SCAN
South East Scotland Cancer Network

NHS SCOTLAND

Working regionally to improve cancer services

SOUTHEAST SCOTLAND CANCER NETWORK
PROSPECTIVE CANCER AUDIT

LUNG CANCER 2010
COMPARATIVE AUDIT REPORT

Dr Ron Fergusson, NHS Lothian
SCAN Lead Lung Cancer Clinician

Dr Jakki Faccenda, NHS Borders
Dr Paul Rafferty, NHS Dumfries & Galloway
Dr Colin Selby, NHS Fife

Ailsa Patrizio
SCAN Lung Cancer Audit Facilitator

Lynn Smith, Cancer Audit Facilitator, Borders
Martin Keith, Snr Cancer Information Officer, Dumfries & Galloway
Mimi Bjelorgrlic, Cancer Audit Assistant, Fife

SCAN Audit Office, c/o Department of Clinical Oncology,
Western General Hospital, Crewe Road, Edinburgh EH4 2XU
T: 0131 537 2266 W: **www.scan.scot.nhs.uk**
Alison.Allen@luht.scot.nhs.uk

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LUNG CANCER COMPARATIVE REPORT 2010
PATIENTS DIAGNOSED 01 JANUARY – 31 DECEMBER 2010

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 2010 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 (pages x – xii) 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 2008 and 2009 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 2010.

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 2010 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 Ailsa Patrizio, SCAN Audit Facilitator, SCAN Audit Office, c/o Dept of Clinical Oncology, Western General Hospital, Edinburgh. (ailsa.patrizio@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 Access databases in each centre.

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	CLINICIAN(S)	AUDIT SUPPORT
SCAN	**Dr R Fergusson** **SCAN Lead Clinician**	**Ailsa Patrizio** **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	Dr R Fergusson	Ailsa Patrizio (Lothian)
St John's Hospital at Howden, Livingston	Dr F Boellert, Dr D Noble, Dr T McCafferty	
New Royal Infirmary of Edinburgh	Dr K Skwarski	

Report Sign-Off
Version 4 (SCAN Report Index No: SA L02/12) has been signed off by Dr Ron Fergusson (NHS Lothian), Dr Jakki Faccenda (NHS Borders), Dr Paul Rafferty (NHS Dumfries & Galloway) and Dr Colin Selby (NHS Fife) [31 January 2012].

Actions for Improvement
The process following final sign-off is for the report to be sent to the Clinical Governance groups within the four health boards and to the Regional Cancer Planning Group. Action plans and progress with plans will be highlighted to the groups. The report will be 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

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 2010 who were treated in SCAN health boards. The report enables us to identify variation in compliance to agreed standards of care and where necessary to drive forward improvement to services and patient care.

The "traffic lights" Summary of Performance, showing our results against both Scottish NHS QIS Standards and UK NLCA Recommendations, has given a clear opportunity to consider specific points of difference and these are outlined in the report's Action Plan. This allows us to identify key areas and to take forward and implement changes where necessary:

- Lung cancer resection rates in early stage disease are slightly lower overall than the average in the UK (NLCA 7). In response to the SCAN data in 2009, an analysis of 2010 patients was carried out and the results are contained within this report (see pages 13-14). Consequently we have implemented prospective auditing at the time of the multi-disciplinary team (MDT) meeting. Taking this forward, the Action Plan this year will require ongoing surgical input and detailed discussions of patients of borderline operability by the MDT with a view to increasing the percentage of patients having surgical resection.

- We also need to review documentation of patients' access to Lung Cancer Nurse Specialists (LCNS) to ensure that all appropriate patients in SCAN are offered this service (NLCA 5).

- The continued collaboration of clinical and audit staff in reviewing results which fall short of current standards and recommendations is vital. For example, although we continue to record a near-miss in the percentage of histologically diagnosed patients (Standard 2a.1) we have to recognise that there are cases where meeting standards cannot be considered a foregone conclusion. Review of the data has shown that high case ascertainment linked with advanced stage at presentation, age and other co-morbidities mean that invasive procedures are sometimes less appropriate especially when treatment management will not be altered.

Ongoing collaboration between clinical and audit staff in reviewing data means that we can be confident in the accuracy of the results shown throughout this report. Regular audit reporting, using standards and recommendations as benchmarks of quality, has demonstrated consistency and improvements over time and many results shown within this report confirm our confidence in the quality of service provided across SCAN.

Scottish NHS QIS Standards for Lung Cancer are soon to be superseded by Quality Performance Indicators. I look forward to SCAN's participation (clinical and audit) in the development of QPIs. These indicators will be outcome focused and their main function will be to drive improvement in services and patient care.

For the fourth consecutive year, the three Scottish cancer networks have submitted data to the UK NLCA Report (http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/lung-cancer). Patients diagnosed in SCAN, NoSCAN and WoSCAN in 2010 are incorporated into the UK NLCA Report 2011, allowing direct comparisons between Scottish networks and with the rest of the UK. Overall SCAN (and Scotland) results for patients diagnosed in 2010 generally compare favourably with English and Welsh data with the exception of surgical resection rates for early stage disease. SCAN had already recognised the need to instigate change in this area and an action point had been included in the 2009 Report which has being carried forward in the 2010 Report as an area for further development (see bullet point 1 above).

I also welcome SCAN Audit's contribution to the Scottish Government's Detect Cancer Early (DCE) Initiative (breast, colorectal and lung cancer). Along with our colleagues in the other two Scottish cancer networks (NoSCAN and WoSCAN), we are providing baseline data to inform the DCE programme which seeks to increase early stage cancer diagnosis and treatment and improve survival.

Outcome of treatment is very important and is incorporated into our analyses and reporting. Treatment management is included within this report and a thirty-day mortality analysis following surgery, radiotherapy and chemotherapy is currently underway and will be reported separately. We will be contributing to the national networks' meeting in November 2012 when survival analysis will be reported.

I would like to thank all audit facilitators for their considerable commitment and hard work in collecting and analysing the data contained within this report, in particular Ailsa Patrizio, SCAN Cancer Audit Facilitator.

Thanks must also go to the lung cancer multi-disciplinary team: respiratory consultants; radiology and pathology consultants; thoracic surgery consultants; the Edinburgh Cancer Centre consultant oncologists and; to the Lung Cancer Nurse Specialist (LCNS) team for all their help and collaboration which has resulted in a very comprehensive report.

Dr Ron J Fergusson
Chair, SCAN Lung Group
January 2012

ACTION PLAN

The 'Action Plan' was introduced in the Lung Cancer Comparative Report in 2009 to encourage greater interaction between clinical and audit staff to maximise the use of audit data and make explicit the link between clinical audit and service improvement. Lung cancer teams (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.

	YEAR	POSSIBLE AREA FOR IMPROVEMENT	PROPOSED ACTION	WHICH CLINCIAL STANDARD WILL THIS MEET/ HOW WILL THIS IMPROVE PATIENT CARE	PROGRESS/ OUTCOME
I	2009	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.	NHS QIS Std 1a.3 To drive forward improvement so that patients can be seen quickly.	Under review
II	2009	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.	An analysis was carried out focusing on patients diagnosed in 2010 and the results are contained within this report (see pages 13-14). **Outcome**: prospective audit of reasons why no active treatment is given is to be recorded at MDT meeting. Surgical input is still required at Borders MDT meeting. Carried forward to 2010 – see III below.

	YEAR	POSSIBLE AREA FOR IMPROVEMENT	PROPOSED ACTION	WHICH CLINCIAL STANDARD WILL THIS MEET/ HOW WILL THIS IMPROVE PATIENT CARE	PROGRESS/ OUTCOME
III	2010	Increase the percentage of early stage lung cancer patients having surgical resection	Ensure all MDT meetings include input from surgeons. Ensure detailed discussions of patients of borderline operability by the MDT and the reasons why surgery is not the choice of treatment should be recorded.	NLCA (7): new recommendation introduced in UK NLCA Report 2011: "For early stage (I and II) disease, [surgical] rates below 52% should be reviewed". To increase rates of surgical resection for early stage lung cancer patients and increase patients' survival rates – surgery represents the main chance of cure and long-term survival.	
IV	2010	Documentation of access to Lung Cancer Nurse Specialists (LCNS).	Review documentation processes of patients' access to LCNS.	NLCA (5) To ensure that all appropriate patients in SCAN are offered and have access to LCNSs.	
V	2010	Increase the percentage of patients with histological diagnoses.	Review results which fall short of standards and recommendations.	NHS QIS 2a.1	Review of the data has shown that high case ascertainment linked with advanced stage at presentation, age and other comorbidities mean that invasive procedures are sometimes less appropriate especially when treatment management will not be altered.
VI	2010	TNM Stage recorded as 'near miss' in Dumfries & Galloway – improve recording process.	Ensure TNM staging is recorded at MDT meetings.	NHS QIS 4a.2 Staging is a key parameter in the selection of treatment management.	
VII	2010	Improve recording of PS in Dumfries & Galloway and Fife.	Ensure PS is recorded at MDT meetings.	NHS QIS 4a.3 PS is a key parameter in the selection of treatment management.	

	YEAR	POSSIBLE AREA FOR IMPROVEMENT	PROPOSED ACTION	WHICH CLINCIAL STANDARD WILL THIS MEET/ HOW WILL THIS IMPROVE PATIENT CARE	PROGRESS/ OUTCOME
VIII	2010	Percentage of surgical patients receiving wedge or segmentectomy.	Review reasons why fairly high percentage of surgical patients have received wedge or segmentectomy in Dumfries and Galloway.	NHS QIS Standard 5b.4	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 in these cases (see page 18).
IX	2010	Percentage of LD SCLC patients having chemotherapy and prophylactic cranial irradiation.	Review results which fall short of standards and recommendations.	NHS QIS Standard 5c.7	Review of the data has shown that age is a relevant factor. PCI 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.
X	2010	Percentage of patients receiving palliative radiotherapy.	Review results which fall short of standards and recommendations.	NHS QIS Standard 5c.8	Review of data has shown that the lower than recommended rate of palliative radiotherapy for NSCLC is a consequence of the higher usage of radical radiotherapy. This offers more patients the chance of cure.
XI	2010	Percentage of SCLC patients who receive chemotherapy.	Review results which fall short of standards and recommendations.	NHS QIS Standard 5d.1	An audit has been carried out in Lothian – see page 24 of this report for results.
XII	2010	Increase anti-cancer treatment rates, especially in Fife.	Multivariate analysis to be undertaken (age, sex, stage, deprivation, comorbidities and pathology).	NLCA (8). To increase the chance of cure and long-term survival.	

DOCUMENT HISTORY

Version	Circulation	Date	Comments
Version 1	SCAN Lung Group	26/10/2011	Draft report circulated to clinicians: Sub-group meeting 01 November 2011: discussion and analysis of results. Thirty-day mortality data was discussed and the analysis will be reported independently of this Report.
Version 2	SCAN Lung Group	Various from 08/11/2011	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	23/01/2012	Final sign-off prior to sending to Clinical Governance Groups and Regional Cancer Planning Group.
Version 4 SCAN Report Index No. SA L02/12	Clinical Governance Groups, Lead Managers and Chairs in the four health boards and to the SCAN Regional Cancer Planning Group.	March 2012 16/02/2012 19/06/2012	Circulated to RCPG Circulated to Health Board Clinical Governance contacts Ailsa Patrizio assessed the report for risk of disclosure of sensitive personal information for publication 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 it is anticipated that they will be introduced towards the end of 2011.

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 'measureable' but are service 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	2010	70.8%	98.9	98.9			9.1		45.5	26.9	
	2009	67.1%	100.0	100.0			-		66.7	41.0	
	2008	80.8%	82.2	90.4			-		71.4	26.9	
D&G	2010	88.8	84.1	78.5			21.4		76.5	25.6	
	2009	79.3	85.6	96.3			-		76.2	31.3	
	2008	76.0	79.0	63.0			7.1		100.0	36.2	
Fife	2010	66.5	93.1	86.2			8.0		62.2	28.8	
	2009	70.8	93.1	95.6			-		66.7	24.1	
	2008	66.1	92.4	97.8			3.7		55.9	25.1	
Lothian	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	
	2008	70.3	99.4	90.5			9.8		72.9	33.5	
SCAN	**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**	
	2008	**70.3**	**94.4**	**90.1**			7.2		**69.5**	**31.1**	

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: **A study has been carried out and will be reported independently of this report.**
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: **A study has been carried out and will be reported independently of this report.**

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	2010	-		19.2	32.7	51.9	100.0		100.0	
	2009	8.3		25.6	20.5	46.1	80.0		60.0	
	2008	n/a		n/a	n/a	n/a	75.0		75.0	
D&G	2010	-		14.1	33.3	47.4	100.0		33.3	
	2009	-		35.8	35.8	68.6	100.0		60.0	
	2008	n/a		n/a	n/a	n/a	n/a		n/a	
Fife	2010	-		23.3	24.0	47.3	62.5		37.5	
	2009	3.8		18.2	28.9	47.1	81.8		54.5	
	2008	n/a		n/a	n/a	n/a	77.8		77.8	
Lothian	2010	-		18.0	28.4	46.4	81.8		68.1	
	2009	1.6		18.3	29.7	48.0	57.6		42.4	
	2008	n/a		n/a	n/a	n/a	61.3		41.9	
SCAN	2010	**-**		**18.8**	**28.3**	**47.1**	**81.1**		**62.2**	
	2009	2.8		**20.4**	**29.1**	**49.6**	**68.5**		**48.1**	
	2008	n/a		**n/a**	**n/a**	**n/a**	**65.9**		**52.3**	

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: **A study has been carried out and will be reported independently of this report**.
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	2010	96.6	52.4	66.3
	2009	n/a	43.5	73.7
	2008	n/a	35.3	63.0
D&G	2010	86.0	76.5	69.2
	2009	n/a	31.8	70.3
	2008	n/a	42.1	68.0
Fife	2010	59.3	35.9	52.7
	2009	n/a	51.9	49.8
	2008	n/a	41.1	52.8
Lothian	2010	86.5	38.5	60.2
	2009	n/a	44.3	62.3
	2008	n/a	40.0	65.6
SCAN	2010	**80.6**	**42.2**	**59.7**
	2009	**n/a**	44.7	**60.4**
	2008	**n/a**	40.1	**62.0**

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 is estimated using the average of the most recent available five years (2005-2009) of Cancer Registry Data. In the most recent period an average of 1254 patients were diagnosed annually with lung cancer (ICD-codes: C33, C34) in the SCAN region.

Table 1: Estimated Case Ascertainment

Health Board	Cancer Registry Average	2010 n	2010 %	2009 n	2009 %	2008 n	2008 %
Borders	89	**89**	**100.0**	76	88.4	73	82.0
D&G	143	**107**	**74.8**	111	77.6	100	69.9
Fife	309	**275**	**89.0**	319	103.2	316	102.3
Lothian	713	**646**	**90.6**	664	90.6	617	86.5
SCAN	1254	**1117**	**89.0**	1170	93.3	1106	88.2

Source: Scottish Cancer Registry, ISD. Data extracted September 2011.

SCAN's estimated case ascertainment appears to have worsened compared with previous years. This is because the SCR 5-year average includes an unexpectedly high number of registrations for 2009. The reasons for this are being investigated.

The estimated case ascertainment for Dumfries & Galloway may be affected because some patients self-refer to A&E in Carlisle and therefore diagnosis and treatment occur in England. These patients are not recorded in audit though they will appear in Cancer Registration data which includes all patients resident within this area.

Table 2: Frequencies of Age at Diagnosis of Lung Cancer
n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
≤49	1	1.1	1	0.9	11	4.0	16	2.5	29	2.6
50-59	7	7.9	6	5.6	30	10.9	64	9.9	107	9.6
60-69	25	28.1	32	29.9	78	28.4	184	28.5	319	28.6
70-79	33	37.1	47	43.9	93	33.8	246	38.1	419	37.5
≥80	23	25.8	21	19.6	63	22.9	136	21.0	243	21.7
Total	**89**		**107**		**275**		**646**		**1117**	
Range	46-91		44-91		34-94		31-98		31-98	
Median	72		72		72		72		72	

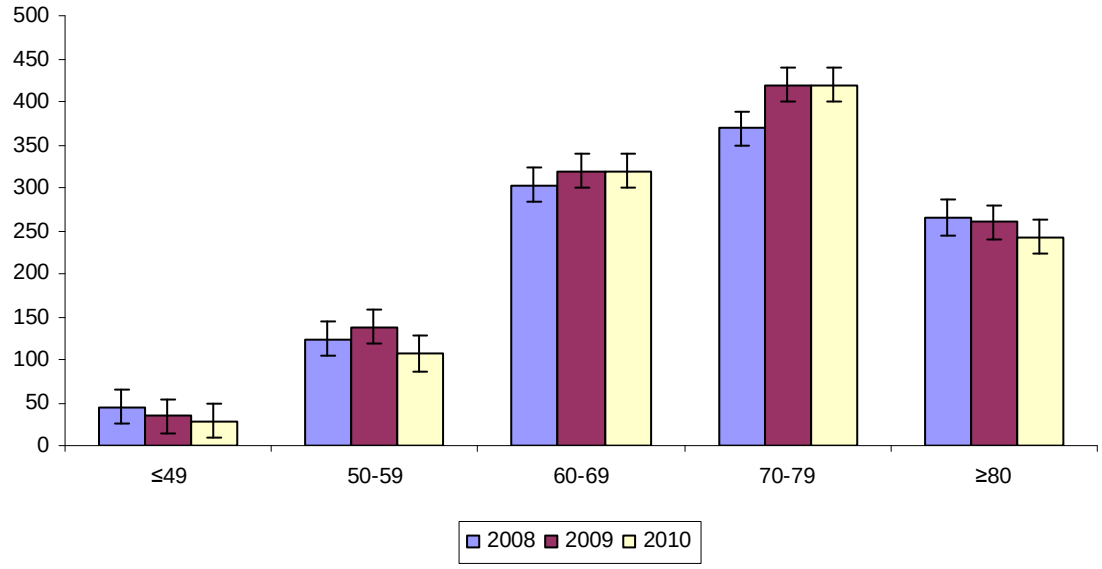
2009
n=all patients diagnosed with lung cancer in **2009**

	Borders	D&G	Fife	Lothian	SCAN
	n	n	n	n	n
Range	40-90	35-88	37-99	27-95	27-99
Median	71	71	72	72	72
Total	**76**	**111**	**319**	**664**	**1170**

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

	Borders	D&G	Fife	Lothian	SCAN
	n	n	n	n	n
Range	40-92	42-91	31-94	21-95	21-95
Median	72	71.5	72	72	72
Total	**73**	**100**	**316**	**617**	**1106**

Figure I: Distribution of Age at Diagnosis of Lung Cancer in SCAN



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

Multi-Disciplinary Approach

Table 3: Patients Presented to Multi-Disciplinary Team Meeting
n=all patients diagnosed with lung cancer in **2008**, **2009** and **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
	Presented at MDT Meeting									
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
2008	67	91.8	98	98.0	268	84.8	572	92.7	1005	90.9
	Not presented at MDT Meeting									
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
2008	6	8.2	2	2.0	48	15.2	45	7.3	101	9.1

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 MDT meetings.

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Contact	86	96.6	92	86.0	163	59.3	559	86.5	900	80.6
No contact	3	3.4	15	14.0	86	31.3	85	13.2	189	16.9
Not recorded	-	-	-	-	26	9.4	2	0.3	28	2.5
Total	**89**		**107**		**275**		**646**		**1117**	

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

This is the first year we have reported on patient contact with LCNS. Of those who have no contact with an LCNS, some will be directly referred to palliative care and will be seen by a Palliative CNS.

There is no Scottish Standard but performance, however, can be compared with UK NLCA recommendations (for England and Wales). While results overall are achieving the recommended level it appears that not all patients in SCAN are offered this service. Reasons for this, which may include recording issues, need to be reviewed.

ACTION PLAN: Review access to LCNS, including documentation.

DIAGNOSIS AND STAGING

Performance Status

Table 5: Performance Status and Recording Completeness 2008 – 2010
n=all patients diagnosed with lung cancer in **2008, 2009** and **2010**

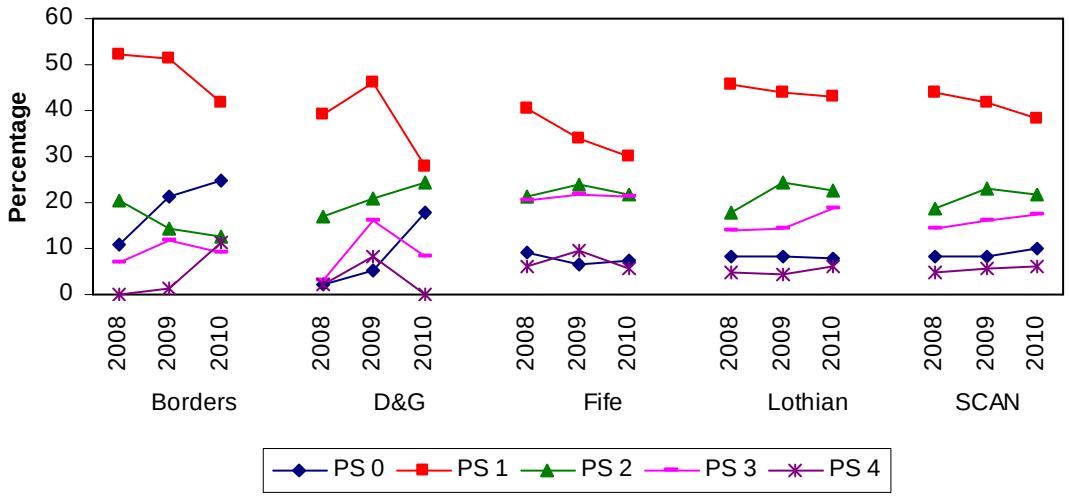
		Percentage PS Distribution & Overall Recording Completeness						
		PS 0 %	PS 1 %	PS 2 %	PS 3 %	PS 4 %	Not Recorded %	Recording Completeness %
Borders	2010	24.7	41.6	12.4	9.0	11.2	1.1	**98.9**
	2009	21.1	51.3	14.5	11.8	1.3	-	**100.0**
	2008	11.0	52.1	20.5	6.8	-	9.6	**90.4**
D&G	2010	17.8	28.0	24.3	8.4	-	21.5	**78.5**
	2009	5.4	45.9	20.7	16.2	8.1	3.7	**96.3**
	2008	2.0	39.0	17.0	3.0	2.0	37.0[1]	**63.0**
Fife	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**
	2008	9.2	40.5	21.2	20.6	6.3	2.2	**97.8**
Lothian	2010	7.7	43.2	22.6	18.7	6.3	1.4	**98.6**
	2009	8.3	44.0	24.2	14.2	4.2	5.1	**94.9**
	2008	8.4	45.7	17.8	13.9	4.7	9.5	**90.5**
SCAN	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**
	2008	**8.2**	**44.0**	**18.9**	**14.4**	**4.6**	**9.9**	**90.1**

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

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

ACTION PLAN: Ensure that PS is recorded at MDT meetings.

Figure II: Performance Status: Distribution by Health Board and SCAN 2008 to 2010



[1] D&G: In 2008, 37% NR represents 18% not recorded plus 17% missing data.

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. Furthermore, "the conclusion of a diagnosis of cancer may be based on one or several [pathological] procedures; clinical findings or as a report on the death certificate. 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 **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Histology	53	59.6	81	75.7	157	57.1	328	50.8	619	55.4
Cytology	10	11.2	14	13.1	26	9.4	129	20.0	179	16.0
Pathology	**63**	**70.8**	**95**	**88.8**	**183**	**66.5**	**457**	**70.7**	**798**	**71.4**
Imaging	*26*	*29.2*	*12*	*11.2*	*92*	*33.5*	*189*	*29.3*	*319*	*28.6*
Total	**89**		**107**		**275**		**646**		**1117**	

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

ACTION PLAN COMMENT: The rate of histological diagnosis, an important marker of good quality service, continues to run at a lowish rate ('near miss' of Standard) with considerable variability seen 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.

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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
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
Total	**76**		**111**		**319**		**664**		**1170**	

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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
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
Total	**73**		**100**		**316**		**617**		**1106**	

[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 2008 - 2010

n=all patients diagnosed (by pathology) with lung cancer in **2008**, **2009** and **2010**

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Bronchoscopy										
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
2008	21	35.6	37	48.7	107	51.2	108	24.9	273	35.1
CT Guided Lung FNA/Biopsy										
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
2008	31	52.5	32	42.1	55	26.3	134	30.9	252	32.4
EBUS										
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
2008	2	3.4	3	3.9	2	1.0	80	18.4	87	11.2
Other Biopsy[3]										
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
2008	5	8.5	4	5.2	45	21.5	112	25.8	166	21.3

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 and that all investigations used are acceptable in clinical practice.

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

Pathology Type

Table 8: Pathology Type: All Patients
n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Squamous	10	11.2	32	29.9	54	19.6	130	20.1	226	20.2
Adenocarcinoma	22	24.7	28	26.2	46	16.7	139	21.5	235	21.0
NSCLC (NOS)[4]	19	21.3	15	14.0	33	12.0	77	11.9	144	12.9
Other specific NSCLC	-	-	-	-	2	0.7	14	2.2	16	1.4
SCLC	11	12.4	17	15.9	37	13.5	80	12.4	145	13.0
Carcinoid	1	1.1	-	-	4	1.5	6	0.9	11	1.0
Combination of non-small cell components	-	-	3	2.8	-	-	-	-	3	0.3
Other Malignancy	-	-	-	-	7	2.5	11	1.7	18	1.6
Negative Pathology	1	1.1	5	4.7	13	4.7	45	7.0	64	5.7
No Pathology	25	28.1	7	6.5	79	28.7	144	22.3	255	22.8
Total	**89**		**107**		**275**		**646**		**1117**	

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 on 1st January 2010) but the categories remain broadly the same.

Table 8.1: Pathology Type: Comparative Table 2008 - 2010
n=all patients diagnosed with lung cancer in **2008**, **2009** and **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
NSCLC										
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
2008	52	71.2	69	69.0	175	55.4	364	59.0	660	59.7
SCLC										
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
2008	7	9.6	7	7.0	34	10.7	70	11.3	118	10.7
No & Negative Pathology										
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
2008	14	19.2	24	24.0	107	33.9	183	29.7	328	29.7

[4] NSCLC [NOS]: Non-small cell lung cancer [not otherwise specified]

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 (LD) or extensive (ED) disease. This report shows the revised and required TNM classification for SCLC but also uses the former limited and extensive categories, where appropriate. These are used as the basis for treatment management.

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 can be seen in Figure III.

Table 9: Staging: All Patients
n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
IA	8	9.0	9	8.4	18	6.5	63	9.7	98	8.8
IB	3	3.4	5	4.7	11	4.0	36	5.6	55	4.9
IIA	3	3.4	2	1.9	6	2.2	22	3.4	33	3.0
IIB	7	7.9	1	0.9	7	2.5	34	5.3	49	4.4
IIIA	10	11.2	13	12.1	43	15.6	87	13.5	153	13.7
IIIB	15	16.8	7	6.5	24	8.7	66	10.2	112	10.0
IV	42	47.2	53	49.5	147	53.5	330	51.1	572	51.2
NR	1	1.1	17	15.9	19	6.9	8	1.2	45	4.0
Total	**89**		**107**		**275**		**646**		**1117**	

Table 9.1: Stage Completeness
n=all patients diagnosed with lung cancer in **2008, 2009** and **2010**

Stage Completeness	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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
2008	60	82.2	79	79.0	292	92.4	613	99.4	1044	94.4

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.

ACTION PLAN: Ensure that all TNM staging is recorded at MDT meetings.

Stage Groups

Table 9.2: Stage Group: NSCLC

n = all patients diagnosed with NSCLC in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I & II	15	28.8	15	19.2	23	15.8	96	25.5	149	22.8
III	16	30.8	14	17.9	47	32.2	96	25.5	173	26.5
IV	21	40.4	39	50.0	70	47.9	184	48.8	314	48.1
NR	-	-	10	12.8	6	4.1	1	0.3	17	2.6
Total	**52**		**78**		**146**		**377**		**653**	

Table 9.3: Stage Group: SCLC

n = all patients diagnosed with SCLC in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I & II	-	-	-	-	3	8.1	7	8.8	10	6.9
III	4	36.4	3	17.6	7	18.9	20	25.0	34	23.4
Sub total (LD)	**4**	**36.4**	**3**	**17.6**	**10**	**27.0**	**27**	**33.8**	**44**	**30.3**
IV (or ED)	**7**	**63.6**	**11**	**64.7**	**25**	**67.6**	**51**	**63.8**	**94**	**64.8**
NR	-	-	3	17.6	2	5.4	2	2.5	7	4.8
Total	**11**		**17**		**37**		**80**		**145**	

Prior to 1st January 2010 SCLC was recorded as either limited (LD) or extensive (ED) disease. This report shows the revised and required TNM classification for SCLC but also uses the former limited and extensive categories in Table 9.3.

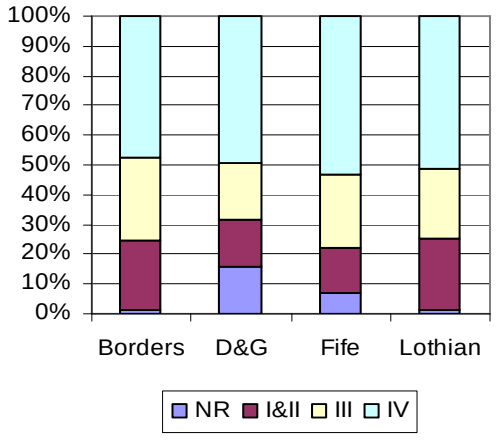
Table 9.4: Stage Group: Imaging Diagnoses (No and Neg Pathology)

n = all patients diagnosed via imaging in **2010**

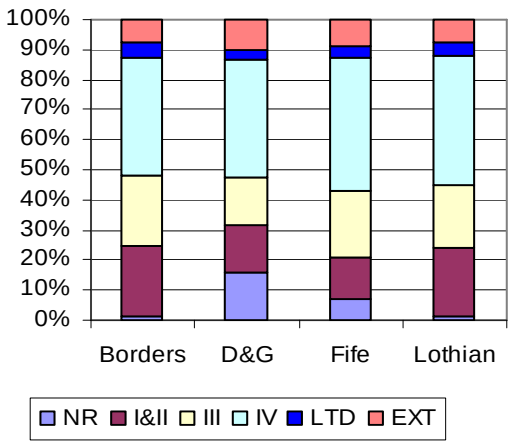
	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I & II	6	23.1	2	16.7	16	17.4	52	27.5	76	23.8
III	5	19.2	3	25.0	13	14.1	37	19.6	58	18.2
IV	14	53.8	3	25.0	52	56.5	95	50.3	164	51.4
NR	1	3.8	4	33.3	11	12.0	5	2.6	21	6.6
Total	**26**		**12**		**92**		**189**		**319**	

Figure III: Stage Distribution by Health Board 2010

IIIA: Stage by TNM classification only



IIIB: Stage by TNM (NSCLC & Imaging) and SCLC (Limited & Extensive)



TREATMENT MANAGEMENT

Anti-Cancer Treatment

Table 10: Frequency of Anti-Cancer Treatment: All Patients
n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Anti-cancer treatment[5]	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**	

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.

ACTION PLAN: A review of treatment options specifically for stage I & II NSCLC patients in Lothian is currently underway. Initial findings have demonstrated the need to prospectively audit why patients do not receive active treatment and this has been instigated (at the time of MDT meeting) and will be reported more fully once results are available.

A recent comorbidity study[6] 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 to be undertaken (age, sex, stage, pathology, comorbidity and deprivation) to investigate further. However, it should be noted that in a recent study: *Explaining variations in lung cancer in Scotland* [7], 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.

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**	

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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
Total	**73**		**100**		**316**		**617**		**1106**	

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

Table 11: Frequency of Potentially Curative and Palliative Treatment
n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Curative	29	32.6	31	29.0	74	26.9	185	28.6	319	28.5
Palliative	55	61.8	75	70.1	177	64.4	382	59.1	689	61.7
Died before treatment	4	4.5	-	-	19	6.9	43	6.7	66	5.9
Refused treatment	1	1.1	-	-	5	1.8	36	5.6	42	3.8
Not recorded	-	-	1	0.9	-	-	-	-	1	0.1
Total	**89**		**107**		**275**		**646**		**1117**	

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

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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	29	4.4	45	4.0
Not recorded	-	-	1	0.9	-	-	1	0.1	2	0.2
Total	**76**		**111**		**319**		**664**		**1170**	

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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	3	3.0	12	3.8	10	1.6	27	2.4
Not recorded	-	-	6	6.0	3	0.9	1	0.2	10	0.9
Total	**73**		**100**		**316**		**617**		**1106**	

Curative treatment rates are generally consistent across the three years reported. 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 first treatment and for the whole ‘treatment package’. Table 12 shows first treatment rates while subsequent treatment tables have focused on the whole treatment package, representing all treatment given: ‘first’, adjuvant, sequential chemo-radiation and additional palliative treatments.

Type of Treatment

Table 12: Type of Treatment (First Treatment Only) – All Patients – All Stages
n=all patients diagnosed with lung cancer in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	11	12.4	14	13.1	25[8]	9.0	77	11.9	127	11.3
Radical RT[9]	9	10.1	8	7.5	24	8.7	66	10.2	107	9.6
Chemoradiation	9	10.1	9	8.4	27	9.7	43	6.6	88	7.9
Chemotherapy	12	13.5	24	22.4	37	13.3	92	14.2	165	14.7
Palliative RT	18	20.2	18	16.8	34	12.3	111	17.2	181	16.2
Other treatment	-	-	1	0.9	-	-	-	-	1	0.1
BSC[10]	25	28.1	33	30.8	106	38.3	178	27.5	342	30.6
Refused treatment	1	1.1	-	-	5	1.8	36	5.6	42	3.7
Died before treatment	4	4.5	-	-	19	6.8	43	6.7	66	5.9
Total	**89**		**107**		**277**		**646**		**1119**	

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	12	15.8	8	7.2	32	10.0	85	12.8	137	11.7
Radical RT	10	13.1	15	13.5	19	6.0	62	9.3	106	9.1
Chemoradiation	11	14.5	20	18.0	31	9.7	47	7.1	109	9.3
Chemotherapy	13	17.1	16	14.4	39	12.2	111	16.7	179	15.3
Palliative RT	10	13.1	19	17.1	38	11.9	108	16.3	175	15.0
Other treatment	-	-	-	-	-	-	1	0.1	1	0.1
BSC	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	0.1	2	0.2
Total	**76**		**111**		**319**		**664**		**1170**	

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

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
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	5	6.8	7	7.0	24	7.6	56	9.1	92	8.3
Chemotherapy	11	15.1	19	19.0	39	12.3	120	19.4	189	17.1
Palliative RT	10	13.7	15	15.0	43	13.6	118	19.1	186	16.8
Other treatment	4	5.5	1	1.0	-	-	10	1.6	15	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	-	-	2	0.6	33	5.3	38	3.4
Not recorded	-	-	1	1.0	3	1.0	-	-	4	0.4
Missing data	-	-	1	1.0	2	0.6	-	-	3	0.3
Total	**73**		**100**		**316**		**617**		**1106**	

[8] FIFE 2010: 2 x surgery patients = 'open & shut'. Subsequent treatment given: 1 x chemoradiation & 1 x radical radiotherapy. Total number of patients for Fife = 277 (and SCAN as 1119) in Table 12 due to these 2 patients appearing as double entries.
[9] RT: Radiotherapy
[10] BSC: Best Supportive Care (No active treatment)

Treatment Management by Stage

Stage is based on stage at diagnosis, i.e. pre-treatment. 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 NSCLC and SCLC patients with imaging diagnoses in addition to those with pathology 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 **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	11	52.4	13	76.5	14	35.9	57	38.5	95	42.2
Radical RT	5	23.8	4	23.5	16	41.0	43	29.1	68	30.2
Chemoradiation	-	-	-	-	-	-	-	-	-	-
Chemotherapy	-	-	-	-	-	-	-	-	-	-
Chemo + pall RT	-	-	-	-	-	-	1	0.7	1	0.4
High dose pall RT	-	-	-	-	1	2.6	1	0.7	2	0.9
Low dose pall RT	2	9.5	-	-	1	2.6	2	1.4	5	2.2
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	2	9.5	-	-	7	17.9	28	18.9	37	16.4
Refused treatment	-	-	-	-	-	-	8	5.4	8	3.6
Died before treatment	1	4.8	-	-	-	-	8	5.4	9	4.0
Total	**21**		**17**		**39**		**148**		**225**	

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.

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.[11] 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.

ACTION PLAN

1. The 2009 Action Plan required that all MDT meetings include thoracic surgical input and acknowledged the role of the surgeon to influence resection rates.

   Surgical input at MDT meetings was found to be current practice in Lothian and Dumfries & Galloway. Teleconferencing of surgical input has been adopted in Fife. Currently there is no surgical input for Borders MDT meetings.

2. Explore surgery rates for NSCLC patients with stage I & II disease with a view to considering the role of 'risk appetite' and patients' operability level:

   The National Thoracic Surgery Activity and Outcomes Report 2011 acknowledges that discussions at MDT will undoubtedly produce conflicting opinions as to a patient's medical

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

fitness but maintains that a willingness to accept patients of borderline operability represents the main chance of cure and ultimately leads to long-term survival[12].

In the first instance, an analysis of treatment management of stage I & II NSCLC patients who were diagnosed and treated in Lothian in 2010 has been undertaken.[13]

- 70% of stage I & II patients in Lothian received active treatment.
- Those who did not receive active treatment had serious comorbidities or other major illnesses and were therefore not candidates for surgical intervention.
- Review of patients' notes demonstrated four main reasons why patients did not receive surgery:

Patient choice	5%	Comorbidities	30%
"Not surgical candidate"	30%	Reason not known	35%

The need to prospectively audit the reasons why all patients do not receive active treatment has been recognised. This has been implemented at MDT meetings in Lothian and other health boards in the SCAN region are being actively encouraged to adopt similar policy as part of the ongoing Action Plan.

The Action Plan proposed in this report will look at 'risk appetite' as part of MDT discussions and in addition will promote new (Borders) and continuing surgical input within the multi-disciplinary teams in the SCAN region.

Table 13.2: Treatment of Stage III NSCLC (pathology or imaging diagnoses)
n=all patients diagnosed NSCLC (pathologically or by imaging) – Stage III in **2010**

	Borders		**D&G**		**Fife**		**Lothian**		**SCAN**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	-	-	-	-	8	13.3	16	12.0	24	10.4
Surgery (open & shut)					2[14]				2	
Radical RT	4	19.0	3	17.6	6	10.0	16	12.0	29	12.5
Chemoradiation	5	23.8	5	29.4	16	26.7	19	14.3	45	19.5
Chemotherapy	1	4.8	-	-	4	6.7	2	1.5	7	3.0
Chemo + pall RT	2	9.5	-	-	1	1.7	9	6.8	12	5.2
High dose pall RT	1	4.8	2	11.8	4	6.7	9	6.8	16	6.9
Low dose pall RT	1	4.8	2	11.8	2	3.3	16	12.0	21	9.1
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	5	23.8	5	29.4	15	25.0	30	22.6	55	23.8
Refused treatment	1	4.8	-	-	1	1.7	10	7.5	12	5.2
Died before treatment	1	4.8	-	-	3	5.0	6	4.5	10	4.3
Total	**21**		**17**		**60**		**133**		**231**	

[12] The Society for Cardiothoracic Surgery in Great Britain & Ireland, *Second National Thoracic Surgery Activity & Outcomes Report, 2011*.
[13] Analysis by Mr Vipin Zamvar, Consultant Cardiothoracic Surgeon, NHS Lothian.
[14] In Fife, two patients were found, at the time of surgery, to be unsuitable for resection. These patients subsequently received alternative radical treatment (1x chemoradiation and 1 x radical radiotherapy) as primary treatment. These patients are therefore recorded twice in this table. The 2 recorded under 'Surgery (open & shut)' are not included in the totals for Fife or SCAN, nor are they represented in the percentage columns.

Table 13.3: Treatment of Stage IV NSCLC (pathology or imaging diagnoses)
n=all patients diagnosed NSCLC (pathologically or by imaging) – Stage IV in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	-	-	-	-	-	-	2*	0.7	2	0.4
Radical RT	-	-	-	-	1	0.8	4	1.4	5	1.0
Chemoradiation	-	-	-	-	3	2.5	-	-	3	0.6
Chemotherapy	3	8.6	5	11.9	8	6.6	33	11.8	49	10.3
Chemo + pall RT	5	14.3	9	21.4	9	7.4	24	8.6	47	9.8
High dose pall RT	2	5.7	1	2.4	4	3.3	5	1.8	12	2.5
Low dose pall RT	9	25.7	11	26.2	17	13.9	72	25.8	109	22.8
Other treatment	-	-	-	-	-	-	-	-	-	-
BSC	14	40.0	16	38.1	67	54.9	101	36.2	198	41.4
Refused treatment	-	-	-	-	2	1.6	18	6.5	20	4.2
Died before treatment	2	5.7	-	-	11	9.0	20	7.2	33	6.9
Total	**35**		**42**		**122**		**279**		**478**	

* Surgery is generally not a treatment option for stage IV lung cancer patients but in certain circumstances can be appropriate. One patient had a single brain metastasis resected and subsequently was suitable for surgical resection of their lung tumour. One patient had retrocrural nodes, was referred to surgery for investigation and/or resection. The patient received pneumonectomy and partial resection of the diaphragm.

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 **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Surgery	-	-	1	7.1	-	-	-	-	1	2.6
Radical RT	-	-	1	7.1	1	5.9	-	-	2	5.3
Chemoradiation	-	-	-	-	-	-	-	-	-	-
Chemotherapy	-	-	-	-	-	-	-	-	-	-
Chemo + pall RT	-	-	1	7.1	-	-	-	-	1	2.6
High dose pall RT	-	-	-	-	-	-	-	-	-	-
Low dose pall RT	-	-	1	7.1	1	5.9	-	-	2	5.3
Other treatment	-	-	1	7.1	-	-	-	-	1	2.6
BSC	1	100	9	64.3	9	52.9	5	83.3	24	63.2
Refused treatment	-	-	-	-	2	11.8	-	-	2	5.3
Died before treatment	-	-	-	-	4	23.5	1	16.7	5	13.2
Total	**1**		**14**		**17**		**6**		**38**	

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. Additionally there were 7 SCLC patients with stage not recorded and because numbers are very small, a separate table is not included here.

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 (LD) in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	-	-	-	-	1	10.0	1	3.7	2	4.5
ChemoRad[15] plus PCI	4	100	1	33.3	3	30.0	15	55.6	23	52.3
ChemoRad no PCI	-	-	2	66.7	2	20.0	2	7.4	6	13.6
Chemotherapy	-	-	-	-	3	30.0	4	14.8	7	15.9
Pall XRT only	-	-	-	-	1	10.0	2	7.4	3	6.8
Radical Radiotherapy	-	-	-	-	-	-	2	7.4	2	4.5
Best Supportive Care	-	-	-	-	-	-	1	3.7	1	2.3
Refused Treatment	-	-	-	-	-	-	-		-	
Died before Treatment	-	-	-	-	-	-	-		-	
Total	**4**		**3**		**10**		**27**		**44**	

Table 14.2: Treatment of SCLC – Extensive Disease (Stage IV)
n=all patients diagnosed SCLC (pathologically or by imaging) – Stage IV (ED) in **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
ChemoRad + PCI	-	-	-	-	-	-	4	7.8	4	4.3
ChemoRad no PCI	-	-	-	-	1	4.0	1	2.0	2	2.1
Chemotherapy	-	-	3	27.3	6	24.0	8	15.7	17	18.1
Chemo + PCI	-	-	1	9.1	-	-	-	-	1	1.1
Chemo + pall RT	1	14.3	4	36.4	6	24.0	12	23.5	23	24.5
Chemo + pall RT + PCI	-	-	-	-	-	-	1	2.0	1	1.1
Pall RT only	3	42.9	-	-	3	12.0	4	7.8	10	10.6
BSC	3	42.9	3	27.3	8	32.0	14	27.5	28	29.8
Refused treatment	-	-	-	-	-	-	-	-	-	
Died before treatment	-	-	-	-	1	4.0	7	13.7	8	8.5
Total	**7**		**11**		**25**		**51**		**94**	

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

[15] ChemoRad: Chemoradiation

SCLC (Limited Disease) – Oncology Treatment Management

Table 15.1: LD SCLC patients receiving chemotherapy and PCI.
n=all patients diagnosed with SCLC – Limited Disease in **2008**, **2009** and **2010** and receiving chemotherapy.

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total LD SCLC (2010)	**4**		**3**		**8**		**22**		**37**	
ChemoRad + PCI	4	100	1	33.3	3	37.5	15	68.1	23	62.2
Total LD SCLC (2009)	**5**		**5**		**11**		**33**		**54**	
ChemoRad + PCI	3	60.0	3	60.0	6	54.5	14	42.4	26	48.1
Total LD SCLC (2008)	**4**		**-**		**9**		**31**		**44**	
ChemoRad + PCI	3	75.0	-	-	7	77.8	13	41.9	23	52.3

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

ACTION PLAN COMMENT: 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.

Table 15.2: LD SCLC patients receiving chemotherapy and plus consolidation radiotherapy to chest
n=all patients diagnosed with SCLC – Limited Disease in **2008**, **2009** and **2010** and receiving chemotherapy.

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total LD SCLC (2010)	**4**		**3**		**8**		**22**		**37**	
Chemotherapy + radiotherapy to chest	4	100	3	100	5	62.5	18	81.8	30	81.1
Total LD SCLC (2009)	**5**		**5**		**11**		**33**		**54**	
Chemotherapy + radiotherapy to chest	4	80.0	5	100	9	81.8	19	57.6	37	68.5
Total LD SCLC (2008)	**4**		**-**		**9**		**31**		**44**	
Chemotherapy + radiotherapy to chest	3	75.0	-	-	7	77.8	19	61.3	29	65.9

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 has been consistently attained over the 3-year period.

ANTI-CANCER TREATMENTS

Surgery

Table 16: Frequency of Surgery
n=all patients diagnosed with lung cancer in **2008**, **2009** and **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total patients (2010)	**89**		**107**		**275**		**646**		**1117**	
Surgery	11	12.4	14	13.1	25[16]	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
Total patients (2008)	**73**		**100**		**316**		**617**		**1106**	
Surgery	9	12.3	14	14.0	27	8.5	61	9.9	111	10.0

Thoracic surgery is performed at the Royal Infirmary in Edinburgh 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 **2010**

	Borders		D&G		Fife		Lothian		SCAN	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Pneumonectomy	-	-	2	14.3	7	28.0	11	14.3	20	15.7
Lobectomy	9	81.8	9	64.3	14	56.0	63	81.8	95	74.8
Wedge or Segmentectomy	1	9.1	3	21.4	2	8.0	3	3.9	9	7.1
Other	1	9.1	-	-	2[17]	8.0	-	-	3	2.4
Total	**11**		**14**		**25**		**77**		**127**	

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 trisegmentectomy.

ACTION PLAN COMMENT: The percentage of wedge or segmentectomy in D&G (21.4%) in 2010 is higher than recommended by Standard 5b.4 and is substantially higher than rates recorded by other health boards in the network. However, data collection and analysis of small populations, where rates may greatly fluctuate from year to year, can create a degree of statistical instability. When aggregated, an average of 11.7% of patients received wedge or segmentectomy over a five year period (2006 – 2010) in D&G. Across the region, only 7.1% patients received wedge or segmentectomy in 2010.

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.

A *Thirty-Day Mortality after Surgery* study has been carried out and will be reported independently of this Report.

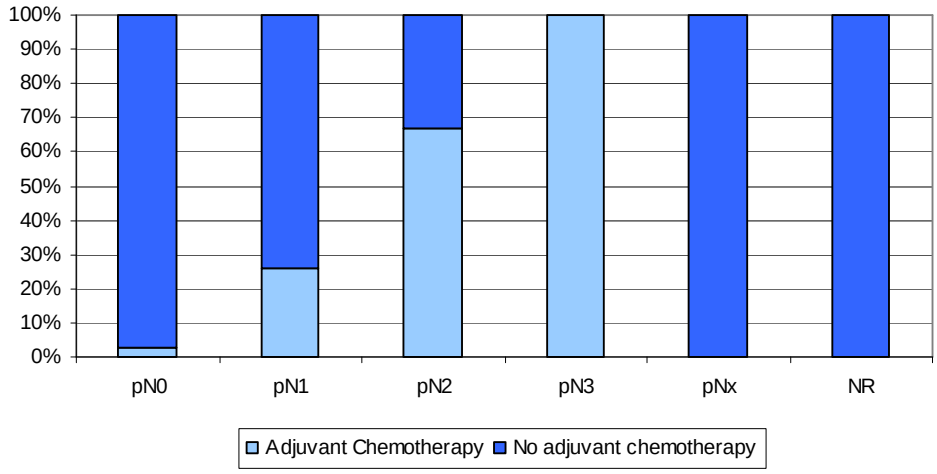
[16] FIFE 2010: 2 x surgery patients = 'open & shut'.
Subsequent treatment given: 1 x chemoradiation & 1 x radical radiotherapy.
[17] 'Other' Surgery: 2 patients were referred for surgery but resection was not appropriate: 'open & shut' surgery.

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[18] 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).

Figure IV: Adjuvant Chemotherapy based on Pathological N Stage
All surgery patients diagnosed in 2010 in SCAN

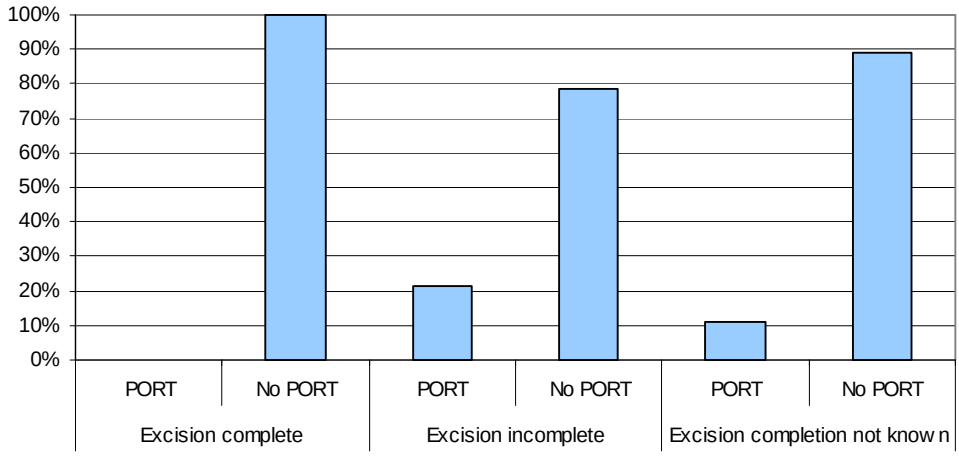


Post-Operative Radiotherapy (PORT)

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 V: Post-operative Radiotherapy (PORT) by Excision Completeness
All surgery patients diagnosed in SCAN in 2010



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

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

Resection completeness is measured following full macroscopic and histological examination of the specimen and excision is considered complete if no evidence of primary tumour is identified at the bronchial, vascular, mediastinal and, if appropriate, chest wall resection margins. In addition, metastatic carcinoma within hilar or mediastinal lymph nodes should not show evidence of extracapsular spread and the free visceral pleural surface should be free of tumour.

Radiotherapy

Table 20: Radiotherapy by Curative Potential: All Patients Receiving Radiotherapy
n=all patients receiving radiotherapy diagnosed with lung cancer in **2008**, **2009** and **2010**

ALL PATIENTS	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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	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
2008										
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

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

This is the second year of presenting data demonstrating performance against Standards 5c.4 and 5c.8. Comparison covers a two-year period.

Table 20.1: Radiotherapy by Curative Potential: NSCLC patients only
n=all patients diagnosed with NSCLC (pathology diagnosis) in 2009 and **2010**

NSCLC only	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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.

ACTION PLAN COMMENT: The rate of palliative radiotherapy is lower than NHS QIS guidelines in both years but this is a consequence of the higher usage of radical radiotherapy, around 10% higher than recommended in both years. This offers more patients the chance of cure. Overall radiotherapy delivery should be 45% to meet NHS QIS requirements (10% radical plus 35% palliative) and this is achieved in all health boards and SCAN.

Chemotherapy: NSCLC

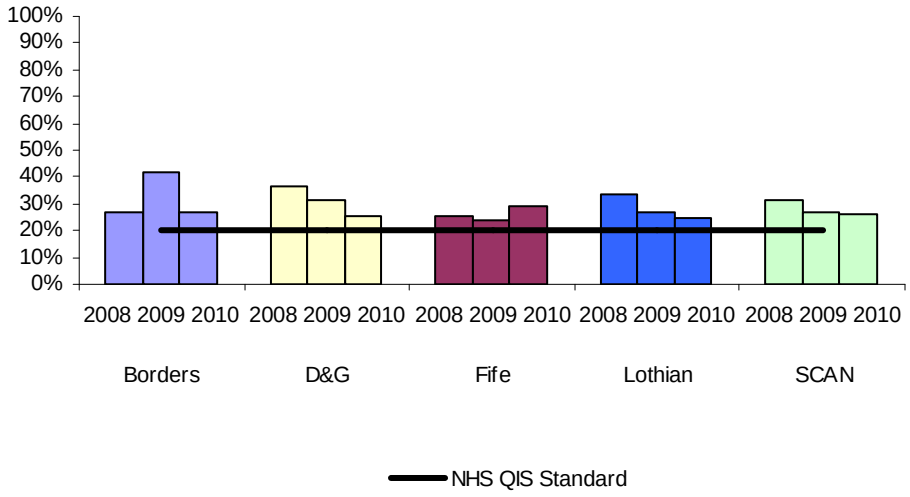
Table 21: Frequency of Chemotherapy: NSCLC
n=all patients diagnosed with **NSCLC** (pathology diagnosis) in **2008**, **2009** and **2010**

NSCLC	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
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
2008										
Chemotherapy	14	26.9	25	36.2	44	25.1	122	33.5	205	31.1

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.

Figure VI: Chemotherapy NSCLC by Health Board 2008 – 2010



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 **2008**, **2009** and **2010**

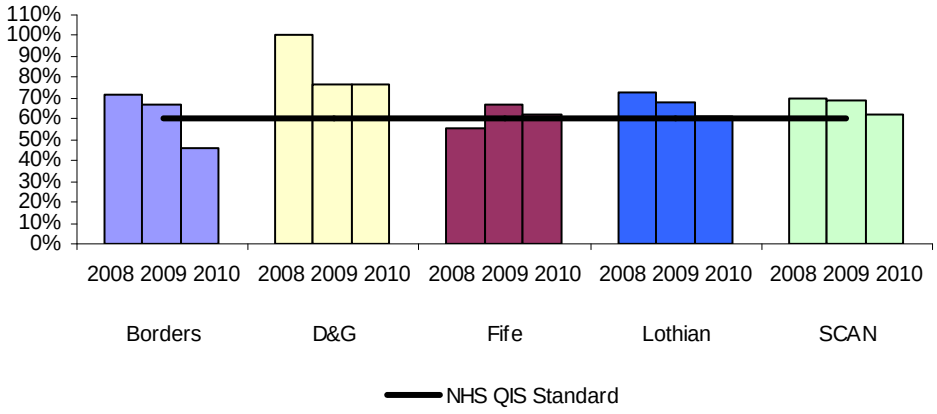
SCLC	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2010 Chemotherapy	5	45.5	13	76.5	23	62.2	49	61.3	90	62.1
2009 Chemotherapy	8	66.7	16	76.2	26	66.7	63	67.7	113	68.5
2008 Chemotherapy	5	71.4	7	100	19	55.9	51	72.9	82	69.5

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.

The Standard has been achieved in all but one health board in 2010. Figure VII shows an analysis of performances of each health board and SCAN overall measured against Standard 5d.1 over the most recent three year period.

Figure VII: Chemotherapy SCLC by Health Board 2008 – 2010



ACTION PLAN ANALYSIS
Over the current 3-year period a fall in the percentage of patients diagnosed with SCLC receiving chemotherapy has been noted. The NHS QIS Standard is no longer being met in Borders and a general decline in numbers is demonstrated. As part of SCAN's ongoing Action Plan audits were carried out in Lothian and Borders[19].

In Lothian in 2010 the audit showed 31 patients did not receive chemotherapy for SCLC. These patients were older, of poor performance status, had advanced stage disease (stage IV) and a tendency to more ischaemic heart disease compared to those that did not receive chemotherapy. Similarly, in Borders 6 patients who were diagnosed with SCLC and did not receive chemotherapy were found to be older and of poor performance status. These patients presented with extensive disease and liver metastases. 5 were seen by an oncologist in Borders.

[19] Lothian audit by Dr Melanie Mackean, Consultant Medical Oncologist, Edinburgh Cancer Centre: October 2011; Borders audit by Professor Allan Price, Consultant Clinical Oncologist, Edinburgh Cancer Centre January 2012.

Out of the 31 patients in Lothian, 10 were seen by an oncologist and all had clearly documented significant comorbidity or personal reasons for declining chemotherapy. Those who did not meet with an oncologist presented with poor performance status (3 or 4) and had a very poor survival from initial presentation.

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.

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.

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).

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.

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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