SCAN
South East Scotland Cancer Network

NHS SCOTLAND

Working regionally to improve cancer services

SOUTH EAST SCOTLAND CANCER NETWORK
PROSPECTIVE CANCER AUDIT

Lung Cancer 2016
QPI Comparative Audit Report

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DOCUMENT HISTORY

Version	Circulation	Date	Comments
Version 1	Lead Clinicians	15/11/2017	Draft results and outliers circulated
Version 2	SCAN Lung Group To present at Clinical Sign-off Meeting 19/12/2017.	19/12/2017	Amendments to be made as agreed at Clinical Sign-off Meeting. Additional outliers' comments will be required after further data analysis has been carried out.
Version 3	To Lead Clinician & SCAN Lung Group. Word document created and shared.	02/02/2018	For final comment by 16th February 2018
Version 4 Final SCAN Report Index	SCAN Lung Group SCAN Governance Framework SCAN Action Plan Board Leads	16/02/2018	Any potentially disclosive data to be removed prior to publication on SCAN Website.
Version 4.2	Not applicable	05/03/2018	Amendments prior to publication on SCAN Website.
Version 4W	Report published to SCAN Website	June 2019	

COMMENT BY CHAIR OF THE SCAN LUNG GROUP

SCAN Lung Cancer 2016 Quality Performance Indicators Comparative Report
Comment by Chair of the SCAN Lung Group

Once again it gives me great pleasure to present the Quality Performance Indicators (QPI) audit data for the Lung Cancer Service in South-east Scotland. This is for patients presenting, and being diagnosed, in the calendar year 2016. Such quality data underpins a quality service.

Data is collected, verified and checked by colleagues across the network as close to real time as possible. It is then reviewed annually and constructively discussed in a 'round table' multi-professional meeting. Additional work invariably arises before and after this to explore if not explain where the indicators are below thresholds. It is from this meeting and associated discussions that the narrating text in this report is generated. These case reviews are often a not insignificant burden of additional work but provide this report with suitable robustness.

Quality Performance Indicators are here to stay in the foreseeable future in Scotland. For lung cancer this 2016 report represents the fourth year of data collection. However these Indicators are not inflexible. They were initially generated by multi-professional national engagement. At their three-year review early 2017, comments from all interested parties were sought and a further national working group reviewed each indicator and all comments received. The organic nature of these Indicators was confirmed with some definitions changed, some Indicators removed in their entirety and others added. The whole process of Indicator data quality and implications for service were reviewed also at a National Assurance meeting early February 2017 which raised few points for action and none that remain unaddressed in South-east Scotland. The associated reports are available on the Healthcare Improvement Scotland website in the Cancer QPI section. Moreover QPIs for mesothelioma are now being drafted, indicating the importance of such as a means of both service assurance and review.

As you move through this document you will find Indicators that are well met, others that are now being achieved where as in the past there was some struggling. However, there are also Indicators which we are now finding difficult to attain. At least some of the shortfall in QPI 1 MDT relates to patients appropriately having a decision of best supportive care treatment made before an MDT. Some other tumour Indicators accept such a decision retrospectively sanctioned by such a meeting; this can be an appreciable proportion of our patients presenting with their lung cancer. Failing to reach a pathological diagnosis, QPI 2, in patients with extensive disease and poor performance who are not going to derive any therapeutic benefit from the pursuit of histology must remain clinically appropriate even if below an Indicator threshold.

This data has also been critiqued at a National tri-network meeting in October 2017. Such comparative performance reaffirms to me the very quality service we are delivering around the network. With many thanks to my colleagues involved in this work, we owe you all a deal of recognition.

Colin Selby,
Chair, SCAN Lung Group
January 2018

CLINICAL ACTION PLANS

KEY (Status)	
1	Action fully implemented
2	Action agreed but not yet implemented
3	No action taken (please state reason)

Clinical Action Plan 2016

2016 Lung Cancer QPI Action Plan (Yr 4)			
QPI	**Action required**	**Person Responsible**	**Date for update**
Clinical Trials	SCAN clinicians should ensure that they register trials with SCRN SCRN should share their lists of current open trials between the Networks to allow the possibility of cross network trial access.	All clinicians involved in clinical trials research Dorothy Boyle, SCRN Network Manager	Next SCAN Lung Group 11th May

Action Plan 2015

2015 Lung Cancer QPI Action Plan (Yr 3)			
QPI	**Action required**	**Progress**	**Status**
QPI 1	D&G to review individual cases not discussed prior to MDT and determine further action in order to achieve this QPI.	All cases were reviewed and no trends identified. All the patients who failed this QPI were emergency admissions either to general medicine or other specialities. The vast majority of the patients received treatment within 3 days of diagnosis and before the next Respiratory MDT.	1

Lung Cancer Attainment Summary 2016			Target%	Borders		D&G		Fife		Lothian		SCAN	
QPI 1 MDT discussion before definitive treatment			95	N 76 D 78	97.4%	N 97 D 114	85.1%	N 283 D 307	92.2%	N 524 D 549	95.4%	N 980 D 1048	93.5%
QPI 2 Pathological Diagnosis	All patients with lung cancers		80	N 52 D 78	66.7%	N 76 D 108	70.4%	N 199 D 307	64.8%	N 396 D 579	68.4%	N 723 D 1072	67.4%
	NSCLC with sub-type identified		90	N 35 D 38	92.1%	N 59 D 63	93.7%	N 145 D 161	90.1%	N 327 D 357	91.6%	N 566 D 619	91.4%
	Adenocarcinoma IIIB-IV & with predictive markers		75	N 11 D 16	68.8%	N 13 D 21	61.9%	N 45 D 54	83.3%	N 77 D 96	80.2%	N 146 D 187	78.1%
QPI 4 Patients being treated with curative intent to have a PET/CT before treatment			95	N 14 D 15	93.3%	N 27 D 27	100%	N 60 D 63	95.2%	N 164 D 166	98.8%	N 265 D 271	97.8%
*QPI 6 Surgical resection in NSCLC patients		All NSCLC	17	Analysis is by Hospital of Surgery: RIE						N 117 D 519	22.5%	N 117 D 519	22.5%
		NSCLC Stage I-II	50	Analysis is by Hospital of Surgery: RIE						N 111 D 163	68.1%	N 111 D 163	68.1%
*QPI 7 Lymph node assessment for NSCLC			80	Analysis is by Hospital of Surgery: RIE						N 84 D 101	83.2%	N 84 D 101	83.2%
QPI 8 Radiotherapy for inoperable lung cancer			15	N 11 D 20	55.0%	N 15 D 36	41.7%	N 42 D 91	46.2%	N 113 D 235	48.1%	N 181 D 382	47.4%
QPI 9 Chemoradiotherapy for locally advanced NSCLC			50	N 1 D 2	50.0%	N 5 D 6	83.3%	N 9 D 11	81.8%	N 13 D 21	61.9%	N 28 D 40	70.0%
QPI 10 Chemoradiotherapy for Limited (Ltd) SCLC			70	N 4 D 4	100%	N 0 D 0	n/a	N 2 D 3	66.7%	N 9 D 13	69.2%	N 15 D 20	75.0%
QPI 11 SACT for patients with inoperable NSCLC		All NSCLC	35	N 9 D 23	39.1%	N 17 D 45	37.8%	N 46 D 123	37.4%	N 85 D 224	37.9%	N 157 D 415	37.8%
		NSCLC stage IIIB-IV, PS 0-1	60	N 3 D 8	37.5%	N 4 D 11	36.4%	N 26 D 34	76.5%	N 39 D 67	58.2%	N 72 D 120	60.0%
QPI 12 SACT for patients with SCLC	All SCLC, all types of chemotherapy		70	N 9 D 11	81.8%	N 5 D 11	45.5%	N 20 D 30	66.7%	N 34 D 47	72.3%	N 68 D 99	68.7%
	SCLC patients for non curative treatment intent should receive palliative chemotherapy		50	N 3 D 5	60.0%	N 4 D 10	40.0%	N 15 D 24	62.5%	N 24 D 41	58.5%	N 46 D 80	57.5%

Lung Cancer Attainment Summary 2016			Target%	Borders	D&G	Fife	Lothian	SCAN
*QPI 13.1 30 Day Mortality After Treatment	*Surgery		<5	Analysis is by Hospital of Surgery: RIE			N 1 D 127 0.8%	N 1 D 127 0.8%
	Radical Radiotherapy		<5	N 0 D 13 0%	N 0 D 5 0%	N 0 D 27 0%	N 1 D 76 1.3%	N 1 D 121 0.8%
	Adjuvant Chemotherapy		<5	N 0 D 4 0%	N 0 D 1 0%	N 0 D 4 0%	N 0 D 5 0%	N 0 D 14 0%
	Chemoradiotherapy		<5	N 0 D 8 0%	N 0 D 12 0%	N 0 D 22 0%	N 0 D 52 0%	N 0 D 94 0%
	Palliative Chemotherapy (NSCLC)		<10	N 0 D 5 0%	N 0 D 4 0%	N 2 D 26 7.7%	N 2 D 35 5.7%	N 4 D 70 5.7%
	Palliative Chemotherapy (SCLC)		<15	N 0 D 3 0%	N 1 D 4 25.0%	N 0 D 14 0%	N 3 D 24 12.5%	N 4 D 45 8.9%
	Biological Therapy (NSCLC)		<10	N 0 D 2 0%	N 1 D 1 100%	N 0 D 4 0%	N 0 D 8 0%	N 1 D 15 6.7%
*QPI 13.2 90 Day Mortality After Treatment	*Surgery		<5	Analysis is by Hospital of Surgery: RIE			N 3 D 127 2.4%	N 3 D 127 2.4%
	Radical Radiotherapy		<5	N 1 D 13 7.7%	N 0 D 3 0%	N 0 D 25 0%	N 5 D 76 6.6%	N 6 D 117 5.1%
	Chemoradiotherapy		<5	N 2 D 8 25.0%	N 1 D 11 9.1%	N 2 D 19 10.5%	N 0 D 52 0%	N 5 D 90 5.6%
QPI Clinical Trials NB: N: patients enrolled in Trials and held on SCRN database D: 5 year average Cancer Registry patients		Interventional	7.5	N 0 D 92 0%	N 0 D 153 0%	N 1 D 333 0.3%	N 7 D 738 1%	N 8 D 1315 0.6%
		Translational	15	N 1 D 92 1.1%	N 0 D 153 0%	N 0 D 333 0%	N 9 D 738 1.2%	N 9 D 1315 0.7%

Target Met	Target Not Met	Not applicable

* D&G patients have surgery at Golden Jubilee Hospital, Clydebank and are therefore included in WOSCAN's report for these QPIs. All patients in Borders, Fife and Lothian have thoracic surgery at the Royal Infirmary of Edinburgh and are accumulated in this report and shown in the Attainment Summary table under "Lothian".

Note: Allowance should be made where small numbers and variation may be due to chance and manifest as disproportionate percentages; which can distort results both positively or negatively. These should be viewed with a degree of caution.

INTRODUCTION AND METHODS

Cohort

This report presents analyses of data collected on lung cancer patients who are newly diagnosed with lung cancer between 01 January 2016 and 31 December 2016 and who were treated in one of the four constituent health board areas; comprising South East Scotland Cancer Network (SCAN) – Borders, Dumfries & Galloway, Fife, Lothian and, the Cancer Centre in Edinburgh. The results are generally presented by NHS board of diagnosis except for surgical outcomes where they have been presented by hospital of surgery.

Datasets and Definitions

Quality Performance Indicators (QPIs) have been developed collaboratively with the three Regional Cancer Networks, Information Services Division (ISD), and Healthcare Improvement Scotland (HIS).

The overarching aim of the cancer quality work programme is to ensure that activity at NHS board level is focussed on areas most important in terms of improving survival and patient experience whilst reducing variance and ensuring safe, effective and person-centred cancer care. Following a period of development, public engagement and finalisation, each set of QPIs is published by Healthcare Improvement Scotland[1]. Accompanying datasets and measurability criteria for QPIs are published on the ISD website[2]. NHS boards are required to report against QPIs as part of a mandatory, publicly reported, programme at a national level.

The standard QPI format is shown below:

QPI Title:	Short title of Quality Performance Indicator (for use in reports etc.)	
Description:	Full and clear description of the Quality Performance Indicator.	
Rationale and Evidence:	Description of the evidence base and rationale which underpins this indicator.	
Specifications:	Numerator:	Of all the patients included in the denominator those who meet the criteria set out in the indicator.
	Denominator:	All patients to be included in the measurement of this indicator.
	Exclusions:	Patients who should be excluded from measurement of this indicator.
	Not recorded for numerator:	Include in the denominator for measurement against the target. Present as not recorded only if the patient cannot otherwise be identified as having met/not met the target.
	Not recorded for exclusion:	Include in the denominator for measurement against the target unless there is other definitive evidence that the record should be excluded. Present as not recorded only where the record cannot otherwise be definitively identified as an inclusion/exclusion for this standard.
	Not recorded for denominator:	Exclude from the denominator for measurement against the target. Present as not recorded only where the patient cannot otherwise be definitively identified as an inclusion/exclusion for this standard.
Target:	Statement of the level of performance to be achieved.	

QPIs are kept under regular review and as required are updated and, crucially, should be responsive to changes in clinical practice and emerging evidence. Baseline Review took place at the end of Year 1 when some changes were introduced – these are highlighted throughout this report as appropriate. Formal Review (covering the first 3 years of QPI reporting) took place on 9th September 2016. Two QPIs were archived: QPI 3 was adjudged to be surpassing aims and objectives with targets easily met by all regions. Secondly, since

[1] QPI documents are available at www.healthcareimprovementscotland.org
[2] Datasets and measurability documents are available at www.isdscotland.org

QPI 5 results were not reflecting actual clinical practice or achieving the intended terms of improvement, the review team agreed that this QPI should also be archived taking effect from Year 4 (2016) onwards. Where QPIs remain unchanged, the analyses are in line with the amended Measurability document: version 3.

At Formal Review some QPIs were amended and additional new ones introduced. For amended QPIs, there has been national agreement that reporting (for QPIs 2.3, 6, 8 and 11.2) should be aligned with Measurability v2.8 (for this year's analyses only) to ensure that there are no gaps in data analyses. New QPIs, which require new data fields, will be reported for patients diagnosed from 1st January 2017; when the revised Data Set (version 3.1) is implemented.

Audit Process

Patients are mainly identified through registration at weekly multi-disciplinary meetings, and through checks made against pathology listings, GRO records, and the LCNS database. Oncology data is available in patients' case notes and electronically via ARIA and Department of Clinical Oncology databases. Data capture is becoming more dependent on review of hospital electronic records systems but case notes are still accessed as required. Data is entered and interrogated on eSystems: TRAK in Lothian and eCase in Borders, Dumfries and Galloway and Fife.

Data is analysed by audit facilitators in each NHS board in line with measurability documentation provided by ISD. SCAN data has been collated by Ailsa Patrizio, SCAN Audit Facilitator for Lung Cancer.

Patients living closer to either Dundee or Carlisle may opt to have oncology treatment outwith the SCAN region or Scotland respectively. Collecting complete audit data for these patients remains a challenge.

Lead Clinicians and Audit Personnel

SCAN Region	Hospital	Lead Clinician	Audit Support
NHS Borders	Borders General Hospital (BGH)	Dr Simon Watkin	Lynn Smith
NHS Dumfries & Galloway	Dumfries & Galloway Royal Infirmary (DRI)	Dr Jane Gysin	Laura Allan
NHS Fife	Queen Margaret Hospital (QMH) Victoria Hospital (VHK)	Dr Colin Selby	Mimi Bjelorgrlic
NHS Lothian	Royal Infirmary of Edinburgh (RIE) Western General Hospital (WGH) St John's Hospital (SJH)	Dr K Skwarski	Ailsa Patrizio
SCAN & NHS Lothian	Edinburgh Cancer Centre (ECC)	Prof. Allan Price	

Acknowledgements

Thanks must go to the Lung Cancer Multi-Disciplinary Team: respiratory, radiology, pathology, cardio-thoracic surgery consultants, the Edinburgh Cancer Centre consultant oncologists, the lung cancer nurse specialists' (CNS) team, and to audit colleagues for their collaborations and enthusiasm which have resulted in a very comprehensive report. For a full list of those who have contributed to this report, see Appendix 6.

Data Quality

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 secondary health service.

Estimated Case Ascertainment is based on the most recent three year average available from Scottish Cancer Registry data and excludes death certificate only registrations.

Cases that have been diagnosed in the private sector but received any part of their treatment in NHS hospitals are included. High levels of case ascertainment provide confidence in the completeness of audit recording and contribute to the reliability of results presented.

In the most recent period (1st January to 31st December 2016) 1164 patients were diagnosed with lung cancer (ICD-codes: C33, C34) in the SCAN region.

Number of patients recorded in audit:

patients diagnosed 01/01/2016 to 31/12/2016

	Borders	D&G	Fife	Lothian	SCAN
Number of cases in audit cohort	81	116	320	647	1164

Estimate of case ascertainment: calculated using the average of the most recent available three years of Cancer Registry data (2014-2016)

	Borders	D&G	Fife	Lothian	SCAN
Number of cases from audit	81	116	320	647	1164
Cases from Cancer Registry (2014-2016)	92	153	333	738	1315
Case Ascertainment	**88.0%**	**75.8%**	**96.1%**	**87.7%**	**88.5%**

Source: Scottish Cancer Registry, ISD. Data extracted from ACaDMe: 30/01/2018

Quality Assurance

All hospitals in the region participate in the Quality Assurance (QA) programme provided by ISD Scotland. QA of the Lung data was carried out in November 2014 (2013 data) and the results show that the SCAN region is performing inline with the Scottish average.

	Borders	D&G	Fife	Lothian	Scotland
Accuracy of data recording (%)	99.4	99.0	99.5	98.8	99.5

Clinical Sign-off

This report compares current and historical data jointly and separately for each of the four SCAN health boards. The collated SCAN results are reviewed jointly by lead clinicians from SCAN health boards to assess variances and provide comments on results as per the following processes:

- Individual health board results were reviewed and signed-off locally.
- Collated results were presented and discussed at the SCAN Lung Sign off Meeting on 19th December 2017, at which point clinical recommendations were agreed.
- Data for Borders, D&G and Fife were submitted to ISD on 25th August 2017 for inclusion in the Lung Cancer National Report.
- Collated results from health boards across Scotland (excepting NHS Lothian) were presented at the Scottish Lung Cancer Forum Meeting, 6th October 2017.
- The final draft, complete with agreed amendments from the sign off meeting on 19th December, was circulated to the SCAN Lung Group on 2nd February 2018 for final comments.
- The Final report was circulated to the SCAN Lung Group and Clinical Governance Groups on 16th February 2018.
- The report will be placed on the SCAN website once it has been fully signed-off and checked for disclosive material.

Actions for Improvement

Lung cancer teams in SCAN (clinicians, nurses, and audit staff) work collaboratively to review data regularly to identify possible areas for improvement and to actively participate to drive improvements and, where appropriate, make changes to the ways care is delivered. Action plans and progress with plans are completed at health board level.

QUALITY PERFORMANCE INDICATORS
Diagnosis And Staging Investigations

QPI 1 Multi-disciplinary Team (MDT) Meeting - Target = 95%

Numerator = Number of patients with lung cancer discussed at MDT before definitive treatment

Denominator = All patients with lung cancer

Exclusions = Patients who died before first treatment

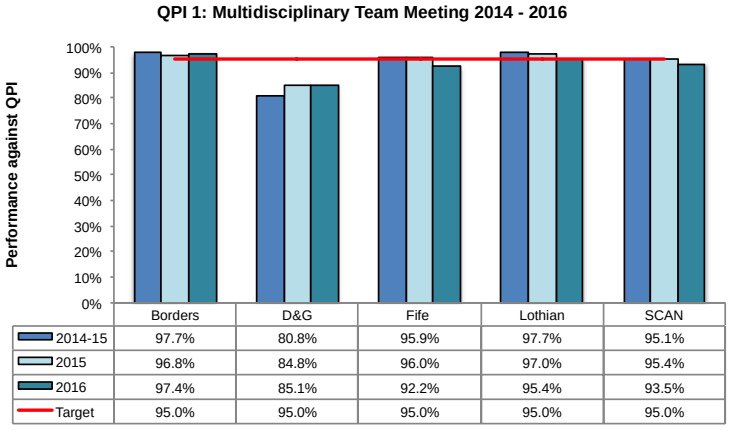
Target 95%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI[3]	3	2	13	98	116
Numerator	76	97	283	524	980
Not recorded for numerator	0	0	0	0	0
Denominator	78	114	307	549	1048
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**97.4%**	**85.1%**	**92.2%**	**95.4%**	**93.5%**

Comments

The target was met in NHS Borders and NHS Lothian.

NHS D&G: The target was not met in D&G with a shortfall of 9.9% (17 cases). A treatment plan for Best Supportive Care (BSC) was made prior to MDT for 11 patients; 3 received emergency radiotherapy for spinal cord compression prior to MDT; and a further 3 patients, who were identified from death register and not known to respiratory had received BSC; all patients were appropriately managed.

NHS Fife: The target was not met in Fife with a shortfall of 2.8% (24 cases). Prior to MDT discussion, 8 patients had urgent radiotherapy while 1 patient with small cell lung cancer (SCLC) required urgent chemotherapy. BSC on ward and the early involvement of the palliative care team affected a further 15 cases. Although these decisions were made prior to MDT, they were ratified at subsequent MDT meetings.



	Borders	D&G	Fife	Lothian	SCAN
2014-15	97.7%	80.8%	95.9%	97.7%	95.1%
2015	96.8%	84.8%	96.0%	97.0%	95.4%
2016	97.4%	85.1%	92.2%	95.4%	93.5%
Target	95.0%	95.0%	95.0%	95.0%	95.0%

Data relating to MDT meetings were not collected as part of the QPI Programme in 2013-14. No comparable data are therefore available for Year 1.

Although treatment decisions in some cases were made prior to MDT, most were ratified at subsequent MDT meetings; ensuring that all patients were appropriately managed. Urgent indication of treatment, for example, emergency radiotherapy for spinal cord compression, additionally represents good practice.

[3] Ineligible for analysis refers to those cases where data does not meet the denominator criteria; the ineligible figure, in addition, includes relevant exclusions (e.g. died before treatment) as laid out in QPI definitions.

QPI 2 Pathological Diagnosis

2.1 Pathological Diagnosis of Lung Cancer – Target = 80%

Numerator = Number of patients with lung cancer who have a pathological diagnosis (including following surgical resection)

Denominator = All patients with lung cancer

Exclusions = All patients who refuse investigations or surgical resection

Target 80%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	3	8	13	34	58
Numerator	52	76	199	396	723
Not recorded for numerator	0	0	0	0	0
Denominator	78	108	307	579	1072
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**66.7%**	**70.4%**	**64.8%**	**68.4%**	**67.4%**

Comment

At Formal Review it was agreed to amend the exclusions category and to remove the clause *patients receiving supportive care*. As a consequence this has resulted in a proportionately higher denominator than in previous years. Additionally the target was increased from 75% to 80%.

NHS Borders: The target was not met with a shortfall of 13.3% (26 cases). Tissue could not be obtained due to patient comorbidities and/or poor fitness levels. .

NHS D&G: The target was not met with a shortfall of 9.6% (32 cases). Tissue could not be obtained due to patient comorbidities and/or poor fitness levels.

NHS Fife: The target was not met with a shortfall of 15.2% (108 cases). Tissue could not be obtained for 76 patients due to poor fitness levels (PS 3-4). For 24 patients with PS 0-2, comorbidities precluded any invasive procedures. The remaining 8 patients had negative pathology.

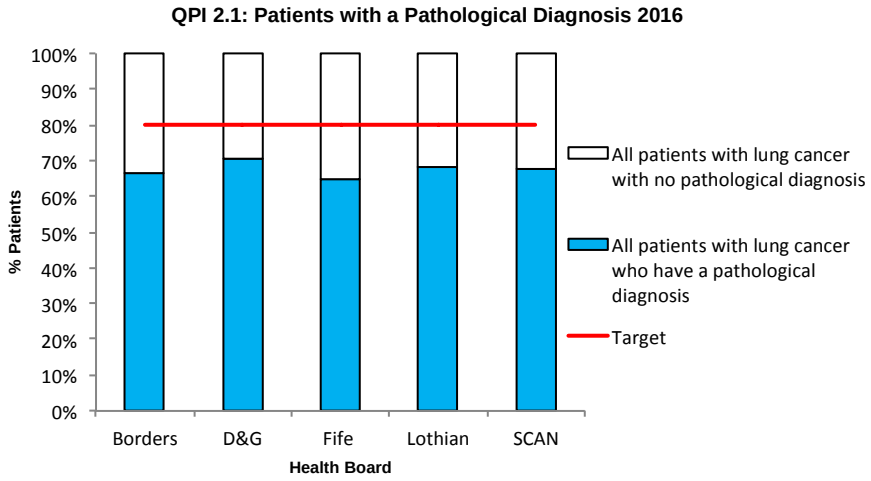
NHS Lothian: The target was not met with a shortfall of 11.6% (183 cases). Of these, 29 had negative pathology and all of the remaining patients were unsuitable for invasive procedures due to poor fitness levels and/or comorbidities.

Not only was the target not met in SCAN; similar decreases in percentage performance were evidenced across Scotland.

SCAN health boards' results from previous years, where the target was 75% and BSC patients were excluded from analyses, yielded expected results:

% Performance in previous years	Borders	D&G	Fife	Lothian	SCAN
2015	79.4%	91.3%	82.1%	76.5%	79.3%
2014/15	87.5%	89.3%	79.8%	94.4%	89.6%
2013/14	83.3%	90.5%	80.8%	84.2%	83.9%

Comparison cannot be made with previous years' data due to the amendments made at Formal Review (mainly to remove BSC from exclusions). Consequently only 1 year's data (2016) is shown.



At the end of Year 4 QPI data from across Scotland was reported and discussed at the Scottish Lung Cancer Forum (SLCF)/National Meeting on 6th October 2017. QPI 2.1 was discussed at length and a proposal to extend exclusions to patients with Performance Status 4 was raised. This, and the role of BSC, will be discussed in more detail at future QPI review.

For information a table has been produced showing percentage performance by health board in SCAN and with consideration to three options:

QPI 2.1: Amended Exclusion Criteria	Borders	D&G	Fife	Lothian
BSC removed from exclusions as per 2016 Exclusions: *Patients who refuse investigations or surgical resection.*	66.7%	70.4%	64.8%	66.1%
Exclusions: *Patients who refuse investigations or refuse surgical resection* ***or receive BSC***	74.5%	90.3%	85.6%	80.7%
Exclusions: *Patients who refuse investigations or refuse surgical resection* ***or have PS 4***	70.8%	69.2%	68.2%	68.4%

Interestingly results support reinstating *patients receiving supportive care* as an appropriate exclusion. It is viewed as inappropriate/not best practice to biopsy patients who are not fit (poor PS) or, for those with significant comorbidities whose treatment management is likely supportive care only. Another influencing factor could be the location of the tumour, making biopsy possible or not.

2.2 Pathological Diagnosis of NSCLC: Sub-type Identified – Target = 90%

Numerator = Number of patients with a pathological diagnosis of NSCLC[4] who have a tumour sub type identified.[5]

Denominator = All patients with a pathological diagnosis of NSCLC.

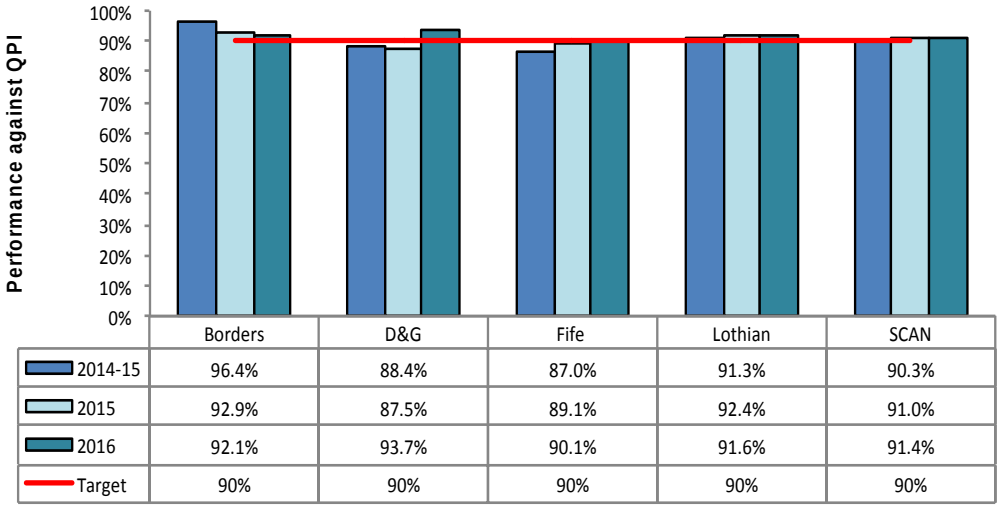
Exclusions = None

Target 90%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	43	53	159	290	545
Numerator	35	59	145	327	566
Not recorded for numerator	0	0	0	0	0
Denominator	38	63	161	357	619
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**92.1%**	**93.7%**	**90.1%**	**91.6%**	**91.4%**

Comments

The target was met by all Boards in 2016.

QPI 2.2 NSCLC with Tumour Sub-Type Identified 2014-2016



	Borders	D&G	Fife	Lothian	SCAN
2014-15	96.4%	88.4%	87.0%	91.3%	90.3%
2015	92.9%	87.5%	89.1%	92.4%	91.0%
2016	92.1%	93.7%	90.1%	91.6%	91.4%
Target	90%	90%	90%	90%	90%

Changes were made to QPI 2.2 at Baseline Review (end of Year 1). In Year 1 sub-types were identified as Squamous or Adenocarcinoma. In Year 2 it was agreed to extend the selection to include Code 14: Other Specific NSCLC[6]. Comparisons are made over three years and Year 1: 2013-14 is not included.

[4] NSCLC = Squamous, Adenocarcinoma, NSCLC (Not Otherwise Specified, (NOS)) and Other Specific NSCLC. *QPI Measurability Document, Version 2.6*: ISD Scotland.
[5] NSCLC sub types = Squamous, Adenocarcinoma, Other Specific NSCLC as specified in *Lung Cancer Measurability of Quality Performance Indicators, Version 2.6*: ISD Scotland: 2015.
[6] Code 14: Salivary-type carcinomas, large cell carcinoma, neuroendocrine, pleomorphic, sarcomatoid and anaplastic carcinomas.

2.3 Adenocarcinoma, Stage IIIB or VI: Molecular Profiling Analysis – Target = 75%

Numerator = Number of patients with a pathological diagnosis of Adenocarcinoma NSCLC, Stage IIIB or IV who have molecular profiling tests[7] undertaken

Denominator = All patients with a pathological diagnosis of Adenocarcinoma NSCLC, Stage IIIB or IV

Exclusions = Patients with Performance Status (PS) 4

Target 75%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	65	92	266	550	973
Numerator	11	13	45	77	146
Not recorded for numerator	0	0	0	0	0
Denominator	16	21	54	96	187
Not recorded for exclusions	0	4	0	0	4
Not recorded for denominator	0	3	0	1	4
% Performance	**68.8%**	**61.9%**	**83.3%**	**80.2%**	**78.1%**

Comments

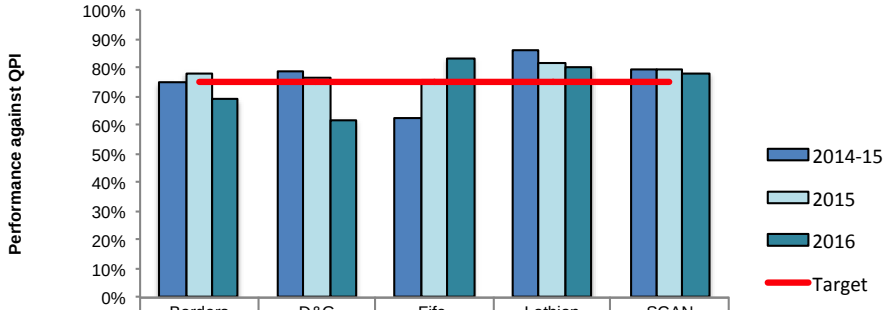
The target was met in NHS Fife and NHS Lothian.

NHS Borders: The target was not met with a shortfall of 6.2% (5 cases). In 2 cases there was insufficient tissue for analysis; another patient died of pneumonia; 1 received urgent chemotherapy while the remaining patient declined chemotherapy in favour of palliative radiotherapy.

NHS D&G: The target was not met with a shortfall of 13.1% (8 cases). Insufficient samples for testing occurred in 4 cases; curative treatment management was agreed for a patient with brain metastasis, and as such EGFR testing was not appropriate; another patient was unfit for any treatment; and testing had to be cancelled when 2 patients died before testing had taken place.

Testing tumours for markers or gene mutations prior to treatment provides the opportunity to take advantage of targeted chemotherapy-based treatments. Targeted therapy is a standard of care that supports personalised medicine and is regarded as 'the selection of the best treatment for each patient on an individual basis'.

QPI 2.3 Adenocarcinoma Stg IIIB-IV: An Analysis of Predictive Markers 2014-2016



	Borders	D&G	Fife	Lothian	SCAN
2014-15	75.0%	78.9%	62.2%	85.8%	79.6%
2015	77.8%	76.2%	75.6%	81.7%	79.2%
2016	68.8%	61.9%	83.3%	80.2%	78.1%
Target	75%	75%	75%	75%	75%

[7] QPI 2 (iii) relates to only one type of molecular profiling: EGFR (Epidermal Growth Factor Receptor). It is acknowledged by the QPI Development and Baseline Review Teams that EGFR is only one of several markers and other genetic mutations such as ALK or PD-L1, will be included under this QPI in future reporting.

QPI 4 PET CT in Patients being treated with Curative Intent – Target 95%

Numerator = Number of patients diagnosed with NSCLC who are treated with curative intent[8] who undergo PET CT prior to start of treatment

Denominator = All patients diagnosed with NSCLC who are treated with curative intent

Exclusions = None

Target 95%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	66	89	257	481	893
Numerator	14	27	60	164	265
Not recorded for numerator	0	0	0	0	0
Denominator	15	27	63	166	271
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**93.3%**	**100.0%**	**95.2%**	**98.8%**	**97.8%**

Comments

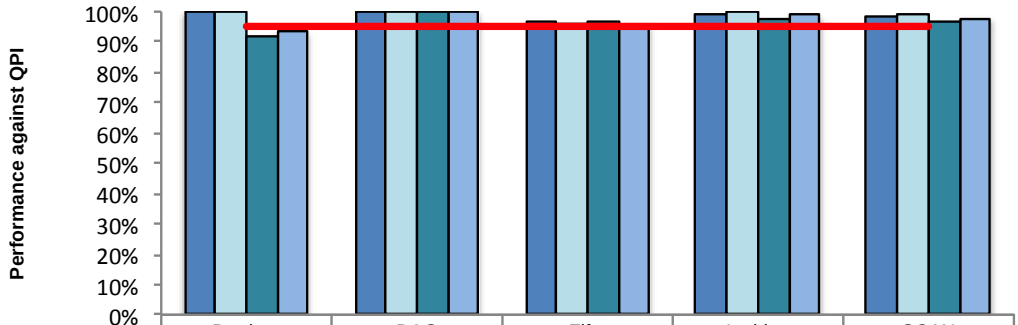
PET scanning is important in the management of lung cancer. It is appropriate in the investigation of solitary pulmonary nodules to determine malignant potential and, is essential in the assessment of occult metastases in patients being considered for radical treatment.

The target was met by all Boards in 2016 except NHS Borders.

NHS Borders: The target was not met with a shortfall of 1.7% (1 case). This result reflects the effects that small numbers can have. PET CT was not booked because the patient required urgent radical radiotherapy and this treatment took precedence.

In reviewing results, allowance should be made where small numbers and variation may be due to chance. No action is required in this instance.

QPI 4 PET CT in Patients being Treated with Curative Intent 2013-2016



	Borders	D&G	Fife	Lothian	SCAN
2013-14	100.0%	100.0%	96.9%	98.9%	98.6%
2014-15	100.0%	100.0%	95.9%	100.0%	99.0%
2015	91.7%	100.0%	96.8%	97.2%	97.1%
2016	93.3%	100.0%	95.2%	98.8%	97.8%
Target	95%	95%	95%	95%	95%

[8] Curative Intent/Treatment = Surgical Resection, Radical Radiotherapy (including SABR) or Chemoradiotherapy.

TREATMENT MANAGEMENT

QPI 6 Surgical Resection in NSCLC

6.1 NSCLC and Surgical Resection – Target = 17%

Numerator = Number of patients with NSCLC who undergo surgical resection

Denominator = All patients with NSCLC

Exclusions = Patients who refuse surgery and patients who die before surgery

(a) By Hospital of Surgery

Target 17%	**Royal Infirmary of Edinburgh**
2016 cohort	1048
Ineligible for this QPI	529
Numerator	117
Not recorded for numerator	0
Denominator	519
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**22.5%**

Comments

In the SCAN region, lung cancer surgical procedures are carried out at the Royal Infirmary of Edinburgh for patients diagnosed in Borders, Fife and Lothian and are included in table (a). The target was met in 2016 and no action is required.

Patients diagnosed with lung cancer in NHS D&G have surgery at the Golden Jubilee Hospital, Clydebank and are included in WOSCAN's reporting. There were a total of 9 out of a possible 13 patients from D&G that had surgery. These are also accounted for within SCAN in table (b) below, by board of diagnosis. It was agreed at the SCAN QPI Lung Cancer Comparative Report Sign-Off Meeting, December 2017, to include analyses by Board of Diagnosis. It should be noted, however, that the following Board-based table is not subject to QPI targets or action plans. These results are included, simply, for information purposes:

(b) By Board of Diagnosis

Target n/a	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	45	54	165	319	583
Numerator	8	12	31	78	129
Not recorded for numerator	0	0	0	0	0
Denominator	36	62	155	328	581
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**22.2%**	**19.4%**	**20.0%**	**23.8%**	**22.2%**

% Performance in previous years	Borders	D&G	Fife	Lothian	SCAN
2015	25.0%	23.8%	17.9%	25.1%	23.1%
2014/15	25.5%	18.8%	21.7%	25.0%	23.5%
2013/14	24.3%	21.5%	20.6%	28.3%	25.6%

6.2 NSCLC, Stage I-II and Surgical Resection – Target = 50%

Numerator = Number of patients with NSCLC, Stage I-II who undergo surgical resection

Denominator = All patients with NSCLC, Stage I-II only

Exclusions = Patients who refuse surgery and patients who die before surgery

(a) By Hospital of Surgery

Target 50%	**Royal Infirmary of Edinburgh**
2016 cohort	1048
Ineligible for this QPI	860
Numerator	111
Not recorded for numerator	0
Denominator	163
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**68.1%**

Comments

Again, table (a) comprises of patients diagnosed in Borders, Fife and Lothian who have surgical procedures carried out at the Royal Infirmary of Edinburgh. The target was met in 2016 and no action is required. Patients diagnosed in D&G have surgery at the Golden Jubilee Hospital, Clydebank and are included in WOSCAN's reporting.

Table (b) shows results based on Board of Diagnosis shown here for information purposes only; and are not subject to QPI targets.

(b) By Board of Diagnosis

Target n/a	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	69	98	275	516	958
Numerator	7	9	31	73	120
Not recorded for numerator	0	0	0	0	0
Denominator	12	13	45	106	176
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	25	25
% Performance	**58.3%**	**69.2%**	**68.9%**	**68.9%**	**68.2%**

QPI 7 Lymph Nodes Assessment – Target = 80%

Numerator = Number of patients with NSCLC undergoing surgical resection by lobectomy or pneumonectomy that have at least 1 node from at least *3 x N2 stations* sampled at the time of resection or at previous mediastinoscopy

Denominator = All patients with NSCLC undergoing surgical resection by lobectomy or pneumonectomy

Exclusions = None

(a) Reported by Hospital of Surgery

Target 80%	**Royal Infirmary of Edinburgh**
2016 cohort	1048
Ineligible for this QPI	947
Numerator	84
Not recorded for numerator	0
Denominator	101
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**83.2%**

Comment

This QPI is analysed by hospital of surgery. Table (a) gives results for patients diagnosed in Borders, Fife and Lothian having surgery at the Royal Infirmary of Edinburgh. The QPI target was met for surgery carried out at the Royal Infirmary of Edinburgh.

Again, patients diagnosed in NHS D&G are not included in table (a) above but will be reported in WOSCAN.

Results by board of diagnosis are not required by the QPI process but are shown in table (b) below for information.

(b) Reported by Board of Diagnosis

Target : n/a	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	73	105	293	581	1052
Numerator	6	9	24	54	93
Not recorded for numerator	0	0	0	0	0
Denominator	8	11	27	66	112
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**75.0%**	**81.8%**	**88.9%**	**81.8%**	**83.0%**

In Year 1 the numerator was expressed in terms of *lymph nodes* or stations "*at least 3 lymph nodes* from N1 and 3 from N2" but this was proving difficult for audit staff to report on. At Baseline Review it was additionally noted that a very small percentage (only 17%) was meeting the lymph node sampling requirements and that the variation across Boards was quite significant.[9] This QPI was therefore amended and now focuses on the number of "stations" rather than the number of lymph nodes. In Year 1 the only procedure from which these measures could be obtained was at primary tumour resection. This was amended in Year 2 to additionally include mediastinoscopy. This QPI was measured only by Board of Diagnosis for Years 1 and 2 (2013-14 and 2014-15).

[9] Lung Cancer Quality Performance Indicators Publication Report: Patients Diagnosed during April 2013 to March 2014. Publication Date 19th May 2015 p25

QPI 8 Radiotherapy for Inoperable Lung Cancer – Target = 15%

Numerator = Number of patients with lung cancer not undergoing surgery but who receive radical radiotherapy[10] +/- chemotherapy

Denominator = All patients with lung cancer not undergoing surgery

Exclusions = Patients with SCLC, patients who refuse radiotherapy, patients who die prior to treatment and patients with stage IV disease

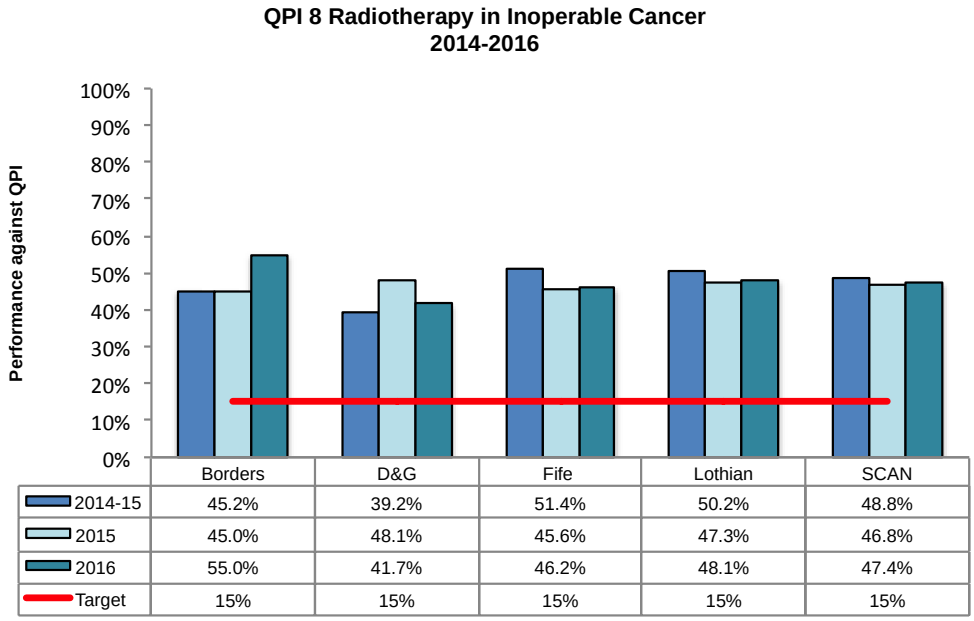
Target 15%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	61	80	229	412	782
Numerator	11	15	42	113	181
Not recorded for numerator	0	0	0	0	0
Denominator	20	36	91	235	382
Not recorded for exclusions	0	7	0	15	22
Not recorded for denominator	0	0	0	0	0
% Performance	**55.0%**	**41.7%**	**46.2%**	**48.1%**	**47.4%**

Note: Patients not recorded for exclusions do not have their M stage recorded and as such it is impossible to access whether or not their cancer is stage IV. These patients, however, are retained in the denominator and are shown under 'Not recorded for exclusion' for information purposes.

Comments

The target of 15% was easily exceeded in 2016 by all Boards.

At Formal Review it was agreed to increase the target to 35% and to amend the numerator to additionally include patients receiving SABR (Stereotactic Ablative Radiotherapy). These changes will take effect for patients diagnosed with lung cancer from 1st January 2017 and onwards.



Changes were made to QPI 8 at Baseline Review (end of Year 1) and at Year 2 the exclusion *patients with Stage IV disease* was added. Comparisons can only be made over three years and therefore the graph above does not show Year 1: 2013-14.

[10] Radical Radiotherapy = Dose given for NSCLC is 54Gy or greater.

QPI 9 Chemoradiotherapy in Locally Advanced NSCLC – Target = 50%

Numerator = Number of patients with NSCLC, Stage IIIA and Performance Status (PS) 0-1, not undergoing surgery and who receive Chemoradiotherapy[11]

Denominator = All patients with NSCLC, Stage IIIA and PS 0-1 not undergoing surgery but who receive radical radiotherapy

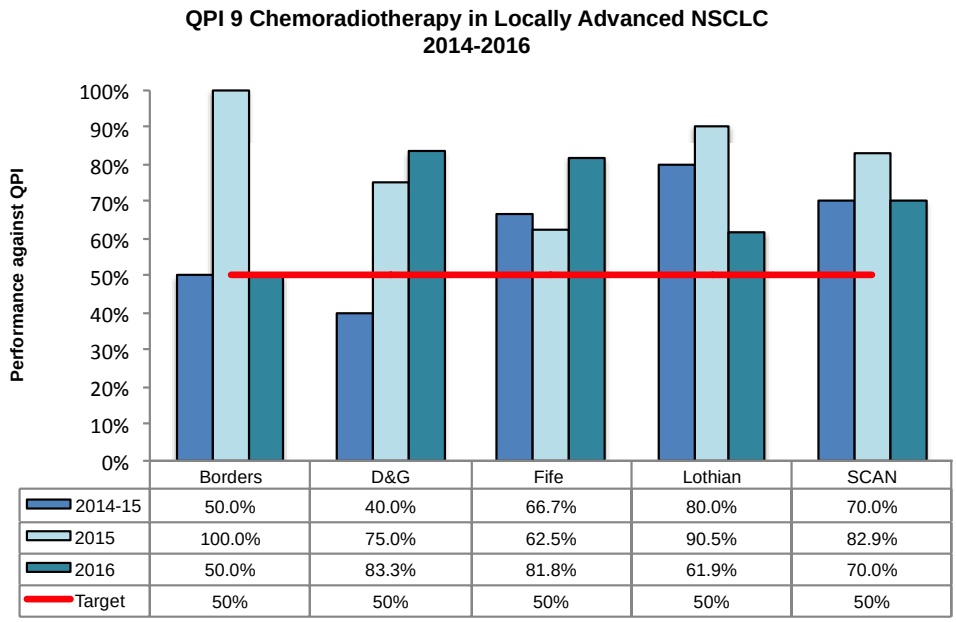
Exclusions = Patients who refuse treatment, patients who die before treatment, patients receiving CHART (Continuous Hyperfractionated Radiotherapy)

Target 50%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	79	110	309	564	1062
Numerator	1	5	9	13	28
Not recorded for numerator	0	0	0	0	0
Denominator	2	6	11	21	40
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**50.0%**	**83.3%**	**81.8%**	**61.9%**	**70.0%**

Comments

The target was met in 2016 by all Boards.

Although all SCAN health boards have easily exceeded the target, the effect of small numbers, which can generate disproportionate percentages, should be borne in mind.



[11] See Appendix 1: Glossary

QPI 10 Chemoradiotherapy in Limited Stage SCLC – Target = 70%

Numerator = Number of patients with SCLC, Stage I-IIIB and PS 0-1 who receive Chemoradiotherapy

Denominator = All patients with SCLC, Stage I-IIIB and PS 0-1

Exclusions = Patients who refuse treatment, patients who die before treatment, and patients who undergo surgical resection

Target 70%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	77	116	317	634	1144
Numerator	4	0	2	9	15
Not recorded for numerator	0	0	0	0	0
Denominator	4	0	3	13	20
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**100.0%**	*	**66.7%**	**69.2%**	**75.0%**

*There were no patients in D&G in 2016 who met the denominator criteria for QPI 10.

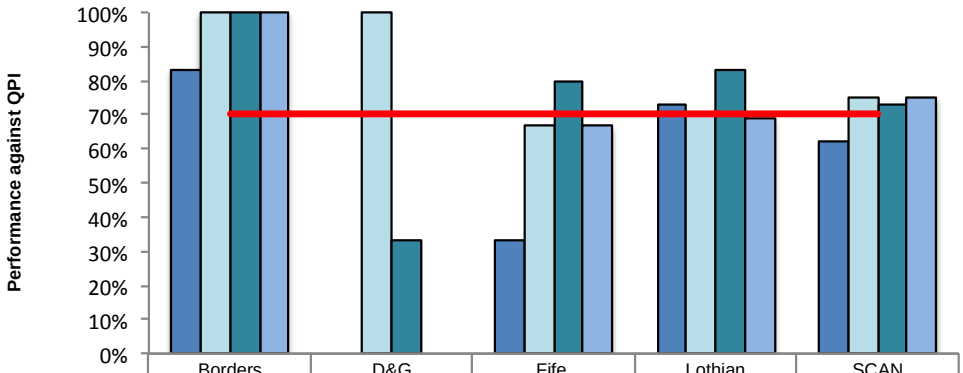
Comments

NHS Fife: The target was not met with a shortfall of 3.3% (1 case).
Although treatment protocols for patients with mixed small cell/non-small cell lung cancer should be the same as given for SCLC; this is not always the case. This patient, whose cancer was of mixed pathology, was initially considered for surgery (T2aN0M0) but after discussion at MDM, the most appropriate treatment was agreed as radical radiotherapy only.

NHS Lothian: The target was not met with a shortfall of 0.8% (4 cases). 2 patients had synchronous lung tumours which would have meant that large volumes would have to be irradiated and therefore unsuitable for chemoradiotherapy. Another patient had comorbidities and was therefore not a candidate for the radiotherapy component. For 1 patient the risk of toxicities associated with chemoradiotherapy was too high.

Caution is advised when viewing small numbers, and likely disproportionate percentages, which can distort results both positively and negatively.

QPI 10 Chemoradiotherapy in Limited SCLC
2013-2016



	Borders	D&G	Fife	Lothian	SCAN
2013-14	83.3%		33.3%	73.3%	62.1%
2014-15	100.0%	100.0%	66.7%	70.0%	75.0%
2015	100.0%	33.3%	80.0%	83.3%	73.3%
2016	100.0%		66.7%	69.2%	75.0%
Target	70%	70%	70%	70%	70%

In D&G in 2013/14 the target was missed when 0 out of 2 patients received chemoradiotherapy thus the target was missed. In 2016 there were no patients who met the denominator criteria and as such the zero result in 2016 should be viewed as inapplicable.

QPI 11 Systemic Anti-Cancer Therapy in Non Small Cell Lung Cancer

11.1 Patients with NSCLC who receive Systemic Anti-Cancer Therapy – Target = 35%

Numerator = Number of patients with NSCLC not undergoing surgery who receive SACT

Denominator = All patients with NSCLC not undergoing surgery

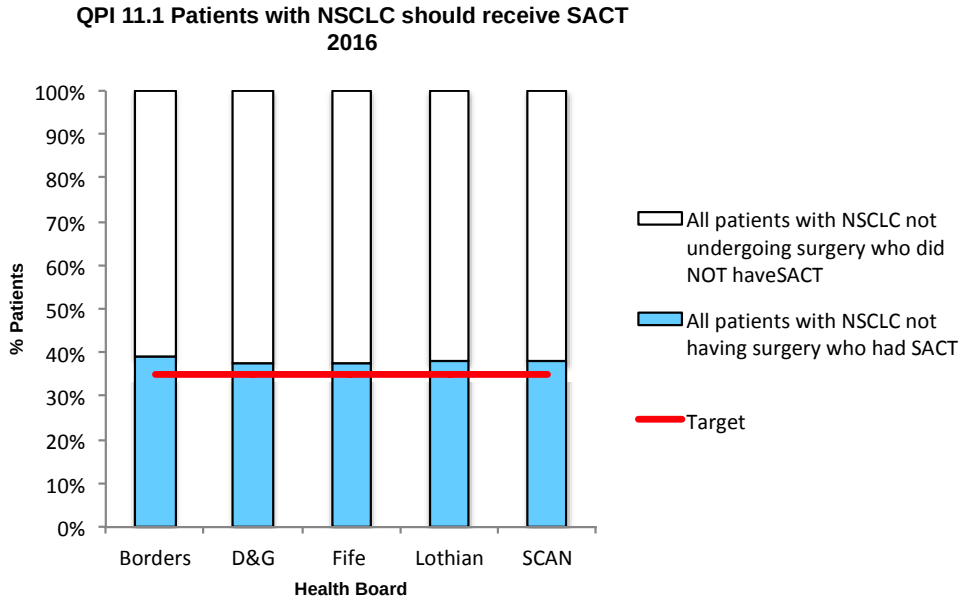
Exclusions = Patients who refuse chemotherapy and patients who die before treatment

Target 35%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	58	71	197	423	749
Numerator	9	17	46	85	157
Not recorded for numerator	0	0	0	0	0
Denominator	23	45	123	224	415
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**39.1%**	**37.8%**	**37.4%**	**37.9%**	**37.8%**

Comments

The target was met by all Boards in 2016.

At Formal Review *patients participating in clinical trials* was removed from the exclusions category. The results for 2016 are therefore presented separately.



11.2 Patients with Stage IIIB and IV who receive Doublet Therapy – Target = 60%

Numerator = Number of patients with NSCLC, Stage IIIB-IV, PS 0-1 and not undergoing surgery who receive doublet chemotherapy including platinum, as their first-line regimen

Denominator = All patients with NSCLC, Stage IIIB-IV, PS 0-1 and not undergoing surgery

Exclusions = Patients who refuse chemotherapy, patients who die before treatment, patients who are participating in clinical trials and patients with known EGFR mutation

Target 60%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	73	101	286	581	1041
Numerator	3	4	26	39	72
Not recorded for numerator	0	0	0	0	0
Denominator	8	11	34	67	120
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	4	0	7	11
% Performance	**37.5%**	**36.4%**	**76.5%**	**58.2%**	**60.0%**

Comments

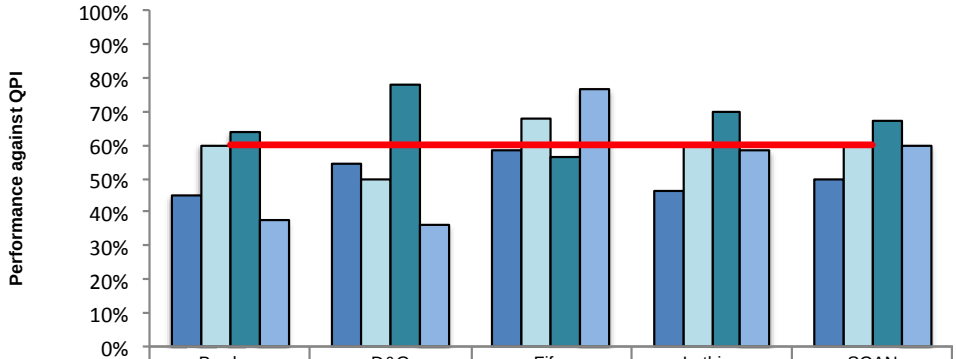
The target was met by NHS Fife in 2016.

NHS Borders: The target was not met with a shortfall of 22.5% (5 cases); all of which were medically unfit and treatment would likely have been detrimental.

NHS D&G: The target was not met with a shortfall of 23.6% (7 cases). 1 patient failed to attend their oncology appointment and no further information is available. 1 patient was not fit enough to have chemotherapy and was given palliative radiotherapy instead. 2 patients had radical radiotherapy, 1 of these did not have chemotherapy due to an associated high risk of sepsis. 1 patient developed brain metastases and became a candidate for BSC. The final 2 patients were not fit for treatment and were given BSC.

NHS Lothian: The target was not met with a shortfall of 1.8% (28 cases). Due to a lack of proven lymph node involvement, 2 patients had radical radiotherapy only. 7 patients were not fit due to frailty from their cancer and were given BSC, with a further 13 patients not candidates for chemotherapy due to additional comorbidities. 2 patients had been given Pembrolizumab as first line treatment. The remaining 4 patients, who did not receive chemotherapy, are of uncertain reasons. All patients were, however, managed appropriately.

QPI 11.2 Patients with NSCLC Stg IIIB-IV who receive Doublet Chemotherapy 2013-2016



	Borders	D&G	Fife	Lothian	SCAN
2013-14	45.0%	54.5%	58.3%	46.3%	49.8%
2014-15	60.0%	50.0%	67.6%	60.3%	60.5%
2015	63.6%	77.8%	56.7%	70.0%	67.0%
2016	37.5%	36.4%	76.5%	58.2%	60.0%
Target	60%	60%	60%	60%	60%

QPI 12 Chemotherapy in SCLC

QPI 12 (i) Chemotherapy ± Radiotherapy: Patients with SCLC – Target = 70%

Numerator = Number of patients with SCLC who receive chemotherapy[12] ± radiotherapy

Denominator = All patients with SCLC

Exclusions = Patients who refuse chemotherapy, patients who die before treatment and patients who are participating in clinical trials

Target 70%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	70	105	290	600	1065
Numerator	9	5	20	34	68
Not recorded for numerator	0	0	0	0	0
Denominator	11	11	30	47	99
Not recorded for exclusions	0	1	0	0	1
Not recorded for denominator	0	0	0	0	0
% Performance	**81.8%**	**45.5%**	**66.7%**	**72.3%**	**68.7%**

Comments
The target was met by NHS Borders and NHS Lothian.

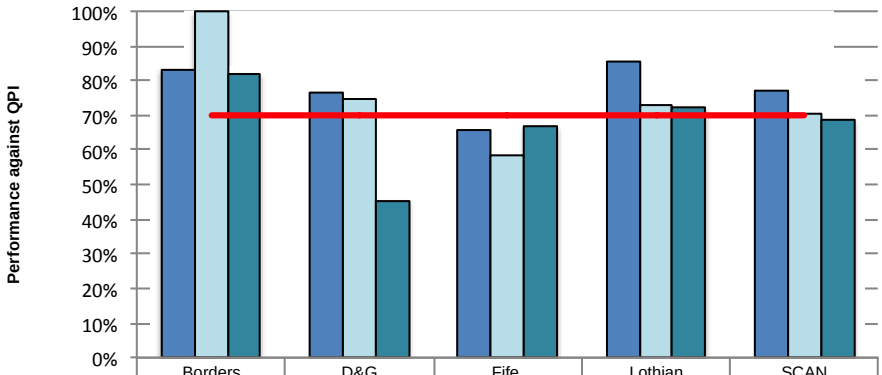
NHS D&G: The target was not met with a shortfall of 24.5% (6 cases). Chemotherapy was contraindicated for 3 patients due to poor PS and significant co-morbidities. 1 patient deteriorated awaiting pathology results and as such was no longer fit enough to receive chemotherapy. The remaining 2 patients were not fit for treatment when discussed at MDM and the agreed treatment decision was for BSC.

NHS Fife: The target was not met with a shortfall of 3.3% (10 cases). 1 patient had mixed SCLC/NSCLC and MDT treatment decision was for radical radiotherapy only. The remaining 9 patients did not have chemotherapy due to poor fitness and/or co-morbidities.

All patients were managed appropriately and no action has been identified.

Once again we should be cognisant when reporting small numbers which can give the effect of disproportionate percentages which in turn can distort results both positively and negatively.

QPI 12.1 Patients with SCLC who receive Chemotherapy ± Radiotherapy 2014-2016



	Borders	D&G	Fife	Lothian	SCAN
2014-15	83.3%	76.5%	65.9%	85.5%	77.3%
2015	100.0%	75.0%	58.6%	72.7%	70.5%
2016	81.8%	45.5%	66.7%	72.3%	68.7%
"Target"	70%	70%	70%	70%	70%

At Baseline Review it was agreed to amend this QPI which in 2013-14 was specified as patients *who receive chemotherapy +/- radiotherapy "with palliative intent"*. From 1st April 2014 *"with palliative intent"* was deleted and the measurement was changed to 'all' types of chemotherapy.

[12] Chemotherapy includes Neoadjuvant, Adjuvant, Chemoradiotherapy or Palliative Chemotherapy.

QPI 12 (ii) Palliative Chemotherapy: Patients with SCLC – Target = 50%

Numerator = Number of patients with SCLC not undergoing treatment with curative intent who receive palliative chemotherapy

Denominator = All SCLC patients not undergoing treatment with curative intent

Exclusions = Patients who refuse chemotherapy, patients who die before treatment and patients who are participating in clinical trials

Target 50%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	76	105	296	606	1083
Numerator	3	4	15	24	46
Not recorded for numerator	0	0	0	0	0
Denominator	5	10	24	41	80
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	1	0	0	1
% Performance	**60.0%**	**40.0%**	**62.5%**	**58.5%**	**57.5%**

Comments

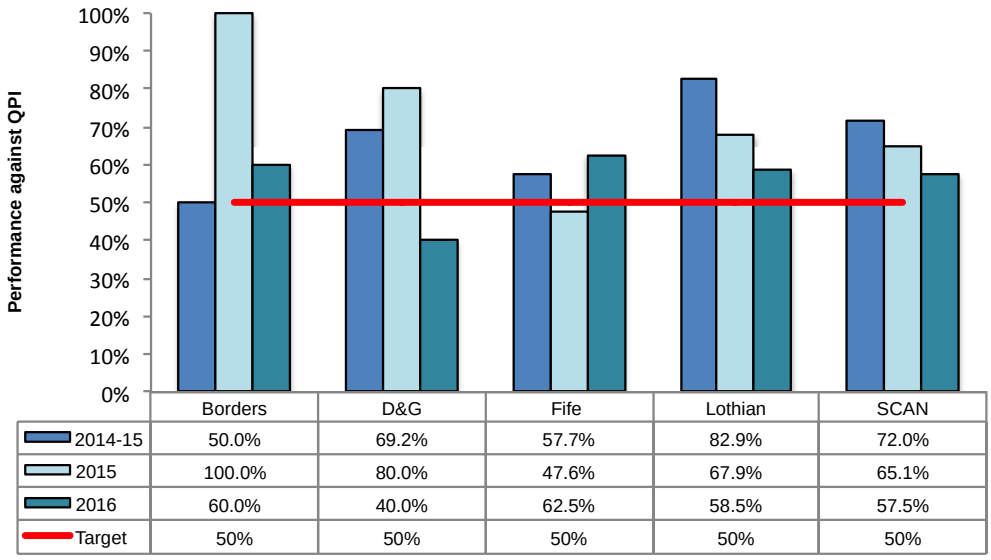
The target was met in all SCAN health boards except NHS D&G.

NHS D&G: The target was not met in 2016 with a shortfall of 10.0% (6 cases). Chemotherapy was contraindicated for 3 patients due to poor PS and significant co-morbidities. 1 patient deteriorated awaiting pathology results and as such was no longer fit enough for chemotherapy. The remaining 2 patients were not fit for treatment when discussed at MDM and received BSC.

All patients were managed appropriately and no action has been identified.

This QPI was introduced at Baseline Review and the chart below covers the 3-year period commencing at Year 2.

QPI 12.2 Patients with SCLC not undergoing Treatment with Curative Intent who receive Palliative Chemotherapy 2014-2016



	Borders	D&G	Fife	Lothian	SCAN
2014-15	50.0%	69.2%	57.7%	82.9%	72.0%
2015	100.0%	80.0%	47.6%	67.9%	65.1%
2016	60.0%	40.0%	62.5%	58.5%	57.5%
Target	50%	50%	50%	50%	50%

QPI 13.1 30-Day Mortality following Active Treatment

QPI 13.1.1 30 Day Mortality: Surgery – Target <5%

Numerator = Number of patients who receive surgery who die within 30 days of treatment
Denominator = All patients with lung cancer who receive surgery
Exclusions = None

(a) Hospital of Surgery

Target <5%	**Royal Infirmary of Edinburgh**
2016 cohort	1048
Ineligible for this QPI	921
Numerator	1
Not recorded for numerator	0
Denominator	127
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**0.8%**

% Performance in previous years	Royal Infirmary of Edinburgh
2015	1.5%
2014/15	*
2013/14	0.6%

* There were no deaths within 30 days of patients having surgery at RIE in 2014/15.

Comments

In 2016 in SCAN/Royal Infirmary of Edinburgh, 0.8% of surgical patients died within 30 days of treatment. This remains within accepted target parameters.

Thoracic surgery is centralised in SCAN and patients from Borders, Fife and Lothian have surgery performed at the Royal Infirmary of Edinburgh. Patients from NHS D&G have surgery at the Golden Jubilee Hospital, Clydebank.

Patients diagnosed in NHS D&G are not included in table (a) above but will be reported in the WOSCAN Lung Cancer QPI Comparative Report 2016. Results by board of diagnosis are not required by the QPI process but are shown in table (b) below for information.

(b) Board of Diagnosis

2016 Cohort	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
Numerator	0	1	0	1	2
Denominator	9	12	35	83	139
Performance**	0%	8.3%	0%	1.2%	1.4%

** Performance is measured by Hospital of Surgery. The target is not applicable by Board of Diagnosis and results are shown here only for information purposes.

QPI 13.1.2 Radical Radiotherapy: 30 Day Mortality – Target = <5%

Numerator = Number of patients who receive radical radiotherapy who die within 30 days of treatment

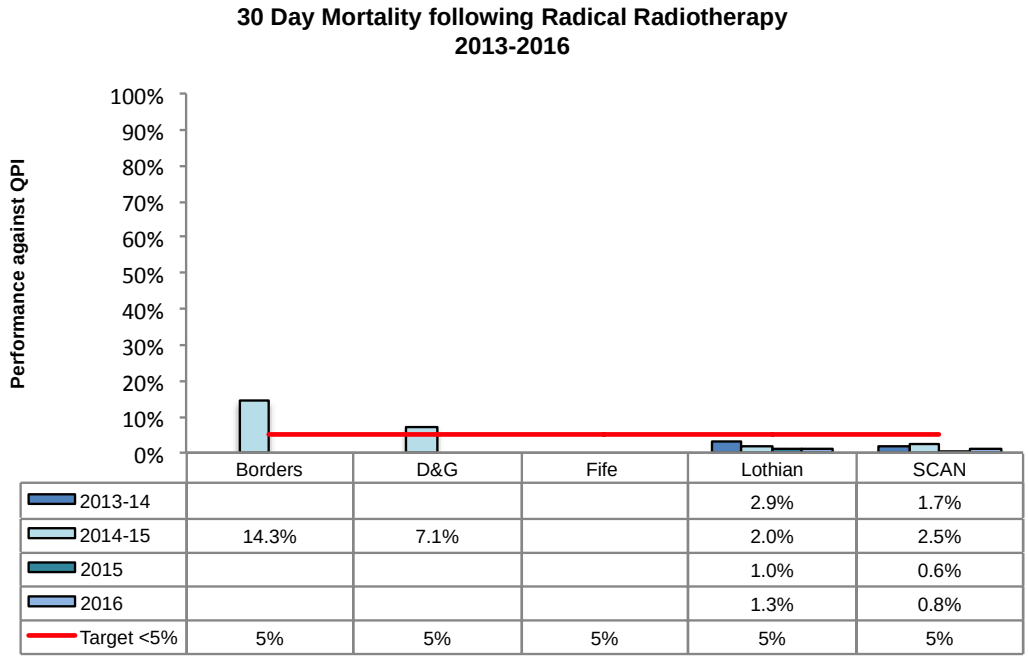
Denominator = All patients with lung cancer who receive radical radiotherapy

Exclusions = None

Target <5%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	68	111	293	571	1043
Numerator	0	0	0	1	1
Not recorded for numerator	0	0	0	0	0
Denominator	13	5	27	76	121
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0%**	**0%**	**0%**	**1.3%**	**0.8%**

Comments

There were no deaths within 30 days following radical radiotherapy in NHS Borders, D&G or Fife. NHS Lothian remained within the accepted target parameters.



QPI 13.1.3 Adjuvant Chemotherapy: 30 Day Mortality – Target <5%

Numerator = Number of patients who receive adjuvant chemotherapy who die within 30 days of treatment

Denominator = All patients with lung cancer who receive adjuvant chemotherapy

Exclusions = None

Target <5%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	77	115	315	642	1149
Numerator	0	0	0	0	0
Not recorded for numerator	0	0	0	0	0
Denominator	4	1	4	5	14
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	1	0	1
% Performance	**0%**	**0%**	**0%**	**0%**	**0%**

Comments

There were no deaths within 30 days of patients receiving adjuvant chemotherapy. All Boards therefore remained within the accepted target parameters. This has been the pattern over the past three years of data with no deaths following adjuvant chemotherapy in 2013/14; 2014-15 or 2015.

QPI 13.1.4 Chemoradiotherapy: 30 Day Mortality – Target = <5%

Numerator = Number of patients who receive chemoradiotherapy who die within 30 days of treatment

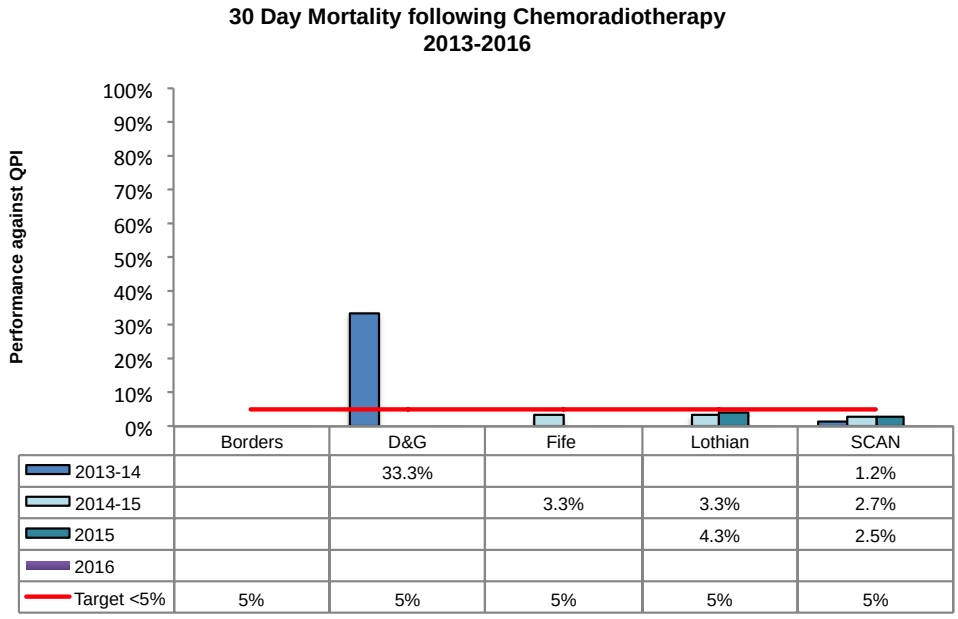
Denominator = All patients with lung cancer who receive chemoradiotherapy

Exclusions = None

Target <5%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	73	104	298	595	1070
Numerator	0	0	0	0	0
Not recorded for numerator	0	0	0	0	0
Denominator	8	12	22	52	94
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0%**	**0%**	**0%**	**0%**	**0%**

Comments

There were no deaths within 30 days following chemoradiotherapy in 2016.



In 2014-15 NHS Fife and NHS Lothian remained within the accepted target parameters. The disproportionately large percentage (33.3%) in D&G in 2013-14 was the result of 1 death out of 3 patients which reminds us that we have to be cognisant of the effects small numbers can have relative to percentage, both positively and negatively.

QPI 13.1.5 Palliative Chemotherapy: 30 Day Mortality

The reporting of 30-day mortality following palliative chemotherapy has been revised and takes effect with patients diagnosed in 2016. Palliative chemotherapy results are now specified as (a) NSCLC only and (b) SCLC only.

(a) 30 Day Mortality: Palliative Chemotherapy – NSCLC – Target < 10%

Numerator = Number of patients diagnosed with NSCLC who receive palliative chemotherapy who die within 30 days of treatment

Denominator = All patients with NSCLC who receive palliative chemotherapy

Exclusions = None

Target <10%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	76	112	294	612	1094
Numerator	0	0	2	2	4
Not recorded for numerator	0	0	0	0	0
Denominator	5	4	26	35	70
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0%**	**0%**	**7.7%**	**5.7%**	**5.7%**

Comments

There were no deaths of patients diagnosed with NSCLC within 30 days of receiving palliative chemotherapy in NHS Borders or NHS D&G. NHS Fife and NHS Lothian results remained within the accepted target parameters.

This is the first year of reporting 30 day mortality after palliative chemotherapy by cancer type, i.e. NSCLC and SCLC. There is no historical data from which to make comparisons.

(b) 30 Day Mortality: Palliative Chemotherapy – SCLC – Target < 15%

Numerator = Number of patients diagnosed with SCLC who receive palliative chemotherapy who die within 30 days of treatment

Denominator = All patients with SCLC who receive palliative chemotherapy

Exclusions = None

Target <15%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	76	112	294	612	1094
Numerator	0	1	0	3	4
Not recorded for numerator	0	0	0	0	0
Denominator	3	4	14	24	45
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0%**	**25.0%**	**0%**	**12.5%**	**8.9%**

The target was exceeded by 10% (1 case out of 4 patients) in D&G. It should be noted that disproportionate results shown here are a consequence of very small numbers. There were no deaths of patients diagnosed with SCLC within 30 days of receiving palliative chemotherapy in NHS Borders or Fife. Results remained within accepted target parameters in NHS Lothian.

QPI 13.1.6 Biological Therapy: 30 Day Mortality - NSCLC – Target <10%

Numerator = Number of patients diagnosed with NSCLC who receive biological therapy who die within 30 days of treatment

Denominator = All patients with NSCLC who receive biological therapy

Exclusions = None

Target <10%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	79	115	316	639	1149
Numerator	0	1	0	0	1
Not recorded for numerator	0	0	0	0	0
Denominator	2	1	4	8	15
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0%**	**100.0%**	**0%**	**0%**	**6.7%**

Comments

Small numbers can generate disproportionate percentages as evidenced in the Dumfries & Galloway result of 100% where this accounts for 1 patient out of a total of 1. This patient had widespread metastatic disease and despite treatment, the cancer progressed. The patient was managed under respiratory and transferred to community hospital for palliative management.

Measuring 30-day mortality after treatment of biological therapy for NSCLC and SCLC was introduced following Formal Review and applies to patients diagnosed from 1st January 2016. There are no historical data for comparison.

Biological Therapy is not a treatment option for patients diagnosed with SCLC and therefore analyses are only possible for patients diagnosed with NSCLC.

QPI 13.2 90-Day Mortality Following Active Treatment

QPI 13.2.1 Surgery: 90 Day Mortality – Target <5%

Numerator = Number of patients who receive surgery who die within 90 days of treatment

Denominator = All patients with lung cancer who receive surgery

Exclusions = None

(a) Reported by Hospital of Surgery

Target <5%	**Royal Infirmary of Edinburgh**
2016 cohort	1048
Ineligible for this QPI	921
Numerator	3
Not recorded for numerator	0
Denominator	127
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**2.4%**

% Performance in previous years	Royal Infirmary of Edinburgh
2015	2.9%
2014/15	1.2%
2013/14	*

*90 Day Mortality was not reported on as part of the QPI process in 2013-14.

Comments

In 2016 in SCAN 2.4%(3 cases) of surgical patients died within 90 days from treatment; this remains within accepted target parameters.

Thoracic surgery is centralised in SCAN and patients from Borders, Fife and Lothian have surgery performed at the Royal Infirmary of Edinburgh. Patients from NHS D&G have surgery at the Golden Jubilee Hospital, Clydebank.

Patients diagnosed in NHS D&G are not included in table (a) above but will be reported in the WOSCAN QPI Comparative Report 2016. Results by board of diagnosis are not required by the QPI process but are shown in table (b) below for information.

(b) Reported by Board of Diagnosis

2016 Cohort	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
Numerator	0	1	2	1	4
Denominator	9	12	35	83	139
Performance**	0%	8.3%	5.7%	1.2%	2.9%

** Performance is measured by Hospital of Surgery. The target is not applicable by Board of Diagnosis and is shown here only for information purposes.

QPI 13.2.2 Radical Radiotherapy: 90 Day Mortality – Target <5%

Numerator = Number of patients who receive radical radiotherapy who die within 90 days of treatment

Denominator = All patients with lung cancer who receive radical radiotherapy

Exclusions = None

Target <5%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	68	111	293	571	1045
Numerator	1	0	0	5	6
Not recorded for numerator	0	0	0	0	0
Denominator	13	3	25	76	117
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	2	2	0	4
% Performance	**7.7%**	**-**	**-**	**6.6%**	**5.1%**

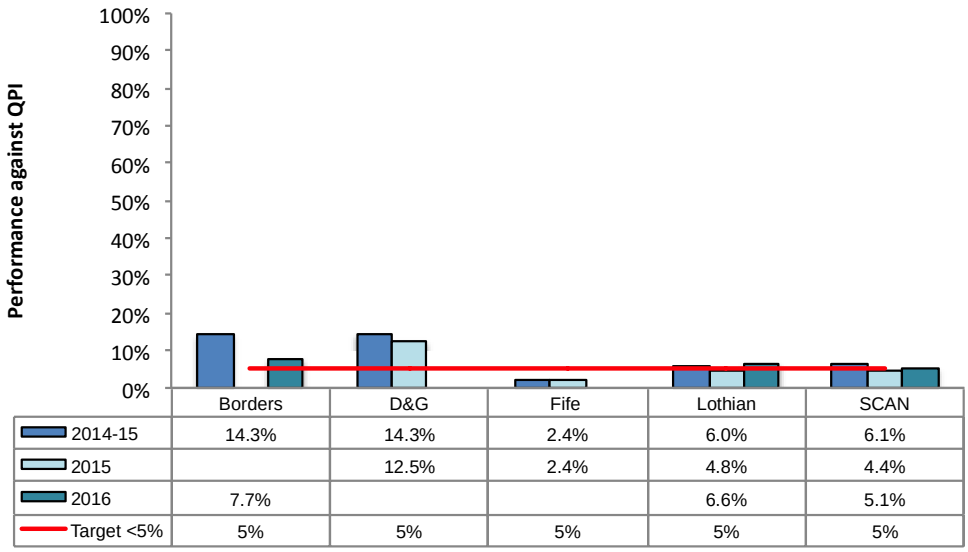
Comments

NHS Borders: The target was exceeded by 2.7% (1 case). This patient experienced exacerbation of COPD following completion of SABR treatment and died 52 days later.

NHS Lothian: The target was exceeded by 1.6% (5 cases). 2 patients died of progressive disease, after developing metastases post treatment. 2 patients died of toxicity/ comorbidities.

Results for NHS D&G and NHS Fife remained within the accepted target parameters.

90 Day Mortality following Radical Radiotherapy
2014-2016



	Borders	D&G	Fife	Lothian	SCAN
2014-15	14.3%	14.3%	2.4%	6.0%	6.1%
2015		12.5%	2.4%	4.8%	4.4%
2016	7.7%			6.6%	5.1%
Target <5%	5%	5%	5%	5%	5%

QPI 13.2.3 Chemoradiotherapy: 90 Day Mortality – Target <5%

Numerator = Number of patients who receive chemoradiotherapy who die within 90 days of treatment

Denominator = All patients with lung cancer who receive chemoradiotherapy

Exclusions = None

Target <5%	Borders	D&G	Fife	Lothian	SCAN
2016 cohort	81	116	320	647	1164
Ineligible for this QPI	73	105	298	595	1071
Numerator	2	1	2	0	5
Not recorded for numerator	0	0	0	0	0
Denominator	8	11	19	52	90
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	3	0	3
% Performance	**25.0%**	**9.1%**	**10.5%**	**0%**	**5.6%**

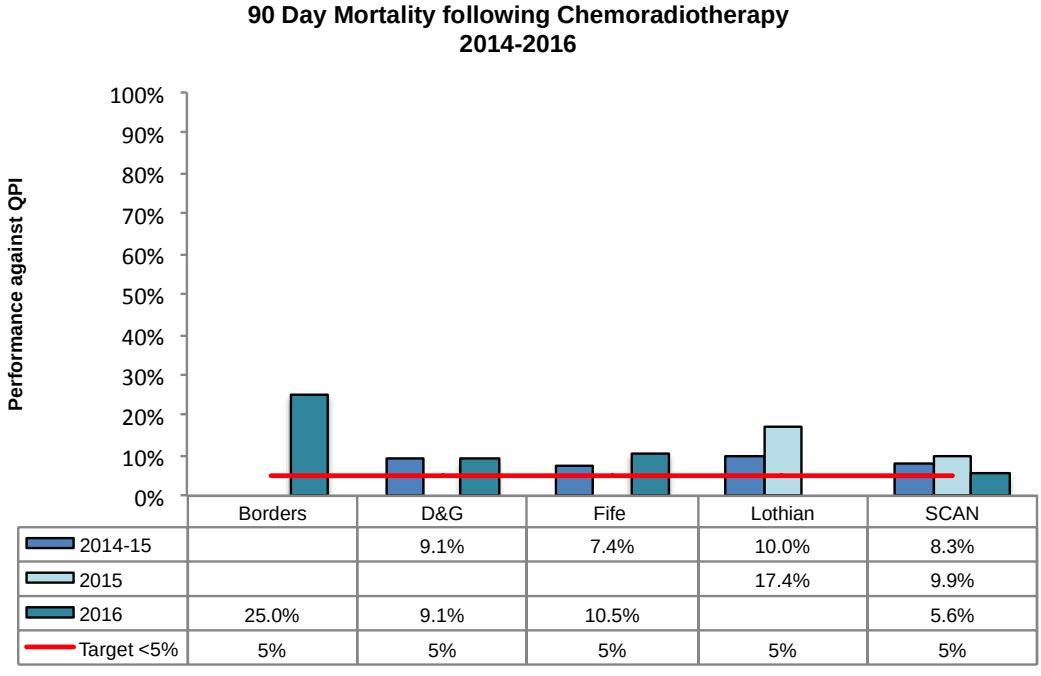
Comments

NHS Borders: The target was exceeded by 20% (2 cases). 1 patient clinically deteriorated following on from a multi-drug resistant infection. The other died due to disease progression. It should be noted that the resulting disproportionate percentage is due to the effects that small numbers can have for data analyses.

NHS D&G: The target was exceeded by 4.1% (1 case). Disease did not respond to chemotherapy but the patient was still referred for consolidation radiotherapy (radical dose). Two weeks post radiotherapy the patient was admitted with shortness of breath, and possible, but not clinically confirmed, radiation pneumonitis prior to discharge to community hospital. Once again we should be cognisant of the effects that small numbers can produce.

NHS Fife: The target was exceeded by 5.5% (2 cases). A patient who had a CT Brain with contrast prior to treatment which had shown no evidence of intracranial metastatic disease, went on to develop multiple brain metastases. The patient clinically deteriorated and died. The other patient had a prolonged stay in hospital due to chest infection and inflammation and died as a result of co-morbidities.

There were no deaths in NHS Lothian within 90 days of treatment by chemoradiotherapy.



QPI Clinical Trials

Interventional Clinical Trials Target = 7.5%
Translational Research target = 15%

Numerator 1 = Number of patients with Lung Cancer enrolled in an interventional clinical trial.
Numerator 2 = Number of patients with Lung Cancer enrolled in translational research.

Denominator = All patients with Lung Cancer.
Exclusions = No exclusions.

Note: The clinical trials QPI will be measured utilising SCRN data and Cancer Registry data (5 year average of case ascertainment 2010-2015).

Interventional Target 7.5%	Borders	D&G	Fife	Lothian	SCAN
Numerator	0	0	1	7	8
Denominator	92	153	333	738	1315
% Performance	**0%**	**0%**	**0.3%**	**0.9%**	**0.6%**

Interventional Trials in 2016	Numbers Recruited
Checkmate 227	6
National Lung Matrix Trial	2

Translational Target 15%	Borders	D&G	Fife	Lothian	SCAN
Numerator	1	0	0	9	9
Denominator	92	153	333	738	1315
% Performance	**1.1%**	**0%**	**0%**	**1.2%**	**0.7%**

Translational Trials in 2016	Numbers Recruited
SHSC Lung	9

Comment
Lung clinical trial eligibility criteria are becoming increasingly complex with most trials geared towards targeted therapies for which many patients will not be eligible. Researchers should be encouraged to look at trials based on quality of life or end of life, as many lung cancer patients may benefit from those kinds of studies.

Action:
SCAN clinicians should ensure that they register trials with SCRN and, SCRN should share their lists of open trials between the Networks to allow the possibility of cross network trial access.

KEY CATEGORIES

Table 1 Age at Diagnosis

n = All patients diagnosed with Lung Cancer 01/01/2016 – 31/12/2016

2016	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
≤49	-	-	1	0.9	9	2.8	15	2.3	25	2.1
50-59	2	2.5	7	6.0	34	10.6	53	8.2	96	8.2
60-69	20	24.7	29	25.0	89	27.8	173	26.7	311	26.7
70-79	35	43.2	43	37.1	105	32.8	244	37.7	427	36.7
≥80	24	29.6	36	31.0	83	25.9	162	25.0	305	26.2
Cohort	81		116		320		647		1164	
2016										
Median	74		75		72		73		73	
Range	57-96		49-95		37-97		41-97		37-97	
2015										
Median	75		73		73		72		73	
Range	44-98		48-90		35-94		30-95		30-98	
2014-15										
Median	76		72		72		72		73	
Range	46-90		43-92		29-96		34 -100		29-100	

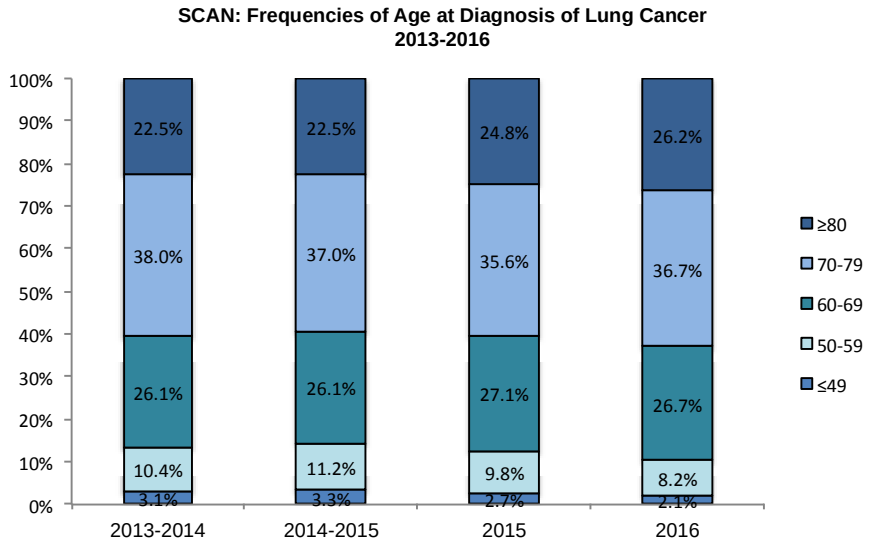


Table 2 Sex Distribution

n = All patients diagnosed with Lung Cancer 01/01/2016 – 31/12/2016

	Borders		D&G		Fife		Lothian		SCAN	
2016	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Male	45	55.6	69	59.5	163	50.9	306	47.3	583	50.1
Female	36	44.4	47	40.5	157	49.1	341	52.7	581	49.9

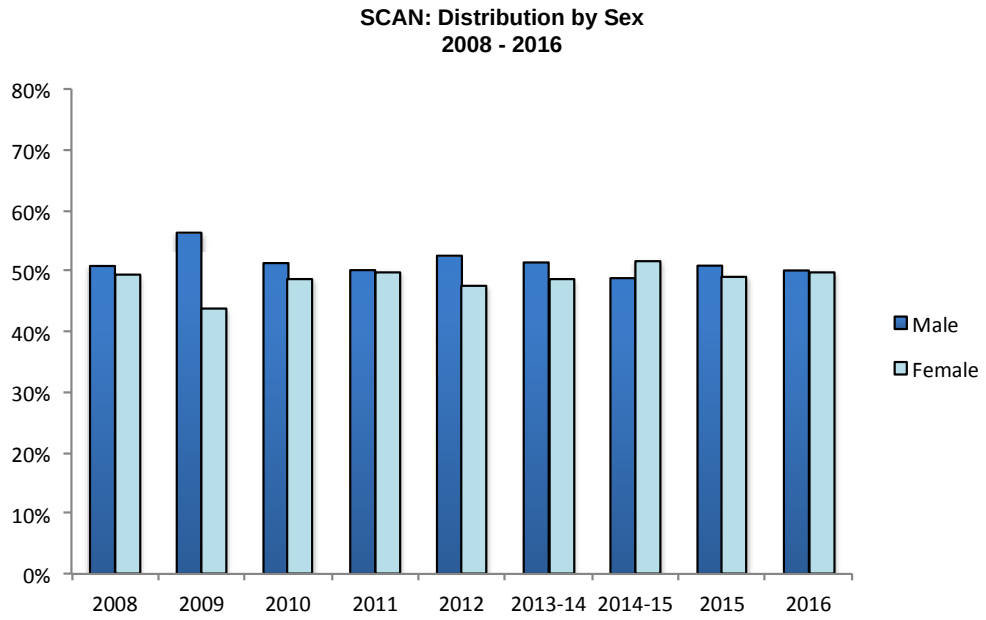


Table 3 Performance Status

n = All patients diagnosed with Lung Cancer 01/01/2016 – 31/12/2016

	Borders		D&G		Fife		Lothian		SCAN	
PS	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
0	13	16.0	9	7.8	27	8.4	79	12.2	128	11.0
1	32	39.5	36	31.0	90	28.1	232	35.9	390	33.5
2	21	25.9	18	15.5	87	27.2	129	19.9	255	21.9
3	9	11.1	28	24.1	94	29.4	122	18.9	253	21.7
4	6	7.4	5	4.3	22	6.9	37	5.7	70	6.0
Not recorded	-	-	20	17.2	-	-	48	7.4	68	5.8
Missing data										
Cohort	81		116		320		647		1164	

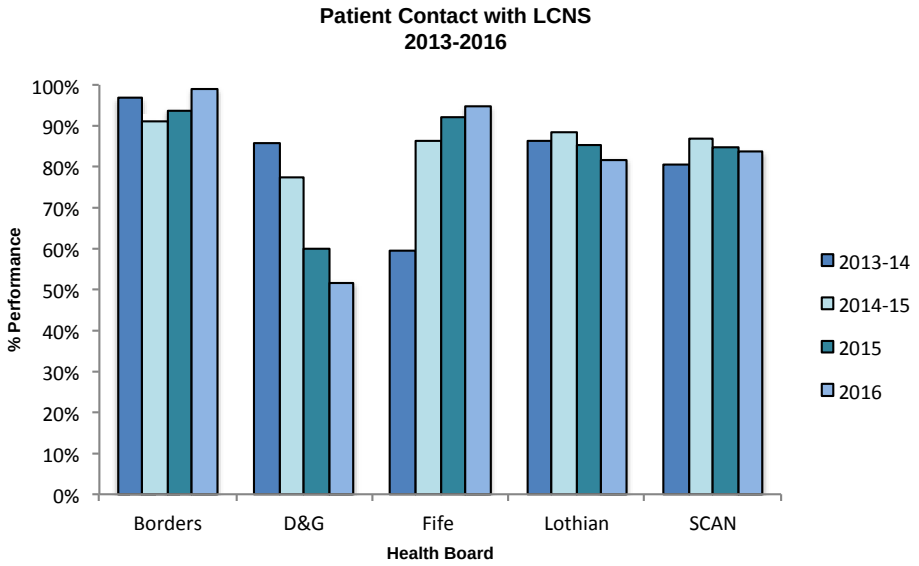
Comments

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

Table 4 Lung Cancer Nurse Specialist (LCNS)

n = patients seen by Lung Cancer Nurse Specialist 01/01/2016 – 31/12/2016

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2016	80	98.8	60	51.7	303	94.7	529	81.8	972	83.5
2015	61	93.8	75	60.0	287	92.0	599	85.2	1022	84.8
2014/2015	80	90.9	118	77.1	287	86.2	594	88.5	1079	86.7
2013/2014	86	96.6	92	86.0	163	59.3	559	86.5	900	80.6



Comments

In NHS Borders, where 98.8% of patients were seen, only 1 patient was not seen by the LCNS. This patient, however, had been transferred to WGH on diagnosis and subsequently passed away in WGH. This is an excellent result for NHS Borders though for some other health boards the ratio of CNS to lung cancer patient remains challenging.

It has been suggested that contact with Palliative CNSs (PCNS) for those patients directly referred to palliative care additionally fulfils the above criteria. NICE guidelines, however, do not consider the crossover between LCNS and PCNS as a 'shared' role and specify that it is *a lung cancer clinical nurse specialist that should be available at all stages of care to support patients and carers*.[13]

Currently there is not a specific QPI quality measure around LCNS support but this, as a crucial measure of patient care, should be considered in future QPI reviews. The NLCA and the national Lung Cancer Forum for Nurses both suggest that 90% of patients should have access to a LCNS at diagnosis and throughout their pathway. In addition, NICE guidelines, as above, recommend all patients have direct access to a LCNS for support throughout the cancer pathway. The Scottish Cancer Plan also recommends all patients have access to a Clinical Nurse Specialist. Currently only Borders and Dumfries & Galloway fulfil this standard/recommendation and this should be addressed. Moreover, charities, for example the Roy Castle Lung Cancer Foundation, see the role of the LCNS as crucial in the provision of optimal patient care; providing support from initial presentation, through investigations to diagnosis, to treatment and thereafter[14].

[13] NICE: National Institute for Health and Care Excellence (April 2011): *Lung Cancer: Diagnosis and Management, Clinical Guideline [CG121]: 1.2 Communication 1.2.2.*

[14] The Roy Castle Lung Cancer Foundation & National Lung Cancer Forum for Nurses (January 2013) *Understanding the Value of Lung Cancer Nurse Specialists.*

Table 5 Pathology Type

n = All patients diagnosed with Lung Cancer 01/01/2016 to 31/12/2016

Pathology Type	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Squamous	11	13.4	16	13.8	46	14.4	132	20.4	205	17.6
Adenocarcinoma	22	26.8	35	30.2	91	28.4	178	27.5	326	28.0
NSCLC (NOS)	3	3.7	3	2.6	15	4.7	30	4.6	51	4.4
Other specific (NSCLC)	2	2.4	3	2.6	8	2.5	14	2.2	27	2.3
SCLC	11	13.4	12	10.3	32	10.0	57	8.8	112	9.6
Carcinoid	1	1.2	-	-	4	1.3	5	0.8	10	0.9
NSCLC combination	-	-	-	-	1	0.3	3	0.5	4	0.3
NSCLC/SCLC mixed	1	1.2	1	0.9	1	0.3	4	0.6	7	0.6
Other malignancy	3	3.7	2	1.7	2	0.6	2	0.3	9	0.8
Negative pathology	5	6.1	1	0.9	8	2.5	29	4.5	43	3.7
Declined investigation	1	1.2	7	6.0	10	3.1	13	2.0	31	2.7
No pathology	22	26.8	36	31.0	102	31.9	180	27.8	339	29.2
Not recorded	-	-	-	-	-	-	-	-	-	-
Pathology Diagnosis	**54**	**65.9**	**72**	**62.1**	**200**	**62.5**	**425**	**65.7**	**751**	**64.5**
Total NSCLC	38	46.3	57	49.1	161	50.3	357	55.2	613	52.6
Total SCLC	12	14.6	13	11.2	33	10.3	61	9.4	119	10.2
Carcinoid & Other	4	4.9	2	1.7	6	1.9	7	1.1	19	1.6
Imaging Diagnosis	**28**	**34.1**	**44**	**37.9**	**120**	**37.5**	**222**	**34.3**	**413**	**35.5**
Cohort	82		116		320		647		1164	

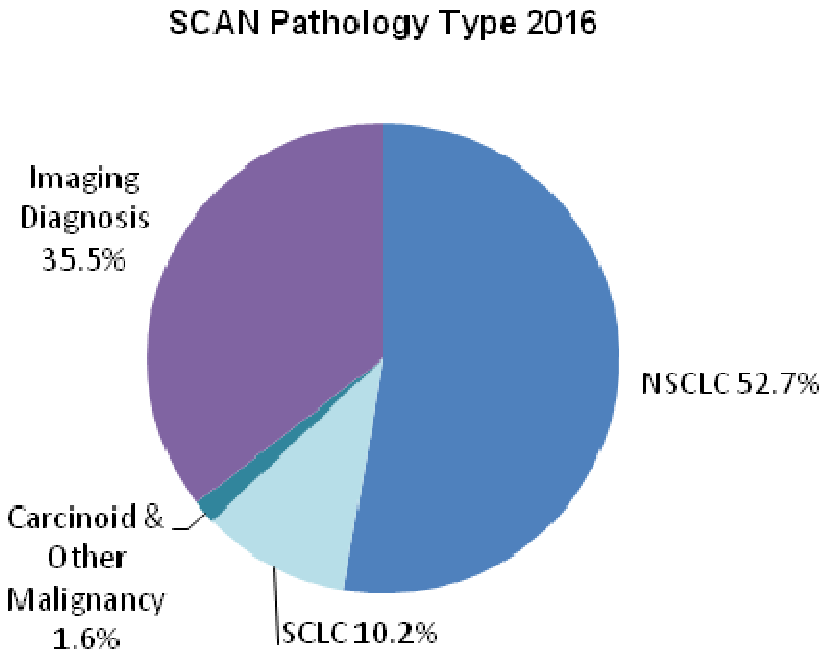


Table 6 Stage Distribution

n = All patients diagnosed with Lung Cancer 01/01/2016 to 31/12/2016

Stage		Borders		D&G		Fife		Lothian		SCAN	
		n	%	n	%	n	%	n	%	n	%
Stage I	IA	14	17.3	3	2.6	43	13.4	95	14.7	155	13.3
	IB	2	2.5	6	5.2	18	5.6	48	7.4	74	6.4
Stage II	IIA	4	4.9	4	3.4	9	2.8	35	5.4	52	4.5
	IIB	3	3.7	5	4.3	15	4.7	22	3.4	45	3.9
Stage III	IIIA	9	11.1	13	11.2	25	7.8	77	11.9	124	10.7
	IIIB	8	9.9	13	11.2	36	11.3	65	10.0	122	10.5
Stage IV		41	50.6	55	47.4	174	54.4	280	43.3	550	47.3
Not Recorded		-	-	17	14.7	-	-	25	3.9	42	3.6
Cohort		81		116		320		647		1164	

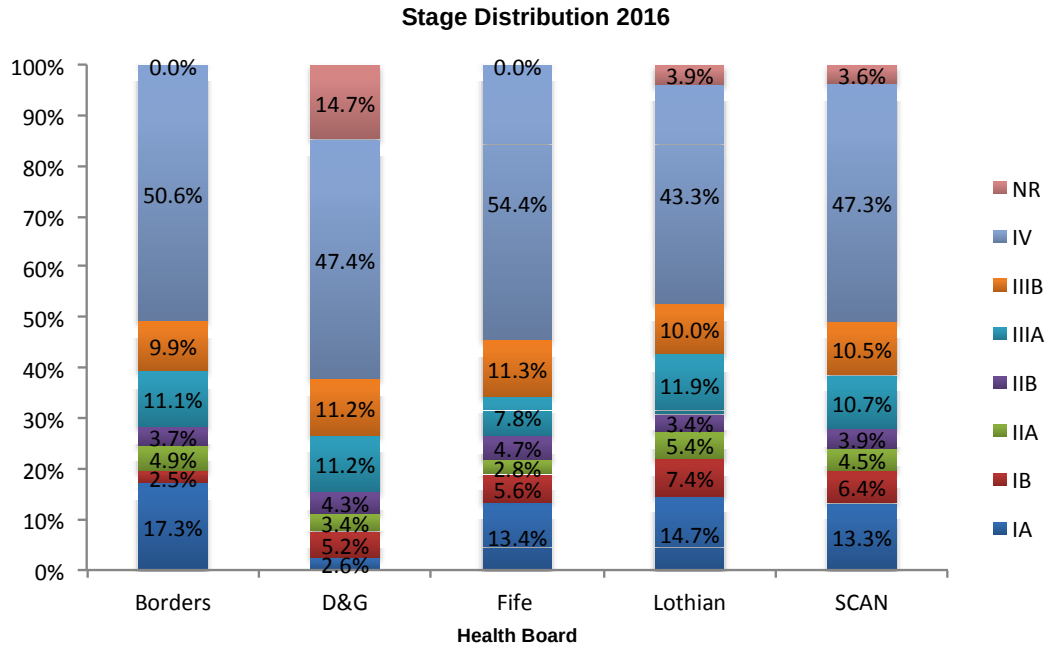


Table 7 First Treatment Type

n = All patients diagnosed with Lung Cancer 01/01/2016 to 31/12/2016

First Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	9	11.1	12	10.3	35	10.9	83	12.8	139	11.9
Radiotherapy	20	24.7	17	14.7	66	20.6	138	21.3	241	20.7
SABR	-	-	-	-	9	2.8	12	1.9	21	1.8
Chemoradiotherapy	8	9.9	7	6.0	34	10.6	60	9.3	109	9.4
Chemotherapy	8	9.9	12	10.3	22	6.9	52	8.0	94	8.1
Endoscopic	-	-	-	-	-	-	-	-	-	-
Biological Therapy	-	-	1	0.9	3	0.9	6	0.9	10	0.9
Best Supportive Care (BSC)	28	34.6	62	53.4	124	38.8	203	31.4	417	35.8
Watchful Waiting	3	3.7	1	0.9	4	1.3	19	2.9	27	2.3
Other Therapy	-	-	-	-	-	-	-	-	-	-
Died before Treatment	3	3.7	1	0.9	13	4.1	41	6.3	58	5.0
Declined Therapies	2	2.5	3	2.6	10	3.1	33	5.1	48	4.1
Not Recorded	-	-	-	-	-	-	-	-	-	-
Cohort	81		116		320		647		1164	

Comments

First Treatment is defined in the QPI Lung Cancer Dataset, Version 2.4: July 2015 as follows:

For any particular modality it is the first treatment and not specifically the definitive treatment i.e. this does not include purely diagnostic biopsies such as incisional biopsies, needle biopsies or core biopsies.

Record patients as having ‘supportive care only’ if a decision was taken not to give the patient any active treatment as part of their primary therapy. No active treatment includes watchful waiting and supportive care but not palliative chemotherapy and/or radiotherapy.

Dilatation without other treatment is not considered as active treatment. Steroids, drainage of pleural effusions etc should not be recorded as first treatment if more substantive treatment such as radiotherapy, chemotherapy or surgery is given. If no further treatment is given, then record as supportive care.

Table 8 Surgery

Table 8 (i) Surgery: Lung Cancer[15]

n = all patients diagnosed with lung cancer 01/01/2016 to 31/12/2016

Surgery	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Pneumonectomy	-	-	-	-	4	11.4	5	6.1	9	6.5
Lobectomy	9	100.0	11	91.7	27	77.1	61	74.4	108	78.3
Wedge	-	-	1	8.3	-	-	3	3.7	4	2.9
Segmental	-	-	-	-	4	11.4	10	12.2	14	10.1
Inoperable	-	-	-	-	-	-	2	2.4	2	1.4
Other	-	-	-	-	-	-	1*	1.2	1	0.7
Not recorded	-	-	-	-	-	-	-	-	-	-
Cohort	9		12		35		82		138	

* NHS Lothian: Other surgery for presumed Glioblastoma Multiforme – resected and pathology returned as Adenocarcinoma from Lung Cancer Primary.

Comments

Wedge procedures should be kept to a minimum and any patients referred for surgical resection but only suitable for wedge resection should be re-evaluated. The patient should be referred back to MDT and the alternative, and less invasive, radiotherapy treatment SABR should be considered.

Table 8 (ii) Surgery: NSCLC

n = all patients diagnosed with lung cancer 01/01/2016 to 31/12/2016

Surgery NSCLC	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Pneumonectomy	-	-	-	-	4	12.9	4	5.1	8	6.2
Lobectomy	8	100.0	11	91.7	23	74.2	60	76.9	102	79.1
Wedge	-	-	1	8.3%	-	-	2	2.6	3	2.3
Segmental	-	-	-	-	4	12.9	9	11.5	13	10.1
Other	-	-	-	-	-	-	1	1.3	1	0.8
Inoperable	-	-	-	-	-	-	2	2.6	2	1.6
Not recorded	-	-	-	-	-	-	-	-	-	-
Cohort	**8**		**12**		**31**		**78**		**129**	

[15] QPI exclusions have not been applied: see QPI 6.1 and 6.2 for QPI results.

Table 9 Radiotherapy

n = All patients diagnosed with Lung Cancer who received Radiotherapy (First or subsequent treatments) 01/01/2016 to 31/12/2016

Radiotherapy	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Radical radiotherapy	14	40.0	5	15.6	17	15.2	62	27.6	98	24.3
SABR	-	-	-	-	10	8.9	13	5.8	23	5.7
Chemoradiotherapy	8	22.9	12	37.5	22	19.6	52	23.1	94	23.3
Adjuvant radiotherapy	-	-	-	-	-	-	7	3.1	7	1.7
Low dose palliative	11	31.4	9	28.1	51	45.5	75	33.3	146	36.1
High dose palliative	2	5.7	6	18.8	12	10.7	5	2.2	25	6.2
Declined radiotherapy	-	-	-	-	-	-	11	4.9	11	2.7
Not recorded	-	-	-	-	-	-	-	-	-	-

APPENDICES

Appendix 1 QPI Attainment Summary – Years 1-3 (2013-14 / 2014-15 / 2015)

Quality Performance Indicators (QPIs) for Lung Cancer			Borders			D & G			Fife			Lothian			SCAN		
		Target %	Yr1	Yr2	Yr3	Yr1	Yr2	Yr3	Yr1	Yr2	Yr3	Yr1	Yr2	Yr3	Yr1	Yr2	Yr3
QPI 1 Pts should be discussed at MDT before definitive treatment		95	-	97.7	96.8	-	80.8	84.8	-	95.9	96.0	-	97.7	97.0	-	95.1	95.4
QPI 2i Pts should have a pathological diagnosis of lung cancer		75	83.3	87.5	79.4	90.5	89.3	91.3	80.8	79.8	82.1	84.2	94.4	76.5	83.9	89.6	79.3
QPI 2ii Pathological diagnosis of NSCLC with sub-type identified		80	82.5	96.4	92.9	84.6	88.4	87.5	82.6	87.0	89.1	84.8	91.3	92.4	84.1	90.3	91.0
QPI 2iii Path diagn of Adeno, IIIB-IV & analysis of predictive markers		75	55.6	75.0	77.8	66.7	78.9	76.2	43.5	62.2	75.6	63.6	85.8	81.7	58.8	79.6	79.2
QPI 3 CT Thorax should be performed prior to bronchoscopy		**95**	100	100	100	98.1	100	100	100	99.2	100	97.8	96.6	98.8	98.5	98.3	99.4
QPI 4 Patients being treated with curative intent have a PET/CT		**95**	100	100	91.7	100	100	100	96.9	95.9	96.8	98.9	100	97.2	98.6	99.0	97.1
QPI 5 NSCLC pts to have investigation of mediastinal malignancy		80	-	55.6	66.7	-	45.5	57.1	-	46.7	46.2	-	90.6	87.8	-	73.0	75.0
QPI 6i Pts with NSCLC should undergo surgical resection		17	24.3	25.5	25.0	21.5	18.8	23.8	20.6	21.7	17.9	28.3	25.0	25.1	25.6	23.5	23.1
QPI 6ii Pts with NSCLC (Stage I-II) should undergo surgery		50	87.5	61.1	83.3	83.3	50.0	84.6	65.1	62.0	53.2	79.0	69.8	66.7	76.5	65.2	65.0
*QPI 7 Pts with NSCLC to have adequate lymph node assessment		80	-	n/a	n/a	-	n/a	n/a	-	n/a	n/a	-	78.6	83.8	-	78.6	83.8
QPI 8 Pts with inoperable lung cancer to have radiotherapy		15	-	45.2	45.0	-	39.2	48.1	-	51.4	45.6	-	50.2	47.3	-	48.8	46.8
QPI 9 Pts with locally advanced NSCLC should have ChemoRads		50	0.0	50.0	100	25.0	40.0	75.0	77.8	66.7	62.5	73.9	80.0	90.5	65.8	70.0	82.9
QPI 10 Pts with Ltd SCLC should have chemoradiotherapy		70	83.3	100	100	0.0	100	33.3	33.3	66.7	80.0	73.3	70.0	83.3	62.1	75.0	73.3
QPI 11i Pts with NSCLC to have SACT		35	46.4	47.4	58.8	41.7	39.2	54.5	37.4	34.7	29.5	38.5	36.0	35.3	39.0	37.0	36.6
QPI 11ii Pts with NSCLC (IIIB-IV), PS 0-1 to receive SACT		60	45.0	60.0	63.6	54.5	50.0	77.8	58.3	67.6	56.7	46.3	60.3	70.0	49.8	60.5	67.0
QPI 12i Patients with SCLC should receive chemotherapy (all types)		70	-	83.3	100	-	76.5	75.0	-	65.9	58.6	-	85.5	72.7	-	77.3	70.5
QPI12.ii Patients with SCLC not undergoing treatment with curative intent should receive palliative chemotherapy		50	-	50.0	100	-	69.2	80.0	-	57.7	47.6	-	82.9	67.9	-	72.0	65.1
QPI 13.1 30 Day Mortality after Treatment	*Surgery	<5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0	1.5	0.6	0.0	1.5
	Radical Radiotherapy	<5	0.0	14.3	0.0	0.0	7.1	0.0	0.0	0.0	0.0	2.9	2.0	1.0	1.7	2.5	0.6
	Adjuvant Chemotherapy	<5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Chemoradiotherapy	<5	0.0	0.0	0.0	33.3	0.0	0.0	0.0	3.3	0.0	0.0	3.3	4.3	1.2	2.7	2.5
	Palliative Chemotherapy	<10	9.1	16.7	18.2	8.3	8.0	5.9	16.0	12.8	6.9	10.9	12.0	8.5	11.7	11.9	8.6
	Biological Therapy	<10	7.7	100	0.0	3.7	0.0	0.0	9.1	0.0	0.0	7.3	0.0	16.7	7.2	5.9	7.7
QPI13.2 90 Day Mortality after Treatment	*Surgery	<5	-	n/a	n/a	-	n/a	n/a	-	n/a	n/a	-	1.3	2.9	-	1.3	2.9
	Radical Radiotherapy	<5	-	14.3	0.0	-	14.3	12.5	-	2.4	2.4	-	6.0	4.8	-	11.7	4.4
	Chemoradiotherapy	<5	-	0.0	0.0	-	9.1	0.0	-	7.4	0.0	-	6.7	17.4	-	6.4	9.9
Clinical Trials QPI	Interventional	7.5														5.0	0.7
	Translational	15														3.9	1.8

Target Met | Target Not Met | - Not reported/ a change in specifications between reporting periods

* D&G patients have surgery at Golden Jubilee Hospital, Clydebank and are therefore included in WOSCAN's report for these QPIs. All patients in Borders, Fife and Lothian have thoracic surgery at the Royal Infirmary of Edinburgh and are accumulated in this report under NHS Lothian.

Note: Allowance should be made where small numbers and variation may be due to chance as is evidenced by the disproportionate percentages which occur in some cases. These should be viewed with a degree of caution.

Appendix 2: Glossary

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

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

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

Audit
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 agree best treatment options and provide optimal care for patients.

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.

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 are squamous cell carcinoma; large cell carcinoma; and adenocarcinoma. Other types include mixed components and NSCLC (not otherwise specified (NOS)). NSCLC 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. Observation of 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 specimens 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.

SABR (Stereotactic Ablative Radiotherapy) Radiotherapy given from many different directions to target the tumour more accurately. It is less invasive treatment with curative intent for patients with NSCLC who are not fit for surgery.

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 3: 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 4: 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. intra-thoracic metastasis
	M1b	Distant metastasis i.e. extra thoracic metastasis

Appendix 5: TNM Stage Groups
(TNM Classification of Malignant Tumours, Seventh Edition, UICC, 2010)

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

Appendix 6: Acknowledgements

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