked on-call team
WC4	2	Post-operative instructions ignored
WCB	2	Poor communication from transferring to receiving hospital
WD5	2	Failure to use antibiotic prophylaxis
WE1	2	Operation should have been done
WE8	2	Incorrect use of drains or catheters
WEB	2	Duration of operation too long
WF0	2	Problems during transfer
WF3	2	Transfer necessary to obtain ITU bed
WF4	2	Delay in transferring patient
WH1	2	Inadequate post-operative assessment
WK2	2	Patient unfit for surgery and anaesthesia
W1B	1	Urinary tract complication of open surgery
W1L	1	Wound complication relating to open surgery
W36	1	Upper GI complication related to endoscopic operation
W46	1	Upper GI complication of radiological operation
W47	1	Lower GI complication of radiological operation
W4A	1	Vascular complication of radiological operation

W4M	1	Peri-operative bleeding after radiological operation
W61	1	Equipment not available
W75	1	Drug omission
W77	1	Drug should have been discontinued before operation
W96	1	Diagnosis missed - no histology
W98	1	Diagnosis missed by radiologists
WAB	1	Operation would have been better deferred or delayed
WAD	1	Delay in transferring patient to ITU
WAE	1	Delay to re-operation
WB6	1	Surgeon operating outwith specialty
WB8	1	No interventional radiologist
WC7	1	Failure of communication at anaesthetic handover
WC9	1	Failed surgical communication through rotation of staff
WCA	1	Poor communication between physician and surgeon
WCE	1	Wrong results used for decision making
WCG	1	Failure to report death to the Procurator Fiscal
WCH	1	Poor communication between nursing staff and medical staff
WD2	1	Failure to use endoscopic surgery
WDM	1	Failure to obtain a chest xray pre-op
WDP	1	Failure to use NHS facilities
WED	1	Tracheostomy problems
WEF	1	Premature withdrawal of treatment
WF2	1	Transfer should have occurred
WF6	1	Transfer between surgical teams may have led to death
WG1	1	Problems with CVP monitoring
WK6	1	Patient fell out of bed
WK8	1	Patient insistent on operation
WK9	1	Relative insistent on operation

Table 11 **Most common ACONs for emergency admissions with malignancy present**

Code	Total	Description
WC5	9	Poor documentation
W0N	8	Miscellaneous complication
WA6	7	Delay to surgery ie earlier operation desirable
WA2	6	Delay in transfer to surgeon by physicians
WE4	6	Unsatisfactory medical management
WE2	5	Operation should not have been done or was unnecessary
W17	4	Lower GI complication of open surgery
W92	4	Diagnosis missed by surgeons
WH0	4	Pre-operative assessment inadequate
WK0	4	Patient refused treatment
W04	3	Respiratory tract
WA0	3	Delay in transfer to surgical unit
WAC	3	Delay in investigating the patient
WE0	3	Wrong operation performed
W1A	2	Vascular complication of open surgery
W50	2	General anaesthetic complications
WA9	2	Delay in recognising complications
WAF	2	Delay to diagnosis
WC0	2	Failure of communication - unspecified
WDJ	2	Hospice not used

WE5	2	Hospital admission to wrong ward or specialty
W08	1	Other abdominal complication
W16	1	Upper GI complication of open surgery
W1B	1	Urinary tract complication of open surgery
W36	1	Upper GI complication related to endoscopic operation
W46	1	Upper GI complication of radiological operation
W47	1	Lower GI complication of radiological operation
W70	1	Reaction to drugs
W72	1	Wrong dose of drug used
W90	1	Diagnosis missed - unspecified
WAJ	1	Delay in transfer to HDU
WB2	1	Surgeon too junior
WB3	1	Anaesthetist too junior
WC6	1	Failure to communicate with senior staff
WD0	1	Failure to use ITU
WD6	1	Failure to use a specialist centre
WDQ	1	Failure to obtain CT scan
WE	1	INCORRECT/INAPPROPRIATE THERAPY
WF1	1	Transfer should not have occurred
WF3	1	Transfer necessary to obtain ITU bed
WG0	1	Inadequate monitoring
WH2	1	Failure to investigate or assess patient fully
WH3	1	Pre-optimisation should have been used
WH4	1	Failure to recognise severity of illness
WK6	1	Patient fell out of bed
WK9	1	Relative insistent on operation

## Imaging

Table 12 **Number of deaths with delay to appropriate imaging**

Delay	n
Pre-op or post-op delay	38
Pre-op delay only	30
Post-op delay only	12
Pre-op and post-op delay	4

Figure 18

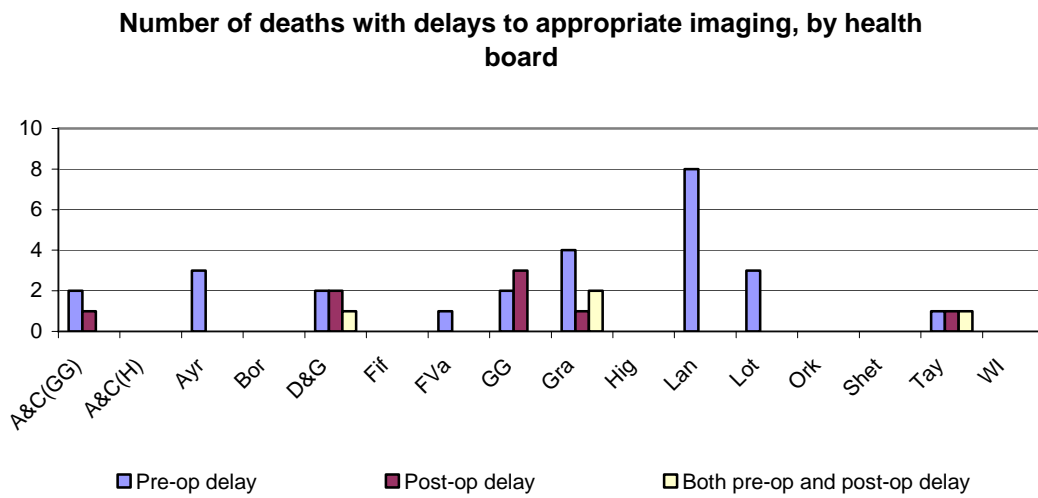


Figure 19

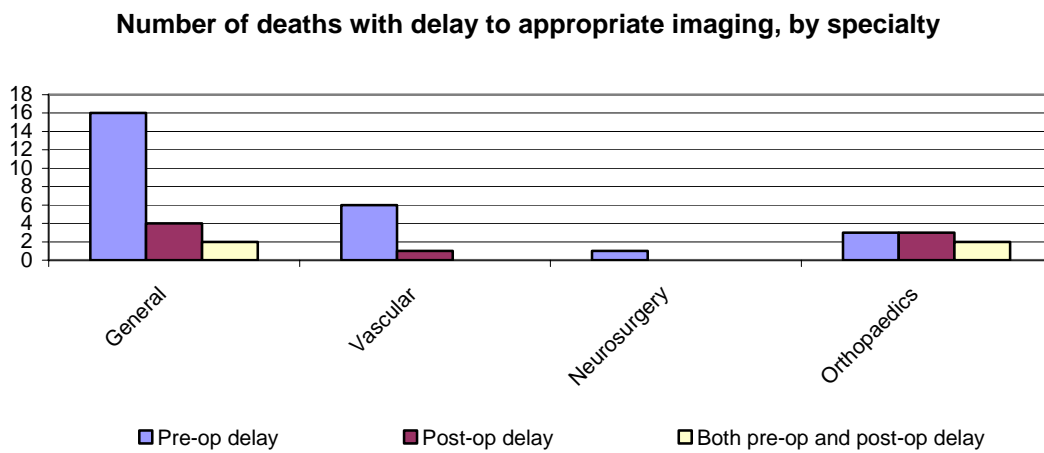


Table 13 **Most common ACONs where there was a delay to appropriate imaging**

Code	Total	Description
WAC	6	Delay in investigating the patient
WA6	4	Delay to surgery ie earlier operation desirable
W0N	2	Miscellaneous complication
W70	2	Reaction to drugs
WAF	2	Delay to diagnosis
WE0	2	Wrong operation performed
W46	1	Upper GI complication of radiological operation
W61	1	Equipment not available
WA9	1	Delay in recognising complications
WAG	1	Delay starting medical treatment
WB8	1	No interventional radiologist
WC5	1	Poor documentation
WD1	1	Failure to use HDU
WD7	1	Failure to obtain a post mortem

Figure 20

**Number of deaths where delay to appropriate imaging, by size of hospital\***

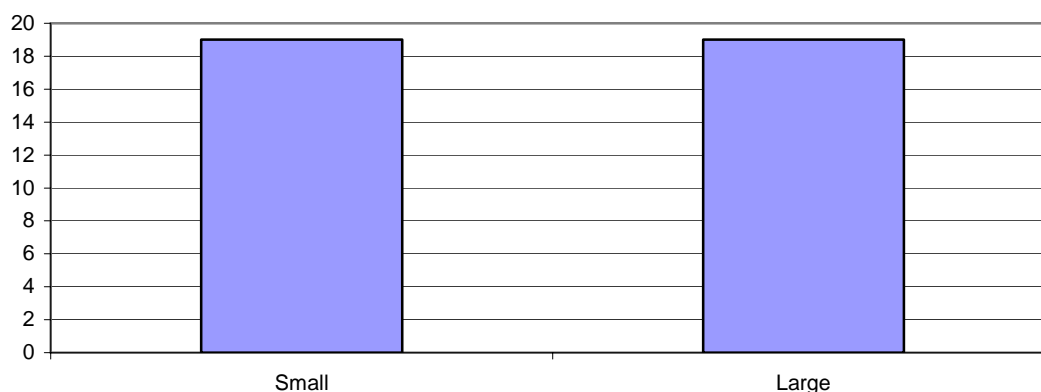


Table 14 **Number of deaths where there was a delay to appropriate imaging, by type of imaging**

Type of Imaging	Count
Cross section imaging	10
Contrast imaging	6
Plain films	5
Radiological intervention	7
Ultrasound	2

## Hospital Acquired Infection (HAI)

Table 15 **Number of patients who developed a HAI after transfer**

Patient developed HAI	N
Total	306 (8.27% of audited deaths)
HAI contributed to or caused death	229
HAI did not contribute to or cause death	73
Unknown if HAI contributed to or caused death	4

Figure 21

**Percentage of patients who had developed a HAI, by health board**

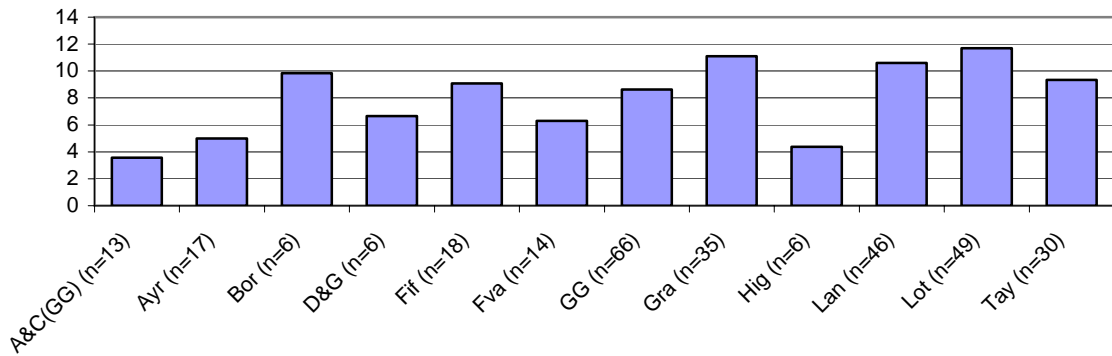


Table 16 **Number of deaths where the patient was transferred with a HAI**

Patient transferred with HAI	N
Total	56 (1.51% of audited deaths)
HAI contributed to or caused death	56
HAI did not contribute to or cause death	-
Unknown if HAI contributed to or caused death	-

Figure 22

**Percentage of patients who were transferred with a HAI, by health board**

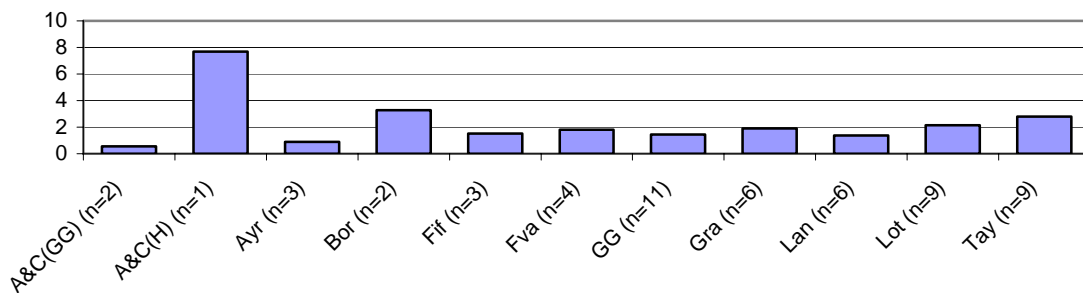


Figure 23

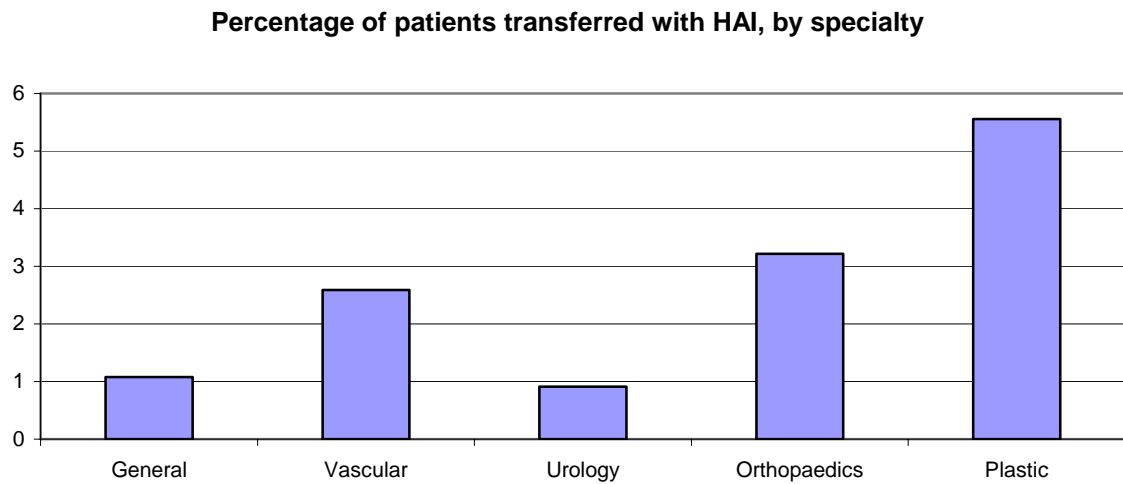


Table 17 **Number of deaths where patients were either transferred with a HAI or developed a HAI**

Patient either transferred with HAI or developed HAI	N (% of all audited deaths)
Total	350 (9.46%)
HAI either contributed to or caused death	255 (6.89%)

Figure 24

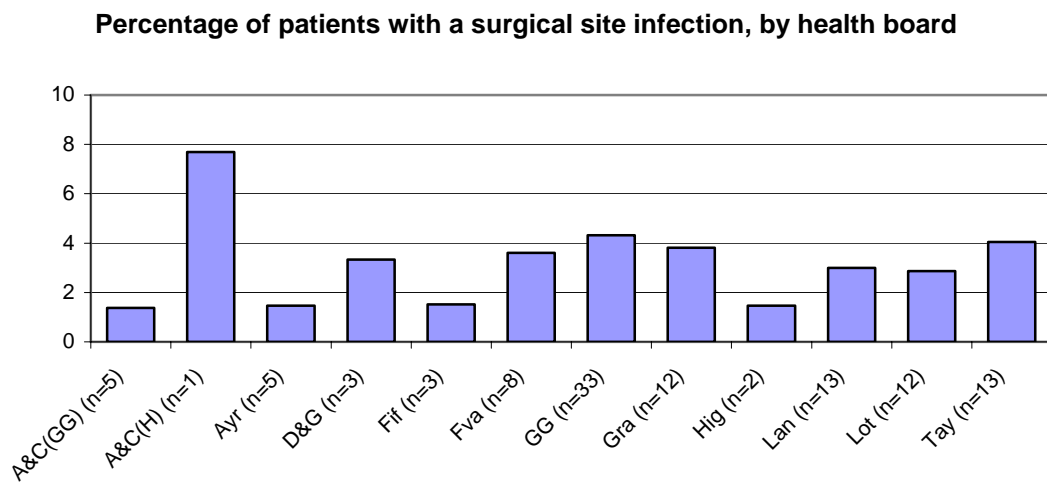


Figure 25

Percentage of patients with a surgical site infection, by specialty

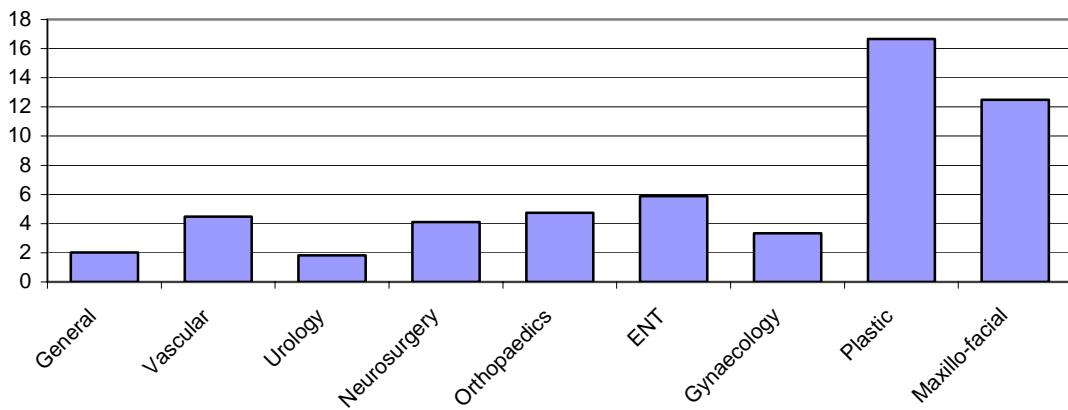


Figure 26

Percentage of patients with MRSA, by health board

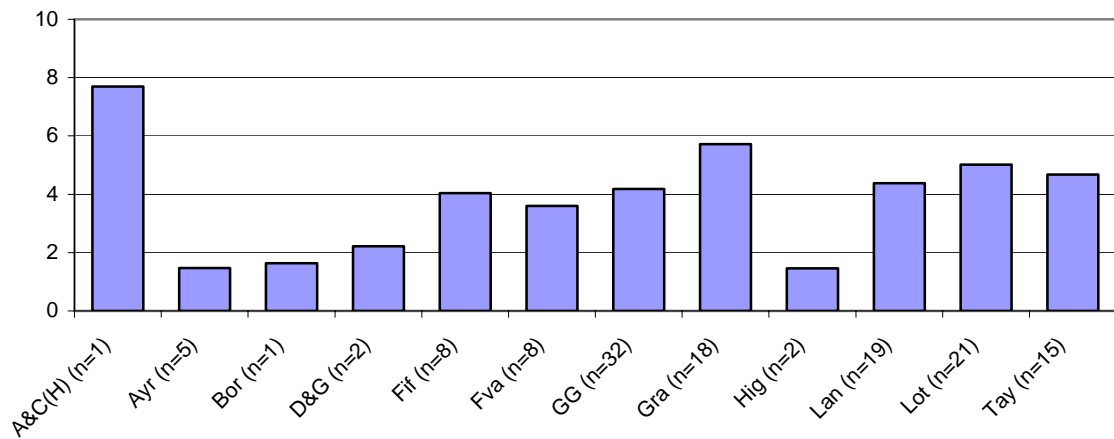


Figure 27

Percentage of patients with MRSA, by specialty

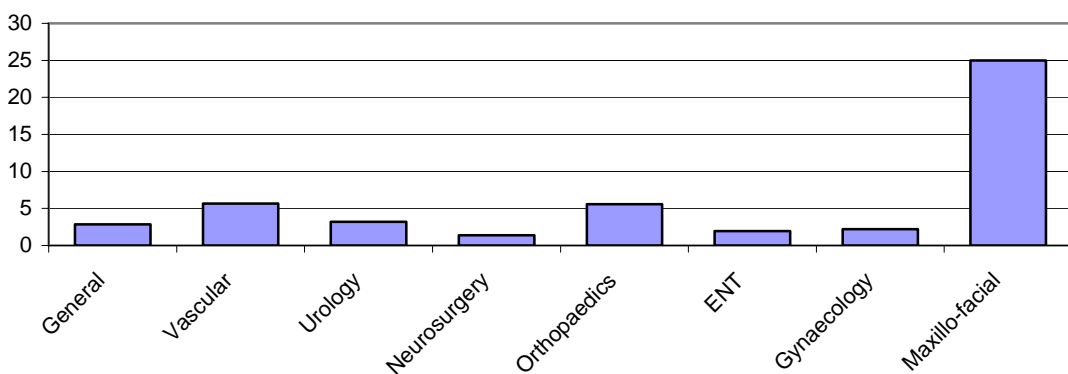


Figure 28

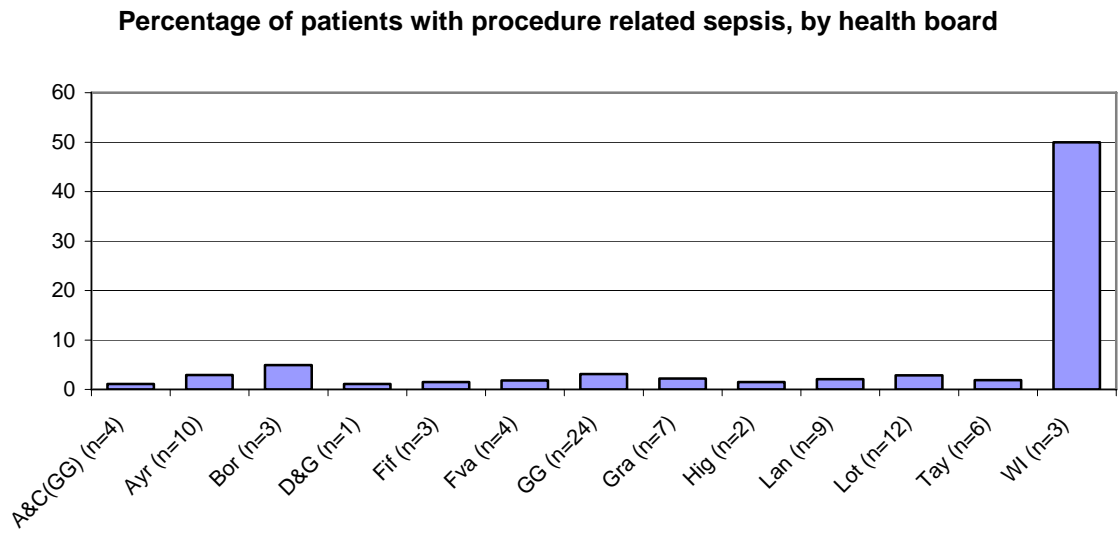


Figure 29

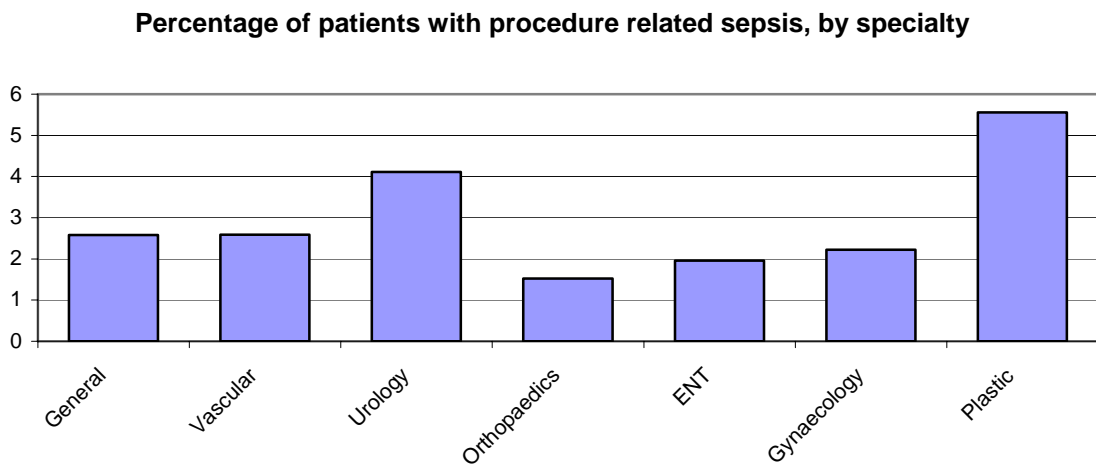


Figure 30

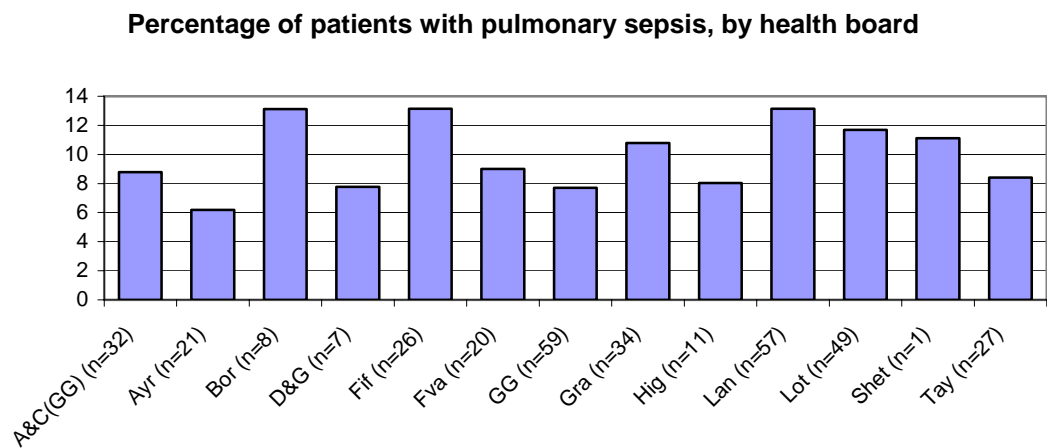
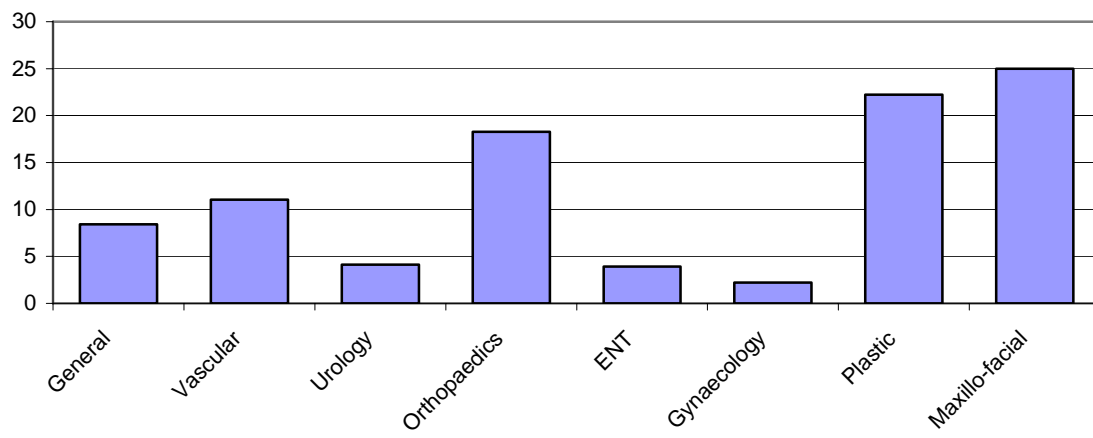


Figure 31

Percentage of patients with pulmonary sepsis, by specialty



## Terminal Care Deaths \*

\* For definition, see page 26

Figure 32

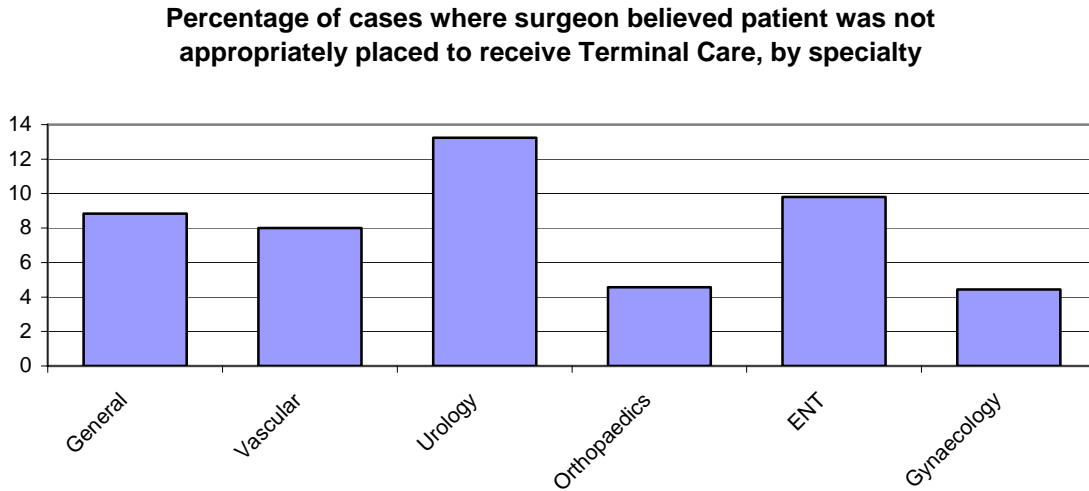
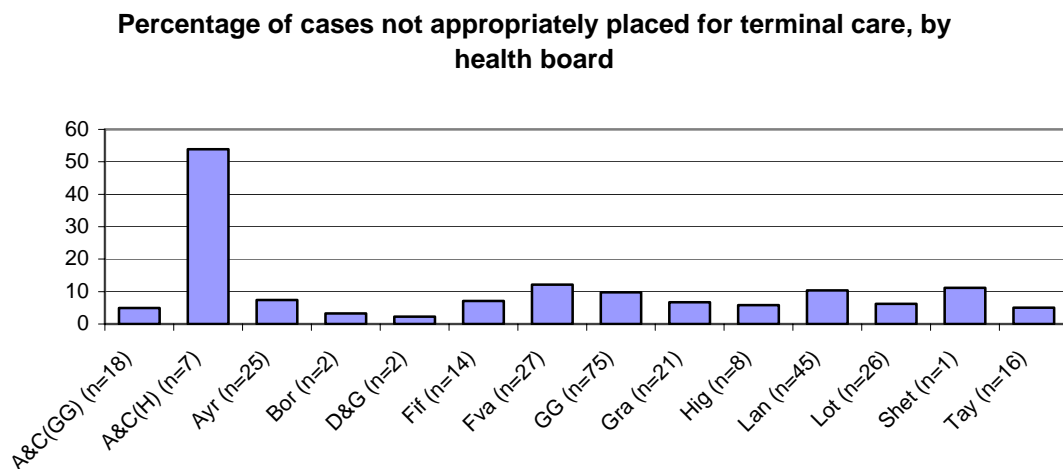


Table 18 **Number of patients not appropriately placed for TC, by specialty**

Specialty	No of cases where surg believed TC was not approp	Total audited deaths in specialty	Percent
General	188	2,129	8.83
Vascular	34	425	8.00
Urology	29	219	13.24
Orthopaedics	27	591	4.57
ENT	5	51	9.80
Gynaecology	4	90	4.44

Figure 33



## Abbreviations

### ACONs

ACONs are areas of concern or for consideration which are identified by the surgical or anaesthetic assessors (either first line or case note reviewers). An area of concern is where the assessor believes that areas of care should have been better. An area for consideration is where the assessor wishes to draw the clinician's attention to areas of care that he/she believes could have been improved, but recognises that it may be an area of debate. These ACONs are coded before being entered on the database. A maximum of three ACONs can be ascribed to each death by the surgical assessors and a maximum of three ACONs can be ascribed to each death by the anaesthetic assessors.

### Health Boards

A&C (GG)	Argyll & Clyde – Greater Glasgow
A&C (H)	Argyll & Clyde - Highland
Ayr	Ayrshire and Arran
Bor	Borders
D&G	Dumfries and Galloway
Fif	Fife
Fva	Forth Valley
GG	Greater Glasgow
Gra	Grampian
Hig	Highland
Lan	Lanarkshire
Lot	Lothian
Ork	Orkney
Shet	Shetland
Tay	Tayside
WI	Western Isles

### Terminal Care

An admission for terminal care is an admission for the control of physical symptoms (e.g. pain) and of psychological, social and spiritual problems for patients whose disease is not responsive to curative treatment.