SCAN
South East Scotland Cancer Network

NHS SCOTLAND

Working regionally to improve cancer services

SOUTH EAST SCOTLAND CANCER NETWORK
PROSPECTIVE CANCER AUDIT

Lung Cancer 2017
QPI Comparative Audit Report

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Document History

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Version 1	Lead Clinicians	22/08/2018	Draft results and outliers circulated
Version 2	SCAN Lung Group To present at Clinical Sign-off Meeting 06/09/2018.	04/09/2018	Amendments to be made as agreed at Clinical Sign-off Meeting.
Version 3	Lead Clinician & Regional Audit/Sign Off Sub Group	21/01/2019	To clarify actions and provide and/or agree clinical commentary.
Version 3.1	To Lead Clinician & SCAN Lung Group. Word document created and shared.	29/01/2019	For final comment by 11/02/2019
Version 4 Final SCAN Report Index	SCAN Lung Group SCAN Governance Framework SCAN Action Plan Board Leads	18/02/2019	Any potentially disclosive data to be removed prior to publication on SCAN Website.
Version 4W	Report published to SCAN Website	July 2019	

Chair Summary

SCAN Lung Cancer 2017 Quality Performance Indicators Comparative Report
Comment by Chair of the SCAN Lung Group

Another year has past and here I present the Quality Performance Indicators (QPI) audit data for the Lung Cancer Service in South-east Scotland, SCAN, for individuals diagnosed within the calendar year 2017. Please make the most of this in your local practice, developing any action points and supporting the quality service that we are delivering here in South-East Scotland. These data, as before, have been collected, checked, considered and critiqued across the Network. This reflects a substantial piece of work by many individuals to whom I offer my sincere thanks.

In last year's comment I reviewed the evolutionary nature of Quality Performance Indicators. This year we are seeing data on new Indicators being presented for the first time and the sharp-eyed amongst you will also notice that a couple have been archived but can, if the need arises, be revisited at a later date. The new Indicator QPI 15(i), (ii) & (iii) aspires to determine a pathological diagnosis before radical treatment to determine the nature of the disease, the likely prognosis and crucially, the treatment choice. It can be difficult to achieve pre-treatment diagnosis of malignancy for some individual patients because of co-morbidities or due to the size and/or anatomical location of the lesion but the tolerance recognises that not everyone will have a pre-treatment diagnosis of malignancy. This is a first year's experience and our performances will be reviewed along with the rest of the Nation in the regular reviews that are undertaken. In all Board areas we have struggled to reach the threshold for patients receiving surgery and radical radiotherapy but the narrative records the real clinical challenges that such an Indicator provides for us and to which we will continue to respond.

Another challenge is, the also new, QPI 16 where the assessment of the brain in individuals with N2 nodal disease receiving potentially curative treatment has also been less than ideal, although numbers are modest. This will formally become an action point, and requires an adjustment of patient flows with reminders at MDMs if not earlier in the patient's journey. This is a very clear example of where a Quality Indicator will and has been accepted as essential to driving clinically relevant patient centred change in practice.

With all the best for the coming year,

Colin Selby
Chair, SCAN Group
September 2018

Clinical Action Points

Action Points 2017: Action Plans will be completed and finalised at board level by Lead Clinicians and approved by Executive Leads.

QPI	Action required	Person Responsible	Date for update
QPI 2 (i)	Since the removal of BSC as exclusion (at Formal Review commencing for patients diagnosed from 1st Jan 2016) SCAN (and Scotland-wide) Health Boards miss the target. Discussions, at the SLCF meeting in Glasgow in 2017 and at SCAN Sign Off, 6th Sept 2018 support reinstating BSC as an appropriate exclusion and perhaps adopting PS 4 as a further 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.	For QPI Review	2019
QPI 2 (ii)	Numerator: Number of patients with a pathological diagnosis of NSCLC who have a tumour **subtype** identified. Code 31 *Combination of non-small cell components* is not included in the measurability document. This category includes adenosquamous and other mixed NSCLC-type cases and should be included as a sub-type within this QPI. This omission is to be raised at the next lung cancer QPI Review and an amendment will be requested.	For QPI Review	2019
QPI 11 (i) & (ii)	SACT data guidelines were discussed at length at the SCAN QPI Report Sign Off meeting, 6th September 2018 and the requirement for more detailed information to be made available to audit staff. Tyrosine Kinase Inhibitors (TKIs), immunotherapy and several other upcoming treatments are set to become routine for NSCLC. It was suggested that detailed treatment information be taken to the next Review for inclusion in the Lung Cancer QPI Data Set Definitions so that audit have the tools and knowledge to ensure SACT data is complete and accurate. It was agreed at the SCAN Lung Group Meeting, 15 February 2019 to introduce a new agenda item "Oncology" which will inform the group of any new oncology treatments and chemotherapy agents which will additionally inform audit data entry.	For QPI Review	2019
QPI 13.1	30 DAY MORTALITY: Point to raise at Review: reporting appropriate end of treatment dates for biological treatment: Query 412 (from 2014 and still in use) NHS Grampian asked: *What would the treatment completed date be for patients on biological treatment e.g. Erlotinib as it is not strictly given in cycles but re-prescribed on a regular basis.* ISD advised: *The advice that has been agreed is that for Erlotinib the date ended should be recorded as inapplicable*. Recently ChemoCare has changed and we can only prescribe 30 days at a time of the -ib tablets so we know the patient CANNOT be on treatment 30 days after the last prescription. Suggest take to Review.	For QPI Review	2019

QPI	Action required	Person Responsible	Date for update
QPI 15 (i), (ii) & (iii)	QPI 15 (cytology/histology before radical treatment) is new to our reporting programme. The target has been set at 75% for all 3 modalities: surgery, radical radiotherapy & chemoradiotherapy. At the SCAN Sign Off meeting it was noted that the results appeared somewhat disappointing for surgery and radical radiotherapy. Concern was voiced as to why the target was not lower for radical radiotherapy given that these patients are not fit for surgery and; should therefore be subject to different criteria and scrutiny. Quite a large number of patients are also referred to surgery without pathology when lesions are too small or inaccessible to biopsy; the patient aware that the lesion may be malignant or benign prior to resection. Additionally, 100% histology would be expected prior to chemoradiotherapy: chemotherapy treatment choices are determined by histological diagnoses. It was agreed that a request for amendment should be submitted at Review. Targets should not be the same for all three modalities.	For QPI Review	2019
QPI 16	Disappointing results. Procedures to be tightened up: these CT or MRI scans should be requested by respiratory medicine as part of the patient's pathway (prior to treatment) when N2 disease has been identified for NSCLC patients who are going on to have curative treatment. An MDM 'reminder' was suggested, similar to that for TNM & PS, so that these requests become common place.	Each MDM site should take responsibility for implementation at MDMs	18/03/19
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. Note: Clinical trial targets remain challenging due to stringent entry criteria for many trials.	SCAN clinicians	18/03/19

Action Point from 2016

QPI	Action required	Progress
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.	Completed with ongoing input.

Lung Cancer QPI Attainment Summary 2017			Target %	Borders	D&G	Fife	Lothian	SCAN
QPI 1 MDT discussion before definitive treatment			95	N 98 / D 101 — 97.0%	N 115 / D 120 — 95.8%	N 309 / D 320 — 96.6%	N 593 / D 620 — 95.6%	N 1115 / D 1161 — 96.0%
QPI 2 Pathological Diagnosis	All patients with lung cancer		80	N 59 / D 96 — 61.5%	N 77 / D 106 — 72.6%	N 189 / D 316 — 59.8%	N 424 / D 676 — 62.7%	N 749 / D 1194 — 62.7%
	NSCLC with sub-type identified		90	N 43 / D 48 — 89.6%	N 57 / D 62 — 91.9%	N 146 / D 161 — 90.7%	N 312 / D 341 — 91.5%	N 558 / D 612 — 91.2%
	Non squamous IIIB-IV: molecular profiling		75	N 16 / D 21 — 76.2%	N 22 / D 26 — 84.6%	N 67 / D 78 — 85.9%	N 107 / D 129 — 82.9%	N 212 / D 254 — 83.5%
QPI 4 Patients being treated with curative intent who have a PET/CT before treatment			95	N 22 / D 24 — 91.7%	N 23 / D 23 — 100%	N 57 / D 58 — 98.3%	N 160 / D 168 — 95.2%	N 262 / D 273 — 96.0%
*QPI 6 Surgical resection in NSCLC patients	All NSCLC		20	Analysis is by Hospital of Surgery: RIE			N 186 / D 615 — 30.2%	N / D — n/a
	NSCLC Stage I-II		60	Analysis is by Hospital of Surgery: RIE			N 157 / D 205 — 76.6%	N / D — n/a
*QPI 7 Lymph node assessment for NSCLC patients having pneumonectomy or lobectomy			80	Analysis is by Hospital of Surgery: RIE			N 137 / D 165 — 83.0%	N / D — n/a
QPI 8 Radiotherapy (including SABR) for inoperable lung cancer			35	N 13 / D 28 — 46.4%	N 10 / D 31 — 32.3%	N 45 / D 111 — 40.5%	N 110 / D 239 — 46.0%	N 178 / D 409 — 43.5%
QPI 9 Chemoradiotherapy for locally advanced NSCLC			50	N 1 / D 3 — 33.3%	N 3 / D 3 — 100%	N 5 / D 7 — 71.4%	N 8 / D 17 — 47.1%	N 17 / D 30 — 56.7%
QPI 10 Chemoradiotherapy for Limited stage SCLC			70	N 1 / D 4 — 25.0%	N 4 / D 4 — 100%	N 3 / D 4 — 75.0%	N 2 / D 8 — 25.0%	N 10 / D 20 — 50.0%
QPI 11 SACT for patients with inoperable NSCLC	All types of SACT for NSCLC		35	N 17 / D 29 — 58.6%	N 18 / D 40 — 45.0%	N 49 / D 120 — 40.8%	N 85 / D 222 — 38.3%	N 169 / D 411 — 41.1%
	Biological therapy for NSCLC stage IIIB-IV, PS 0-1		60	N 0 / D 0 — n/a	N 2 / D 2 — 100%	N 3 / D 3 — 100%	N 15 / D 17 — 88.2%	N 20 / D 22 — 90.9%
QPI 12 SACT for patients with SCLC	All types of chemotherapy for SCLC		70	N 9 / D 10 — 90.0%	N 10 / D 11 — 90.9%	N 18 / D 26 — 69.2%	N 38 / D 59 — 64.4%	N 75 / D 106 — 70.8%
	Palliative chemotherapy for SCLC patients having treatment with non-curative intent		50	N 6 / D 7 — 85.7%	N 5 / D 6 — 83.3%	N 13 / D 21 — 61.9%	N 33 / D 52 — 63.5%	N 57 / D 86 — 66.3%

Lung Cancer QPI Attainment Summary 2017		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 3 D 192 1.6%	N D n/a
	Radical Radiotherapy	<5	N 0 D 11 0%	N 0 D 6 0%	N 0 D 33 0%	N 0 D 101 0%	N 0 D 151 0%
	Adjuvant Chemotherapy	<5	N 0 D 4 0%	N 0 D 3 0%	N 0 D 2 0%	N 0 D 14 0%	N 0 D 23 0%
	Chemoradiotherapy	<5	N 0 D 8 0%	N 1 D 9 11.1%	N 0 D 14 0%	N 0 D 21 0%	N 1 D 52 1.9%
	Palliative Chemotherapy (NSCLC)	<10	N 0 D 12 0%	N 0 D 10 0%	N 3 D 27 11.1%	N 3 D 35 8.6%	N 6 D 84 7.1%
	Palliative Chemotherapy (SCLC)	<15	N 2 D 6 33.3%	N 1 D 5 20.0%	N 1 D 14 7.1%	N 3 D 31 9.7%	N 7 D 56 12.5%
	Biological Therapy (NSCLC)	<10	N 0 D 3 0%	N 0 D 4 0%	N 0 D 9 0%	N 0 D 34 0%	N 0 D 50 0%
*QPI 13.2 90 Day Mortality After Treatment	*Surgery	<5	Analysis is by Hospital of Surgery: RIE			N 5 D 181 2.8%	N D n/a
	Radical Radiotherapy	<5	N 0 D 11 0%	N 0 D 6 0%	N 2 D 30 6.7%	N 4 D 99 4.0%	N 6 D 146 4.1%
	Chemoradiotherapy	<5	N 3 D 8 37.5%	N 1 D 8 12.5%	N 0 D 13 0%	N 1 D 15 6.7%	N 5 D 44 11.4%
QPI 14 SABR for Inoperable Lung Cancer with Stage I Disease		35	N 2 D 4 50.0%	N 2 D 4 50.0%	N 8 D 25 32.0%	N 26 D 66 39.4%	N 38 D 99 38.4%
QPI 15 Cytological/Pathological Diagnosis Prior to Treatment	Surgery	75	N 4 D 14 28.6%	N 6 D 15 40.0%	N 19 D 29 65.5%	N 73 D 107 68.2%	N 102 D 165 61.8%
	Radical Radiotherapy	75	N 6 D 11 54.5%	N 3 D 5 60.0%	N 18 D 31 58.1%	N 58 D 102 56.9%	N 85 D 149 57.0%
	Chemoradiotherapy	75	N 8 D 8 100%	N 9 D 9 100%	N 17 D 17 100%	N 21 D 21 100%	N 55 D 55 100%
QPI 16 Contrast CT/MRI for N2 Pts Prior to Curative Treatment		95	N 5 D 13 38.5%	N 5 D 6 83.3%	N 5 D 9 55.6%	N 22 D 33 66.7%	N 37 D 61 60.7%

Lung Cancer QPI Attainment Summary 2017	Target %	Borders	D&G	Fife	Lothian	SCAN
Clinical Trials N=patients consented to trials/research and held on SCRN database. D= 5year average from Cancer Registry	15	N 0 D 106 0%	N 0 D 120 0%	N 1 D 337 0.3%	N 24 D 682 3.5%	N 25 D 1245 2.0%

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 QPIs 6(i), 6(ii), 7, 13.1(i) and 13.2(i).
All patients in NHS Borders, Fife and Lothian have thoracic surgery at the Royal Infirmary of Edinburgh (RIE). Some patients from outwith the SCAN area have surgery at RIE, e.g. patients referred from Tayside. These are identified throughout the report as required.
SCAN totals are therefore not appropriate for these QPIs and are marked as being not applicable.

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 and 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 2017 and 31 December 2017 and who were treated in one of the four constituent health board areas; comprising South East Scotland Cancer Network (SCAN) – Borders, Dumfries & Galloway (D&G), 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 has been published by HIS[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 and 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.	

QPI Review Process

QPIs are kept under regular review, are updated and, crucially, are 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 at this time, taking effect from Year 4 (2016) onwards: QPI 3 was adjudged to be surpassing aims and objectives with targets easily met

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

by all regions. Secondly, since QPI 5 results were not reflecting actual clinical practice or achieving the intended terms of improvement.

Audit Process
Patients are mainly identified through registration at weekly multi-disciplinary meetings, and through checks made against pathology listings, General Register Office (GRO) records, and the Lung Cancer Nurse Specialist (LCNS or CNS) database. Oncology data is available in patients' case notes and electronically via ARIA Varian and other 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 a national system used by all health boards across NHS Scotland: Electronic-Cancer Audit Support Environment (e-Case).

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 Hosni El Taweel Ms Lynda Taylor	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

Scottish Cancer Registry Incidence

Case Ascertainment & Scottish Cancer Registry

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.

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

In the most recent period (1st January to 31st December 2017) 1245 patients were diagnosed with lung cancer (ICD-codes: C33, C34) in the SCAN region.

Number of patients recorded in audit:

patients diagnosed 01/01/2017 to 31/12/2017

	Borders	D&G	Fife	Lothian	SCAN
Number of cases in audit cohort	106	120	337	682	1245

Estimate of case ascertainment: calculated using the average of the most recent available three years of Cancer Registry data (2012-2016)

	Borders	D&G	Fife	Lothian	SCAN
Number of cases from audit	106	120	337	682	1245
Cases from Cancer Registry (2014-2016)	94	143	341	764	1342
Case Ascertainment	**112.8%**	**83.9%**	**98.8%**	**89.3%**	**92.8%**

Source: Scottish Cancer Registry, ISD. Data extracted from ACaDMe: 11/06/2018

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 are reviewed and signed-off locally.
- Collated results were presented and discussed at the SCAN Lung Sign off Meeting on 6th September 2018, at which point clinical recommendations were agreed.
- The final draft, complete with agreed amendments from the sign off meeting on 6th September, was circulated to the SCAN Lung Group on 29th January 2019 for final comments.
- The Final report was circulated to the SCAN Lung Group, Clinical Governance Groups and SCAN Action Plan Board Leads on 18/02/2019.
- 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 in driving improvements and, where appropriate, making changes to the ways care is delivered. Action plans and details of their progress 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**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI[3]	5	0	17	60	82
Numerator	98	115	309	593	1115
Not recorded for numerator	1	0	0	0	1
Denominator	101	120	320	620	1161
Not recorded for exclusions	0	0	0	1	1
Not recorded for denominator	0	0	0	2	2
% Performance	**97.0%**	**95.8%**	**96.6%**	**95.6%**	**96.0%**

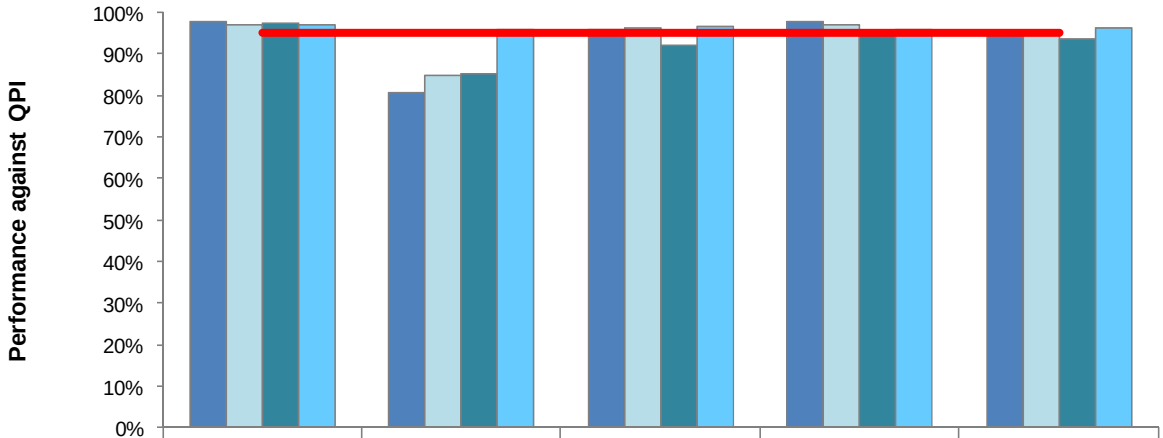
Comments

The target was met across SCAN Health Boards.

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 are appropriately managed. Urgent indication of treatment, for example, emergency radiotherapy for spinal cord compression or compromised airway, represents good practice and should take precedence as required.

QPI 1: Multidisciplinary Team Meeting
Lung Cancer: 2014 - 2017



	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%
2017	97.0%	95.8%	96.6%	95.6%	96.0%
Target	95%	95%	95%	95%	95%

[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 (i) 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 = Patients who decline investigations or surgical resection

Target 80%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	10	14	21	6	51
Numerator	59	77	189	424	749
Not recorded for numerator	0	0	0	0	0
Denominator	96	106	316	676	1194
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**61.5%**	**72.6%**	**59.8%**	**62.7%**	**62.7%**

Comments

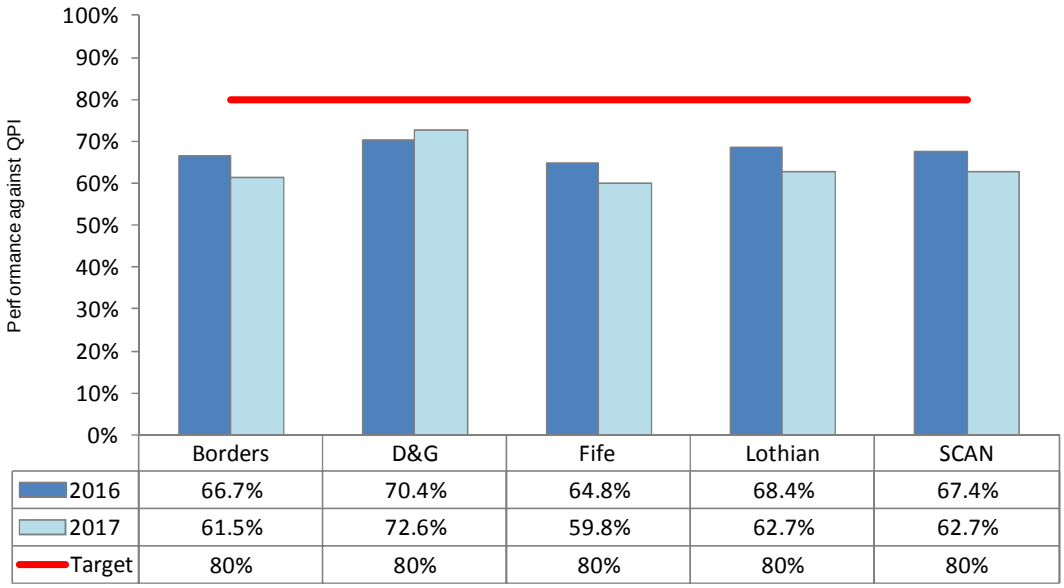
NHS Borders: The target was not met with a shortfall of 18.5% (37 cases). Tissue could not be obtained due to patient comorbidities and/or poor fitness levels. .

NHS D&G: The target was not met with a shortfall of 7.4% (29 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 20.2% (127 cases). Tissue could not be obtained due to patient comorbidities and/or poor fitness levels.

NHS Lothian: The target was not met with a shortfall of 17.3% (252 cases). Tissue could not be obtained in these cases. Of note, 65% of these patients were not suitable for active treatment but were candidates for best supportive care (BSC); generally due to poor fitness levels and/or comorbidities.

QPI 2 (i) Pathological Diagnosis
Lung Cancer: 2016-2017



	Borders	D&G	Fife	Lothian	SCAN
2016	66.7%	70.4%	64.8%	68.4%	67.4%
2017	61.5%	72.6%	59.8%	62.7%	62.7%
Target	80%	80%	80%	80%	80%

N.B. Change to measurability (BSC removed) and target increase in 2016 (75% to 85%) therefore chart shows only 2 years of data.

While these results appear disappointing they need to be considered in a wider context.

QPIs, which have been developed by clinical experts, are constantly reviewed to assess their continuing viability and to ensure they are flexible and responsive to change. The review

process provides a platform to ensure QPIs are, and remain, effective; to learn from experience and agree to make necessary modifications as required.

When this QPI was originally developed *patients receiving (best) supportive care* were excluded from the denominator. At Formal Review it was agreed to delete "*patients receiving supportive care"* from exclusions and this was implemented for patients diagnosed from 1st January 2016. Additionally, the target was increased from 75% to 80%.

Consequently, targets have been consistently missed, as shown in the results above, and apparent for 2016 results reported across Scotland and discussed at the Scottish Lung Cancer Forum (SLCF)/National Meeting on 6th October 2017.

BSC patients are generally not candidates for active treatment and often have significant comorbidities and/or poor fitness levels. Investigative procedures and treatment management choices are often limited and, indeed, invasive procedures are seldom appropriate for this group. When BSC patients are excluded from analyses the results below are obtained, and targets are generally met.

% Performance in previous years *BSC patients excluded*	Borders	D&G	Fife	Lothian
2017	78.1%	89.1%	83.0%	85.3%
2016	74.5%	90.3%	85.6%	80.7%

At the SLCF meeting it was generally accepted that this QPI requires further adjustment. Discussions support reinstating BSC as an appropriate exclusion and/or adopting performance status (PS) 4 as an exclusion. It is viewed as inappropriate/not best practice to biopsy patients who are not fit (poor PS), or those with significant comorbidities whose treatment management is likely supportive care only. Another influencing factor is the location of the tumour, making biopsy possible or not. These factors are due to be considered at the next QPI Review.

2 (ii) Pathological Diagnosis of NSCLC: Sub-type Identified Target = 90%

Numerator = Number of patients with a pathological diagnosis of Non Small Cell Lung Cancer (NSCLC[4]) who have a tumour sub-type identified.[5]

Denominator = All patients with a pathological diagnosis of NSCLC (no exclusions).

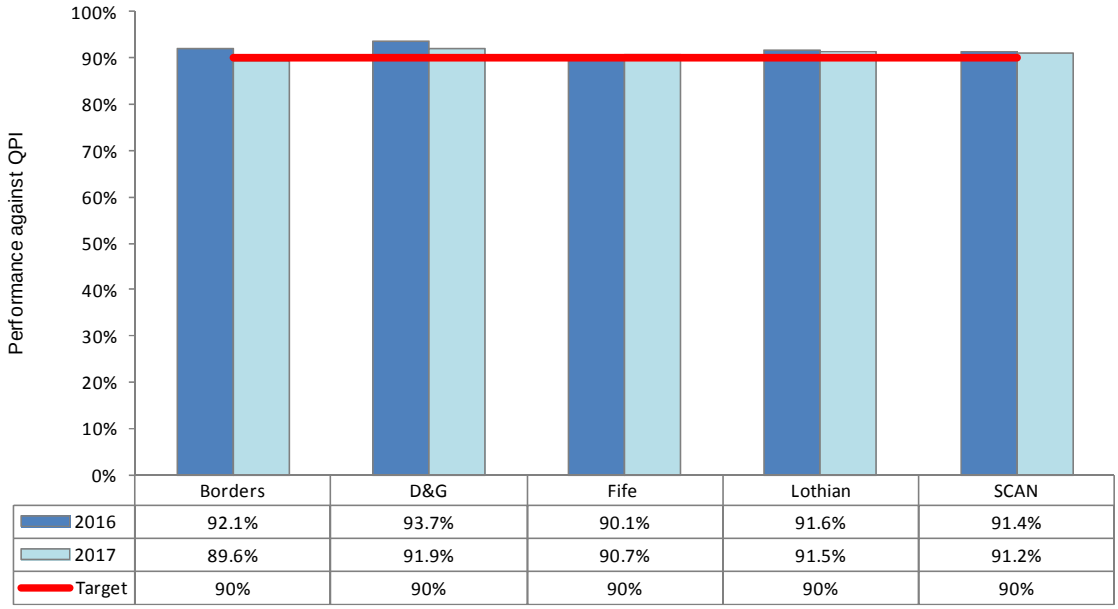
Target 90%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	57	58	176	341	632
Numerator	43	57	146	312	558
Not recorded for numerator	0	0	0	0	0
Denominator	48	62	161	341	612
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**89.6%**	**91.9%**	**90.7%**	**91.5%**	**91.2%**

Comments

The target was met by NHS Dumfries & Galloway, Fife, and Lothian.

NHS Borders: The target was not met with a shortfall of 0.4% (5 cases). These were reviewed by Pathology and 4 were confirmed as NSCLC (Not Otherwise Specified (NOS)). It is not always possible to provide detailed sub-typing as there are still a small proportion of cases where sub-classification is not possible; due either to the result of a 'null' immunohistochemistry (IHC) phenotype or where there are poorly differentiated malignant cells but insufficient material is available for subsequent IHC. NHS Borders rate is marginally lower than other health boards; however, this probably reflects lower numbers as a shift in 1 case would bring them over the 90% target. There was also 1 patient whose pathology was sub-typed as Code 31 *Combination of non-small cell components*. This category includes adenosquamous and other mixed NSCLC-type cases and should be specified as a sub-type within this QPI. This omission will be raised at the next lung cancer QPI Review and an amendment will be requested.

QPI 2 (ii) Pathology:Sub-Type
NSCLC: 2016-2017



	Borders	D&G	Fife	Lothian	SCAN
2016	92.1%	93.7%	90.1%	91.6%	91.4%
2017	89.6%	91.9%	90.7%	91.5%	91.2%
Target	90%	90%	90%	90%	90%

The target was changed at Formal Review from 80% to 90% and took effect for patients diagnosed from 1st January 2016 onwards. The above table cannot therefore account for data prior to 2016.

[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.

2 (iii) Non-Squamous, Stage IIIB or IV: Molecular Profiling Analysis Target = 75%

Numerator = Number of patients with a pathological diagnosis of non-squamous NSCLC, Stage IIIB or IV who have molecular profiling tests[6] undertaken

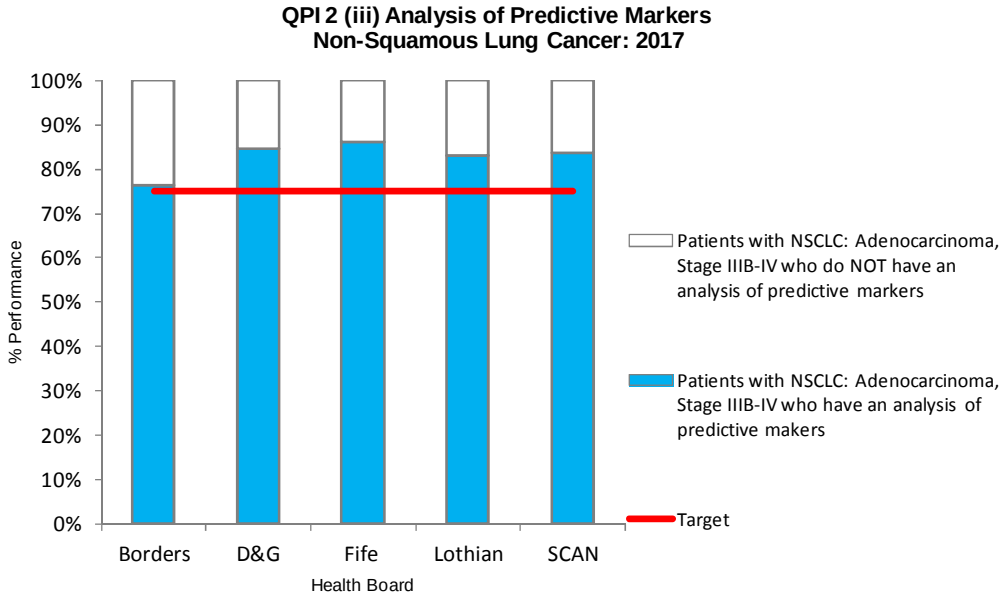
Denominator = All patients with a pathological diagnosis of non-squamous NSCLC, Stage IIIB or IV

Exclusions = Patients with PS 4

Target 75%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	85	90	259	552	986
Numerator	16	22	67	107	212
Not recorded for numerator	0	0	0	0	0
Denominator	21	26	78	129	254
Not recorded for exclusions	0	0	0	3	3
Not recorded for denominator	1	5	0	1	7
% Performance	**76.2%**	**84.6%**	**85.9%**	**82.9%**	**83.5%**

Comments

The target was met across SCAN Health Boards.



The denominator was changed in 2016 from 'NSCLC patients with stage IIIB-IV' to 'non-squamous NSCLC, stage IIIB-IV'. In addition, molecular profiling has been extended to include Oncogenic Anaplastic Lymphoma Kinase (ALK) testing and the new data field [ALK] was introduced at the beginning of 2017. Consequently only one year's data is available at this time.

[6] QPI 2 (iii) reports on two types of molecular profiling: EGFR (Epidermal Growth Factor Receptor) and ALK (Oncogenic Anaplastic Lymphoma Kinase). It is acknowledged by the QPI Development and Review teams that there are several markers and other genetic mutations, for example PD-L1. Developments and modifications will be continually reviewed going forward.

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[7] who undergo PET CT prior to start of treatment

Denominator = All patients diagnosed with NSCLC who are treated with curative intent, (no exclusions)

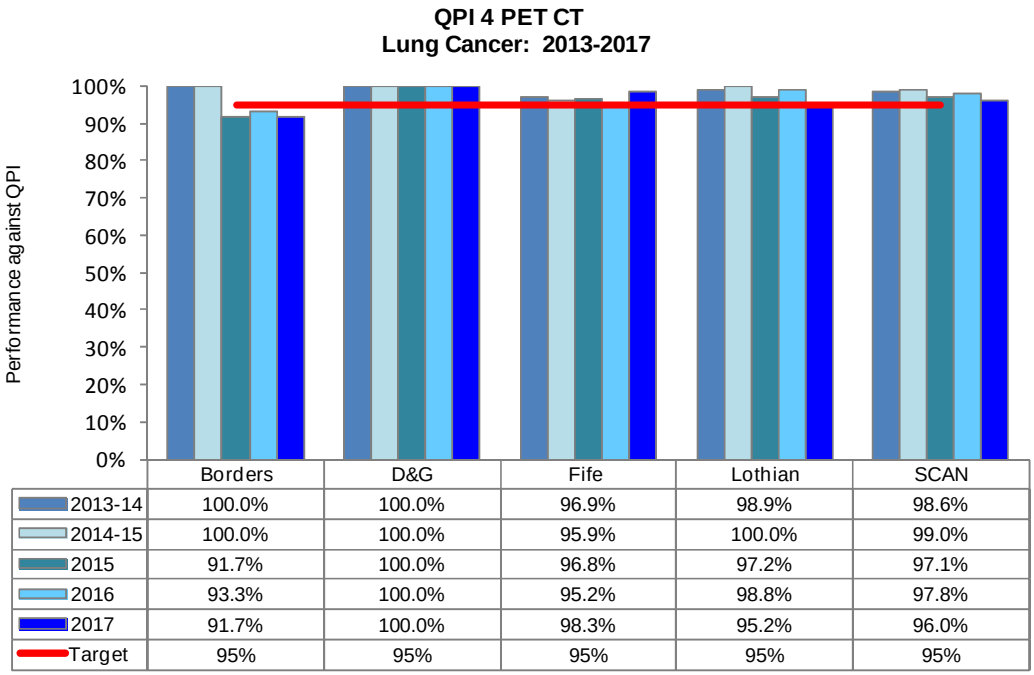
Target 95%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	81	97	279	514	971
Numerator	22	23	57	160	262
Not recorded for numerator	0	0	0	0	0
Denominator	24	23	58	168	273
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**91.7%**	**100.0%**	**98.3%**	**95.2%**	**96.0%**

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.

NHS Borders: The target was not met with a shortfall of 3.3% (2 cases). 1 patient was originally thought to be non-curative with liver metastasis but this was found to be a haemangioma and the patient later went on to receive curative treatment. The other patient proceeded to surgery with a differential diagnosis of lung abscess or lung cancer; pathology at surgery revealed this as lung cancer.

In reviewing results, allowance should be made where small numbers and variation may be due to chance.



	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%
2017	91.7%	100.0%	98.3%	95.2%	96.0%
Target	95%	95%	95%	95%	95%

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

Treatment Management

QPI 6 Surgical Resection in Non-Small Cell Lung Cancer

6 (i) NSCLC and Surgical Resection Target = 20%

Numerator = Number of patients with NSCLC who undergo surgical resection

Denominator = All patients with NSCLC

Exclusions = Patients who decline surgery, who die before surgery or who undergo SABR[8]

(a) By Hospital of Surgery 2017

Target 20%	**Royal Infirmary of Edinburgh**
Numerator	186
Not recorded for numerator	0
Denominator*	615
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**30.2%**

* 42 patients (NSCLC) from NHS Tayside had surgery at RIE and are included in the above table.

Comments

Thoracic surgery is centralised in SCAN and patients from NHS 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 and are reported by West of Scotland Cancer Network (WOSCAN). They are not included in table (a). Results by board of diagnosis are not required by the QPI process but are shown in table (b) below.

The target was exceeded in 2017 and no action is required.

QPI 6 (i) was amended with effect from 1st January 2017. The target was raised from 17% to 20% and an additional exclusion '*patients who undergo SABR*' was applied. Consequently only one year's data is available for analysis at this time.

It was agreed at the SCAN QPI Lung Cancer Report Sign-Off Meeting in September 2017 to additionally include local results in a separate table by health board to include D&G under the SCAN umbrella. It should be noted, however, that the following board-based table is not subject to QPI targets or to action plans. These results are included for information purposes only.

(b) By Board of Diagnosis

Target n/a	**Borders**	**D&G**	**Fife**	**Lothian**
2017 cohort	106	120	337	682
Ineligible for this QPI	57	59	191	348
Numerator	14	16	28	102
Not recorded for numerator	0	0	0	0
Denominator	48	61	146	334
Not recorded for exclusions	0	0	0	0
Not recorded for denominator	0	0	0	0
% Performance	**29.2%**	**26.2%**	**19.2%**	**30.5%**

[8] SABR: Stereotactic Ablative Radiotherapy

6 (ii) NSCLC, Stage I-II and Surgical Resection Target = 60%

Numerator = Number of patients with NSCLC, Stage I-II[9] who undergo surgical resection

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

Exclusions = Patients who decline surgery, who die before surgery or who undergo SABR

(a) By Hospital of Surgery 2017

Target 60%	**Royal Infirmary of Edinburgh**
Numerator	157
Not recorded for numerator	0
Denominator	205
Not recorded for exclusions	0
Not recorded for denominator	4
% Performance	**76.6%**

* 36 patients (NSCLC stage I-II) from NHS Tayside had surgery at RIE and are included in the above table.

Comments

Again, table (a) comprises patients diagnosed in NHS Borders, Fife and Lothian who have surgical procedures carried out at the Royal Infirmary of Edinburgh; patients diagnosed in D&G have surgery at the Golden Jubilee Hospital, Clydebank and are included in WOSCAN's reporting.

The target was exceeded in 2017 and no action is required.

At the SCAN QPI Lung Cancer Report Sign-Off Meeting in December 2017 it was noted that around 23% of stage I and II NSCLC patients had not received surgery. Patients who are borderline candidates or deemed too high risk for surgery, due to poor fitness or comorbidities, might be offered radical radiotherapy, including SABR (although excluded from this QPI); while others' poor fitness or medical frailty might preclude active treatment altogether. It was agreed that the above results represent good practice. All patients are discussed fully at MDM so that all approaches are considered and to ensure that all proper processes take their course.

Historic comparisons cannot be made to this QPI. In line with QPI 6 (i), SABR was applied as a new exclusion in 2017 and the target was raised from 50% to 60%. These changes took effect for patients diagnosed from 1st January 2017.

Table (b) shows local results, included here for information purposes only and not subject to QPI targets.

(b) By Board of Diagnosis

Target n/a	**Borders**	**D&G**	**Fife**	**Lothian**
2017 cohort	106	120	337	682
Ineligible for this QPI	95	102	301	565
Numerator	9	9	25	87
Not recorded for numerator	0	0	0	0
Denominator	10	13	36	118
Not recorded for exclusions	0	0	0	0
Not recorded for denominator	0	5	0	3
% Performance	**90.0%**	**69.2%**	**69.4%**	**73.7%**

[9] Stage I-II: T1aN0 – T2bN1, or T3N0.

QPI 7 Lymph Node 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 (no exclusions)

(a) Reported by Hospital of Surgery 2017

Target 80%	**Royal Infirmary of Edinburgh**
Numerator	137
Not recorded for numerator	0
Denominator	165
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**83.0%**

* 28 patients (NSCLC: lobectomy or pneumonectomy) from NHS Tayside had surgery at RIE and are included in the above table.

Comment

Table (a) comprises patients diagnosed in NHS Borders, Fife and Lothian who have surgical procedures carried out at the Royal Infirmary of Edinburgh; patients diagnosed in D&G have surgery at the Golden Jubilee Hospital, Clydebank and are included in WOSCAN's reporting.

The target was exceeded in 2017 and no action is required.

This QPI was previously measured by Board of Diagnosis. Comparable data is however available for patients diagnosed in 2016 where performance was reported as 83.2%; similar to results achieved in 2017.

Table (b) shows local results, included here for information purposes only and not subject to QPI targets.

(b) Reported by Board of Diagnosis

Target : n/a	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	94	105	311	587	1097
Numerator	10	14	23	76	123
Not recorded for numerator	0	0	0	0	0
Denominator	12	15	26	95	148
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**83.3%**	**93.3%**	**88.5%**	**80.0%**	**83.1%**

QPI 8 Radiotherapy for Inoperable Lung Cancer **Target = 35%**

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

Denominator = All patients with lung cancer not undergoing surgery

Exclusions = Patients with Small Cell Lung Cancer (SCLC), patients who decline radiotherapy, patients who die prior to treatment and patients with stage IV disease

Target 35%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	78	89	226	443	836
Numerator	13	10	45	110	178
Not recorded for numerator	0	0	0	1	1
Denominator	28	31	111	239	409
Not recorded for exclusions	1	8	0	13	22
Not recorded for denominator	0	0	0	0	0
% Performance	**46.4%**	**32.3%**	**40.5%**	**46.0%**	**43.5%**

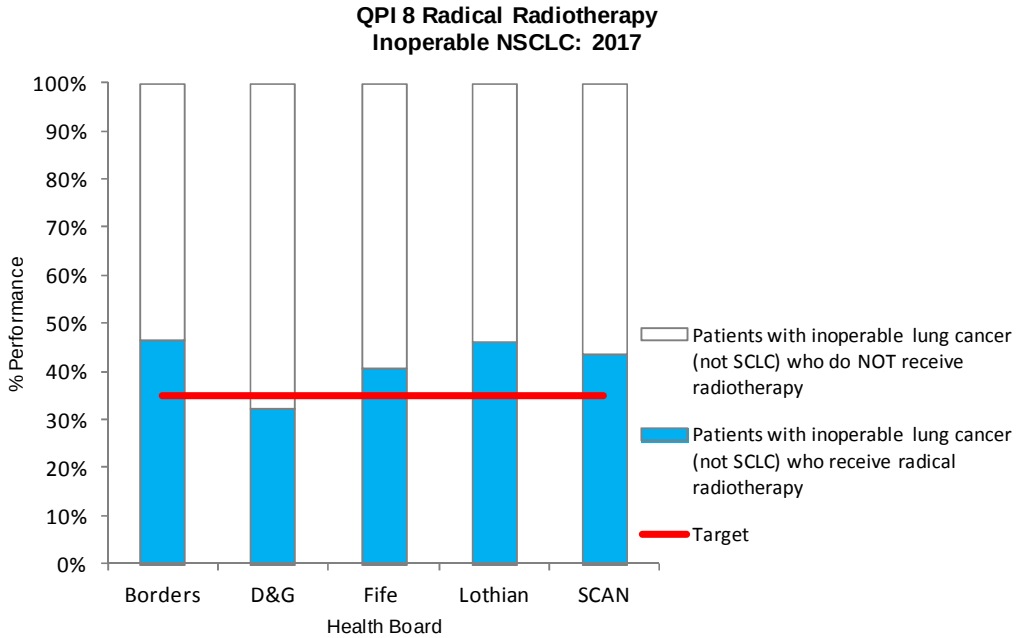
Note: Patients not recorded for exclusions do not have their M stage recorded and as such it is impossible to access whether or not their cancer is stage IV. These patients, however, are retained in the denominator and are shown under 'Not recorded for exclusion' for information purposes.

Comments

The target was met by NHS Borders, Fife and Lothian.

NHS D&G: The target was not met with a shortfall of 2.7% (21 cases). These patients were not candidates for radiotherapy due to poor fitness levels.

At Formal Review it was agreed to increase the target to 35% and to include the relatively recent treatment SABR (Stereotactic Ablative Radiotherapy) as part of the criteria for numerator. A new data field [SABR] has been introduced to the lung cancer data set for patients diagnosed with lung cancer from 1st January 2017.Comparable historic data is not available and a single year's chart is therefore appropriate.



10 Radical Radiotherapy = Dose given for NSCLC ≥54Gy.

QPI 9 Chemoradiotherapy: Locally Advanced Non Small Cell Lung Cancer
Target = 50%

Numerator = Number of patients with NSCLC, Stage IIIA[11] and Performance Status (PS) 0-1, not undergoing surgery and who receive Chemoradiotherapy[12]

Denominator = All patients with NSCLC, Stage IIIA and PS 0-1 not undergoing surgery but who receive radical radiotherapy[13]

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

Target 50%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	103	116	330	665	1214
Numerator	1	3	5	8	17
Not recorded for numerator	0	0	0	0	0
Denominator	3	3	7	17	30
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	1	0	0	1
% Performance	**33.3%**	**100.0%**	**71.4%**	**47.1%**	**56.7%**

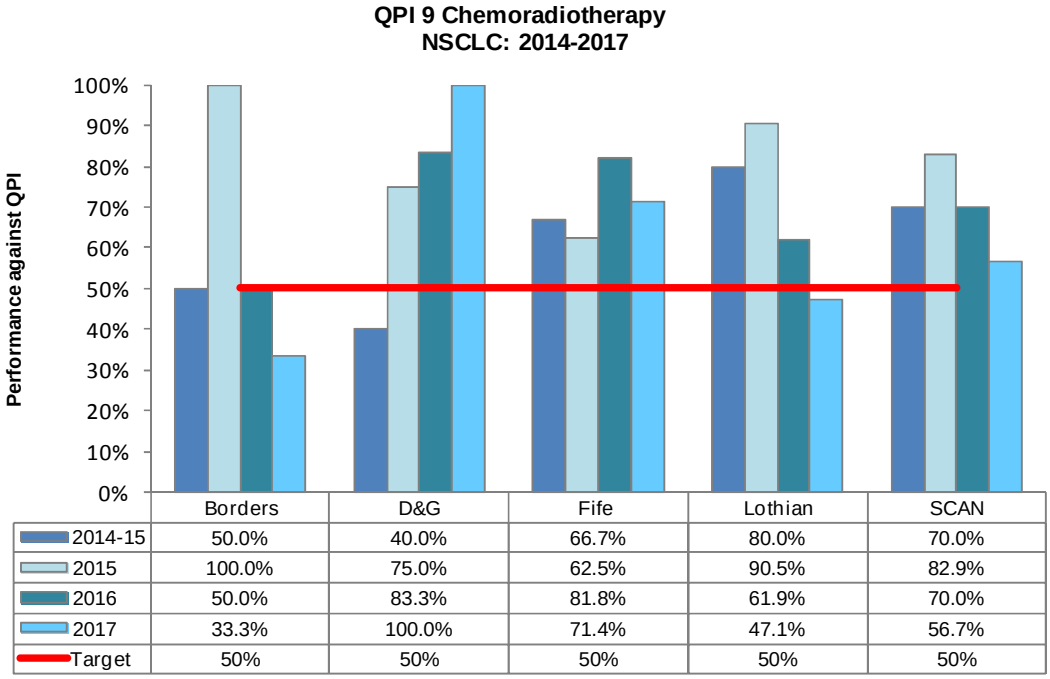
Comments

The target was met by NHS Dumfries & Galloway and Fife.

NHS Borders: The target was not met with a shortfall of 16.7% (2 cases). Chemotherapy was contraindicated for one patient who had radical radiotherapy only. The second patient declined chemotherapy an agreed to radical radiotherapy.

NHS Lothian: The target was not met with a shortfall of 2.9% (9 cases). The risks of adding chemotherapy outweighed the benefits for these patients and all were treated with radical radiotherapy.

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



	Borders	D&G	Fife	Lothian	SCAN
2014-15	50.0%	40.0%	66.7%	80.0%	70.0%
2015	100.0%	75.0%	62.5%	90.5%	82.9%
2016	50.0%	83.3%	81.8%	61.9%	70.0%
2017	33.3%	100.0%	71.4%	47.1%	56.7%
Target	50%	50%	50%	50%	50%

[11] Stage IIIA NSCLC includes: T1a N2; T1b N2; T2a N2; T3 N1; T3 N2; T4 N0; T4 N1.
[12] NSCLC Chemoradiotherapy: radiotherapy ≥ 54Gy and concurrent or sequential chemotherapy.
[13] Radical radiotherapy: dose given for NSCLC ≥ 54Gy.

QPI 10 Chemoradiotherapy in Limited Stage Small Cell Lung Cancer Target = 70%

Numerator = Number of patients with SCLC, Stage I-IIIB[14] and PS 0-1 who receive Chemoradiotherapy[15]

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

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

Target 70%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	102	116	332	671	1221
Numerator	1	4	3	2	10
Not recorded for numerator	0	0	0	0	0
Denominator	4	4	4	8	20
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	3	3
% Performance	**25.0%**	**100.0%**	**75.0%**	**25.0%**	**50.0%**

Comments

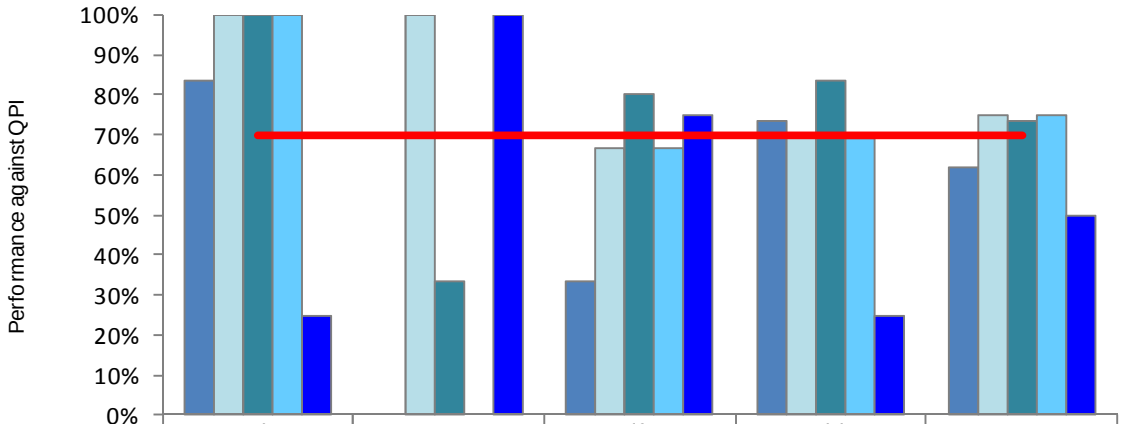
The target was met by NHS D&G and Fife.

NHS Borders: The target was not met with a shortfall of 45% (3 cases).
1 patient died while undergoing chemotherapy, before radiotherapy could be given. 1 patient received 2 cycles of chemotherapy and did not attend for further treatment. 1 patient had received their chemotherapy component and was due to return to discuss radiotherapy at time of reporting .

NHS Lothian: The target was not met with a shortfall of 45% (6 cases). 2 patients commenced chemotherapy but due to progressive disease were then treated with palliative radiotherapy. Treatment was discontinued for 1 patient who had cardiac failure on cycle 1 of chemotherapy. 1 patient had a TIA at cycle 1 and the plan was changed to radical radiotherapy only. 1 patient received radical radiotherapy only as other treatments were contraindicated. The final patient was not suitable for active treatment due to tumour position, cardiovascular issues and poor fitness levels and was for BSC.

[14] Patients with $T_xN_{1-3}M_0$ disease will be included within the measurement of this QPI.
[15] SCLC Chemoradiotherapy: radiotherapy ≥ 40Gy and concurrent or sequential platinum-based chemotherapy.

QPI 10 Chemoradiotherapy
SCLC : 2013-2017



	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%
2017	25.0%	100.0%	75.0%	25.0%	50.0%
Target	70%	70%	70%	70%	70%

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

Allowance should be made where small numbers and variation may be due to chance as per the results for NHS Borders and Lothian in 2017; especially where disproportionate percentages can appear to distort results. Caution is advised when viewing small numbers which can distort results both positively and negatively.

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

11 (i) 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

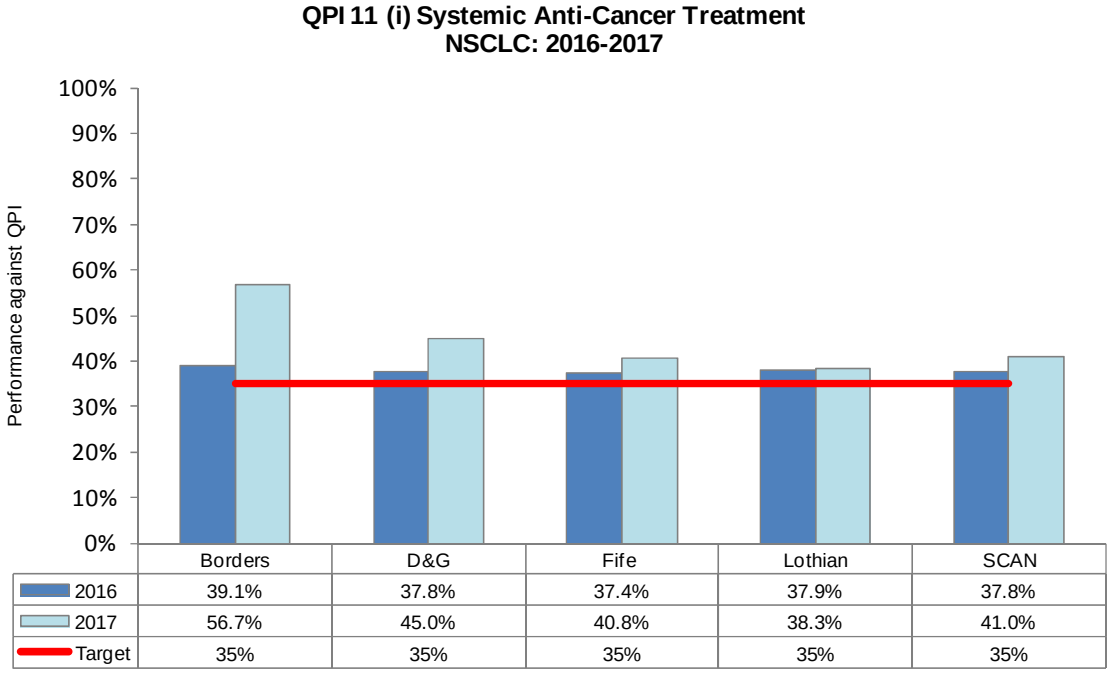
Exclusions = Patients who decline chemotherapy and patients who die before treatment

Target 35%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	76	80	217	460	833
Numerator	17	18	49	85	169
Not recorded for numerator	0	0	0	0	0
Denominator	29	40	120	222	411
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**58.6%**	**45.0%**	**40.8%**	**38.3%**	**41.1%**

Comments

The target was met across SCAN Health Boards.

At Formal Review the exclusion criteria was amended and the clause *patients participating in clinical trials* was removed from exclusions. This took effect for patients diagnosed from 1st January 2016. The results are therefore presented below covering the most recent 2 year period.



SACT data guidelines were discussed at length at the SCAN QPI Report Sign Off meeting, 6th September 2018 and the requirement for more detailed information to be made available to audit staff. Tyrosine Kinase Inhibitors (TKIs), immunotherapy and several other upcoming treatments are set to become routine for NSCLC. It was suggested that detailed treatment information be taken to the next Review for inclusion in the Lung Cancer QPI Data Set Definitions to ensure audit have complete and accurate knowledge of treatments available.

11 (ii) NSCLC, Stage IIIB and IV who have Biological Therapy Target = 60%

Numerator = Number of patients with NSCLC, Stage IIIB-IV, PS 0-2 not undergoing surgery, that are EGFR[16] or ALK[17] positive who receive biological therapy.

Denominator = All patients with NSCLC, Stage IIIB-IV, PS 0-2 not undergoing surgery that are EGFR or ALK positive

Exclusions = Patients who decline SACT, patients who die before treatment, and patients who are participating in clinical trials

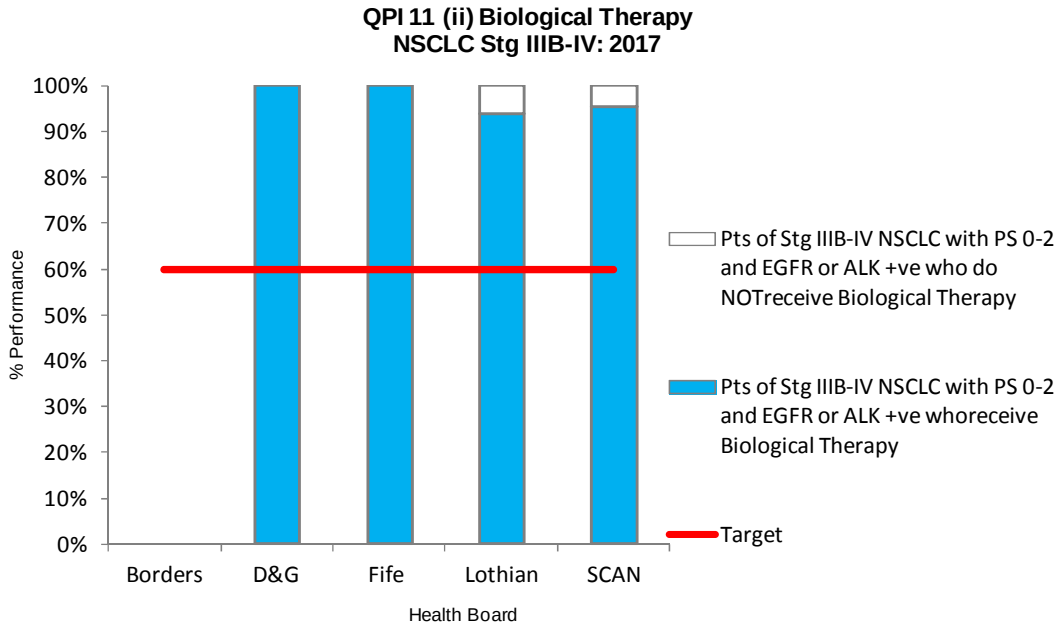
Target 60%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	106	118	334	665	1223
Numerator	0	2	3	15	20
Not recorded for numerator	0	0	0	0	0
Denominator	0	2	3	17	22
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**n/a**	**100.0%**	**100.0%**	**88.2%**	**90.9%**

Comments

The target was met across SCAN Health Boards.

Whilst there were 3 patients who had biological therapy treatment in NHS Borders they did not meet the denominator criteria of QPI 11.2 and as such are not included in the above table.

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



At Formal Review it was agreed to change the focus of this QPI from doublet chemotherapy agents to biological or 'targeted' therapy treatments. This QPI has been introduced for patients diagnosed with lung cancer from 1st January 2017, i.e. the current year of reporting.

[16] EGFR: Epidermal Growth Factor Receptor
[17] ALK: Oncogenic Anaplastic Lymphoma Kinase status

QPI 12 Chemotherapy in Small Cell Lung Cancer

QPI 12 (i) Patients with SCLC should receive chemotherapy ± radiotherapy Target = 70%

Numerator = Number of patients with SCLC who receive chemotherapy[18] ± radiotherapy

Denominator = All patients with SCLC

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

Target 70%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	96	109	311	623	1139
Numerator	9	10	18	38	75
Not recorded for numerator	0	0	0	0	0
Denominator	10	11	26	59	106
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**90.0%**	**90.9%**	**69.2%**	**64.4%**	**70.8%**

Comments

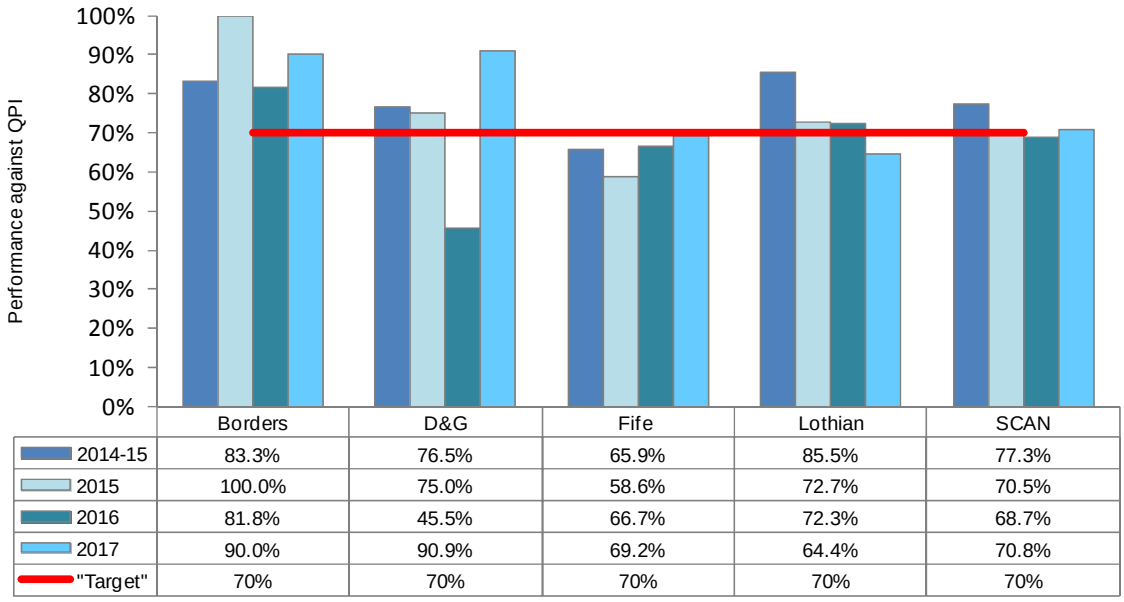
The target was met by NHS Borders and Dumfries & Galloway.

NHS Fife: The target was not met with a shortfall of 0.8% (8 cases). Chemotherapy was contraindicated for all 8 patients due to poor Performance Status . All patients received BSC.

NHS Lothian: The target was not met with a shortfall of 35.6% (21 cases). 12 patients had significant pre-existing comorbidities: 7 received radiotherapy (3 with radical intent) and after discussion with an oncologist, 5 patients agreed that chemotherapy was not in their best interest. The remaining 4 patients deteriorated very rapidly pre-treatment (PS 3 or 4) despite urgent investigations and/or in-patient transfer to oncology.

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

QPI 12 (i) Chemotherapy ± Radiotherapy
SCLC: 2014-2017



	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%
2017	90.0%	90.9%	69.2%	64.4%	70.8%
"Target"	70%	70%	70%	70%	70%

At Baseline Review it was agreed to amend QPI 12 (i). From 1st April 2014 QPI 12 was split into 2 parts: Chemotherapy ± radiotherapy and (ii) palliative chemotherapy). Part (i) was added as an additional measure of quality.

[18] 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

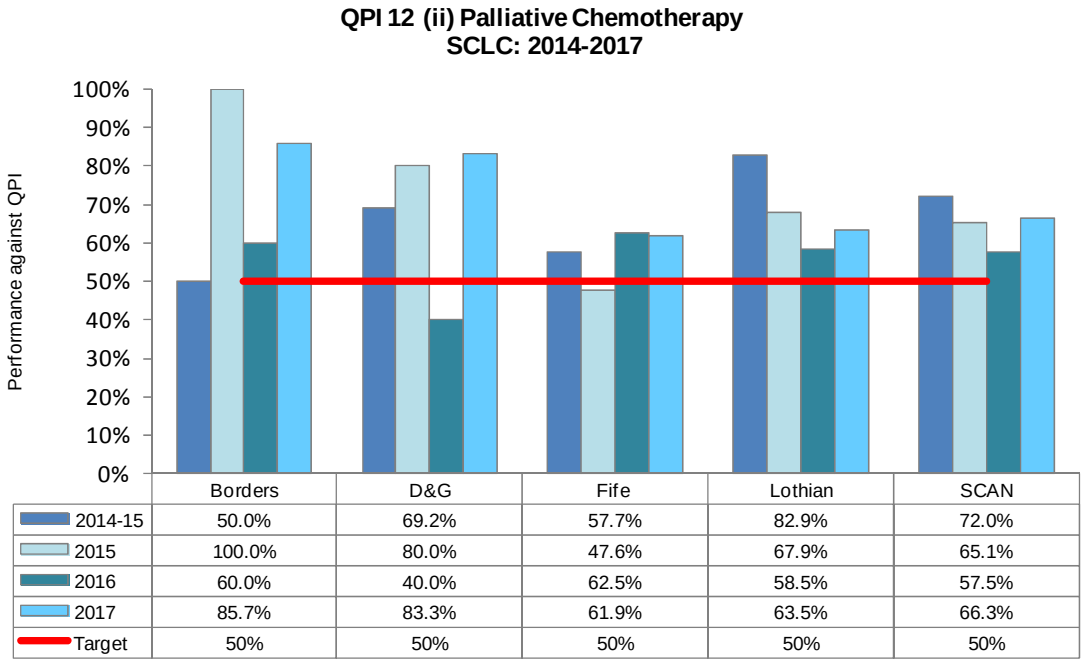
Exclusions = Patients who decline chemotherapy, patients who die before treatment and patients who are participating in clinical trials

Target 50%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	99	114	316	631	1160
Numerator	6	5	13	33	57
Not recorded for numerator	0	0	0	0	0
Denominator	7	6	21	52	86
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**85.7%**	**83.3%**	**61.9%**	**63.5%**	**66.3%**

Comments

The target was met across SCAN Health Boards.

This QPI was introduced at Baseline Review and the chart below covers the 4-year period commencing at Year 2.



	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%
2017	85.7%	83.3%	61.9%	63.5%	66.3%
Target	50%	50%	50%	50%	50%

QPI 13.1 30 Day Mortality following Active Treatment

All patients who die during or within 30 and 90 days of treatment completion are discussed and reported at regularly held Mortality and Morbidity (M & M) meetings. It is standard QPI practice to report reasons only for outliers but for completeness, and in line with M & M meetings, reasons are given here for all patients who die within 30 and 90 days of treatment regardless whether the results remain within the accepted parameters or if they are exceeded.

QPI 13.1.1 Surgery: 30 Day Mortality 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 (no exclusions)

(a) Hospital of Surgery 2017

Target <5%	**Royal Infirmary of Edinburgh**
Numerator	3
Not recorded for numerator	0
Denominator*	192
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**1.6%**

* The denominator includes 44 patients who were diagnosed in NHS Tayside and had surgery at RIE. Of these none died within 30 days of surgery.

Comments

Thoracic surgery is centralised in SCAN and patients from NHS 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 and are reported by WOSCAN. Results by board of diagnosis are not required by the QPI process but are shown in table (b) below for information.

3 patients who died within 30 days of surgery at the RIE were all diagnosed in NHS Lothian and all were reviewed post mortem. Performance achieved is 1.6% which is within accepted target parameters.

(b) Board of Diagnosis

2017 Cohort	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
Numerator	0	0	0	3	3
Denominator	14	16	29	107	166
Performance**	**0%**	**0%**	**0%**	**2.8%**	**1.8%**

** 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%

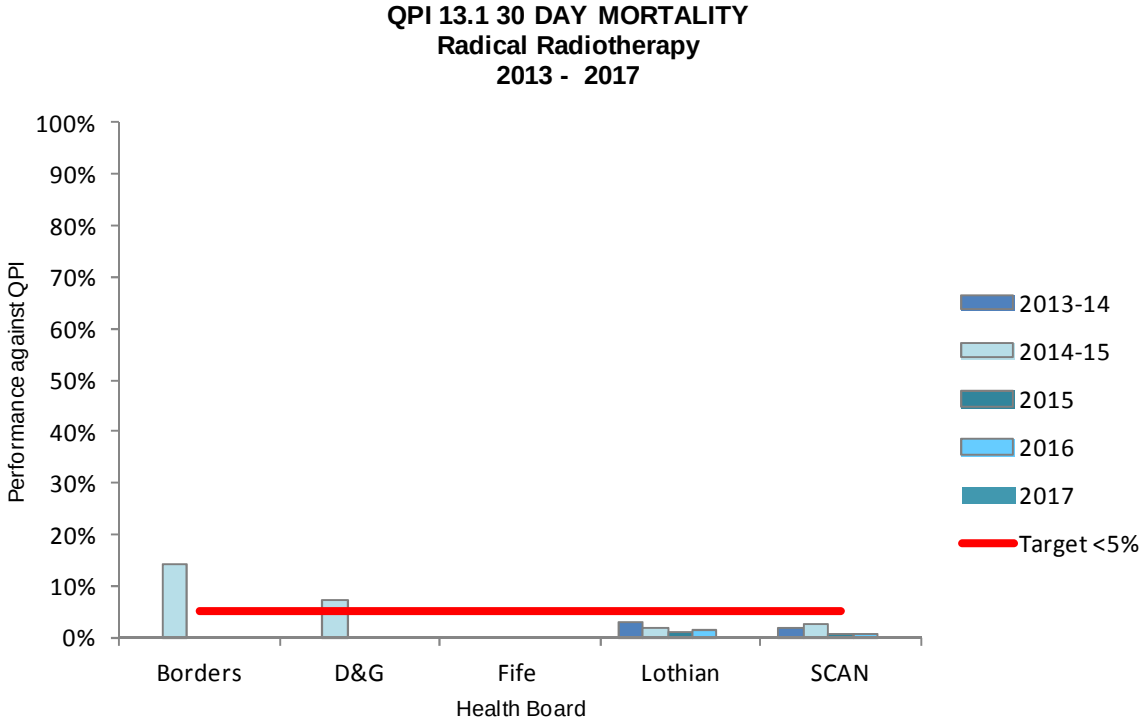
Numerator = Number of patients who receive radical radiotherapy who die within 30 days of treatment

Denominator = All patients with lung cancer who receive radical radiotherapy (no exclusions)

Target <5%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	95	114	304	581	1094
Numerator	0	0	0	0	0
Not recorded for numerator	0	0	0	0	0
Denominator	11	6	33	101	151
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 of patients receiving radical radiotherapy in 2017 across SCAN Health Boards.



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 (no exclusions)

Target <5%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	102	117	335	668	1222
Numerator	0	0	0	0	0
Not recorded for numerator	0	0	0	0	0
Denominator	4	3	2	14	23
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 for patients diagnosed with lung cancer in 2017 and who received adjuvant chemotherapy in SCAN. This has been the pattern over the past 5 years of QPI reporting with no deaths occurring within this timescale; a chart has therefore not been included.

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 (no exclusions)

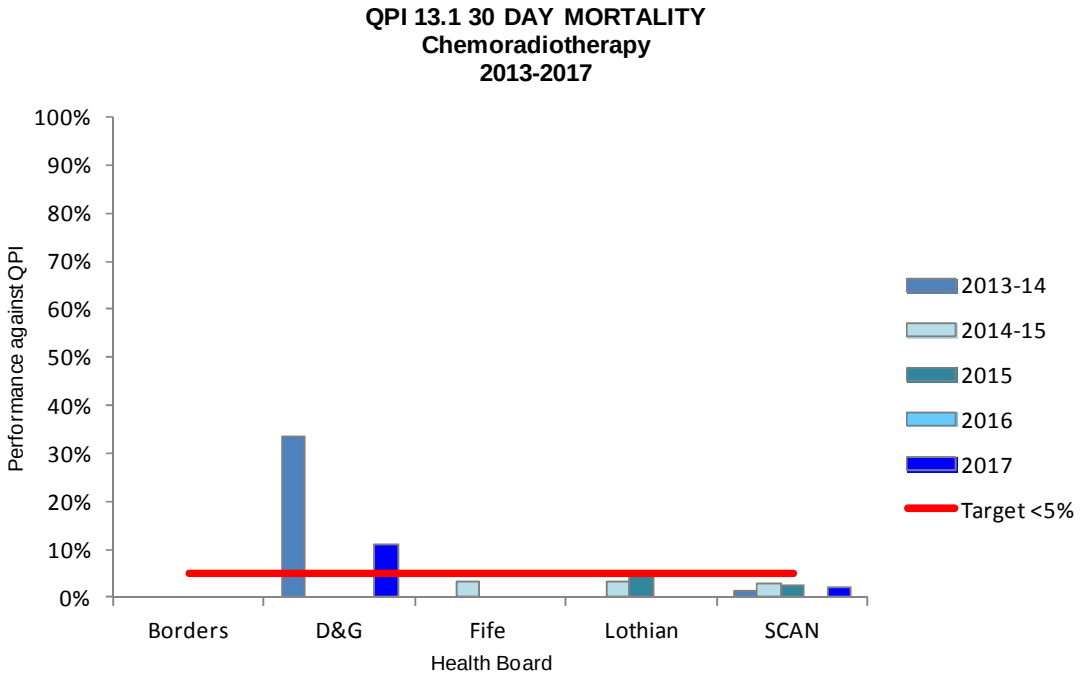
Target <5%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	98	111	323	661	1193
Numerator	0	1	0	0	1
Not recorded for numerator	0	0	0	0	0
Denominator	8	9	14	21	52
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0.0%**	**11.1%**	**0.0%**	**0.0%**	**1.9%**

NHS Fife: 3 patients who have not completed radiotherapy at time of analyses are not included in this table.

Comments

There were no deaths within 30 days following chemoradiotherapy in NHS Borders, Fife or Lothian.

NHS D&G: The target was exceeded by 6.1% (1 case). The patient developed coincidental infection and multi organ failure post chemoradiotherapy. Caution is advised when viewing small numbers, as in this case, where small numbers can generate disproportionate percentages.



NB The disproportionately large percentage (33.3%) in D&G in 2013-14 was the result of 1 death out of 3 patients which again 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

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

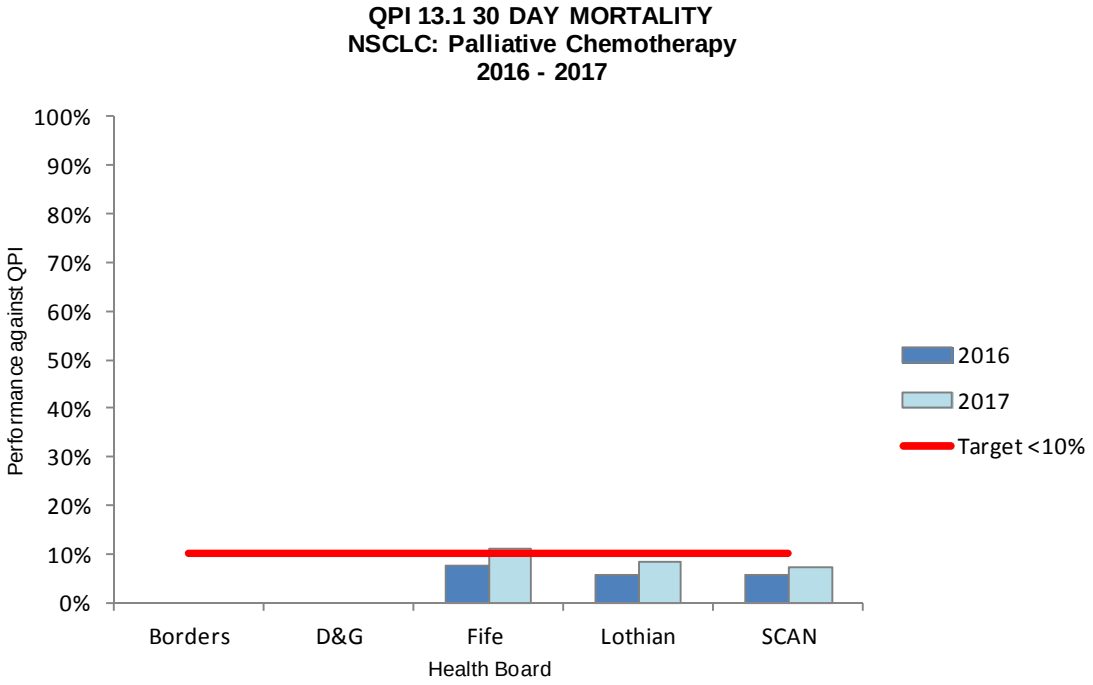
Numerator = Number of patients diagnosed with NSCLC who receive palliative chemotherapy who die within 30 days of treatment

Denominator = All patients with NSCLC who receive palliative chemotherapy (no exclusions)

Target <10%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	94	110	310	647	1161
Numerator	0	0	3	3	6
Not recorded for numerator	0	0	0	0	0
Denominator	12	10	27	35	84
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0.0%**	**0.0%**	**11.1%**	**8.6%**	**7.1%**

Comments

There were 6 deaths of patients diagnosed with NSCLC within 30 days of receiving palliative chemotherapy in SCAN region. All of these deaths are subject to M+M meetings on a regular basis in oncology. A common theme is frailty and co morbidity of patients. Only one patient was identified as having died of neutropenic sepsis from the chemotherapy.



NB: The reporting of 30-day mortality following palliative chemotherapy was revised at Formal Review and takes effect for patients diagnosed from 1st January 2016 and are specified as (a) NSCLC only and (b) SCLC.

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

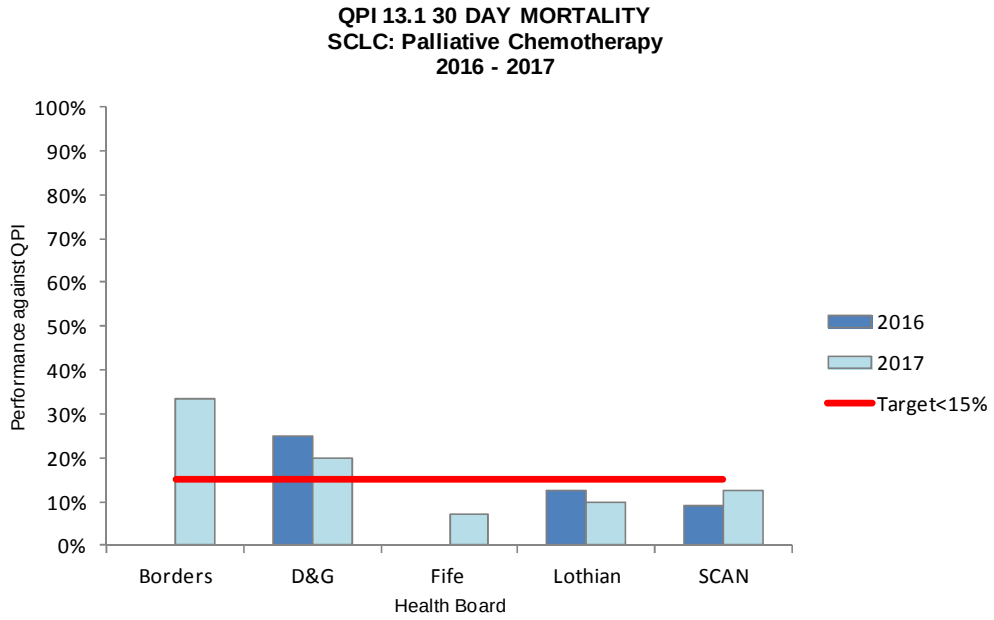
Numerator = Number of patients diagnosed with SCLC who receive palliative chemotherapy who die within 30 days of treatment

Denominator = All patients with SCLC who receive palliative chemotherapy (no exclusions)

Target <15%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	100	115	323	651	1189
Numerator	2	1	1	3	7
Not recorded for numerator	0	0	0	0	0
Denominator	6	5	14	31	56
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**33.3%**	**20.0%**	**7.1%**	**9.7%**	**12.5%**

Comment

7 patients died within 30 days of chemotherapy for SCLC. All of these deaths are subject to M+M meetings on a regular basis in oncology. A common theme is frailty and co morbidity of patients. With SCLC 5 patients had rapid progression of disease whilst on chemotherapy. In two remaining patients of the 7 the chemotherapy was likely to have contributed to death with one of the two patients declining to be seen. The issue of nonattendance when unwell due to treatment remains difficult to resolve.



The reporting of 30-day mortality following palliative chemotherapy was revised at Formal Review and takes effect for patients diagnosed from 1st January 2016. Palliative chemotherapy results from 2016 are specified as (a) NSCLC only and (b) SCLC only. The chart therefore includes 2 years of data only.

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

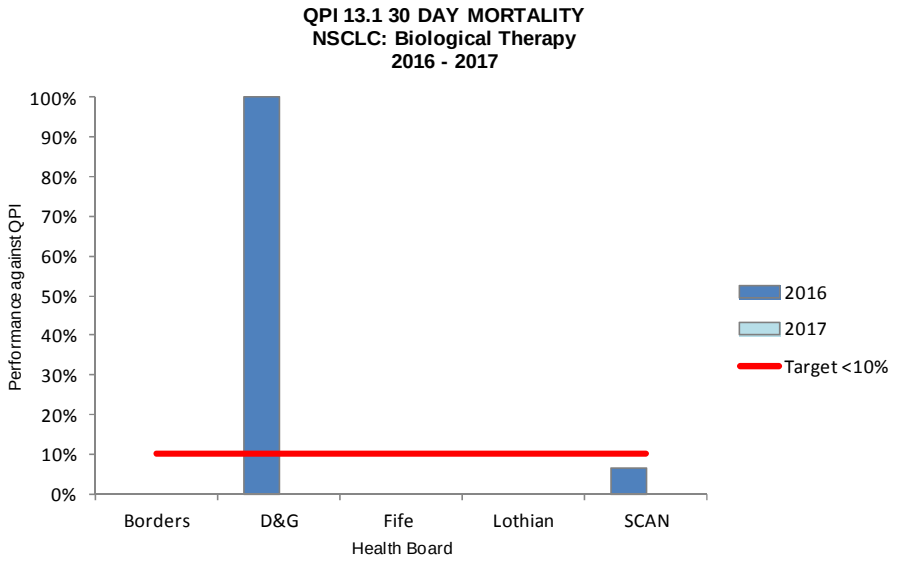
Numerator = Number of patients diagnosed with NSCLC who receive biological therapy who die within 30 days of treatment

Denominator = All patients with NSCLC who receive biological therapy (no exclusions)

Target <10%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	103	116	328	648	1195
Numerator	0	0	0	0	0
Not recorded for numerator	0	0	0	0	0
Denominator	3	4	9	34	50
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 of patients receiving biological therapy in 2017 across SCAN Health Boards.



The reporting of 30-day mortality following biological therapy was revised at Formal Review and takes effect for patients diagnosed from 1st January 2016. The chart therefore includes 2 years of data only.

Small numbers can generate disproportionate percentages as evidenced in the Dumfries & Galloway result of 100% in 2016 where this accounts for 1 patient out of a total of 1. Small numbers and variation may be due to chance and aggregation of results over time can help to clarify outcomes. No action was required.

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

All patients who die during or within 30 and 90 days of treatment completion are discussed and reported at regularly held Mortality and Morbidity (M & M) meetings. It is standard QPI practice to report reasons only for outliers but for completeness, and in line with M & M meetings, reasons are given here for all patients who die within 30 and 90 days of treatment regardless whether the results remain within the accepted parameters or if they are exceeded.

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 (no exclusions)

(a) Reported by Hospital of Surgery 2017

Target <5%	**Royal Infirmary of Edinburgh**
Numerator	5
Not recorded for numerator	0
Denominator*	181
Not recorded for exclusions	0
Not recorded for denominator	0
% Performance	**2.8%**

* The denominator includes 38 patients who were diagnosed in NHS Tayside and had surgery at RIE. Of these none died within 90 days of surgery.

Comments

Thoracic surgery is centralised in SCAN and patients from NHS 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 and are reported by WOSCAN. Results by board of diagnosis are not required by the QPI process but are shown in table (b) below for information. Of the 5 patients who died within 90 days of surgery at the RIE, 1 was diagnosed in Fife and 4 in Lothian. Performance achieved is 2.8% which is within accepted target parameters.

(b) Reported by Board of Diagnosis 2017

90 day mortality post surgery	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
Numerator	0	0	1	4	5
Denominator	14	15	29	107	165
Performance**	**-**	**-**	**3.4%**	**3.7%**	**3.0%**

** 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

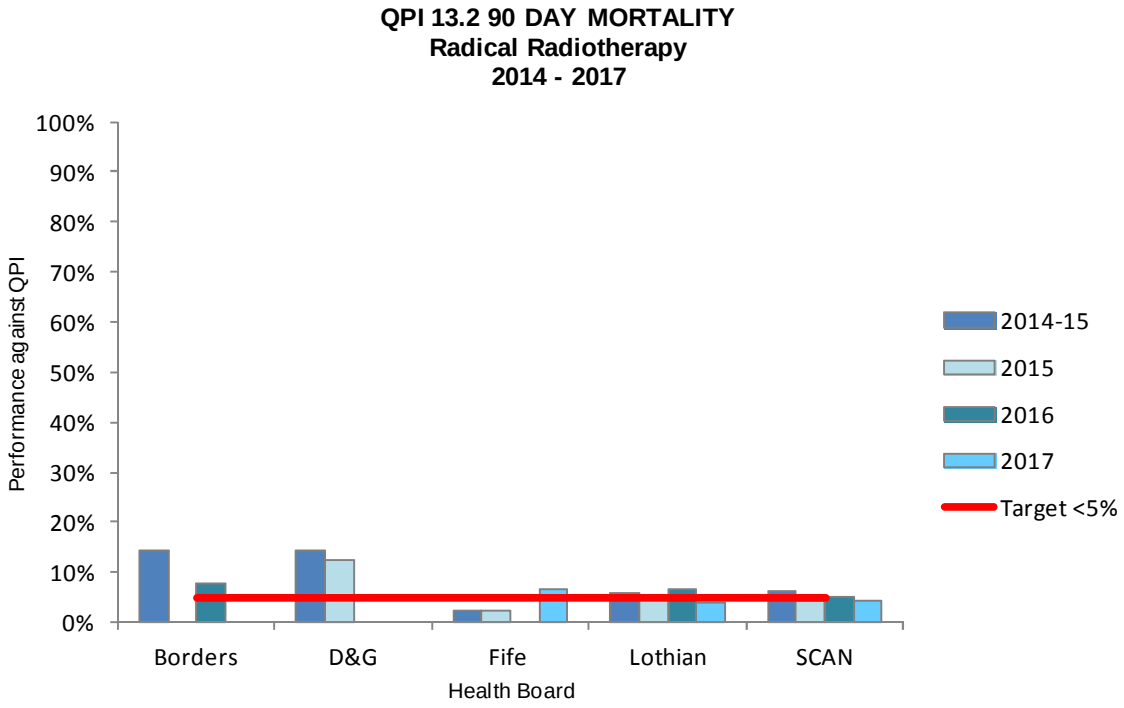
Denominator = All patients with lung cancer who receive radical radiotherapy (no exclusions)

Target <5%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	95	114	307	583	1099
Numerator	0	0	2	4	6
Not recorded for numerator	0	0	0	0	0
Denominator	11	6	30	99	146
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**0.0%**	**0.0%**	**6.7%**	**4.0%**	**4.1%**

NHS Fife: 90 days since treatment had not been reached for 3 patients at the time of analyses and they are not included in this table.

Comments

There were 6 deaths of patients diagnosed with lung cancer within 90 days of receiving radical radiotherapy in SCAN. All cases have been reviewed and 5 died of incidental causes from comorbidities. One critical finding was the lack of CT Brain prior to starting radical radiotherapy in one patient who subsequently developed progressive brain metastases. All stage II and above patients receiving radical treatment are required to have CT Brain prior to starting treatment.



QPI 13.2.3 Chemoradiotherapy: 90 Day Mortality Target <5%

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

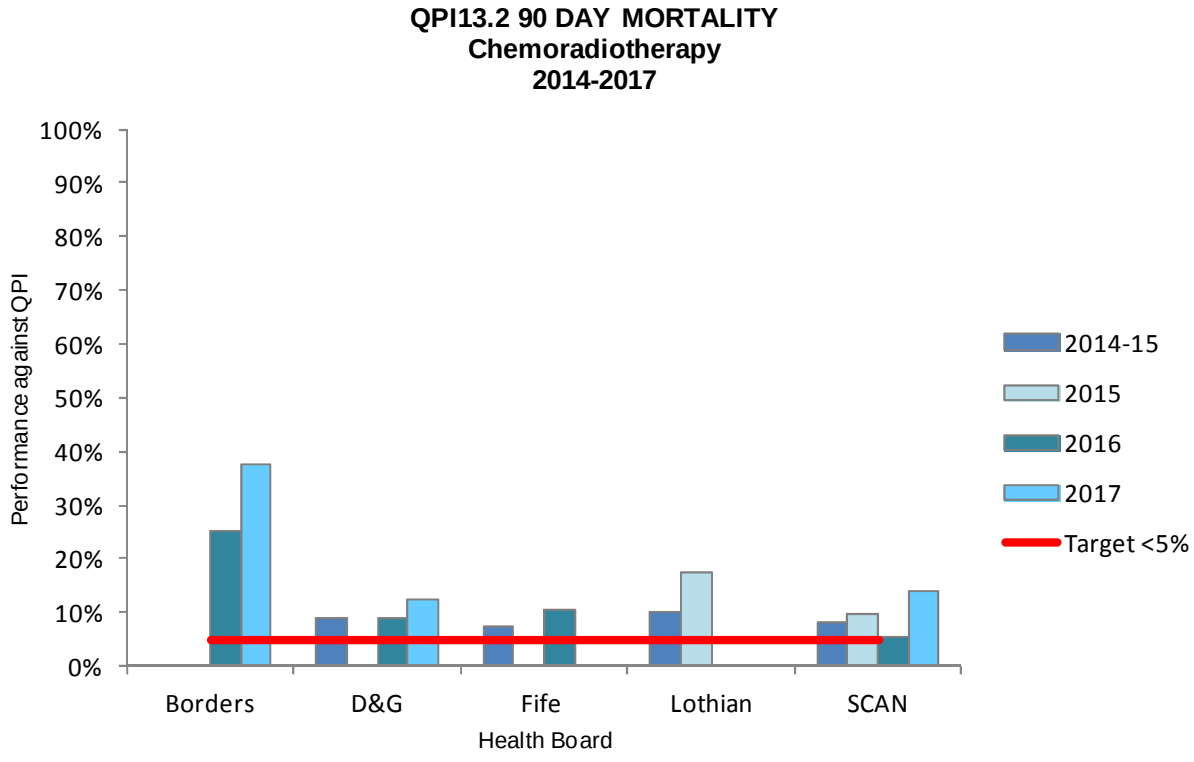
Denominator = All patients with lung cancer who receive chemoradiotherapy (no exclusions)

Target <5%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	98	112	324	667	1201
Numerator	3	1	0	1	5
Not recorded for numerator	0	0	0	0	0
Denominator	8	8	13	15	44
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**37.5%**	**12.5%**	**0.0%**	**6.7%**	**11.4%**

Comments

There were 5 deaths of patients diagnosed with lung cancer within 90 days of receiving chemoradiotherapy in SCAN region. Caution is again advised when viewing small numbers, as in this case, where small numbers can, and do, generate disproportionate percentages.

The 5 cases have all been reviewed and subject to M+M meetings in oncology with no critical outcomes. 4 patients died of rapidly progressive disease and one patient died of a coincidental infection (non neutropenic) and multiorgan failure.



QPI 14 SABR in Inoperable Stage I Lung Cancer **Target = 35%**

SABR: Stereotactic Ablative Radiotherapy

Numerator = Number of patients with Stage I[19] lung cancer not undergoing surgery who receive SABR

Denominator = All patients with Stage I lung cancer not undergoing surgery

Exclusions = Patients with SCLC, patients who decline SABR and patients who die before treatment

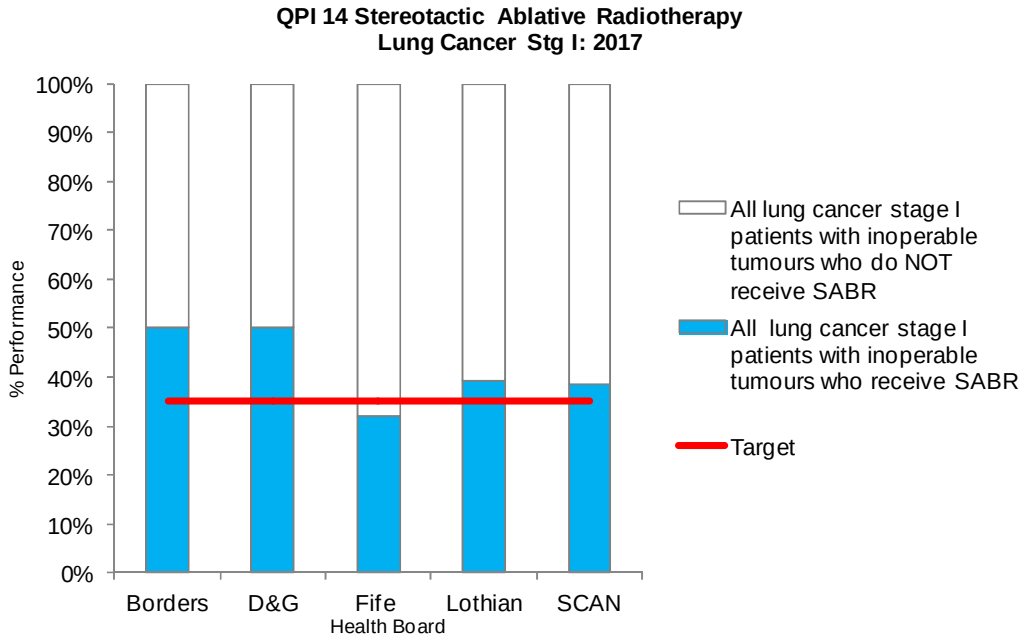
Target 35%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	102	109	311	612	1134
Numerator	2	2	8	26	38
Not recorded for numerator	0	0	0	0	0
Denominator	4	4	25	66	99
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	1	7	0	4	12
% Performance	**50.0%**	**50.0%**	**32.0%**	**39.4%**	**38.4%**

Comments

This QPI is new to our reporting programme and takes effect from 1st January 2017 coinciding with the implementation of a new data field [SABR]; a specialised type of radiotherapy which precisely targets the tumour with radiation whilst lowering the risk of damage to surrounding tissue.

In the first year of reporting, 3 of 4 SCAN Health Boards have met the target.

NHS Fife: The target was not met with a shortfall of 3% (17 cases). 4 patients were given conventional radical radiotherapy instead. The risks to other organs were too high to opt for SABR in all of these cases. For the remaining 13 patients, treatment management was selected as BSC due to poor fitness and co-morbidities.



[19] Stage I: T1a-1b, N0, M0

QPI 15 Pre-Treatment Diagnosis

15 (i) Thoracic Surgery: Cytology or Histology Prior to Treatment Target = 75%

Numerator = Number of patients with lung cancer receiving surgery who have a cytological/histological diagnosis prior to treatment

Denominator = All patients with lung cancer who receive surgery

Exclusions = Patients who decline investigations

Target 75%	**Borders**	**D&G**	**Fife**	**Lothian**	**SCAN**
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	92	105	308	575	1080
Numerator	4	6	19	73	102
Not recorded for numerator	0	0	0	0	0
Denominator	14	15	29	107	165
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**28.6%**	**40.0%**	**65.5%**	**68.2%**	**61.8%**

Comments

This QPI is new to our reporting programme. It was introduced at Formal Review to take effect from 1st January 2017. The target was comprehensively missed.

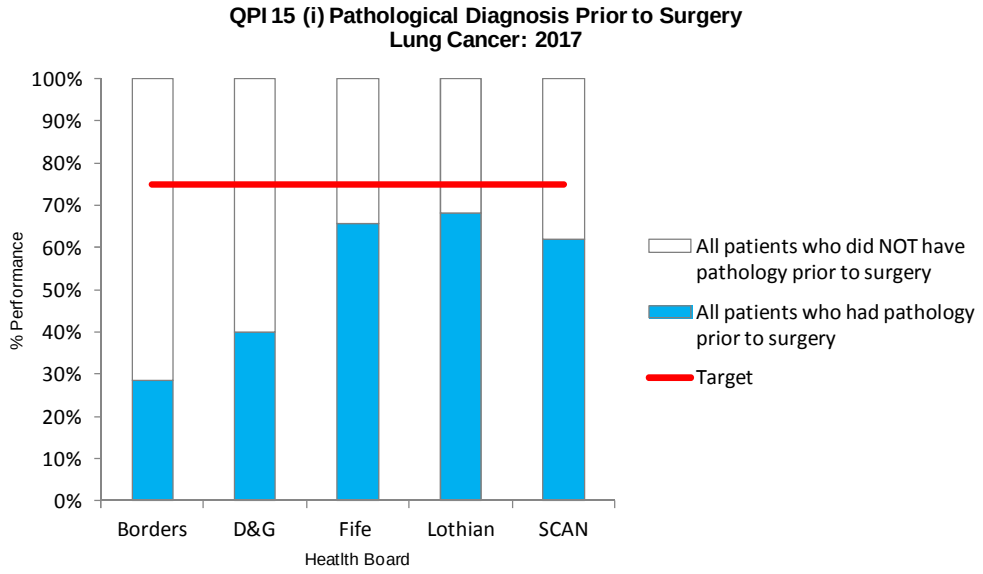
NHS Borders: The target was not met with a shortfall of 46.4% (10 cases). 7 patients had negative histology. For 1 patient the nodule was too small to biopsy and for another the tumour was inaccessible. Surgery proceeded based on frozen section histological results on the same day for the final patient.

NHS D&G: The target was not met with a shortfall of 35.0% (9 cases). 5 of these patients were inaccessible to biopsy; 1 tumour was too small to biopsy; a further 2 had attempted but failed biopsies. The MDT decision was that 1 patient would be best served by tissue from surgery and proceeded to surgery without any pathology.

NHS Fife: The target was not met with a shortfall of 9.5% (10 cases). 6 patients had negative or inconclusive histology – 3 of which had frozen sections which demonstrated adenocarcinoma and they went on to have surgery on the same day. The remaining 4 surgical patients had lesions which were inaccessible for biopsy.

NHS Lothian: The target was not met with a shortfall of 6.8% (34 cases).15 lesions were too small and a further 14 were inaccessible to biopsy. For another 2 patients the lesions were too small and inaccessible. 1 patient had negative histology. 1 patient had suspected carcinoid and proceeded straight to surgery. The final patient was discussed at MDM and due to cerebovascular history it was in the patient's best interest to go directly to surgery.

Obtaining histology or cytology prior to surgery is not always considered the most appropriate course of action; nor always in the patient's best interest. It is recognised that not all lesions will be accessible for pre-treatment diagnosis, i.e. small and/or peripheral lesions. A number of negative and inconclusive histologies which radiologically merit referral to surgery are also likely. All patients are discussed fully at MDM so that all approaches are considered and to ensure that all proper processes take their course. It would be beneficial to discuss the level at which the target has been set at the next Review.



15 (ii) Radical Radiotherapy: Cytology or Histology Prior to Treatment Target = 75%

Numerator = Number of patients with lung cancer receiving radical radiotherapy who have a cytological/histological diagnosis prior to treatment.

Denominator = All patients with lung cancer who receive radical radiotherapy

Exclusions = Patients who decline investigations

Target 75%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	95	115	306	580	1096
Numerator	6	3	18	58	85
Not recorded for numerator	0	0	0	0	0
Denominator	11	5	31	102	149
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**54.5%**	**60.0%**	**58.1%**	**56.9%**	**57.0%**

Comments

This QPI is new to our reporting programme. It was introduced at Formal Review to take effect from 1st January 2017. The target has been set at 75%; being the same as that for patients receiving surgery. At the SCAN Sign Off meeting it was noted that the results appeared somewhat disappointing and concern was voiced as to why the target was not lower for this QPI given that patients included here are not fit for surgery and should therefore be subject to different criteria and scrutiny. It was agreed that a request for amendment should be submitted at Formal review.

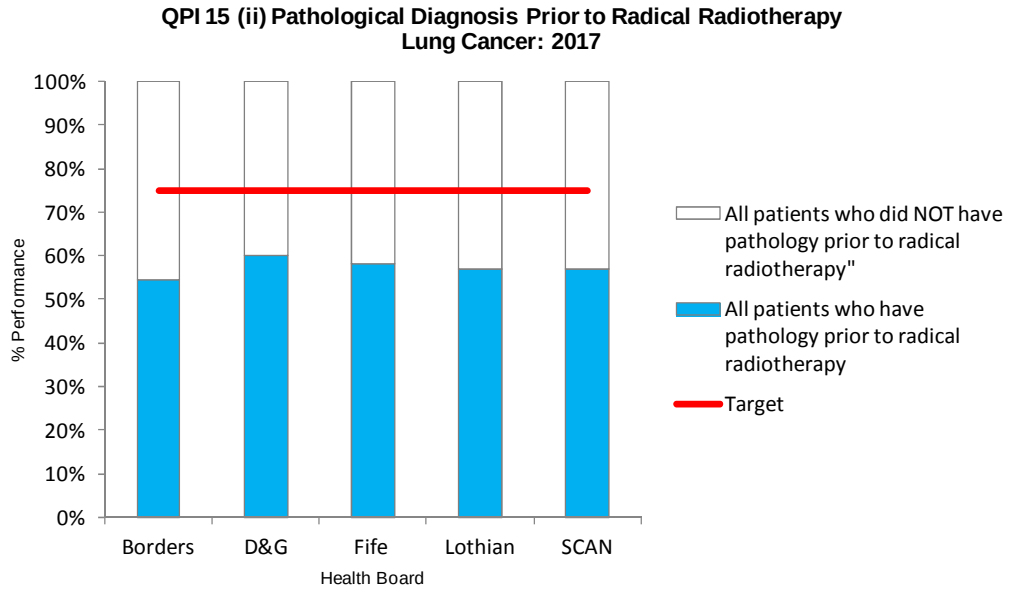
NHS Borders: The target was not met with a shortfall of 20.4% (5 cases). 3 patients underwent investigations but returned negative histology; 1 patient was not fit enough and

undergoing biopsy was considered potentially hazardous and therefore not in the final patient's best interest.

NHS D&G: The target was not met with a shortfall of 15.0% (2 cases). 1 patient could not undergo biopsy due to severe COPD and, biopsy was not possible for the other patient due to the size and location of the lesion.

NHS Fife: The target was not met with a shortfall of 16.9% (13 cases). 5 patients could not undergo biopsy due to comorbidities and another 5 patients because their lesions were too small (T1a). For 2 patients the lesions were too difficult to biopsy and no reason has been recorded for the final patient.

NHS Lothian: The target was not met with a shortfall of 18.1% (44 cases). 16 patients had poor lung function which precluded biopsy; the lesion was too small for biopsy for 14 patients; biopsy was not possible due to comorbidities for 6 patients; and for 5 the lesions were not accessible. 1 patient could not have biopsy due to comorbidities in addition to the location of the nodule. The final 2 patients received emergency radiotherapy. Once stable, both of these patients went on to have pathological diagnoses.



15 (iii) Chemoradiotherapy: Cytology or Histology Prior to Treatment Target = 75%

Numerator = Number of patients with lung cancer receiving chemoradiotherapy who have a cytological/histological diagnosis prior to treatment.

Denominator = All patients with lung cancer who receive chemoradiotherapy

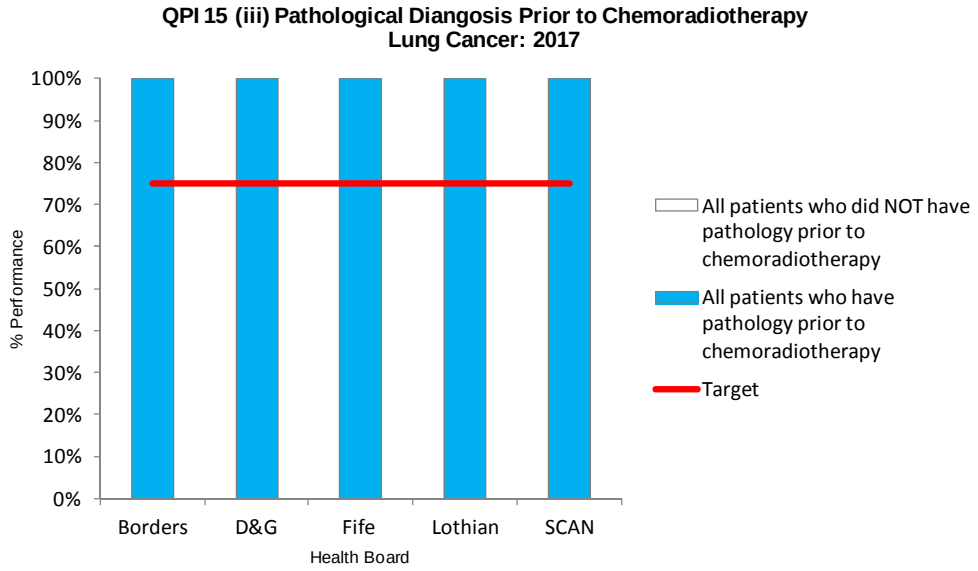
Exclusions = Patients who decline investigations

Target 75%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	98	111	320	661	1190
Numerator	8	9	17	21	55
Not recorded for numerator	0	0	0	0	0
Denominator	8	9	17	21	55
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	0	0	0	0
% Performance	**100%**	**100%**	**100%**	**100%**	**100%**

Comments

This QPI is new to our reporting programme. It was introduced at Formal Review to take effect from 1st January 2017.

The target was easily exceeded by SCAN Health Boards. It was acknowledged at Sign Off that these results are as expected given that it is medical practice not to give chemotherapy without pathology in place; pathology which additionally indicates the appropriate chemotherapy agent(s) to be administered.



QPI 16 Brain Imaging for Lung Cancer Patients with N2 Disease Target = 95%

Numerator = Number of patients with lung cancer N2 disease who receive curative treatment that undergo contrast enhanced CT/MRI scanning prior to the start of treatment

Denominator = All patients with lung cancer N2 disease who receive curative treatment[20]

Exclusions = Patients who decline brain imaging

Target 95%	Borders	D&G	Fife	Lothian	SCAN
2017 cohort	106	120	337	682	1245
Ineligible for this QPI	93	111	328	649	1181
Numerator	5	5	5	23	38
Not recorded for numerator	0	0	0	0	0
Denominator	13	6	9	32	60
Not recorded for exclusions	0	0	0	0	0
Not recorded for denominator	0	3	0	0	3
% Performance	**38.5%**	**83.3%**	**55.6%**	**71.9%**	**63.3%**

Comments

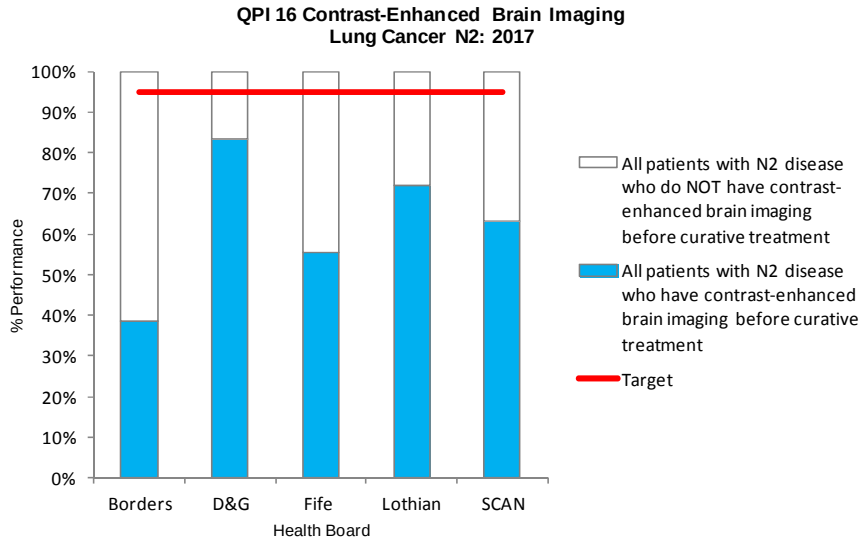
This QPI is new to our reporting programme. It was introduced at Formal Review to take effect from 1st January 2017. The target was not met by SCAN Health Boards.

NHS Borders: The target was not met with a shortfall of 56.5% (8 cases). No reason was reported for 6 patients and the remaining 2 had imaging although this was after and not before first treatment.

NHS D&G: The target was not met with a shortfall of 11.7% (1 case). PET CT reported N2 disease but was thought to be more appropriately staged as N1 by MDT and surgeon. Surgical resection confirmed, unexpected, N2 disease.

NHS Fife: The target was not met with a shortfall of 39.4% (4 cases). For 2 patients initial treatment intent was palliative but both later received curative treatment.

NHS Lothian: The target was not met with a shortfall of 25.3% (10 cases). 5 patients had non-contrast scans rather than *contrast enhanced* scans. No reason is documented for 2 patients. 1 patient wanted to adopt a 'watch and wait' approach (recorded as first treatment and dated); later decided to have curative treatment and, in fact, received a contrast enhanced CT Head prior to commencing treatment. 1 patient had a previous cancer recurrence treated first followed closely by radical radiotherapy for lung cancer. No reason is otherwise documented.



[20] Curative treatment: radical radiotherapy, radical chemoradiotherapy or surgical resection.

These results are somewhat disappointing and the issues were discussed in detail at the Sign Off meeting in September 2018. It was agreed to add this QPI to the Action Plan for this year. These CT or MRI scans should be requested by respiratory medicine as part of the patient's pathway if the patient is to be treated with curative intent; and when N2 disease has been identified. An MDM 'reminder' was suggested, similar to that for TNM & PS, to encourage identification of this requirement and drive change going forward.

QPI Clinical Trials

Consented Trials/Research Study Target = 15%

Numerator = Number of patients with lung cancer consented for a clinical trial/research study

Denominator = All patients diagnosed with lung cancer

Exclusions = No exclusions

Consented Target 15%	Borders	D&G	Fife	Lothian	SCAN
Numerator	0	0	1	24	25
Denominator	106	120	337	682	1245
% Performance	**0.0%**	**0.0%**	**0.3%**	**3.5%**	**2.0%**

Consented Trials in 2017	Numbers Recruited
A phase II trial of Pembrolizumab in NSCLC PS2 patients	2
CA209-817 - Nivolumab and Ipilimumab in advanced malignancies	4
CANC - 4303 Checkmate 227	3
CANC-4880 - PEARLS: A randomized, phase 3 trial	4
National Lung Matrix: Multi-Drug Phase II trial in NSC Lung Cancer	1
Predicting treatment response to radiotherapy for bone cancer pain	2
SHSC Lung	5
The MENAC Trial	4
TOTAL	25

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.

An action identified in the 2016 (and 2017) report was that SCAN clinicians should ensure that they register trials with SCRN and, that SCRN should share their lists of open trials between the Networks to allow the possibility of cross network trial access. 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.

Clinical trials for patients diagnosed with lung cancer remain challenging due to stringent entry criteria but ongoing efforts by clinical staff ensure that all appropriate patients are included in trials.

Key Categories

Table 1 Age at Diagnosis

n = All patients diagnosed with Lung Cancer 01/01/2017 – 31/12/2017

	Borders		D&G		Fife		Lothian		SCAN	
2017	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
≤49	1	0.9%	1	0.8%	4	1.2%	21	3.1%	27	2.2%
50-59	5	4.7%	11	9.2%	45	13.4%	70	10.3%	131	10.5%
60-69	28	26.4%	36	30.0%	98	29.1%	196	28.7%	358	28.8%
70-79	50	47.2%	43	35.8%	111	32.9%	240	35.2%	444	35.7%
≥80	22	20.8%	29	24.2%	79	23.4%	155	22.7%	285	22.9%
Cohort	106		120		337		682		1245	
2017										
Median	73		72		72		72		72	
Range	47-93		45-92		44-92		37-99		37-99	
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 01/01/2017 – 31/12/2017

	Borders		D&G		Fife		Lothian		SCAN	
2017	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Male	50	47.2%	58	48.3%	168	49.9%	329	48.2%	605	48.6%
Female	56	52.8%	62	51.7%	169	50.1%	353	51.8%	640	51.4%

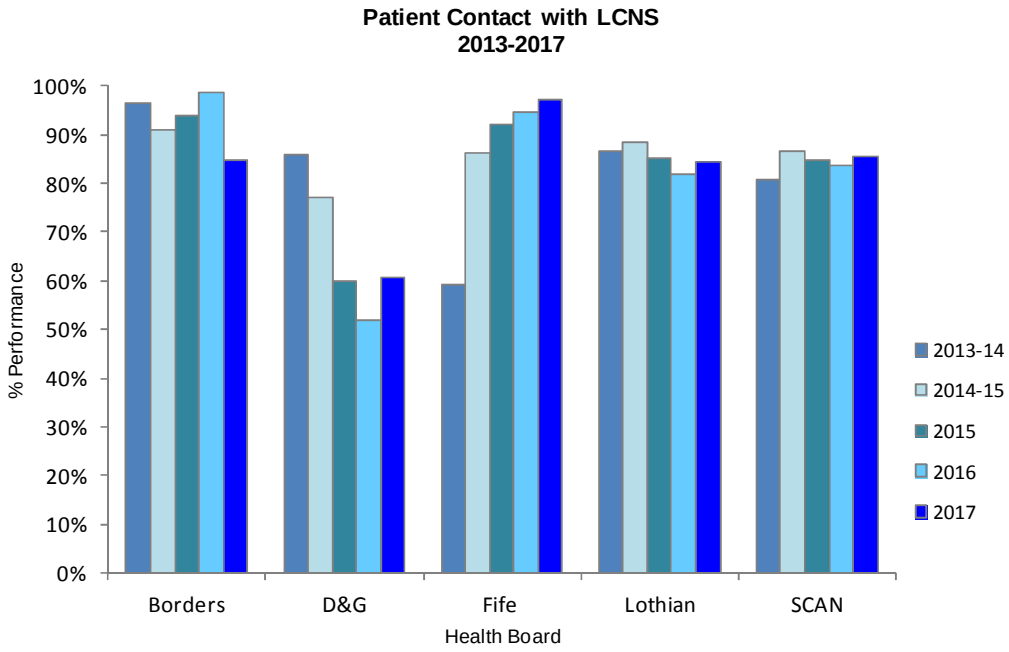
Historic Data: Sex Distribution

SCAN	2013-14	2014-15	2015	2016	2017
Male	51.4%	48.8%	50.9%	50.1%	48.6%
Female	48.6%	51.6%	49.1%	49.9%	51.4%

Table 4 Lung Cancer Nurse Specialist

n = patients seen by Lung Cancer Nurse Specialist 01/01/2017 – 31/12/2017

	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
2017	**90**	**84.9%**	**73**	**60.8%**	**328**	**97.3%**	**575**	**84.3%**	**1066**	**85.6%**
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

The NLCA and the Lung Cancer Forum for Nurses both suggest that 90% of patients should have access to a LCNS at diagnosis and throughout their pathway. This is backed up by the Scottish Cancer Plan which recommends all patients have access to a Clinical Nurse Specialist; and NICE guidelines which recommend all patients have direct access to a LCNS for support throughout the cancer pathway. Last year only NHS Borders and D&G met the standard/recommendation and for 2017 only NHS Fife has achieved greater than 90%. Improvements are required. Currently there is not a specific QPI quality measure around LCNS support; however, as a crucial measure of patient care, an LCNS-specific QPI will need to be proposed at the next QPI review.

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.[21]

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

Table 5 Performance Status

n = All patients diagnosed with Lung Cancer 01/01/2017 – 31/12/2017

	Borders		D&G		Fife		Lothian		SCAN	
PS	n	%	n	%	n	%	n	%	n	%
0	10	15.4%	10	8.0%	25	8.0%	93	13.2%	138	11.5%
1	29	44.6%	44	35.2%	98	31.4%	205	29.2%	376	31.2%
2	12	18.5%	34	27.2%	90	28.8%	180	25.6%	316	26.2%
3	5	7.7%	16	12.8%	84	26.9%	113	16.1%	218	18.1%
4	5	7.7%	2	1.6%	14	4.5%	37	5.3%	58	4.8%
Not recorded	4	6.2%	19	15.2%	1	0.3%	75	10.7%	99	8.2%
Cohort	106		120		337		682		1245	

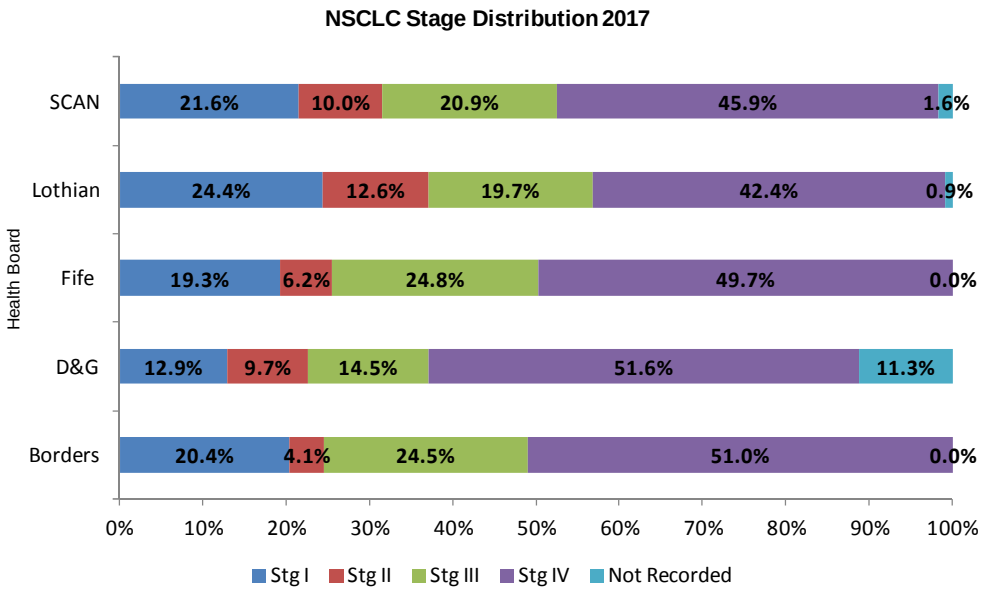
Comments

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

Table 6 Stage Distribution

n = All patients diagnosed with lung cancer 01/01/2017 to 31/12/2017

	Borders		D&G		Fife		Lothian		SCAN	
Stage	n	%	n	%	n	%	n	%	n	%
IA	14	17.3%	11	9.5%	37	11.6%	118	18.2%	180	15.5%
IB	2	2.5%	3	2.6%	25	7.8%	56	8.7%	86	7.4%
IIA	3	3.7%	3	2.6%	7	2.2%	31	4.8%	44	3.8%
IIB		0.0%	4	3.4%	9	2.8%	28	4.3%	41	3.5%
IIIA	18	22.2%	8	6.9%	42	13.1%	83	12.8%	151	13.0%
IIIB	14	17.3%	13	11.2%	38	11.9%	60	9.3%	125	10.7%
IV	54	66.7%	65	56.0%	179	55.9%	289	44.7%	587	50.4%
Not Recorded	1	1.2%	13	11.2%	0	0.0%	17	2.6%	31	2.7%
Cohort	106		120		337		682		1245	


NSCLC Stage Distribution 2017
Health Board
SCAN
Lothian
Fife
D&G
Borders
21.6%
10.0%
20.9%
45.9%
1.6%
24.4%
12.6%
19.7%
42.4%
0.9%
19.3%
6.2%
24.8%
49.7%
0.0%
12.9%
9.7%
14.5%
51.6%
11.3%
20.4%
4.1%
24.5%
51.0%
0.0%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Stg I
Stg II
Stg III
Stg IV
Not Recorded

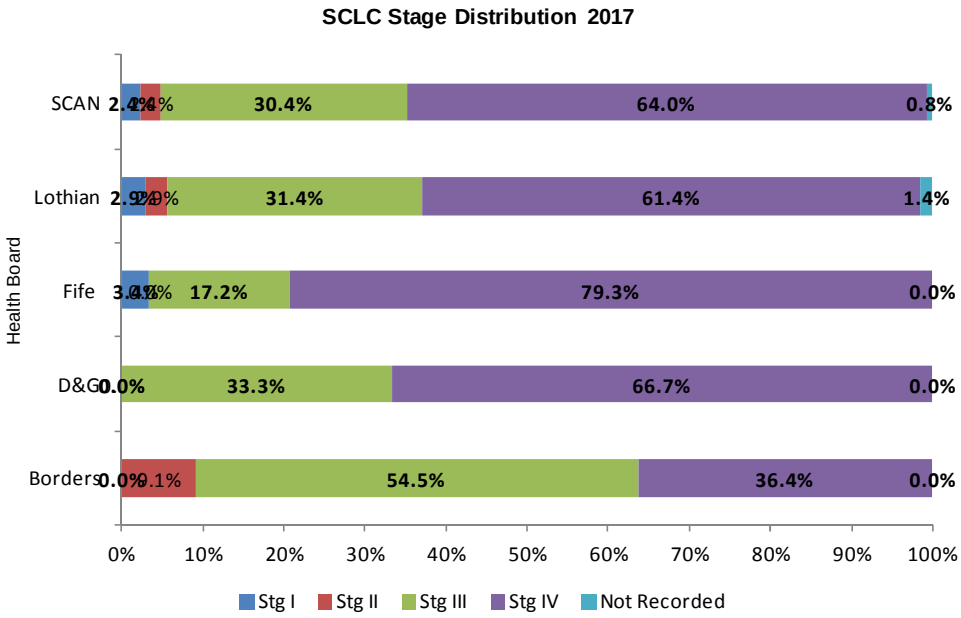
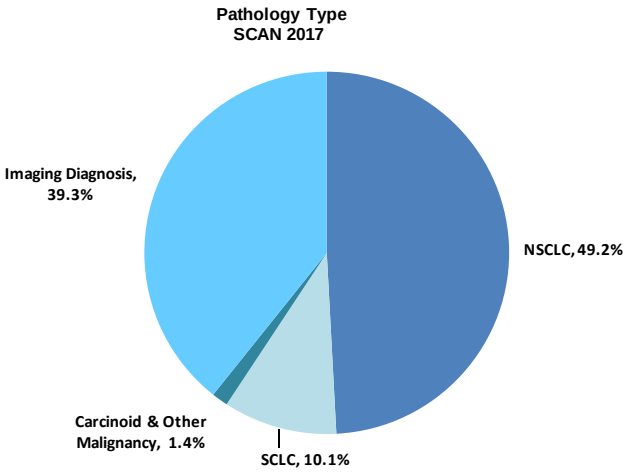

SCLC Stage Distribution 2017
Health Board
SCAN
Lothian
Fife
D&G
Borders
30.4%
64.0%
0.8%
31.4%
61.4%
1.4%
17.2%
79.3%
0.0%
0.0%
33.3%
66.7%
0.0%
0.0%
0.1%
54.5%
36.4%
0.0%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Stg I
Stg II
Stg III
Stg IV
Not Recorded

Table 7 Pathology Type

n = All patients diagnosed with Lung Cancer 01/01/2017 to 31/12/2017

Pathology Type	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Squamous	15	14.2%	12	10.0%	51	15.1%	104	15.2%	182	14.6%
Adenocarcinoma	24	22.6%	42	35.0%	91	27.0%	188	27.6%	345	27.7%
NSCLC (NOS)	6	5.7%	5	4.2%	13	3.9%	29	4.3%	53	4.3%
Other specific NSCLC	3	2.8%	3	2.5%	4	1.2%	12	1.8%	22	1.8%
NSCLC combination	1	0.9%	0	0.0%	2	0.6%	7	1.0%	10	0.8%
SCLC	11	10.4%	15	12.5%	29	8.6%	68	10.0%	123	9.9%
NSCLC/SCLC mixed		0.0%	0	0.0%	0	0.0%	3	0.4%	3	0.2%
Carcinoid		0.0%	0	0.0%	1	0.3%	6	0.9%	7	0.6%
Other malignancy		0.0%	2	1.7%	3	0.9%	6	0.9%	11	0.9%
Negative pathology	9	8.5%	3	2.5%	8	2.4%	28	4.1%	48	3.9%
Declined investigation		0.0%	11	9.2%	10	3.0%	0	0.0%	21	1.7%
No pathology	37	34.9%	27	22.5%	125	37.1%	231	33.9%	420	33.7%
Not recorded		0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Pathology Diagnosis										
Total NSCLC	49	46.2%	62	51.7%	161	47.8%	340	49.9%	612	49.2%
Total SCLC	11	10.4%	15	12.5%	29	8.6%	71	10.4%	126	10.1%
Carcinoid & Other	0	0.0%	2	1.7%	4	1.2%	12	1.8%	18	1.4%
Imaging Diagnosis	46	43.4%	41	38.7%	143	134.9%	259	244.3	489	39.3%
Cohort	106		120		337		682		1245	



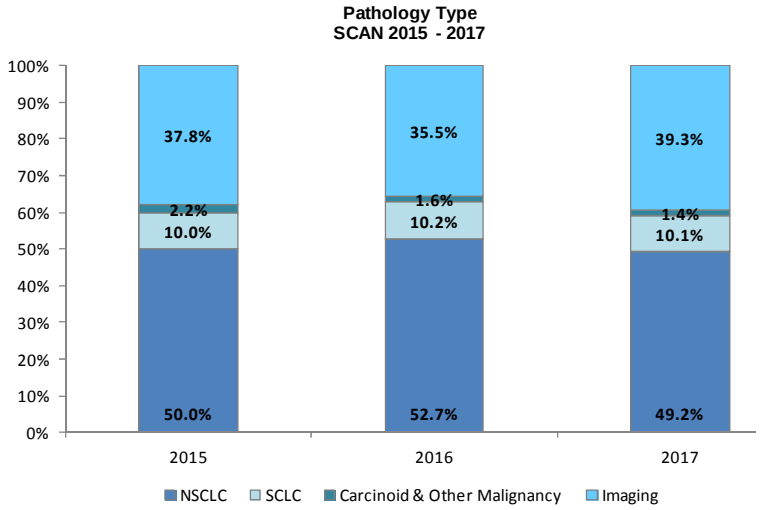


Table 8 First Treatment Type

n = All patients diagnosed with Lung Cancer 01/01/2017 to 31/12/2017

First Treatment	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Surgery	14	13.2%	15	12.5%	29	8.6%	107	15.7%	165	13.3%
Radiotherapy	22	20.8%	12	10.0%	58	17.2%	135	19.8%	227	18.2%
SABR	2	1.9%	3	2.5%	10	3.0%	27	4.0%	42	3.4%
Chemoradiotherapy	8	7.5%	9	7.5%	17	5.0%	20	2.9%	54	4.3%
Chemotherapy	12	11.3%	16	13.3%	40	11.9%	64	9.4%	132	10.6%
Biological Therapy	-	-	4	3.3%	7	2.1%	25	3.7%	36	2.9%
Endoscopic	-	-	-	-	-	-	2	0.3%	2	0.2%
Best Supportive Care (BSC)	38	35.8%	55	45.8%	143	42.4%	249	36.5%	485	39.0%
Watchful Waiting	1	0.9%	5	4.2%	3	0.9%	10	1.5%	19	1.5%
Other Therapy	-	-	-	-	-	-	-	-	-	-
Died before Treatment	5	4.7%	-	-	17	5.0%	24	3.5%	46	3.7%
Declined Therapies	4	3.8%	1	0.8%	13	3.9%	19	2.8%	37	3.0%
Not Recorded	-	-	-	-	-	-	-	-	-	-

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.

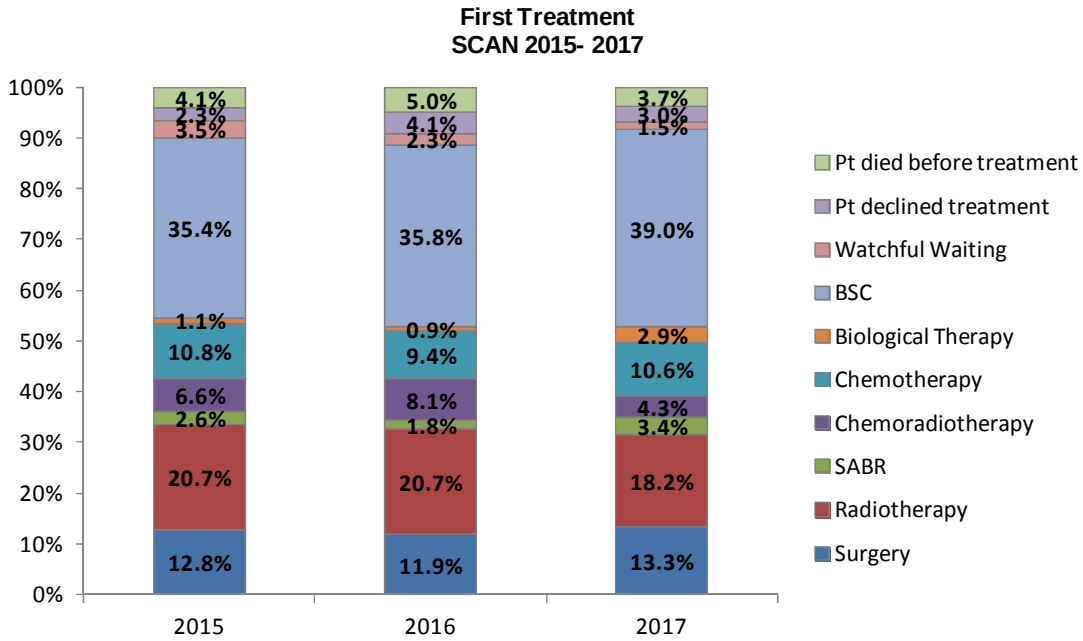


Table 9 Surgery: Non Small Cell Lung Cancer

n = all patients diagnosed with NSCLC[22] 01/01/2017 to 31/12/2017

Surgery	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Pneumonectomy	1	7.1%	1	6.3%	6	21.4	8	7.8%	16	10.0
Lobectomy	11	78.6	14	87.5	20	71.4	87	85.3	132	82.5
Wedge		0.0%	1	6.3%	2	7.1%	1	1.0%	4	2.5%
Segmental	2	14.3	0	0.0%	0	0.0%	6	5.9%	8	5.0%
Inoperable		0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other		0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Not recorded		0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cohort	14		16		28		102		160	

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 10 Systemic Anti Cancer Treatment (SACT)

This is the first year of reporting SACT as part of key categories.

Table 10 (a) SACT: Non Small Cell Lung Cancer (NSCLC)

n = All patients diagnosed with NSCLC who received SACT (First or subsequent treatments) 01/01/2017 to 31/12/2017

SACT: NSCLC	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Neoadjuvant	-	-	1	3.6%	1	1.5%	-	-	2	0.8%
Adjuvant	4	19.0%	3	10.7%	2	3.0%	15	11.5%	24	9.8%
Chemoradiotherapy	5	23.8%	4	14.3%	13	19.4%	18	13.8%	40	16.3%
Biological Therapy	-	-	4	14.3%	9	13.4%	35	26.9%	48	19.5%
Palliative	12	57.1%	11	39.3%	27	40.3%	35	26.9%	85	34.6%
Pt died before SACT	-	-	-	-	7	10.4%	2	1.5%	9	3.7%
Declined SACT	-	-	5	17.9%	8	11.9%	25	19.2%	38	15.4%
Not recorded	-	-	-	-	-	-	-	-	-	-

Table 10 (b) SACT: Small Cell Lung Cancer (SCLC)

n = All patients diagnosed with SCLC who received SACT (First or subsequent treatments) 01/01/2017 to 31/12/2017

SACT: NSCLC	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Neoadjuvant	-	-	-	-	-	-	1	1.0%	1	0.6%
Adjuvant	-	-	-	-	-	-	1	1.0%	1	0.6%
Chemoradiotherapy	3	21.4%	5	31.3%	4	14.3%	3	2.9%	15	9.4%
Biological Therapy	-	-	-	-	-	-	-	-	-	-
Palliative	6	42.9%	5	31.3%	14	50.0%	33	32.4%	58	36.3%
Pt died before SACT	-	-	-	-	2	7.1%	5	4.9%	7	4.4%
Declined SACT	-	-	4	25.0%	1	3.6%	4	3.9%	9	5.6%
Not recorded	-	-	-	-	-	-	-	-	-	-

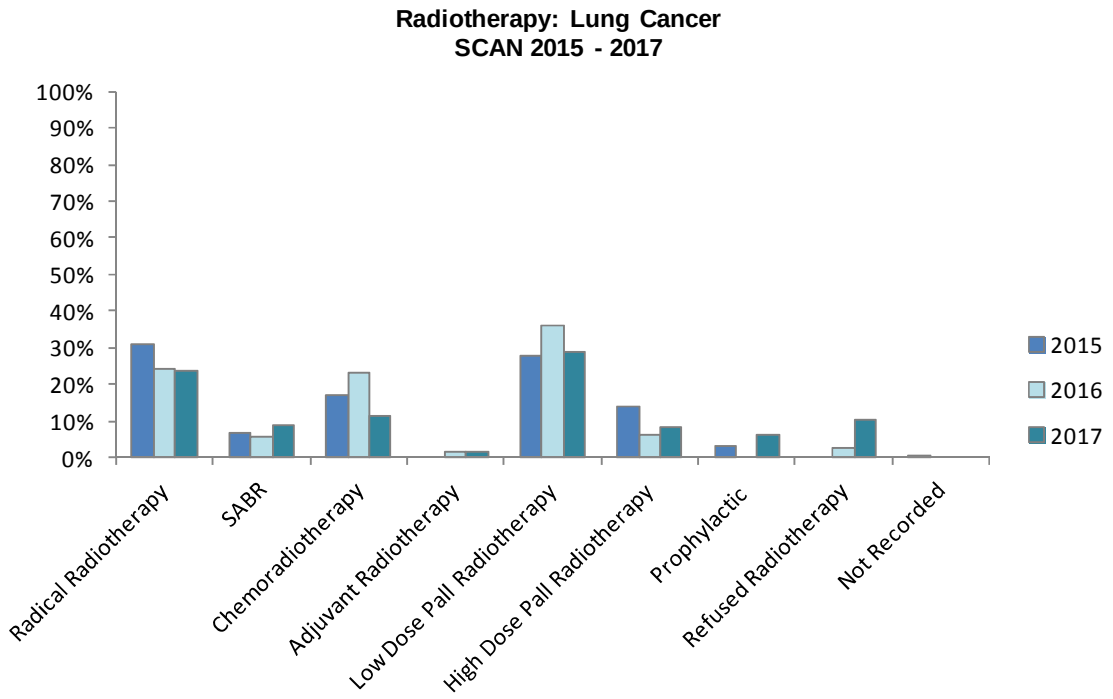
[22] QPI exclusions have not been applied: see QPI 6.1 and 6.2 for QPI results.

Table 11 Radiotherapy

n = All patients diagnosed with Lung Cancer who received Radiotherapy (First or subsequent treatments) 01/01/2017 to 31/12/2017

Radiotherapy	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Radical radiotherapy	11	28.2%	3	7.3%	23	18.5%	76	28.3%	113	23.9%
SABR	2	5.1%	3	7.3%	10	8.1%	28	10.4%	43	9.1%
Chemoradiotherapy	8	20.5%	9	22.0%	17	13.7%	21	7.8%	55	11.6%
Adjuvant radiotherapy	-	-	1	2.4%	1	0.8%	6	2.2%	8	1.7%
Low dose palliative	13	33.3%	6	14.6%	33	26.6%	85	31.6%	137	29.0%
High dose palliative	-	-	6	14.6%	19	15.3%	15	5.6%	40	8.5%
Prophylactic	-	-	4	9.8%	8	6.5%	17	6.3%	29	6.1%
Declined radiotherapy	5	12.8%	9	22.0%	13	10.5%	21	7.8%	48	10.1%
Not recorded	-	-	-	-	-	-	-	-	-	-

Type of Radiotherapy	Borders		D&G		Fife		Lothian		SCAN	
	n	%	n	%	n	%	n	%	n	%
Radical	21	53.8%	16	39.0%	51	41.1%	131	48.7%	219	46.3%
Palliative	13	33.3%	12	29.3%	52	41.9%	100	37.2%	177	37.4%



Appendices

Appendix 1 QPI Attainment Summary – 2016

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%
*QPI 13.1		*Surgery	<5	Analysis is by Hospital of Surgery: RIE			N 1 0.8%	N 1 0.8%

Lung Cancer Attainment Summary 2016			Target%	Borders		D&G		Fife		Lothian		SCAN	
30 Day Mortality After Treatment										D 127		D 127	
	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%

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.

CVA (Cerebrovascular Accident)
Is the medical term for a stroke.

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.

EOL care
End of life care.

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

Glomerular filtration rate (GFR)
is a test used to check how well the kidneys are working. Specifically, it estimates how much blood passes through the glomeruli each minute. Glomeruli are the tiny filters in the kidneys that filter waste from the blood.

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).

STEMI (ST-Elevation Myocardial Infarction) is a very serious type of heart attack during which one of the heart's major arteries is blocked.

SVCO (Superior Vena Cava Obstruction)
The superior vena cava is a large vein in the chest which carries blood from the upper half of the body into the heart. SVCO happens when this blood flow is blocked and is usually caused by lung cancer near to this vein.

Thoracic
Relating to the chest.

TIA (Transient Ischaemic Attack)
A transient ischaemic attack or "mini stroke" is caused by a temporary disruption in the blood supply to part of the brain.

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

Clinical and Audit Staff who contributed to the Lung Cancer Comparative Report 2017.

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