SE SCOTLAND CANCER NETWORK
PROSPECTIVE CANCER AUDIT

LUNG CANCER

REPORT ON PATIENTS DIAGNOSED
1 JANUARY – 31 DECEMBER 2009

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South East Scotland Cancer Network (SCAN)
Working regionally to improve cancer services

PROSPECTIVE CANCER AUDIT

LUNG CANCER

REPORT ON PATIENTS DIAGNOSED
1 JANUARY – 31 DECEMBER 2009

FOREWORD

This report presents analysis of data collected on lung cancer patients newly-diagnosed with lung cancer between 01 January and 31 December 2009 who were treated in one of the four constituent health board areas comprising S E Scotland Cancer Network (SCAN) – Borders, Dumfries & Galloway, Fife, and Lothian, and the tertiary centre in Edinburgh. Comparison is also shown with results for 2008 and 2007 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 (NHS QIS) (www.nhshealthquality.org) in March 2008. Performance against NHS QIS Standards is summarised in Appendix 1: *Attainment of NHS QIS Clinical Standards for Lung Cancer*.

Patients included in the Report

Patients included: all patients newly-diagnosed with lung cancer 1 January – 31 December 2009

Health Board/Hospital	Lead clinician(s)	Audit Support
SCAN	Dr R Fergusson	Ailsa Robertson
NHS Borders	Dr J Faccenda	Lynn Smith
Borders General Hospital		
NHS Dumfries & Galloway		
D&G Royal Infirmary	Dr P Rafferty	Martin Keith
NHS Fife		
Queen Margaret Hospital, Dunfermline	Dr C Selby	Gillian Brown
Victoria Hospital, Kirkcaldy		
NHS Lothian		
Western General Hospital	Dr R Fergusson	Ailsa Robertson
St John's Hospital at Howden, Livingston	Dr F Boellert	Ailsa Robertson
New Royal Infirmary of Edinburgh	Dr K Skwarski	Marion Shaw/ Ailsa Robertson

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 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 and/or review of various hospitals electronic records systems. Data was recorded on Access databases in each centre.

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 (patients diagnosed in 2008) against national data definitions showed accuracy rates of 97%.

Estimate of Case Ascertainment
Please see Table 1 in Results (below) indicating an estimate of Case Ascertainment of 101.4% in SCAN when compared with the most recent available Scottish Cancer Registry data based on a five year average for 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 resulting in a comprehensive and detailed report.

Document History

Version	Circulation	Date	Comments
1.1	SCAN Lung Group	25/08/2010	Circulated to clinicians for "sense checking". Data updated as required. Thirty-day mortality analysis to be reported independently of this Report and Executive Summary to be provided within this Report for publication on SCAN website.
1.2	SCAN Lung Group	20/09/2010	For sign-off meeting: lead clinicians and audit staff on 28/09/10.
1.2	SCAN Sub-Group Sign-off Meeting	28/09/2010	Carcinoid tumours reported separately – to be incorporated into NSCLC analysis. New table to be included for *Type of Investigation* specifying the types of *Other Biopsy* (Tbl 8.1). Clinicians to provide comments/responses on the data as required. Action points agreed.
2.1	SCAN Lung Group	09/11/2010	Amendments made following sign-off meeting. Report circulated for final views with deadline 24/11/2010
2.2	Clinical Governance Groups, Lead Managers and Chairs in the four health boards and to the SCAN Regional Cancer Planning Group.		Circulated to RCPG 15/12/2010 Circulated to Health Board Clinical Governance contacts 09/12/2010
Website version	Lodged on SCAN website	23/06/2011	Checks undertaken to protect against disclosure of any sensitive personal patient information. Some changes were made and documented.

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LUNG CANCER AUDIT REPORT 2009
Comment by Chair of the SCAN Lung Group

I am pleased to present the SCAN Lung Group Comparative Audit Report on patients newly-diagnosed with lung cancer between 01 January and 31 December 2009 who were treated in SCAN health boards.

A key purpose of SCAN 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.

Data has been collected and analysed from 2009 with comparisons made with previous data from 2008 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.

The Report provides evidence relating to the quality and outcomes of patient care and compares performance against nationally agreed Standards which are summarised in Appendix 1: *Attainment of NHS QIS Clinical Standards for Lung Cancer*. This summary was first introduced in 2008 and comparison has been drawn across the two years to identify variation in compliance against the Standards and to highlight areas of success as well as those which require improvement or further comment, for example:

> The recording of performance status and TNM shows overall improvement and Standards have been met or surpassed by the majority of health boards. Dumfries and Galloway whose TNM recording has not yet met the 90% requirement does, however, show improvement with TNM recording rising from 79.0% in 2008 to 85.6% in 2009. The improvement across all health boards was driven by implementing new systems for recording performance status and staging at Multi-Disciplinary Team (MDT) meetings.
>
> The number of SCLC patients with Limited Disease receiving prophylactic cranial irradiation (PCI) appears to have fallen and, in SCAN overall the target is not being met. An analysis of Lothian data has shown that factors determining eligibility for PCI are having an impact on the number of patients able to receive this treatment. PCI is contraindicated in patients over 70 years, patients who have suffered a cerebrovascular accident and those considered too frail.

Many results also confirm our confidence in the quality of the service provided across SCAN. Continued improvement in histological diagnosis rate is evident, rising from 70.5% in 2007 to 71.4% in 2009.There is a general improvement shown with curative treatment rates increasing across the three years reported from 24.5% to 26.8% and reaching 28.7% in 2009. Surgical resection rates have also risen progressively from 8.7% in 2007 to 11.7% in 2009, above the acceptable 10% resection rate as set out by the UK-wide National Lung Cancer Audit (NLCA) (www.ic.nhs.net).

The Report continues to evolve to meet the changing demands in the diagnosis and treatment of lung cancer. The high quality data collected by audit makes possible additional areas of analysis, which allow us to evaluate services and patient care.

For example, in 2009 the referral procedure was investigated, specifically the time from urgent referral to being seen by a respiratory clinician. The results highlight the need for further investigation and this has been identified as an “Action Point” from which to drive forward service improvement. In 2010 it is proposed to continue to report on the referral process but in line with NHS QIS Standard 1a.3: “Arrangements are in place for a respiratory physician to see 90% of patients within 2 weeks of the first referral with a suspicion of lung cancer”.

Data on patients diagnosed with lung cancer in 2009 in Scotland will additionally be incorporated into the NLCA Report 2010 (patients diagnosed in 2009 in England and Wales) which will be published in due course. Previous overall Scottish results for patients diagnosed in 2008 compared favourably with English and Welsh data and it is anticipated that similar results will be shown again.

Ongoing analysis and reporting of high quality audit data by audit facilitators in collaboration with clinical staff represents a considerable amount of effort and hard work. We strive to identify possible areas for improvement and to drive forward continuous development in services and patient care in SE Scotland.

Dr Ron J Fergusson
Chair, SCAN Lung Group
November 2010

Action Points

Listed below are some possible areas for improvement identified throughout the Report with proposed action outlined against each.

Report Table	Possible area for improvement	Proposed action	Which clinical standard will this meet/ How will this improve patient care?
4	Increase the percentage of patients seen by a respiratory physician within 2 weeks of referral with a suspicion of lung cancer.	To develop "fast-track" services in Lothian. To promote earlier triage of referrals. Audit to include a referrals' analysis in quarterly reports to be presented to SCAN Lung Group.	To drive forward improvement so that patients can be seen quickly. NHS QIS Std 1a.3
15.1/17	Increase the percentage of patients having surgical resection	Ensure all MDT meetings include input from surgeons. Analysis of treatment management of patients with stage I & II disease.	NLCA Performance Measure: an acceptable resection rate is set at 10%. To maintain good resection rates and make improvements.

Summary of Patients by Key Categories

	SCAN 2009 n	%	SCAN 2008 n	%	2007 n	%
Total Diagnosed	**1170**		**1106**		***1106***	
Aged Distribution						
Range	**72**		21-95		37-97	
Median	**27-99**		72		72	
Sex Distribution						
Male	**659**	**56.3**	562	50.8	585	52.9
Female	**511**	**43.7**	544	49.2	521	47.1
Performance Status						
0	**98**	**8.4**	91	8.2	94	8.5
1	**490**	**41.9**	487	44.0	374	33.8
2	**272**	**23.2**	209	18.9	204	18.4
3	**190**	**16.2**	159	14.4	161	14.6
4	**68**	**5.8**	51	4.6	46	4.2
Not recorded	**52**	**4.4**	90	8.1	225	20.3
Missing data			19	1.7	2	0.2
Mode of Diagnosis						
Histology	**577**	**49.3**	582	52.6	558	50.4
Cytology	**258**	**22.1**	196	17.7	212	19.2
Imaging	**335**	**28.6**	328	29.7	336	30.4
Confirmed pathology diagnosis[1]	**835**	**71.4**	**778**	**70.3**	**780**	**70.5**
Pathology						
NSCLC	**670**	**57.3**	660	59.7	626	53.6
SCLC	**165**	**14.1**	118	10.7	154	13.9
Negative Pathology	**72**	**6.2**	81	7.3	110	9.9
No Pathology	**263**	**22.5**	247	22.3	216	19.5
Staging NSCLC						
IA	**84**	**7.2**	37	5.6	21	3.5
IB	**117**	**10.0**	70	10.6	51[2]	8.6
IIA	**10**	**0.9**	8	1.2	2	0.3
IIB	**55**[3]	**4.7**	43	6.5	29[4]	4.9
IIIA	**116**	**9.9**	74	11.2	80	13.5
IIIB	**136**[5]	**11.6**	114	17.3	98[6]	16.5
IV	**444**	**37.9**	293	44.4	257	43.3
Not recorded	**43**	**3.7**	21	3.2	55	9.3
Staging SCLC						
Limited Disease	**54**	**4.6**	43	3.8	53	4.8
Extensive Disease	**111**	**9.5**	75	6.8	97	8.8
Not recorded	**-**	**-**	-	-	4	0.4

[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.

[2] 2007: Includes 3 patients with Stage I unclassified

[3] 2009: Includes 1 patient with Stage II unclassified

[4] 2007: Includes 1 patients with Stage II unclassified

[5] 2009: Includes 1 patient with Stage III unclassified

[6] 2007: Includes 9 patients with Stage III unclassified

	SCAN 2009		SCAN 2008		SCAN 2007	
	n	**%**	**n**	**%**	**n**	**%**
PET scan: radically treatable NSCLC patients	**254**	**94.8**	220	93.2	194	76.7
PET scan: all patients	**411**	**35.1**	409	37.0	278	25.1
Treatment ALL patients						
Anti-Cancer Treatment	**707**	**60.4**	686	62.0	657	59.4
No Active Treatment	**377**	**32.2**	352	31.8	350	31.6
Refused all treatment	**45**	**3.8**	27	2.4	23	2.1
Died before treatment	**39**	**3.3**	38	3.4	39	3.5
Missing data	**2**	**0.2**	3	0.3	37	3.2
Surgery						
Surgery	**137**	**11.7**	111	10.0	96	8.7
Radiotherapy						
TOTAL Radiotherapy	**495**		470		444	
Radical Radiotherapy	**210**	**42.1**	205	43.6	186	41.9
Palliative Radiotherapy	**281**	**56.8**	265	56.4	251	56.5
Not recorded			-	-	7	0.6
Chemotherapy						
Chemotherapy NSCLC as percentage of NSCLC patients	**180**	**27.2**	205	31.1	205	34.6
Chemotherapy SCLC as a percentage of SCLC patients	**113**	**68.5**	82	69.5	110	71.2

GENERAL INFORMATION

Demographics

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.

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 in 2007, 2008 and 2009

Health Board	Cancer Registry Average	2009		2008		2007	
		n	%	n	%	n	%
Borders	86	**76**	**88.4**	73	84.9	79	91.9
D&G	139	**111**	**78.7**	100	71.9	114	82.0
Fife	280	**319**	**114.3**	316	112.9	315	112.5
Lothian	649	**664**	**101.5**	617	95.1	598	92.1
SCAN	1154	**1170**	**101.4**	1106	95.8	1106	95.8

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

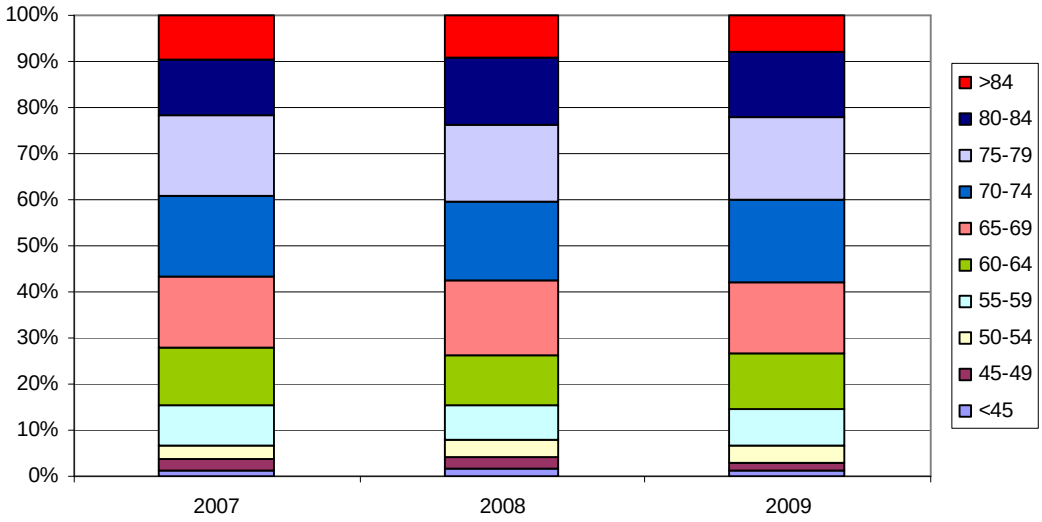
Comment
Overall, Health Boards in SCAN are achieving high levels of case ascertainment. This provides confidence that the results shown are representative of the relevant population for the year reported.

Note
In Dumfries & Galloway, Cancer Registration data 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 those 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 **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
<45	2	2.6	3	2.7	3	0.9	8	1.2	16	1.4
45-49	1	1.3	-	-	7	2.2	10	1.5	18	1.5
50-54	1	1.3	4	3.6	11	3.4	26	3.9	42	3.6
55-59	8	10.5	9	8.1	24	7.5	55	8.3	96	8.2
60-64	8	10.5	13	11.7	39	12.2	78	11.7	138	11.8
65-69	11	14.5	22	19.8	51	16.0	97	14.6	181	15.5
70-74	18	23.7	27	24.3	52	16.3	115	17.3	212	18.1
75-79	14	18.4	16	14.4	60	18.8	117	17.6	207	17.7
80-84	7	9.2	13	11.7	45	14.1	101	15.2	166	14.2
≥85	6	7.9	4	3.6	27	8.5	57	8.6	94	8.0
Range	40-90		35-88		37-99		27-95		27-99	
Median	71		71		72		72		72	

Figure 1 - Age Distribution: SCAN 2007 to 2009



2008
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**
Range	40-92	42-91	31-94	21-95	21-95
Median	72	71.5	72	72	72

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

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

Table 3
Sex of Patients

n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
Male	42	55.3	64	57.7	173	54.2	380	57.2	659	56.3
Female	34	44.7	47	42.3	146	45.8	284	42.8	511	43.7

2008

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**	
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	**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

Referrals

Table 4
Time from Urgent Referral to being seen by Respiratory Clinician

n=all patients with Urgent GP Referral with Clinician 1 Specialty = Respiratory in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**28**		**43**		**223**		**234**		**528**	
0-7days	17	60.7	15	34.9	108	48.4	86	36.8	226	42.8
8-14 days	10	35.7	21	48.8	80	35.9	65	27.8	176	33.3
15-21 days	-	-	4	9.3	18	8.1	57	24.4	79	15.0
>21 days	1	3.6	3	7.0	17	7.6	26	11.1	47	8.9

Table 4.1
Patients with Urgent GP Referral seen within 2 weeks by Respiratory Clinician

n=all GP urgently referred patients (Clinician 1 Specialty = Respiratory) diagnosed in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total Urgent GP Referrals	**28**		**43**		**223**		**234**		**528**	
Total number seen of patients seen within 2 weeks	27	96.4	36	83.7[7]	188	84.3	151	64.5	402	76.1

Table 4.2
Patients with Urgent GP Referral seen within 2 weeks by Respiratory Clinician as a percentage of ALL patients diagnosed with lung cancer in 2009

n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total patients	**76**		**111**		**319**		**664**		**1170**	
Total number seen of patients seen within 2 weeks	27	35.5	36	32.4	188	58.9	151	22.7	402	34.4

Comment
It would appear that the lung cancer services in Lothian are not performing to the same levels as other health boards in SCAN. The lung cancer service in Lothian is currently the subject of a re-design programme which should improve this.

[7] In Dumfries and Galloway, all delays beyond 2 weeks of referral were at the request of the patients.

DIAGNOSIS AND STAGING

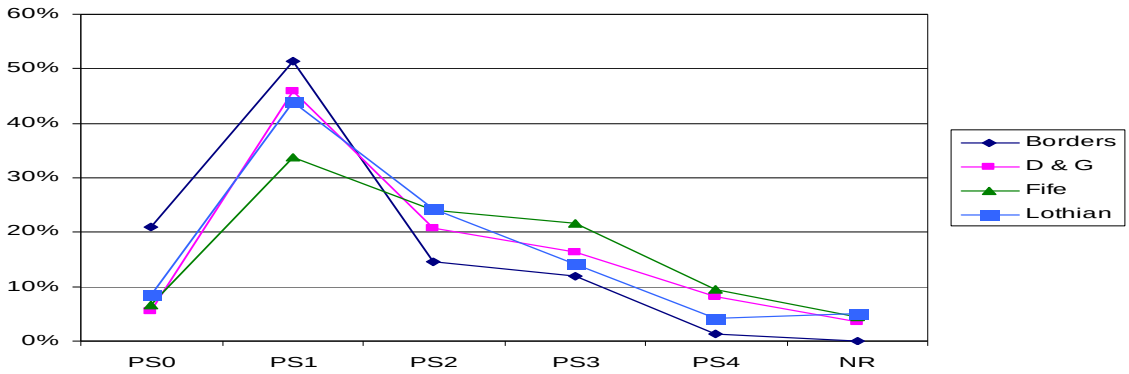
Performance Status

Table 5
Performance Status[8]
n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**76**		**111**		**319**		**664**		**1170**	
PS 0	16	21.1	6	5.4	21	6.6	55	8.3	98	8.4
PS 1	39	51.3	51	45.9	108	33.9	292	44.0	490	41.9
PS 2	11	14.5	23	20.7	77	24.1	161	24.2	272	23.2
PS 3	9	11.8	18	16.2	69	21.6	94	14.2	190	16.2
PS 4	1	1.3	9	8.1	30	9.4	28	4.2	68	5.8
NR[9]	-	-	4	3.6	14	4.4	34	5.1	52	4.4
Complete Recording	**76**	**100.0**	**107**	**96.4**	**305**	**95.6**	**630**	**94.9**	**1118**	**95.6**

NHS QIS Standard 4a.3
Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.
SCAN, overall, is exceeding this Standard attaining 95.6% WHO performance status recorded – see Appendix 1: *Attainment of NHS QIS Standards for Lung Cancer*.

Figure 2: Performance Status: Distribution by Health Board



Comment
Performance Status (PS), in conjunction with staging, is a key parameter for the selection of optimal management. As illustrated in Figure 2, there is a higher proportion of patients from Fife with poorer PS, probably related to higher levels of deprivation and co-morbidity, which is reflected in the lower use of active treatment (see Table 13: Frequency of Anti-Cancer Treatment: Fife shows 49.8% as compared to 73.7%, 70.3% and 62.3% in Borders, D&G and Lothian respectively).

[8] WHO/ECOG Performance Status categories (PS0 – PS4) are defined in Appendix 3
[9] NR: Not Recorded

Table 5 (continued): Performance Status

2008

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**	
PS 0	8	11.0	2	2.0	29	9.2	52	8.4	91	8.2
PS 1	38	52.1	39	39.0	128	40.5	282	45.7	487	44.0
PS 2	15	20.5	17	17.0	67	21.2	110	17.8	209	18.9
PS 3	5	6.8	3	3.0	65	20.6	86	13.9	159	14.4
PS 4	-	-	2	2.0	20	6.3	29	4.7	51	4.6
NR	7	9.6	18	18.0	7	2.2	58	9.4	90	8.1
Missing	-	-	19	19.0	-	-	-	-	19	1.7
Complete Recording	**66**	**90.4**	**63**	**63.0**	**309**	**97.8**	**559**	**90.6**	**997**	**90.2**

2007

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**79**		**114**		**315**		**598**		**1106**	
PS 0	8	10.1	-	-	26	8.3	60	10.0	94	8.5
PS 1	37	46.8	21	18.4	101	32.1	215	36.0	374	33.8
PS 2	12	15.2	8	7.0	73	23.2	111	18.6	204	18.4
PS 3	12	15.2	2	1.8	83	26.3	64	10.7	161	14.6
PS 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
Complete Recording	**69**	**87.3**	**31**	**27.2**	**307**	**97.5**	**472**	**78.9**	**879**	**79.5**

Mode of Diagnosis

Table 6
Mode of Diagnosis: Most Valid Basis of Diagnosis

n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**76**		**111**		**319**		**664**		**1170**	
Histology	44	57.9	78	70.3	161	50.5	294	44.3	577	49.3
Cytology	7	9.2	10	9.0	65	20.4	176	26.5	258	22.1
Imaging	25	32.9	23	20.7	93	29.2	194	29.2	335	28.6
Most Valid Basis of Diagnosis[10]										
Pathology	**51**	**67.1**	**88**	**79.3**	**226**	**70.8**	**470**	**70.8**	**835**	**71.4**
Imaging	25	32.9	23	20.7	93	29.2	194	29.2	335	28.6

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 with a small increase of 1.1% evident from the previous year.

Comment
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 within 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.

2008
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**	
Pre-Treatment										
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
Most Valid Basis of Diagnosis										
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

[10] 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.

Table 6 (continued): Most Valid Basis of Diagnosis

2007

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**79**		**114**		**315**		**598**		**1106**	
Pre-Treatment										
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
Imaging	12	15.2	26	22.8	93	29.5	205	33.9	336	30.4
Most Valid Basis of Diagnosis										
Pathology	69	87.3	88	77.2	228	72.4	395	66.1	780[11]	70.5
Imaging	10	12.7	26	22.8	87	27.6	203	33.9	326	29.5

[11] 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.

Multi-Disciplinary Team

Table 7
Patients Presented at Multi-Disciplinary Team Meeting
n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
Presented	76	100.0	108	97.3	291	91.2	647	97.4	1122	95.9
Not Presented	-	-	3	2.7	28	8.8	17	2.6	48	4.1

2008
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**	
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

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**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 (within 4 weeks of referral). While the above data addresses whether a patient is discussed, it does not include information on timescales. As a result we are not in a position to measure our performance directly against this Standard and it is therefore not included in the *Attainment of NHS QIS Standards* in Appendix 1. Nonetheless, improvements continue with a 4.4% rise in patients discussed in 2008 and a further 5% increase in 2009. It is proposed that this Standard in its entirety be reported on in future years.

Review of the data shows that the majority of patients who are not presented at MDT meetings are usually older and frailer and often present via other specialties, for example, Medicine of the Elderly. Treatment options are often limited to supportive care due to age, co-morbidities and the advanced stage of their cancer at presentation. Their treatment management would, in all probabilities, not be altered by presentation at MDT meetings.

Patients who are not presented but go on to receive active treatment can be seen by specialities other than Respiratory Medicine, discussed at their respective MDTs and subsequently referred directly to Oncology. There are also those patients who receive treatment (often radiotherapy) on an urgent basis usually for symptom control (spinal cord compression, major airway narrowing) and MDT discussion is omitted.

Investigations

Table 8
Type of Investigation leading to Pathological Diagnosis of Lung Cancer

n=all patients with pathological (pre-treatment or at surgery) diagnosis in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**51**		**88**		**226**		**470**		**835**	
Bronchoscopy	14	27.5	52	59.1	107	47.3	98	20.9	271	32.5
CT Guided Lung Biopsy[12]	23	45.1	25	28.4	58	25.7	128	27.2	234	28.0
CT or EUS guided 'Other' FNA/Biopsy	1	2.0	-	-	11	4.9	53	11.3	65	7.8
EBUS[13]	4	7.8	5	5.7	3	1.3	90	19.1	102	12.2
Other Biopsy[14]	9	17.6	5	5.7	47	20.8	101	21.5	162	19.4
Not recorded	-	-	1	1.1	-	-	-	-	1	0.1

Table 8.1: Frequency of Type of Other Biopsy

n=all patients diagnosed by **'Other Biopsy'** in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total Other Biopsy patients	**9**		**5**		**47**		**101**		**162**	
Biopsy at surgery	3	33.3	5	100.0	10	21.3	39	38.6	57	35.2
Liver	-	-	-	-	1	2.1	4	4.0	5	3.1
Nodes	-	-	-	-	10	21.3	7	6.9	17	10.5
Pleura	1	11.1	-	-	15	31.9	31	30.7	47	29.0
Bone	1	11.1	-	-	1	2.1	5	4.9	7	4.3
Neck	-	-	-	-	-	-	3	3.0	3	1.9
Other[15]	4	44.4	-	-	10	21.3	12	11.9	26	16.0

Comment

A high percentage of patients were investigated by EBUS in Lothian 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.

[12] CT (Computerised tomography) Guided Lung FNA (Fine needle aspiration)/Biopsy.
[13] EBUS: Endobronchial ultrasound
[14] 'Other Biopsy' includes frozen section at surgery. Other biopsy sites include liver, skin, bone, pleura, supraclavicular node, lymph node, mediastinum and neck node.
[15] Other includes chest wall, breast, tongue, skin, thyroid, brain met and sputum cytology.

Table 8.2
Type of Investigation leading to Pathological Diagnosis of Lung Cancer
Comparative Table 2007 - 2009

n=all patients diagnosed with lung cancer in 2007, 2008 and 2009

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Bronchoscopy										
2009	14	27.5	52	59.1	107	47.3	98	20.9	271	32.5
2008	21	35.6	37	48.7	107	51.2	108	24.9	273	35.1
2007	26	37.7	55	62.5	131	57.5	122	30.9	334	42.8
CT Guided Lung FNA/Biopsy										
2009	23	45.1	25	28.4	58	25.7	128	27.2	234	28.0
2008	31	52.5	32	42.1	55	26.3	134	30.9	252	32.4
2007	27	39.1	13	14.8	43	18.8	132	33.4	215	27.6
EBUS										
2009	4	7.8	5	5.7	3	1.3	90	19.1	102	12.2
2008	2	3.4	3	3.9	2	1.0	80	18.4	87	11.2
2007	5	7.2	4	4.5	7	3.1	58	14.7	74	9.5
Other Biopsy[16]										
2009	9	17.6	5	5.7	47	20.8	101	21.5	162	19.4
2008	5	8.5	3	3.9	45	21.5	112	25.8	165	21.2
2007	11	15.9	16	18.2	47	20.6	83	21.0	157	20.1

[16] '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 9
Frequency of PET[17] 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 **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**19**		**32**		**65**		**152**		**268**	
Performed	17	89.5	32	100.0	63	96.9	142	93.4	254	94.8
Not performed	1	5.3	-	-	2	3.1	10	6.6	13	4.9
Not recorded	1	5.3	-	-	-	-	-	-	1	0.4

Table 9.1
Frequency of PET: ALL patients
n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
Total number of PET performed	38	50.0	44	39.6	101	31.7	228	34.3	411	35.1

Comment
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 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 from 76.7% to an acceptable 94.8%.

The frequency of use of PET scanning at just over a third of all lung cancer patients in 2009 is within the predicted parameters as set out in PET scanning protocols at the time of funding.

Table 9.2
Frequency of PET*: *Comparative Table 2007 – 2009
n=all patients diagnosed with lung cancer in 2007, 2008 and 2009

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Frequency of PET scans in radically treated NSCLC patients expressed as a percentage of all radically treated NSCLC patients in each year.										
2009	17	89.5	32	100.0	63	96.9	142	93.4	254	94.8
2008	8	80.0	27	87.1	68	94.4	117	95.1	220	93.2
2007	22	50.0	15	83.3	46	80.7	111	82.8	194	76.7
Frequency of PET scans performed for ALL patients expressed as a percentage of ALL patients diagnosed in each year.										
2009	38	50.0	44	39.6	101	31.7	228	34.3	411	35.1
2008	28	38.4	37	37.0	110	34.8	234	37.9	409	37.0
2007	32	40.5	15	13.2	70	22.2	161	26.9	278	25.1

[17] PET: Positron emission tomography

Pathology

Table 10
Pathology Type: ALL PATIENTS
n=all patients diagnosed with lung cancer in **2009**

Pathology Type[18]	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**76**		**111**		**319**		**664**		**1170**	
Squamous	11	14.5	27	24.3	71	22.3	117	17.6	226	19.3
Adenocarcinoma	15	19.7	23	20.7	44	13.8	127	19.1	209	17.9
NSCLC (NOS)	12	15.8	16	14.4	61	19.1	111	16.7	200	17.1
Mixed NSCLC	-	-	-	-	4	1.3	1	0.2	5	0.4
Other specific NSCLC	-	-	1	0.9	-	-	2	0.3	3	0.3
SCLC	12	15.8	21	18.9	38	11.9	92	13.9	163	13.9
Neuroendocrine	-	-	-	-	2	0.6	7	1.1	9	0.8
Mixed SCLC/**NSCLC**[19]	-	-	-	-	1	0.3	2	0.3	3	0.3
Mixed **SCLC**/NSCLC[20]	-	-	-	-	1	0.3	1	0.2	2	0.2
Other Malignancy	-	-	-	-	3	0.9	3	0.5	6	0.5
Carcinoid	1	1.3	-	-	1	0.3	7	1.1	9	0.8
Neg Pathology	1	1.3	9	8.1	24	7.5	38	5.7	72	6.2
No Pathology	24	31.6	14	12.6	69	21.6	156	23.5	263	22.5

Figure 3
Pathology Type: Health Board : 2009

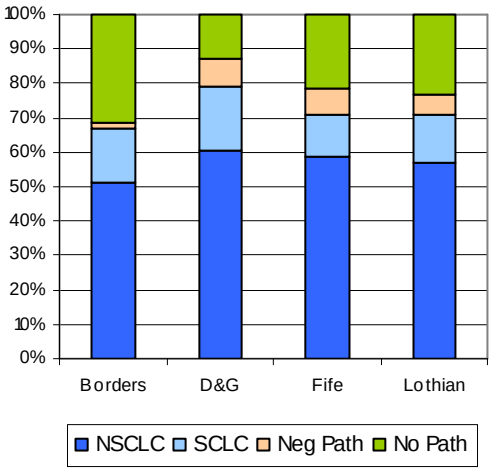
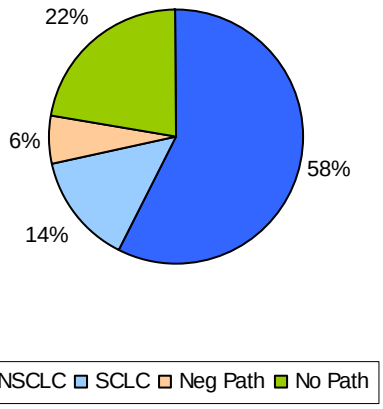


Figure 4
Pathology Type: SCAN: 2009



The general grouping *NSCLC* in Figures 3 and 4 is comprised of squamous, adenocarcinoma, NSCLC (NOS), Mixed NSCLC, Neuroendocrine, Mixed SCLC/**NSCLC**, other malignancy and carcinoid (i.e. carcinoma other than SCLC).

[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 and Carcinoid; 32 Mixed SCLC/NSCLC; 41 Other Malignancy.
[19] Mixed SCLC/**NSCLC** – when treated as NSCLC.
[20] Mixed **SCLC**/NSCLC – when treated as SCLC.

Table 10 (continued): Pathology Type: ALL PATIENTS

2008

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**	
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**	-	-	-	-	1	0.3	1	0.2	2	0.2
Mixed **SCLC**/NSCLC	-	-	-	-	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

2007

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

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**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	-	-	0	0.0	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	-	-	0	0.0	1	0.3	6	1.0	7	0.6
Other Malignancy	1	1.3	0	0.0	10	3.2	5	0.8	16	1.4
Negative Pathology	0	-	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

Staging

Table 11
Staging: ALL PATIENTS

n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
IA	8	10.5	8	7.2	15	4.7	53	8.0	84	7.2
IB	9	11.8	7	6.3	23	7.2	78	11.7	117	10.0
IIA	-	-	4	3.6	4	1.3	2	0.3	10	0.9
IIB	6	7.9	3	2.7	12	3.8	33	5.0	54	4.6
II (unclassified)	-	-	-	-	-	-	1	0.2	1	0.1
IIIA	6	7.9	14	12.6	34	10.7	62	9.3	116	9.9
IIIB	9	11.8	8	7.2	29	9.1	89	13.4	135	11.5
III (unclassified)	-	-	-	-	-	-	1	0.2	1	0.1
IV	26	34.2	30	27.0	141	44.2	247	37.2	444	37.9
Limited SCLC	5	6.6	5	4.5	11	3.4	33	5.0	54	4.6
Extensive SCLC	7	9.2	16	14.4	28	8.8	60	9.0	111	9.5
Not Recorded	-	-	16	14.4	22	6.9	5	0.8	43	3.7
Data completeness for Stage										
Recorded	**76**	**100.0**	**95**	**85.6**	**297**	**93.1**	**659**	**99.2**	**1123**	**96.0**

NHS QIS Standard 4a.2
Audit has a minimum of 90% cases with TNM stage recorded at diagnosis.

Comment
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.

All health boards, excepting D&G which records a ‘near miss’, have surpassed the target. New systems for recording staging at MDM are now in place and this is reflected in the improving results in *data completeness for stage* which over the three year period in SCAN rises progressively from 87.9% in 2007 to 96.0% in 2009. (See Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer).

Table 11 (continued): Staging: ALL PATIENTS

2008

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**	
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**

2007

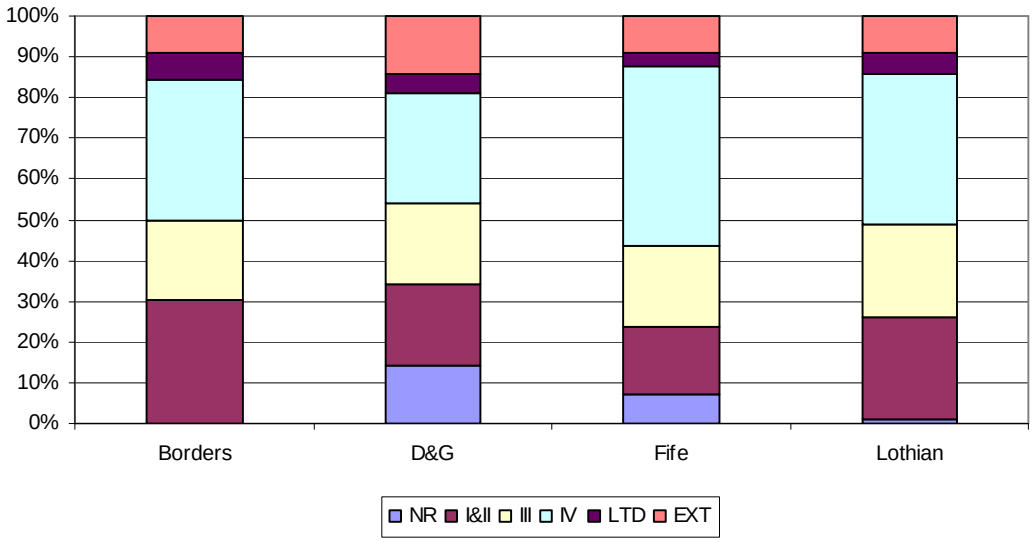
n=all patients diagnosed with lung cancer in **2007**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**79**		**114**		**315**		**598**		**1106**	
IA	7	8.9	0	0.0	16	5.1	19	3.2	42	3.8
IB	5	6.3	0	0.0	17	5.4	56	9.4	78	7.1
I (unclassified)	-	-	6	5.3	-	-	0	0.0	6	0.5
IIA	-	-	1	0.9	2	0.6	4	0.7	7	0.6
IIB	3	3.8	0	0.0	9	2.9	21	3.5	33	3.0
II (unclassified)	-	-	2	1.8	-	-	0	0.0	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	-	-	0	0.0	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**

STAGE DISTRIBUTION BY HEALTH BOARD

Staging, in conjunction with Performance Status, is a key parameter in the selection of optimal management of patients with lung cancer. Differences in distribution between health board areas are shown in Figures 5.

Figure 5: Stage[21] Distribution by Health Board – All Patients: 2009



Comment

Treatment options can be limited when patients present with advanced-stage lung cancer and the high proportion of patients presenting with Stage IV NSCLC in Fife, and to a degree in Lothian, might explain the lower rates of active treatment shown in Table 13 with Fife attaining 49.8% and Lothian 62.3% active anti-cancer treatment compared to Borders and D&G which show 73.7% and 70.3% respectively.

[21] Stage I&II, III and IV - NSCLC; LTD: Limited disease – SCLC; EXT: Extensive disease – SCLC; NR: Not recorded

TREATMENT

Table 12
Frequency of Potentially Curative and Palliative Treatment

n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
Curative	33	43.4	37	33.3	71	22.3	195	29.4	336	28.7
Palliative	39	51.3	69	62.2	232	72.7	408	61.4	748	63.9
Died before treatment	4	5.3	1	0.9	3	0.9	31	4.7	39	3.3
Refused treatment	-	-	3	2.7	13	4.1	30	4.5	46	3.9
Not recorded	-	-	1	0.9	-	-	-	-	1	0.1

NHS QIS Standard 5a.4
The percentage of patients receiving treatment with curative intent is recorded.

Comment
UK curative rates are difficult to establish as often only 'first treatment' is reported resulting in an under-reporting of sequential chemo-radiation. In SCAN, audit collects and reports on data for the whole 'treatment package'. There is a general improvement shown with curative treatment rates increasing across the three years reported.

2008
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**	
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

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**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

Anti-Cancer Treatment

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. Results are not yet available for comparison with SCAN 2009 data.

Table 13
Frequency of Anti-Cancer Treatment: ALL Patients– ALL STAGES
n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
Anti-cancer treatment[22]	56	73.7	78	70.3	159	49.8	414	62.3	707	60.4
No active treatment	16	21.1	28	25.2	144	45.1	189	28.5	377	32.2
Refused treatment	-	-	3	2.7	13	4.1	29	4.4	45	3.8
Died before treatment	4	5.3	1	0.9	3	0.9	31	4.7	39	3.3
Not recorded	-	-	1	0.9	-	-	1	0.2	2	0.2

2008
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**	
Anti-cancer treatment	46	63.0	68	68.0	167	52.8	405	65.6	686	62.0
No active treatment	22	30.1	26	26.0	135	42.7	169	27.4	352	31.8
Refused treatment	2	2.7	3	3.0	12	3.8	10	1.6	27	2.4
Died before treatment	3	4.1	-	-	2	0.6	33	5.3	38	3.4
Not recorded	-	-	3	3.0	-	-	-	-	3	0.3

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**N**	**%**
Total	**79**		**114**		**315**		**598**		**1106**	
Anti-cancer treatment	60	75.9	73	64.0	156	49.5	368	61.5	657	59.4
No active treatment	15	19.0	25	21.9	139	44.1	171	28.6	350	31.6
Refused treatment	-	-	5	4.4	5	1.6	13	2.2	23	2.1
Died before treatment	3	3.8	2	1.7	5	1.6	29	4.8	39	3.5
Missing data	1	-	9	7.9	10	3.2	17	2.8	37	3.3

[22] 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.

Treatment Management

Table 14
Type of Treatment: ALL Patients– ALL STAGES

n=all patients diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**76**		**111**		**319**		**664**		**1170**	
Surgery	12	15.8	8	7.2	32	10.0	85	12.8	137	11.7
Radical RT[23]	10	13.2	15	13.5	19	6.0	62	9.3	106	9.1
Chemoradiation	8	10.5	15	16.2	21	6.9	33	5.0	81	6.9
Chemoradiation plus PCI[24]	3	3.9	5	1.8	9	2.8	14	2.1	28	2.4
Chemotherapy	7	9.2	6	5.4	15	4.7	56	8.4	84	7.2
Chemotherapy plus Pall RT[25]	6	7.9	10	9.0	25	7.5	51	7.7	91	7.8
Chemotherapy plus PCI	-	-	-	-	-	-	1	0.2	1	0.1
Chemotherapy plus Pall RT plus PCI	-	-	-	-	-	-	3	0.5	3	0.3
High Dose Pall RT	2	2.6	8	7.2	10	3.1	16	2.4	36	3.1
Low Dose Pall RT	8	10.5	11	9.9	28	8.8	92	13.9	139	11.9
Other treatment	-	-	-	-	-	-	1	0.2	1	0.1
BSC[26]	16	21.1	28	25.2	144	45.1	189	28.5	377	32.2
Refused treatment	-	-	3	2.7	13	4.1	29	4.4	45	3.8
Died before treatment	4	5.3	1	0.9	3	0.9	31	4.7	39	3.3
NR	-	-	1	0.9	-	-	1	0.2	2	0.2

[23] RT: Radiotherapy
[24] PCI: Prophylactic Cranial Irradiation
[25] Pall RT: Palliative Radiotherapy
[26] BSC: Best Supportive Care (No active treatment)

Table 14 (continued): Type of Treatment: ALL Patients– ALL STAGES

2008

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**	
Surgery	9	12.3	14	14.0	27	8.5	61	9.9	111	10.0
Radical RT	10	13.7	13	13.0	32	10.1	49	7.9	104	9.4
Chemoradiation	2	2.8	7	7.0	15	4.7	41	6.6	65	5.9
Chemoradiation plus PCI	3	4.1	-	-	9	2.8	15	2.4	27	2.4
Chemotherapy	5	6.8	19	19.0	14	4.4	87	14.1	125	11.3
Chemotherapy plus Pall RT	6	8.2	-	-	25	7.9	33	5.3	64	5.8
Chemotherapy plus PCI	-	-	-	-	-	-	-	-	-	-
Chemotherapy plus Pall RT plus PCI	-	-	-	-	-	-	-	-	-	-
High Dose Pall RT	-	-	6	6.0	7	2.2	19	3.1	32	2.9
Low Dose Pall RT	10	13.7	9	9.0	36	11.4	99	16.1	154	13.9
Other treatment	4	5.5	1	1.0	-	-	11	1.8	16	1.4
BSC	19	26.0	26	26.0	132	41.8	160	25.9	337	30.5
Refused treatment	2	2.8	3	3.0	12	3.8	10	1.6	27	2.4
Died before treatment	3	4.1	-	-	4	1.3	32	5.2	39	3.5
NR	-	-	1	1.0	3	1.0	-	-	4	0.4
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	**79**		**114**		**315**		**598**		**1106**	
Surgery	5	6.3	16	14.0	26	8.3	49	8.2	96	8.7
Radical RT	9	11.4	11	9.6	20	6.3	49	8.2	89	8.0
Chemoradiation	11	13.9	5	4.4	17	5.4	44	7.4	77	7.0
Chemoradiation plus PCI	2	2.5	1	0.9	5	1.6	23	3.8	31	2.8
Chemotherapy	14	17.7	31	27.2	16	5.1	65	10.9	126	11.4
Chemotherapy plus Pall RT	5	6.3	-	-	23	7.3	50	8.4	78	7.0
Chemotherapy plus PCI	-	-	-	-	-	-	-	-	-	-
Chemotherapy plus Pall RT plus PCI	-	-	-	-	-	-	-	-	-	-
High Dose Pall RT	1	1.3	3	2.6	8	2.5	23	3.8	35	3.2
Low Dose Pall RT	12	15.2	3	2.6	41	13.0	59	9.9	115	10.4
Other treatment	1	1.3	3	2.6	-	-	6	1.0	10	0.9
BSC	15	19.0	25	21.9	139	44.1	171	28.6	350	31.6
Refused treatment	-	-	5	4.4	5	1.6	13	2.2	23	2.1
Died before treatment	3	3.8	2	1.8	5	1.6	29	4.8	39	3.5
NR	-	-	4	3.5	-	-	2	0.3	6	0.5
Missing Data	1	1.3	5	4.4	10	3.2	15	2.5	31	2.8

TREATMENT OF PATIENTS DIAGNOSED IN 2009 WITH NSCLC OR WITHOUT PATHOLOGY - GROUPED BY STAGE

Table 15.1
Treatment of Stage I & II Disease (NSCLC or without pathology)

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage I/II in **2009**
(Codes 11, 12, 13, 14, 22, 31, 41and 32 if treated as NSCLC)

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**23**		**22**		**54**		**167**		**266**	
Surgery	10	43.5	7	31.8	28	51.9	74	44.3	119	44.7
Radical RT	7	30.4	12	54.5	8	14.8	45	26.9	72	27.1
Chemoradiation	1	4.3	-	-	2	3.7	1	0.6	4	1.5
Chemotherapy	1	4.3	-	-	-	-	-	-	1	0.4
Chemo + pall RT	-	-	-	-	1	1.9	-	-	1	0.4
High dose pall RT	1	4.3	1	4.5	-	-	1	0.6	3	1.1
Low dose pall RT	1	4.3	1	4.5	2	3.7%	6	3.6	10	3.8
Chemo + pall RT	-	-	-	-	-	-	-	-	-	-
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	2	8.7	-	-	10	18.5	31	18.6	43	16.2
Refused treatment	-	-	1	4.5	3	5.6	7	4.2	11	4.1
Died before treatment	-	-	-	-	-	-	2	1.2	2	0.8

Comment
An analysis is currently underway to investigate surgery rates for patients with Stage I & II disease which are presently appearing as slightly lower than expected. This will be attached as an Addendum to this Report once completed.

Table 15.2
Treatment of Stage III Disease (NSCLC or without pathology)

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage III in **2009**
(Codes 11, 12, 13, 14, 22, 31, 41and 32 if treated as NSCLC)

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**15**		**22**		**63**		**152**		**252**	
Surgery	1	6.7	-	-	3	4.8	11	7.2	15	6.0
Radical RT	2	13.3	3	13.6	9	14.3	16	10.5	30	11.9
Chemoradiation	6	40.0	11	50.0	15	23.8	26	17.1	58	23.0
Chemotherapy only	-	-	2	9.1	1	1.6	4	2.6	7	2.8
Chemo + pall RT	1	6.7	-	-	3	4.8	6	3.9	10	4.0
High dose pall RT	1	6.7	2	9.1	5	7.9	11	7.2	19	7.5
Low dose pall RT	-	-	-	-	6	9.5	24	15.8	30	11.9
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	2	13.3	3	13.6	20	31.7	40	26.3	65	25.8
Refused treatment	-	-	-	-	-	-	9	5.9	9	3.6
Died before treatment	2	13.3	-	-	1	1.6	5	3.3	8	3.2
Not Recorded	-	-	1	4.5	-	-	-	-	1	0.4

Table 15.3
Treatment of Stage IV Disease (NSCLC or without pathology)

n=all patients diagnosed with NSCLC (pathologically or by imaging) – Stage IV in **2009**
(Codes 11, 12, 13, 14, 22, 31, 41and 32 if treated as NSCLC)

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**26**		**30**		**141**		**247**		**444**	
Surgery	1	3.8	-	-	1	0.7	-	-	2	0.5
Radical RT	1	3.8	-	-	1	0.7	-	-	2	0.5
Chemoradiation	-	-	1	3.3	1	0.7	1	0.4	3	0.7
Chemotherapy only	4	15.4	1	3.3	6	4.3	27	10.9	38	8.6
Chemo + pall RT	3	11.5	5	16.7	15	10.6	30	12.1	53	11.9
High dose pall RT	-	-	5	16.7	5	3.5	4	1.6	14	3.2
Low dose pall RT	6	23.1	10	33.3	19	13.5	56	22.7	91	20.5
Other treatment	-	-	-	-	-	-	1	0.4	1	0.2
BSC	10	38.5	7	23.3	85	60.3	98	39.7	200	45.0
Refused treatment	-	-	1	3.3	7	5.0	12	4.9	20	4.5
Died before treatment	1	3.8	-	-	1	0.7	17	6.9	19	4.3
Not recorded	-	-	-	-	-	-	1	0.4	1	0.2

Table 15.4
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 **2009** (Codes 11, 12, 13, 14, 22, 31, 41and 32 if treated as NSCLC)

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**-**		**16**		**22**		**5**		**43**	
Surgery	-	-	1	6.3	-	-	-	-	1	2.3
Radical RT	-	-	-	-	1	4.5	-	-	1	2.3
Chemoradiation	-	-	-	-	-	-	-	-	-	-
Chemotherapy only	-	-	-	-	-	-	-	-	-	-
Chemo + pall RT	-	-	-	-	-	-	-	-	-	-
High dose pall RT	-	-	-	-	-	-	-	-	-	-
Low dose pall RT	-	-	-	-	1	4.5	1	20.0	2	4.7
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	-	-	14	87.5	19	86.4	3	60.0	36	83.7
Refused treatment	-	-	1	6.3	1	4.5	-	-	2	4.7
Died before treatment	-	-	-	-	-	-	1	20.0	1	2.3

TREATMENT OF PATIENTS DIAGNOSED IN 2009 WITH SCLC OR WITHOUT PATHOLOGY - GROUPED BY STAGE

Table 16.1

Treatment of SCLC - Limited Disease

n=all patients diagnosed with SCLC (pathologically or by imaging) – Limited Disease in **2009** (Codes 21and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**5**		**5**		**11**		**33**		**54**	
Chemorad[27]+ PCI[28]	3	60.0	3	60.0	6	54.5	14	42.4	26	48.1
Chemorad no PCI	1	20.0	2	40.0	3	27.3	5	15.2	11	20.4
Chemotherapy	-	-	-	-	-	-	5	15.2	5	9.3
Chemo + pall RT	-	-	-	-	-	-	3	9.1	3	5.6
Pall RT only	1	20.0	-	-	-	-	1	3.0	2	3.7
Radical RT	-	-	-	-	-	-	1	3.0	1	1.9
BSC	-	-	-	-	1	9.1	2	6.1	3	5.6
Refused treatment	-	-	-	-	1	9.1	-	-	1	1.9
Died before treatment	-	-	-	-	-	-	2	6.1	2	3.7

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 overall, the Standard was achieved showing 68.5%. Lothian recorded a 'near miss' while the other three health boards exceeded the target – Appendix 1: *Attainment of NHS QIS Clinical Standards for Lung Cancer*.

LD SCLC patients receiving chemotherapy and PCI.

n=all patients diagnosed with SCLC – Limited Disease in 2009, 2008 & 2007

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total patients (2009)	**5**		**5**		**11**		**33**		**54**	
Chemorad + PCI	3	60.0	3	60.0	6	54.5	14	42.4	26	48.1
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

NHS QIS Standard 5c.7 – A minimum of 60% of those LD SCLC patients receiving chemotherapy subsequently receive prophylactic cranial irradiation (PCI).

The target is being met in 2 out of 4 health boards in SCAN.

A relevant factor in determining eligibility for PCI is age. This will have an effect on the number of patients offered PCI, which is contraindicated in patients over 70 years. PCI is also not offered to patients who have suffered a previous cerebrovascular accident or to those considered too frail.
In Lothian, of those patients who did not receive PCI a total of 42% died prior to treatment.

[27] Chemorad: chemoradiation
[28] PCI: Prophylactic Cranial Irradiation

Table 16.2
Treatment of SCLC - Extensive Disease

n=all patients diagnosed with SCLC (pathologically or by imaging) – Extensive Disease in **2009**(Codes 21and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**7**		**16**		**28**		**60**		**111**	
Chemorad + PCI	-	-	2	12.5	3	10.7	-	-	5	4.5
Chemorad no PCI	-	-	1	6.3	-	-	-	-	1	0.9
Chemotherapy	2	28.6	3	18.8	8	28.6	20	33.3	33	29.7
Chemo + pall RT	2	28.6	5	31.3	6	21.4	12	20.0	25	22.5
Chemo + pall RT + PCI	-	-	-	-	-	-	3	5.0	3	2.7
Chemo + PCI	-	-	-	-	-	-	1	1.7	1	0.9
Pall RT only	-	-	-	-	-	-	4	6.7	4	3.6
BSC	2	28.6	4	25.0	9	32.1	15	25.0	30	27.0
Refused treatment	-	-	-	-	1	3.6	1	1.7	2	1.8
Died before treatment	1	14.3	1	6.3	1	3.6	4	6.7	7	6.3

NHS QIS Standard 5c.6
The percentage of SCLC patients treated with concurrent chemoradiotherapy are recorded.

Surgery

Table 17
Frequency of Surgery

n=all patients diagnosed with lung cancer in 2007, 2008 and 2009

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2009										
Total patients	76		111		319		664		1170	
Surgery	12	15.8	8	7.2	32	10.0	85	12.8	137	11.7
2008										
Total patients	73		100		316		617		1106	
Surgery	9	12.3	14	14.0	27	8.5	61	9.9	111	10.0
2007										
Total patients	79		114		315		598		1106	
Surgery	5	6.3	16	14.0	26	8.3	49	8.2	96	8.7

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 in 2008 of 10.0% shows improvement from previous years and is comparable with the NLCA recommendation applicable in England and Wales. This has been exceeded in 2009 where results show further improvement to 11.7%.

Table 18
Type of Surgery for Resection of the Primary Tumour

n=all patients treated surgically diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**12**		**8**		**32**		**85**		**137**	
Pneumonectomy	1	8.3	-	-	4	12.5	10	11.8	15	10.9
Lobectomy	10	83.3	8	100.0	27	84.4	69	82.2	114	83.2
Wedge or Segmentectomy	-	-	-	-	-	-	6	7.1	6	4.4
Other	1	8.3	-	-	1	3.1	-	-	2	1.5

NHS QIS Standard 5b.4
Less than 10% of patients that undergo surgery are resected by wedge or segmentectomy.

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.

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**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

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

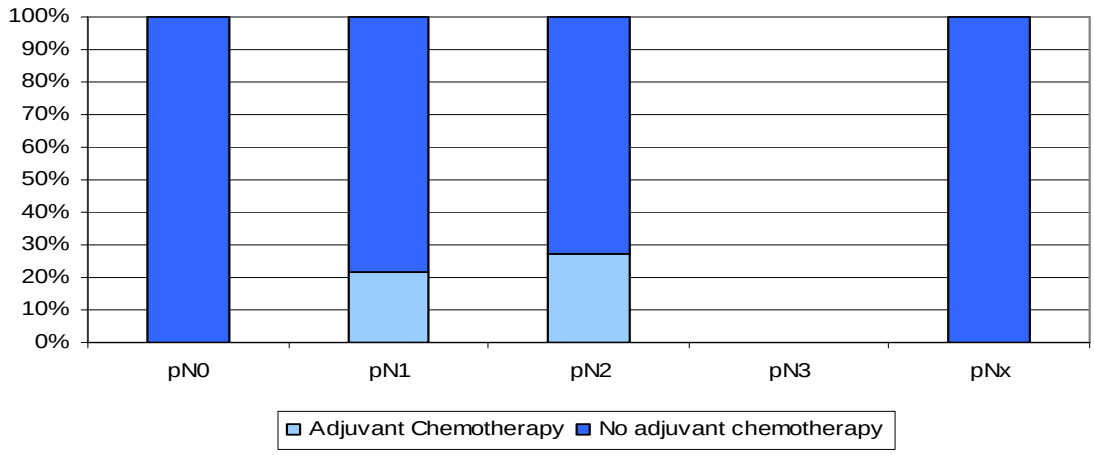
	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**5**		**16**		**26**		**49**		**96**	
Pneumonectomy	-	-	2	12.5	5	19.2	7	14.3	14	14.6
Lobectomy	5	100.0	13	81.3	19	73.1	39	79.6	76	79.2
Wedge or Segmentectomy	-	-	1	6.3	1	3.8	3	6.1	5	5.2
Other	-	-	-	-	1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

Post-Operative/Adjuvant Treatment

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 5: Adjuvant Chemotherapy based on Pathological N Stage
All surgery patients diagnosed in 2009 in SCAN Region



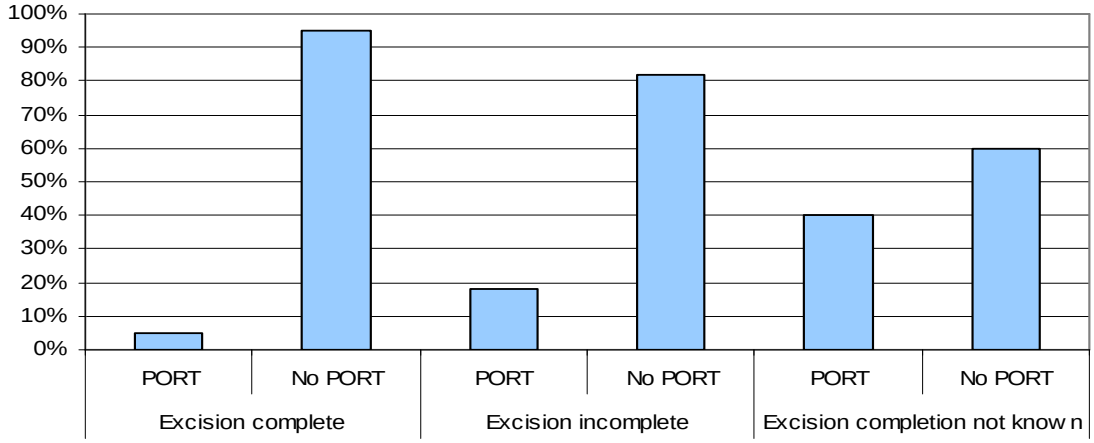
POST-OPERATIVE RADIOTHERAPY (PORT).

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.

NHS QIS Standard 5c.3

The percentage of patients with incomplete resection receiving post-operative radiotherapy are recorded.

Figure 6: Post-operative Radiotherapy (PORT) by Excision Completeness
All surgery patients diagnosed in 2009 in SCAN Region

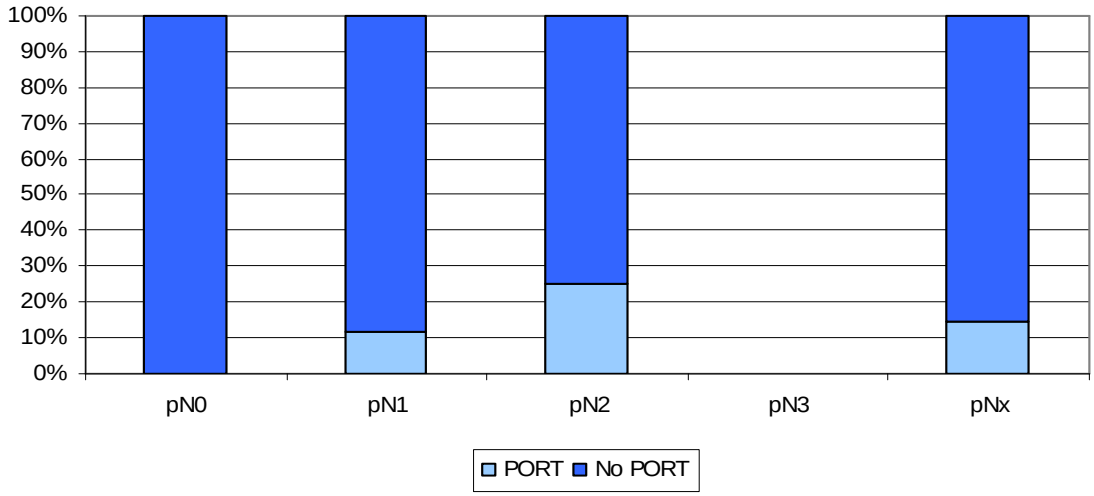


POST-OPERATIVE TREATMENTS (continued)

COMPLETE EXCISION AND PORT BASED ON PATHOLOGICAL N STAGE

NHS QIS Standard 5c.2
Patients with completely resected N0/N1 tumours do not receive postoperative radiotherapy (PORT).

Figure 7: Post-operative Radiotherapy (PORT) with Complete Excision and based on Pathological N Stage
All surgery patients diagnosed in 2009 in SCAN Region



Radiotherapy

Table 21
Frequency of Radiotherapy[29]

n=all patients diagnosed with lung cancer 2007, 2008 and 2009

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2009										
Total patients	76		111		319		664		1170	
Radiotherapy	38	50.0	65	58.6	116	36.4	276	41.6	495	42.3
2008										
Total patients	73		100		316		617		1106	
Radiotherapy	33	45.2	51	51.0	126	39.9	260	42.1	470	42.5
2007										
Total patients	79		114		315		598		1106	
Radiotherapy	40	50.6	23	20.2	125	39.7	256	42.8	444	40.1

NHS QIS Standard 5a.3
The percentage of all patients diagnosed with lung cancer receiving radiotherapy is recorded.

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.

[29] Radiotherapy totals shown here additionally include all post-operative radiotherapy treatments.
In SCAN a total of 10 surgical patients went on to receive adjuvant treatment in the form of radiotherapy.

Table 21.1
Radiotherapy by Curative Potential: All Patients Receiving Radiotherapy[30]

n=all patients receiving radiotherapy diagnosed with lung cancer in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**38**		**65**		**116**		**276**		**495**	
Radical	21	55.3	29	44.6	50	43.1	112	40.6	210	42.4
Palliative	17	44.7	35	53.8	66	56.9	164	59.4	281	56.8
Not recorded	-	-	1	1.5	-	-	-	-	4	0.8
Radical Radiotherapy as percentage of ALL lung cancer patients (n=all patients diagnosed in 2009)										
		27.6		24.3		15.7		16.9		17.9

2008

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**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
Radical Radiotherapy as percentage of ALL lung cancer patients (n=all patients diagnosed in 2008)										
		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	**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
Radical Radiotherapy as percentage of ALL lung cancer patients (n=all patients diagnosed in 2007)										
		26.6		8.8		15.6		17.7		16.8

[30] Radiotherapy totals shown here additionally include all post-operative radiotherapy treatments.
In SCAN a total of 10 surgical patients went on to receive adjuvant treatment in the form of radiotherapy.

Table 21.2
Radiotherapy by Curative Potential: NSCLC patients only

n=all patients diagnosed with NSCLC in **2009**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**39**		**67**		**187**		**377**		**670**	
Radical	10	25.6	24	35.8	34	18.2	69	18.3	135	20.1
Palliative	8	20.5	21	31.3	54	28.9	113	30.0	195	29.1
No Radiotherapy	21	53.8	21	31.3	99	52.9	195	51.7	336	50.1
Not recorded	-	-	1	1.5	-	-	-	-	4	0.6

NHS QIS Standard 5c.4
A minimum of 10% NSCLC patients receive radical radiotherapy dose.

NHS QIS Standard 5c.8
A minimum of 35% NSCLC patients receive palliative radiotherapy.

Comment
The rate of palliative radiotherapy appears lower than QIS guidance but this is a consequence of the higher usage of radical radiotherapy. This offers more patients the chance of cure.

This is the first year presenting data on radiotherapy by curative potential solely based on patients diagnosed with NSCLC. Comparison with previous years is therefore not possible.

Chemotherapy

Table 22
Chemotherapy NSCLC

n=all patients diagnosed with NSCLC in **2009**
(Codes 11, 12, 13, 14, 22, 31, 41and 32 if treated as NSCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**38**		**67**		**186**		**370**		**661**	
Chemotherapy	16	42.1	21	31.3	45	24.2	98	26.5	180	27.2
No chemotherapy	22	57.9	46	68.7	141	75.8	271	73.2	480	72.6
Missing Data	-	-	-	-	-	-	1	0.3	1	0.2

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 27.2% of NSCLC patients receiving chemotherapy (Appendix 1: *Attainment of NHS QIS Clinical Standards for Lung Cancer*).

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Total	**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

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	**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

Table 23
Chemotherapy SCLC

n=all patients diagnosed with SCLC in **2009**(Codes 21and 32 if treated as SCLC)

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**12**		**21**		**39**		**93**		**165**	
Chemotherapy	8	66.7	16	76.2	26	66.7	63	67.7	113	68.5
No chemotherapy	4	33.3	5	23.8	13	33.3	30	32.3	52	31.5

NHS QIS Standard 5d.1
A minimum of 60% of SCLC patients receive chemotherapy.

This Standard is currently being achieved in all Health Boards in the SCAN region. (Appendix 1: Attainment of NHS QIS Clinical Standards for Lung Cancer).

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.

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**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

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	**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

30 DAY MORTALITY AUDIT
Surgery, Radical Radiotherapy & Chemotherapy

Relative to NHS QIS Standards 5b.9, 5c.13, and 5d.6, a Thirty-Day Mortality Audit after Surgery, Radical Radiotherapy and Chemotherapy has been carried out and the Executive Summary is reproduced below.

NHS QIS Std 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 Std 5c.13	The 30-day mortality rate following final radiotherapy with curative intent is recorded and analysed.
NHS QIS Std 5d.6	The 30-day mortality rate following final chemotherapy treatment is recorded and analysed.

Executive Summary

Patients included in the Audit
This report presents analysis of data collected on lung cancer patients diagnosed between 01 January and 31 December 2009 in the four health board regions comprising S E Scotland Cancer Network (SCAN) – Borders, Dumfries & Galloway, Fife and Lothian, who were treated by surgical resection, with radical radiotherapy and/or chemotherapy. This report does not include patients who were treated with palliative radiotherapy.

Data collection
Patients were mainly identified through registration at weekly multidisciplinary meetings, and through checks made against pathology listings, GRO (General Register Office) records, CNS (Clinical Nurse Specialist) lists, and oncology records. Audit facilitators in each health board area obtained data from clinical records (whether electronic or paper casenotes). Data was recorded on Access databases in each centre. The audit facilitators are Lynn Smith, Borders; Martin Keith, Dumfries & Galloway; Gillian Brown, Fife; and Ailsa Robertson, Lothian/SCAN.

Report preparation process
Coordination of data, data quality checks, and analysis was carried out by Ailsa Robertson. Review of the patient data and commentary on factors contributing to mortality were supplied by Professor Allan Price, Dr Melanie Mackean, Dr Felicity Little, Dr Sorcha Campbell, and Dr Janet Ironside, all consultant oncologists. Surgical review and commentary was provided by Mr Vipin Zamvar, consultant thoracic surgeon.

Results and Conclusions

- 30 day mortality was reviewed in 210 patients with lung cancer in SCAN who received radical radiotherapy, for 297 who received chemotherapy and 137 patients who underwent surgical resection.

- 1 (0.7%) patient died within 30 days of surgery and this was due to complications associated with surgical treatment of their lung cancer.

- 6 (3%) died within 30 days of radical radiotherapy: 1 from progressive cancer; a further 4 deaths were unrelated to radiotherapy; and 1 patient died from radiation pneumonitis - giving a mortality due to radiotherapy of 0.5%

- 29 (10%) died within 30 days of chemotherapy: 13 from progressive cancer; 9 (3%) definitely and 3 (1%) possibly treatment related; 3 from infection unrelated to treatment; and 1 from intercurrent disease.

- 16 deaths occurred with cycle 1 and 11 with cycle 2 of chemotherapy.

The majority of deaths within 30 days are due to progression or complications of the cancer. The 30 day mortality due to treatment of cancer is relatively low: <1% for surgery and radiotherapy and ~4% for chemotherapy. A number of deaths occur within the first 2 cycles of chemotherapy. This emphasises the need for careful patient selection and informed consent.

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.

Performance against these Standards, for patients diagnosed in 2009, 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 up to and between 5% - 10%. Some Standards are not 'measureable' as such and simply require adherence to said Standard. These are included as non-numerical (or blank) 'green' cells.

Standards which show either **improvement** (↑) or **decline** (↓) from the previous year coupled with **a change in performance category** are shown in bold type with the previous year's performance included for comparison.

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% ↓ 67.1%**	79.3%	**70.8% ↑ 66.1%**	70.8%	71.4%
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)	**100% ↑ 82.8%**	85.6%	93.1%	99.2%	96.4%
4a.3	Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.	100%	**96.4% ↑ 63.0%**	95.6%	94.9%	95.6%
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%	0.0%	0.0%	7.1%	4.4%

NHS QIS Standard		Borders	D&G	Fife	Lothian	SCAN
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 is recorded.					
5c.4	A minimum of 10% NSCLC patients receive radical radiotherapy dose.	25.6%	35.8%	18.2%	18.3%	20.1%
5c.5	A minimum of 60% of those limited (LD) SCLC patients receiving chemotherapy also receive consolidation radiotherapy to the chest.	80.0%	100%	81.8%	**61.3% ↓ 57.6%**	68.5%
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).	60.0%	60.0%	**77.8% ↓ 54.5%**	42.4%	**52.3% ↓ 48.1%**
5c.8	A minimum of 35% NSCLC patients receive palliative radiotherapy.	20.5%	31.3%	28.9%	30.0%	29.1%
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.	66.7%	76.2%	**66.7% ↑ 55.9%**	67.7%	68.5%
5d.2	A minimum of 20% of NSCLC patients receive chemotherapy.	42.1%	31.3%	24.2%	26.5%	27.2%
5d.6	The 30-day mortality rate following final chemotherapy treatment is recorded and analysed.					

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 it 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, rounds 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
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 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.

Comment
The TNM Classification of Malignant Tumours was revised in 2010. Data contained within this report is based on the 6th Edition (as shown above) while data collected from 01 January 2010 will be based on the newly revised 7th Edition which will be included as an appendix in next year's report.

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