Society for Cardiothoracic Surgery in Great Britain and Ireland

The Thoracic Surgery Registry
Brief Report
Audit Years 2011-12 to 2013-14

The SCTS Thoracic Surgery Audit Group

Introduction

This brief report summarises national data from the SCTS thoracic returns for the last three audit years.

The aim is to provide benchmarking national data for individual members and units, who contribute to this project. It provides feedback and data to units between the publication of full database reports or "blue books".

The SCTS returns is a national registry of British and Irish general thoracic surgery, which has collected data since 1980. Activity and in-hospital mortality is recorded. Remarkably for a project that has run almost entirely on the goodwill of our membership and their units, it has enjoyed almost complete data submission since its inception.

This report includes trends in overall surgical volumes over the last three years. We have also included mortality rates for the larger volume procedures.

The SCTS returns have never collected true "process of care" data. This is unlike other clinical audit projects, for example the National Lung Cancer Audit, which collects data on the care delivered as well as the outcomes achieved. We have however been able to report some data beyond in-hospital mortality, for example the pneumonectomy rate, which illustrate the nature of the care delivered.

Doug West
SCTS Thoracic Audit Lead
Thoracic Surgeon, University Hospitals Bristol

SCTS Local Audit Leads 2013-14

Mr	Doug	Aitchison	Basildon and Thurock University Hospitals
Mr	Tim	Batchelor	Bristol Royal Infirmary
Mr	Patrick	Yiu	Royal Woverhampton Hospitals NHS Trust
Ms	Elizabeth	Belcher	John Radcliffe Hospital
Mr	Andy	Chukwuemeka	Imperial College Healthcare
Mr	Mike	Cowen	Castle Hill Hospital
Mr	Mahmoud	Loubani	Castle Hill Hospital
Mr	Andy	Duncan	Blackpool Teaching Hospitals
Mr	Jonathan	Edwards	Northern General Hospital
Mr	Hussein	El Shafei	Aberdeen Royal Infirmary
Mr	Johnny	Ferguson	James Cook University Hospital
Mr	Peter	Froeschle	Royal Devon & Exeter NHS Trust
Mr	Shilly	Ghosh	North Staffordshire Royal Infirmary
Mr	David	Healy	Mater Misericordae University Hospital
Mr	David	Healy	St Vincent's University Hospital
Mr	John	Hinchion	Cork University Hospital
Mr	John	Duffy	Nottingham City Hospital
Mr	Mark	Jones	Royal Victoria Hospital
Mr	Maninder	Kalkat	Heart of England NHS Trust
Ms	Juliet	King	Guy's and St Thomas' Hospital
Mr	Alan	Kirk	Golden Jubilee National Hospital
Ms	Margaret	Kornaszewska	University Hospital of Wales
Mr	Kelvin	Lau	St Bartholomews Hospital
Mr	Eric	Lim	Royal Brompton and Harefield Hospitals
Mr	Adrian	Marchbank	Derriford Hospital
Mr	Joe	Marzouk	University Hospitals, Coventry & Warwickshire NHS Trust
Professor	Christopher	McGregor	University College Hospital London
Mr	Nil	Chaudhuri	Leeds Teaching Hospitals
Mr	Steve	Wooley	Liverpool Heart and Chest Hospital
Mr	Sri	Rathinam	Glenfield Hospital
Mr	Marco	Scarci	Papworth Hospital
Mr	Ram	Rammohan	South Manchester University Hospital
Mr	Sasha	Stamenkovic	Freeman Hospital
Ms	Carol	Tan	St George's Hospital
Mr	Marc	VanLeuvan	Norfolk and Norwich University Hospital
Mr	Dave	Verasingham	University Hospital Galway
Mr	Bill	Walker	Royal Infirmary of Edinburgh
Mr	Donald	Whitaker	King's College Hospital
Mr	Edwin	Woo	Southampton General Hospital
Mr	Aprim	Youhana	Morriston Hospital
Mr	Vincent	Young	St James's Hospital

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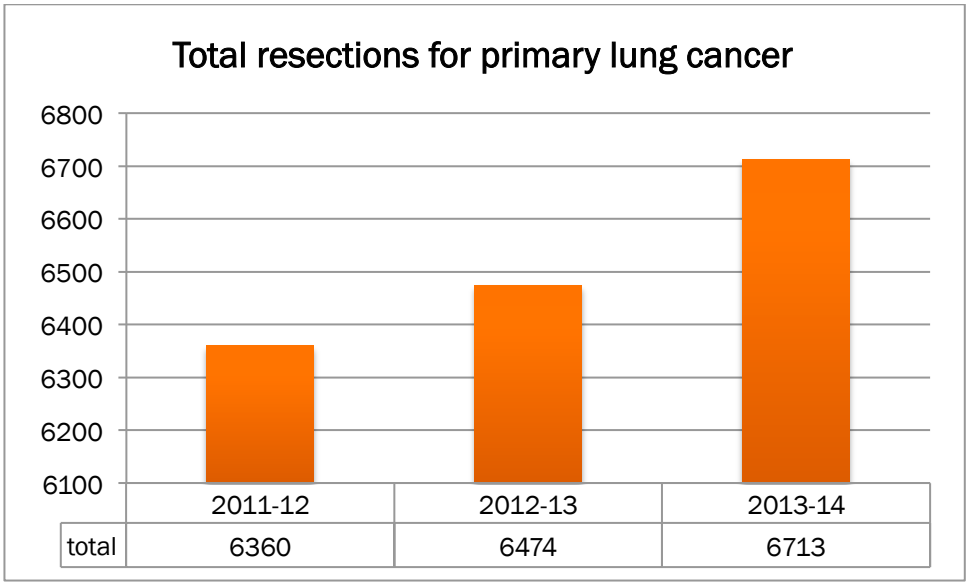
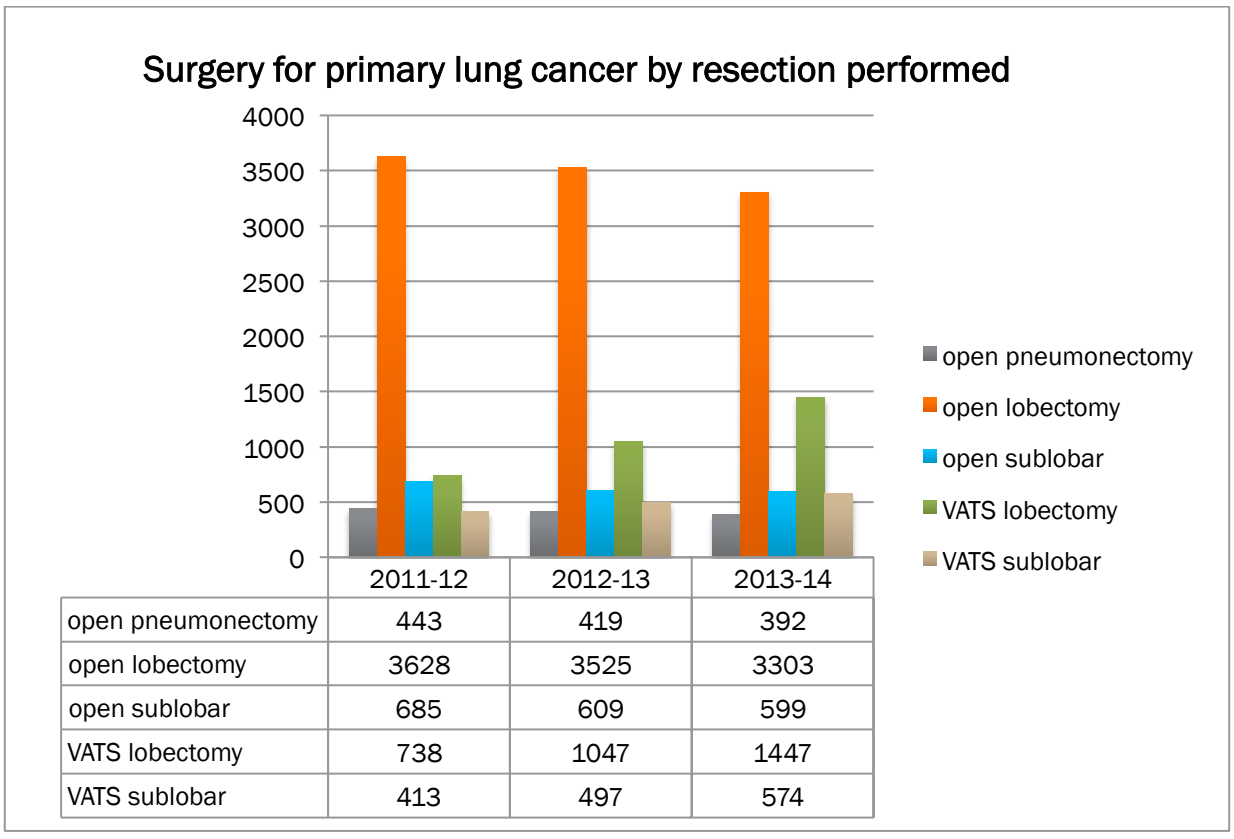
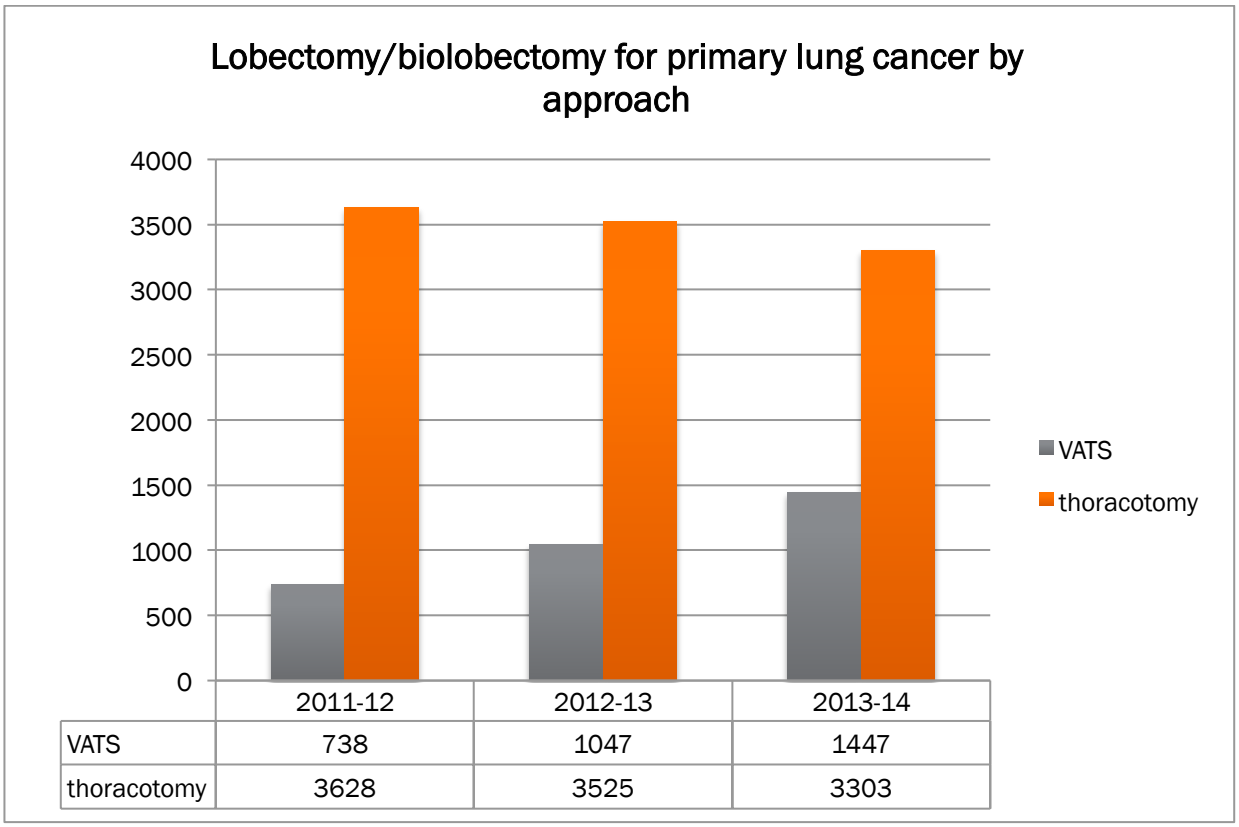
1a Surgery for Primary Lung Cancer: Activity



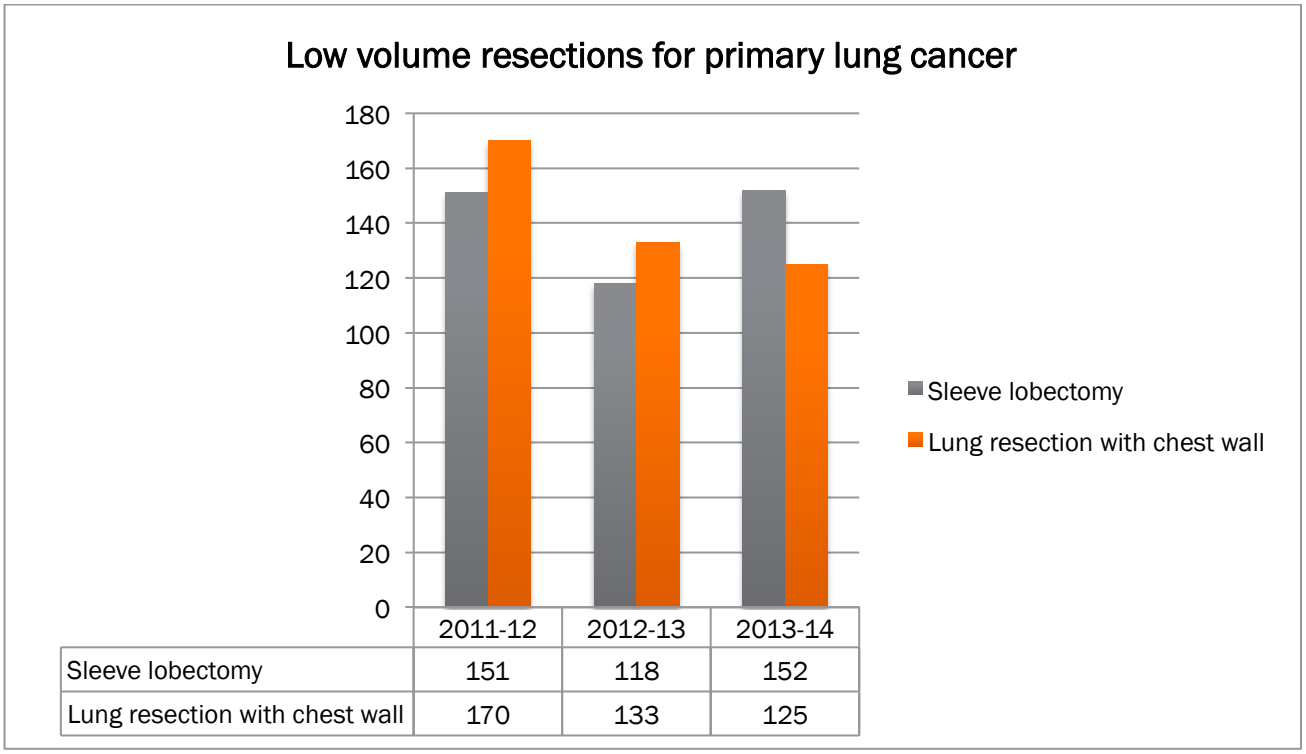
	2011-12	2012-13	2013-14
total	6360	6474	6713



	2011-12	2012-13	2013-14
open pneumonectomy	443	419	392
open lobectomy	3628	3525	3303
open sublobar	685	609	599
VATS lobectomy	738	1047	1447
VATS sublobar	413	497	574



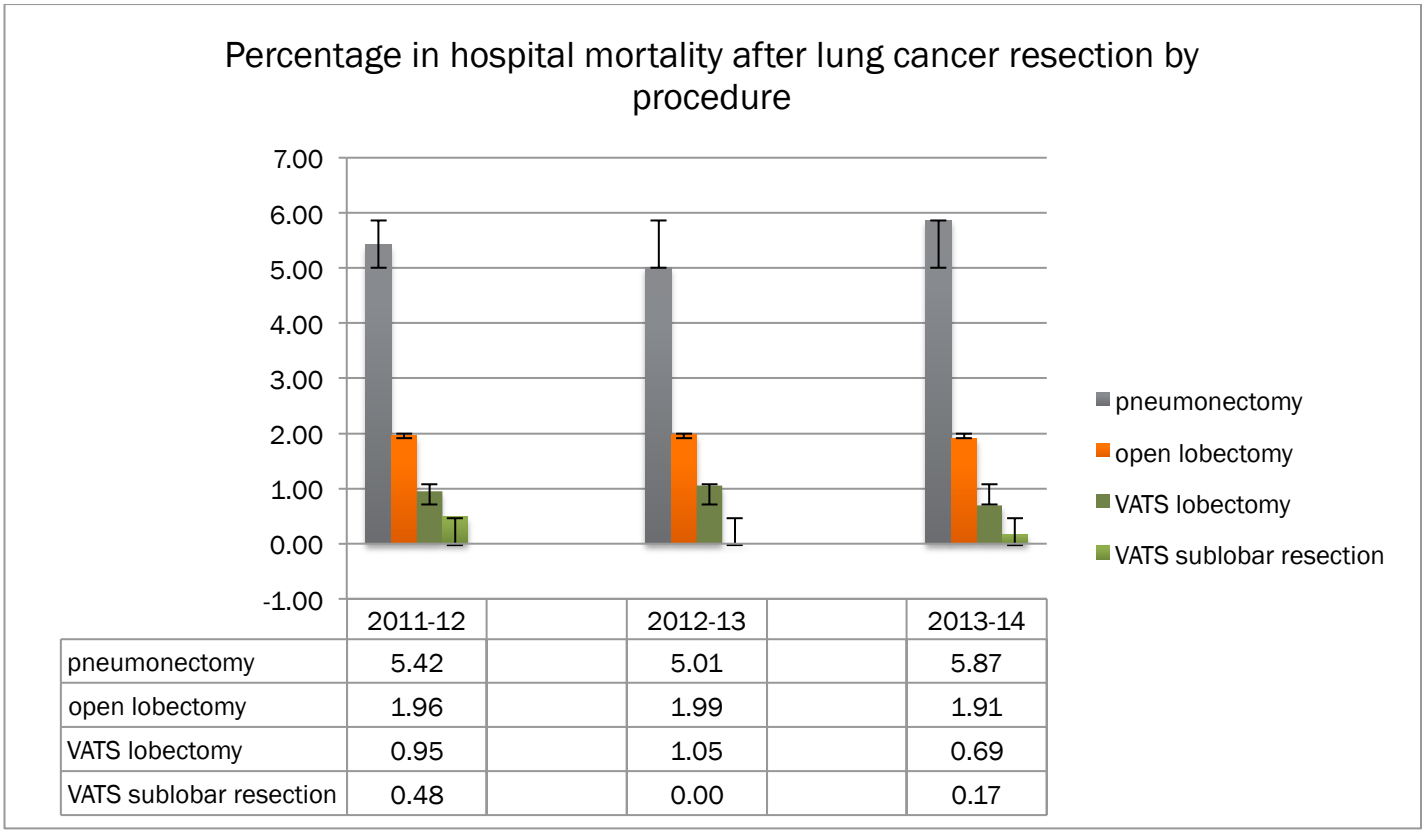
	2011-12	2012-13	2013-14
VATS	738	1047	1447
thoracotomy	3628	3525	3303



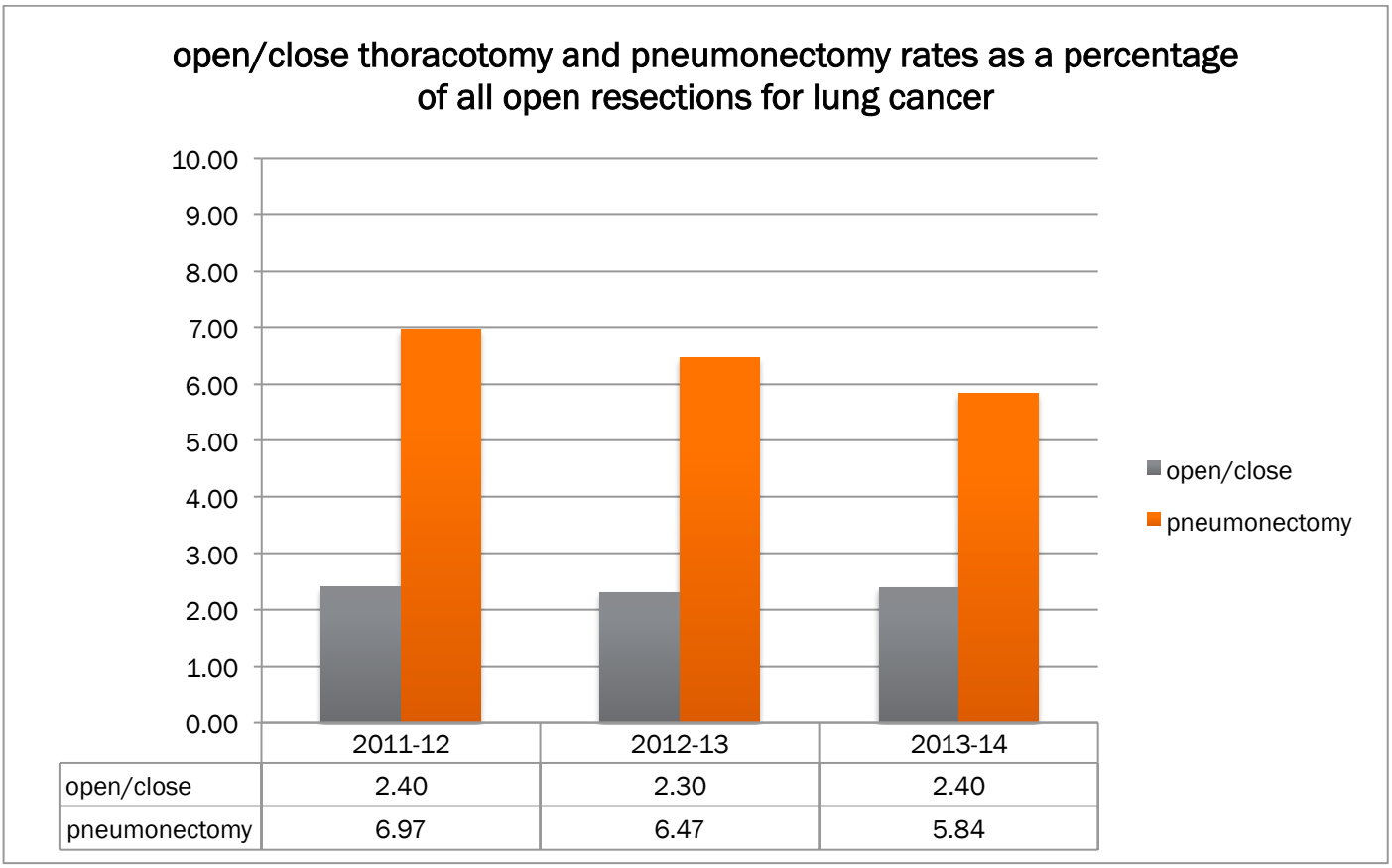
	2011-12	2012-13	2013-14
Sleeve lobectomy	151	118	152
Lung resection with chest wall	170	133	125

The number of lung cancer resections performed continues to increase, rising by 5.6% between 2011-12 and 2013-14. Lobectomy remains the commonest resection, but there has been a marked change in the surgical approach employed. Minimal access (VATS) surgery has increased year-on-year, accounting for 30% of all lobectomies for primary lung cancer in 2013-14. In contrast, slight falls have been recorded in the number of pneumonectomies and open lobectomies performed.

Surgery for Primary Lung Cancer: Outcomes and Process Measures



	2011-12		2012-13		2013-14
pneumonectomy	5.42		5.01		5.87
open lobectomy	1.96		1.99		1.91
VATS lobectomy	0.95		1.05		0.69
VATS sublobar resection	0.48		0.00		0.17



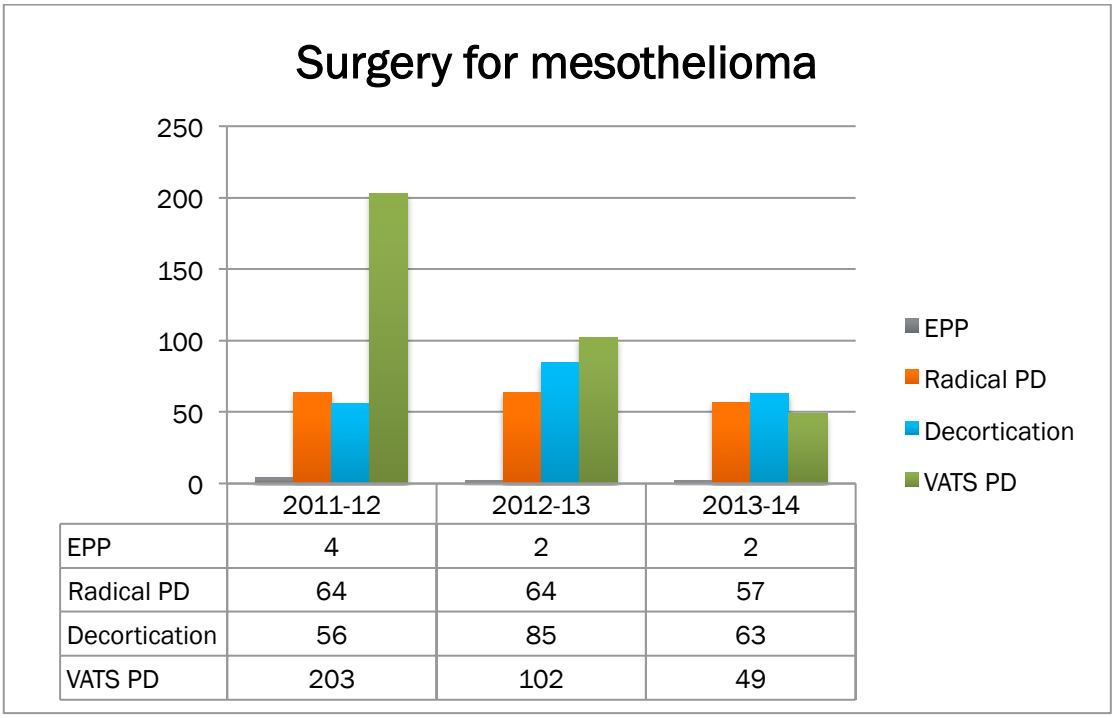
	2011-12	2012-13	2013-14
open/close	2.40	2.30	2.40
pneumonectomy	6.97	6.47	5.84

Pneumonectomy accounted for around 6-7% of all open surgery for lung cancer during the three years reported. Pneumonectomy carried the highest risk of in-hospital mortality, between 5-6%. This was over twice the in-hospital mortality of open lobectomy, which was around 2%. Around 20% of all deaths after lung resection for lung cancer occurred after a pneumonectomy.

VATS lobectomy mortality was around 1%, with sublobar thoracoscopic resections never registering an annual mortality rate of more than 0.5% in the three years reported. This is perhaps surprising, since these procedures are often chosen for patients thought to be unfit for lobectomy.

Just over one in 50 open operations for lung cancer result in an “open and close” or futile thoracotomy.

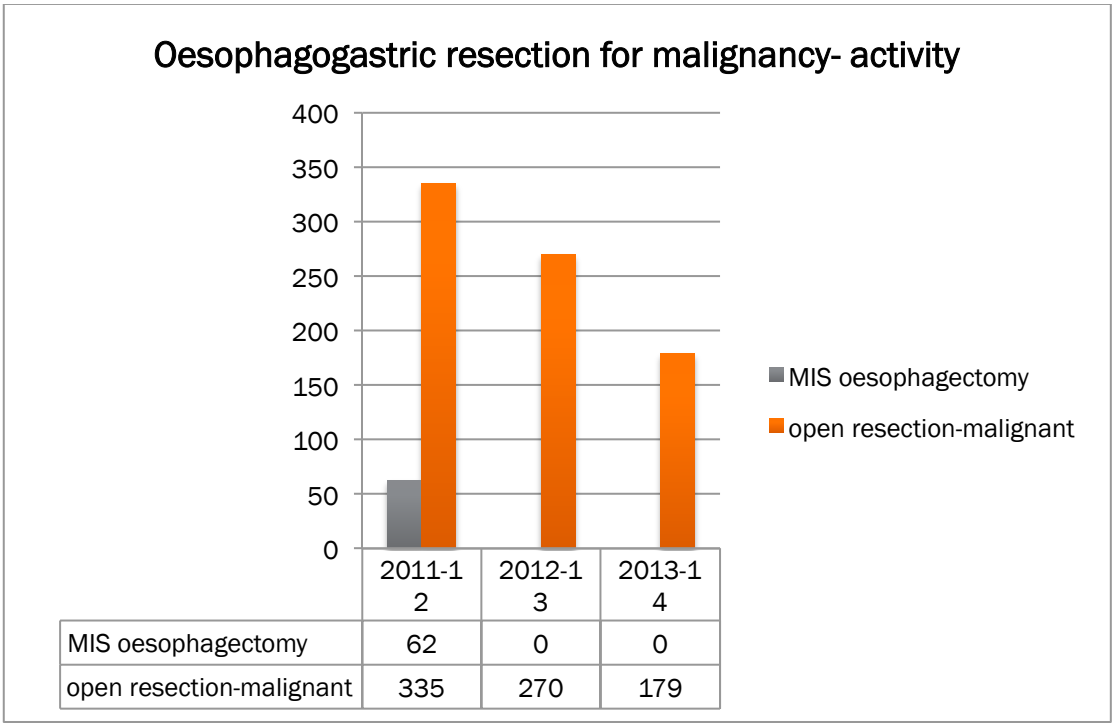
(1b) Surgery for malignant pleural mesothelioma



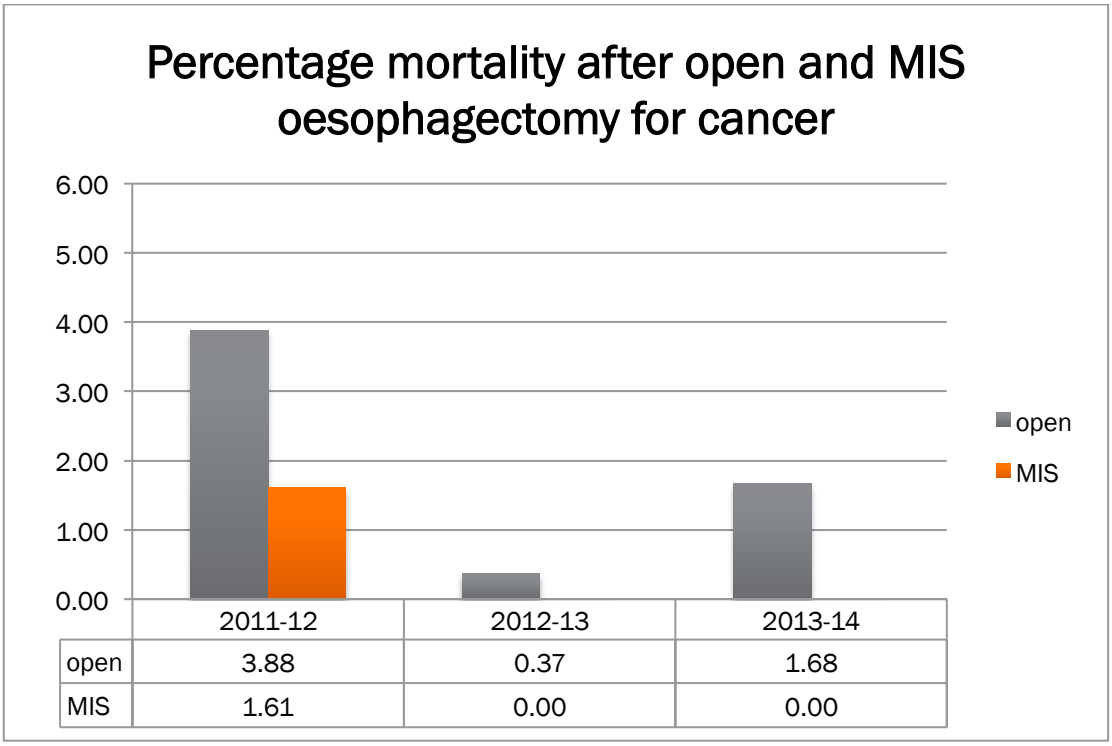
	2011-12	2012-13	2013-14
EPP	4	2	2
Radical PD	64	64	57
Decortication	56	85	63
VATS PD	203	102	49

Surgery for malignant pleural mesothelioma was uncommon during the audit period,. Extrapleural pneumonectomy was very rare, with only eight cases reported in three years. VATS pleurectomy/decortication, the commonest procedure in 2011-12, saw a significant reduction in frequency. The decline began before publication of the MesoVATS trial in 2014 (Rintoul et al Lancet. 2014 Sep 20; 384 (9948):1118-27).

(1c) Oesophageal Cancer



	2011-12	2012-13	2013-14
MIS oesophagectomy	62	0	0
open resection-malignant	335	270	179



	2011-12	2012-13	2013-14
open	3.88	0.37	1.68
MIS	1.61	0.00	0.00

*** no MIS oesophageal resections were reported in either 2012-13 or 2013-14**

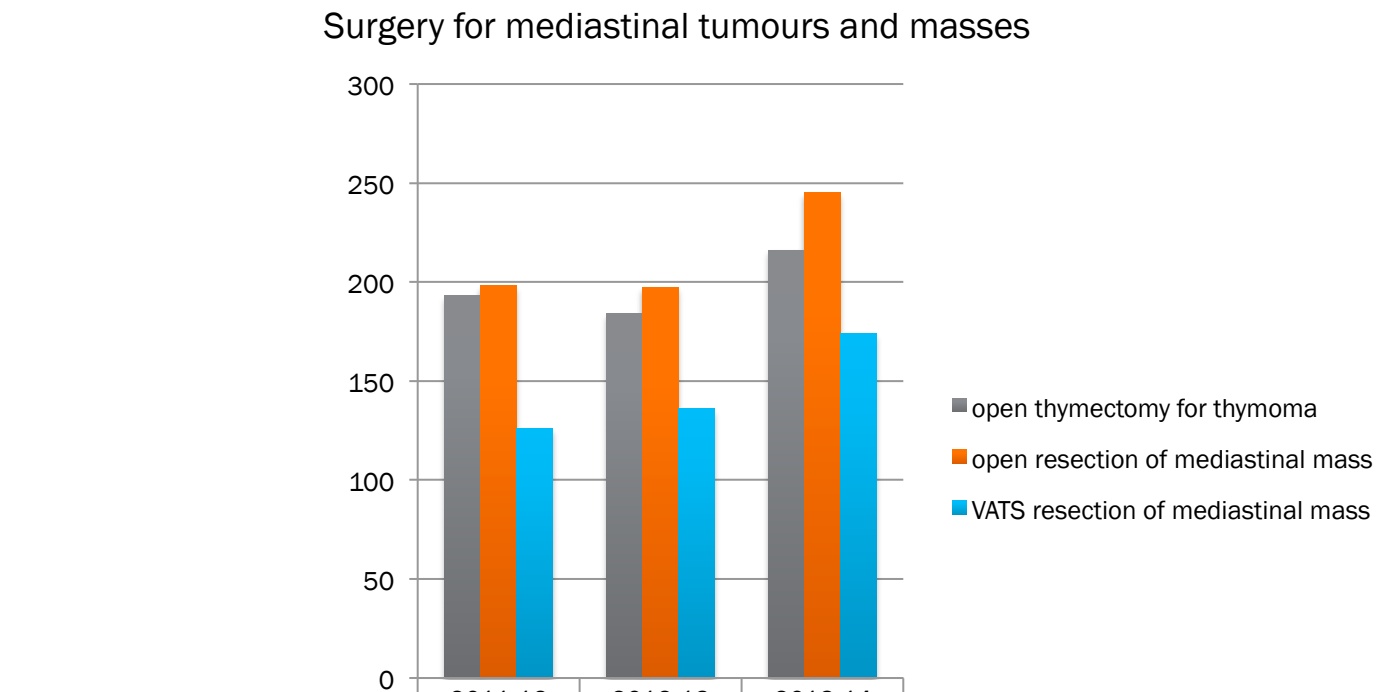
We recorded a sustained decrease in the number of oesophagectomies for cancer reported to the Society, with less than 200 open cases in 2013-14. No minimal access cases have been reported in the last two years.

In contrast, the 2014 National Oesophaogastric Cancer Audit (reporting 2012-13 data) reported 2,986 oesophagectomies for malignancy with curative intent in England and Wales (see the report at http://www.hscic.gov.uk/og). 41.5% of these cases were via a minimal access or hybrid technique. Therefore, we believe that the great majority of oesophageal surgery is now performed outside thoracic surgical units.

Mortality remained low, with only 17 deaths after open and 1 death after MIS oesophagectomy during the entire audit period.

(1d) Rare Primary Thoracic Tumours

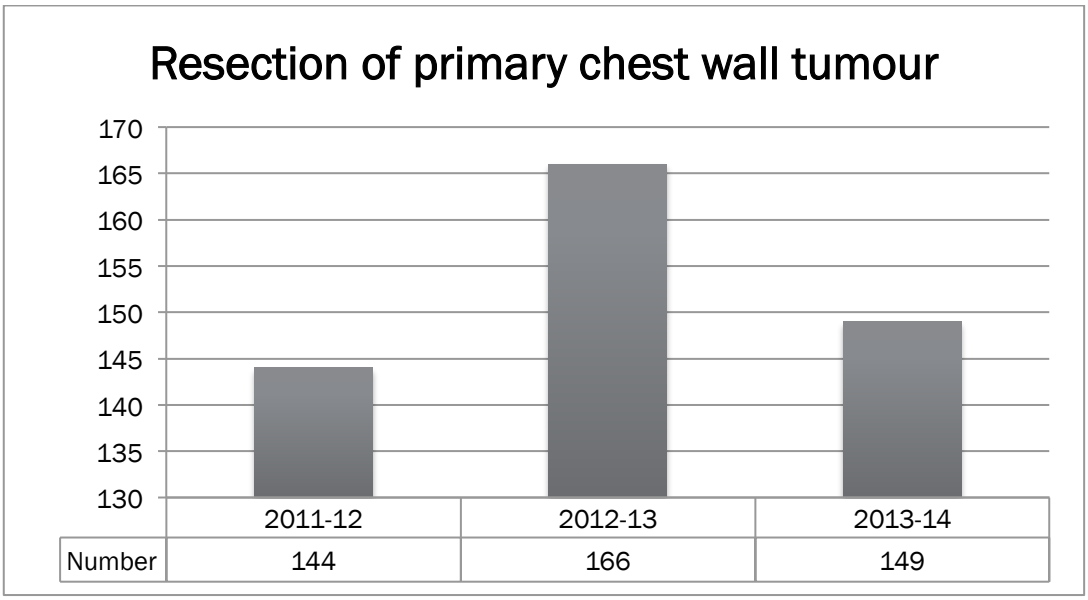
Surgery for mediastinal masses and tumours



	2011-12	2012-13	2013-14
open thymectomy for thymoma	193	184	216
open resection of mediastinal mass	198	197	245
VATS resection of mediastinal mass	126	136	174

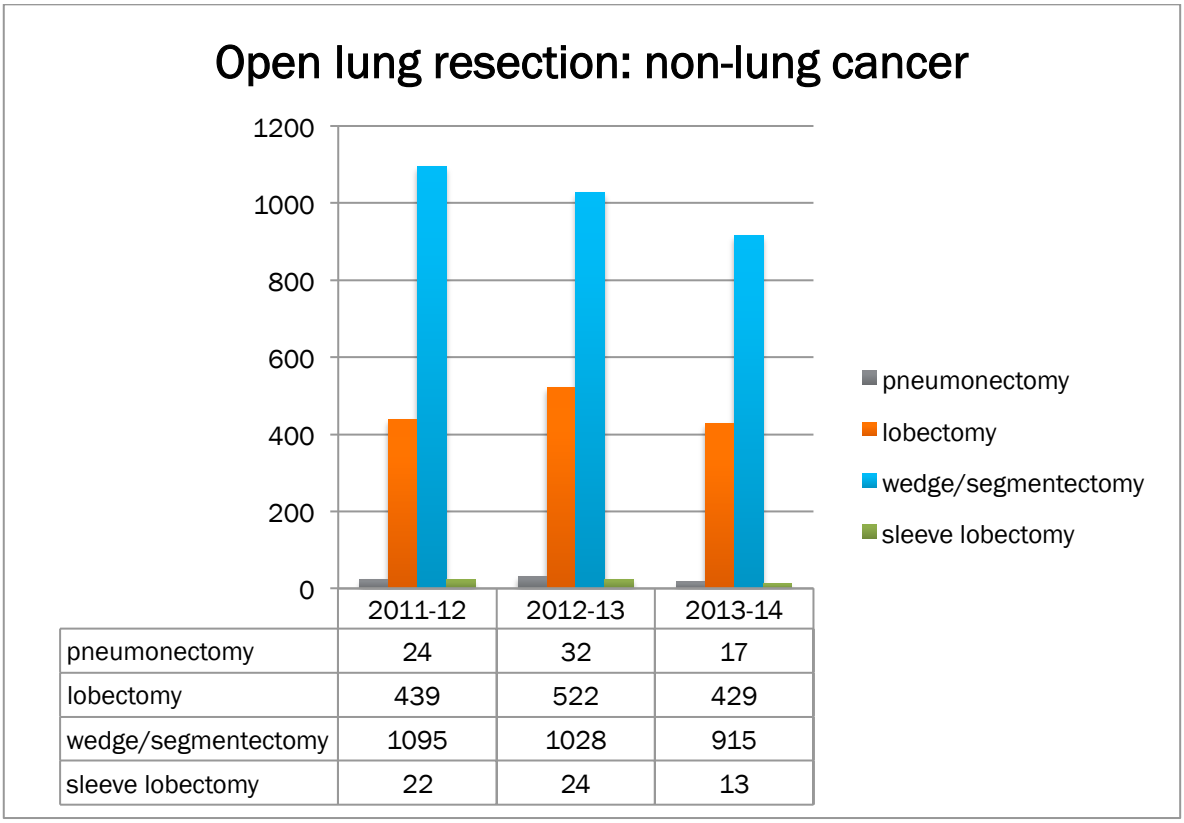
Mediastinal surgery remains rare, but we registered small increases in both open and VATS resections.

Resection of primary chest wall tumours



(2) Surgery for Benign and Pleural Disease

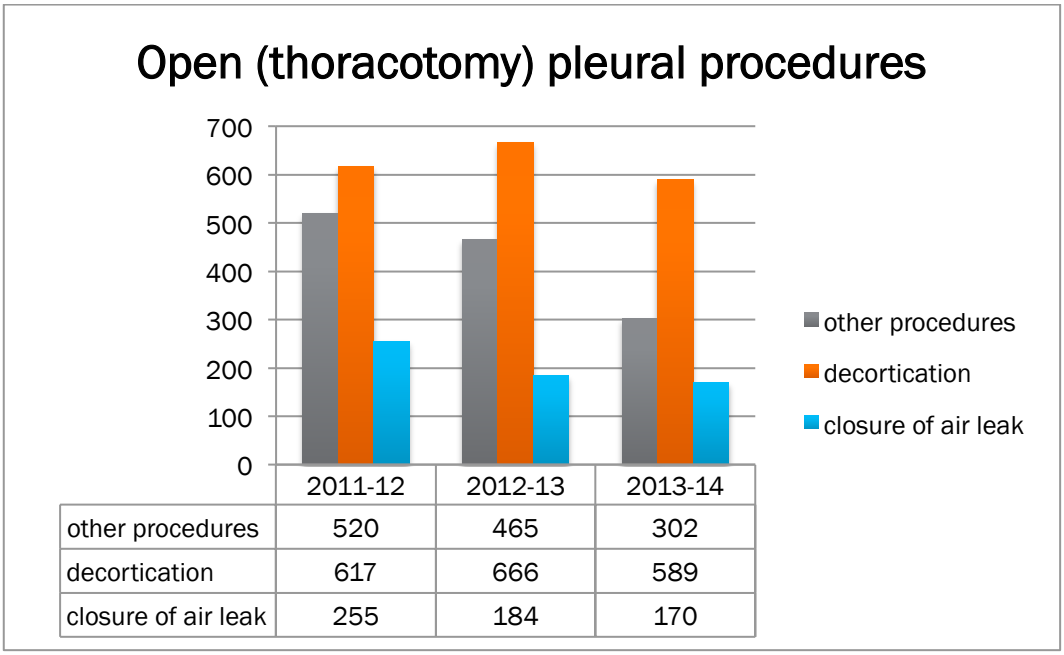
(2a) Lung resection



	2011-12	2012-13	2013-14
pneumonectomy	24	32	17
lobectomy	439	522	429
wedge/segmentectomy	1095	1028	915
sleeve lobectomy	22	24	13

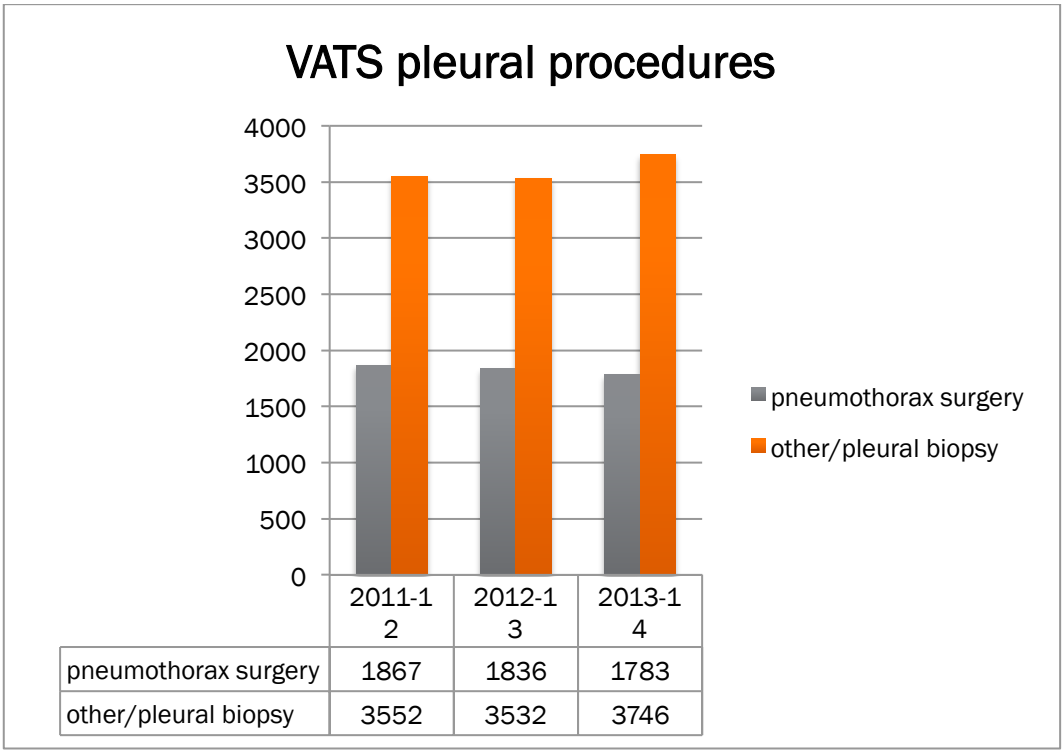
This group includes open surgery for pulmonary metastases, benign tumours, pulmonary sepsis and other aetiologies. In contrast to lung cancer surgery, sub-lobar resections are the commonest resection for open non-lung cancer surgery.

(2b) Pleural Disease



	2011-12	2012-13	2013-14
other procedures	520	465	302
decortication	617	666	589
closure of air leak	255	184	170

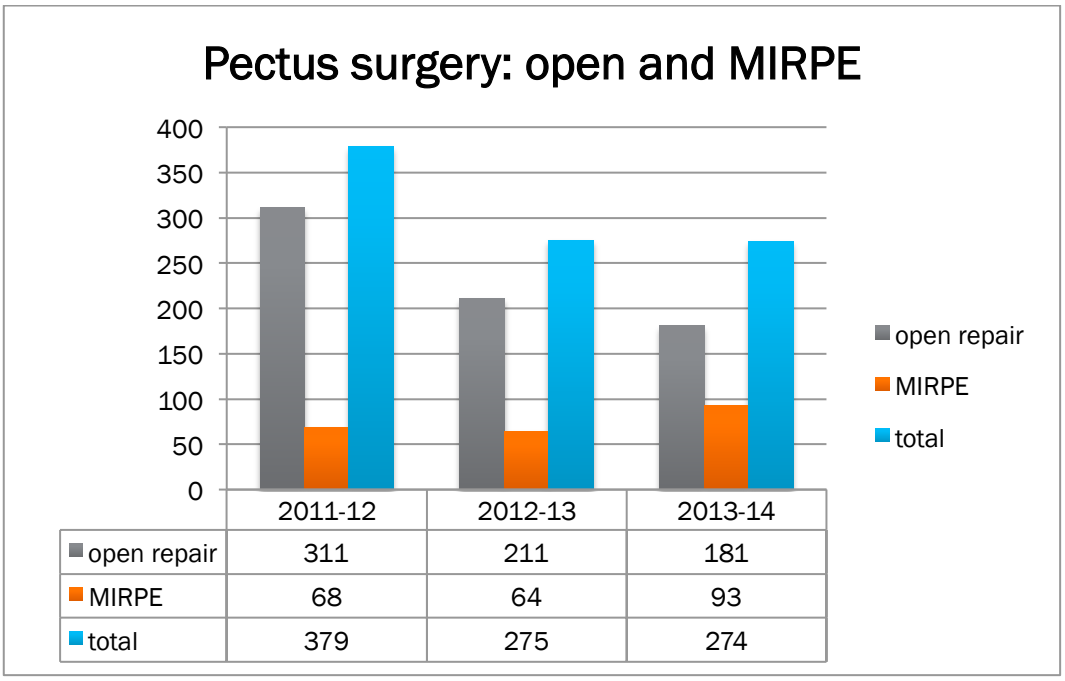
Slight falls have been recorded in "other procedures", which includes open pleural biopsies, and open operations for air leak. Open surgery accounted for less than 9% of all pneumothorax surgery reported in 2013-14.



	2011-12	2012-13	2013-14
pneumothorax surgery	1867	1836	1783
other/pleural biopsy	3552	3532	3746

The bulk of pneumothorax surgery and other pleural procedures (including biopsy and procedures for sepsis) are performed by a thoracoscopic approach. Despite the rise of local anaesthetic thoracoscopy, we have not seen a fall in the amount of thoracoscopic pleural procedures.

(2c) Chest wall deformity surgery

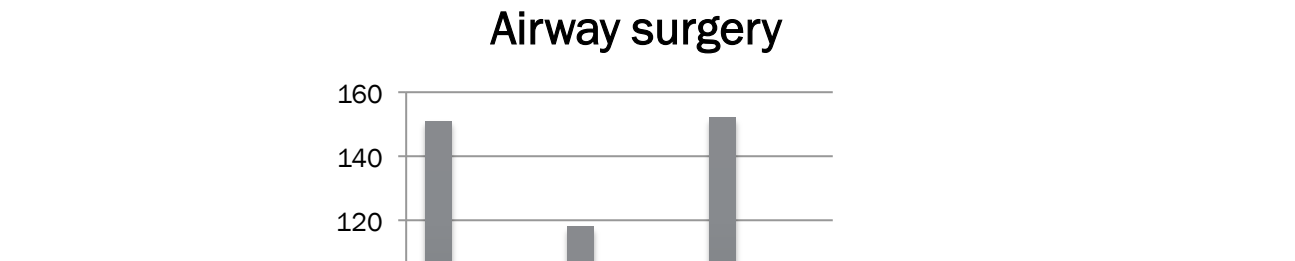


	2011-12	2012-13	2013-14
open repair	311	211	181
MIRPE	68	64	93
total	379	275	274

We have seen a slight fall in the volume of pectus surgery done. We are aware of some local attempts to impose commissioning restrictions on this surgery in parts of England prior to the allocation of this work to national specialist commissioning. This may have played a part in the reduction seen.

There has been an increase in the proportion of pectus surgerperformed via a minimal access technique to 51.4% of all cases in 2013-14.

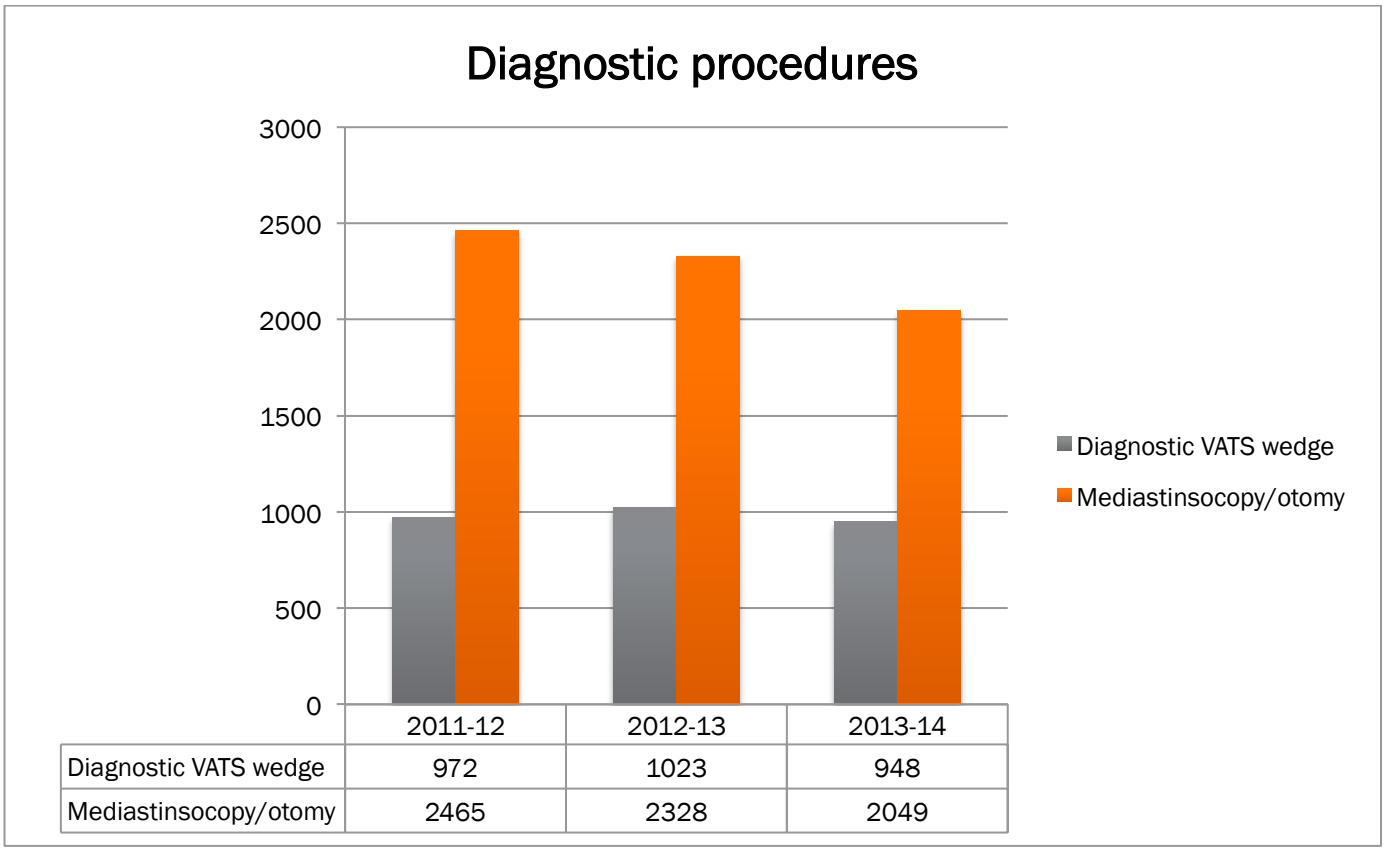
(3) Surgery of the major airways: benign and malignant



	2011-12	2012-13	2013-14
Sleeve lobectomy- lung cancer	151	118	152
sleeve lobectomy- non lung cancer	22	24	13
tracheal resection- tumour	6	4	6
tracheal resection- non tumour	23	16	13

Surgery of the major airways is rare. Sleeve lobectomy represents the bulk of the work reported. There has been no discernable trend in activity over the three years reported.

(4) Diagnostic procedures

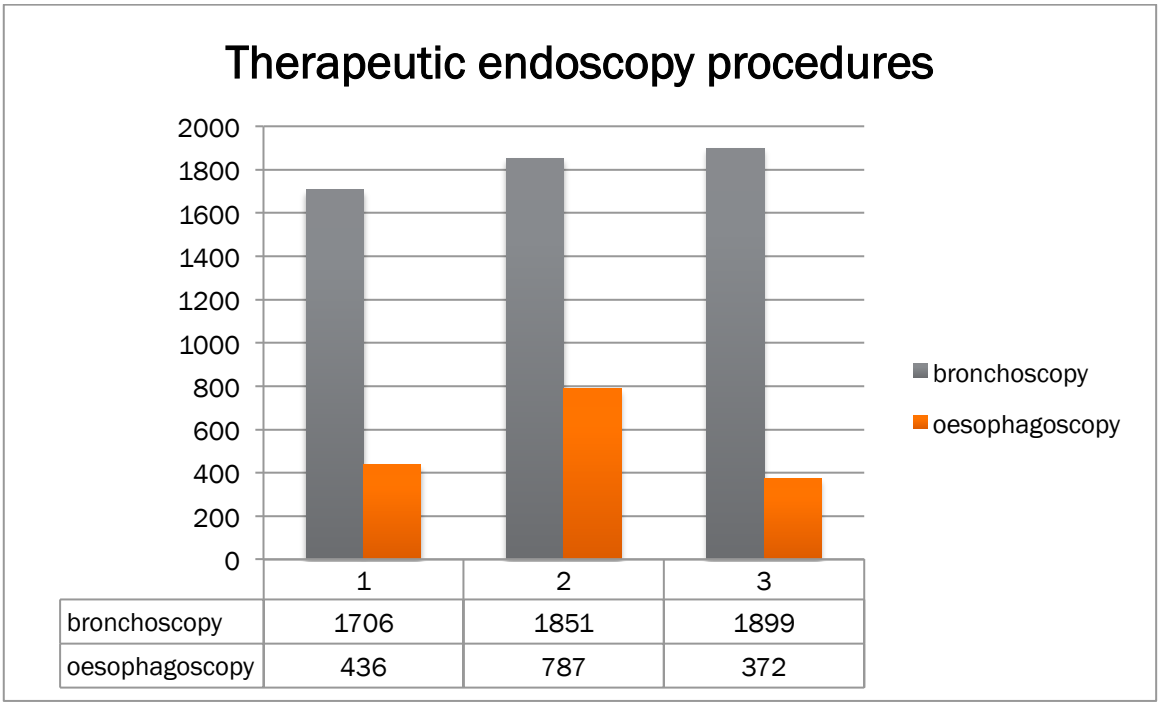


	2011-12	2012-13	2013-14
Diagnostic VATS wedge	972	1023	948
Mediastinsocopy/otomy	2465	2328	2049

A fall in the number of mediastinoscopy and mediastinotomy procedures has continued. This is probably related to the increased availability and guideline support for the use of EBUS/EUS in diagnosis and staging of mediastinal nodes. Diagnostic VATS wedge resections (including both biopsies for diffuse interstitial disease and non-curative resection of nodules for diagnosis) were broadly static.

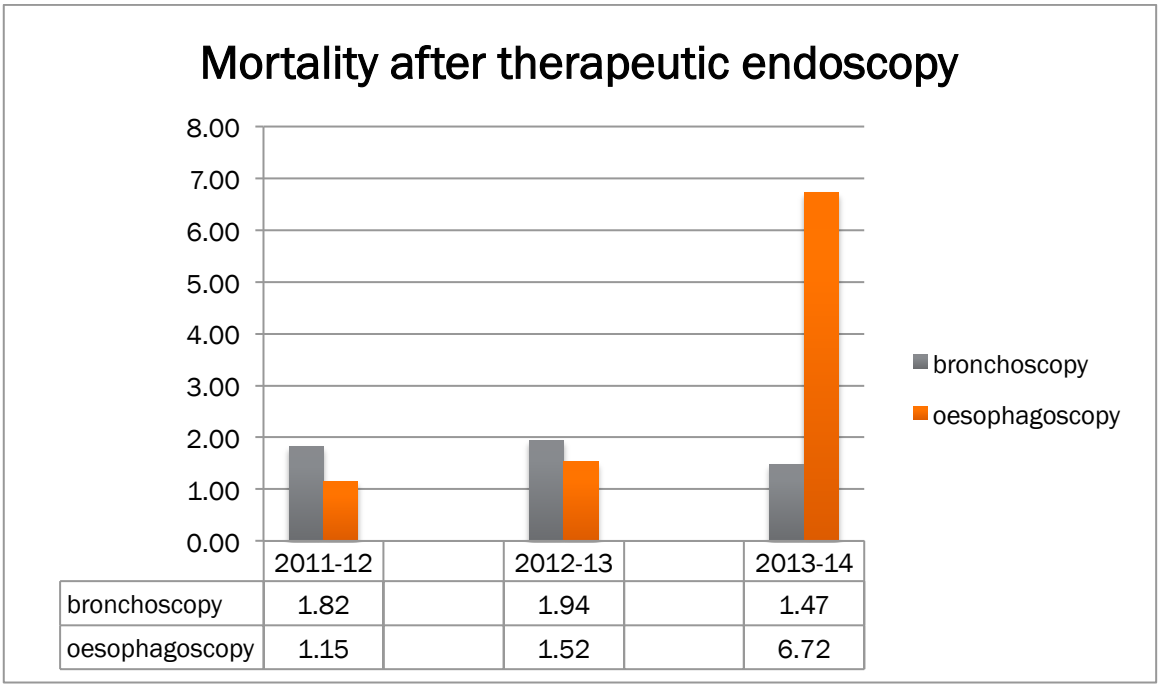
(5) Endoscopy

(5a) Therapeutic endoscopy activity



	1	2	3
bronchoscopy	1706	1851	1899
oesophagoscopy	436	787	372

(5b) Mortality after therapeutic endoscopy

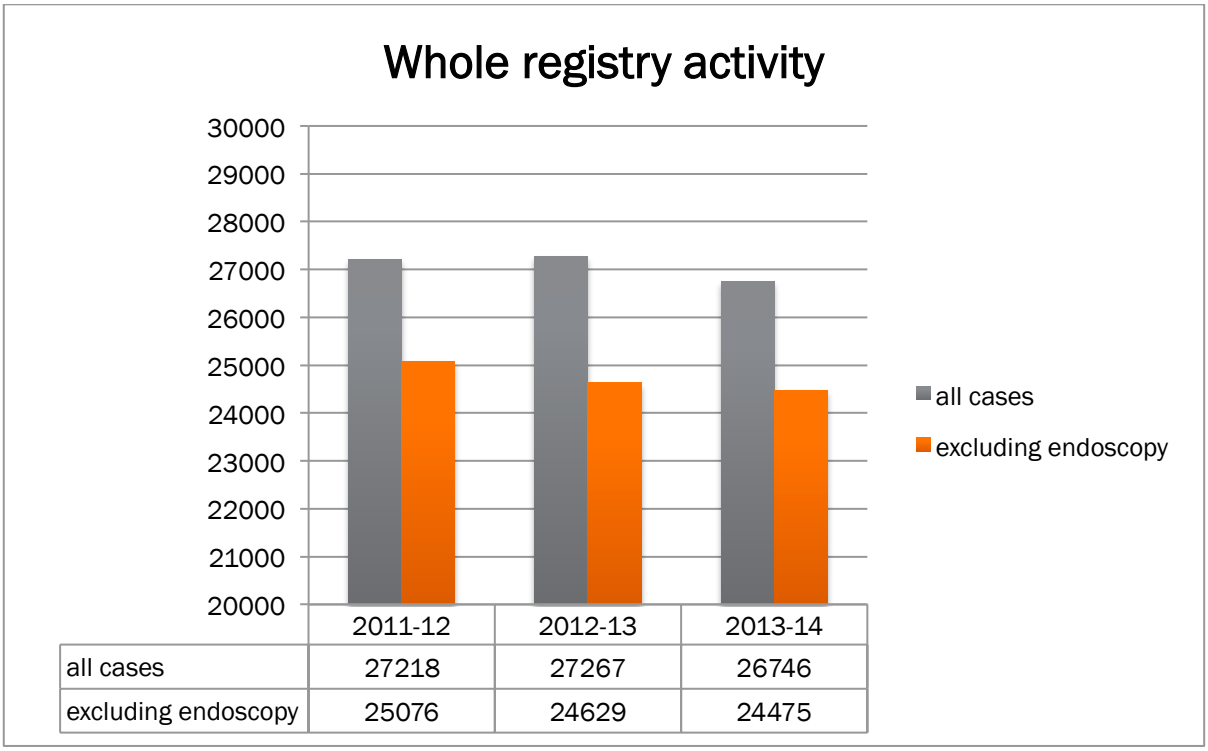


	2011-12		2012-13		2013-14
bronchoscopy	1.82		1.94		1.47
oesophagoscopy	1.15		1.52		6.72

There were relatively few deaths after therapeutic endoscopy; 42 in three years after oesophagoscopy and 95 after bronchoscopy. Although we do not sub-classify these cases, many of these patients will have been undergoing palliative procedures for locally advanced malignancy. The increase in oesophagoscopy mortality seen in 2013-14 comprised 13 additional deaths compared to the previous year, but was accompanied by a drop in activity and therefore a lower denominator. See appendix for source data.

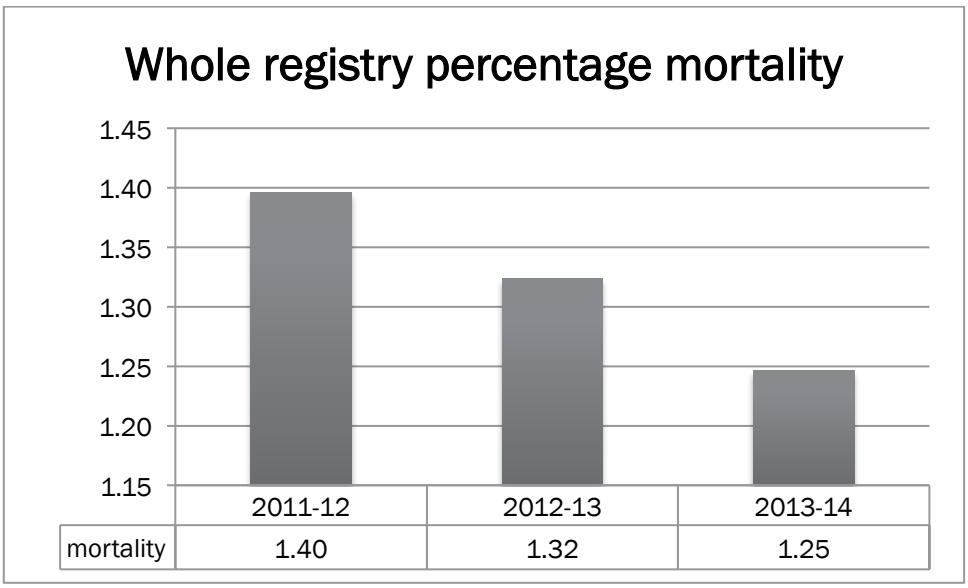
(7) Whole registry data

(7a) activity



	2011-12	2012-13	2013-14
all cases	27218	27267	26746
excluding endoscopy	25076	24629	24475

(7b) Whole registry mortality



Unadjusted observed whole-registry (including endoscopy) mortality trended downwards (p 0.08) during the three years reported. Changes in case mix and comorbidity may have played a part.

(8) Appendix

(8a) Source data

	2011-12		2012-13		2013-14	
A LUNG RESECTIONS - PRIMARY-MALIGNANT	Totals	Deaths	Totals	Deaths	Totals	Deatl
1 Pneumonectomy including sleeve pneumonectomy	443	24	419	21	392	23
2 Lobectomy, bilobectomy	3628	71	3525	70	3303	63
3 Sleeve resection lobectomy	151	5	118	7	152	2
4 Segmentectomy, wedge resection	685	4	609	6	599	7
5 Any pulmonary resection with resection of chest wall, diaphragm etc	170	7	133	4	125	5
6 Exploratory thoracotomy - no resection	128	2	116	2	115	3
B LUNG RESECTIONS - OTHER						
1 Pneumonectomy	24	1	32	2	17	2
2 Lobectomy, bilobectomy	439	7	522	6	429	10
3 Sleeve resection lobectomy	22	0	24	1	13	0
4 Segmentectomy, wedge resection	1095	4	1028	4	915	5
5 Any pulmonary resection with resection of chest wall, diaphragm etc	33	1	47	2	15	0
6 Open lung volume reducion surgery for emphysema	34	1	52	2	24	0
7 Other pulmonary procedure	76	0	149	1	85	1
C MESOTHELIOMA SURGERY (THERAPEUTIC)						
1 Extrapleural pneumonectomy (pleura, lung, diaphragm, pericardium)	4	0	2	0	2	0
2 Radical decortication (pleura, diaphragm, pericardium)	64	2	64	2	57	3
3 Pleurectomy/decortication	56	1	85	2	63	1
D PLEURAL PROCEDURES						
1 Thoracotomy + decortication	617	11	666	4	589	15
2 Thoracotomy+ pleural symphysis +/- closure of air leak	255	3	184	1	170	0
3 Thoracotomy + other pleural procedures	520	14	465	8	302	8
E CHEST WALL/DIAPHRAGMATIC PROCEDURES						
1. Correction of pectus deformity	311	0	211	0	181	0
2 Resection of primary chest wall tumour (not lung cancer)	144	0	166	2	149	0
3 Other major	358	10	373	4	389	4
4 Minor	245	0	303	4	270	0
F MEDIASTINAL PROCEDURES						
1 Thymectomy for thymoma	193	1	184	2	216	2
2 Thymectomy for myasthenia gravis	48	0	57	0	74	0
3 Throidectomy	77	0	60	0	75	0
4 Resection of other mediastinal mass/tumour	198	3	197	0	245	1
5 Mediastinoscopy / mediastinotomy	2465	9	2328	6	2049	4
6 Other mediastinal proceudure	155	5	169	17	112	3
G OESOPHAGEAL/GASTRIC PROCEDURES						
1 Oesophago-gastric resection/bypass - malignant	335	13	270	1	179	3
2 Oesophago-gastric resection/bypass - non-malignant	15	0	30	1	12	0
3 Other major oesophagogastric	83	2	76	2	63	4
4 Exploration only by any route, ie inoperable	22	1	23	0	6	0

5 Minor oesophagogastric	45	1	35	0	46	1
H TRACHEAL SURGERY (includes carinal resection)						
1 Tracheal resection - tumour	6	0	4	0	6	0
2 Tracheal resection - non-tumour	23	0	16	0	13	0
I OTHER PROCEDURES						
1 Major	485	29	437	16	501	15
2 Minor	1581	19	1228	24	1474	21
Video Assisted Thoracic Surgery (VATS):-						
VATS-A LUNG RESECTIONS - PRIMARY-MALIGNANT						
1 Wedge resection	413	2	497	0	574	1
2 Lobectomy	738	7	1047	11	1447	10
3 Pneumonectomy	4	0	10	1	6	0
VATS-B LUNG RESECTIONS - OTHER						
1 Wedge resection - therapeutic (includes resection of an isolated nodule)	702	0	827	2	1052	3
2 Wedge resection - diagnostic for diffuse disease or multiple nodules	972	2	1023	4	948	7
3 Lobectomy	146	0	116	0	127	1
4 Pneumonectomy	4	0	0	0	0	0
5 Bullectomy (not pneumothorax)	140	0	207	0	166	1
6 Lung volume reducion surgery for emphysema	102	1	86	1	102	1
VATS-C PLEURAL PROCEDURES						
1 Pneumothorax surgery (closure of air leak +/- pleural symphysis)	1867	15	1836	9	1783	8
2 Pleurectomy/decortication for mesothelioma	203	0	102	0	49	0
3 Any other pleural procedures	3552	60	3532	70	3746	63
VATS-D CHEST WALL/DIAPHRAGMATIC PROCEDURES						
1 Sympathectomy	76	0	93	0	67	0
2 Correction of pectus deformity	68	0	64	0	93	0
3 Other chest wall proceudure	40	0	33	0	57	0
VATS-E MEDIASTINAL CONDITIONS						
1 Resection of mediastinal mass/tumour	126	0	136	0	174	2
2 Other mediastinal proceudure	118	2	145	1	183	1
					0	0
VATS-F OESOPHAGEAL/GASTRIC PROCEDURES						
1 Therapeutic - cancer resection	62	1	0	0	0	0
2 Diagnostic	20	0	47	0	9	0
3 Therapeutic - other	7	0	4	0	5	0
VATS-G OTHER PROCEDURES						
1 All	483	9	417	3	460	1
Z Endoscopic Procedures (Not VATS)						
1 Therapeutic bronchoscopy	1706	31	1851	36	1899	28
2 Therapeutic oesophagoscopy	436	5	787	12	372	25
Total=	27218	386	27267	374	26746	358

(8b) Thoracic data group membership

Doug West
Joel Dunning
Eric Lim
Mo Asif
Kieran McManus
David Healey
Juliet King
Carol Tan