



SE SCOTLAND CANCER NETWORK
PROSPECTIVE CANCER AUDIT
LUNG CANCER

REPORT ON PATIENTS DIAGNOSED
1 JANUARY – 31 DECEMBER 2008

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Final Version 2.2 (W)
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FOREWORD

This report presents analysis of data collected on lung cancer patients diagnosed between 1 January and 31 December 2008 in the four health board regions comprising S E Scotland Cancer Network (SCAN) – Borders, Dumfries & Galloway, Fife, and Lothian. Comparison is also shown with results for 2007 and 2006 where available.

Basis of Analysis

Some of the measures presented are based on nationally-agreed standards for lung cancer care published by the Clinical Standards Board for Scotland (CSBS) in 2001. Revised Standards for Lung Cancer were published by NHS Quality Improvement Scotland (NHSQIS) (www.nhshealthquality.org) in March 2008 and it is expected that future reports will take account of these.

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Patients included in the Report

Patients included: all new patients diagnosed with lung cancer 1 January – 31 December 2008

Data Collection

Patients were mainly identified through registration at weekly multidisciplinary meetings, and through checks made against pathology listings, GRO records, CNS downloads, Oncology records. Data capture was dependent on casenote audit or review of various hospitals electronic records systems. Data was recorded on Access databases in each centre.

Datasets and Definitions

The dataset collected is the SIGN Core Minimum dataset as published by SCTN in Sept 1999 and June 2001 with Revisions July 2005. (www.isdscotland.org) Further information on the dataset and definitions can be obtained from Ailsa Robertson, SCAN Audit Facilitator, SCAN Audit Office, c/o Dept of Clinical Oncology, Western General Hospital, Edinburgh. (ailsa.robertson@luht.scot.nhs.uk)

Data Quality

All hospitals in the region participate in the Quality Assurance programme provided by the National Services Scotland Information & Statistics Division (ISD). Previous quality assurance examination of data against national data definitions showed accuracy rates >90%.

Estimate of Case Ascertainment

Please see Table 1 in Results (below) indicating an estimate of Case Ascertainment of 99.4% when compared with the Scottish Cancer Registry based on a five year average from the period 2003-2007, excluding death certificate only registrations.

Acknowledgements

Thank you to all audit facilitators involved in collecting and analysing the data contained within this report. A thank you is also expressed to all clinicians (Respiratory Medicine and Oncology) for their collaboration in producing this report.

Dissemination of Report

Following final sign-off the Report was sent on 30/06/2010 to Clinical Governance Groups, Lead Managers and Chairs in the four health boards and to the SCAN Regional Cancer Planning Group.

In preparation of publication of the Report on the SCAN website the contents were reviewed for Disclosive Material to assess any risk of communication of personally-identifiable information about a data subject. Adjustments were not required.

Document History

Version	Circulation/Action	Date	Comments
1.1	SCAN Lung Group	26/02/2010	Updated D&G data to be incorporated. Include additional analyses: patients not presented at MDM; Correlation between mode of diagnosis and age/PS/stage; and BSC for early stage cancer. Thirty-day mortality analysis and survival analysis to be reported independently of this Report.
1.2	Oncology Consultants	26/04/2010	Comments added regarding post-operative and oncology treatments.
2.1	SCAN Chair	05/05/2010	Comment by Chair added to Report.
	SCAN Lung Group	14/05/2010	Circulation for final comments prior to sign-off. Report approved.
		28/05/2010	
2.2	Clinical Governance Groups, Lead Managers & Chairs in each Board.	30/06/2010	
2.2	SCAN Regional Cancer Planning Group	11/08/2010	
2.2(W)	Report Reviewed for Disclosive Material to assess the risk of communication of personally-identifiable information about a data subject.	29/11/2010	No adjustments required.
2.2(W)	Report uploaded to SCAN website	December 2010	

LUNG CANCER AUDIT REPORT 2008

Comment by Chair of the SCAN Lung Group

I am pleased to present the SCAN Lung Group Comparative Audit Report on data relating to patients newly-diagnosed with lung cancer between 01 January and 31 December 2008 who were treated in one of the four constituent health board areas (Borders, Dumfries & Galloway, Fife, and Lothian) and the tertiary centre in Edinburgh.

A key purpose of SE Scotland Cancer Network is to promote equity of treatment across its constituent health boards. We first started collecting the nationally-agreed dataset in SCAN health boards in 1999 and the process of collection and reporting has matured substantially over the years. In reviewing results, allowance should also be made where small numbers and variation may be due to chance. Aggregation of results over time helps to clarify results where numbers are small.

The Report provides evidence relating to the quality and outcomes of patient care and compares performance against nationally agreed Standards. Our new “traffic lights” table in Appendix 1 highlights the attainment of *Revised NHS QIS Clinical Standards for Lung Cancer (New Edition): July 2008*, shown for individual health board and collectively for SCAN. The majority of targets are met, if not exceeded, confirming high levels in the quality of care and service provided, for example:

- Staging and performance status data completeness has been fully met indicating that new systems for recording were successfully implemented at Multi-Disciplinary meetings (MDMs) throughout all health boards in SCAN.
- Results over the three years shown indicate that Standards have been fully met in all health boards in SCAN for NSCLC and SCLC patients receiving chemotherapy.

Some results merit further comment, for example:

- The rate of histological diagnosis, an important marker of good quality service, continues to run at a lowish rate with considerable variability between geographical areas and with each reporting time frame. Variation across years is to be expected but, additionally, the interpretation of data is dependent upon complex variables including how advanced a patient’s disease is at diagnosis and factors such as age and the presence of other illnesses. For example, the Fife lung cancer population tended to be older and with more advanced stage disease. Equally, however, the trend may reflect greater use of advanced imaging techniques especially PET scanning.

The report shows results from 2008 with comparisons made with previous data from 2006 and 2007. It is important to demonstrate consistency and improvement in results over time. Comparing results offers the opportunity to consider any specific points of difference and comments within the Report will draw attention to these. Moreover, clinicians and managers can identify any areas which merit further investigation and more detailed analyses:

- An analysis was undertaken of patients diagnosed in 2008 to assess why some patients were not presented to MDM. More than three-quarters of these were managed with supportive care only or died before MDM. More than half of the remainder were treated as an emergency prior to the MDM. Many were seen by specialties other than Respiratory Medicine, were discussed at their respective MDMs and, subsequently referred directly to Oncology.
- The 2007 Report identified that just over 10% of NSCLC patients with Stage I or II disease were receiving Best Supportive Care (BSC) rather than active treatment. It was considered appropriate to investigate the factors influencing this, especially since the trend continued in 2008 with 15% of Stage I & II NSCLC patients receiving BSC. Almost 95% of these patients were discussed at MDM where it was found that frailty and high co-morbidity status indicated that these patients were not fit for invasive investigations or active treatment.

SCAN, along with our colleagues in the North and West of Scotland Cancer Networks, continues to participate in the UK-wide National Lung Cancer Audit (NLCA). Data on patients diagnosed in 2008 in Scotland was incorporated into the NLCA Report 2009 (www.ic.nhs.uk) showing comparison of results in a wider arena, with the overall Scottish results comparable if not better.

- Histological confirmation of diagnosis Scotland-wide showed 77.5% compared to 72%.
- Active anti-cancer treatment is offered to 54% of patients in England and Wales compared to 64% in Scotland with SCAN showing 63.5%.
- The surgical resection rate of 10% across SCAN health boards shows improvement from previous years with an increase of almost 2% compared with that of 2006 and, is equivalent to NLCA guidelines where the acceptable resection rate stands at 10%.

Outcome of treatment is the final, and a very important, piece of information incorporated into our analyses and reporting. A thirty-day mortality analysis following surgery, radiotherapy and chemotherapy is currently underway and will be reported separately. Additionally, a survival analysis against our 2008 data will be available in due course. Previous survival analysis of our 2005 data showed that 2-year survival in the SCAN region had improved since 1995 from 11.4% to 16.3%. Possible explanations lie in a number of changes implemented including development of multi-disciplinary networks to enable equitable access to specialist services across the region, provision of extra funding for additional specialist staff, increased capacity for PET/CT scanning, increased use of radical dose radiotherapy, and access to new drugs and to the new cancer trials network. It is hoped that these measures will continue to produce improvements in survival rates.

Continued analysis and reporting of high quality audit data, including incorporation of our results in UK-wide NLCA reporting, represents a considerable amount of work for audit facilitators and contributes to the continuous improvement of the service we provide to patients in S E Scotland.

Dr Ron J Fergusson
Chair, SCAN Lung Group
May 2010

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01 JANUARY – 31 DECEMBER 2008**

CONTENTS

FOREWORD.....	i
Comment by Chair of the SCAN Lung Group	iv
Summary of Patients by Key Categories	1
RESULTS	4
DIAGNOSIS AND STAGING	9
TREATMENT	25
Surgery	34
Radiotherapy.....	38
Chemotherapy.....	40
APPENDICES	42
Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer	42
Appendix 2: Glossary	44
Appendix 3: Performance Status and Staging	48
Appendix 4: TNM Classification.....	49
References.....	50

Summary of Patients by Key Categories

	2008		SCAN 2007		2006	
	n	%	n	%	n	%
Total Diagnosed	1106		1106		1147	
<i>Age Range</i>						
< 45	17	1.5	16	1.4	9	0.8
45-49	28	2.5	26	2.4	26	2.3
50-54	44	4.0	31	2.8	49	4.3
55-59	80	7.2	96	8.7	95	8.3
60-64	122	11.0	139	12.6	118	10.3
65-69	181	16.4	172	15.6	192	16.7
70-74	187	16.9	191	17.3	200	17.4
75-79	182	16.5	195	17.6	222	19.4
80-84	163	14.7	135	12.2	147	12.8
≥ 85	102	9.2	105	9.5	89	7.7
Range	21-95		37-97		28-99	
Median	72		72		72	
<i>Sex Distribution</i>						
Male	562	50.8	585	52.9	619	54.0
Female	544	49.2	521	47.1	528	46.0
<i>Performance Status</i>						
0	91	8.2	94	8.5	81	7.1
1	487	44.0	374	33.8	367	32.0
2	209	18.9	204	18.4	216	18.8
3	159	14.4	161	14.6	151	13.2
4	51	4.6	46	4.2	51	4.4
Not recorded	90	8.1	225	20.3	280	24.4
Missing data	19	1.7	2	0.2	1	0.1
<i>Mode of Diagnosis</i>						
Histology	582	52.6	558	50.4	614	53.5
Cytology	196	17.7	212	19.2	242	21.1
Total pathology	778	70.3	770	69.6	856	74.6
Imaging	328	29.7	336	30.4	291	25.4
Confirmed pathology diagnosis ¹	778	70.3	780	70.5	856	74.6

¹ Confirmed pathology diagnosis represents the *most valid basis of diagnosis* which includes patients either with pre-treatment diagnoses or pathological diagnosis at surgery. In 2007 patients with pathological diagnosis at surgery were recorded separately. The total of 780 patients includes 10 patients initially diagnosed via imaging who later had pathology confirmed at surgery.

	2008		SCAN 2007		2006	
	n	%	n	%	n	%
<i>Pathology</i>						
TOTAL NSCLC	660	59.7	593	53.6	679	59.2
TOTAL SCLC	118	10.7	154	13.9	156	15.7
Squamous	182	16.5	186	16.8	209	18.2
Adenocarcinoma	183	16.5	147	13.3	189	16.5
NSCLC (NOS)	253	22.9	255	23.1	266	23.2
Mixed NSCLC	2	0.2	2	0.2	8	0.7
Other NSCLC	5	0.5	3	0.3	7	0.6
SCLC	117	10.6	154	13.9	156	13.6
Neuroendocrine	13	1.2	10	0.9	4	0.3
Mixed SCLC/NSCLC	3 ²	0.2	7	0.6	7	0.6
Other Malignancy	20	1.8	16	1.4	10	0.9
Negative Pathology	81	7.3	110	9.9	81	7.1
No Pathology	247	22.3	216	19.5	210	18.3
<i>Staging NSCLC</i>						
IA	37	5.6	21	3.5	37	5.5
IB	70	10.6	51 ³	8.6	58	8.6
IIA	8	1.2	2	0.3	7	1.0
IIB	43	6.5	29 ⁴	4.9	24	3.5
IIIA	74	11.2	80	13.5	80	11.8
IIIB	114	17.3	98 ⁵	16.5	92	13.6
IV	293	44.4	257	43.3	326	48.0
Not recorded	21	3.2	55	9.3	54	8.0
<i>Staging SCLC</i>						
Limited Disease	43	36.4	53	34.4	49	31.4
Extensive Disease	75	63.6	97	63.0	101	64.7
Not recorded			4	2.6	6	3.8
<i>Treatment NSCLC patients</i>						
<i>ALL staging</i>						
Anti-Cancer Treatment	498	75.4	435	73.4	6	
No Active Treatment	130	19.7	127	21.4		
Refused all treatment	13	2.0	9	1.5		
Died before treatment	17	2.6	15	2.5		
Not recorded	2	0.3	7	1.2		
<i>Treatment SCLC patients</i>						
<i>ALL staging</i>						
Anti-Cancer Treatment	92	78.0	119	77.3	7	
No Active Treatment	23	19.5	29	18.8		
Refused all treatment	1	0.8	2	1.3		
Died before treatment	2	1.7	4	2.6		
<i>Surgery</i>						
Surgery	111	10.0	96	8.7	93	8.1
No Surgery	994	89.9	1010	91.3	1054	91.9
Missing data	1	0.1				
<i>Radiotherapy</i>						

² 2 patients treated as NSCLC and 1 patient treated as SCLC making SCLC patients actual total 118

³ Includes 3 patients with Stage I unclassified

⁴ Includes 1 patients with Stage II unclassified

⁵ Includes 9 patients with Stage III unclassified

⁶ Comparable data was not collected in 2006.

⁷ Comparable data for *all* patients' treatment was not collected in 2006.

	2008		SCAN 2007		2006	
	n	%	n	%	n	%
TOTAL Radiotherapy	470		444		438	
Radical Radiotherapy	205	18.5	186	16.8	177	15.4
Palliative Radiotherapy	265	24.0	251	22.7	257	22.4
Not recorded	-	-	7	0.6	4	0.3
No Radiotherapy	636	57.5	662	59.9	709	61.8
<i>Chemotherapy</i>						
Chemotherapy NSCLC	205	31.1	205	34.6	179	26.4
No Chemotherapy NSCLC	455	68.9	388	65.4	500	73.6
Chemotherapy SCLC	82	69.5	110	71.2	104	66.7
No Chemotherapy SCLC	36	30.5	44	28.8	52	33.3

RESULTS

Table 1
Estimated Case Ascertainment

Case ascertainment is estimated using the average of the most recent available five years (2003 – 2007) of Cancer Registry Data excluding death certificate only registrations.

In the most recent period (2003 to 2007) an average of 1154 patients were diagnosed annually with lung cancer (ICD-codes: C33, C34) within the SCAN region.

n = all patients diagnosed with lung cancer

Health Board	Cancer Registry Average	2008		2007		2006	
		n	%	n	%	n	%
Borders	86	73	84.9	79	91.9	90	104.6
D&G	139	100	71.9	114	82.0	114	82.0
Fife	280	316	112.9	315	112.5	296	105.7
Lothian	649	617	95.1	598	92.1	647	99.7
SCAN	1154	1106	95.8	1106	95.8	1147	99.4

Source: Scottish Cancer Registry, ISD. Data extracted: February 2010

Comment

Overall, Health Boards in SCAN are achieving high levels of case ascertainment. This provides confidence that the results shown are representative of the relevant population for the year reported.

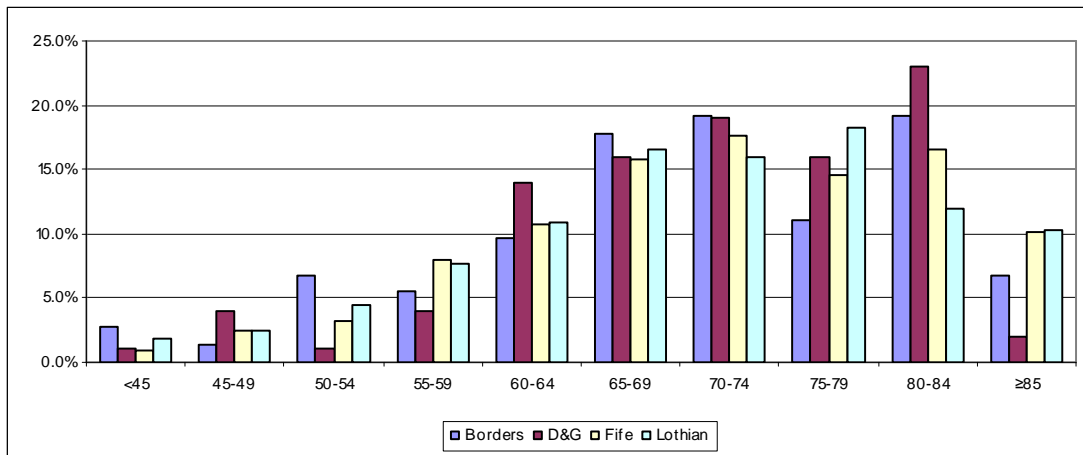
Note

In Dumfries & Galloway, Cancer Registration includes all patients resident within this area. Some patients, however, self-refer to A&E in Carlisle and therefore diagnosis and treatment occur in England. While these patients are included in Cancer Registry figures they are *not* included in Dumfries & Galloway data which excludes patients diagnosed outwith Scotland, as per the national dataset. This may contribute to the slightly lower case ascertainment shown for Dumfries & Galloway.

Table 2
Frequencies of Age at Diagnosis of Lung Cancer
n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	73		100		316		617		1106	
<45	2	2.7	1	1.0	3	0.9	11	1.8	17	1.5
45-49	1	1.4	4	4.0	8	2.5	15	2.4	28	2.5
50-54	5	6.8	1	1.0	10	3.2	28	4.5	44	4.0
55-59	4	5.5	4	4.0	25	7.9	47	7.6	80	7.2
60-64	7	9.6	14	14.0	34	10.8	67	10.9	122	11.0
65-69	13	17.8	16	16.0	50	15.8	102	16.5	181	16.4
70-74	14	19.2	19	19.0	56	17.7	98	15.9	187	16.9
75-79	8	11.0	16	16.0	46	14.6	112	18.2	182	16.5
80-84	14	19.2	23	23.0	52	16.5	74	12.0	163	14.7
≥85	5	6.8	2	2.0	32	10.1	63	10.2	102	9.2
Range	40-92		42-91		31-94		21-95		21-95	
Median	72		71.5		72		72		72	

Figure 1 - Age Distribution of Patients Diagnosed in 2008



2007

n=all patients diagnosed with lung cancer in 2007

	Borders	D&G	Fife	Lothian	SCAN
	n	n	n	n	n
Total patients	79	114	315	598	1106
Range	32-91	38-87	41-94	37-97	32-97
Median	74	69	72	72	72

2006

n=all patients diagnosed with lung cancer in 2006

	Borders	D&G	Fife	Lothian	SCAN
	n	n	n	n	n
Total patients	92	114	296	647	1147
Range	40-90	42-86	36-99	28-94	28-99
Median	75	72	70	72	72

Table 3
Sex of Patients

n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	73		100		316		617		1106	
Male	36	49.3	49	49.0	159	50.3	318	51.5	562	50.8
Female	37	50.7	51	51.0	157	49.7	299	48.5	544	49.2

2007

n=all patients diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	79		114		315		598		1106	
Male	39	49.4	55	48.2	171	54.3	320	53.5	585	52.9
Female	40	50.6	59	51.8	144	45.7	278	46.5	521	47.1

2006

n=all patients diagnosed with lung cancer in 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	90		114		296		647		1147	
Male	48	53.3	66	57.9	158	53.4	347	53.6	619	54.0
Female	42	46.7	48	42.1	138	46.6	300	46.4	528	46.0

Figure 2
Sex Distribution of Patients Diagnosed in 2006, 2007 and 2008

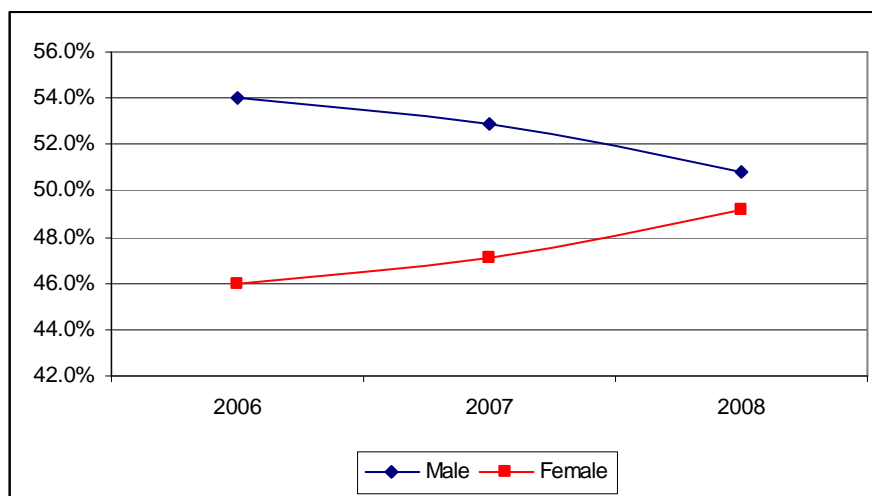


Table 4
Performance Status

n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
0	8	11.0	2	2.0	29	9.2	52	8.4	91	8.2
1	38	52.1	39	39.0	128	40.5	282	45.7	487	44.0
2	15	20.5	17	17.0	67	21.2	110	17.8	209	18.9
3	5	6.8	3	3.0	65	20.6	86	13.9	159	14.4
4	-	-	2	2.0	20	6.3	29	4.7	51	4.6
NR ⁸	7	9.6	18	18.0	7	2.2	58	9.4	90	8.1
Missing	-	-	19	19.0	-	-	-	-	19	1.7

Comment

As a result of the high levels of missing or not recorded performance status values in 2006 and 2007, no firm conclusions could be drawn about the levels of pre-treatment performance status on the treatment or outcome of patients. However, new systems for recording performance status at MDM have been implemented and may account for improved results in 2008. Further improvement is expected in D&G in 2009.

NHS QIS Standard 4a.3

Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.

SCAN, overall, is meeting this requirement with 90.1% cases with WHO performance status recorded – see Appendix 1: Attainment of NHS QIS Standards for Lung Cancer.

⁸ NR: Not Recorded

Table 4 (continued)
Performance Status

2007

n=all patients diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
0	8	10.1	-	-	26	8.3	60	10.0	94	8.5
1	37	46.8	21	18.4	101	32.1	215	36.0	374	33.8
2	12	15.2	8	7.0	73	23.2	111	18.6	204	18.4
3	12	15.2	2	1.8	83	26.3	64	10.7	161	14.6
4	-	-	-	-	24	7.6	22	3.7	46	4.2
NR	10	12.7	83	72.8	8	2.5	124	20.7	225	20.3
Missing	-	-	-	-	-	-	2	0.3	2	0.2

2006

n=all patients diagnosed with lung cancer in 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	90		114		296		647		1147	
0	7	7.8	-	-	16	5.4	58	9.0	81	7.1
1	38	42.2	8	7.0	113	38.2	208	32.1	367	32.0
2	17	18.9	5	4.4	54	18.2	140	21.6	216	18.8
3	16	17.8	2	1.75	38	12.8	95	14.7	151	13.2
4	3	3.3	2	1.75	19	6.4	27	4.2	51	4.4
NR	9	10.0	97	85.1	56	18.9	118	18.2	280	24.4
Missing	-	-	-	-	-	-	1	0.2	1	0.1

DIAGNOSIS AND STAGING

Table 5
Mode of Diagnosis

n=all patients diagnosed with lung cancer in **2008**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
Histology	51	69.9	72	72.0	156	49.4	303	49.1	582	52.6
Cytology	8	11.0	4	4.0	53	16.8	131	21.2	196	17.7
Imaging	14	19.2	24	24.0	107	33.9	183	29.7	328	29.7
<i>Most Valid Basis of Diagnosis⁹</i>										
Pathology	59	80.8	76	76.0	209	66.1	434	70.3	778	70.3
Imaging	14	19.2	24	24.0	107	33.9	183	29.7	328	29.7

2007

n=all patients diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
<i>Pre-Treatment</i>										
Histology	53	67.1	83	72.8	145	46.0	277	46.3	558	50.4
Cytology	14	17.7	5	4.4	77	24.4	116	19.4	212	19.2
Sub-Total	67	84.8	88	77.2	222	70.5	393	65.7	770	69.6
Imaging	12	15.2	26	22.8	93	29.5	205	33.9	336	30.4
Total	79	100%	114	100%	315	100%	598	100%	1106	100%
<i>Most Valid Basis of Diagnosis</i>										
Pathology	69	87.3	88	77.2	228	72.4	395	66.1	780 ¹⁰	70.5
Imaging	10	12.7	26	22.8	87	27.6	203	33.9	326	29.5

⁹ The *most valid basis of diagnosis* includes all confirmed pathology both pre-treatment and at surgery. An imaging diagnosis is recorded for patients with negative or no pathology.

¹⁰ In 2007 patients with pathological diagnosis at surgery were recorded separately. The total of 780 patients includes 10 patients initially diagnosed via imaging who later had pathology confirmed at surgery. This includes Borders: 2 patients; Fife: 6 patients; and Lothian: 2.

Table 5 (continued)
Mode of Diagnosis

2006

n=all patients diagnosed with lung cancer in 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	90		114		296		647		1147	
<i>Pre-Treatment</i>										
Histology	66	73.3	81	71.1	140	47.3	327	50.5	614	53.5
Cytology	7	7.8	9	7.9	87	29.4	139	21.5	242	21.1
Sub-Total										
Imaging	17	18.9	24	21.1	69	23.3	181	28.0	291	25.4
Total	90	100%	114	100%	296	100%	647	100%	1147	100%
<i>Most Valid Basis of Diagnosis</i>										
Pathology	73	81.1	90	78.9	227	76.7	466	72.0	856	74.6
Imaging	17	18.9	24	21.1	69	23.3	181	28.0	291	25.4

NHS QIS Standard 2a.1

A minimum of 75% of all lung cancer patients have their diagnosis confirmed by histology/cytology.

SCAN, overall, is showing a 'near-miss' for this target in all three years reported.

Note

The rate of histological diagnosis, an important marker of good quality service, continues to run at a lowish rate with considerable variability between geographical areas and with each reporting time frame. Variation across years is to be expected but, additionally, the interpretation of data is dependent upon complex variables including how advanced a patient's disease is at diagnosis and factors such as age and the presence of other illnesses.

Comment

A comparative study was undertaken looking at patients diagnosed in 2008 with a view to determine the factors influencing whether a pathological or imaging diagnosis was pursued. Three key factors were analysed: age at diagnosis; performance status; and staging.

Age at diagnosis proved to be significant for older patients, especially those over 80 years, who tended to have an imaging diagnosis (Figure 3) while the majority of those less than 70 years were diagnosed pathologically.

Performance Status (Figure 4) shows a trend favouring a lower (i.e. better) PS being associated with a pathological diagnosis.

Staging did not appear to have a major impact on the mode of diagnosis with a fairly even spread across the various stages (Figure 5).

Figure 3
Correlation between Age and Mode of Diagnosis: 2008

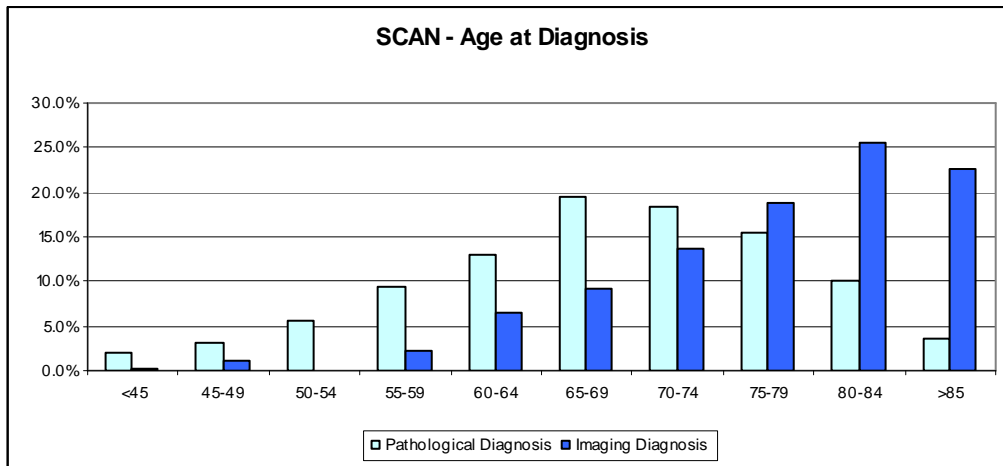


Figure 4
Correlation between Performance Status and Mode of Diagnosis: 2008

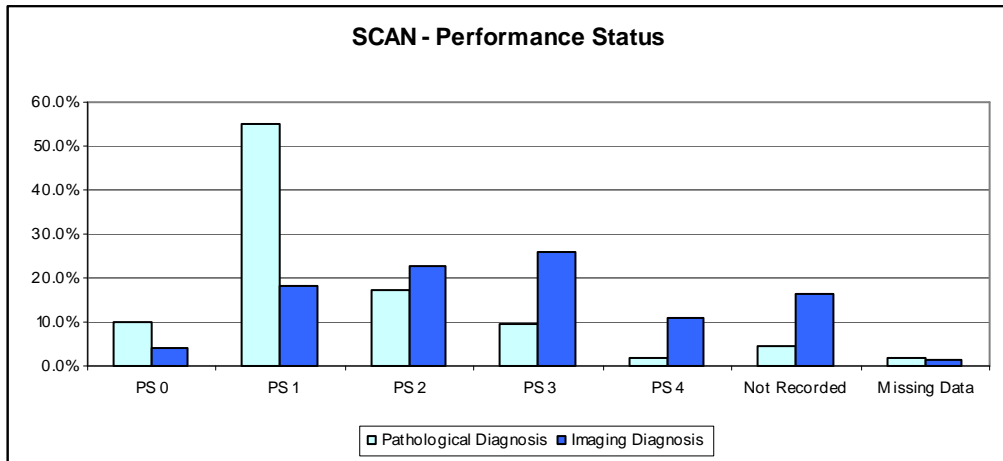


Figure 5
Correlation between Staging and Mode of Diagnosis: 2008

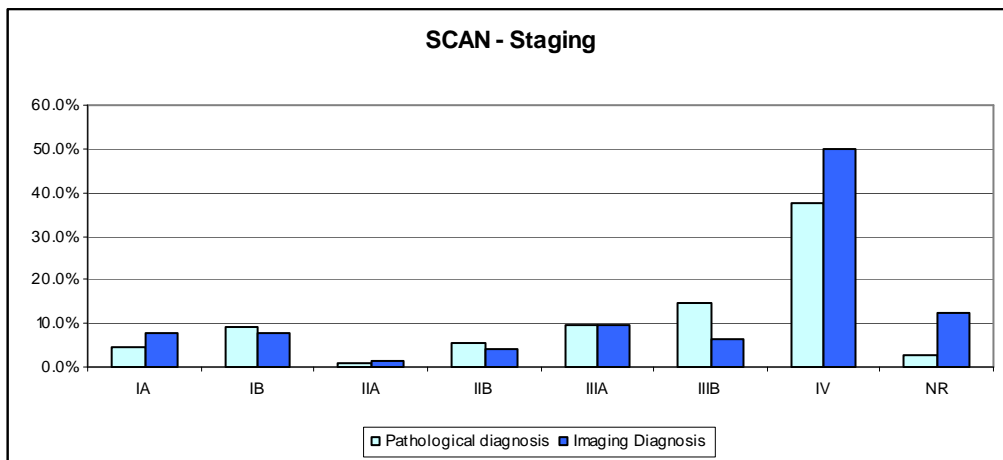


Table 6
Patients Presented at Multi-Disciplinary Team Meeting

n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
Presented	67	91.8	98	98.0	268	84.8	572	92.7	1005	90.9
Not Presented	6	8.2	1	1.0	48	15.2	45	7.3	100	9.0
Not Recorded	-	-	1	1.0	-	-	-	-	1	0.1
<i>Patients not presented at MDM: Respiratory Consultation</i>										
Yes	5	83.3	1	100.0	32	66.7	27	60.0	65	65.0
No	1	16.7	-	-	16	33.3	17	37.8	34	34.0
Not Recorded	-	-	-	-	-	-	1	2.2	1	1.0

2007

n=all patients diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
Presented	79	100.0	104	91.2	264	83.8	510	85.3	957	86.5
Not Presented	-	-	1	0.9	51	16.2	88	14.7	140	12.7
Not Recorded	-	-	9	7.9	-	-	-	-	9	0.8

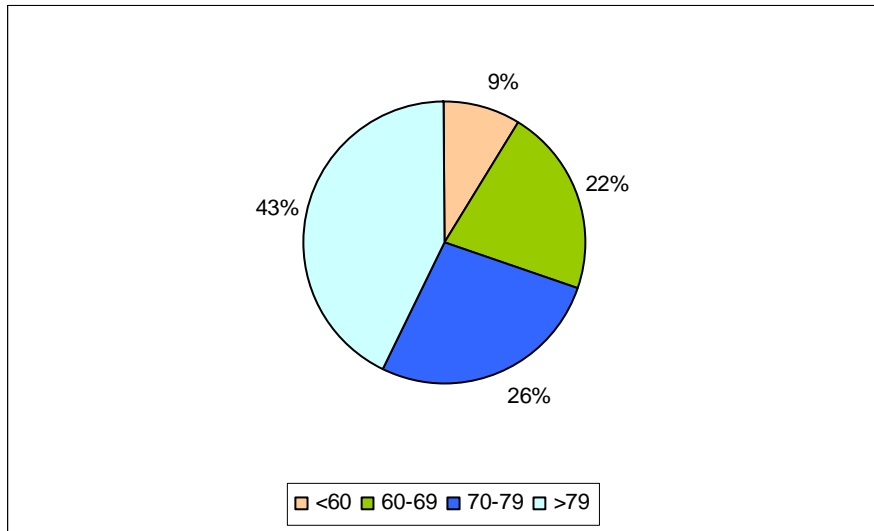
Comment

NHS QIS Standard 1a.4 specifies that all patients with a diagnosis of lung cancer should be discussed by the MDT. In 2006 this measure was not reported but compared to data analysed in 2007 improvements are evident in 2008 with a rise of 4.4% giving 90.9% of all lung cancer patients in the SCAN region presented to, and discussed at, MDM.

A study was undertaken to evaluate possible factors which might have an impact on, and/or explain, why 9% of patients diagnosed with lung cancer in 2008 were not presented at the MDM (Multi-Disciplinary Meeting). The results are shown below for SCAN Health Boards jointly.

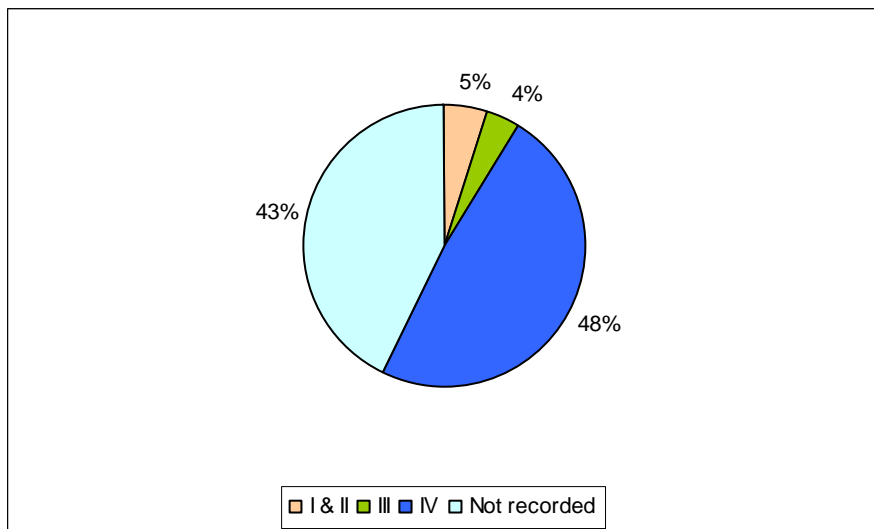
An Analysis: Patients not presented at Multi-Disciplinary Meetings

Figure 6
SCAN – Age of Patients Not Presented at MDM: 2008



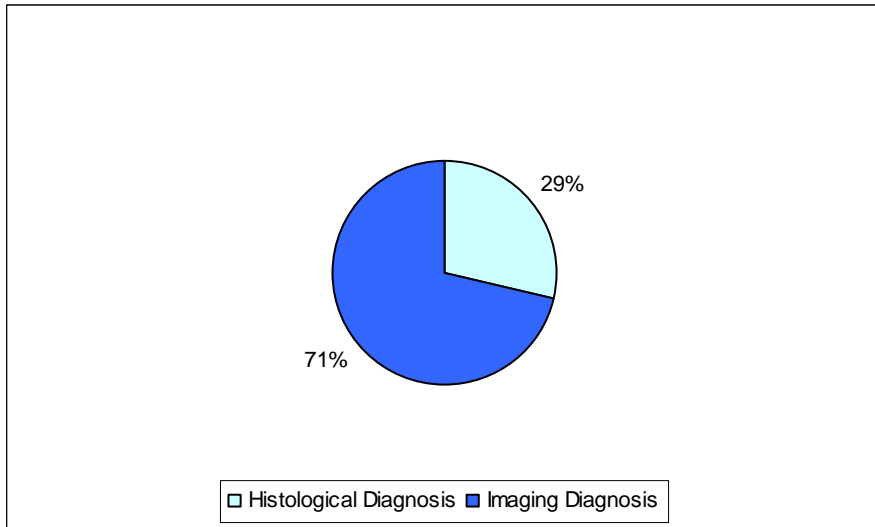
Older, frailer patients are often referred to Medicine of the Elderly and other specialties for investigations, some of which result in a diagnosis of lung cancer. Almost 70% of the patients not presented at MDM were over 70 years with the highest proportion over 79 years old. Treatment options are often limited to supportive care due to age, co-morbidities and the advanced stage of the cancer (see Fig 7 below). Patients' management would, in all probabilities, not be altered by presentation to MDM and this may explain why these patients were not referred for discussion.

Figure 7
SCAN – Staging of Patients Not Presented at MDM: 2008



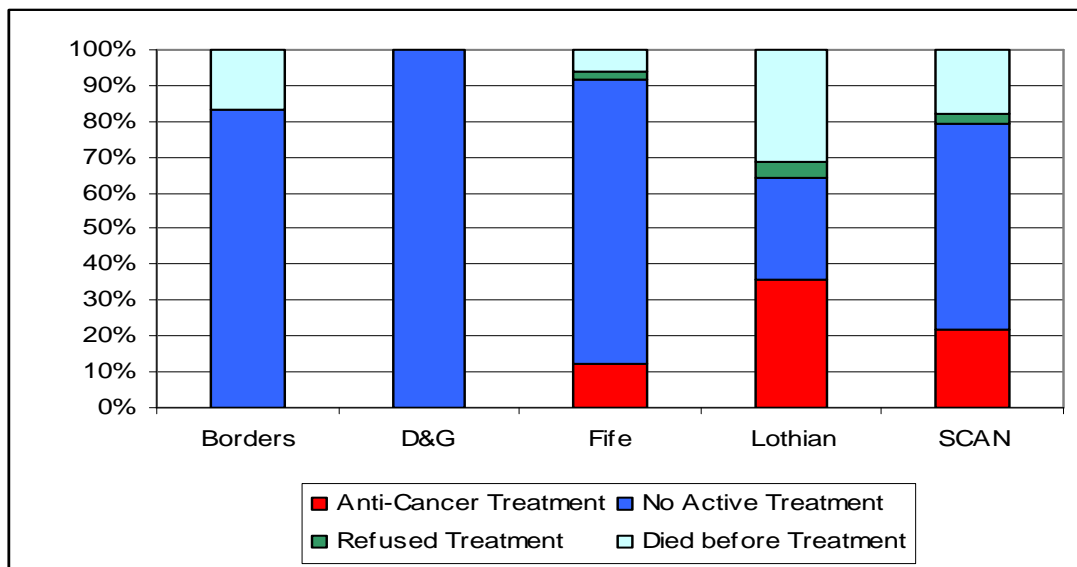
A significant number of patients with Stage IV disease and stage 'not recorded' were found in patients who were not presented at MDM. Patients who are presented to other specialties, or die before MDM, do not necessarily have their stage recorded. As illustrated in Figure 9 the majority of these patients go on to receive best supportive care.

Figure 8
SCAN – Mode of Diagnosis for Patients Not Presented at MDM: 2008



Pursuing a histological diagnosis requiring invasive procedures can have risks and would likely not alter treatment management, specially for older, frailer patients. This might explain why these patients were not referred to the MDM for discussion.

Figure 9
SCAN – Mode of Treatment for Patients Not Presented at MDM: 2008



The majority of patients who were not presented at MDM were those who were managed with supportive care only, or who died before MDM. However 22% of patients in SCAN received active treatment and more than half of these were treated as an emergency prior to the MDM. Over 10%, additionally, were seen by specialties other than Respiratory Medicine, were discussed at their respective MDMs and, were subsequently referred directly to Oncology.

Table 7
Frequency of Type of Investigation leading to Pathological Diagnosis of Lung Cancer

n=all patients with pathological (pre-treatment or at surgery) diagnosis of lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	59		76		209		434		778	
Bronchoscopy	21	35.6	37	48.7	107	51.2	108	24.9	273	35.1
CT Guided Lung FNA/Biopsy ¹¹	31	52.5	32	42.1	55	26.3	134	30.9	252	32.4
EBUS ¹²	2	3.4	3	3.9	2	1.0	80	18.4	87	11.2
Other Biopsy ¹³	5	8.5	3	3.9	45	21.5	112	25.8	165	21.2
Not recorded	-	-	1	1.3	-	-	-	-	1	0.1

Table 7b
Frequency of EBUS- ALL patients

n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
Total number of EBUS performed	6	8.2	5	5.0	8	2.5	118	19.1	137	12.4

Comment

A high percentage of patients were investigated by EBUS in Lothian in 2008 compared to the other Health Boards within SCAN. It should, however, be noted that the choice of investigation carried out often reflects local expertise and available services.

This pattern is expected to change in the future due to histological diagnoses being sought more frequently now than cytological because of requirements in the prescription of certain drugs. As a result, in Lothian EBUS is likely to be used more as a staging rather than a diagnostic tool.

¹¹ CT (Computerised tomography) Guided Lung FNA (Fine needle aspiration)/Biopsy.

¹² EBUS: Endobronchial ultrasound

¹³ 'Other Biopsy' includes frozen section at surgery. Other biopsy sites include adrenal gland, liver, skin, bone, pleura, supraclavicular node, lymph node, mediastinum and neck node.

Table 7 (continued)
Frequency of Type of Investigation leading to Pathological Diagnosis of Lung Cancer

2007

n=all patients with pathological (pre-treatment or at surgery) diagnosis of lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	69		88		228		395		780	
Bronchoscopy	26	37.7	55	62.5	131	57.5	122	30.9	334	42.8
CT Guided Lung FNA/Biopsy	27	39.1	13	14.8	43	18.8	132	33.4	215	27.6
EBUS	5	7.2	4	4.5	7	3.1	58	14.7	74	9.5
Other Biopsy ¹⁴	11	15.9	16	18.2	47	20.6	83	21.0	157	20.1

Frequency of EBUS - ALL patients

n=all patients diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
Total number of EBUS performed	9	11.4	4	3.5	12	3.8	91	15.2	116	10.5

2006

n=all patients with pathological (pre-treatment or at surgery) diagnosis of lung cancer in 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		90		227		466		856	
Bronchoscopy	30	41.1	58	64.4	116	51.1	165	35.4	369	43.1
CT Guided Lung FNA/Biopsy	33	45.2	19	21.1	48	21.1	133	28.5	233	27.2
EBUS	1	1.4	1	1.1	10	4.4	42	9.0	54	6.3
Other Biopsy	9	12.3	9	10.0	53	23.3	126	27.0	197	23.0
Not recorded	-	-	3	3.3	-	-	-	-	3	0.4

Comment

The frequency of EBUS as a percentage of all patients was not reported in 2006.

¹⁴ 'Other Biopsy' includes frozen section at surgery. In 2007 10 patients who were initially diagnosed via imaging later had pathology confirmed at surgery. This includes Borders: 2 patients; Fife: 6 patients; and Lothian: 2.

Table 8
Frequency of PET¹⁵ scans in radically treated NSCLC patients

n=all patients (excluding SCLC and Mixed (32) if treated as SCLC) treated radically (surgery or >50Gy) diagnosed in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	10		31		72		123		236	
Performed	8	80.0	27	87.1	68	94.4	117	95.1	220	93.2
Not performed	2	20.0	4	12.9	4	5.6	6	4.9	16	6.8

Table 8a
Frequency of PET: ALL patients

n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
Total number of PET performed	28	38.4	37	37.0	110	34.8	234	37.9	409	37.0

Comment

The frequency of use of PET scanning continues to increase with around a third of all lung cancer patients in 2008 undergoing a scan. PET scanning is used in two situations in the management of lung cancer patients; firstly in the investigation of a solitary pulmonary nodule for malignant potential and, also in the assessment of the occult metastases in patients being considered for radical treatment. Over the last three years, when PET scanning has been available to clinicians, the proportion of radically treated NSCLC patients having a PET scan has risen progressively from 48.4% to an acceptable 93.2%.

¹⁵ PET: Positron emission tomography

Table 8 (continued)
Frequency of PET scans in radically treated NSCLC patients

2007

n=all patients (excluding SCLC and Mixed (32) if treated as SCLC) treated radically (surgery or >50Gy) diagnosed in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	44		18		57		134		253	
Performed	22	50.0	15	83.3	46	80.7	111	82.8	194	76.7
Not performed	-	-	3	16.7	11	19.3	22	16.4	36	14.2
Missing data	22	50.0	-	-	-	-	1	0.7	23	9.1

Frequency of PET: ALL patients

n=all patients diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
Total number of PET performed	32	40.5	15	13.2	70	22.2	161	26.9	278	25.1

2006

n=all patients (excluding SCLC and Mixed (32) if treated as SCLC) treated radically (surgery or >50Gy) diagnosed in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	20		20		49		136		225	
Performed	8	40.0	8	40.0	19	38.8	74	54.4	109	48.4
Not performed	12	60.0	12	60.0	30	61.2	62	45.6	116	51.6

Frequency of PET: ALL patients

n=all patients diagnosed with lung cancer in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	90		114		296		647		1147	
Total number of PET performed	- ¹⁶		13	11.4	32	10.8	120	18.5	165	14.4 ¹⁷

¹⁶ Missing data: Originally there was no data field for "PET scan" in the *National Dataset for Lung Cancer* although it has been introduced into the Revised Dataset published in December 2009. PET scan data was not routinely collected in Borders in 2006 but was included in the 'local' 2007 dataset.

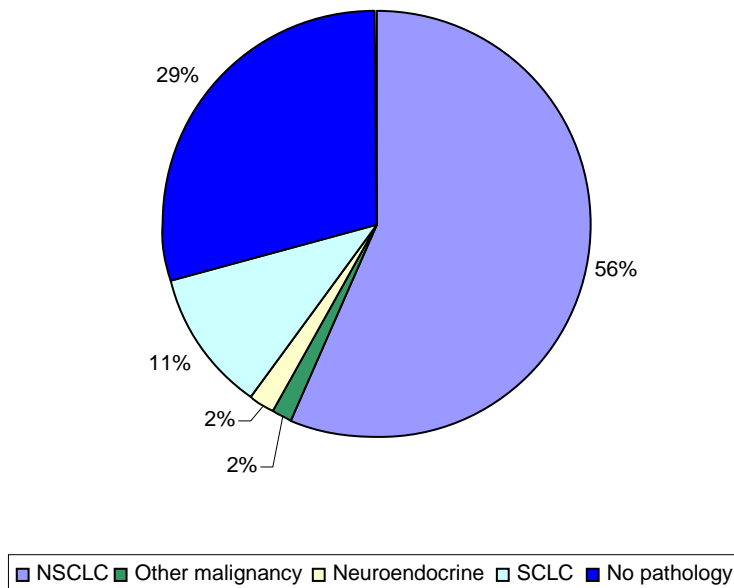
¹⁷ SCAN totals reflect the missing data from Borders and would be expected to be higher than 14.4% as shown.

Table 9a
Pathology Type: ALL PATIENTS

n=all patients diagnosed with lung cancer in 2008

Pathology Type ¹⁸	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
Squamous	9	12.3	34	34.0	65	20.6	74	12.0	182	16.5
Adenocarcinoma	17	23.3	20	20.0	43	13.6	103	16.7	183	16.5
NSCLC (NOS)	23	31.5	8	8.0	50	15.8	172	27.9	253	22.9
Mixed NSCLC	1	1.4	1	1.0	-	-	-	-	2	0.2
Other NSCLC	-	-	1	1.0	2	0.6	2	0.3	5	0.5
SCLC	7	9.6	7	7.0	33	10.4	70	11.3	117	10.6
Neuroendocrine	-	-	3	3.0	3	0.9	7	1.1	13	1.2
Mixed SCLC/NSCLC ¹⁹	-	-	-	-	1	0.3	1	0.2	2	0.2
Mixed SCLC/NSCLC ²⁰	-	-	-	-	1	0.3	-	-	1	0.1
Other Malignancy	2	2.7	2	2.0	11	3.5	5	0.8	20	1.8
Neg Pathology	3	4.1	9	9.0	23	7.3	46	7.5	81	7.3
No Pathology	11	15.1	15	15.0	84	26.6	137	22.2	247	22.3

Figure 10
SCAN – Pathology Type – All Patients Diagnosed in 2008



¹⁸ Pathology Types with codes as defined in the *National Dataset for Lung Cancer*: 11 Squamous; 12 Adenocarcinoma; 13 NSCLC (Non-small cell lung cancer) [not otherwise specified: NOS]; 14 Other NSCLC; 31 Mixed NSCLC; 21 SCLC (Small cell lung cancer); 22 Neuroendocrine; 32 Mixed SCLC/NSCLC; 41 Other Malignancy.

¹⁹ Mixed SCLC/NSCLC – when treated as NSCLC.

²⁰ Mixed SCLC/NSCLC – when treated as SCLC.

Table 9a (continued)
Pathology Type: ALL PATIENTS

2007

n=all patients diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
Squamous	10	12.7	40	35.1	63	20.0	73	12.2	186	16.8
Adenocarcinoma	14	17.7	21	18.4	31	9.8	81	13.5	147	13.3
NSCLC (NOS)	30	38.0	6	5.3	78	24.8	141	23.6	255	23.1
Mixed NSCLC	-	-	2	1.8	-	-	-	-	2	0.2
Other NSCLC	-	-	1	0.9	1	0.3	1	0.2	3	0.3
SCLC	14	17.7	17	14.9	39	12.4	84	14.0	154	13.9
Neuroendocrine	-	-	1	0.9	5	1.6	4	0.7	10	0.9
Mixed										
SCLC/NSCLC	-	-	-	-	1	0.3	6	1.0	7	0.6
Other Malignancy	1	1.3	-	-	10	3.2	5	0.8	16	1.4
Negative										
Pathology	-	-	16	14.0	27	8.6	67	11.2	110	9.9
No Pathology	10	12.7	10	8.8	60*	19.0	136	22.7	216	19.5

2006

n=all patients diagnosed with lung cancer in 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	90		114		296		647		1147	
Squamous	15	16.7	48	42.1	47	15.9	99	15.3	209	18.2
Adenocarcinoma	20	22.2	19	16.7	38	12.8	112	17.3	189	16.5
NSCLC (NOS)	22	24.4	2	1.8	75	25.3	167	25.8	266	23.2
Mixed NSCLC	-	-	1	0.9	6	2.0	1	0.2	8	0.7
Other NSCLC	-	-	-	-	5	1.7	2	0.3	7	0.6
SCLC	15	16.7	19	16.7	49	16.6	73	11.3	156	13.6
Neuroendocrine	-	-	-	-	1	0.3	3	0.5	4	0.3
Mixed										
SCLC/NSCLC	1	1.1	1	0.9	3	1.0	2	0.3	7	0.6
Other Malignancy	-	-	-	-	3	1.0	7	1.1	10	0.9
Negative										
Pathology	2	2.2	9	7.9	18	6.1	52	8.0	81	7.1
No Pathology	15	16.7	15	13.1	51	17.2	129	19.9	210	18.3

Table 9b**Pathology Types: Patients with POSITIVE pathology**n=all patients with positive pathology (pre-treatment or at surgery) diagnosed in **2008**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	59		76		209		434		778	
Squamous	9	15.3	34	44.7	65	31.1	74	17.1	182	23.4
Adenocarcinoma	17	28.8	20	26.3	43	20.6	103	23.7	183	23.5
NSCLC (NOS)	23	39.0	8	10.5	50	23.9	172	39.6	253	32.5
Mixed NSCLC	1	1.7	1	1.3	-	-	-	-	2	0.3
Other NSCLC	-	-	1	1.3	2	1.0	2	0.5	5	0.6
SCLC	7	11.9	7	9.2	33	15.8	70	16.1	117	15.0
Neuroendocrine	-	-	3	3.9	3	1.4	7	1.6	13	1.7
Mixed SCLC/NSCLC ²¹	-	-	-	-	1	0.5	1	0.2	2	0.3
Mixed SCLC/NSCLC ²²	-	-	-	-	1	0.5	-	-	1	0.1
Other Malignancy	2	3.4	2	2.6	11	5.3	5	1.2	20	2.6

2007n=all patients with positive pathology diagnosed in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	69		88		228		395		780	
Squamous	10	14.5	40	45.5	63	27.6	73	18.5	186	23.8
Adenocarcinoma	14	20.3	21	23.9	31	13.6	81	20.5	147	18.8
NSCLC (NOS)	30	43.5	6	6.8	78	34.2	141	35.7	255	32.7
Mixed NSCLC	-	-	2	2.3	-	-	-	-	2	0.3
Other NSCLC	-	-	1	1.1	1	0.4	1	0.3	3	0.4
SCLC	14	20.3	17	19.3	39	17.1	84	21.3	154	19.7
Neuroendocrine	-	-	1	1.1	5	2.2	4	1.0	10	1.3
Mixed SCLC/NSCLC	-	-	-	-	1	0.4	6	1.5	7	0.9
Other Malignancy	1	1.4	-	-	10	4.4	5	1.3	16	2.1

2006n=all patients with positive pathology diagnosed in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		90		227		466		856	
Squamous	15	20.5	48	53.3	47	20.7	99	21.2	209	24.4
Adenocarcinoma	20	27.4	19	21.1	38	16.7	112	24.0	189	22.1
NSCLC (NOS)	22	30.1	2	2.2	75	33.0	167	35.8	266	31.1
Mixed NSCLC	-	-	1	1.1	6	2.6	1	0.2	8	0.9
Other NSCLC	-	-	-	-	5	2.2	2	0.4	7	0.8
SCLC	15	20.5	19	21.1	49	21.6	73	15.7	156	18.2
Neuroendocrine	-	-	-	-	1	0.4	3	0.6	4	0.5
Mixed SCLC/NSCLC	1	1.4	1	1.1	3	1.3	2	0.4	7	0.8
Other Malignancy	-	-	-	-	3	1.3	7	1.5	10	1.2

²¹ Mixed SCLC/NSCLC – when treated as NSCLC.²² Mixed SCLC/NSCLC – when treated as SCLC.

Table 10
Staging: ALL PATIENTS

n=all patients diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
IA	4	5.5	4	4.0	18	5.7	37	6.0	63	5.7
IB	8	11.0	6	6.0	25	7.9	56	9.1	95	8.6
IIA	2	2.7	2	2.0	2	0.6	6	1.0	12	1.1
IIB	3	4.1	7	7.0	11	3.5	36	5.8	57	5.2
IIIA	6	8.2	12	12.0	27	8.5	61	9.9	106	9.6
IIIB	8	11.0	14	14.0	27	8.5	86	13.9	135	12.2
IV	22	30.1	26	26.0	148	46.8	260	42.1	456	41.2
Limited SCLC	4	5.5	8	8.0	9	2.8	31	5.0	52	4.7
Extensive SCLC	3	4.1	-	-	25	7.9	40	6.5	68	6.1
Not Recorded	13	17.8	21	21.0	24	7.6	4	0.6	62	5.6
Data completeness for Stage										
Recorded	60	82.2	79	79.0	292	92.4	613	99.4	1044	94.4
Not recorded	13	17.8	21	21.0	24	7.6	4	0.6	62	5.6

NHS QIS Standard 4a.2

Audit has a minimum of 90% cases with TNM stage recorded at diagnosis.

Stage Groupings are calculated from TNM permutations. In order to ascertain stage groupings, TNM classifications must be complete. See Appendix 3 for detailed TNM classifications and staging.

Fairly high levels of missing or not recorded TNM staging values existed in 2006 and 2007. New systems for recording staging at MDM are now in place and this is reflected in the improved results in 2008 with SCAN overall exceeding the target by achieving 94.4% data completeness for Stage (Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer).

Comment

Internationally rates of Stage IV disease for NSCLC are 44-45%. In future, increased use of PET scanning may result in increases in reported levels of Stage IV disease.

Table 10 (continued)
Staging: ALL PATIENTS

2007

n=all patients diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
IA	7	8.9	-	-	16	5.1	19	3.2	42	3.8
IB	5	6.3	-	-	17	5.4	56	9.4	78	7.1
I (unclassified)	-	-	6	5.3	-	-	-	-	6	0.5
IIA	-	-	1	0.9	2	0.6	4	0.7	7	0.6
IIB	3	3.8	-	-	9	2.9	21	3.5	33	3.0
II (unclassified)	-	-	2	1.8	-	-	-	-	2	0.2
IIIA	14	17.7	8	7.0	29	9.2	47	7.9	98	8.9
IIIB	9	11.4	2	1.8	35	11.1	76	12.7	122	11.0
III (unclassified)	-	-	10	8.8	-	-	-	-	10	0.9
IV	20	25.3	26	22.8	150	47.6	219	36.6	415	37.5
Limited SCLC	3	3.8	6	5.3	13	4.1	34	5.7	56	5.1
Extensive SCLC	12	15.2	9	7.9	26	8.3	56	9.4	103	9.3
Not Recorded	6	7.6	44	38.6	18	5.7	65	10.9	133	12.0
Missing data	-	-	-	-	-	-	1	0.2	1	0.1
Data completeness for Stage										
Recorded	73	92.4	70	61.4	297	94.3	532	89.0	972	87.9
Not recorded	6	7.6	44	38.6	18	5.7	66	11.0	134	12.1

2006

n=all patients diagnosed with lung cancer in 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	90		114		296		647		1147	
IA	6	6.7	3	2.6	7	2.4	38	5.9	54	4.7
IB	8	8.9	2	1.8	25	8.4	42	6.5	77	6.7
IIA	-	-	-	-	2	0.7	9	1.4	11	1.0
IIB	-	-	2	1.8	9	3.0	19	2.9	30	2.6
IIIA	8	8.9	7	6.1	20	6.8	56	8.7	91	7.9
IIIB	10	11.1	13	11.4	22	7.4	65	10.0	110	9.6
IV	36	40.0	32	28.1	124	41.9	242	37.4	434	37.8
Limited SCLC	3	3.3	2	1.8	12	4.1	32	4.9	49	4.4
Extensive SCLC	12	13.3	12	10.5	37	12.5	40	6.2	101	8.9
Not recorded	7	7.8	38	33.3	31	10.5	90	13.9	166	14.5
Missing data	-	-	3	2.6	7	2.4	14	2.2	24	1.9
Data completeness for Stage										
Recorded	83	92.2	73	64.0	258	87.2	543	83.9	957	83.4
Not recorded	7	7.8	41	36.0	38	12.8	104	16.1	190	16.6

Table 10a
Staging of Patients with NSCLC

n=all patients diagnosed (pre-treatment or at surgery) with NSCLC in 2008
(Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	52		69		175		364		660	
IA	2	3.8	1	1.4	10	5.7	24	6.6	37	5.6
IB	8	15.4	4	5.8	19	10.9	39	10.7	70	10.6
IIA	2	3.8	2	2.9	1	0.6	3	0.8	8	1.2
IIB	2	3.8	7	10.1	8	4.6	26	7.1	43	6.5
IIIA	6	11.5	12	17.4	19	10.9	37	10.2	74	11.2
IIIB	8	15.4	13	18.8	24	13.7	69	19.0	114	17.3
IV	18	34.6	18	26.1	91	52.0	166	45.6	293	44.4
Not Recorded	6	11.5	12	17.4	3	1.7	-	-	21	3.2

Table 10b
Staging of Patients with SCLC

n=all patients diagnosed (pre-treatment or at surgery) with SCLC in 2008
(Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	7		7		34		70		118	
Limited SCLC	4	57.1	-	-	9	26.5	30	42.9	43	36.4
Extensive SCLC	3	42.9	7	100.0	25	73.5	40	57.1	75	63.6

Table 10c
Staging of Patients with No or Negative Pathology

n=all patients diagnosed with lung cancer by imaging alone in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	14		24		107		183		328	
IA	2	14.3	3	12.5	8	7.5	13	7.1	26	7.9
IB	-	-	2	8.3	6	5.6	17	9.3	25	7.6
IIA	-	-	-	-	1	0.9	3	1.6	4	1.2
IIB	1	7.1	-	-	3	2.8	10	5.5	14	4.3
IIIA	-	-	-	-	8	7.5	24	13.1	32	9.8
IIIB	-	-	1	4.2	3	2.8	17	9.3	21	6.4
IV	4	28.6	8	33.3	57	53.3	94	51.4	163	49.7
Limited SCLC	-	-	-	-	-	-	1	0.5	1	0.3
Extensive SCLC	-	-	1	4.2	-	-	-	-	1	0.3
Not Recorded	7	50.0	9	37.5	21	19.6	4	2.2	41	12.5

TREATMENT

Table 11
Frequency of Potentially Curative and Palliative Treatment

n=all patients diagnosed with lung cancer in **2008**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	73		100		316		617		1106	
Curative	26	35.6	32	32.0	69	21.8	169	27.4	296	26.8
Palliative	42	57.5	59	59.0	228	72.2	406	65.8	735	66.5
Died before treatment	3	4.1	-	-	4	1.3	31	5.0	38	3.4
Refused treatment	2	2.7	4	4.0	15	4.7	10	1.6	31	2.8
Not recorded	-	-	5	5.0	-	-	1	0.2	6	0.5

NHS QIS Standard 5a.4

The percentage of patients receiving treatment with curative intent is recorded.

2007

n=all patients diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	79		114		315		598		1106	
Curative	26	32.9	31	27.2	58	18.4	156	26.1	271	24.5
Palliative	50	63.3	58	50.9	248	78.7	408	68.2	764	69.1
Died before treatment	-	-	21	18.4	5	1.6	20	3.3	46	4.2
Refused treatment	-	-	4	3.5	4	1.3	13	2.2	21	1.9
Inapplicable	3	3.8	-	-	-	-	-	-	3	0.3
Not recorded	-	-	-	-	-	-	1	0.2	1	0.1

2006

n=all patients diagnosed with lung cancer in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	90		114		296		647		1147	
Curative	21	23.3	24	21.0	51	17.2	156	24.1	252	22.0
Palliative	65	72.2	80	70.2	236	79.7	421	65.1	802	69.9
Died before treatment	-	-	-	-	2	0.7	26	4.0	28	2.4
Refused treatment	4	4.4	5	4.4	7	2.4	42	6.5	58	5.1
Not recorded	-	-	5	4.4	-	-	2	0.3	7	0.6

Table 12a
Treatment of Patients Diagnosed with NSCLC – ALL STAGES

n=all patients diagnosed (pre-treatment or at surgery) with NSCLC in 2008
(Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	52		69		175		364		660	
<i>Anti-cancer treatment²³</i>	36	69.2	51	73.9	124	70.9	287	78.8	498	75.4
No active treatment	13	25.0	14	20.3	45	25.7	58	15.9	130	19.7
Refused treatment	1	1.9	2	2.9	4	2.3	6	1.6	13	2.0
Died before treatment	2	3.8	-	-	2	1.1	13	3.6	17	2.6
Not recorded	-	-	2	2.9	-	-	-	-	2	0.3

Comment

Although the proportion of patients receiving anti-cancer treatment is not a Scottish Standard, it is being used as a quality measure by the National Lung Cancer Audit (NLCA). The NLCA Report provides an analysis of data collected in England and Wales, to which Scotland contributes its own analysis. SCAN 2008 data is shown in the NLCA Report 2009 (<http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/lung-cancer>) and demonstrates results in comparison with other areas of the UK as comparable if not better.

2007

n = all patients diagnosed with NSCLC (Codes 11, 12, 13, 14 and 31) in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	54		70		173		296		593	
<i>Anti-cancer treatment</i>	44	81.5	50	71.4	117	67.7	224	75.7	435	73.4
No active treatment	8	14.8	12	17.1	52	30.1	55	18.6	127	21.4
Refused treatment	-	-	2	2.9	3	1.7	4	1.3	9	1.5
Died before treatment	2	3.7	2	2.9	1	0.6	10	3.4	15	2.5
Not recorded	-	-	4	5.7	-	-	3	1.0	7	1.2

The analysis in 2006 did not include treatment data as shown for 2007 and 2008. It focused on treatment relating to specific stages: NSCLC Stages I, II, III, and IV *inclusive* of patients without pathology and, SCLC, limited and extensive disease). Therefore Tables 12a, 12b and 12c do not contain data from 2006 as comparable data is not available in all instances.

²³ Anti-cancer treatment includes any form of radiotherapy, chemotherapy, and/or surgery. It excludes best supportive care and watchful waiting. Treatments such as stenting and steroids that are not followed by surgery, chemotherapy or radiotherapy are regarded as best supportive care/no active treatment.

Table 12b
Treatment of Patients Diagnosed with SCLC: ALL STAGES

n=all patients diagnosed (pre-treatment or at surgery) with SCLC in **2008**
 (Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	7		7		34		70		118	
<i>Anti-cancer treatment</i>	6	85.7	6	85.7	24	70.6	56	80.0	92	78.0
No active treatment	1	14.3	1	14.3	10	29.4	11	15.7	23	19.5
Refused treatment	-	-	-	-	-	-	1	1.4	1	0.8
Died before treatment	-	-	-	-	-	-	2	2.9	2	1.7

2007

n = all patients diagnosed with SCLC (Code 21) in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	14		17		39		84		154	
<i>Anti-cancer treatment</i>	11	78.6	13	76.5	24	61.5	71	84.5	119	77.3
No active treatment	2	14.3	4	23.5	14	35.9	9	10.7	29	18.8
Refused treatment	-	-	-	-	-	-	2	2.4	2	1.3
Died before treatment	1	7.1	-	-	1	2.6	2	2.4	4	2.6

Table 12c
Treatment of Patients without Pathology – ALL STAGES

n=all patients diagnosed with lung cancer by imaging (negative or no pathology) in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	14		24		107		183		328	
<i>Anti-cancer treatment</i>	4	28.6	11	45.8	19	17.8	62	33.9	96	29.3
No active treatment	8	57.1	11	45.8	80	74.8	100	54.6	199	60.7
Refused treatment	1	7.1	1	4.2	8	7.5	3	1.6	13	4.0
Died before treatment	1	7.1	-	-	-	-	18	9.8	19	5.8
Not recorded	-	-	1	4.2	-	-	-	-	1	0.3

2007

n = all patients diagnosed with lung cancer by imaging (negative or no pathology) in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	10		22		87		205		324	
<i>Anti-cancer treatment</i>	4	40.0	7	31.8	9	10.3	69	33.7	89	27.5
No active treatment	6	60.0	12	54.5	73	83.9	111	54.1	202	62.3
Refused treatment	-	-	3	13.6	2	2.3	7	3.4	12	3.7
Died before treatment	-	-	-	-	3	3.4	17	8.3	20	6.2
Not recorded	-	-	-	-	-	-	1	0.5	1	0.3

**TREATMENT OF PATIENTS DIAGNOSED IN 2008 WITH NSCLC OR WITHOUT
PATHOLOGY - GROUPED BY STAGE**

Table 13a
Treatment of Stage I & II Disease (NSCLC or without pathology)

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage I/II in **2008**
(Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	17		19		56		135		227	
Surgery	6	35.3	8	42.1	23	41.1	54	40.0	91	40.1
Radical RT ²⁴	9	52.9	10	52.6	22	39.3	37	27.4	78	34.4
Chemoradiation	-	-	-	-	1	1.8	4	3.0	5	2.2
High dose pall RT ²⁵	-	-	-	-	-	-	2	1.5	2	0.9
Low dose pall RT	2	11.8	1	5.3	2	3.6	3	2.2	8	3.5
Chemotherapy	-	-	-	-	-	-	-	-	-	-
Chemo + pall RT	-	-	-	-	-	-	1	0.7	1	0.4
Other treatment	-	-	-	-	-	-	2	1.5	2	0.9
BSC ²⁶	-	-	-	-	5	8.9	29	21.5	34	15.0
Refused treatment	-	-	-	-	3	5.4	2	1.5	5	2.2
Died before treatment	-	-	-	-	-	-	1	0.7	1	0.4

Comment: An analysis was carried out to explore the rationale in providing Best Supportive Care (no active treatment) to 34 patients with early stage Lung Cancer, i.e. Stage I or II disease.

Almost 95% of these patients were presented at the MDM and were fully discussed.

Over 60% had a Performance Status of 3 or more which suggests frailty and this is reinforced by over 75% of all BSC patients having 2 or more co-morbidities while only less than 9% had no co-morbidity. Moreover, almost 80% were 75 years or over and no patients were less than 60 years of age. The frailty and high co-morbidity status is likely responsible for the high imaging diagnosis rate of almost 80% indicating patients were not fit for invasive investigation and subsequently not fit for active treatment.

²⁴ RT: Radiotherapy

²⁵ Pall RT: Palliative radiotherapy

²⁶ BSC: Best Supportive Care (No active treatment)

Table 13b
Treatment of Stage III Disease (NSCLC or without pathology)

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage III in 2008
(Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	14		26		54		147		241	
Surgery	2	14.3	2	7.7	4	7.4	6	4.1	14	5.8
Radical RT	1	7.1	2	7.7	9	16.7	11	7.5	23	9.5
Chemoradiation	2	14.3	6	23.1	11	20.4	30	20.4	49	20.3
High dose pall RT	-	-	3	11.5	5	9.3	8	5.4	16	6.7
Low dose pall RT	2	14.3	2	7.7	5	9.3	27	18.4	36	14.9
Chemotherapy only	2	14.3	7	26.9	2	3.7	19	12.9	30	12.4
Chemo + pall RT	-	-	-	-	2	3.7	3	2.0	5	2.1
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	3	21.4	4	15.4	15	27.8	32	21.8	54	22.4
Refused treatment	-	-	-	-	1	1.9	2	1.4	3	1.3
Died before treatment	2	14.3	-	-	-	-	9	6.1	11	4.6

Table 13c
Treatment of Stage IV Disease (NSCLC or without pathology)

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage IV in 2008
(Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	22		26		148		260		456	
Surgery	1	4.5	-	-	-	-	-	-	1	0.2
Radical RT	-	-	1	3.8	1	0.7	-	-	2	0.4
Chemoradiation	-	-	-	-	3	2.0	1	0.4	4	0.9
High dose pall RT	-	-	2	7.7	2	1.4	9	3.5	13	2.9
Low dose pall RT	5	22.7	6	23.1	25	16.9	66	25.4	102	22.4
Chemotherapy only	2	9.1	7	26.9	8	5.4	46	17.7	63	13.8
Chemo + pall RT	5	22.7	-	-	16	10.8	21	8.1	42	9.2
Other treatment	4	18.2	1	3.8	-	-	9	3.5	14	3.1
BSC	3	13.6	8	30.8	83	56.1	86	33.1	180	39.5
Refused treatment	2	9.1	1	3.8	5	3.4	5	1.9	13	2.7
Died before treatment	-	-	-	-	2	1.4	17	6.7	19	4.2
Not recorded	-	-	-	-	3	2.0	-	-	3	0.7

Table 13d**Treatment of Disease with Stage Not Recorded (NSCLC or without pathology)**

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage not recorded in 2008 (Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	13		21		24		4		62	
Surgery	-	-	4	19.0	-	-	-	-	4	6.4
Radical RT	-	-	-	-	-	-	-	-	-	-
Chemoradiation	-	-	-	-	-	-	-	-	-	-
High dose pall RT	-	-	1	4.8	-	-	-	-	1	1.6
Low dose pall RT	-	-	-	-	-	-	-	-	-	-
Chemotherapy only	-	-	-	-	-	-	-	-	-	-
Chemo + pall RT	-	-	-	-	-	-	-	-	-	-
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	12	92.3	13	61.9	19	79.2	1	25.0	45	72.6
Refused treatment	-	-	2	9.5	3	12.5	-	-	5	8.1
Died before treatment	1	7.7	-	-	2	8.3	3	75.0	6	9.7
Not recorded	-	-	1	4.8	-	-	-	-	1	1.6

TREATMENT OF PATIENTS DIAGNOSED IN 2008 WITH SCLC OR WITHOUT PATHOLOGY - GROUPED BY STAGE

Table 14a

Treatment of SCLC - Limited Disease

n=all patients diagnosed with SCLC (pathologically or by imaging) – Limited Disease in 2008 (Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	4		-		9		31		44	
Surgery	-	-	-	-	-	-	1 ²⁷	3.2	1	2.3
Radical RT	-	-	-	-	-	-	1 ²⁸	3.2	1	2.3
Chemorad ²⁹ + PCI ³⁰	3	75.0	-	-	7	77.8	13	41.9	23	52.3
Chemorad no PCI	-	-	-	-	-	-	6	19.4	6	13.6
Chemotherapy	1	25.0	-	-	1	11.1	5	16.1	7	15.9
Chemo + pall RT	-	-	-	-	1	11.1	1	3.2	2	4.5
BSC	-	-	-	-	-	-	4	12.9	4	9.1
Refused treatment	-	-	-	-	-	-	-	-	-	-
Died before treatment	-	-	-	-	-	-	-	-	-	-

NHS QIS Standard 5c.5 – A minimum of 60% of those limited (LD) SCLC patients receiving chemotherapy also receive consolidation radiotherapy to the chest. In SCAN a total of 65.9% Limited SCLC patients received this treatment. (Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer).

NHS QIS Standard 5c.7 – A minimum of 60% of those LD SCLC patients receiving chemotherapy subsequently receive prophylactic cranial irradiation (PCI). SCAN achieved 52.3% indicating a *near miss* (Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer). Over the past three years a steady increase is indicated and this trend, as illustrated below, suggests the target is expected to be met in the near term.

LD SCLC patients receiving chemotherapy and PCI.

n=all patients diagnosed with SCLC – Limited Disease in 2008, 2007 & 2006

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients (2008)	4		-		9		31		44	
Chemorad + PCI	3	75.0	-	-	7	77.8	13	41.9	23	52.3
Total patients (2007)	3		6		13		31		53	
Chemorad + PCI	2	66.7	1	16.7	5	38.5	17	54.8	25	47.2
Total patients (2006)	3		2		12		32		49	
Chemorad + PCI	1	33.3	-	-	5	41.7	16	50.0	22	44.9

A relevant factor in determining eligibility for PCI is age and this will have an effect on the number of patients offered PCI which is contraindicated in patients over 70 years. However, in 2008 PCI was additionally offered to 2 LD SCLC patients in SCAN who were over 70 who, in effect, were ineligible.

²⁷ The patient was referred to Thoracic Surgery with an imaging diagnosis of NSCLC. The patient underwent Lobectomy and subsequent pathology showed SCLC. The patient was thereafter referred to Oncology and underwent ChemoRad + PCI.

²⁸ SCLC is not normally treated with radical radiotherapy. In this case, although histologically the tumour looked like SCLC, it behaved radiologically and biologically like NSCLC. The patient agreed to undergo radical radiotherapy.

²⁹ Chemorad: chemoradiation

³⁰ PCI: Prophylactic Cranial Irradiation

Table 14b
Treatment of SCLC - Extensive Disease

n=all patients diagnosed with SCLC (pathologically or by imaging) – Extensive Disease in 2008(Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	3		7		25		40		75	
Surgery	-	-	-	-	-	-	-	-	-	-
Chemorad + PCI	-	-	-	-	2	8.0	2	5.0	4	5.3
Chemorad no PCI	-	-	1	14.3	-	-	-	-	1	1.3
Chemotherapy	-	-	5	71.4	3	12.0	17	42.5	25	33.3
Chemo + pall RT	1	33.3			6	24.0	7	17.5	14	18.7
Pall RT only	1	33.3			4	16.0	3	7.5	8	10.7
BSC	1	33.3	1	14.3	10	40.0	8	20.0	20	26.7
Refused treatment	-	-	-	-	-	-	1	2.5	1	1.3
Died before treatment	-	-	-	-	-	-	2	5.0	2	2.7

NHS QIS Standard 5c.6

The percentage of SCLC patients treated with concurrent chemoradiotherapy are recorded.

Surgery

Table 15
Frequency of Surgery

n=all patients diagnosed with lung cancer in **2008**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	73		100		316		617		1106	
Surgery	9	12.3	14	14.0	27	8.5	61	9.9	111	10.0
No surgery	64	87.7	85	85.0	289	91.5	556	90.1	994	89.9
Missing data	-	-	1	1.0	-	-	-	-	1	0.1

2007

n=all patients diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	79		114		315		598		1106	
Surgery	5	6.3	16	14.0	26	8.3	49	8.2	96	8.7
No surgery	74	93.7	98	86.0	289	91.7	549	91.8	1010	91.3

2006

n=all patients diagnosed with lung cancer in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	90		114		296		647		1147	
Surgery	6	6.7	7	6.1	24	8.1	56	8.7	93	8.1
No surgery	84	93.3	107	93.9	272	91.9	591	91.3	1054	91.9

Comment

Scotland contributed to the NLCA Report 2009 (patients diagnosed in 2008) in which the percentage of patients having surgery is applied as a performance measure with an acceptable resection rate set at 10%. SCAN's overall result of 10% shows improvement from previous years and is comparable with the NLCA recommendation applicable in England and Wales.

Table 16
Type of Surgery for Resection of the Primary Tumour

n=all patients treated surgically diagnosed with lung cancer in 2008

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	9		14		27		61		111	
Pneumonectomy	2	22.2	1	7.1	5	18.5	10	16.4	18	16.2
Lobectomy	7	77.8	11	78.6	21	77.8	45	73.8	84	75.7
Wedge or Segmentectomy	-	-	1	7.1	1	3.7	6	9.8	8	7.2
Other	-	-	1	7.1	-	-	-	-	1	0.9

NHS QIS Standard 5b.4

Less than 10% of patients that undergo surgery are resected by wedge or segmentectomy.

NHS QIS Standard 5b.9

The 30-day mortality rate following final lung cancer surgery specific to the procedure performed is recorded and discussed at team meetings.

NHS QIS Standard 4a.1

Arrangements are in place for the annual reporting of case-mix (based on data items included in the nationally agreed audit dataset) and outcome including 1, 2, and 5-year survival rate.

Comment: A *Thirty-Day Mortality after Surgery* study and *Survival Analysis* have been carried out and will be reported independently of this Report.

2007

n=all patients treated surgically diagnosed with lung cancer in 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	5		16		26		49		96	
Pneumonectomy	-	-	2	12.5	5	19.2	7	14.3	14	14.6
Lobectomy	5	100.0	13	81.3	19	73.1	39	79.6	76	79.2
Wedge or Segmentectomy	-	-	1	6.3	1	3.8	3	6.1	5	5.2
Other	-	-	-	-	1	3.8	-	-	1	1.0

2006

n=all patients treated surgically diagnosed with lung cancer in 2006

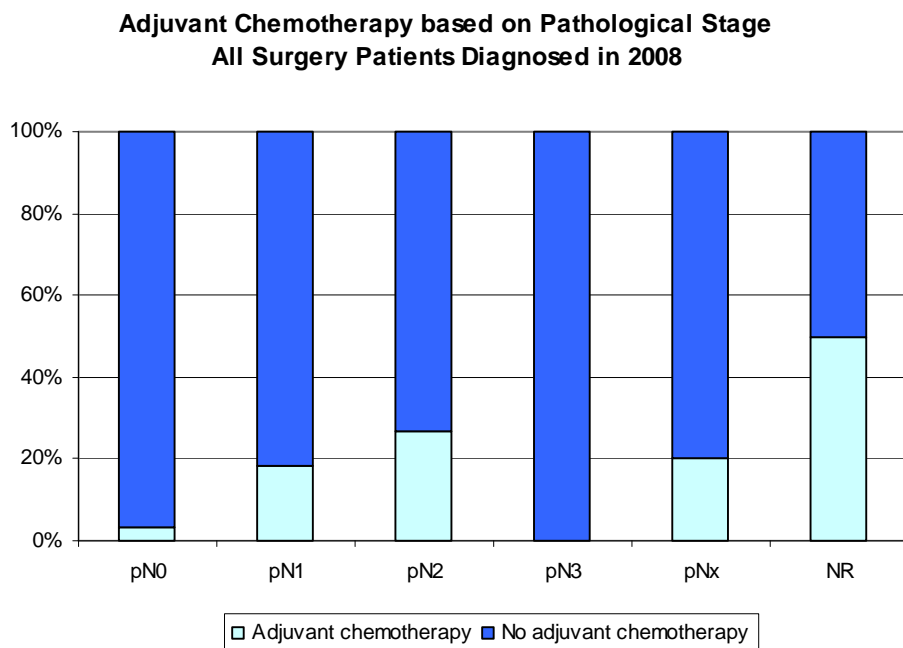
	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	6		7		24		56		93	
Pneumonectomy	1	16.7	1	14.3	6	25.0	9	16.1	17	18.3
Lobectomy	5	83.3	4	57.1	17	70.8	44	78.6	70	75.3
Wedge or Segmentectomy	-	-	2	28.6	-	-	1	1.8	3	3.2
Other	-	-	-	-	1	4.2	2	3.6	3	3.2

POST-OPERATIVE TREATMENTS

ADJUVANT CHEMOTHERAPY

Adjuvant chemotherapy is offered to patients with a complete resection of non-small cell lung cancer of stages II or IIIA (T1N1; T2N1; T2N2; T3N0/1/2) based on the LACE meta-analysis. It should not be given for IIIB (T4 or N3) disease as these patients are excluded from the trials. The benefits and side effects need to be carefully considered for each individual as the absolute benefit is small (around 5% improvement).

Figure 11: Adjuvant Chemotherapy based on Pathological N Stage³¹ – SCAN Region



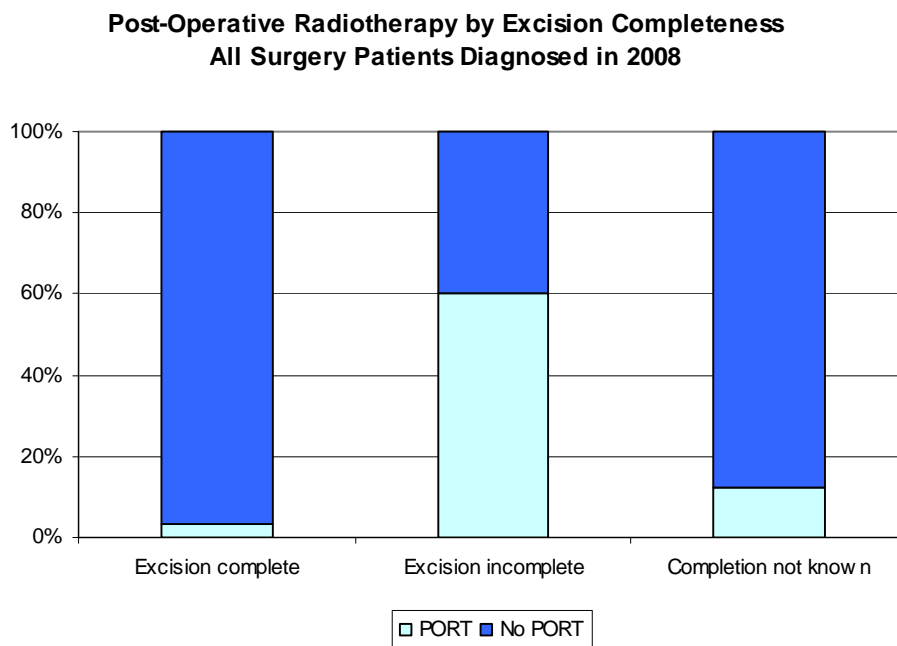
³¹ pN0=no regional lymph node metastasis; pN1=ipsilateral peribronchial and/or ipsilateral hilar and intrapulmonary lymph nodes; pN2=ipsilateral mediastinal and/or subcarinal lymph nodes; pN3=Contralateral mediastinal, contralateral hilar lymph nodes, ipsilateral or contralateral scalene or supraclavicular lymph nodes(s); pNx=Regional lymph nodes cannot be assessed; NR= not recorded.

POST-OPERATIVE TREATMENTS (continued)

POST-OPERATIVE RADIOTHERAPY (PORT).

PORT is offered to patients with incomplete resection of non-small cell lung cancer with involved central margins or incomplete resection of N2 disease. Again the benefit is small and needs to be weighed against potential for toxicity in each case.

Figure 12: Post-operative Radiotherapy (PORT) by Excision Completeness – SCAN Region



NHS QIS Standard 5c.3 – the percentage of patients with incomplete resection receiving post-operative radiotherapy are recorded.

Radiotherapy

Table 17
Frequency of Radiotherapy

n=all patients diagnosed with lung cancer in **2008**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	73		100		316		617		1106	
Radiotherapy	33	45.2	51	51.0	126	39.9	260	42.1	470	42.5
No radiotherapy	40	54.8	49	49.0	190	60.1	357	57.9	636	57.5

NHS QIS Standard 5a.3

The percentage of all patients diagnosed with lung cancer receiving radiotherapy is recorded.

NHS QIS Standard 5c.13

The 30-day mortality rate following final radiotherapy with curative intent is recorded and analysed.

NHS QIS Standard 4a.1

Arrangements are in place for the annual reporting of case-mix (based on data items included in the nationally agreed audit dataset) and outcome including 1, 2, and 5-year survival rate.

Comment: A *Thirty-Day Mortality after Radiotherapy study and Survival Analysis* have been carried out and will be reported independently of this Report.

2007

n=all patients diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	79		114		315		598		1106	
Radiotherapy	40	50.6	23	20.2	125	39.7	256	42.8	444	40.1
No radiotherapy	39	49.4	91	79.8	190	60.3	342	57.2	662	59.9

2006

n=all patients diagnosed with lung cancer in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	90		114		296		647		1147	
Radiotherapy	42	46.7	45	39.5	98	33.1	253	39.1	438	38.2
No radiotherapy	48	53.3	69	60.5	198	66.9	394	60.9	709	61.8

Table 18
Radiotherapy by Curative Potential

n=all patients receiving radiotherapy diagnosed with lung cancer in **2008**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	33		51		126		260		470	
Radical	16	48.5	22	43.1	58	46.0	109	41.9	205	43.6
Palliative	17	51.5	29	56.9	68	54.0	151	58.1	265	56.4
<i>Radical Radiotherapy as percentage of ALL lung cancer patients (n=all patients diagnosed in 2008)</i>										
		21.9		22.0		18.4		17.7		18.5

2007

n=all patients receiving radiotherapy diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	40		23		125		256		444	
Radical	21	52.5	10	43.5	49	39.2	106	41.4	186	41.9
Palliative	19	47.5	6	26.1	76	60.8	150	58.6	251	56.5
Not recorded	-	-	7	30.4	-	-	-	-	7	1.6
<i>Radical Radiotherapy as percentage of ALL lung cancer patients (n=all patients diagnosed in 2007)</i>										
		26.6		8.8		15.6		17.7		16.8

2006

n=all patients receiving radiotherapy diagnosed with lung cancer in **2006**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	42		45		98		253		438	
Radical	15	35.7	18	40.0	35	35.7	109	43.1	177	40.4
Palliative	27	64.3	23	51.1	63	64.3	144	56.9	257	58.7
Not recorded	-	-	4	8.9	-	-	-	-	4	0.9
<i>Radical Radiotherapy as percentage of ALL lung cancer patients (n=all patients diagnosed in 2006)</i>										
		16.7		15.8		11.8		16.8		15.4

Chemotherapy

Table 19
Chemotherapy NSCLC

n=all patients diagnosed with NSCLC in **2008**
(Codes 11, 12, 13, 14, 22, 31, 41 and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	52		69		175		364		660	
Chemotherapy	14	26.9	25	36.2	44	25.1	122	33.5	205	31.1
No chemotherapy	38	73.1	44	63.8	131	74.9	242	66.5	455	68.9

NHS QIS Standard 5d.2

A minimum of 20% of NSCLC patients receive chemotherapy.

This Standard is currently being achieved in all Health Boards in the SCAN region with SCAN overall reporting 31.1% of NSCLC patients receiving chemotherapy (Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer).

2007

n=all patients diagnosed with NSCLC in **2007** (Codes 11, 12, 13, 14, and 31)

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	54		71		172		296		593	
Chemotherapy	22	40.7	23	32.4	44	25.6	116	39.2	205	34.6
No chemotherapy	32	59.3	48	67.6	128	74.4	180	60.8	388	65.4

2006

n=all patients diagnosed with NSCLC in **2006** (Codes 11, 12, 13, 14, and 31)

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	58		69		171		381		679	
Chemotherapy	15	25.9	27	39.1	38	22.2	99	26.0	179	26.4
No chemotherapy	43	74.1	42	60.9	133	77.8	282	74.0	500	73.6

Table 20
Chemotherapy SCLC

n=all patients diagnosed with SCLC in **2008**(Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	7		7		34		70		118	
Chemotherapy	5	71.4	7	100.0	19	55.9	51	72.9	82	69.5
No chemotherapy	2	28.6	-	-	15	44.1	19	27.1	36	30.5

NHS QIS Standard 5d.1

A minimum of 60% of SCLC patients receive chemotherapy.

A 'near-miss' of 55.9% is reported in Fife while SCAN overall achieved 69.5%, exceeding the required percentage (Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer).

NHS QIS Standard 5d.6

The 30-day mortality rate following final chemotherapy treatment is recorded and analysed.

NHS QIS Standard 4a.1

Arrangements are in place for the annual reporting of case-mix (based on data items included in the nationally agreed audit dataset) and outcome including 1, 2, and 5-year survival rate.

Comment: A *Thirty-Day Mortality after Chemotherapy* study and *Survival Analysis* have been carried out and will be reported independently of this Report.

2007

n=all patients diagnosed with SCLC in **2007**(Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	14		17		39		84		154	
Chemotherapy	8	57.1	13	76.5	20	51.3	69	82.1	110	71.4
No chemotherapy	6	42.9	4	23.5	19	48.7	15	17.9	44	28.6

2006

n=all patients diagnosed with SCLC in **2006**(Codes 21 and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Total patients	15		19		49		73		156	
Chemotherapy	8	53.3	13	68.4	31	63.3	52	71.2	104	66.7
No chemotherapy	7	46.7	6	31.6	18	36.7	21	28.8	52	33.3

APPENDICES

Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer

The Revised NHS QIS Clinical Standards for Lung Cancer (New Edition) were published in July 2008. Many of these are already being reported on and are included in this Report as illustrated in the summary below. More comprehensive reporting of Standards, published in 2008, is expected in subsequent annual reports.

Performance against these Standards, for patients diagnosed in 2008, is highlighted by a system of colour-coding. Green confirms that a Standard has been met or surpassed, red where this has not been achieved, and amber indicates a 'near miss'. A 'near miss' is quantified as missing the target by between 5% - 10%.

NHS QIS Standard		Borders	D&G	Fife	Lothian	SCAN
2a.1	A minimum of 75% of all lung cancer patients have their diagnosis confirmed by histology/cytology	80.8%	76.0%	66.1%	70.3%	70.3%
4a.1	Arrangements are in place for the annual reporting of case-mix (based on data items included in the nationally agreed audit dataset) and outcome including 1, 2, and 5-year survival rate.					
4a.2	Audit has a minimum of 90% cases with TNM stage recorded at diagnosis. (We currently report on patients' Staging status which is the overall stage derived from TNM)	82.2%	79.0%	92.4%	99.4%	94.4%
4a.3	Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.	90.4%	63.0%	97.8%	90.5%	90.1%
5a.3	The percentage of all patients diagnosed with lung cancer receiving surgery, radiotherapy, chemotherapy and combined modality treatment is recorded.					
5a.4	The percentage of patients receiving treatment with curative intent is recorded.					
5b.4	Less than 10% of patients that undergo surgery are resected by wedge or segmentectomy.	0.0%	7.1%	3.7%	9.8%	7.2%
5b.9	The 30-day mortality rate following final lung cancer surgery specific to the procedure performed is recorded and discussed at team meetings.					
5c.3	The percentage of patients with incomplete resection receiving postoperative radiotherapy are recorded.					

NHS QIS Standard		Borders	D&G	Fife	Lothian	SCAN
5c.5	A minimum of 60% of those limited (LD) SCLC patients receiving chemotherapy also receive consolidation radiotherapy to the chest.	75.0%	n/a ³²	77.8%	61.3%	65.9%
5c.6	The percentage of SCLC patients treated with concurrent chemoradiotherapy are recorded.					
5c.7	A minimum of 60% of those LD SCLC patients receiving chemotherapy subsequently receive prophylactic cranial irradiation (PCI).	75.0%	n/a ³⁰	77.8%	41.9%	52.3%
5c.13	The 30-day mortality rate following final radiotherapy with curative intent is recorded and analysed.					
5d.1	A minimum of 60% of SCLC patients receive chemotherapy.	71.4%	100%	55.9%	72.9%	69.5%
5d.2	A minimum of 20% of NSCLC patients receive chemotherapy.	26.9%	36.2%	25.1%	33.5%	31.1%
5d.6	The 30-day mortality rate following final chemotherapy treatment is recorded and analysed.					

³² There were no Limited Disease SCLC patients diagnosed in D&G in 2008.

Appendix 2: Glossary

Adenocarcinoma

This type of cancer develops from glandular cells which produce mucus in the lining of the airways. This is classified as a type of non-small cell lung cancer.

Adjuvant therapy

A treatment given in addition to the main or primary treatment (for example, chemotherapy given after surgery) to try to prevent a cancer recurring.

Anti-cancer treatment

Anti-cancer treatment includes any form of radiotherapy, chemotherapy, and/or surgery. It excludes best supportive care and watchful waiting. Treatments such as stenting and steroids that are not followed by surgery, chemotherapy or radiotherapy are regarded as best supportive care/no active treatment.

Audit

The measuring and evaluation of care against best practice with a view to improving current practice and care delivery.

Bronchoscopy

An examination used for inspection of the interior of the tracheo-bronchial tree, performance of endobronchial diagnostic tests, taking of specimens for biopsy and culture, and removal of foreign bodies.

BSC

Best Supportive Care or palliative care with medicines given to control any symptoms. See also **palliative care**.

Cancer

The name given to a group of diseases that can occur in any organ of the body, and in blood, and which involve abnormal or uncontrolled growth of cells.

Case ascertainment

Number of cases recorded as a proportion of those expected using the average of the most recent available five years reported in the Scottish Cancer Registry.

Case-mix

Population of patients with different prognostic factors.

Chemotherapy

The use of drugs that destroy cancer cells, or prevent or slow their growth.

Chemoradiation

Term used to describe chemotherapy and radiotherapy used in combination. This can be adjuvant, neoadjuvant or concurrent.

CNS

A Lung Cancer Nurse Specialist is a first level nurse, locally recognised as part of the specialist lung cancer multidisciplinary team and designated as a specialist in lung cancer. The nurse should spend at least 50% of his or her time caring for lung cancer patients. It is recognised that the Lung Cancer Nurse Specialist may be practising within a sub speciality of oncology, respiratory nursing, thoracic nursing or specialist palliative care. [*National Lung Cancer Forum*].

Computed Tomography (CT) scan

An X-ray imaging technique used in diagnosis that can reveal many soft tissue structures not shown by conventional radiography. A computer is used to assimilate multiple X-ray images into a two-dimensional cross-sectional image.

Co-morbidity

The condition of having two or more diseases at the same time.

Concurrent Therapy

A treatment that is given at the same time as another treatment.

Consolidation Radiotherapy

Treatment to stop the cancer coming back once it is in remission. The aim is to kill any remaining cancerous cells.

Cytology/Cytological

The study of the structure and function of cells under the microscope, and of their abnormalities.

Diagnosis

Confirmation of the presence of the disease.

EBUS

Endobronchial ultrasound is a form of bronchoscopy where the bronchoscope is fitted with an ultrasound probe which allows visualisation and sampling of mediastinal and hilar lymph nodes.

ECOG

The Eastern Cooperative Oncology Group (ECOG) was established in 1955 as one of the first cooperative groups launched to perform multi-centre cancer clinical trials. The cooperative group is a large network of researchers, physicians, and health care professionals at public and private institutions across USA.

Extensive small cell lung cancer (EXT SCLC)

The cancer has spread outside the lung, within the chest area or to other parts of the body.

FNA Biopsy

Fine needle aspiration biopsy involves the extraction of cells in fluid through a fine needle for microscopic examination and diagnosis.

GRO Records

General Register Office Records provide official government information on births, marriages and deaths.

Histology/Histological

The study of cells and tissue on the microscopic level.

LACE meta-analysis

Lung Adjuvant Cisplatin Evaluation (LACE): A pooled analysis of five randomized clinical trials including 4,584 patients. *Journal of Clinical Oncology*, 2006 ASCO Annual Meeting Proceedings Part I. Vol 24, No. 18S (June 20 Supplement), 2006: 7008.

Large cell carcinoma

Consists of large, round cells which are seen under the microscope. It is sometimes known as undifferentiated carcinoma. This is classified as a type of non-small cell lung cancer.

Limited small cell lung cancer (LD SCLC)

Limited disease is cancer that can only be seen in one lung, in nearby lymph nodes or in fluid around the lung (pleural effusion).

Lobe/lobes

A section of an organ. The right lung has three lobes and the left has two.

Lobectomy

The surgical removal of a lobe of the lung.

Managed Clinical Network (MCN)

A formally organised network of clinicians. The main function is to audit performance on the basis of standards and guidelines, with the aim of improving healthcare across a wide geographic area, or for specific conditions.

MDM

The Multi-Disciplinary Meeting of the MDT. See **MDT**.

MDT: Multi-Disciplinary Team

A multi-professional group of people from different disciplines (both healthcare and non-healthcare) who work together to provide care for patients with a particular condition. The composition of multi-disciplinary teams will vary according to many factors. These include: the specific condition, the scale of the service being provided; and geographical/socio-economic factors in the local area.

Mixed NSCLC

This category includes lung cancer with mixed NSCLC components e.g. adenosquamous.

Neoadjuvant Therapy

Treatment given as first step to shrink the tumour prior to the main treatment with the 'main' treatment usually as surgery.

Neuroendocrine tumours

Neuroendocrine tumours (NETs) are rare cancers. The commonest type of NET is carcinoid tumour, which grows most often in the appendix and small bowel, but may occur in other parts of the digestive system, or the lung, pancreas, kidney, ovaries and testicles.

NLCA

National Lung Cancer Audit which reports on patients diagnosed in England and Wales and to which Scotland contributes data.

Non-small cell lung cancer (NSCLC)

A group of lung cancers that are named for the kinds of cells found in the cancer and how the cells look under a microscope. The three main types of non-small cell lung cancer are squamous cell carcinoma, large cell carcinoma and adenocarcinoma. Other types include mixed components and NSCLC (not otherwise specified (NOS)). Non-small cell lung cancer is the most common kind of lung cancer.

NR

Not Recorded.

NSCLC (NOS)

Non-small cell lung cancer (not otherwise specified) includes undifferentiated carcinoma and large cell undifferentiated which cannot be further specified.

Other malignancy

To describe lung cancers reported as 'malignant cells' or 'carcinoma (not otherwise specified)'.

Other NSCLC

This accounts for other specific NSCLC including salivary-type carcinomas.

Outcome

The end result of care and treatment and/or rehabilitation. In other words, the change in health, functional ability, symptoms or situation of a person, which can be used to measure the effectiveness of care and treatment, and/or rehabilitation.

Palliative Care

Palliative care is the active total care of patients and their families by a multi-professional team when the patient's disease is no longer responsive to curative treatment.

Palliative Radiotherapy

When it is not possible to cure a cancer, radiotherapy can be given to alleviate symptoms and improve quality of life. Lower doses are given than for curative or radical radiotherapy and generally over a shorter period of time.

Pathology

The study of disease processes with the aim of understanding their nature and causes. This is achieved by observing samples of fluid and tissues obtained from the living patient by various methods, or at a post mortem.

Pathological diagnosis

The microscopic examination (histological or cytological) of the specimen by a pathologist to determine the presence of malignancy and the classification of the malignant tumour.

Prophylactic Cranial Irradiation (PCI)

Radiation therapy to the brain to prevent cancer seeding.

Positron Emission Tomography (PET) scan

A specialised scintigraphic imaging technique now frequently combined with CT which demonstrates uptake of tracer in areas of high cell metabolism and can help differentiate between benign and malignant masses. It is most frequently used to help stage lung cancer by demonstrating or excluding distant metastases.

Pneumonectomy

An operation to remove an entire lung.

PORT

Post-operative radiotherapy. PORT is offered to patients with incomplete resection of non-small cell lung cancer with involved central margins or incomplete resection of N2 disease.

Primary Tumour

Original site of the cancer. The mass of tumour cells at the original site of abnormal tissue growth.

Radical Radiotherapy

Radiotherapy is given with the aim of destroying cancer cells to attain cure.

Radiotherapy (RT)

The use of radiation, usually X-rays or gamma rays, to kill tumour cells.

Resection

Surgical removal of a portion of any part of the body.

Segmentectomy

Removal of part of the lung less than a lobe. See **lobe**.

Small cell lung cancer (SCLC)

A type of lung cancer in which the cells are small and round.

Squamous cell carcinoma

This is the commonest type of lung cancer. It develops in the cells which line the airways.

Staging

The process of determining whether cancer has spread. Staging involves clinical, surgical, radiological and pathological assessment (see Appendix 3 for further details).

Thoracic

Relating to the chest.

TNM Classification

TNM classification provides a system for staging the extent of cancer. T refers to the size and position of the primary tumour. N refers to the involvement of the lymph nodes. M refers to the presence or absence of distant metastases. See Appendix 4.

Tumour

An abnormal mass of tissue. A tumour may be either benign (not cancerous) or malignant. Also known as a neoplasm.

Undifferentiated

Undifferentiated is a term used to describe very immature cells that are not specialised. If a cancer cell is completely undifferentiated, it may not be possible to tell its origin.

Wedge

A surgically removed triangle-shaped portion of lung containing a tumour and a small amount of normal tissue around it. A tissue wedge may also be removed for biopsy.

WHO (World Health Organisation) Performance Status (PS)

An overall assessment of the functional/physical performance of the patient (see Appendix 3 for further details).

Appendix 3: Performance Status and Staging

WHO/ECOG PERFORMANCE STATUS (PS) CATEGORIES

0	Fully active. Able to carry on all pre-disease performance without restriction.
1	Restricted in physically strenuous activities but ambulatory and able to carry out work of a light and sedentary nature.
2	Ambulatory and capable of all self-care but unable to carry out many work activities; up and about more than 50% waking hours.
3	Capable of only limited self-care; confined to bed or a chair for more than 50% of waking hours.
4	Completely disabled; unable to carry out any self-care; totally confined to bed or a chair.

STAGE GROUPING

Occult carcinoma	Tx	N0	M0
Stage 0	Tis	N0	M0
Stage IA	T1	N0	M0
Stage IB	T2	N0	M0
Stage IIA	T1	N1	M0
Stage IIB	T2	N1	M0
	T3	N0	M0
Stage IIIA	T1	N2	M0
	T2	N2	M0
	T3	N1/N2	M0
Stage IIIB	Any T	N3	M0
	T4	Any N	M0
Stage IV	Any T	Any N	M1

Appendix 4: TNM Classification

TNM CLASSIFICATION OF MALIGNANT TUMOURS (6th ED., UICC, 2002)

T – Extent of Primary Tumour	
T0	No evidence of primary tumour
Tx	Unable to establish tumour extent despite positive cytology
T1	≤3cm
T2	> 3cm, main bronchus ≥ 2cm from the carina, invades visceral pleura, partial atelectasis.
T3	Chest wall, diaphragm, pericardium, mediastinal pleura, main bronchus <2cm from carina, total atelectasis.
T4	Mediastinum, heart, great vessels, carina, oesophagus, vertebra; separate nodules in same lobe, malignant effusion.
N – Condition of Regional Lymph Nodes	
Nx	Regional Lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Ipsilateral peribronchial and/or ipsilateral hilar.
N2	Ipsilateral mediastinal and/or subcarinal lymph nodes
N3	Contralateral mediastinal, contralateral hilar lymph nodes, ipsilateral or contralateral scalene or supraclavicular lymph node(s)
M – Distant Metastasis	
MX	Distant metastasis cannot be assessed.
M0	No distant metastasis.
M1	Distant Metastasis, includes separate nodules in different lobe.

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