SCAN
South East Scotland Cancer Network

NHS SCOTLAND

Working regionally to improve cancer services

SOUTH EAST SCOTLAND CANCER NETWORK
PROSPECTIVE CANCER AUDIT

LUNG CANCER 2012

COMPARATIVE AUDIT REPORT

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Report Number: SA L01/14

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LUNG CANCER COMPARATIVE REPORT 2012
PATIENTS DIAGNOSED 01 JANUARY – 31 DECEMBER 2012

CONTENTS

INTRODUCTION AND METHODS

This report presents analysis of data collected on lung cancer patients newly diagnosed with lung cancer between 01 January and 31 December 2012 who were treated in one of the four constituent health board areas comprising South East Scotland Cancer Network (SCAN) – Borders, Dumfries & Galloway, Fife, and Lothian, and the tertiary centre in Edinburgh.

Basis of Analysis

The Report provides evidence relating to quality and outcomes of patient care, and compares performance against nationally agreed Revised Lung Cancer Standards published by NHS Quality Improvement Scotland (NHS QIS) (www.nhshealthquality.org) in March 2008. Data from Scotland is additionally incorporated into the UK-wide National Lung Cancer Audit (NLCA) (www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/lung-cancer) where performance is measured against set recommendations. Performance has been measured against eighteen NHS QIS Standards and three UK NLCA recommendations and is shown in the Summary of Performance (pp. xii – xiv) and is detailed throughout this Report.

In reviewing results, allowance should 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. General comparison is also shown with results for previous years where available. It is important to demonstrate consistency and improvement of results over time. Comparing results also offers the opportunity to consider any specific points of difference and the Action Plan and comments contained within this Report will draw attention to these.

Patients included in the Report

Patients included are all patients newly-diagnosed with lung cancer from 01 January to 31 December 2012.

Datasets and Definitions

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. The dataset currently collected (implemented on 1st January 2010) is the nationally agreed Lung Cancer Data Definitions for Minimum Core Data Set, revised and published in 2010 (www.isdscotland.org). The Revised Definitions were developed by ISD (Information Services Division) Scotland in collaboration with the regional cancer networks (SCAN (South East Scotland Cancer Network), NoSCAN (North of Scotland Cancer Network) and WoSCAN (West of Scotland Cancer Network)).

From 1st January 2010 we began collecting data on patients diagnosed with mesothelioma. Data for mesothelioma patients are not included in this report because due to small numbers there is a high risk of disclosure of sensitive information. It has been agreed to report using aggregated data for mesothelioma once sufficient data has been collected (3 to 5 years of data). Analyses of 2012 mesothelioma data have been carried out at local and regional levels and have been reviewed by clinical staff.

Further information on the dataset and definitions can be obtained from the SCAN Audit Office, Western General Hospital, Edinburgh. (Tommy.Tan@luht.scot.nhs.uk).

Data Collection

Patients were mainly identified through registration at weekly multi-disciplinary meetings, and through checks made against pathology listings, GRO records, LCNS database download, and oncology records. Data capture was dependent on casenote audit and/or review of hospital electronic records systems. Data was recorded on MS Access databases in Borders, Fife and Lothian. D&G used eCase.

Data Quality
All hospitals in the region participate in the Quality Assurance programme provided by ISD Scotland. Previous quality assurance examination of data (patients diagnosed in 2008) against national data definitions showed accuracy rates of 97%.

Estimate of Case Ascertainment
Case ascertainment levels are assessed by comparing the number of new cases identified by audit with those identified by Scottish Cancer Registry. Comparisons will, however, be subject to a small amount of variation. The 'year' in audit is based on the date of diagnosis whereas cancer registration defines their cohort based on the date the patient first became known to the secondary health service. Estimated Case Ascertainment is based on the most recent five year average available from Scottish Cancer Registry data and excludes death certificate only registrations.

HEALTH BOARD/HOSPITAL	LEAD CLINICIAN(S)	AUDIT SUPPORT
SCAN	**Dr C Selby** **SCAN Lead Clinician**	**Tommy Tan** **SCAN Audit Facilitator**
NHS Borders Borders General Hospital	**Dr J Faccenda**	Lynn Smith (Borders)
NHS Dumfries & Galloway D&G Royal Infirmary	**Dr P Rafferty**	Martin Keith (D&G)
NHS Fife Queen Margaret Hospital, Dunfermline Victoria Hospital, Kirkcaldy	**Dr C Selby**	Mimi Bjelorgrlic (Fife)
NHS Lothian Western General Hospital & New Royal Infirmary	**Dr K Skwarski**	Tommy Tan (Lothian)

Report Sign-Off

Draft version has been signed off by Colin Selby, Kris Skwarski and Paul Rafferty on 22nd November 2013.

Actions for Improvement
The process following final sign-off is that the report is sent to the Clinical Governance groups within the four health boards and to the Regional Cancer Planning Group. Action plans and progress with plans is highlighted to the groups. The report is placed on the SCAN website once it has been fully signed-off and checked for any disclosive material.

COMMENT BY CHAIR OF THE SCAN LUNG GROUP

Lung Cancer 2012 Comparative Audit Report

Once again I am delighted to present the SCAN Lung Cancer Comparative Audit Report. It considers patients diagnosed during 2012 in the four Health Boards and records the substantial work undertaken by all colleagues in the multidisciplinary lung cancer teams across the Region. The layout and content is similar to previous reports and encourages direct comparison of progress and developments achieved over a number of years.

We have extensively reviewed and considered these data. We are confident of their accuracy. Once again we have taken the opportunity to benchmark our services against Scottish and United Kingdom (UK) performance indicators. While there is never a place for complacency such comparisons are often favourable. Nevertheless there are still areas and topics that deserve formalisation into Action Plans. Appropriately, many of the previous years' action plans have now been completed, a few redefined and new ones added. This reflects the dynamic and progressive nature of our lung cancer services.

Alert readers will have noticed the mention of targeted treatments into this report and even as a definition in the glossary. This is an exciting new development that is really changing the way we investigate and manage patients with lung cancer and one that will increase in scope as additional specific treatments become available, increasing numbers of patients able to benefit. I wish to record how extremely fortunate we are in having Dr William Wallace, who has developed and leads a lung cancer molecular pathology service. Indeed in SCAN we benefit from having the first fully accredited molecular pathology service in Scotland.

We welcome Tommy Tan and Lorna Bruce to our Audit team, without them and their colleagues around the region this report would lack much. On looking ahead to next year we will see the Scottish Quality Performance Indicators (QPI) embedded further into our reporting systems. The effect of the symptom-based Detect lung Cancer Early programme will have become apparent too.

Until then, enjoy this report and once again I encourage you to use the data contained herein.

Dr Colin Selby
January 2014

LUNG CANCER AUDIT 2012: ACTION POINTS

Lung cancer teams in SCAN (clinicians, nurses, and audit staff) review data regularly to identify possible areas for improvement and actively participate in driving improvements and, where appropriate, make changes to the way care is delivered.

Note: NLCA = National (UK) Lung Cancer Audit (www.ic.nhs.uk);
NHSQIS = NHS Quality Improvement Scotland (www.healthcarequalityimprovementscotland.org)
SIGN = Scottish Intercollegiate Guidelines Network

Table No:	YEAR(S)	POSSIBLE AREA FOR IMPROVEMENT	PROPOSED ACTION	WHICH CLINICAL STANDARD WILL THIS MEET/ HOW WILL THIS IMPROVE PATIENT CARE	PROGRESS/ OUTCOME
Table 3	2012	Improve registering patients at MDT.	Register deceased patients at MDT.	No current standard.	To be initiated.
Table 5	2012 Brought forward from 2011	Improve recording of Performance Status in Dumfries & Galloway (up from 78% to 86%)	Ensure performance status is recorded at MDT meetings.	NHS QIS 4a.3 Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis. Performance status is a key parameter in the selection of treatment management.	**Outcome**: Improvements in recording procedures were implemented at MDT meetings. D&G: procedures were implemented mid-2011 and further improvements are expected in 2012.
Table 11	2012 Brought forward from 2011	Increase anti-cancer treatment rates, especially in Fife (53.6%).	Multivariate analysis to be undertaken (age, sex, stage, deprivation, comorbidities and pathology). To contact Dr Sara Erridge to ascertain if she would allow her published case to be added in to the Appendix.	NLCA (8). Active anti-cancer treatment rates below the England and Wales average of 60% should be reviewed. To increase the chance of cure and long-term survival.	Awaiting completion of multivariate analysis. 17/12/2013 - Contacted Dr Sara Erridge who has advised that this analysis is still on-going and not yet complete. Furthermore, this analysis is based on 2010 cohort.
Table 13.2	2012 Brought forward from 2011	Increase the number of NSCLC Stage III patients receiving radical treatment. (37.8% in 2011)	Review 2011 data for NSCLC Stage III patients.	No standard but radical treatment offers more patients the chance of cure.	Audit NSCLC Stage III patients to assess reasons why patients do not have radical therapy, consider enhancing MDM measures to ensure full discussion and recording of decisions.

Table No:	YEAR(S)	POSSIBLE AREA FOR IMPROVEMENT	PROPOSED ACTION	WHICH CLINICAL STANDARD WILL THIS MEET/ HOW WILL THIS IMPROVE PATIENT CARE	PROGRESS/ OUTCOME
Table 16.1	2012 Brought forward from 2011	Percentage of surgical patients receiving wedge or segmentectomy.	Review reasons why fairly high percentage of surgical patients have received wedge or segmentecto my in Dumfries and Galloway.	**NHS QIS Standard 5b.4** Less than 10% of patients that undergo surgery are resected by wedge or segmentectomy.	**Outcome**: Review of the data has shown that allowance should be made where small numbers and variation may be due to chance. Aggregated results better illustrate performance. Across the region the percentage for 2011 is 10.1%.
Table 20	2012 Brought forward from 2011	Improve methods of reporting radiotherapy treatment data to peripheral Boards: Problem noted in D&G by audit manager Some deficiencies in Fife RT data identified at late stage in preparation of 2011 Comparative Report.	Raise concerns with ECC management about ensuring timely flow of oncology treatment data to and from peripheral boards	No clinical standard but lack of information in peripheral hospitals about treatment received by patients at ECC impedes clinical management and audit data capture with possible consequence in patient care and reduction in reliability of audit results	Discussed at SCAN Group September 2013. Suggested use of end of treatment summary sheets – on-going issues.

DOCUMENT HISTORY

Version	Circulation	Date	Comments
Version 1	SCAN Lung Group	15/11/2013	Draft report circulated to clinicians: Sub-group meeting 15 November 2013: discussion and analysis of results.
Version 2	SCAN Lung Sub Group	22/112013	Commentary from sub-group meeting added to report. Various results checked and clarified by clinical staff and any necessary amendments have been carried out.
Version 3	SCAN Lung Group	dd/mm/yyyy	
Version 4 Final	Clinical Governance Groups, Lead Managers and Chairs in the four health boards and to the SCAN Regional Cancer Planning Group.		
		Jan 2015	Report assessed for disclosive material and published on SCAN website.

NHS QIS STANDARDS FOR LUNG CANCER AND NLCA RECOMMENDATIONS

The Revised NHS QIS (Quality Improvement Scotland) Clinical Standards for Lung Cancer (New Edition) were published in July 2008 to inform the management of, and continuously improve, lung cancer services. SCAN currently reports on 18 NHS QIS Standards. These are used as a benchmark from which to measure performance.

2a.1	A minimum of 75% of all lung cancer patients have their diagnosis confirmed by histology/cytology.
4a.2	Audit has a minimum of 90% cases with TNM stage recorded at diagnosis.
4a.3	Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.
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.
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.2	Patients with completely resected N0/N1 tumours do not receive postoperative radiotherapy (PORT).
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.
5c.5	A minimum of 60% of those limited (LD) SCLC patients receiving chemotherapy also receive consolidation radiotherapy to the chest.
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).
5c.8	A minimum of 35% NSCLC patients receive palliative radiotherapy.
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.
5d.2	A minimum of 20% of NSCLC patients receive chemotherapy.
5d.6	The 30-day mortality rate following final chemotherapy treatment is recorded and analysed.

The three Scottish networks (SCAN, NoSCAN and WoSCAN) also contribute data to the National Lung Cancer Audit (NLCA) Report annually. The NLCA sets recommendations for England and Wales and, in addition to NHS QIS Standards, this report measures performance in SCAN against three of these recommendations:

NLCA (5)	At least 80% of patients are seen by a lung cancer specialist nurse.
NLCA (7)	For early stage (I and II) disease, [surgical] rates below 52% should be reviewed to ensure that patients on the margins of operability/resectability are being offered access to specialist thoracic surgical expertise.
NLCA (8)	Active anti-cancer treatment rates below the England and Wales average of 60% should be reviewed.

Quality Performance Indicators (QPIs) are due to replace NHS QIS Standards as a measurement of performance and these were introduced on 1st April 2013.

Summary of Performance: NHS QIS Standards and NLCA Recommendations

Levels of performance are indicated by a colour coded 'traffic light' system. Green confirms that a Standard has been achieved, amber indicates a 'near miss', quantified as missing the target by up to 10%. Standards which are missed by more than 10% are shown as red. Some Standards are not defined as measurable but are process driven, i.e. are recorded. These are shown as non-numerical (or blank) 'green' cells when met.

Summary of Performance: NHS QIS Standards

		Percentage Achievement									
		2a.1	**4a.2**	**4a.3**	**5a.3**	**5a.4**	**5b.4**	**5b.9**	**5d.1**	**5d.2**	**5d.6**
Borders	2012	77.4	100.0	100.0			33.3		100.0	25.5	
	2011	73.9	100.0	100.0			15.4		53.3	30.0	
	2010	70.8	98.9	98.9			9.1		45.5	26.9	
	2009	67.1	100.0	100.0			-		66.7	41.0	
D&G	2012	64.1	89.2	84.2			0.0		78.9	37.9	
	2011	80.0	86.0	86.0			25.0		81.8	26.1	
	2010	88.8	84.1	78.5			21.4		76.5	25.6	
	2009	79.3	85.6	96.3			-		76.2	31.3	
Fife	2012	65.3	94.7	94.1			10.8		65.7	31.0	
	2011	61.6	97.6	86.2			0.0		60.4	28.1	
	2010	66.5	93.1	86.2			8.0		62.2	28.8	
	2009	70.8	93.1	95.6			-		66.7	24.1	
Lothian	2012	66.9	94.7	94.7			11.7		68.7	23.2	
	2011	64.2	99.9	99.1			10.4		58.7	24.5	
	2010	70.7	98.8	98.6			3.9		61.3	24.7	
	2009	70.8	99.2	94.9			7.1		67.7	26.0	
SCAN	**2012**	**66.9**	**94.5**	**93.9**			**12.0**		**71.4**	**26.8**	
	2011	**65.6**	**97.6**	**94.9**			**10.1**		**60.4**	**25.9**	
	2010	**71.4**	**96.0**	**93.6**			**7.1**		**62.1**	**25.9**	
	2009	**71.4**	**96.0**	**95.5**			**4.4**		**68.5**	**26.9**	

2a.1	A minimum of 75% of all lung cancer patients have their diagnosis confirmed by histology/cytology.
4a.2	Audit has a minimum of 90% cases with TNM stage recorded at diagnosis.
4a.3	Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.
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.
5b.9	The 30-day mortality rate following final lung cancer surgery specific to the procedure performed is recorded and discussed at team meetings
5d.1	A minimum of 60% of SCLC patients receive chemotherapy.
5d.2	A minimum of 20% of NSCLC patients receive chemotherapy.
5d.6	The 30-day mortality rate following final chemotherapy treatment is recorded and analysed

Summary of Performance: NHS QIS Standards

		Percentage Achievement								
		5c.2	**5c.3**	**5c.4**	**5c.8**	**5c.4 + 5c.8***	**5c.5**	**5c.6**	**5c.7**	**5c.13**
Borders	2012			21.8	20.0	41.8	87.5		37.5	
	2011			20.0	16.0	36.0	75.0		50.0	
	2010			19.2	32.7	51.9	100.0		100.0	
	2009	8.3		25.6	20.5	46.1	80.0		60.0	
D&G	2012			20.7	25.9	46.6	80.0		80.0	
	2011			15.9	31.9	47.8	16.7		50.0	
	2010			14.1	33.3	47.4	100.0		33.3	
	2009			35.8	35.8	68.6	100.0		60.0	
Fife	2012			21.3	20.7	42.0	71.4		42.9	
	2011	3.7		14.8	18.5	33.3	92.9		64.3	
	2010			23.3	24.0	47.3	62.5		37.5	
	2009	3.8		18.2	28.9	47.1	81.8		54.5	
Lothian	2012			16.3	26.5	42.8	90.0		60.0	
	2011			18.1	24.5	42.6	87.0		69.6	
	2010			18.0	28.4	46.4	81.8		68.1	
	2009	1.6		18.3	29.7	48.0	57.6		42.4	
SCAN	**2012**			**18.5**	**24.3**	**42.8**	**85.0**		**55.0**	
	2011	**0.8**		**17.3**	**23.3**	**40.6**	**78.7**		**63.8**	
	2010			**18.8**	**28.3**	**47.1**	**81.1**		**62.2**	
	2009	**2.8**		**20.4**	**29.1**	**49.6**	**68.5**		**48.1**	

5c.2	Patients with completely resected N0/N1 tumours do not receive postoperative radiotherapy (PORT).
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.
5c.5	A minimum of 60% of those limited (LD) SCLC patients receiving chemotherapy also receive consolidation radiotherapy to the chest.
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).
5c.8	A minimum of 35% NSCLC patients receive palliative radiotherapy.
5c.13	The 30-day mortality rate following final radiotherapy with curative intent is recorded and analysed
Note:	Cells marked “n/a” represent any years where data was not collected for specific Standards.

* NHS QIS Standard 5c.4 aggregated with 5c.8 gives the recommended radiotherapy delivery (radical AND palliative) for all NSCLC patients. 45% of NSCLC patients should therefore receive radiotherapy (10% radical, 35% palliative). All health boards and SCAN are achieving this target. The rate of palliative radiotherapy (5c.8) is lower than the NHS QIS guidelines but it should be noted that this is as a consequence of the higher usage of radical radiotherapy (5c.4) which offers more patients the chance of cure.

Summary of Performance: NLCA Recommendations

		Percentage Achievement		
		NLCA (5)	**NLCA (7)**	**NLCA (8)**
Borders	2012	94.0	53.8	60.7
	2011	94.3	47.6	64.8
	2010	96.6	52.4	66.3
	2009	n/a	43.5	73.7
D&G	2012	65.8	53.3	54.2
	2011	82.0	76.9	63.0
	2010	86.0	76.5	69.2
	2009	n/a	31.8	70.3
Fife	2012	85.0	36.1	56.3
	2011	79.1	37.5	53.5
	2010	59.3	35.9	52.7
	2009	n/a	51.9	49.8
Lothian	2012	81.7	43.8	55.9
	2011	78.9	34.6	56.3
	2010	86.5	38.5	60.2
	2009	n/a	44.3	62.3
SCAN	**2012**	**81.8**	**42.8**	**56.2**
	2011	**80.4**	**38.1**	**56.8**
	2010	**80.6**	**42.2**	**59.7**
	2009	**n/a**	**44.7**	**60.4**

NLCA (5)	At least 80% of patients are seen by a lung cancer specialist nurse.
NLCA (7)	For early stage (I and II) disease, [surgical] rates below 52% should be reviewed to ensure that patients on the margins of operability/resectability are being offered access to specialist thoracic surgical expertise.
NLCA (8)	Active anti-cancer treatment rates below the England and Wales average of 60% should be reviewed.

GENERAL INFORMATION

Demographics

Case ascertainment by using the average of the most recent available five years (2007-2011) of Cancer Registry Data.

Table 1: Lung 2012 Case Ascertainment

Health Board	Cancer Registry	2012	
		n	%
Borders	85	84	98.8
D&G	120	120	100.0
Fife	316	320	101.3
Lothian	672	665	99.0
SCAN	**1193**	**1189**	**99.7**

Source: Scottish Cancer Registry, ISD. Data extracted 01 November 2013

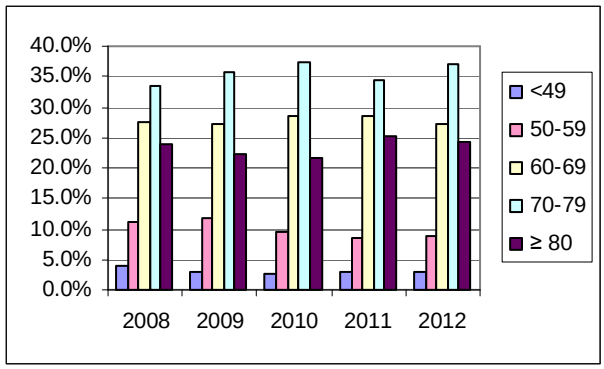
Health Boards	Cancer Registry Average (2007-2011)	SCAN 2012	Case Ascertainment %
Borders	105.8	84	79.4
D&G	149.0	120	80.5
Fife	359.2	320	89.1
Lothian	724.0	665	91.9

Source: Scottish Cancer Registry, ISD. Data extracted 17 December 2013.

Table 2: Frequencies of Age at Diagnosis of Lung Cancer
n=all patients diagnosed with lung cancer in **2012**

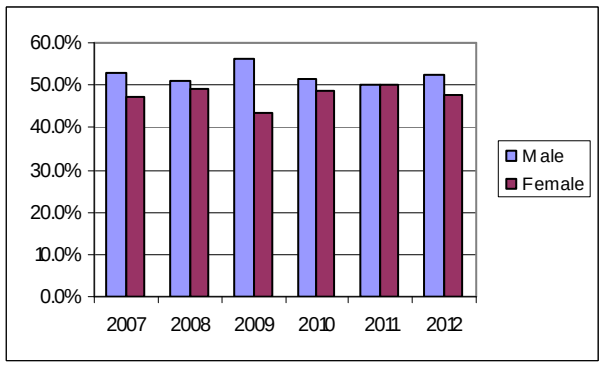
Age	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
<49	1	1.2	5	4.2	9	2.8	20	3.0	35	2.9
50-59	7	8.3	10	8.3	29	9.1	58	8.7	104	8.7
60-69	26	31.0	33	27.5	92	28.8	172	25.9	323	27.2
70-79	34	40.5	43	35.8	116	36.3	248	37.3	441	37.1
>80	16	19.0	29	24.2	74	23.1	167	25.1	286	24.1
Total	**84**	**100.0**	**120**	**100.0**	**320**	**100.0**	**665**	**100.0**	**1189**	**100.0**
MEDIAN	71		72		72		73			
RANGE	47-93		42-94		34-91		32-95			

Fig (i): Distribution of Age at Diagnosis of Lung Cancer in SCAN 2008 – 2012



Error bars are used to indicate standard deviation and therefore represent variability between years rather than consistency of trend.

Fig (ii): Sex Distribution in SCAN 2007 - 2012



The ratio of male to female patients diagnosed with lung cancer in SCAN is shown in Fig 2, with comparisons over a five year period. Research by Macmillan indicates that projected rates for women with lung cancer will quadruple within the next 30 years while lung cancer rates for men are expected to rise by 8.[1] The difference reflects different smoking rates between the sexes in the past and the later 'peak' in smoking amongst women.

[1] Macmillan Cancer Support: http://www.macmillan.org.uk/Home.aspx

Multi-Disciplinary Approach

Table 3: Patients Presented to Multi-Disciplinary Team Meeting
n=all patients diagnosed with lung cancer in **2009**, **2010**, **2011 and 2012**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
	Presented at MDT Meeting									
2012	**84**	**100.0**	**111**	**92.5**	**320**	**100.0**	**632**	**95.0**	**1147**	**96.5**
2011	87	98.9	94	94.0	297	100.0	684	97.4	1162	97.9
2010	86	96.6	107	100	264	96.0	630	97.5	1087	97.3
2009	76	100	108	97.3	291	91.2	647	97.4	1122	95.9
	Not presented at MDT Meeting									
2012	-	-	9	7.5	-	-	33	5.0	42	3.6
2011	1	1.1	6	6.0	-	-	18	2.6	25	2.1
2010	3	3.4	-	-	11	4.0	16	2.5	30	2.7
2009	-	-	3	2.7	28	8.8	17	2.6	48	4.1

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

ACTION PLAN: The deceased patients should be registered at MDT meetings.

Table 4: Patient contact with Lung CNS (Lung Cancer Nurse Specialist)
n=all patients diagnosed with lung cancer in **2010, 2011 and 2012**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
	CNS Contact									
2012	**79**	**94.0**	**79**	**65.8**	**272**	**85.0**	**543**	**81.7**	**973**	**81.8**
2011	83	94.3	82	82.0	235	79.1	554	78.9	954	80.4
2010	86	96.6	92	86.0	163	59.3	559	86.5	900	80.6
	No CNS contact/not recorded									
2012	**5**	**6.0**	**41**	**34.2**	**48**	**15.0**	**122**	**18.3**	**216**	**18.2**
2011	5	5.7	18	18.0	62	20.9	148	21.1	233	19.6
2010	3	3.4	15	14.0	86	31.3	85	13.2	189	16.9

This is the third year we have reported on patient contact with LCNS. Of those who have no contact with an LCNS, many will be directly referred to palliative care and will be seen by a Palliative CNS. D&G percentage are lower but the numbers are consistent.

NLCA (5)
At least 80% of patients are seen by a lung cancer specialist nurse.

DIAGNOSIS AND STAGING

Performance Status

Performance Status (PS), in conjunction with staging, is a key parameter for the selection of optimal management.

Table 5: Performance Status and Recording Completeness 2009 – 2012
n=all patients diagnosed with lung cancer in **2009, 2010**, **2011 and 2012**

		Percentage PS Distribution & Overall Recording Completeness						
		PS 0 %	**PS 1 %**	**PS 2 %**	**PS 3 %**	**PS 4 %**	**Not Recorded %**	**Recording Complete %**
Borders	**2012**	**26.2**	**52.4**	**13.1**	**2.4**	**6.0**	**0**	**100.0**
	2011	27.3	45.5	13.6	9.1	4.5	0	**100.0**
	2010	24.7	41.6	12.4	9.0	11.2	1.1	**98.9**
	2009	21.1	51.3	14.5	11.8	1.3	0	**100.0**
D&G	**2012**	**10.0**	**36.7**	**20.8**	**16.7**	**0**	**15.8**	**84.2**
	2011	7.0	41.0	28.0	8.0	2.0	14.0	**86.0**
	2010	17.8	28.0	24.3	8.4	-	21.5	**78.5**
	2009	5.4	45.9	20.7	16.2	8.1	3.7	**96.3**
Fife	**2012**	**6.3**	**37.2**	**25.0**	**21.9**	**3.8**	**5.9**	**94.1**
	2011	5.1	31.3	24.2	22.2	3.4	13.8	**86.2**
	2010	7.6	30.2	21.8	21.1	5.5	13.8	**86.2**
	2009	6.6	33.9	24.1	21.6	9.4	4.4	**95.6**
Lothian	**2012**	**9.9**	**38.6**	**20.8**	**20.8**	**4.7**	**5.3**	**94.7**
	2011	8.1	40.2	23.9	19.8	7.1	0.9	**99.1**
	2010	7.7	43.2	22.6	18.7	6.3	1.5	**98.5**
	2009	8.3	44.0	24.2	14.2	4.2	5.1	**94.9**
SCAN	**2012**	**10.1**	**39.0**	**21.4**	**19.3**	**4.0**	**6.1**	**93.9**
	2011	8.7	38.4	23.6	18.6	5.6	5.1	**94.9**
	2010	10.0	38.4	21.8	17.5	5.9	6.4	**93.6**
	2009	8.4	41.9	23.2	16.2	5.8	4.5	**95.5**

NHS QIS Standard 4a.3
Audit has a minimum of 90% cases with WHO performance status recorded at diagnosis.

D&G is improving in its data capture with changes made in data recording in 2011. It is anticipated that the target will be achieved in D&G in 2013.

Mode of Diagnosis

Most Valid Basis of Diagnosis

The Revised Lung Cancer Dataset implemented on 1st January 2010 defines most valid basis of diagnosis as the best evidence in support of the diagnosis of cancer. Histological confirmation is considered as the most valid basis of diagnosis"[2]

Table 6: Mode of Diagnosis – Most Valid Basis of Diagnosis
n=all patients diagnosed with lung cancer in **2012**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Histology	52	61.9	67	55.8	184	57.5	298	44.8	601	50.6
Cytology	13	15.5	10	8.3	25	7.8	147	22.1	195	16.4
Pathology	**65**	**77.4**	**77**	**64.1**	**209**	**65.3**	**445**	**66.9**	**796**	**66.9**
Imaging	19	22.6	43	35.8	111	34.7	220	33.1	393	33.1
Total	**84**		**120**		**320**		**665**		**1189**	

NHS QIS Standard 2a.1
A minimum of 75% of all lung cancer patients have their diagnosis confirmed by histology/cytology.

This NHS QIS Standard (2a.1) will be replaced by QPI 1 which excludes patients receiving best supportive care as first treatment. As this group of patients are less likely to be fit for histological diagnosis it is expected that performance against this measure will be improved with the implementation of the QPIs.

[2] ISD Scotland: *Lung Cancer National Data Definitions for Minimum Core Dataset: Version 2.1, Oct 2010* (p37)

Table 7: Type of Investigation leading to Pathological Diagnosis of Lung Cancer: Comparative Table 2009 - 2012

n=all patients diagnosed (by pathology) with lung cancer in **2009**, **2010**, **2011 and 2012**

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
	Bronchoscopy									
2012	**15**	**23.1**	**34**	**44.2**	**96**	**45.9**	**118**	**26.5**	**263**	**33.0**
2011	21	32.3	41	51.3	78	42.6	94	20.8	234	30.0
2010	16	25.4	42	44.2	88	48.1	101	22.1	247	31.0
2009	14	27.5	52	59.1	107	47.3	98	20.9	271	32.5
	CT Guided Lung FNA/Biopsy									
2012	**30**	**46.2**	**20**	**26.0**	**49**	**23.4**	**131**	**29.4**	**230**	**28.9**
2011	26	40.0	21	26.3	51	27.9	119	26.4	217	27.9
2010	24	38.1	26	27.4	41	22.4	125	27.4	216	27.1
2009	23	45.1	25	28.4	58	25.7	128	27.2	234	28.0
	EBUS									
2012	**10**	**15.4**	**1**	**1.3**	**6**	**2.9**	**46**	**10.3**	**63**	**7.9**
2011	7	10.8	4	5.0	6	3.3	54	12.0	71	9.1
2010	3	4.8	4	4.2	-	-	73	16.0	80	10.0
2009	4	7.8	5	5.7	3	1.3	90	19.1	102	12.2
	Other Biopsy[3]									
2012	**6**	**9.2**	**15**	**19.5**	**38**	**18.2**	**150**	**33.7**	**209**	**30.1**
2011	11	16.9	14	17.5	48	26.2	184	40.8	257	33.0
2010	20	31.7	23	24.2	54	29.5	158	34.6	255	31.9
2009	10	19.6	6	6.8	58	25.7	154	32.8	228	27.3

It should be noted that the choice of investigation carried out often reflects local expertise and available services and that all investigations used are acceptable in clinical practice.

Table 8: Frequency of PET scans in radically treated NSCLC patients

n=all patients diagnosed with NSCLC and treated radically (surgery or radiotherapy >50 Gy) in **2009**, **2010, 2011 and 2012**

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
PET scan performed expressed as a percentage of all radically treated NSCLC patients in each year.										
2012	**18**	**85.7**	**17**	**89.5**	**69**	**94.5**	**138**	**95.8**	**242**	**94.2**
2011	19	86.4	22	91.7	45	95.7	131	94.9	217	93.9
2010	17	85.0	24	100.0	50	90.0	128	92.8	219	92.4
2009	17	89.5	32	100.0	63	96.9	142	93.4	254	94.8

PET scanning is important in the management of lung cancer patients. It is appropriate in the investigation of a solitary pulmonary nodule to determine malignant potential and is essential in the assessment of occult metastases in patients being considered for radical treatment. Patients who have blood glucoses greater than 10 are not suitable for PET scanning because of the impaired sensitivity, but such patients would be scanned once their glucose levels are brought under control or stabilised.

[3] 'Other Biopsy' includes thoracic surgical procedure (frozen section), sputum cytology and biopsies from liver, skin, bone, pleura, supraclavicular node, lymph node, neck node, breast, thyroid, brain metastasis.

Pathology Type

Table 9: Pathology Type: All Patients
n=all patients diagnosed with lung cancer in **2012**

Pathology	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Squamous	10	11.9	27	22.5	78	24.4	112	16.8	227	19.1
Adenocarcinoma	36	42.9	23	19.2	57	17.8	158	23.8	274	23.0
NSCLC (NOS)	8	9.5	5	4.2	27	8.4	59	8.9	99	8.3
Other NSCLC	0	0.0	0	0.0	2	0.6	11	1.7	13	1.1
SCLC	10	11.9	19	15.8	35	10.9	83	12.5	147	12.4
Carcinoid	1	1.2	0	0.0	2	0.6	8	1.2	11	0.9
Combination of non-small cell components	0	0.0	2	1.7	3	0.9	4	0.6	9	0.8
Other Malignancy	0	0.0	1	0.8	5	1.6	10	1.5	16	1.3
Negative Pathology	1	1.2	9	7.5	14	4.4	46	6.9	70	5.9
No Pathology	18	21.4	34	28.3	97	30.3	174	26.2	323	27.2
Not recorded	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**84**	**100.0**	**120**	**100.0**	**320**	**100.0**	**665**	**100.0**	**1189**	**100.0**

Pathological diagnoses are based on microscopic examination of the specimen by a pathologist to determine the presence of malignancy and the WHO classification of the malignant tumour.

To maintain consistency and accuracy in data collection, the Lung Cancer National Definitions for Minimum Core Data Set sets out specific guidelines for consistent coding of pathology across Scotland. There were some minor changes to coding allocation in the revised Definitions (implemented 1st January 2010) but categories remain broadly the same.

See footnote about inclusions in "NSCLC (NOS)" and "Other Specific NSCLC".

[1] NSCLC [NOS]: Non-small cell lung cancer [not otherwise specified]. In National Data Definitions this includes large cell carcinoma and undifferentiated, pleomorphic, sarcomatoid or anaplastic carcinoma and spindle cell. Other specific NSC carcinomas include salivary-type carcinomas and large cell neuroendocrine carcinomas

Table 9.1: Pathology Type: Comparative Table 2009 - 2012
n=all patients diagnosed with lung cancer in **2009**, **2010, 2011** and **2012**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
NSCLC										
2012	**55**	**65.5**	**58**	**48.3**	**174**	**54.4**	**362**	**54.4**	**649**	**54.6**
2011	50	56.8	69	69.0	135	45.5	376	53.6	630	53.1
2010	52	58.4	78	72.9	146	53.1	377	58.4	653	58.5
2009	39	51.3	67	60.4	187	58.6	377	56.8	670	57.3
SCLC										
2012	**10**	**11.9**	**19**	**15.8**	**35**	**10.9**	**83**	**12.5**	**147**	**12.4**
2011	15	17.0	11	11.0	48	16.2	75	10.7	149	12.5
2010	11	12.4	17	15.9	37	13.5	80	12.4	145	13.0
2009	12	15.8	21	18.9	39	12.2	93	14.0	165	14.1
No & Negative Pathology										
2012	**19**	**22.6**	**43**	**35.8**	**111**	**34.7**	**220**	**33.1**	**393**	**33.1**
2011	23	26.1	20	20.0	114	38.4	251	35.7	408	34.4
2010	26	29.2	12	11.2	92	33.5	189	29.3	319	28.6
2009	25	32.9	23	20.7	93	29.2	194	29.2	335	28.6

Staging

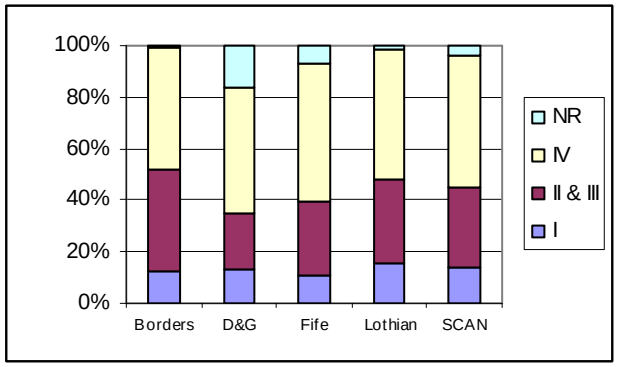
Stage is calculated using TNM (Tumour Nodal Metastases) classifications (see Appendices 3 and 4). Prior to 1st January 2010 SCLC was recorded as either limited or extensive disease. This report shows the revised TNM classification for SCLC. These categories are used as the basis for treatment management.

Table 10: Staging: All Patients
n=all patients diagnosed with lung cancer in **2012**

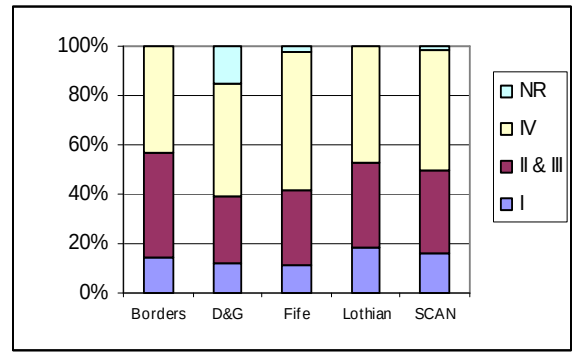
Stage	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
IA	6	7.1	6	5.0	27	8.4	78	11.7	117	9.8
IB	6	7.1	3	2.5	20	6.3	42	6.3	71	6.0
IIA	2	2.4	1	0.8	12	3.8	28	4.2	43	3.6
IIB	2	2.4	5	4.2	13	4.1	36	5.4	56	4.7
IIIA	13	15.5	7	5.8	32	10.0	89	13.4	141	11.9
IIIB	14	16.7	25	20.8	38	11.9	55	8.3	132	11.1
IV	41	48.8	60	50.0	161	50.3	302	45.4	564	47.4
NR	0	0.0	13	10.8	17	5.3	35	5.3	65	5.5
Total	**84**	**100.0**	**120**	**100.0**	**320**	**100.0**	**665**	**100.0**	**1189**	**100.0**

Fig (v): Stage Distribution by Health Board 2010 and 2012 (all patients)

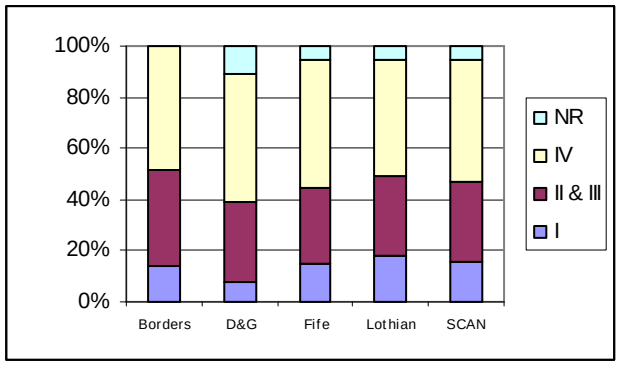
(a): Stage Distribution 2010



(b): Stage Distribution 2011



(c): Stage Distribution 2012



Staging (in conjunction with Performance Status) is a key parameter in the selection of optimal treatment management of patients with lung cancer. Differences in stage distribution between health board areas over the last two years can be seen in Figure (v). Around half of those who present with lung cancer in SCAN are stage IV compared to 10-15 of stage I lung cancer.

The Scottish Government in collaboration with the three Cancer Networks in Scotland are currently working towards improving the percentage of early stage lung cancer diagnosis as part of the Detect Cancer Early Programme. The earlier that cancer is diagnosed and treated, the better survival outcomes.

Table 10.1: Stage Recording Completeness
n=all patients diagnosed with lung cancer in **2009, 2010, 2011 and 2012**

Stage Completeness	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2012	**84**	**100.0**	**107**	**89.2**	**303**	**94.7**	**630**	**94.7**	**1124**	**94.5**
2011	88	100.0	86	86.0	290	97.6	701	99.9	1159	97.6
2010	88	98.9	90	84.1	256	93.1	638	98.8	1072	96.0
2009	76	100.0	95	85.6	297	93.1	659	99.2	1127	96.0

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

All health boards, excepting D&G (which records a 'near miss'), have attained the Standard. Routine recording of staging at MDM has generally resulted in consistent completeness of stage data over the three year period.

Stage Groups

Table 10.2: Stage Group: NSCLC
n = all patients diagnosed with NSCLC in **2012**

NSCLC SCAN Stage	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
IA	5	9.1	2	3.4	10	5.7	41	11.3	58	8.9
IB	3	5.5	3	5.2	11	6.3	26	7.2	43	6.6
IIA	0	0.0	0	0.0	8	4.6	20	5.5	28	4.3
IIB	1	1.8	4	6.9	10	5.7	19	5.2	34	5.2
IIIA	10	18.2	3	5.2	21	12.1	54	14.9	88	13.6
IIIB	7	12.7	15	25.9	25	14.4	33	9.1	80	12.3
IV	29	52.7	28	48.3	78	44.8	156	43.1	291	44.8
NR	0	0.0	3	5.2	11	6.3	13	3.6	27	2.4
Total	**55**	**100.0**	**58**	**100.0**	**174**	**100.0**	**362**	**100.0**	**649**	**98.2**

Table 10.3: Stage Group: SCLC
n = all patients diagnosed with SCLC in **2012**

SCLC Stage	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
IA	1	10.0	0	0.0	0	0.0	0	0.0	1	0.7
IB	1	10.0	0	0.0	0	0.0	0	0.0	1	0.7
IIA	1	10.0	0	0.0	0	0.0	4	4.8	5	3.4
IIB	0	0.0	0	0.0	0	0.0	2	2.4	2	1.4
IIIA	1	10.0	2	10.5	4	11.4	14	16.9	21	14.3
IIIB	5	50.0	5	26.3	5	14.3	9	10.8	24	16.3
IV	1	10.0	10	52.6	25	71.4	50	60.2	86	58.5
NR	0	0.0	2	10.5	1	2.9	4	4.8	7	4.8
Total	**10**	**100**	**19**	**100**	**35**	**100**	**83**	**100**	**147**	**100**

Table 10.4: Stage Group: Imaging Diagnoses (No and Neg Pathology)
n = all patients diagnosed via imaging in **2012**

Stage no path	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
IA	0	0.0	4	9.3	17	15.3	37	16.8	58	14.8
IB	2	10.5	0	0.0	9	8.1	16	7.3	27	6.9
IIA	1	5.3	1	2.3	4	3.6	4	1.8	10	2.5
IIB	1	5.3	1	2.3	3	2.7	15	6.8	20	5.1
IIIA	2	10.5	2	4.7	7	6.3	21	9.5	32	8.1
IIIB	2	10.5	5	11.6	8	7.2	13	5.9	28	7.1
IV	11	57.9	22	51.2	58	52.3	96	43.6	187	47.6
NR	0	0.0	8	18.6	5	4.5	18	8.2	31	7.9
Total	**19**	**100.0**	**43**	**100.0**	**111**	**100.0**	**220**	**100.0**	**393**	**100.0**

TREATMENT MANAGEMENT

Anti-Cancer Treatment

Table 11: Frequency of Anti-Cancer Treatment: All Patients

2012
n=all patients diagnosed with lung cancer in **2012**

Treatment ALL Patients	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Anti-cancer Treatment	51	60.7	65	54.2	180	56.3	372	55.9	668	56.2
No Active Treatment	30	35.7	50	41.7	120	37.5	246	37.0	446	37.5
Refused Treatment	2	2.4	3	2.5	6	1.9	18	2.7	29	2.4
Died before Treatment	1	1.2	2	1.7	14	4.4	24	3.6	41	3.4
NR	0	0.0	0	0.0	0	0.0	5	0.8	5	0.4
Total	**84**	**100.0**	**120**	**100.0**	**320**	**100.0**	**665**	**100.0**	**1189**	**100.0**

Lothian has 5 patients listed as "Not Recorded". Of these, 3 have moved out of region and 2 were from GRO Death Data.

2011
n=all patients diagnosed with lung cancer in **2011**

	Borders		D&G		Fife		Lothian		SCAN	
	n		n		n		n		n	
Anti-cancer treatment[4]	57	64.8	63	63.0	159	53.5	395	56.3	674	56.8
No active treatment	29	32.9	36	36.0	131	44.1	248	35.3	444	37.4
Refused treatment	2	2.3	1	1.0	4	1.3	24	3.4	31	2.6
Died before treatment	-	-	-	-	3	1.0	35	5.0	38	3.2
Total	**88**		**100**		**297**		**702**		**1187**	

NLCA (8)
Active anti-cancer treatment rates below the England and Wales average of 60% should be reviewed.

The proportion of patients receiving anti-cancer treatment is a quality measure used by the UK National Lung Cancer Audit (NLCA) and is not a Scottish Standard. Anti-cancer treatment rates for SCAN overall are below the recommended level set by UK NLCA.

A recent comorbidity study[5] shows that COPD, a factor in determining non-surgical management of NSCLC, does appear to be significantly more common in Fife than in other parts of Scotland. A multivariate analysis is proposed (age, sex, stage, pathology, comorbidity and deprivation) to further investigate and this is included in the current Action Plan. However, it should be noted that in a recent study: *Explaining variations in lung cancer in Scotland* [6], Fife, which appears to have the lowest treatment rate at 49.8 in 2009, has survival rates at 1 (2004-2008) and 5 years (2000-2004) which are commensurate, and sometimes better, than other areas in Scotland.

[4] 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.
[5] *Variation in comorbidity and clinical management in patients newly diagnosed with lung cancer in four Scottish centres* (2011).
[6] The Roy Castle Lung Cancer Foundation: *Explaining variations in lung cancer in Scotland*. (November 2011).

2010

n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Anti-cancer treatment	59	66.3	74	69.2	145	52.7	389	60.2	667	59.7
No active treatment	25	28.1	33	30.8	106	38.5	178	27.5	342	30.6
Refused treatment	1	1.1	-	-	5	1.8	36	5.6	42	3.8
Died before treatment	4	4.5	-	-	19	6.9	43	6.7	66	5.9
Total	**89**		**107**		**275**		**646**		**1117**	

2009

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Anti-cancer treatment	56	73.7	78	70.3	159	49.8	414	62.3	707	60.4
No active treatment	16	21.0	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	0.1	2	0.2
Total	**76**		**111**		**319**		**664**		**1170**	

Treatment Management by Stage

Pre-treatment stage is crucial to determine optimal treatment management and outcome. Treatment shown here represents the whole 'treatment package' and in this section includes all NSCLC and SCLC patients with pathology AND imaging diagnoses.

NSCLC: Treatment by Stage

Table 13.1: Treatment of Stage I & II NSCLC (pathology or imaging diagnoses)
n=all patients diagnosed NSCLC (pathologically or by imaging) – Stage I/II in **2012**

NSCLC (+NSCLC No/Neg Path) Stage I and II Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	7	53.8	8	53.3	26	36.1	78	43.8	119	42.8
Radical Radiotherapy	3	23.1	4	26.7	21	29.2	35	19.7	63	22.7
Chemoradiation	0	0.0	0	0.0	1	1.4	4	2.2	5	1.8
Chemotherapy	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Chemo and pall RT	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
High dose pall RT only	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Low dose pall RT only	0	0.0	0	0.0	1	1.4	8	4.5	9	3.2
Other Treatment*	0	0.0	0	0.0	0	0.0	6	3.4	6	2.2
Best Supportive Care	3	23.1	3	20.0	22	30.6	38	21.3	66	23.7
Refused Treatment	0	0.0	0	0.0	0	0.0	5	2.8	5	1.8
Died before Treatment	0	0.0	0	0.0	1	1.4	3	1.7	4	1.4
Not recorded	0	0.0	0	0.0	0	0.0	1	0.6	1	0.4
Targeted or Biological Therapy	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**13**	**100.0**	**15**	**100.0**	**72**	**100.0**	**178**	**100.0**	**278**	**100.0**

*Other treatment in Lothian consists of 6 patients who were on Watchful Waiting.

NLCA (7)
For early stage (I and II) disease, [surgical] rates below 52% should be reviewed to ensure that patients on the margins of operability/resectability are being offered access to specialist thoracic surgical expertise.

Following the audit, all early stage patients including those of borderline operability are subject to full and detailed discussion prior to treatment management decisions and where a patient is considered not suitable as a surgical candidate, the reasons are recorded. This has been implemented at MDT meetings in Lothian and other health boards in the SCAN region as part of the ongoing Action Plan.

Table 13.2: Treatment of Stage III NSCLC (pathology or imaging diagnoses)
n=all patients diagnosed NSCLC (pathologically or by imaging) – Stage III in **2012**

NSCLC (+NSCLC No/Neg Path) Stage III Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	1	4.8	2	8.0	6	9.8	7	5.8	16	7.0
Radical Radiotherapy	5	23.8	2	8.0	5	8.2	14	11.6	26	11.4
Chemoradiation	7	33.3	7	28.0	15	24.6	25	20.7	54	23.7
Chemotherapy	0	0.0	0	0.0	3	4.9	5	4.1	8	3.5
Chemo and pall RT	0	0.0	0	0.0	4	6.6	0	0.0	4	1.8
High dose pall RT only	0	0.0	2	8.0	3	4.9	3	2.5	8	3.5
Low dose pall RT only	1	4.8	1	4.0	3	4.9	24	19.8	29	12.7
Other Treatment*	0	0.0	0	4.0	0	0.0	0	0.0	1	0.4
Best Supportive Care	7	33.3	9	36.0	18	29.5	36	29.8	70	30.7
Refused Treatment	0	0.0	0	0.0	2	3.3	3	2.5	5	2.2
Died before Treatment	0	0.0	1	4.0	2	3.3	2	1.7	5	2.2
Not recorded	0	0.0	0	0.0	0	0.0	1	0.8	1	0.4
Targeted or Biological Therapy	0	0.0	1	0.0	0	0.0	1	0.8	1	0.4
Total	**21**	**100.0**	**25**	**100.0**	**61**	**100.0**	**121**	**100.0**	**228**	**100.0**

* Lothian: In Targeted or Biological Therapy - 1 Patient had Afatinib.

Table 13.3: Treatment of Stage IV NSCLC (pathology or imaging diagnoses)
n=all patients diagnosed NSCLC (pathologically or by imaging) – Stage IV in **2012**

NSCLC (+NSCLC No/Neg Path) Stage IV Treatment	**Borders**		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Radical Radiotherapy	0	0.0	0	0.0	2	1.5	3	1.2	5	1.0
Chemoradiation	1	2.5	0	0.0	3	2.2	2	0.8	6	1.3
Chemotherapy	4	10.0	8	16.0	13	9.6	14	5.6	39	8.2
Chemo and pall RT	2	5.0	1	2.0	10	7.4	0	0.0	13	2.7
High dose pall RT only	0	0.0	0	0.0	5	3.7	2	0.8	7	1.5
Low dose pall RT only	8	20.0	13	26.0	20	14.7	80	31.7	121	25.3
Other Treatment*	0	0.0	0	0.0	1	0.7	1	0.4	2	0.4
Best Supportive Care	19	47.5	26	52.0	69	50.7	129	51.2	243	50.8
Refused Treatment	2	5.0	1	2.0	3	2.2	6	2.4	12	2.5
Died before Treatment	1	2.5	1	2.0	8	5.9	10	4.0	20	4.2
Not recorded	0	0.0	0	0.0	0	0.0	1	0.4	1	0.2
Targeted or Biological Therapy	3	7.5	0	0.0	2	1.5	4	1.6	9	1.9
Total	**40**	**100**	**50**	**100**	**136**	**100**	**252**	**100**	**478**	**100**

*Surgery is generally not a treatment option for stage IV lung cancer patients but in certain circumstances can be appropriate.
Lothian: "Other treatment" includes 1 patient who had stereotactic radiosurgery; "Targeted or Biological Therapy" includes 3 patients who had Erlotinib and 1 who had Crizotinib.
Fife: "Other treatment" includes 1 patient who had Endobronchial (stent insertion); "Targeted or Biological Therapy" includes 2 patients who had Erlotinib.

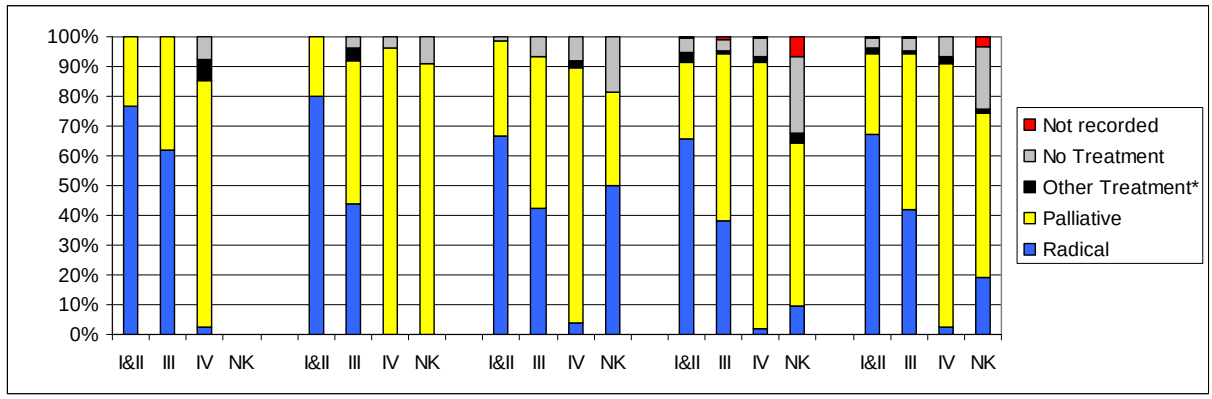
Table 13.4: Treatment of Stage Not Recorded NSCLC (pathology or imaging diagnoses)
n=all patients diagnosed NSCLC (pathologically or by imaging) – Stage NR in **2012**

NSCLC (+NSCLC No/Neg Path) Stage NR Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	0	0.0	0	0.0	5	31.3	2	6.5	7	12.1
Radical Radiotherapy	0	0.0	0	0.0	1	6.3	0	0.0	1	1.7
Chemoradiation	0	0.0	0	0.0	2	12.5	1	3.2	3	5.2
Chemotherapy	0	0.0	0	0.0	1	6.3	1	3.2	2	3.4
Chemo and pall RT	0	0.0	1	9.1	0	0.0	0	0.0	1	1.7
High dose pall RT only	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Low dose pall RT only	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Other Treatment*	0	0.0	0	0.0	0	0.0	1	3.2	1	1.7
Best Supportive Care	0	0.0	9	81.8	4	25.0	16	51.6	29	50.0
Refused Treatment	0	0.0	1	9.1	1	6.3	2	6.5	4	6.9
Died before Treatment	0	0.0	0	0.0	2	12.5	6	19.4	8	13.8
Not recorded	0	0.0	0	0.0	0	0.0	2	6.5	2	3.4
Targeted or Biological Therapy	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**0**	**0.0**	**11**	**100.0**	**16**	**100.0**	**31**	**100.0**	**58**	**100.0**

*Other treatment in Lothian included 1 watchful waiting.

Early stage presentation and diagnosis is fundamental to the objectives of the Scottish Government's *Detect Cancer Early Initiative* which aims to promote early stage cancer diagnosis and treatment to improve survival.[7] Surgery provides the most effective curative treatment for early stage lung cancer while, in comparison, patients who present with advanced stage disease have more limited treatment options and poorer outcomes.

Fig (vii): Treatment Type (NSCLC) – Distribution by Stage & Health Board/SCAN 2012
No Treatment: Refused treatment or died before treatment



[7] Scottish Government: *Stakeholder Engagement: Detect Cancer Early Initiative (breast, colorectal and lung cancer)*, 01 Aug 2011

SCLC: Treatment by Stage

Treatment by stage for small cell lung cancer is usually based on limited and extensive disease categories. Stage I, II and III aggregated are aligned with limited disease while stage IV is equivalent to extensive disease.

Table 14.1: Treatment of SCLC – Limited Disease (Stage I + II + III)

n=all patients diagnosed SCLC (pathologically or by imaging) – Stages I, II & III (limited) in **2012**

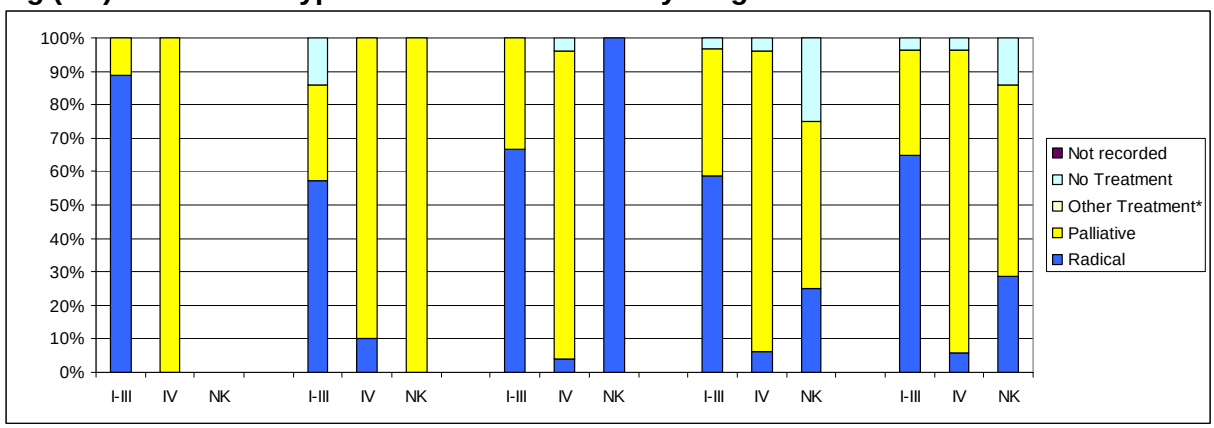
SCLC (+SCLC No/Neg Path) Stage I, II & III Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	1	11.1	0	0.0	0	0.0	0	0.0	1	1.9
Chemoradiation plus PCI	3	33.3	4	57.1	3	33.3	11	37.9	21	38.9
Chemoradiation no PCI	4	44.4	0	0.0	2	22.2	6	20.7	12	22.2
Chemotherapy	1	11.1	1	14.3	2	22.2	1	3.4	5	9.3
Chemotherapy plus PCI	0	0.0	0	0.0	0	0.0	1	3.4	1	1.9
Chemotherapy and pall RT	0	0.0	0	0.0	0	0.0	1	3.4	1	1.9
Pall XRT only	0	0.0	1	14.3	1	11.1	5	17.2	7	13.0
Radical Radiotherapy	0	0.0	0	0.0	1	11.1	0	0.0	1	1.9
Best Supportive Care	0	0.0	0	0.0	0	0.0	3	10.3	3	5.6
Refused Treatment	0	0.0	1	14.3	0	0.0	1	3.4	2	3.7
Died before Treatment	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Targeted or Biological Therapy	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**9**	**100.0**	**7**	**100.0**	**9**	**100.0**	**29**	**100.0**	**54**	**100.0**

Table 14.2: Treatment of SCLC – Extensive Disease (Stage IV)
n=all patients diagnosed SCLC (pathologically or by imaging) – Stage IV (Ext) in **2012**

SCLC (+SCLC No/Neg Path) Stage IV Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Chemoradiation plus PCI	0	0.0	1	10.0	0	0.0	2	4.0	3	3.5
Chemoradiation no PCI	0	0.0	0	0.0	1	4.0	1	2.0	2	2.3
Chemotherapy	0	0.0	3	30.0	11	44.0	17	34.0	31	36.0
Chemotherapy plus PCI	1	100.0	0	0.0	0	0.0	0	0.0	1	1.2
Chemotherapy and pall RT	0	0.0	2	20.0	1	4.0	11	22.0	14	16.3
Chemotherapy and pall RT plus PCI	0	0.0	1	10.0	2	8.0	0	0.0	3	3.5
Pall XRT only	0	0.0	0	0.0	2	8.0	4	8.0	6	7.0
Radical Radiotherapy	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Best Supportive Care	0	0.0	3	30.0	7	28.0	13	26.0	23	26.7
Refused Treatment	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Died before Treatment	0	0.0	0	0.0	1	4.0	2	4.0	3	3.5
Targeted or Biological Therapy	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**1**	**100.0**	**10**	**100.0**	**25**	**100.0**	**50**	**100.0**	**86**	**100.0**

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

Fig (viii): Treatment Type SCLC – Distribution by Stage & Health Board/SCAN 2012



SCLC (Limited Disease) – Oncology Treatment Management

Table 15.1: LD SCLC patients receiving chemotherapy and PCI.
n=all patients diagnosed with SCLC – Ltd Disease in **2009**, **2010, 2011** & **2012** plus chemotherapy.

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n		**n**		**n**		**n**		**n**	
Total LD SCLC + Chemo (2012)	**8**		**5**		**7**		**20**		**40**	
Chemo or ChemoRad + PCI	3	37.5	4	80.0	3	42.9	12	60.0	22	55.0
Total LD SCLC + Chemo (2011)	**4**		**6**		**14**		**23**		**47**	
Chemo or ChemoRad + PCI	2	50.0	3	50.0	9	64.3	16	69.6	30	63.8
Total LD SCLC + Chemo (2010)	**4**		**3**		**8**		**22**		**37**	
Chemo or ChemoRad + PCI	4	100	1	33.3	3	37.5	15	68.1	23	62.2
Total LD SCLC + Chemo (2009)	**5**		**5**		**11**		**33**		**54**	
Chemo or ChemoRad + PCI	3	60.0	3	60.0	6	54.5	14	42.4	26	48.1

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

A relevant factor in determining eligibility for PCI is age. PCI is contra-indicated in patients over 70 years and is not offered to patients who have suffered a previous cerebrovascular accident or to those considered too frail. Variation may occur with small numbers.

Table 15.2: LD SCLC patients receiving chemotherapy and plus consolidation radiotherapy to chest

n=all patients diagnosed with SCLC – Ltd Disease in **2009**, **2010, 2011** & **2012** plus chemotherapy.

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n		**n**		**n**		**N**		**n**	
Total LD SCLC + Chemo (2012)	**8**		**5**		**7**		**20**		**40**	
Chemo + RT to chest	7	87.5	4	80.0	5	71.4	18	90	34	85.0
Total LD SCLC + Chemo (2011)	**4**		**6**		**14**		**23**		**47**	
Chemo + RT to chest	3	75.0	1	16.7	13	92.9	20	87.0	37	78.7
Total LD SCLC + Chemo (2010)	**4**		**3**		**8**		**22**		**37**	
Chemo + RT to chest	4	100	3	100	5	62.5	18	81.8	30	81.1
Total LD SCLC + Chemo (2009)	**5**		**5**		**11**		**33**		**54**	
Chemo + RT to chest	4	80.0	5	100	9	81.8	19	57.6	37	68.5

NHS QIS Standard 5c.5
A minimum of 60% of those limited (LD) SCLC patients receiving chemotherapy also receive consolidation radiotherapy to the chest.

Variation may occur through small numbers. Where populations are small it is useful to aggregate the results over time, for example, D&G aggregated over the 3 year period demonstrates 64.3%.

ANTI-CANCER TREATMENTS

Surgery

Table 16: Frequency of Surgery
n=all patients diagnosed with lung cancer in **2009**, **2010, 2011** and **2012**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**N**	**%**	**n**	**%**
Total patients (2012)	**84**		**120**		**320**		**665**		**1189**	
Surgery	9	10.7	10	8.3	37	11.6	94	14.1	150	12.6
Total patients (2011)	**88**		**100**		**297**		**702**		**1187**	
Surgery	13	14.8	12	12.0	27	9.1	77	11.0	129	10.9
Total patients (2010)	**89**		**107**		**275**		**646**		**1117**	
Surgery	11	12.4	14	13.1	25	9.1	77	11.9	127	11.4
Total patients (2009)	**76**		**111**		**319**		**664**		**1170**	
Surgery	12	15.8	8	7.2	32	10.0	85	12.8	137	11.7

Thoracic surgery is performed at the Edinburgh Royal Infirmary for patients diagnosed in Lothian, Fife and Borders while Dumfries & Galloway patients generally attend the Golden Jubilee Hospital, Glasgow.

Table 16.1: Type of Surgery for Resection of Primary Tumour
n=all patients treated surgically diagnosed with lung cancer in **2012**

Type of Surgery	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Pneumonectomy	0	0.0	0	0.0	3	8.1	5	5.3	8	5.3
Lobectomy	6	66.7	10	100.0	30	81.1	77	81.9	123	82.0
Wedge or Segmentectomy	3	33.3	0	0.0	4	10.8	11	11.7	18	12.0
Other	0	0.0	0	0.0	0	0.0	1	1.1	1	0.7
Missing data	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**9**	**100**	**10**	**100**	**37**	**100**	**94**	**100**	**150**	**100**

*Lothian: 1 open and close surgical procedure where the intended thoracotomy and pneumonectomy was not carried out and the surgery was recorded as “inoperable” is included in the “other” category.

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

Wedge and segmentectomy facilitate surgery for patients with impaired respiratory function. Furthermore, segmentectomy may be more difficult than lobectomy. Procedures include tri- and quad basal segmentectomies; lingulectomy and left upper tri-segmentectomy.

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, except T4 (see Appendix 4) and is based on the LACE[8] meta-analysis. It should not be given for stage IIIA (T4) and 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).

Table 17: Adjuvant Chemotherapy based on Pathological N Stage[9]

n=all surgery patients diagnosed with lung cancer in **2012**

pN	Borders		D&G		Fife		Lothian		SCAN	
	✓	✖	✓	✖	✓	✖	✓	✖	✓	✖
pN0	0	6	1	4	0	25	1	67	2	101
pN1	1	1	2	1	0	4	8	8	11	14
pN2	0	1	1	1	0	3	2	4	3	9
pN3	0	0	0	0	0	0	0	0	0	0
pNx	0	0	0	0	0	4	0	3	0	7
Not Recorded	0	0	0	0	0	1	0	0	1	2
Total	**1**	**8**	**4**	**6**	**0**	**37**	**11**	**82**	**17**	**133**

*Lothian – 1 patient was recorded as inoperable, Open and Close surgical procedure.

✓ Received adjuvant chemotherapy

✖ Did not receive adjuvant chemotherapy

Post-Operative Radiotherapy (PORT)

PORT is offered to patients with incomplete resection of NSCLC with involved central margins or incomplete resection of N2 disease. The benefit is small and needs to be weighed against potential for toxicity in each case. Resection completeness is measured following full macroscopic and histological examination of the specimen. Excision is considered complete if no evidence of primary tumour is identified at the bronchial, vascular, mediastinal and, if appropriate, chest wall resection margins. Metastatic carcinoma in hilar or mediastinal lymph nodes should not show evidence of extracapsular spread and the free visceral pleural surface should be free of tumour.

Table 18: Post-operative radiotherapy (PORT) by Excision Completeness

n=all surgery patients diagnosed with lung cancer in **2012**

PORT		Borders		D&G		Fife		Lothian		SCAN	
		n	%	n	%	n	%	N	%	n	%
Excision Complete	PORT	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	No PORT	7	77.8	8	80.0	31	83.8	86	91.5	132	88.0
Excision Incomplete	PORT	0	0.0	2	20.0	1	2.7	4	4.3	7	4.7
	No PORT	2	22.2	0	0.0	4	10.8	1	1.1	7	4.7
Excision Completion Not Known	PORT	0	0.0	0	0.0	0	0.0	1	1.1	1	0.7
	No PORT	0	0.0	0	0.0	1	2.7	2	2.1	3	2.0
	Total	**9**	**100**	**10**	**100**	**37**	**100**	**94**	**100**	**150**	**100**

NHS QIS Standard 5c.3

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

[8] LACE: Lung Adjuvant Cisplatin Evaluation: a pooled analysis of five randomised clinical trials (see Appendix 1).

[9] N Stage: 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.

Table 19: Complete Excision and PORT based on pathological N stage
n=all surgery patients diagnosed with lung cancer and with complete excision in **2012**

pN	Borders		D&G		Fife		Lothian		SCAN	
	✓	✖	✓	✖	✓	✖	✓	✖	✓	✖
pN0	0	5	0	4	0	24	0	66	0	99
pN1	0	1	0	3	0	3	0	10	0	17
pN2	0	1	0	1	0	2	0	6	0	10
pN3	0	0	0	0	0	0	0	0	0	0
pNx	0	0	0	0	0	2	0	3	0	5
NR	0	0	0	0	0	0	0	1	0	1
Total	**0**	**7**	**0**	**8**	**0**	**31**	**0**	**86**	**0**	**132**

✓ Received PORT
✖ Did not receive PORT

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

The Standard has been met by all health boards. PORT has not been given to any patients with completely resected tumours, including N0/N1.

Radiotherapy

Table 20: Radiotherapy by Curative Potential: All Patients Receiving Radiotherapy
n=all patients receiving radiotherapy diagnosed with lung cancer in **2009**, **2010, 2011** and **2012**

ALL PATIENTS	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2012										
Radical	23	63.9	20	44.4	59	53.2	98	40.0	200	45.8
Palliative	13	36.1	25	55.6	52	46.8	147	60.0	237	54.2
Not recorded	-	-	-	-	-	-	-	-	-	-
2011										
Radical	16	47.1	13	30.2	44	48.4	127	45.5	200	44.8
Palliative	18	52.9	30	69.8	46	50.5	152	54.5	246	55.0
Not recorded	-	-	-	-	1	1.1	-	-	1	0.2
2010										
Radical	17	38.6	16	32.0	52	51.5	115	42.3	200	42.8
Palliative	27	61.4	34	68.0	49	48.5	157	57.7	267	57.2
2009										
Radical	21	55.3	29	44.6	50	43.1	112	40.6	212	42.8
Palliative	17	44.7	35	53.9	66	56.9	164	59.4	282	57.0
Not recorded	-	-	1	1.5	-	-	-	-	1	0.2

Radiotherapy totals (radical and palliative) are derived from the whole 'treatment package' and include patients who have post-operative radiotherapy and palliative treatment given in addition to 'first' treatment.

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

Radiotherapy: NSCLC

Table 20.1: Radiotherapy by Curative Potential: NSCLC patients only

n=all patients diagnosed with NSCLC (pathology diagnosis) in 2009, 2010, 2011 and **2012**

NSCLC only	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2012										
Radical	12	21.8	12	20.7	37	21.3	59	16.3	120	18.5
Palliative	11	20.0	15	25.9	36	20.7	96	26.5	158	24.3
Total Radiotherapy	**23**	**41.8**	**27**	**46.6**	**73**	**42.0**	**155**	**42.8**	**278**	**42.8**
Total NSCLC patients	55		58		174		362		649	
2011										
Radical	10	20.0	11	15.9	20	14.8	68	18.1	109	17.3
Palliative	8	16.0	22	31.9	25	18.5	92	24.5	147	23.3
Total Radiotherapy	**18**	**36.0**	**33**	**47.8**	**45**	**33.3**	**160**	**42.6**	**256**	**40.6**
Total NSCLC patients	50		69		135		376		630	
2010										
Radical	10	19.2	11	14.1	34	23.3	68	18.0	123	18.8
Palliative	17	32.7	26	33.3	35	24.0	107	28.4	185	28.3
Total Radiotherapy	**27**	**51.9**	**37**	**47.4**	**69**	**47.3**	**175**	**46.4**	**308**	**47.1**
Total NSCLC patients	52		78		146		377		653	
2009										
Radical	10	25.6	24	35.8	34	18.2	69	18.3	137	20.4
Palliative	8	20.5	21	31.3	54	28.9	112	29.7	195	29.1
Not recorded	-	-	1	1.5	-	-	-	-	1	0.1
Total Radiotherapy	**18**	**46.1**	**46**	**68.6**	**88**	**47.1**	**181**	**48.0**	**333**	**49.6**
Total NSCLC patients	39		67		187		377		670	

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.

The rate of palliative radiotherapy is lower than NHS QIS guidelines but this is a consequence of the higher usage of radical radiotherapy, around 10% higher than recommended. This offers more patients a better chance of cure.

Chemotherapy: NSCLC

Table 21: Frequency of Chemotherapy: NSCLC
n=all patients diagnosed with **NSCLC** (pathology diagnosis) in **2009**, **2010, 2011** and **2012**

NSCLC	**Borders**		**D&G**		**Fife**		**Lothian**		**SCAN**	
2012	**n = 55**		**n = 58**		**n = 174**		**n = 362**		**n = 649**	
Chemotherapy	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
	14	25.5	22	37.9	54	31.0	84	23.2	174	26.8
2011										
Chemotherapy	15	30.0	18	26.1	38	28.1	92	24.5	163	25.9
2010										
Chemotherapy	14	26.9	20	25.6	42	28.8	93	24.7	169	25.9
2009										
Chemotherapy	16	41.0	21	31.3	45	24.1	98	26.0	180	26.9

Chemotherapy totals are derived from the whole 'treatment package' of NSCLC patients with *pathological* only diagnoses.

NHS QIS Standard 5d.2
A minimum of 20% of NSCLC patients receive chemotherapy.

This Standard is consistently achieved by all Health Boards in the SCAN region, with SCAN overall reporting 25.9 of NSCLC patients receiving chemotherapy in 2010.

Chemotherapy: SCLC

Table 22: Frequency of Chemotherapy for SCLC
n=all patients diagnosed with **SCLC** (pathology diagnosis) in **2009**, **2010, 2011** and **2012**

SCLC	**Borders**		**D&G**		**Fife**		**Lothian**		**SCAN**	
2012	**n = 10**		**n = 19**		**n = 35**		**n = 83**		**n = 147**	
Chemotherapy	n	**%**	n	**%**	n	**%**	n	**%**	n	**%**
	10	100.0	15	78.9	23	65.7	57	68.7	105	71.4
2011										
Chemotherapy	8	53.3	9	81.8	29	60.4	44	58.7	90	60.4
2010										
Chemotherapy	5	45.5	13	76.5	23	62.2	49	61.3	90	62.1
2009										
Chemotherapy	8	66.7	16	76.2	26	66.7	63	67.7	113	68.5

Chemotherapy totals are derived from the whole 'treatment package' of SCLC patients with *pathological* only diagnoses.

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

Figure (x) shows an analysis of performances of each health board and SCAN overall measured against Standard 5d.1 over the most recent three year period.

Treatment Mortality

Thirty Day Mortality after Surgery

Vital Status	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Alive at 30 days	9	100.0	9	90.0	35	94.6	94	100.0	147	98.0
Dead within 30 days	0	0.0	1	10.0	2	5.4	0	0.0	3	2.0
Total	9	100.0	10	100.0	37	100.0	94	100.0	150	100.0

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.

Thirty Day Mortality after Radiotherapy

Vital Status	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Alive at 30 days	23	100.0	20	100.0	58	98.3	97	99.0	198	99.0
Dead within 30 days	0	0.0	0	0.0	1	1.7	1	1.0	2	1.0
Total	23	100.0	20	100.0	59	100.0	98	100.0	200	100.0

Thirty Day Mortality after Chemotherapy

Vital Status	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Alive at 30 days	26	96.3	34	91.9	76	98.7	141	92.8	277	94.5
Dead within 30 days	1	3.7	3	8.1	1	1.3	11	7.2	16	5.5
Total	27	100.0	37	100.0	77	100.0	152	100.0	293	100.0

Comment:
All deaths within 30 days of Oncology treatment are reviewed by the SCAN Lead clinicians.

Appendices

Appendix 1: 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
Audit is the measurement and evaluation of care against best practice with a view to improving current practice and care delivery.

Biopsy
A biopsy is a small tissue sample taken for microscopic examination and diagnosis.

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.

Carcinoid
A carcinoid tumour is a rare, mostly slow growing, type of neuroendocrine tumour.

Case Ascertainment (Estimated)
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.

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.

COPD (Chronic Obstructive Pulmonary Disease)
Chronic Obstructive Pulmonary Disease is the name for a collection of lung diseases including chronic bronchitis, emphysema and chronic obstructive airways disease.

CT Guided Lung FNA / Biopsy
A Computed Tomography scan is used to accurately locate the abnormality and mark a spot on the chest through which the biopsy needle will be passed to obtain

FNA (fine needle aspirate/fluid) or biopsy for pathological diagnosis.

CT (Computed Tomography) 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.

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.

EUS-B
Endoscopic Ultrasound performed with EBUS scope allowing visualisation and sampling of para-oesophageal lymph nodes and/or masses. This procedure is performed by respiratory physicians.

ED or EXT SCLC (Extensive Small Cell Lung Cancer)
The cancer has spread outside the lung, within the chest area or to other parts of the body. TNM Stage IV is equivalent to extensive disease.

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.

LCNS (Lung Cancer Nurse Specialist)
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*].

LD or LTD SCLC (Limited Small Cell Lung Cancer)
Limited disease is cancer that can only be seen in one lung, in nearby lymph nodes or in fluid around the lung (pleural effusion). TNM Stages I, II and III aggregated are equivalent to limited disease.

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.

Mesothelioma
Mesothelioma is a type of cancer that most often starts in the covering of the lungs (pleural mesothelioma) but can also start in the abdomen (peritoneal mesothelioma).

Mixed NSCLC
Includes lung cancer with mixed NSCLC components e.g. adenosquamous.

Most Valid Basis of Diagnosis
This is the best evidence in support of the diagnosis of cancer. It is based on one or several pathological procedures or clinical investigations. Histological confirmation is considered the most valid basis of diagnosis.

Neoadjuvant Therapy
Treatment given as the first step to shrink the tumour prior to the main treatment.

Neuroendocrine Tumours
Neuroendocrine tumours (NETs) are rare cancers. The commonest type is carcinoid tumour, which grows most often in the appendix and small bowel, but may occur in other parts of the digestive system, 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 (www.ic.nhs.uk)

NR
Not Recorded.

NSCLC (Non-Small Cell Lung Cancer)
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.

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

Outcome
The end result of care and treatment and/or rehabilitation: 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.

PCI (Prophylactic Cranial Irradiation)
Radiation therapy to the brain to prevent cancer seeding.

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.

PS: (WHO [World Health Organisation] Performance Status)
Performance Status is an overall assessment of the functional/physical performance of the patient (see Appendix 2 for further details).

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

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

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

SCLC (Small Cell Lung Cancer)
A type of lung cancer in which the cells are small and round.

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

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 Appendices 3 and 4 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 Appendices 3 and 4).

Targeted Therapies
Forms of treatment becoming available that specifically target discrete abnormalities that may be present in molecular systems responsible for driving the malignancy of lung cancer cells.

Tumour
An abnormal mass of tissue. A tumour may be either benign (not cancerous) or malignant. A tumour is 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.

Appendix 2: Performance Status

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.
9	Not known

Appendix 3: TNM Classification

TNM Classification
(TNM Classification of Malignant Tumours, Seventh Edition, UICC, 2010)

T – Primary Tumour		
T0	**No evidence of primary tumour**	
Tx	**Unable to establish tumour extent despite positive cytology**	
Tis	**Carcinoma in situ**	
T1	**Tumour ≤3cm in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e. not in main bronchus)**	
	T1a	**≤ 2cm**
	T1b	**> 2cm but ≤ 3cm**
T2	**Tumour ≥ 3cm but not > 7cm; or tumour with any of the following:** o **Involves main bronchus ≥ 2cm distal to carina** o **Invades visceral pleura** o **Associated atelectasis or obstructive pneumonitis that extends to hilar region but doesn't involve entire lung**	
	T2a	**> 3cm but ≤ 5cm**
	T2b	**> 5cm but ≤ 7cm**
T3	**Tumour > 7cm OR with any of the following features:** o **Direct invasion of chest wall (including superior sulcus tumour), diaphragm, phrenic nerve, mediastinal pleura, parietal pleura or parietal pericardium** o **Tumour in the main bronchus < 2cm from main carina** o **Associated atelectasis or obstructive pneumonitis that involves the entire lung** o **Separate tumour nodule(s) in the same lobe as the primary**	
T4	**Tumour of ANY size with evidence of invasion of:** o **Mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, oesophagus, vertebral body, carina** o **Separate tumour nodule(s) in different lobe (ipsilateral) to primary tumour**	
N – Regional Lymph Nodes		
Nx	**Regional Lymph nodes cannot be assessed**	
N0	**No regional lymph node metastasis**	
N1	**Ipsilateral peribronchial and/or ipsilateral hilar and intrapulmonary lymph nodes, including by direct extension**	
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		
M0	**No distant metastasis**	
M1	**Distant Metastasis**	
	M1a	**Separate tumour nodule(s) in a contralateral lobe; tumour with pleural nodules or malignant pleural or pericardial effusion i.e. intrathoracic metastasis**
	M1b	**Distant metastasis i.e. extra thoracic metastasis**

Appendix 4: TNM Stage Groups

Stage Group	Tumour	Nodal	Metastases
Stage IA	T1a	N0	M0
	T1b	N0	M0
Stage IB	T2a	N0	M0
Stage IIA	T2b	N0	M0
	T1a	N1	M0
	T2a	N1	M0
Stage IIB	T3	N0	M0
	T1b	N1	M0
	T2b	N1	M0
Stage IIIA	T4	N0 or N1	M0
	T3	N1	M0
	T1a/T1b/T2a/T2b or T3	N2	M0
Stage IIIB	T4	N2	M0
	T1a/T1b/T2a/T2b/T3 or T4	N3	M0
Stage IV	T1a/T1b/T2a/T2b/T3 or T4	N0/N1/N2 or N3	M1a
	T1a/T1b/T2a/T2b/T3 or T4	N0/N1/N2 or N3	M1b

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