Royal College of Physicians | National Lung Cancer Audit

National Lung Cancer Audit annual report 2016
(for the audit period 2015)

Published January 2017

In association with:

British Thoracic Oncology Group

National Lung Cancer Forum for Nurses · NLCFN ·

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Citation for this document: Royal College of Physicians. *National Lung Cancer Audit annual report 2016 (for the audit period 2015).* London: Royal College of Physicians, 2017.

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ISBN 978-1-86016-630-3
eISBN 978-1-86016-631-0

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www.rcplondon.ac.uk
Registered Charity No 210508

Document purpose	To disseminate results on the quality of care of lung cancer care for patients diagnosed in the period between 1 January and 31 December 2015
Title	*National Lung Cancer Audit annual report 2016 (for the audit period 2015)*, January 2017
Author	Royal College of Physicians, Clinical Effectiveness and Evaluation Unit
Publication date	January 2017
Target audience	NHS staff in lung cancer multidisciplinary teams; hospital managers and chief executives; commissioners; lung cancer researchers; general public; lung cancer patients, their families and their carers.
Description	This is the 12th report on the clinical component (process of care) of the National Lung Cancer Audit. It publishes national and named team results on the quality of lung cancer care for patients diagnosed between 1 January and 31 December 2015. It covers many processes of care across the entire patient pathway.
Related publications	NICE Quality Standard for Lung Cancer 2012: **www.nice.org.uk/guidance/qs17** National Lung Cancer Audit annual report 2015: **www.rcplondon.ac.uk/projects/outputs/nlca-annual-report-2015**
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Thank you to all the lung cancer teams that have contributed data to the audit; without your considerable efforts, this report would not be possible.

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Foreword

It gives me great pleasure to see the progress that the National Lung Cancer Audit has made over the past 10 years and this, our latest annual report, is a testament to the desire of lung cancer clinical teams and cancer analysts to harbour all the very latest sources of cancer intelligence to produce the most complete report in the history of the audit. We are delighted to have access to fully registered lung cancer case data, which have been carefully compiled from at least eight different sources.[1] Consequently, we are able to report on an additional 6,000 cases that were not previously captured when the audit relied on a single source of case identification and submission. We believe it is crucial that we report on the treatment and outcomes for all patients with lung cancer, not just those whom lung cancer multidisciplinary teams are aware of and have correctly entered onto local systems. Our analysis suggests that the additional cases tend to be older, sicker and less likely to receive treatment, which further emphasises the importance of ensuring that the care of these patients is not neglected.

Despite the nature of the additional cases, it is very encouraging to note that, overall, many of our audit indicators have improved compared with the last report. Highlights include the improvement in pathological subtyping of lung cancer, the use of chemotherapy and surgery in non-small-cell lung cancer and, probably most importantly, the improvement in 1-year survival. However, there is still much work to do to ensure that all lung cancer patients receive a standard of care that is equal to the best in the country, and we implore all lung cancer units to critically review their results and work with our quality improvement team to achieve this.

Dr Ian Woolhouse
Senior clinical lead, National Lung Cancer Audit

[1] See Data collection and methodology section for more details.

Executive summary

This report summarises the key findings from the 12th annual National Lung Cancer Audit (NLCA) for patients diagnosed with lung cancer in England, Wales, Guernsey and Scotland in 2015. The purpose of the audit is to review the quality of lung cancer care, to highlight areas for improvement and to reduce variation in practice.

Lung cancer is the second most common cancer in the UK after breast cancer, and is the commonest cause of cancer-related death. Current survival rates for lung cancer are the second lowest out of 20 common cancers in England and Wales.[2]

The NLCA has been collecting data since 2005 and has become an exemplar of national cancer audit; it currently forms part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) commissioned by the Healthcare Quality Improvement Partnership (HQIP). NLCA data have been widely disseminated through abstracts at national and international meetings and in peer-reviewed publications. The data have also been used to underpin National Institute for Health and Care Excellence (NICE) guidelines, to inform research protocols and to guide national service developments. Most importantly, local data have been used as a driver for local service improvement projects.

In 2014, the contract for the NLCA was awarded to the Royal College of Physicians (RCP) and is delivered in partnership with a number of key stakeholders. The University of Nottingham provides the analysis for England and Wales. Clinical leadership is provided by lung cancer experts recruited through the Clinical Effectiveness and Evaluation Unit at the RCP. The NLCA executive group is constituted by the Society for Cardiothoracic Surgery (SCTS), the Roy Castle Lung Cancer Foundation (representing lung cancer patients), the Welsh Lung Cancer Special Advisory Group, the National Lung Cancer Forum for Nurses and the British Thoracic Oncology Group.

The report covers patients with a diagnosis of cancer that has been classified with code C34 of the 10th edition of the World Health Organization International Classification of Disease (ICD-10). Mesothelioma has not been included nationally in this report, because a mesothelioma-specific report for England published in December 2016 (**www.rcplondon.ac.uk/meso2016**) was independently funded by Mesothelioma UK. However, data from Scotland in this report do still include mesothelioma cases.

Participation in the audit by lung cancer services in England, Guernsey, Scotland and Wales continues to be outstanding, collectively contributing data on over 43,000 patients diagnosed in 2015.

For the first time in England, the audit uses data collected and processed by the National Cancer Registration and Analysis Service (NCRAS). This replaces the previous bespoke dataset submitted by trusts through a web portal (LUCADA). Alongside lung cancer multidisciplinary teams (MDTs) submitting data using the Cancer Outcomes and Services Dataset (COSD) to the NCRAS, the final dataset includes other registry and national datasets submitted by trusts, including pathology reports, Hospital Episode Statistics (HES), the National Radiotherapy Dataset (RTDS), the Systemic Anti-Cancer Therapy (SACT) dataset and death certificates. This linkage of many datasets provides the most comprehensive picture of lung cancer care to date.

[2] CRUK, 2016: **www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer** [accessed July 2016].

The audit has always reported groups of patients based on the 'place first seen' in secondary care because, in the vast majority of cases, it represents the location of the MDT that coordinates the investigation and treatment of the individual patient. However, as care becomes more complex, more patients move between different organisations for their investigations and treatment. For English data, the NLCA has developed an algorithm for allocation of the patient to a single trust (available at **www.rcplondon.ac.uk/nlcadata**), and data on the algorithm distribution of cases in this report are available online at **www.rcplondon.ac.uk/NLCA2016**.

In England, the new system of data collection has identified 6,000 additional cases of lung cancer in 2015, an increase of 20% from historical LUCADA records. Trusts have noted the extra cases identified in their results and some have raised concerns regarding the differences between their COSD submissions and the final results. To help identify the additional cases found from the use of additional datasets, NCRAS is releasing patient-level data back to trusts where requested. In-depth reviews at a number of trusts generally found that the additional cases had either been missed in the COSD feed owing to IT issues, or were not referred to the lung cancer MDT. As the new system beds down, the NLCA expects to see ongoing improvement in data quality.

In Wales, data are collected through the Cancer Network Information System Cymru (CANISC) and a pseudo-anonymised extract of patient-level data is submitted to the NLCA. The results for Wales demonstrate high levels of completeness, with the percentages of patients discussed at MDT, and with their performance status and stage recorded at 98% or greater. Improving lung cancer outcomes in Wales was selected as a national priority in 2015, with the formation of a Lung Cancer Initiative group to coordinate several projects aimed at improving lung cancer survival rates.

The report also includes data from Guernsey and Scotland, which are independently funded. Data for Guernsey are collected and submitted to the NLCA analysis team. Scottish data are collected by the three regional cancer networks and analysed locally against lung cancer quality performance indicators (QPIs). Summary data of the results are available in the report.

Summary of key findings and recommendations

In our last annual report (patients diagnosed in 2014), we made recommendations that lung cancer services should set out to achieve, covering data quality, process of care and treatment. We report below the overall national (England, Wales, Guernsey) performance against these measures. Scotland does not provide individual patient data and therefore is not included in this overall measurement. More detailed results are reported separately in the Key findings and recommendations section.

- This report covers patients with lung cancer first diagnosed in 2015, and includes 36,025 patients in England, 2,207 in Wales, 37 in Guernsey and 4,884 in Scotland.

- The new dataset in England has identified more patients and more treatments, but has also identified issues with local completion and submission of performance status and lung cancer nurse specialist data.

- Incorrect or incomplete local completion and submission of the 'place first seen' field has created some difficulties in allocating patients to the correct trust in England, and so the data for individual organisations should be viewed in context.

- Measures of survival show encouraging improvements, with 1-year survival measured at 38% for this cohort, compared with 31% for the 2010 audit.

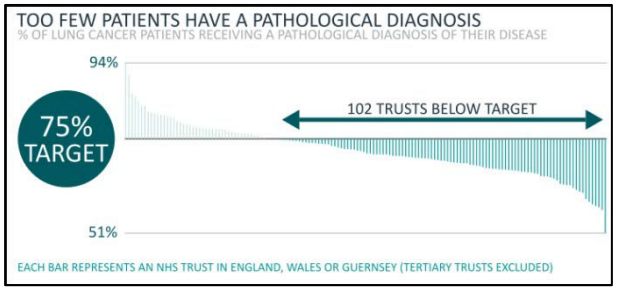
- Pathological confirmation rates have risen to 72% overall (although falling short of the target of 75%), and it is very pleasing that the proportion of lung cancers that are not precisely pathologically subtyped has fallen further to 11%.

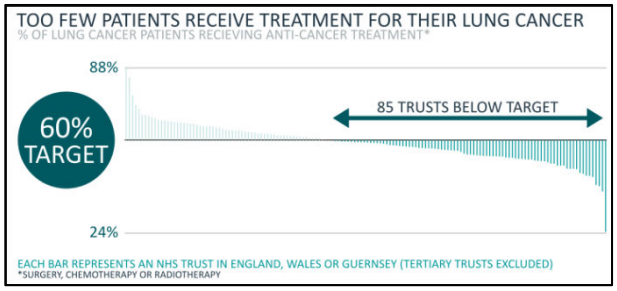
- Inclusion of other sources of data (HES, SACT and RTDS) has revealed more treatments, such that anticancer treatment was given to 60% of patients overall, meeting the previous target of 60%.

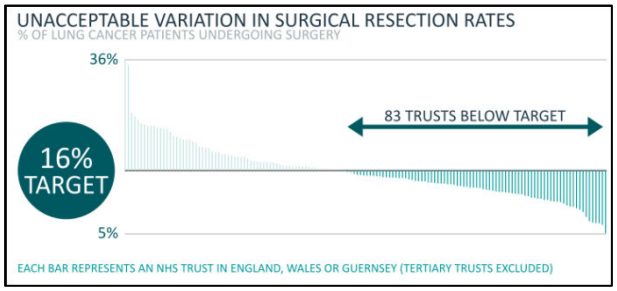
- The proportion of patients undergoing surgery has risen, reaching 16.8% in patients with non-small-cell lung cancer (NSCLC).

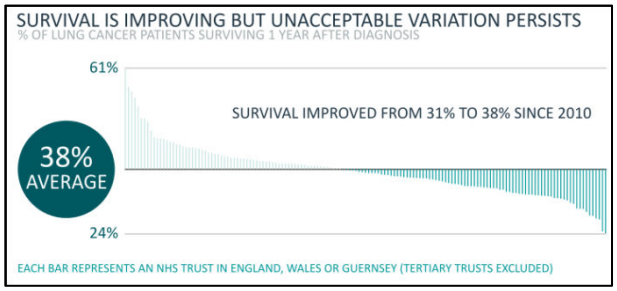
- There has been a significant rise to 64% in the proportion of patients with NSCLC (advanced stage and performance status 0–1) who receive chemotherapy.

- There remains wide and unacceptable variation in standards of care between organisations.









Recommendations

We make a number of specific recommendations for the next round of audit:

DATA COMPLETENESS	STANDARD
Case ascertainment	95%
Valid performance status (PS) and stage	≥90%
Patients with stage I–II and PS 0–1, completeness for FEV1 and FEV1%	>75%
PROCESS	
Proportion of patients seen by lung CNS	≥90%
Proportion of patients where lung CNS present for diagnosis	≥80%
Proportion of patients with pathological confirmation of lung cancer	≥80%
Proportion of patients where the pathology code is NSCLC NOS	<15%
Proportion of patients receiving PET-CT scan before surgery or radical radiotherapy	≥90%
Proportion of patients receiving chemotherapy for SCLC starting treatment within 2 weeks of pathological diagnosis	≥80%
TREATMENT AND OUTCOME **The casemix-adjusted odds ratio will be used to determine outlier status, but organisations can use the 2015 mean results (shown below) as a guide to performance**	
	2015 mean
Active anticancer treatment rates for patients	60%
Surgical resection rates for NSCLC patients	17%
Radical treatment rates for patients with stage I/II NSCLC	70%
Chemotherapy rates for SCLC	≥ 69%
Systematic anticancer treatment rates for PS (0–1) stage IIIB/IV NSCLC	64%
1-year survival	38%

For some organisations, achieving these recommendations will require a programme of quality improvement (QI). We provide a toolkit (Appendix 2) to assist this process.

In 2017, the NLCA will be building on QI initiatives and support for lung cancer teams. An online portal is under development, which will enable the collection of additional data items to better understand and address variation in surgical treatment and curative treatment rates across England. Alongside this, the NLCA team will be delivering regional workshops on quality improvement in England and Wales and will be inviting teams to attend and develop ongoing QI initiatives.

What do the data results mean for me?

Patients, their families and their carers should be reassured by the engagement of clinical teams with the audit process, and the improvements in survival seen over the past few years. However, they should be concerned that significant variation still exists in the care delivered across different organisations. In 2017, the NLCA will be producing a patient-focused version of the report to identify the key results for patients.

NHS staff in lung cancer multidisciplinary teams should move rapidly to deal with any issues with their data quality, and focus on issues of patient process and treatment. Where performance appears to be suboptimal, teams should work together to understand the results in the local context, perform deep-dive audit to uncover areas for improvement, and use QI strategies to deliver change.

Hospital managers and chief executives should seek to understand and to challenge areas of poor performance identified in this report, and should discuss the findings with their clinical teams who know the strengths and weaknesses of the service best. Such discussions are key in unlocking barriers to improvement.

Commissioners in England should use this report alongside the National Service Specification, to understand areas of weakness in provider hospitals and to ensure that the services they commission provide the highest-quality care. For example, why do fewer than 50% of patients receive anticancer treatment in around 16 hospital trusts?

The NLCA project team should communicate the results of the audit to all stakeholders, support provider hospitals in submitting data of the highest quality, and provide a QI resource to help drive effective and sustainable change. The appointment of new clinical leads and the planned QI workshops will aim to stimulate quality improvement in participating organisations.

Commentary

Commentary on England

This is the first year that the NLCA has used the cancer registry data as the data source for England. Alongside lung cancer MDTs submitting data using the Cancer Outcomes and Services Dataset (COSD) to the NCRAS, the final dataset includes other registry and national datasets submitted by trusts, including pathology reports, Hospital Episode Statistics (HES), the National Radiotherapy Dataset (RTDS), the Systemic Anti-Cancer Therapy (SACT) dataset and death certificates. This linkage of many datasets realises what the NLCA team have been hoping to achieve for several years and provides the most comprehensive picture of lung cancer care to date.

Overall, 6,000 further cases of lung cancer have been identified via the new system of data collection, an increase of 20% from historical LUCADA records. The move to using cancer registry data has identified an increase in anticancer treatment rates to 60%, a welcome improvement from 58% in the previous report. A review of the demographics of the additional cases identified in England found that these patients tend to be those who may not have been receiving anticancer treatment; therefore, this makes the improvement in treatment rates even more notable, even though this may also be due to the move to new data sources.

Surgical treatment rates for NSCLC patients have increased to 16.7%, meeting the benchmark set the previous year. Chemotherapy treatment rates for NSCLC have also risen to 64%, continuing the trend in gradual improvement in treatment rates across England since they were first reported in 2008.

Trusts have noted the extra cases identified in their results and some have raised concerns regarding the differences between their COSD submissions and the final results. To help identify the additional cases found from the use of additional datasets, NCRAS is releasing patient-level data back to trusts where requested. In-depth reviews at a number of trusts found that generally the additional cases had either been missed in the COSD feed owing to IT issues, or were not referred to the lung cancer MDT. We have developed an algorithm for allocation of the patient to a single trust; more information on this algorithm is available in the Data collection, analysis and reporting methodology section.

Some aspects of data completeness results have been disappointing. The results for ‘seen by Lung Cancer Nurse Specialist (NLCA) data completeness’ are not as high as we would like. This data item requires ongoing communication between the nursing and cancer data teams to ensure that it is collected and recorded consistently. Overall, 75% of patients had PS recorded in England, not meeting the target of 90%. Across individual organisations, the results varied from 0% to 100%.

As previous reports from the NLCA have shown,[3] there continues to be regional variation in the survival rates and the treatments that patients are offered. We urge trusts to review their results and to use the NLCA data improvement toolkit to improve submissions. CancerStats,[4] the online portal, is currently available for teams to review the completeness of their monthly submissions and, in 2017, the first quarterly performance reports will become available. The NLCA clinical leads are available to visit MDTs and network meetings to provide support for ongoing QI.

In the next report, we expect to see ongoing improvements in results as the new system of COSD and registry data embeds in England.

Rosie Dickinson
Project manager, NLCA

[3] **www.rcplondon.ac.uk/projects/national-lung-cancer-audit**
[4] **nww.cancerstats.nhs.uk/users/sign_in** (users will require an N3 connection)

Commentary on Wales

Wales continues to submit data that demonstrate high levels of completeness, with the percentage of patients discussed at MDT, PS and stage all recorded at 98% or greater. Pathological confirmation of the diagnosis fell slightly from 73% to 71%. The proportion of patients receiving any anticancer treatment remains static at 60%, which is equal to the England and Wales average. The percentage of patients receiving LCNS support was high and increased slightly from 88% to 91%, and the proportion of patients receiving chemotherapy for SCLC increased from 67% to 73%. The proportion of NSCLC patients having surgery was 18.7%, increasing from 15.7% in 2014 and 10.9% in 2013.

Improving lung cancer outcomes in Wales was selected as a national priority in 2015,[5] with the formation of a Lung Cancer Initiative group to coordinate several projects aimed at improving lung cancer survival rates. It would be too early for some of the benefits from this initiative to be seen in this year's audit data. However, significant changes and work had already been started by teams within individual MDTs and primary care in order to improve these outcomes. The lung cancer service had also undergone a period of rigorous peer review that has focused on patient outcomes and quality of care, which in 2013 resulted in a reduction in the number of hospital MDTs from 14 to 11.

To continue the improvement in lung cancer outcomes and patient experiences in Wales will be a major challenge, requiring a continued emphasis on early diagnosis and detection and greater cooperation between primary care, hospital MDTs and tertiary treatment centres to optimise patient pathways.

Dr Ian Williamson, Wales Cancer Network clinical lead for lung cancer, and Dr Gareth Collier, lead for the Welsh Priority Programme: the Lung Cancer Initiative

[5] Welsh Government, 2015. *Together for health: Cancer Annual Report 2015*. Crown copyright. **http://gov.wales/docs/dhss/publications/160120canceren.pdf**

Commentary on Scotland

Lung cancer is the second most common cancer in men and women, and a leading cause of cancer-related deaths in Scotland. Lung cancer QPI audit and 'real-time' data review are utilised to ensure that activity at NHS board level in Scotland is focused on areas most important in terms of improving survival and patient experience, while reducing variance and ensuring safe, effective and person-centred cancer care.

QPIs have been developed collaboratively with the three regional cancer networks in the north, south-east and west of Scotland (NOSCAN, SCAN and WOSCAN, respectively); with the Information Services Division (ISD);[6] and with Healthcare Improvement Scotland (HIS).[7] The Lung Cancer QPI Dataset[8] was implemented commencing 1 April 2013 and audit is now in its third year of reporting.

The data presented relate to patients diagnosed with lung cancer in Scotland from 1 January to 31 December 2015. This has only been made possible by the hard work and commitment by all audit and clinical teams in the three cancer networks, presenting an impressive array of data on 4,884 patients diagnosed across Scotland.

Clinical evidence-based quality improvement strategies (for example, QPIs and the Scottish Intercollegiate Guideline Network (SIGN) Guidelines)[9] and recommendations from the National Lung Cancer Forum for Nurses (NLCFN) inform improvements in Scotland. These and key recommendations adopted by NLCA share similar goals and, while there are areas of immediately comparable data, this is not always the case. Direct comparison should therefore be made with some caution.

Overall, the three regional cancer networks in Scotland have improved performance against most of the QPI targets over the past 3 years. In particular, surgical resection rates (QPIs 6(a) and (b)) show increased levels nationally: rising from 22.5% to 23.3% for all patients diagnosed with NSCLC, and from 45.5% in 2013–14 to 66.9% in 2015 for patients with NSCLC stages I and II, undergoing surgical resection.

Appropriate treatment of lung cancer is dependent on accurate diagnosis and distinction between histological types. Targets are consistently met in years 2 and 3 across the three regional networks with regards to pathological diagnosis (QPI 2). Conversely, rates for NSCLC NOS (not otherwise specified) remain consistently lower than the 10% benchmark indicated by the SIGN Guidelines 2014,[9] with an overall decrease of 4.5% in cases across the 3-year period.

As part of the National Cancer Quality Programme, QPIs will be subject to formal review following 3 years' analyses of comparative QPI data. Lung cancer QPIs are currently undergoing a programme of formal review, which will provide the opportunity to update and develop additional QPIs in line with evolving evidence as part of a rolling programme.

Hardy Remmen, clinical lead, North of Scotland Cancer Network (NOSCAN)
Colin Selby, clinical lead, South East Scotland Cancer Network (SCAN)
John McPhelim, clinical lead, West of Scotland Cancer Network (WoSCAN)
Ailsa Patrizio, Lung Cancer Audit facilitator, SCAN

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[6] **www.isdscotland.org/Health-Topics/Cancer/Cancer-Audit/index.asp?Co=Y**
[7] **www.healthcareimprovementscotland.org/our_work/cancer_care_improvement/cancer_qpis/quality_performance_indicators.aspx**
[8] **www.isdscotland.org/Health-Topics/Cancer/Cancer-Audit/docs/Lung/Lung-Cancer-QPI-Dataset-V2-5-Final.pdf**
[9] Scottish Intercollegiate Guidelines Network, *Management of Lung Cancer* (SIGN 137): 2014

Plans for 2017 onwards

The NLCA indicators have been updated for 2017 to include additional items relating to diagnostic processes, treatments and survival rates. The full list can be found on page 10 of this report.

In 2017, the NLCA will be building on QI initiatives and support for lung cancer teams. An online portal is under development, which will enable the collection of additional data items to better understand and address variation in surgical resection and curative treatment rates across England. This will be launched in early 2017. Alongside this, the NLCA team will be delivering regional workshops on quality improvement in England and Wales, and will be inviting teams to attend and develop ongoing QI initiatives.

The second organisational audit will be launched for England and Wales, building on the previous audit in 2014, which demonstrated significant variation in access to novel diagnostics, treatment modalities and treatment specialists. The online audit will measure progress against the recommendations set in 2014, as well as focusing on new areas such as the impact of new treatment modalities on radical treatment rates. The audit will also review the key organisation determinants of patient experience.

The NLCA will launch the fourth lung cancer clinical outcomes publication (LCCOP) reporting survival rates after surgery for lung cancer in England in 2015. These data are published on NHS Choices (**www.nhs.uk**). In collaboration with the SCTS, the NLCA will review the indicators and begin to develop additional outcomes measures.

1 Introduction

1.1 Purpose and background

The NLCA was developed in response to the finding in the late 1990s that outcomes for lung cancer patients in the UK lagged behind those in other westernised countries,[10] and varied considerably between organisations. The audit began collecting data nationally in 2005, and since then has become an exemplar of national cancer audit.

The purpose of this document, the 12th NLCA annual report, is to summarise the key findings of the audit for patients diagnosed with lung cancer across the UK between 1 January and 31 December 2015. More extensive analyses of the data are available in an electronic spreadsheet format from the RCP website at **www.rcplondon.ac.uk/nlca2016**.

Background to the audit

The NLCA is commissioned by HQIP on behalf of NHS England and the Welsh Government in response to the need for better information about the quality of lung cancer services and care provided in England and Wales.

HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the National Clinical Audit Programme, comprising more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.
www.hqip.org.uk

> The aim of the NLCA is to drive further improvements in lung cancer care and outcomes by bringing the standard of all lung cancer MDTs up to that of the best.
> **Dr Ian Woolhouse**

The audit is run by the RCP, which now works in partnership with NCRAS, the Division of Epidemiology and Public Health at the University of Nottingham, the National Lung Cancer Forum for Nurses (NLCFN), the SCTS, the British Thoracic Oncology Group (BTOG), the Roy Castle Lung Cancer Foundation and the Welsh Lung Cancer Special Advisory Group (Appendix 3).

[10] *Ann Oncol* 2003;14 Suppl 5:v61–118

We have defined six overarching questions that guide the data collection and reporting in the audit:

Patient story: Adrian Morgan, aged 58

Adrian has severe chronic obstructive pulmonary disease (COPD). He presented in 2015 with a large right middle lobe tumour and a single metastasis in the upper lobe. After a period of preoperative pulmonary rehabilitation, he underwent a video-assisted thoracic surgery (VATS) middle lobectomy and wedge of an upper lobe metastasis in July 2016. He has subsequently had four cycles of adjuvant chemotherapy. So far he remains well and is continuing to attend follow-up clinics.

This is Adrian's story:
'I have had COPD since 2006. In autumn 2013 my breathing worsened. I saw a pulmonary consultant in August 2014. I was prescribed medical oxygen. Various tests followed. I was at "end-stage" COPD. A bronchoscopy in January 2015 led to a collapsed lung, and a PET scan indicated two tumours. In March, I was told my chances of dying during lobectomy lung surgery were six times higher than someone suffering lung cancer without COPD.

To give myself the best chance of a good recovery, before undergoing the operation I was advised to go on a short course of pulmonary rehabilitation exercises. These helped. I could see improvement, though my lung function was still bad. I went in for surgery on 7 July 7 2015. I made preparations for my cats to be cared for should things go wrong. The right middle lobe was removed, along with morbid tissue from the upper lobe. Two adenocarcinomas were taken out. After surgery I spent two nights in the intensive care unit with surgical emphysema, then 2 weeks on a ward. A pump drained fluid from the lung, but it took 2 weeks for it to fully inflate. I spent each day pacing the corridors with a digital pedometer, increasing the distance daily (with rests). On the final day, I managed 11 km (6 miles).

I had chemotherapy for 3 months, but now, almost 17 months after the operation, I feel optimistic. I still have COPD, but my breathing is better. I feel alive. Without surgery, I would probably not be here now.'

2 Data collection, analysis and reporting methodology

Each year, the NLCA produces guidance for audit participants on the items to be collected for the audit. For English data, NHS hospitals submit the details for all lung cancer patients using the Cancer Outcomes and Services Dataset (COSD) monthly to the NCRAS. COSD is a generic cancer registry dataset that includes additional clinical and pathological site-specific data items relevant to different tumour types. The COSD specifies the items to be submitted electronically by service providers to NCRAS and also identifies the items that the NCRAS will obtain from other sources, such as cancer waiting times and the Office for National Statistics. COSD replaces the previous NLCA dataset submitted by a bespoke web portal known as LUCADA – LUng CAncer DAta).

To produce the data for the NLCA annual report, NCRAS links the COSD data with other registry datasets submitted by trusts including pathology reports, Hospital Episode Statistics (HES) data, the National Radiotherapy Dataset (RTDS), the Systemic Anti-Cancer Dataset (SACT) and the Office for National Statistics dataset, which provides death certificate data. A pseudo-anonymised extract is then submitted to the NLCA analysis team.

Patients with a primary diagnosis of lung cancer (ICD-10 code C34) are included in the analysis. The following patients are excluded: patients identified with lung cancer through death certificate only, patients with non-lung cancer-related pathology codes and patients who cannot be assigned a trust of diagnosis.

For some trusts in England (18%), the field in COSD relating to trust first seen is missing. Where this happens, we have written an algorithm to assign trust first seen on the basis of other data in the database. Our process is designed to allocate patients to peripheral centres first rather than tertiary trusts, but the algorithm is dependent on data completeness in other fields and where this is not present, for some cases allocation is difficult. We acknowledge that the system of case allocation is not perfect and a number of trusts have highlighted this to us in the feedback stage. As stated in the Introduction, the results for each trust should be interpreted in this context. Nevertheless, the NLCA team is confident that the number of cases affected by this issue is relatively small and therefore the results are as representative as a large national audit can be. As the proportion of missing data improves with time, it is anticipated that the results will become more robust. Trust-level data, including details of the algorithm allocation of cases, are available online in the NLCA Information sheet 2016 at **www.rcplondon.ac.uk/nlca2016**.

In Wales, data are collected through the Cancer Network Information System Cymru (CANISC) and a pseudo-anonymised extract of patient-level data is submitted to the NLCA.

This report also includes data from Guernsey and Scotland, which are independently funded by their local governments. Data for Guernsey are collected and submitted to the NLCA analysis team. Scottish data are collected and analysed locally and therefore summary, rather than patient-level, data are submitted for inclusion in the report. It is for this reason that Scottish results appear separate in this report.

The analysis for England, Wales and Guernsey is casemix adjusted for patient features including age, sex, performance status, socio-economic status and cancer stage. The population included in the audit report is taken as a baseline population and each network or trust is compared with the baseline to produce odds ratios with a 95% confidence interval, where an odds ratio of 1 means there is no difference between the analysed network or organisation and the baseline. An odds ratio of <1 means that the network or organisation performs less well than the baseline, and an odds ratio of more than one means that the network or organisation performs better than the baseline.

Recording the activity of tertiary trusts has always been problematic for the NLCA. Most activity relating to lung cancer initial diagnosis in England occurs in secondary care trusts, which range from small district general hospitals to large teaching hospitals. Subsequent treatment often takes place in the same trust or, for some smaller trusts, the patient may be transferred to another secondary care organisation. Activity in these organisations is well represented by the audit, as the analysis of cases by 'place first seen' allocates patients to the decision-making MDT.

Some tertiary trusts provide specialist treatment only, and others also provide some complex diagnostics, and are therefore the 'place first seen' only rarely. These trusts do provide a very important treatment service for patients in their local area, but also on a regional/national basis.

A further complexity arises this year, in the allocation of cases where the 'place first seen' has not been recorded correctly. In such cases, although we try very hard to find evidence of activity in non-tertiary trusts, in some cases the patient may be allocated to these organisations even though they may only have undergone diagnostic tests or treatment there. Thus, the data for tertiary trusts must be interpreted with caution.

Tertiary trusts and their partner organisations will need to work together with the audit team and NCRAS staff to ensure that data submitted to the audit contain enough information to allow correct allocation of cases.

Table 5: Tertiary trusts

Trust code	Trust name
RBV	The Christie NHS FT
REN	The Clatterbridge Cancer Centre NHS FT
RGM	Papworth Hospital NHS FT
RM2	University Hospital of South Manchester NHS FT
RPY	The Royal Marsden NHS FT
RT3	Royal Brompton and Harefield NHS FT

In England, an online portal CancerStats collects COSD data and provides trusts with a way to review their submissions and data completeness levels for some of the key NLCA indicators. Further details can be found via **nww.cancerstats.nhs.uk/users/sign_in** (N3 connection required).

In 2017, CancerStats will also provide the facility for trusts to view fully processed registry data to develop their own bespoke reports. Alongside this, the NLCA team will provide quarterly performance reports using the fully processed registry data to deliver more contemporaneous results for the audit.

We report the results of the NLCA at national, Strategic Clinical Network (SCN) and trust or health board levels. Overall national results, unless otherwise stated, represent analysis of the combined patient-level data from England, Wales and Guernsey, as Scotland currently provides only summary data.

Standards and NICE guidelines

National guidelines produced by NICE underpin the approach to management of patients with lung cancer in England (**http://pathways.nice.org.uk/pathways/lung-cancer**). NICE has produced a set of 15 quality standards (QSs), intended to describe what a high-quality lung cancer service should deliver, although they stop short of setting numerical standards. Similar standards exist in Scotland (**www.healthcareimprovementscotland.org/our_work/cancer_care_improvement/cancer_qpis.aspx**).

Patients vary greatly in their disease profile, their fitness for investigation and treatment, and their own preferences for their care. As a result, it is not always easy to interpret the results of individual organisations. However, setting standards is an important driver of improvements in care; without standards, we cannot know which organisations are doing well and we cannot learn from them. Similarly, we cannot know which organisations are performing poorly and we cannot try to support them to improve the quality of care.

Each year, the NLCA develops a set of key indicators by which results will benchmarked and reported on in the audit results (see page 10). These indicators reflect NICE guidelines and QSs that have a broad clinical consensus. Our standards are designed to encourage healthcare professionals to review the findings of this report and to understand why the differences exist.

Use of NLCA data

In England, the NLCA 2014 data have been submitted for the Care Quality Commission (CQC) inspection process, which summarised key audit data at trust level and are used to populate inspection packs. This process will continue and the NLCA will be submitting 2015 data on the following metrics after publication of this annual report:

1 proportion of patients alive at 1 year
2 proportion of patients seen by a lung cancer nurse specialist (LCNS)
3 overall surgical resection rate
4 NSCLC chemotherapy rate (stage IIIB/IV, PS 0–1)
5 SCLC chemotherapy rate.

Quality improvement

The NLCA team continues to support lung cancer teams to improve data quality and use data to drive local improvements. The NLCA clinical leads attend conferences and local network meetings to discuss the findings of the audit, and to share QI methods and initiatives. In 2017, the NLCA will be broadening the QI element of the work programme by launching a spotlight audit asking trusts to review cases, via an online portal, where patients have not been offered treatment, in order to understand the variation in surgical resection rates and curative treatment rates identified in the audit results. The aim is to stimulate quality improvement. The team will also be hosting regional QI workshops for lung cancer audit teams in England and Wales, to discuss QI methodology and facilitate plans for local quality improvement.

Along with this report, we have produced a toolkit (Appendix 2) to improve data submissions.

2.1 Case ascertainment

After excluding 3,678 records, there were 36,025 patients analysed from England, 2,207 from Wales, 37 from Guernsey and 4,884 from Scotland with a date of diagnosis in 2015 (Figure 1). Although the age-specific incidence of lung cancer is falling nationally as smoking prevalence falls, there has been a steady rise in the total number of lung cancer patients in all countries, partly owing to the ageing population.

Reasons for initial exclusion of cases included:

- death certificate only diagnosis
- duplicate patient
- mesothelioma or other non-lung cancer diagnosis
- missing trust of diagnosis.

Under the new contract for the NLCA, we are commissioned to report on all lung cancer cases in England, not just those patients who the lung cancer MDTs are aware of and have submitted data on via COSD. NCRAS has access to many different data sources to identify a lung cancer case. These include the COSD feed, but also pathology reports, radiology reports, treatment events and death certificates. These data feeds, bar the death certificates, are submitted to NCRAS. We have excluded patients who were identified just on a death certificate, but had no record of contact with a secondary care organisation.

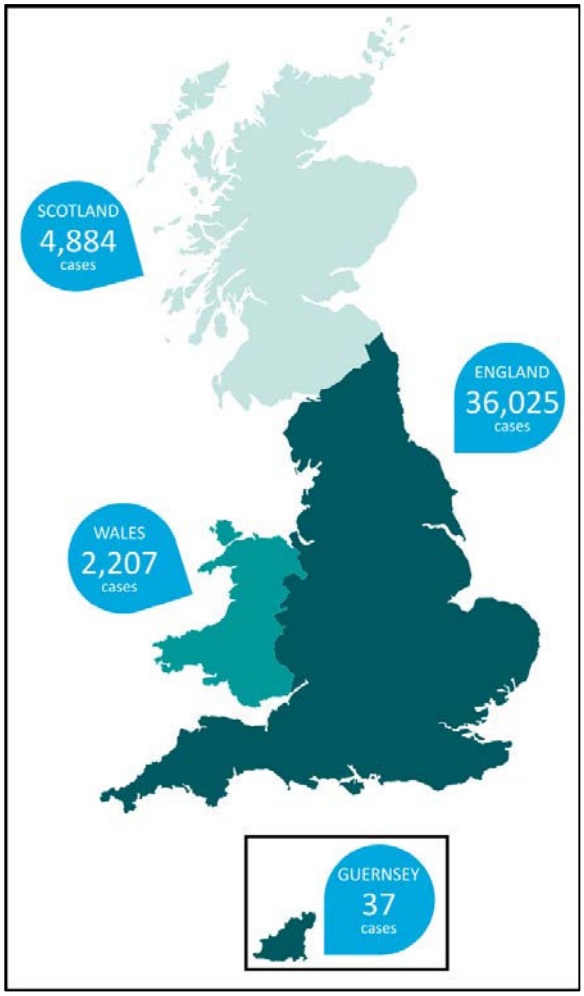


Figure 1: Number of patient records submitted to the NLCA – England, Wales, Scotland and Guernsey

Using this multitude of data feeds, we have identified an additional 6,000 lung cancer cases in England compared with historical LUCADA records. Having reviewed these cases, we are confident that these are true cases of lung cancer and it is therefore important that these patients are included in the audit. Clearly, because these notifications have not necessarily come from trust data, there is a potential issue in identifying which trust first saw these patients. In order to obtain this information, we have used a range of other sources to determine the 'trust first seen'. A full description of the algorithm that we have used is available on the NLCA website at **www.rcplondon.ac.uk/NLCAdata**. In summary, if the COSD 'trust first seen' field is blank or contains two contradictory values, we have used the site of diagnostic testing in preference to the site of treatment to avoid over-assignment of patients to treatment centres. Following tests of this methodology at a number of sites, we are satisfied that it is fit for purpose. Where requested, the NCRAS has released patient-level data to trusts to enable them to review the results compared with their submissions.

2.2 Demographics

Analysis of the patient-level data submitted to the audit from England, Wales and Guernsey (not Scotland) allows a detailed description of the population of patients who are diagnosed with lung cancer. In this section, we provide information on age, gender and lung cancer subtypes.

Age of patients at diagnosis

Age distribution of lung cancer cases

NSCLC patients have a median age of 73 years at diagnosis and SCLC patients have a median age of 70 years. Patients with carcinoid tend to be even younger at diagnosis, with a median age of 65 years. This is shown graphically in Figure 2 opposite. Note the different scale for the SCLC or carcinoid cases, which are much less common than NSCLC.

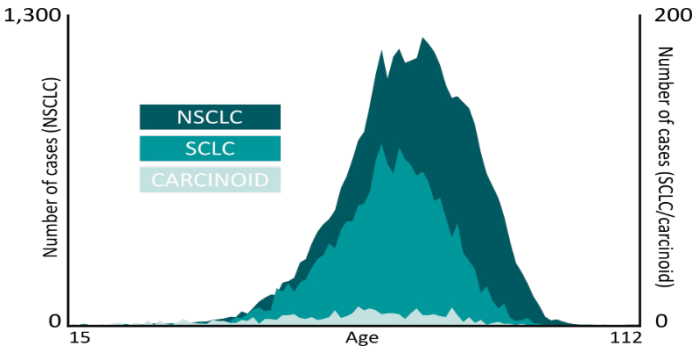


Figure 2: Age distribution of lung cancer cases

Age at diagnosis

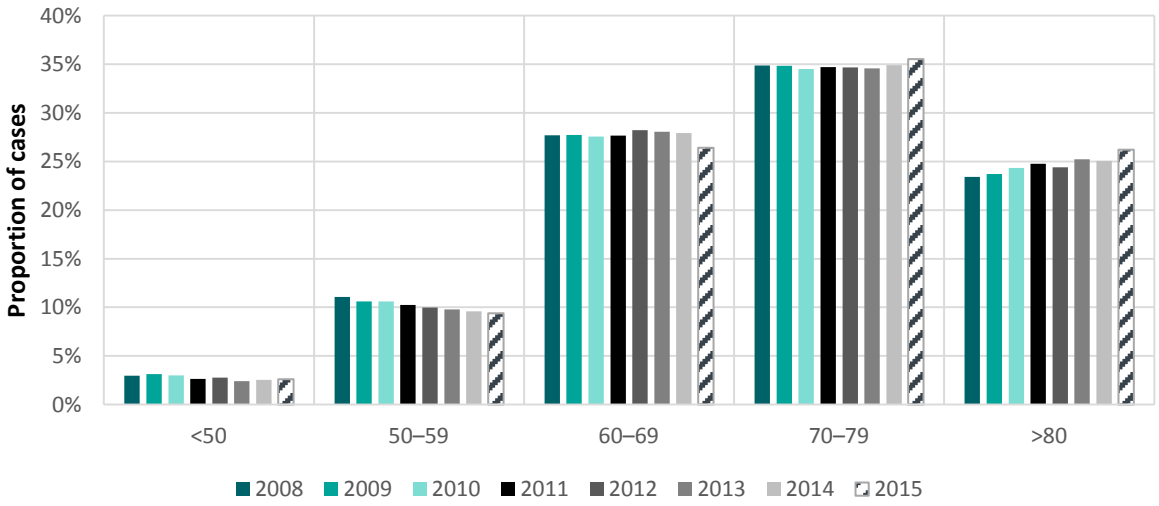


Figure 3: Age at diagnosis by audit year (all lung cancers)

Figure 3 shows how there has been a progressive reduction in the number of younger patients with lung cancer, perhaps reflecting trends in tobacco smoking. At the same time, progressively more cases are diagnosed in older patients, which reflects our ageing population as well as better access to diagnostic techniques such as CT scanning. This is illustrated more clearly in Figure 4 below.

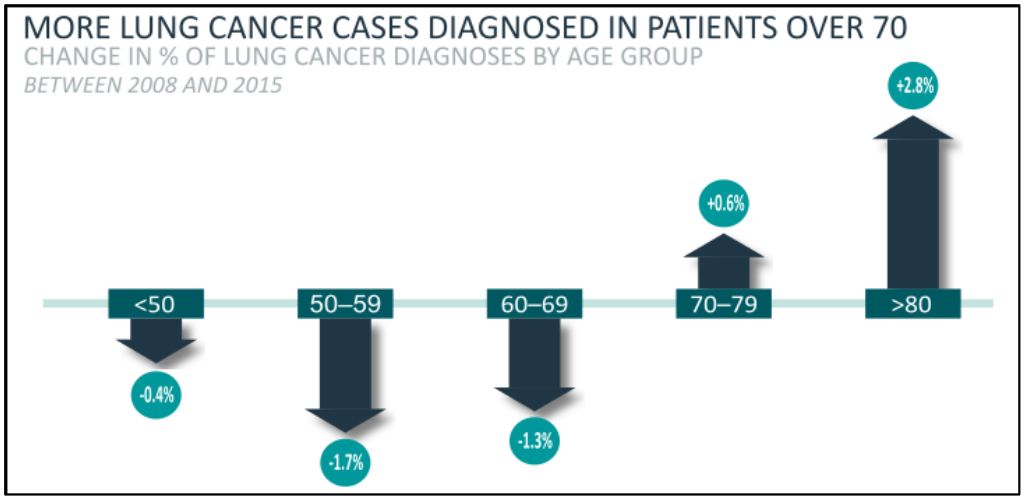


Figure 4: Change in lung cancer diagnosis by age group

Subtype of lung cancer

There are several distinct subtypes of lung cancer, which can be distinguished by their features as seen under a microscope, and sometimes by their appearance and behaviour on CT scans. Determining the exact cancer subtype for individual patients is important, as the specific treatment varies for each. Figure 5 shows the distribution of lung cancer types, and the subtypes within NSCLC (non-small cell lung cancer).

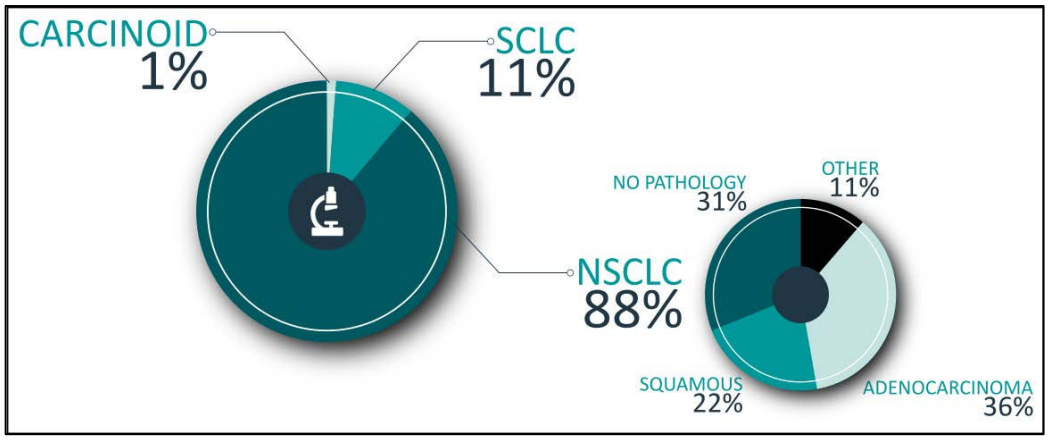


Figure 5: Distribution of lung cancers and subtypes

Stage

Stage refers to the extent of the cancer. Lung cancer teams use the 7th edition of the international TNM system[11] to record details of the tumour ('T'), whether it has spread to any lymph glands (also known as nodes, hence 'N'), and whether there is more distant spread to other organs (known as metastasis, hence 'M'). The three components are combined into an overall stage between 1A (early stage, local disease only) and 4 (late stage, advanced disease). Figure 6 illustrates the percentage of cases recorded postoperatively by stage.

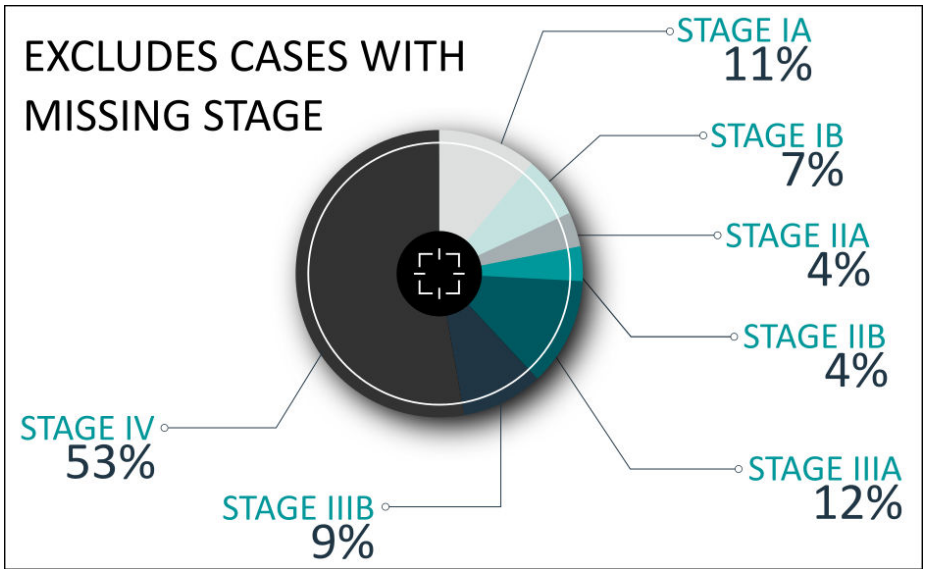


Figure 6: percentages of cases by stage

[11] **http://cancerstaging.org/references-tools/quickreferences/documents/lungmedium.pdf**

Gender

Since the late 1970s, lung cancer incidence rates have overall decreased by around one-seventh (14%) in Great Britain, although this includes an increase in females (more than two-thirds, 69%) and a decrease in males (more than two-fifths, 44%), reflecting changes in smoking habits over the preceding decades.[12] Despite these changes, the audit data show that lung cancer remains more common in men than in women.

Comparison of some key features reveals some interesting differences between the sexes, as shown in Figure 7. Men are less likely to have early-stage disease at diagnosis and, perhaps as a consequence, less likely to have surgical treatment than women. This may reflect a tendency for men to delay seeking help and advice from their GP for symptoms such as cough, breathlessness or weight loss. Local and national campaigns aimed at improving awareness and encouraging earlier diagnosis are important in changing attitudes.[13]

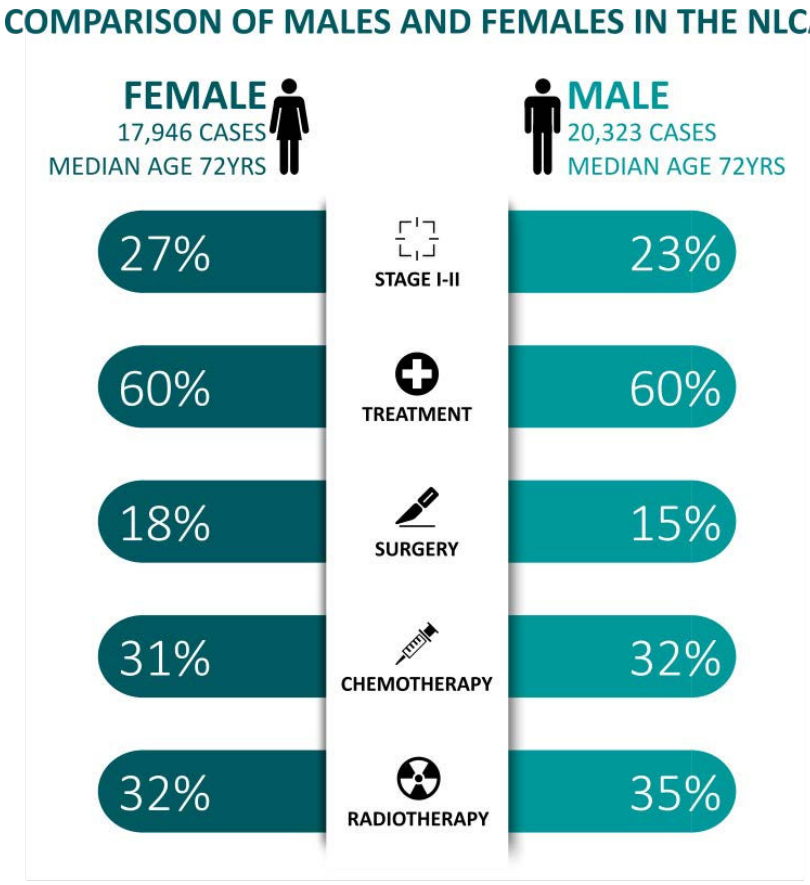


Figure 7: Demographics according to gender

[12] www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer
[13] www.nhs.uk/be-clear-on-cancer/symptoms/lung-cancer

3 Key findings and recommendations

Each year, we make a number of specific recommendations against which we will audit, analyse and report in the annual report. In this section, we review progress compared with the recommendations set out in the 2015 annual report, and we make new recommendations for the next annual report.

Our recommendations require change, as is true for all quality improvement (QI). Delivering that change is beyond the scope of this report, but we provide a toolkit (Appendix 2) to assist this process. Our clinical leads will support trusts in their QI work, and we plan to hold a series of regional QI workshops in 2017.

The NLCA focuses on the following areas of lung cancer care:

- data completeness
- pathological confirmation
- specialist nursing input
- use of CT scanning prior to bronchoscopy
- overall anticancer treatment rates
- surgical treatment for NSCLC patients
- use of chemotherapy in SCLC patients
- use of chemotherapy in NSCLC patients.

Where relevant, we have also indicated where these results align to NICE quality standards.

The clipboard icon illustrates the overall results for the indicator. A tick indicates that the recommendation has been met, and a cross indicates that the recommendation has been missed.

3.1 Data completeness

It is important to maintain or improve the quality of data submitted to the NLCA, including detailed clinical data to allow the most accurate risk adjustment to be carried out. *Performance status* (PS) describes a patient's level of functioning in terms of their ability to care for themselves, daily activity, and physical ability. *Stage* refers to the extent of the cancer, such as how large the tumour is and whether it has spread. *FEV1* is a measurement of lung capacity used by doctors to determine how healthy a patient's lungs are, and can be measured as an absolute amount, or as a percentage predicted (based on gender, age, height). Submitting high-quality data takes time and effort from many people in lung cancer teams, but clinical engagement and quality assurance are vital.

In the 2015 annual report, we made the following recommendations for data completeness:

- ***Both PS and stage should be recorded in at least 90% of cases.***
- ***For patients with stage I–II and PS 0–1, completeness for FEV1 and FEV1% should exceed 75%.***
- ***All MDTs should appoint a 'clinical data lead' with protected time to allow promotion of data quality, governance and QI (to be measured through future rounds of organisational audit).***

Key findings

Performance status

Overall, 76% of patients had PS recorded (England 75%, Guernsey 100%, Wales 100%). Across individual organisations, the result for PS varied from 0% to 100%, meaning that 119 trusts failed to meet this recommendation.

It is disappointing to see such poor recording of PS by trusts in England. However, feedback from trusts in England suggested that although MDTs were recording PS, there were problems in uploading this via COSD.

Stage

Overall, 95% of patients had stage recorded (England 95%, Guernsey 84%, Wales 99%). Across individual organisations, the result for stage varied from 69% to 100%, meaning that 18 trusts failed to meet this recommendation.

This is the best result that the NLCA has ever achieved, and is to be welcomed. One reason for the improvement is the use of multiple data sources to calculate a stage by the NCRAS registration staff, even if a stage was not submitted by an MDT.

Lung function

Lung function data were only available for English patients. Overall, 53% of these patients (with good PS and early-stage disease) had FEV1% recorded and 55% had FEV1 absolute recorded. 100 trusts failed to achieve the standard for FEV1% and 92 failed to achieve the standard for FEV1 absolute.

It seems unlikely that so few patients had their lung function measured, and these results probably reflect problems with recording and submitting the data. Many trusts have not submitted any lung function results at all.

Recommendations

Organisations should continue to ensure that high-quality data are submitted to the audit. We maintain the same benchmarks as last year, and so trusts that have fallen short this year need to move swiftly to ensure that their processes are robust.

- **Both performance status (PS) and stage should be recorded in at least 90% of cases.**
- **For patients with stage I–II and PS 0–1, completeness for FEV1 and FEV1% should exceed 75%.**
- **All lung cancer MDTs should appoint a 'clinical data lead' with protected time to allow promotion of data quality, governance and QI (to be measured through future rounds of organisational audit).**

We make two further recommendations for local rather than national audit:

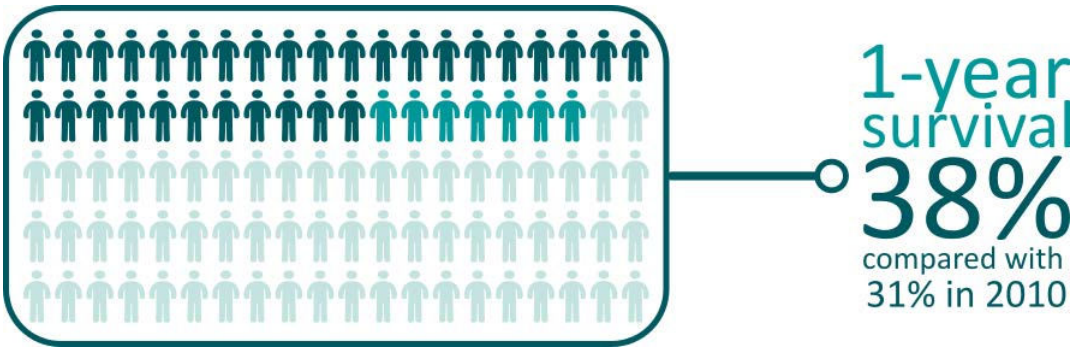
- **Following the transition to using COSD in England, more patients have come to light whom MDTs are unaware of. Trusts affected by this should consider looking at patient-level data to understand why these patients are not being captured, and work to resolve this issue.**
- **It is important that all patients submitted via COSD have the 'trust first seen' field completed, in order to allocate patients to the correct trust during analysis.**

3.2 Survival

The aim of treatment for lung cancer patients is to provide a cure for as many as possible, as well as to maintain quality of life in survivors and those who will still die of the disease. We do not set a target for survival; rather, we expect that attention to individual components will deliver improvements.

Key findings

1-year survival



Comparing survival across different years is difficult and complex. However, comparison of the data from the 2010 LUCADA submissions with data from the current cohort suggests an improvement in 1-year survival from 31% to 38% over this 5-year period. This finding is extremely welcome, and is in keeping with other published analyses showing steady improvements in 1-year and 5-year survival rates in lung cancer.

However, there is still unacceptable variation in survival across organisations, although this needs to be considered in the context of casemix variation (patient features including age, sex, performance status, socio-economic status and cancer stage).

3.3 Pathological confirmation

A diagnosis of lung cancer can be made by various means, but usually is done based on the findings of an X-ray/scan or by finding cancer cells when examining a specimen of tissue or fluid under a microscope. The latter is referred to as pathological confirmation and is the preferred means of diagnosis, as it is more accurate and helps to determine the most appropriate form of treatment. It is recognised that, in some very old or frail patients, attempts to perform invasive biopsies are not appropriate, and thus pathological confirmation may not be possible.

For patients whose lung cancer has been pathologically confirmed, a more precise diagnosis is preferred (ie the cancer should be subtyped as adenocarcinoma, squamous carcinoma or other subtype). This helps to determine the most appropriate form of treatment, and whether further molecular analysis is required. The proportion of lung cancer cases that cannot be subtyped (known as 'not otherwise specified' or NOS) should be kept as low as possible.

In the 2015 annual report, we made the following recommendations (which align to NICE QS7):

- ***Pathological confirmation rates below 75% should be reviewed to determine whether best practice is being followed and whether patients have effective access to the whole range of biopsy techniques.***

- ***Non-small-cell lung cancer, not otherwise specified (NSCLC NOS) rates of >15% should be reviewed to ensure that best-practice histological diagnostic techniques including immunohistochemistry are being followed, in order that patients receive appropriate chemotherapy regimens.***

Key findings

Pathological confirmation rates

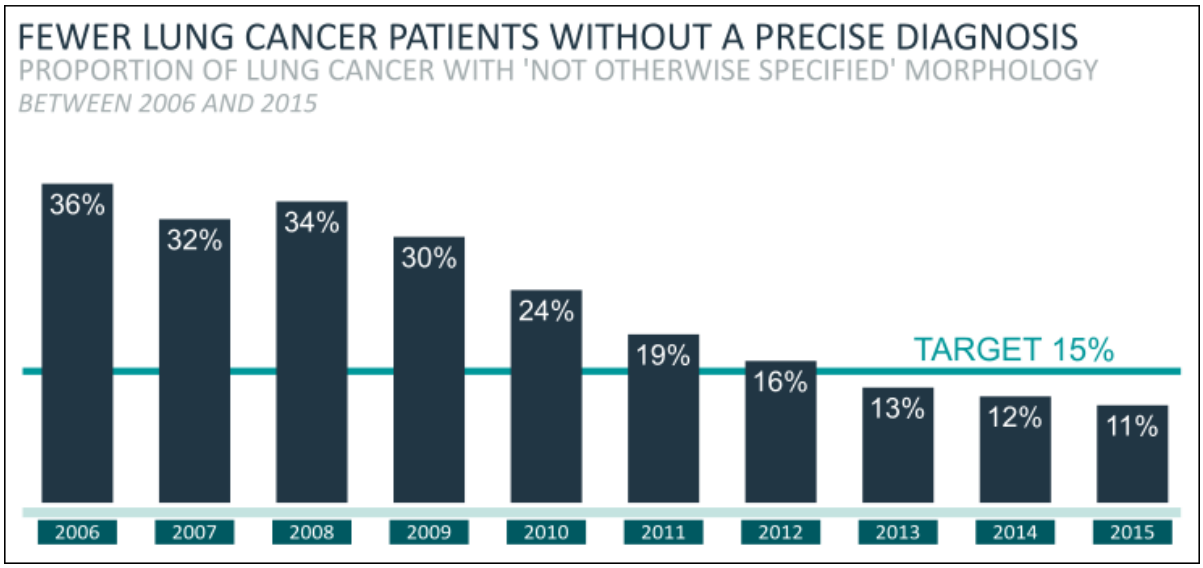
Pathological confirmation of diagnosis

Overall, 72% of patients had their diagnosis of lung cancer confirmed pathologically (England 72.5%, Guernsey 51.4%, Wales 70.7%). This result is better than those in 2014, although higher rates were seen between 2010 and 2013.

Across individual organisations (excluding tertiary trusts), the result varied from 51% to 94%, meaning that 102 trusts failed to achieve the suggested standard.

Recorded morphology

Overall, 11% of patients who had their lung cancer pathologically confirmed as NSCLC had a recorded morphology of NSCLC NOS (England 11.0%, Guernsey 0.0%, Wales 6.7%). There has been a steady improvement in this measure over the past 10 years, and this national performance is probably very close to optimal.
Across individual organisations, the result varied from 0% to 35%, meaning that 29 trusts failed to achieve the suggested standard. Six trusts continue to submit high proportions (>20%) of 'NOS' histology.



Recommendations

The optimal rate of pathological confirmation is hotly debated, and clearly is influenced by the casemix of the patient population. It is important, therefore, to look at the rate for individual organisations in conjunction with the casemix-adjusted odds ratio. However, we feel that, overall, a higher rate is achievable, and so we have raised the standard to 80% for the coming year.

For the 'NOS rate', we have kept the same standard, but those trusts falling short of this target should realise that they are in the minority, and push hard to reduce their rates.

- **Pathological confirmation rates of <80% should be reviewed to determine whether best practice is being followed and whether patients have effective access to the whole range of biopsy techniques.**
- **Non-small-cell lung cancer, not otherwise specified (NSCLC NOS) rates of >15% should be reviewed to ensure that best-practice histological diagnostic techniques (including immunohistochemistry) are being followed, in order that patients receive appropriate chemotherapy regimens.**

3.4 Specialist nursing input

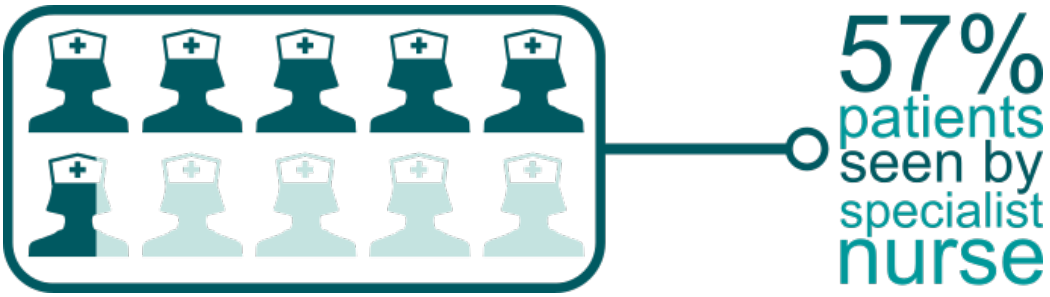
The importance of the specialist nurse cannot be overemphasised and, as in previous years, we strongly promote this role. Last year, 84% of patients nationally were seen by a specialist nurse, and 65% had a nurse present at the time of diagnosis (recorded for English patients only).

In the 2015 annual report, we made the following recommendation (which aligns to NICE QS7):

- ***At least 90% of patients are seen by an LCNS; at least 80% of patients should have an LCNS present at the time of diagnosis.***

Key findings

Patients seen by lung cancer nurse specialist



Overall, only 57% of patients were recorded to have been seen by a LCNS.

However, data completion for this item was highly variable and, as a result, it is difficult to interpret. In Wales, 97% of cases had data, and overall 91% of patients were seen by an LCNS. In Guernsey, 100% of cases had data, which suggest that only 22% of patients were seen by an LCNS.

Probably because of the new data collection methodology, the data from English trusts were only recorded in 60% of cases. Based on these incomplete data, the results suggest that 55% of patients were seen.

Data on whether a nurse was present at the time of diagnosis were only available for England and were too incomplete to be interpreted.

Recommendation

Specialist nurses need to work with their data managers to ensure that the data accurately reflect their activity. For the coming year, we reiterate the standards set previously:

- **At least 90% of patients are seen by an LCNS; at least 80% of patients should have an LCNS present at the time of diagnosis.**

3.5 Use of CT scanning prior to bronchoscopy

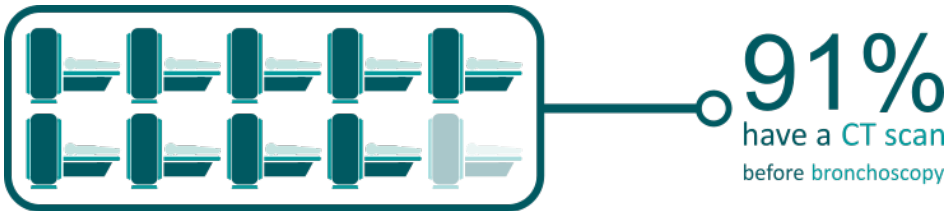
Historically, it was often quicker for patients to undergo a bronchoscopy than it was to have a CT (computerised tomography) scan carried out. This often meant that, in retrospect, an initial bronchoscopy was found to have been unnecessary, and the patients had to undergo a second invasive procedure.

In the 2015 annual report, we made the following recommendation (which aligns to NICE QS6):

- ***For patients undergoing bronchoscopy, at least 95% should have a CT scan prior to the procedure.***

Key findings

CT scanning prior to bronchoscopy



These data are only available for English patients. Overall, 91% of patients who had a CT scan and a bronchoscopy had the CT scan first. This did not meet the recommendation of 95%.

Although this falls short of the target, it is a strong and improving performance, so it is clear that the message has been received and changes implemented. Changes to diagnostic pathways mean that this measure is less relevant than historically, and we do not plan to audit it in the future.

Recommendation

Organisations should continue to implement best practice with respect to timing of CT scan and bronchoscopy. In cases where the order is reversed, teams should review the case to ensure that there are appropriate reasons for this.

As PET-CT scanning is now the key modality in the non-invasive staging of patient disease extent, we recommend that, where possible, all patients should undergo this imaging test prior to delivery of radical (curative intent) treatment.

- **At least 90% of patients having surgery or radical radiotherapy should undergo a PET-CT scan prior to treatment.**

3.6 Overall anticancer treatment rates

Anticancer treatment refers to therapies (surgery, radiotherapy, chemotherapy) that have activity against the cancer itself, rather than just against the symptoms. Patients with lung cancer are often older and have other comorbidities, which can sometimes make treatments challenging, but delivering more anticancer treatment to patients is necessary to achieve the goal of improving quality of life and survival.

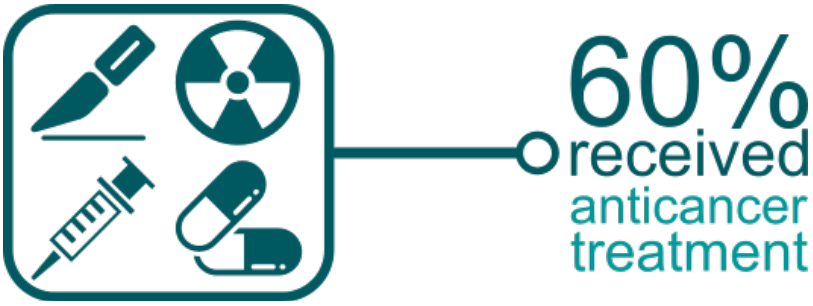
This year, we have been able to link new data from the SACT dataset, RTDS and HES dataset to obtain details of treatments that have not been recorded in COSD submissions.

Last year, we made the following recommendation (which aligns to NICE QS8–13):

- ***MDTs with lower-than-expected active anticancer treatment rates (<60% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why patients with good PS did not receive active anticancer treatment.***

Key findings

Anticancer treatment rates



Overall, 60% of patients received anticancer treatment (England 60%, Guernsey 57%, Wales 60%).

This is a welcome improvement over the rates of 58% seen in the past 2 years. In England, approximately 20% more patients have been analysed, and we know that these 'extra patients' tend to be ones previously hidden from MDTs, and thus typically less likely to receive anticancer treatment. This makes the improvement in treatment rates even more impressive, although some of the improvement may reflect capture of more treatments through the linkage of multiple datasets.

Despite overall improvements, across individual organisations (excluding tertiary trusts), the result varied from 24% to 88%, meaning that 85 trusts failed to achieve the suggested standard.

Recommendation

Two opposing trends affect our decision to maintain the 60% recommendation. As stated earlier, the population of lung cancer patients is getting older, meaning that treatment becomes more challenging; however, the emergence of more targeted therapies means that patients previously deemed unsuitable for treatment may now be eligible.

Individual organisations should take account of their overall rate as well as case-mix adjusted odds ratios. Those teams with low treatment rates should use our toolkit (Appendix 2) to help them improve.

- **MDTs with lower-than-expected active anticancer treatment rates (<60% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why patients with good PS did not receive active anticancer treatment.**

3.7 Surgical treatment for non-small-cell lung cancer patients

Surgery remains the preferred treatment for early-stage lung cancer, and historically patients in the UK have been less likely to undergo surgery than patients in other countries, although the numbers have increased slowly over the past 10 years. Disease stage, PS and lung function measurements are crucial in

determining whether to offer a patient a surgical operation. Survival after surgery is high (98% at 30 days),[14] suggesting that there is scope to further increase the resection rate.

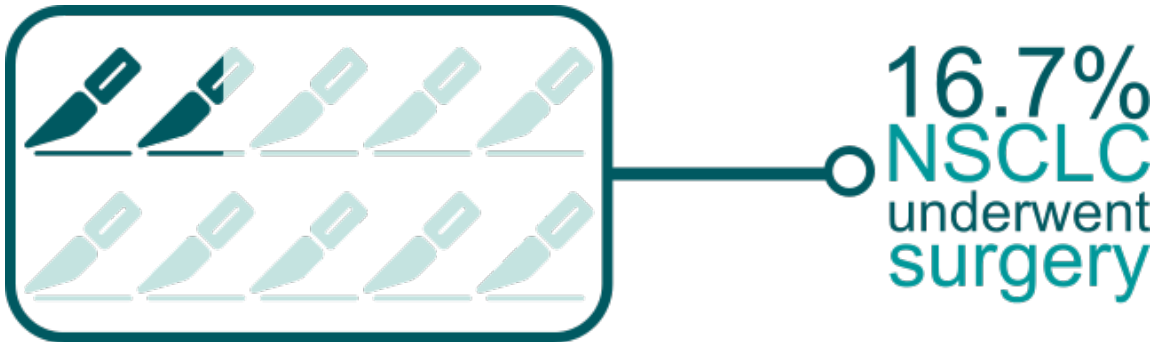
The proportion of patients undergoing surgery can be measured in several ways, using different denominators. Historically, we have reported the rate in patients with histologically confirmed and presumed NSCLC (ie all patients except those with SCLC/carcinoid).

Last year, we made the following recommendation (which aligns to NICE QS8):

- ***MDTs with lower-than-expected surgical resection rates for NSCLC (<16% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each resectable patient did not receive an operation, including whether a second opinion was offered to borderline-fit patients.***

Key findings

NSCLC surgical treatment rates



Overall, 16.8% of NSCLC patients received surgical treatment (England 16.7%, Guernsey 22.9%, Wales 18.7%).

This is an excellent result, and continues the rise in surgical operations seen over the past 10 years. However, across individual organisations (excluding tertiary trusts), the result varied from 5% to 36%, meaning that 83 trusts failed to achieve the suggested standard.

Recommendations

There remains scope to increase the surgical resection rate, particularly in those organisations reporting very low rates. One possible explanation for low surgical rates in some organisations is that their surgical cases could be allocated to a tertiary surgical trust – this might occur if the organisation does not complete the COSD 'trust first seen' field. A key priority for these trusts will be to ensure that their data reflect their workload as outlined in the section on data completeness.

At the same time, there is an increasing use of radiotherapy as a curative treatment and, using the RTDS, we also set a standard to achieve a 'radical treatment rate'.

[14] Royal College of Physicians. *Lung cancer clinical outcomes publication 2016 (for the 2014 audit period)*. London: RCP, 2016. **www.rcplondon.ac.uk/LCCOP2016**

- **MDTs with lower-than-expected surgical resection rates for NSCLC (<17% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each resectable patient did not receive an operation, including whether a second opinion was offered to borderline-fit patients.**
- **MDTs with lower-than-expected radical treatment rates for NSCLC (<30% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each patient with stage I/II disease did not receive surgery or radical (chemo)radiotherapy.**

The NLCA will be reviewing the denominator for surgery in the future.

3.8 Use of chemotherapy in small-cell lung cancer patients

SCLC is a particularly aggressive cancer, which is nearly always advanced at the time of diagnosis, so the role of surgery is controversial and not often appropriate. These tumours are, however, very sensitive to chemotherapy (and radiotherapy), and this can improve survival and quality of life. Patients may deteriorate quickly in the time between presentation and treatment, and so it is particularly important that the pathway is expeditious.

Last year, we made the following recommendation (which aligns to NICE QS13):

- ***MDTs with lower-than-expected chemotherapy rates for SCLC (<70% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each SCLC patient did not receive chemotherapy.***

Key findings

SCLC chemotherapy rates

Overall, 69% of SCLC patients received chemotherapy (England 69%, Guernsey 100%, Wales 73%). Across individual organisations (excluding tertiary trusts), the result varied from 0% to 100%, meaning that 72 trusts failed to achieve the suggested standard.

It is disappointing that this result falls just short of the recommendation, but it is an improvement over the past 2 years. Although there is an enormous range of performance across organisations, this is in part a reflection of the low numbers of cases seen in some smaller trusts, meaning that, in any single year, the results may appear extreme.

Overall, 34% of SCLC patients receive their chemotherapy within 14 days of pathological diagnosis (England 34%, Guernsey 50%, Wales 30%). This performance varies widely across organisations.

Recommendations

Oncologists and patients work in partnership to decide whether chemotherapy is likely to be helpful or harmful, and we acknowledge that these decisions can be difficult. However, delivering an efficient patient pathway can ensure that patients arrive at the point of treatment in a better condition than if there have been delays, and we would therefore expect more patients to be suitable for treatment.

Given the low numbers of SCLC patients seen in some smaller trusts, it may be useful for these organisations to pool results over a 3-year period to ascertain their performance. Likewise, all organisations should consider the casemix-adjusted results alongside the raw results.

- **MDTs with lower-than-expected chemotherapy rates for SCLC (<70% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each SCLC patient did not receive chemotherapy.**
- **80% of patients receiving chemotherapy for SCLC should start treatment within 2 weeks of pathological diagnosis.**

3.9 Use of chemotherapy in non-small-cell lung cancer patients

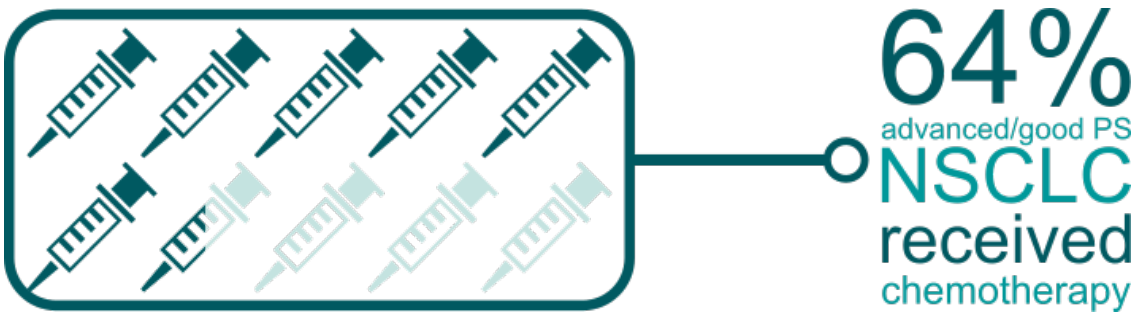
Clinical trials have demonstrated that patients with advanced and incurable NSCLC can benefit from palliative chemotherapy, delivered to improve quality of life and to extend survival. Since this measure was first introduced, there have been significant developments in the treatment options available to patients, such that the term 'chemotherapy' should now be replaced by the term 'systemic anticancer treatment'.

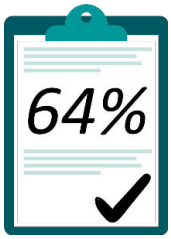
Last year, we made the following recommendation (which aligns to NICE QS12):

- ***MDTs with lower-than-expected chemotherapy rates for good PS (0–1) stage IIIB/IV NSCLC (<60% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each advanced NSCLC patient with good PS did not receive chemotherapy.***

Key findings

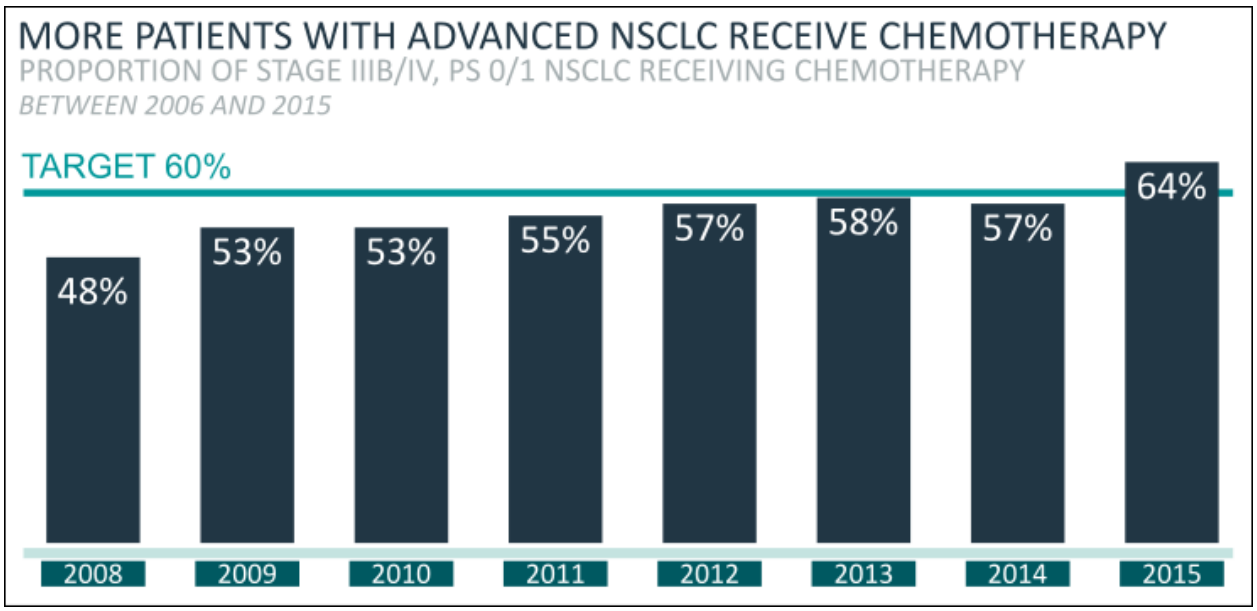
NSCLC chemotherapy rates





Overall, 64% of patients with good PS with advanced NSCLC received systemic anticancer treatment (England 64%, Guernsey 54%, Wales 62%). Across individual organisations (excluding tertiary trusts), the result varied from 20% to 100%, meaning that 58 trusts failed to achieve the suggested standard.

This result is very encouraging and continues a trend of gradually increasing treatment rates since they were first reported at 48% in 2008.



Recommendation

We would expect that more patients with advanced NSCLC will be suitable for treatment as new treatments with less toxicity become available to oncologists. Thus, we raise the recommended treatment rate for the coming year.

- **MDTs with lower-than-expected systemic anticancer treatment rates for good PS (0–1) stage IIIB/IV NSCLC (<65% or low odds ratio after casemix adjustment) should perform detailed case-note review to determine why each advanced NSCLC patient with good PS did not receive chemotherapy.**

4 Commentary on new treatment datasets

The National Radiotherapy Dataset (RTDS) and Systemic Anti-Cancer Therapy (SACT) datasets were used to calculate active treatment rates at trust level in England for this report for the first time. Although these new datasets require validation, there is huge potential to obtain detailed information about oncological treatments given to lung cancer patients for future NLCA reports, and to identify whether there is variation across the country. Examples include the use of stereotactic ablative radiotherapy (SABR) for early-stage NSCLC, radical treatments for stage III NSCLC and limited-stage SCLC, and the uptake of modern systemic anticancer treatments such as biological targeted treatments and immunotherapy.

Ensuring that accurate and complete data are submitted to the RTDS and SACT datasets is another important area for trusts to focus on with their local QI, including treatment intent, cycle start dates, correct names for drug combinations, and ensuring that oral treatments are all captured. With the increasing drive towards personalised medicine for lung cancer patients, it is intended that all molecular pathology data will be sent to NCRAS directly from the molecular pathology centres across the country and become available for future NLCA reports.

National Radiotherapy Dataset (RTDS)

The RTDS is a very recent addition to the registry datasets and has not been fully validated at trust level for this report. Distilling and summarising information from the RTDS is complex for a number of reasons. Firstly, patients may be treated with radiotherapy for multiple cancers, primary or recurrence, over time and a number of factors need to be considered when trying to link at tumour level.

The course of treatment that a patient receives can also be complex – a course can include multiple prescriptions, each with a different dose/fraction combination. Furthermore, there is variation in the completeness of data items and how they have been recorded by trusts. Work is ongoing within NCRAS to develop the optimal methods for reporting these data, which will then be shared with others moving forward.

Some key data at national level (England only) on curative radiotherapy treatments for 2015 include the following.

- For patients with stage I and II NSCLC, 19% were treated with radical radiotherapy, and just over half of these received SABR. The two most commonly used prescriptions were 55 Gy in 20 fractions for conventional RT and 55 Gy in five fractions for SABR.
- Combining radical radiotherapy data with stage I and II NSCLC surgical data for England gives a curative treatment rate of 68.7%.
- For patients with stage IIIA NSCLC, 14.1% received chemoradiation (sequential or concurrent) with radical intent.
- For patients with limited-stage (stage I–III) SCLC, 27.6% received chemoradiation with radical intent, with half of these cases (13.5%) also receiving prophylactic cranial irradiation (PCI). The most commonly used prescriptions to treat the primary tumour were 40 Gy in 15 fractions (40%), followed by 45 Gy in 30 fractions (18%). 25 Gy in 10 fractions was the most commonly used prescription for PCI. A further small number of stage I–III SCLC cases received either radical radiotherapy alone (2%) or surgery (7.6%), with chemotherapy also given in two-thirds of surgical cases. Combining radical RT and surgery stage I–III SCLC data for England gives a curative treatment rate of 37% for limited-stage disease.

Systemic Anti-Cancer Therapy (SACT) dataset

Earlier this year, 30-day mortality rates for both palliative and curative lung cancer systemic anticancer treatments delivered in 2014 (irrespective of the year that the lung cancer was diagnosed) were reported using this dataset for the first time.[15] The authors included detailed analysis of the strengths and limitations of the study, including data quality and completeness, with additional trust-level information contained within a companion report (**www.gov.uk/government/uploads/system/uploads/attachment_data/file/549299/30_day_mortality_after_sact.pdf**, first published 31 August 2016).

This NLCA report uses the SACT data to report treatments received by patients diagnosed in 2015 and so is not directly comparable with the publication by Wallington *et al*.[15] For example, it is likely that first-line treatments will dominate, owing to the relatively short time that has passed from diagnosis to analysis of the data, meaning that many patients may not yet have moved onto subsequent lines of treatment. With this caveat, the commonest (first-line) regimens used to treat lung cancer are as follows:

Carboplatin + etoposide	2,247
GemCarbo (carboplatin + gemcitabine)	1,617
Carboplatin + pemetrexed	1,321
Cisplatin + pemetrexed	1,130
Cisplatin + vinorelbine	1,001
Carboplatin + vinorelbine	920
Cisplatin + etoposide	437
Pemetrexed	347
Erlotinib	226
Gefitinib	211

Although data on EGFR (epidermal growth factor receptor) mutation testing were too incomplete for inclusion in this report, it is encouraging to see that patients who were treated with a tyrosine kinase inhibitor (erlotinib, gefitinib or afatinib) in 2015 comprise approximately 4.4% of cases of stage IIIB/IV non-squamous NSCLC.

[15] Wallington M, Saxon EB, Bomb M *et al*. *Lancet Oncol* 2016;17:1203–16.

5 Results for individual organisations

Data on key process and outcome measures ('headline indicators') relating to the care of patients with lung cancer in England, Wales and Guernsey are given in Table 1 by country, by network and by trust (a key to codes is given in Appendix 1). These indicators have been chosen to benchmark against the recommendations made in the 2015 annual report, to align with national standards and guidelines, and to reflect the overall standard of care provided to patients. Similar data for Scotland are shown in Table 2. More extensive analyses of the data are available in the NLCA Information online at **www.rcplondon.ac.uk/nlca2016**.

Interpretation of the data

In interpreting these figures, the population coverage and data field completeness must be considered and can be cross-referenced using the online data tables. Furthermore, some of the results as presented do not take into account the casemix of patients (for example, some organisations might legitimately claim that lower treatment rates reflect an older population, or patients presenting with more advanced disease) – where available, these unadjusted proportions should be evaluated alongside casemix-adjusted results.

For unadjusted proportions, we present a colour coding in the tables to reflect performance by organisations compared with the targets set in the 2015 annual report (2014 data) and local action plan.

✓ equal to or exceeds level suggested for this audit year
✖ below level suggested for this audit year

For Scotland, performance against national quality improvement standards is shown.

For casemix-adjusted data, we present an odds ratio (OR) and colour-code the result based on its statistical significance. The confidence intervals for these will be available on the NLCA website: **www.rcplondon/NLCA2016**.

The OR refers to the chance of a particular treatment or outcome happening after adjusting for casemix, including PS, stage and age, when compared with the national average.

For example, if your organisation has a resection rate of 16% with an OR of 0.64 (ie <1), this suggests that your resection rate is lower than would be expected once the casemix of your patients has been taken into account. The colour coding will indicate whether this is statistically significant or likely to be a chance finding.

↑ statistically significantly better than national level
→ not statistically significantly different from national level
↓ statistically significantly worse than national level

It is recommended that organisations perform local deep-dive audits into areas of lower performance to try to understand the reasons for this.

Understanding variation

It is clear from these tables that there is considerable variation across organisations in the outputs measured by the audit (notwithstanding earlier comments regarding casemix adjustment of the data). This is apparent both at SCN and even more markedly at hospital level. In the latter case, some of the more extreme variation is explained by low numbers of cases or low-quality data, so a useful way of reporting the variation is the interquartile range (IQR), describing the range of values in the middle 50%. These data are supplied at the bottom of each table.

Table 1: **Process, imaging and nursing measures for England, Wales and Guernsey 2015 data**

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
N44 London Cancer Alliance								
Whole network	2,587	56.6 ✖	90.1 ✓	67.9 ✖	78.5 ✓	1.62 ↑	8.2 ✓	38.5 ✖
R1K London North West Healthcare NHS Trust	195	76.4 ✖	76.9 ✖	73.8 ✖	66.7 ✖	0.96 →	7.8 ✓	33.8 ✖
RAS The Hillingdon Hospitals NHS FT	105	67.6 ✖	98.1 ✓	93.3 ✖	63.8 ✖	0.87 →	11.5 ✓	85.7 ✖
RAX Kingston Hospital NHS Trust	137	89.1 ✖	97.1 ✓	86.1 ✖	65.0 ✖	0.63 ↓	2.4 ✓	85.4 ✖
RFW West Middlesex University Hospital NHS Trust	72	75.0 ✖	97.2 ✓	91.7 ✖	73.6 ✖	1.00 →	9.3 ✓	48.6 ✖
RJ1 Guy's and St Thomas' NHS FT	462	29.4 ✖	96.5 ✓	66.5 ✖	94.2 ✓	7.31 ↑	6.1 ✓	19.5 ✖
RJ2 Lewisham Healthcare NHS Trust	203	10.8 ✖	88.2 ✖	31.5 ✖	69.5 ✖	1.15 →	10.5 ✓	1.5 ✖
RJ6 Croydon Health Services NHS Trust	135	75.6 ✖	85.9 ✖	85.2 ✖	78.5 ✓	1.54 →	9.3 ✓	78.5 ✖
RJ7 St George's Healthcare NHS Trust	180	32.8 ✖	92.8 ✓	21.1 ✖	83.3 ✓	2.17 ↑	7.5 ✓	1.7 ✖
RJZ King's College Hospital NHS FT	203	34.0 ✖	92.1 ✓	75.9 ✖	67.5 ✖	1.06 →	10.3 ✓	66.0 ✖
RPY The Royal Marsden NHS FT*	248	80.6 ✖	93.1 ✓	65.3 ✖	89.9 ✓	2.88 ↑	9.5 ✓	10.5 ✖
RQM Chelsea and Westminster Hospital NHS FT	88	87.5 ✖	85.2 ✖	89.8 ✖	75.0 ✖	1.64 →	17.5 ✖	72.7 ✖
RT3 Royal Brompton and Harefield NHS FT*	105	17.1 ✖	65.7 ✖	21.0 ✖	96.2 ✓	20.80 ↑	5.7 ✓	16.2 ✖
RVR Epsom and St Helier University Hospitals NHS Trust	116	67.2 ✖	85.3 ✖	71.6 ✖	57.8 ✖	0.80 →	14.0 ✓	0.0 ✖
RYJ Imperial College Healthcare NHS Trust	338	91.1 ✓	90.8 ✓	90.8 ✖	78.7 ✓	1.29 →	7.1 ✓	72.2 ✖
N50 Cheshire and Merseyside								
Whole network	2,042	82.5 ✖	94.7 ✓	86.4 ✖	69.0 ✖	0.74 ↓	9.2 ✓	65.9 ✖
LLCU Liverpool Lung Cancer Centre	462	82.3 ✖	96.3 ✓	89.6 ✖	76.8 ✓	1.28 →	9.2 ✓	50.6 ✖
RBL Wirral University Teaching Hospital NHS FT	341	97.1 ✓	97.4 ✓	96.5 ✓	71.3 ✖	0.75 ↓	10.4 ✓	81.8 ✖
RBN St Helens and Knowsley Hospitals NHS Trust	304	68.1 ✖	92.8 ✓	79.9 ✖	62.2 ✖	0.70 ↓	11.8 ✓	63.5 ✖
REM Aintree University Hospital NHS FT	334	72.2 ✖	92.2 ✓	70.1 ✖	69.8 ✖	0.87 →	5.7 ✓	57.8 ✖
REN The Clatterbridge Cancer Centre NHS FT*	26	3.8 ✖	84.6 ✖	3.8 ✖	42.3 ✖	0.49 →	0.0 ✓	3.8 ✖
RJR Countess of Chester Hospital NHS FT	189	95.2 ✓	93.1 ✓	96.3 ✓	74.6 ✖	0.75 →	8.8 ✓	82.5 ✖
RVY Southport and Ormskirk Hospital NHS Trust	176	86.9 ✖	94.9 ✓	93.2 ✖	58.5 ✖	0.42 ↓	12.8 ✓	75.0 ✖
RWW Warrington and Halton Hospitals NHS FT	210	91.0 ✓	95.7 ✓	93.8 ✖	63.3 ✖	0.37 ↓	7.3 ✓	75.2 ✖

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
N51 Greater Manchester, Lancashire and South Cumbria								
Whole network	3,886	84.1 ✖	95.2 ✓	89.6 ✖	75.8 ✓	1.06 →	14.0 ✓	66.5 ✖
RBT Mid Cheshire Hospitals NHS FT	194	84.0 ✖	88.1 ✖	84.5 ✖	75.8 ✓	0.97 →	16.0 ✖	75.3 ✖
RBV The Christie NHS FT*	16	0.0 ✖	100.0 ✓	6.3 ✖	75.0 ✖	1.37 →	9.1 ✓	0.0 ✖
RJN East Cheshire NHS Trust	93	89.2 ✖	95.7 ✓	93.5 ✖	80.6 ✓	1.53 →	13.8 ✓	84.9 ✖
RM2 University Hospital of South Manchester NHS FT*	274	76.6 ✖	94.2 ✓	77.0 ✖	82.8 ✓	1.93 ↑	15.3 ✖	31.0 ✖
RM3 Salford Royal NHS FT	257	84.8 ✖	95.3 ✓	93.0 ✖	73.9 ✖	1.08 →	16.4 ✖	72.8 ✖
RMC Bolton NHS FT	251	81.3 ✖	92.8 ✓	85.7 ✖	74.5 ✖	0.87 →	8.1 ✓	45.8 ✖
RMP Tameside Hospital NHS FT	184	82.1 ✖	90.2 ✓	92.9 ✖	74.5 ✖	1.67 ↑	19.8 ✖	69.0 ✖
RRF Wrightington, Wigan and Leigh NHS FT	286	88.8 ✖	99.0 ✓	94.4 ✖	78.0 ✓	1.12 →	16.6 ✖	72.0 ✖
RTX University Hospitals of Morecambe Bay NHS FT	272	77.2 ✖	96.0 ✓	91.9 ✖	67.6 ✖	0.70 ↓	7.9 ✓	47.4 ✖
RW3 Central Manchester University Hospitals NHS FT	221	67.9 ✖	95.9 ✓	82.4 ✖	91.0 ✓	3.90 ↑	11.9 ✓	73.3 ✖
RW6 Pennine Acute Hospitals NHS Trust	681	94.6 ✓	97.8 ✓	95.0 ✓	73.7 ✖	0.79 ↓	19.8 ✖	77.2 ✖
RWJ Stockport NHS FT	206	77.7 ✖	93.7 ✓	77.7 ✖	79.1 ✓	1.26 →	15.0 ✖	68.0 ✖
RXL Blackpool Teaching Hospitals NHS FT	299	91.0 ✓	94.6 ✓	90.3 ✖	77.3 ✓	1.05 →	6.4 ✓	76.9 ✖
RXN Lancashire Teaching Hospitals NHS FT	313	83.1 ✖	95.8 ✓	92.0 ✖	73.2 ✖	1.16 →	8.0 ✓	57.5 ✖
RXR East Lancashire Hospitals NHS Trust	339	85.8 ✖	95.0 ✓	95.9 ✓	69.9 ✖	0.62 ↓	15.1 ✖	80.8 ✖
N52 Northern England								
Whole network	2,985	79.5 ✖	96.7 ✓	88.0 ✖	69.0 ✖	0.80 ↓	11.5 ✓	53.8 ✖
RE9 South Tyneside NHS FT	137	91.2 ✓	97.8 ✓	94.2 ✖	59.9 ✖	0.57 ↓	10.8 ✓	81.0 ✖
RLN City Hospitals Sunderland NHS FT	367	91.3 ✓	94.0 ✓	91.0 ✖	67.3 ✖	0.74 →	9.9 ✓	76.6 ✖
RNL North Cumbria University Hospitals NHS Trust	248	71.0 ✖	96.0 ✓	68.1 ✖	61.7 ✖	0.65 ↓	14.4 ✓	71.8 ✖
RR7 Gateshead Health NHS FT	235	78.3 ✖	94.9 ✓	88.5 ✖	59.1 ✖	0.56 ↓	12.8 ✓	70.2 ✖
RTD The Newcastle Upon Tyne Hospitals NHS FT	405	73.3 ✖	98.0 ✓	84.4 ✖	72.3 ✖	1.00 →	12.9 ✓	68.1 ✖
RTF Northumbria Healthcare NHS FT	411	64.2 ✖	96.8 ✓	91.7 ✖	68.9 ✖	0.85 →	12.9 ✓	67.6 ✖
RTR South Tees Hospitals NHS FT	393	76.3 ✖	97.7 ✓	89.3 ✖	75.1 ✓	1.09 →	7.8 ✓	11.5 ✖
RVW North Tees and Hartlepool NHS FT	318	89.9 ✖	97.5 ✓	89.0 ✖	74.8 ✖	0.98 →	9.5 ✓	81.1 ✖
RXP County Durham and Darlington NHS FT	471	86.2 ✖	97.2 ✓	92.4 ✖	70.1 ✖	0.71 ↓	13.2 ✓	3.2 ✖

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
N53 Yorkshire and the Humber								
Whole network	4,446	80.4 ✖	96.5 ✓	83.3 ✖	70.0 ✖	0.76 ↓	12.5 ✓	46.0 ✖
RAE Bradford Teaching Hospital NHS FT	255	80.4 ✖	97.3 ✓	86.3 ✖	67.5 ✖	0.55 ↓	8.5 ✓	31.8 ✖
RCB York Hospitals NHS FT	333	90.4 ✓	98.2 ✓	90.4 ✖	68.5 ✖	0.69 ↓	15.1 ✖	83.8 ✖
RCD Harrogate and District NHS FT	114	94.7 ✓	93.9 ✓	93.9 ✖	71.1 ✖	0.71 →	20.9 ✖	76.3 ✖
RCF Airedale NHS FT	149	89.9 ✖	98.7 ✓	89.3 ✖	69.1 ✖	0.64 ↓	24.1 ✖	35.6 ✖
RFF Barnsley Hospital NHS FT	188	93.6 ✓	94.1 ✓	93.1 ✖	75.0 ✖	0.95 →	24.1 ✖	44.1 ✖
RFR The Rotherham NHS FT	177	88.1 ✖	97.2 ✓	87.0 ✖	77.4 ✓	1.38 →	2.6 ✓	70.1 ✖
RFS Chesterfield Royal Hospital NHS FT	198	90.4 ✓	96.0 ✓	85.4 ✖	66.2 ✖	0.50 ↓	4.6 ✓	64.1 ✖
RHQ Sheffield Teaching Hospitals NHS FT	514	84.8 ✖	96.7 ✓	84.6 ✖	69.5 ✖	0.74 ↓	9.0 ✓	54.3 ✖
RJL Northern Lincolnshire and Goole Hospitals NHS FT	319	74.0 ✖	98.1 ✓	95.3 ✓	63.6 ✖	0.46 ↓	10.9 ✓	67.4 ✖
RP5 Doncaster and Bassetlaw Hospitals NHS FT	403	62.3 ✖	91.1 ✓	58.6 ✖	68.2 ✖	0.74 ↓	12.5 ✓	49.9 ✖
RR8 Leeds Teaching Hospitals NHS Trust	610	78.2 ✖	98.0 ✓	71.6 ✖	70.5 ✖	0.89 →	15.4 ✖	54.1 ✖
RWA Hull and East Yorkshire Hospitals NHS Trust	417	74.3 ✖	95.9 ✓	80.3 ✖	68.8 ✖	0.67 ↓	18.6 ✖	12.9 ✖
RWY Calderdale and Huddersfield NHS FT	281	85.4 ✖	95.7 ✓	82.2 ✖	84.3 ✓	2.15 ↑	7.1 ✓	43.8 ✖
RXF Mid Yorkshire Hospitals NHS Trust	488	75.0 ✖	98.2 ✓	95.3 ✓	67.2 ✖	0.73 ↓	10.0 ✓	1.8 ✖
N54 East of England								
Whole network	3,634	78.2 ✖	96.3 ✓	84.9 ✖	74.9 ✖	1.01 →	7.1 ✓	60.7 ✖
RAJ Southend University Hospital NHS FT	258	81.4 ✖	95.3 ✓	90.3 ✖	81.0 ✓	2.02 ↑	8.6 ✓	39.9 ✖
RC1 Bedford Hospital NHS Trust	117	91.5 ✓	99.1 ✓	92.3 ✖	72.6 ✖	0.80 →	1.3 ✓	69.2 ✖
RC9 Luton and Dunstable Hospital NHS FT	207	75.4 ✖	97.6 ✓	83.6 ✖	78.3 ✓	1.39 →	8.4 ✓	63.8 ✖
RCX The Queen Elizabeth Hospital, King's Lynn, NHS FT	181	73.5 ✖	96.1 ✓	65.7 ✖	77.3 ✓	0.79 →	10.5 ✓	61.3 ✖
RDD Basildon and Thurrock University Hospitals NHS FT	254	89.8 ✖	95.3 ✓	89.8 ✖	76.8 ✓	1.13 →	3.8 ✓	66.1 ✖
RDE Colchester Hospital University NHS FT	318	76.4 ✖	94.7 ✓	86.2 ✖	72.0 ✖	0.92 →	5.1 ✓	65.7 ✖
RGM Papworth Hospital NHS FT*	104	74.0 ✖	99.0 ✓	92.3 ✖	96.2 ✓	9.97 ↑	2.4 ✓	55.8 ✖
RGN Peterborough and Stamford Hospitals NHS FT	207	74.9 ✖	96.1 ✓	89.9 ✖	74.4 ✖	1.13 →	7.9 ✓	41.5 ✖
RGP James Paget University Hospitals NHS FT	202	57.9 ✖	98.0 ✓	85.1 ✖	72.3 ✖	1.13 →	5.6 ✓	65.8 ✖
RGQ Ipswich Hospital NHS Trust	202	77.7 ✖	97.0 ✓	86.1 ✖	76.2 ✓	1.23 →	3.7 ✓	73.3 ✖
RGR West Suffolk NHS FT	152	90.1 ✓	95.4 ✓	93.4 ✖	71.1 ✖	0.85 →	8.8 ✓	78.9 ✖

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
RGT Cambridge University Hospitals NHS FT	185	62.2 ✖	95.1 ✓	62.7 ✖	77.3 ✓	1.23 →	13.0 ✓	51.9 ✖
RM1 Norfolk and Norwich University Hospitals NHS FT	431	82.8 ✖	95.8 ✓	85.4 ✖	67.1 ✖	0.46 ↓	5.3 ✓	52.9 ✖
RQ8 Mid Essex Hospital Services NHS Trust	223	91.9 ✓	97.3 ✓	96.4 ✓	73.1 ✖	0.82 →	9.0 ✓	80.7 ✖
RQQ Hinchingbrooke Health Care NHS Trust	102	84.3 ✖	98.0 ✓	90.2 ✖	81.4 ✓	1.14 →	10.9 ✓	62.7 ✖
RWG West Hertfordshire Hospitals NHS Trust	221	77.8 ✖	96.4 ✓	82.4 ✖	77.8 ✓	1.27 →	2.8 ✓	64.7 ✖
RWH East and North Hertfordshire NHS Trust	270	68.9 ✖	95.9 ✓	76.3 ✖	70.0 ✖	0.89 →	13.5 ✓	54.1 ✖
N55 East Midlands								
Whole network	2,569	66.6 ✖	92.2 ✓	69.2 ✖	73.0 ✖	1.00 →	9.8 ✓	43.3 ✖
RJF Burton Hospitals NHS FT	141	91.5 ✓	97.9 ✓	95.7 ✓	76.6 ✓	0.85 →	5.6 ✓	83.0 ✖
RK5 Sherwood Forest Hospitals NHS FT	186	61.8 ✖	96.2 ✓	41.9 ✖	58.1 ✖	0.64 ↓	11.4 ✓	0.0 ✖
RNQ Kettering General Hospital NHS FT	216	84.7 ✖	97.2 ✓	90.3 ✖	81.0 ✓	1.50 ↑	11.6 ✓	79.2 ✖
RNS Northampton General Hospital NHS Trust	178	56.2 ✖	92.7 ✓	89.9 ✖	66.3 ✖	0.65 ↓	13.5 ✓	44.4 ✖
RTG Derby Hospitals NHS FT	342	82.7 ✖	97.1 ✓	79.5 ✖	79.5 ✓	1.23 →	5.9 ✓	69.9 ✖
RWD United Lincolnshire Hospitals NHS Trust	378	37.6 ✖	81.2 ✖	52.9 ✖	70.6 ✖	1.11 →	10.7 ✓	0.5 ✖
RWE University Hospitals of Leicester NHS Trust	555	66.8 ✖	94.2 ✓	77.1 ✖	68.8 ✖	0.85 →	16.8 ✖	58.9 ✖
RX1 Nottingham University Hospitals NHS Trust	573	67.9 ✖	89.7 ✖	54.1 ✖	77.7 ✓	1.25 →	4.6 ✓	31.1 ✖
N56 West Midlands								
Whole network	3,572	78.4 ✖	97.0 ✓	87.3 ✖	70.9 ✖	0.80 ↓	13.7 ✓	69.1 ✖
RBK Walsall Healthcare NHS Trust	172	96.5 ✓	98.8 ✓	96.5 ✓	64.5 ✖	0.57 ↓	10.6 ✓	79.7 ✖
RJC South Warwickshire NHS FT	127	86.6 ✖	94.5 ✓	92.9 ✖	80.3 ✓	1.48 →	35.1 ✖	72.4 ✖
RJE University Hospital of North Staffordshire NHS Trust	567	68.8 ✖	97.9 ✓	89.9 ✖	74.1 ✖	0.89 →	18.4 ✖	71.6 ✖
RKB University Hospitals Coventry and Warwickshire NHS Trust	283	64.0 ✖	90.8 ✓	67.1 ✖	70.3 ✖	0.92 →	13.5 ✓	43.1 ✖
RL4 The Royal Wolverhampton NHS Trust	269	77.0 ✖	97.4 ✓	91.1 ✖	68.4 ✖	0.88 →	9.4 ✓	85.9 ✖
RLQ Wye Valley NHS Trust	100	86.0 ✖	92.0 ✓	89.0 ✖	70.0 ✖	0.69 →	19.6 ✖	57.0 ✖
RLT George Eliot Hospital NHS Trust	109	91.7 ✓	99.1 ✓	95.4 ✓	70.6 ✖	0.66 →	13.8 ✓	66.1 ✖
RNA The Dudley Group NHS FT	249	82.7 ✖	97.6 ✓	88.0 ✖	73.9 ✖	0.96 →	11.9 ✓	73.9 ✖
RR1 Heart of England NHS FT	513	71.5 ✖	97.5 ✓	79.9 ✖	67.3 ✖	0.68 ↓	5.6 ✓	61.4 ✖
RRK University Hospitals Birmingham NHS FT	309	86.7 ✖	98.7 ✓	89.6 ✖	70.2 ✖	0.81 →	7.1 ✓	79.3 ✖

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
RWP Worcestershire Acute Hospitals NHS Trust	356	92.1 ✓	98.3 ✓	93.0 ✗	71.1 ✗	0.73 ↓	18.2 ✗	73.0 ✗
RXK Sandwell and West Birmingham Hospitals NHS Trust	248	60.5 ✗	97.6 ✓	88.3 ✗	66.5 ✗	0.62 ↓	7.8 ✓	67.3 ✗
RXW Shrewsbury and Telford Hospital NHS Trust	270	89.6 ✗	96.7 ✓	89.3 ✗	76.3 ✓	0.92 →	17.2 ✗	67.0 ✗
N57 South West								
Whole network	2,719	77.2 ✗	94.3 ✓	87.5 ✗	69.5 ✗	0.73 ↓	6.8 ✓	53.6 ✗
RA3 Weston Area Health NHS Trust	99	38.4 ✗	89.9 ✗	87.9 ✗	73.7 ✗	1.57 →	8.6 ✓	48.5 ✗
RA4 Yeovil District Hospital NHS FT	113	73.5 ✗	93.8 ✓	92.0 ✗	69.0 ✗	0.85 →	9.1 ✓	51.3 ✗
RA7 University Hospitals Bristol NHS FT	178	81.5 ✗	94.4 ✓	87.1 ✗	69.7 ✗	0.70 →	11.5 ✓	58.4 ✗
RA9 South Devon Healthcare NHS FT	213	64.8 ✗	90.6 ✓	74.6 ✗	65.3 ✗	0.60 ↓	0.8 ✓	66.7 ✗
RBA Taunton and Somerset NHS FT	204	67.2 ✗	93.1 ✓	84.8 ✗	70.1 ✗	0.87 →	6.6 ✓	30.4 ✗
RBZ Northern Devon Healthcare NHS Trust	129	79.8 ✗	92.2 ✓	89.1 ✗	66.7 ✗	0.64 →	5.8 ✓	72.9 ✗
RD1 Royal United Hospital Bath NHS Trust	243	86.0 ✗	95.9 ✓	86.8 ✗	72.4 ✗	0.68 ↓	6.0 ✓	54.3 ✗
REF Royal Cornwall Hospitals NHS Trust	285	76.5 ✗	93.7 ✓	89.8 ✗	65.6 ✗	0.57 ↓	3.3 ✓	6.0 ✗
RH8 Royal Devon and Exeter NHS FT	302	91.7 ✓	95.7 ✓	92.4 ✗	74.2 ✗	0.80 →	9.7 ✓	86.8 ✗
RK9 Plymouth Hospitals NHS Trust	333	71.2 ✗	95.5 ✓	88.6 ✗	67.6 ✗	0.74 ↓	12.0 ✓	48.6 ✗
RTE Gloucestershire Hospitals NHS FT	353	86.7 ✗	96.3 ✓	86.7 ✗	73.9 ✗	0.90 →	4.8 ✓	65.7 ✗
RVJ North Bristol NHS Trust	267	78.3 ✗	94.8 ✓	89.1 ✗	65.5 ✗	0.60 ↓	3.9 ✓	53.9 ✗
N58 South East Coast								
Whole network	3,039	71.1 ✗	93.5 ✓	71.7 ✗	68.8 ✗	0.75 ↓	12.1 ✓	53.0 ✗
RA2 Royal Surrey County Hospital NHS Trust	119	34.5 ✗	85.7 ✗	85.7 ✗	81.5 ✓	2.20 ↑	13.4 ✓	3.4 ✗
RDU Frimley Park Hospital NHS FT	422	84.1 ✗	95.7 ✓	93.4 ✗	70.9 ✗	0.84 →	13.4 ✓	70.4 ✗
RN7 Dartford and Gravesham NHS Trust	162	71.6 ✗	92.6 ✓	74.7 ✗	70.4 ✗	0.82 →	8.9 ✓	50.6 ✗
RPA Medway NHS FT	261	92.3 ✓	96.6 ✓	92.0 ✗	57.1 ✗	0.47 ↓	8.9 ✓	84.3 ✗
RTK Ashford and St Peter's Hospitals NHS FT	181	35.4 ✗	92.8 ✓	79.0 ✗	66.9 ✗	0.79 →	22.9 ✗	23.2 ✗
RTP Surrey and Sussex Healthcare NHS Trust	221	77.8 ✗	97.3 ✓	96.8 ✓	81.0 ✓	1.70 ↑	15.8 ✗	74.2 ✗
RVV East Kent Hospitals University NHS FT	479	61.8 ✗	91.9 ✓	12.5 ✗	61.4 ✗	0.46 ↓	14.1 ✓	21.1 ✗
RWF Maidstone and Tunbridge Wells NHS Trust	266	67.3 ✗	98.5 ✓	37.6 ✗	75.2 ✓	0.80 →	5.0 ✓	60.5 ✗
RXC East Sussex Healthcare NHS Trust	318	76.4 ✗	90.9 ✓	91.5 ✗	72.0 ✗	1.09 →	7.1 ✓	39.0 ✗

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
RXH Brighton and Sussex University Hospitals NHS Trust	280	59.3 ✖	93.9 ✓	78.6 ✖	71.1 ✖	0.87 →	12.3 ✓	60.0 ✖
RYR Western Sussex Hospitals NHS Trust	330	87.6 ✖	89.7 ✖	89.4 ✖	63.3 ✖	0.50 ↓	12.8 ✓	74.8 ✖
N59 Thames Valley								
Whole network	1,100	55.5 ✖	93.6 ✓	75.0 ✖	78.5 ✓	1.30 ↑	12.4 ✓	50.8 ✖
RD8 Milton Keynes Hospital NHS FT	143	69.2 ✖	91.6 ✓	73.4 ✖	81.8 ✓	1.21 →	10.3 ✓	9.8 ✖
RHW Royal Berkshire NHS FT	191	0.5 ✖	97.4 ✓	91.6 ✖	75.4 ✓	1.26 →	11.8 ✓	62.8 ✖
RN3 Great Western Hospitals NHS FT	185	78.9 ✖	90.3 ✓	80.0 ✖	70.8 ✖	0.74 →	18.9 ✖	58.4 ✖
RTH Oxford University Hospitals NHS Trust	370	59.5 ✖	94.3 ✓	56.8 ✖	78.6 ✓	1.33 →	8.9 ✓	51.4 ✖
RXQ Buckinghamshire Healthcare NHS Trust	211	68.2 ✖	93.4 ✓	88.6 ✖	85.8 ✓	2.45 ↑	15.5 ✖	60.2 ✖
N60 Wessex								
Whole network	1,708	74.2 ✖	92.6 ✓	83.0 ✖	71.6 ✖	0.79 ↓	13.4 ✓	55.9 ✖
R1F Isle of Wight NHS Trust	117	93.2 ✓	97.4 ✓	97.4 ✓	72.6 ✖	0.91 →	13.7 ✓	87.2 ✖
RBD Dorset County Hospital NHS FT	115	77.4 ✖	95.7 ✓	93.9 ✖	67.0 ✖	0.59 ↓	13.0 ✓	77.4 ✖
RD3 Poole Hospital NHS FT	169	50.3 ✖	89.3 ✖	91.7 ✖	76.3 ✓	1.54 →	6.1 ✓	27.2 ✖
RDZ Royal Bournemouth and Christchurch Hospitals NHS FT	241	90.0 ✓	85.9 ✖	91.3 ✖	62.7 ✖	0.42 ↓	12.3 ✓	79.3 ✖
RHM University Hospital Southampton NHS FT	361	84.8 ✖	95.3 ✓	85.0 ✖	68.1 ✖	0.63 ↓	12.4 ✓	46.5 ✖
RHU Portsmouth Hospitals NHS Trust	376	63.8 ✖	92.0 ✓	62.8 ✖	77.9 ✓	1.19 →	15.3 ✖	51.3 ✖
RN5 Hampshire Hospitals NHS FT	202	53.0 ✖	92.1 ✓	79.7 ✖	74.8 ✖	0.95 →	16.0 ✖	38.1 ✖
RNZ Salisbury NHS FT	127	89.8 ✖	96.9 ✓	92.1 ✖	71.7 ✖	0.56 ↓	19.0 ✖	69.3 ✖
N61 London Cancer								
Whole network	1,738	63.4 ✖	93.7 ✓	76.6 ✖	77.8 ✓	1.44 ↑	12.9 ✓	46.6 ✖
R1H Barts Health NHS Trust	411	79.6 ✖	95.4 ✓	90.0 ✖	80.3 ✓	1.46 ↑	7.0 ✓	72.3 ✖
RAL Royal Free London NHS FT	314	69.4 ✖	93.0 ✓	71.0 ✖	77.7 ✓	1.51 ↑	29.0 ✖	34.4 ✖
RAP North Middlesex University Hospital NHS Trust	126	19.8 ✖	88.1 ✖	69.0 ✖	83.3 ✓	2.45 ↑	12.4 ✓	15.9 ✖
RF4 Barking, Havering and Redbridge Univ. Hospitals NHS Trust	364	73.6 ✖	89.3 ✖	84.9 ✖	70.9 ✖	0.86 →	10.2 ✓	31.9 ✖
RKE The Whittington Hospital NHS Trust	64	56.3 ✖	100.0 ✓	95.3 ✓	75.0 ✖	1.75 →	4.3 ✓	70.3 ✖
RQW The Princess Alexandra Hospital NHS Trust	170	82.4 ✖	96.5 ✓	85.3 ✖	74.7 ✖	1.05 →	7.6 ✓	49.4 ✖

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
RQX Homerton University Hospital NHS FT	91	52.7 ✖	98.9 ✓	93.4 ✖	75.8 ✓	1.19 →	6.7 ✓	82.4 ✖
RRV University College London Hospitals NHS FT	198	20.2 ✖	96.5 ✓	25.8 ✖	86.4 ✓	3.35 ↑	15.1 ✖	32.8 ✖
N95 South Wales Regional Cancer Network								
Whole network	1,652	100.0 ✓	98.6 ✓	98.4 ✓	70.3 ✖	0.74 ↓	7.9 ✓	88.9 ✖
7A2AJ Bronglais General Hospital	42	100.0 ✓	100.0 ✓	97.6 ✓	76.2 ✓	1.02 →	13.3 ✓	76.2 ✖
7A2AL Prince Philip Hospital	174	100.0 ✓	100.0 ✓	100.0 ✓	76.4 ✓	0.73 →	3.9 ✓	96.0 ✓
7A2BL Withybush General Hospital	95	100.0 ✓	97.9 ✓	98.9 ✓	73.7 ✖	0.86 →	5.2 ✓	94.7 ✓
7A3B7 Princess of Wales Hospital	108	100.0 ✓	92.6 ✓	97.2 ✓	71.3 ✖	1.09 →	11.9 ✓	83.3 ✖
7A3C7 Morriston Hospital	311	100.0 ✓	97.4 ✓	95.8 ✓	71.1 ✖	0.68 ↓	6.2 ✓	92.9 ✓
7A4C1 University Hospital Llandough	264	100.0 ✓	100.0 ✓	100.0 ✓	65.5 ✖	0.62 ↓	9.5 ✓	95.5 ✓
7A5B1 The Royal Glamorgan Hospital	143	100.0 ✓	97.2 ✓	99.3 ✓	67.1 ✖	0.91 →	11.3 ✓	75.5 ✖
7A5B3 Prince Charles Hospital Site	126	100.0 ✓	100.0 ✓	98.4 ✓	66.7 ✖	0.67 →	7.4 ✓	71.4 ✖
7A6AM Nevill Hall Hospital	114	100.0 ✓	100.0 ✓	100.0 ✓	72.8 ✖	0.95 →	7.7 ✓	93.9 ✓
7A6AR Royal Gwent Hospital	275	100.0 ✓	99.6 ✓	97.8 ✓	70.2 ✖	0.69 →	8.1 ✓	88.4 ✖
N96 North Wales Regional Cancer Network								
Whole network	555	100.0 ✓	99.3 ✓	98.9 ✓	71.7 ✖	0.67 ↓	3.3 ✓	95.9 ✓
7A1A1 Ysbyty Glan Clwyd	203	100.0 ✓	100.0 ✓	99.0 ✓	77.3 ✓	0.93 →	6.2 ✓	99.0 ✓
7A1A4 Wrexham Maelor Hospital	187	100.0 ✓	98.4 ✓	98.9 ✓	69.0 ✖	0.54 ↓	2.7 ✓	92.0 ✓
7A1AU Ysbyty Gwynedd	165	100.0 ✓	99.4 ✓	98.8 ✓	67.9 ✖	0.59 →	0.0 ✓	96.4 ✓
England total	**36,025**	**74.8** ✖	**94.7** ✓	**81.7** ✖	**72.5** ✖	–	**11.0** ✓	**54.8** ✖
Wales total	**2,207**	**100** ✓	**98.8** ✓	**98.5** ✓	**70.7** ✖	–	**6.7** ✓	**90.6** ✓
Guernsey total	**37**	**100** ✓	**83.8** ✖	**100.0** ✓	**51.4** ✖	–	**0** ✓	**21.6** ✖
Range: network								
Min	–	56	84	68	51	–	0	22
LQ	–	69	93	76	69	–	8	46
Median	–	78	94	86	71	–	11	54

Place first seen	Actual number	PS completeness (%)	Stage completeness (%)	Discussed at MDT (%)	Pathological diagnosis (%)	Pathological diagnosis (odds ratio)	NSCLC NOS rate (%)	Seen by LCNS (%)
UQ	–	83	97	89	75	–	13	66
Max	–	100	99	100	79	–	14	96
Range: trust								
Min	16	0	69	4	42	–	0	0
LQ	–	69	93	80	68	–	7	45
Median	–	79	96	89	72	–	10	66
UQ	–	90	97	93	77	–	13	75
Max	681	100	100	100	97	–	35	99

*This is a tertiary trust that provides treatment for lung cancer patients, but where patients are not usually first seen. The cases may have been incorrectly allocated to this trust, and instead first seen at another trust in the region. The data should be interpreted with caution.

✓ equal to or exceeds level suggested for this audit year
✖ below level suggested for this audit year

🡐 statistically significantly better than national level
🡒 not statistically significantly different from national level
🡓 statistically significantly worse than national level

Table 2: **Process, imaging and nursing measures for Scotland (2015 data)**

Place first seen	Actual number	Discussed at MDT (%)	Pathological diagnosis (%)	NSCLC NOS rate (%) ♦	Patient seen by nurse specialist (%) ♠
SCAN					
Whole network	**1,205**	**95.4** ✓	**79.2** ✓	**7.8** ✓	**84.8** ✖
Borders	65	96.8 ✓	79.4 ✓	7.1 ✓	93.8 ✓
Dumfries and Galloway	125	84.8 ✖	91.3 ✓	12.5 ✖	60.0 ✖
Fife	312	96.0 ✓	82.1 ✓	6.4 ✓	92.0 ✓
Lothian	703	97.0 ✓	76.3 ✓	7.6 ✓	85.2 ✖
WOSCAN					
Whole network	2,556	95.6 ✓	86.1 ✓	9.9 ✓	85.4 ✖
Ayrshire and Arran	352	95.0 ✓	85.4 ✓	8.7 ✓	90.9 ✓
Forth Valley	214	97.0 ✓	84.7 ✓	10.6 ✖	80.8 ✖
Lanarkshire	495	95.2 ✓	89.9 ✓	6.2 ✓	68.3 ✖
Greater Glasgow and Clyde	1,495	95.7 ✓	85.3 ✓	11.3 ✖	90.4 ✓
NOSCAN					
Whole network	1,017	92.0 ✖	86.2 ✓	11.7 ✓	82.6 ✖
Grampian	373	92.9 ✖	87.3 ✓	9.7 ✓	66.8 ✖
Highland	206	85.2 ✖	85.2 ✓	3.3 ✓	87.4 ✖
Orkney	10	88.9 ✖	100.0 ✓	33.3 ✖	100.0 ✓
Shetland	20	90.0 ✖	90.9 ✓	8.3 ✓	95.0 ✓
Tayside	383	95.2 ✓	85.1 ✓	18.4 ✖	94.0 ✓
Western Isles	25	91.3 ✖	88.2 ✓	5.9 ✓	88.0 ✖
Scotland total	**4,884**	**94.8** ✖	**84.6** ✓	**9.8** ✓	**84.7** ✖

✓ equal to or exceeds level suggested in QPI/♦ SIGN 137/♠ NLCNF

✖ below level suggested in QPI/♦ SIGN 137/♠ NLCNF

Table 3: **Treatment and outcome measures for England, Wales and Guernsey 2015 data**

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
N44 London Cancer Alliance									
Whole network	63.5 ✓	1.37 ↑	20.9 ✓	1.38 ↑	77.8 ✓	2.15 ↑	65.5 ✗	1.18 →	46.5
R1K London North West Healthcare NHS Trust	52.8 ✗	1.03 →	25.1 ✓	3.71 ↑	62.5 ✓	1.40 →	60.0 ✗	0.46 →	43.4
RAS The Hillingdon Hospitals NHS FT	47.6 ✗	0.92 →	7.6 ✗	0.64 →	70.0 ✓	1.25 →	57.1 ✗	0.76 →	27.5
RAX Kingston Hospital NHS Trust	54.0 ✗	0.81 →	14.6 ✗	1.02 →	81.0 ✓	2.34 →	60.0 ✗	0.67 →	37.0
RFW West Middlesex University Hospital NHS Trust	61.1 ✓	1.27 →	23.6 ✓	2.04 →	83.3 ✓	3.59 →	75.0 ✓	0.99 →	38.7
RJ1 Guy's and St Thomas' NHS FT	88.3 ✓	4.99 ↑	35.3 ✓	1.89 ↑	94.4 ✓	8.70 ↑	86.5 ✓	3.12 ↑	60.8
RJ2 Lewisham Healthcare NHS Trust	46.8 ✗	0.96 →	6.4 ✗	0.46 ↓	77.8 ✓	1.70 →	63.0 ✗	1.53 →	32.2
RJ6 Croydon Health Services NHS Trust	58.5 ✗	0.96 →	16.3 ✓	0.83 →	88.9 ✓	3.29 →	44.4 ✗	0.60 →	49.5
RJ7 St George's Healthcare NHS Trust	63.9 ✓	1.18 →	25.0 ✓	1.33 →	95.2 ✓	11.00 ↑	66.7 ✗	1.50 →	45.3
RJZ King's College Hospital NHS FT	39.9 ✗	0.53 ↓	10.3 ✗	0.49 ↓	71.4 ✓	2.29 →	78.9 ✓	4.42 ↑	32.4
RPY The Royal Marsden NHS FT*	87.1 ✓	4.99 ↑	6.9 ✗	0.36 ↓	89.1 ✓	4.80 ↑	75.0 ✓	1.55 →	53.2
RQM Chelsea and Westminster Hospital NHS FT	50.0 ✗	0.69 →	9.1 ✗	0.38 ↓	61.9 ✓	0.92 →	33.3 ✗	0.21 →	42.9
RT3 Royal Brompton and Harefield NHS FT*	73.3 ✓	2.31 ↑	61.9 ✓	7.45 ↑			66.7 ✗	0.99 →	78.9
RVR Epsom and St Helier University Hospitals NHS Trust	24.1 ✗	0.29 ↓	16.4 ✓	1.85 →	20.0 ✗	0.19 ↓	11.1 ✗	0.10 ↓	34.1
RYJ Imperial College Healthcare NHS Trust	67.8 ✓	1.36 →	21.9 ✓	1.92 ↑	67.5 ✓	1.21 →	60.9 ✗	0.81 →	48.8
N50 Cheshire and Merseyside									
Whole network	59.4 ✗	0.86 ↓	18.9 ✓	1.08 →	57.8 ✗	0.81 →	65.9 ✗	0.65 ↓	39.9
LLCU Liverpool Lung Cancer Centre	69.5 ✓	1.61 ↑	21.6 ✓	1.18 →	62.2 ✓	1.21 →	70.2 ✓	1.12 →	45.0
RBL Wirral University Teaching Hospital NHS FT	63.6 ✓	0.99 →	18.5 ✓	1.06 →	62.1 ✓	0.97 →	82.1 ✓	1.40 →	40.5
RBN St Helens and Knowsley Hospitals NHS Trust	52.6 ✗	0.87 →	13.2 ✗	0.85 →	73.3 ✓	1.26 →	58.3 ✗	0.64 →	32.6
REM Aintree University Hospital NHS FT	60.8 ✓	0.95 →	23.1 ✓	1.26 →	69.0 ✓	1.40 →	64.5 ✗	0.57 →	44.1
REN The Clatterbridge Cancer Centre NHS FT*	50.0 ✗	1.22 →	7.7 ✗	0.42 →	0.0 ✗		100.0 ✓		33.3
RJR Countess of Chester Hospital NHS FT	56.6 ✗	0.49 ↓	20.1 ✓	1.22 →	40.4 ✗	0.35 ↓	64.0 ✗	0.36 ↓	39.3
RVY Southport and Ormskirk Hospital NHS Trust	48.9 ✗	0.54 ↓	13.6 ✗	0.68 →	53.6 ✗	0.63 →	75.0 ✓	0.98 →	32.6
RWW Warrington and Halton Hospitals NHS FT	50.0 ✗	0.37 ↓	19.5 ✓	1.41 →	45.7 ✗	0.54 ↓	43.5 ✗	0.18 ↓	38.9

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
N51 Greater Manchester, Lancashire and South Cumbria									
Whole network	61.5 ✓	0.91 ↓	17.1 ✓	1.11 →	59.7 ✗	0.81 ↓	70.6 ✓	0.87 →	35.7
RBT Mid Cheshire Hospitals NHS FT	64.9 ✓	0.96 →	14.9 ✗	0.77 ✓	62.8 ✓	0.76 →	80.0 ✓	0.90 →	44.2
RBV The Christie NHS FT*	62.5 ✓	1.27 →	0.0 ✗				0.0 ✗		60.0
RJN East Cheshire NHS Trust	65.6 ✓	1.17 →	19.4 ✓	2.09 ↑	47.6 ✗	0.61 →	86.7 ✓	3.03 →	42.9
RM2 University Hospital of South Manchester NHS FT*	65.3 ✓	1.19 →	25.2 ✓	1.45 →	67.6 ✓	1.23 →	78.6 ✓	2.51 ↑	47.8
RM3 Salford Royal NHS FT	65.4 ✓	1.37 ↑	17.5 ✓	1.03 →	54.5 ✗	0.58 →	61.3 ✗	0.52 →	40.1
RMC Bolton NHS FT	59.4 ✗	0.76 →	16.7 ✓	1.00 →	42.9 ✗	0.43 ↓	56.0 ✗	0.45 →	32.3
RMP Tameside Hospital NHS FT	53.8 ✗	0.99 →	14.7 ✗	1.38 →	36.4 ✗	0.22 ↓	50.0 ✗	0.41 →	31.1
RRF Wrightington, Wigan and Leigh NHS FT	64.0 ✓	0.78 →	20.3 ✓	1.56 →	56.5 ✗	0.70 →	72.7 ✓	0.89 →	35.9
RTX University Hospitals of Morecambe Bay NHS FT	56.3 ✗	0.77 →	14.7 ✗	0.77 →	73.6 ✓	1.64 →	80.0 ✓	1.80 →	33.7
RW3 Central Manchester University Hospitals NHS FT	66.5 ✓	1.03 →	16.7 ✓	1.02 →	59.5 ✗	0.75 →	74.2 ✓	1.39 →	38.1
RW6 Pennine Acute Hospitals NHS Trust	59.6 ✗	0.70 ↓	16.7 ✓	0.97 →	57.4 ✗	0.65 ↓	64.9 ✗	0.48 ↓	34.1
RWJ Stockport NHS FT	67.0 ✓	1.44 →	18.4 ✓	0.98 →	61.9 ✓	0.85 →	68.2 ✗	1.10 →	31.3
RXL Blackpool Teaching Hospitals NHS FT	62.5 ✓	0.94 →	17.4 ✓	1.38 →	59.6 ✗	1.03 →	75.0 ✓	0.79 →	30.9
RXN Lancashire Teaching Hospitals NHS FT	60.1 ✓	1.08 →	15.0 ✗	1.46 →	66.7 ✓	1.16 →	71.4 ✓	1.07 →	30.4
RXR East Lancashire Hospitals NHS Trust	57.2 ✗	0.68 ↓	14.7 ✗	1.01 →	63.5 ✓	1.05 →	80.0 ✓	1.28 →	34.0
N52 Northern England									
Whole network	60.2 ✓	1.05 →	13.3 ✗	0.72 ↓	70.3 ✓	1.46 ↑	69.4 ✗	1.04 →	37.4
RE9 South Tyneside NHS FT	46.0 ✗	0.39 ↓	11.7 ✗	0.42 ↓	75.0 ✓	1.35 →	71.4 ✓	0.79 →	36.3
RLN City Hospitals Sunderland NHS FT	56.4 ✗	0.83 →	12.8 ✗	0.64 →	60.8 ✓	1.13 →	55.0 ✗	0.57 →	39.3
RNL North Cumbria University Hospitals NHS Trust	50.8 ✗	0.82 →	15.7 ✗	1.01 →	56.4 ✗	0.81 →	60.0 ✗	0.61 →	34.8
RR7 Gateshead Health NHS FT	57.9 ✗	1.14 →	10.2 ✗	0.57 ↓	63.6 ✓	1.08 →	70.4 ✓	1.54 →	37.1
RTD The Newcastle Upon Tyne Hospitals NHS FT	62.5 ✓	1.21 →	15.1 ✗	0.88 →	71.6 ✓	1.46 →	60.5 ✗	0.87 →	33.9
RTF Northumbria Healthcare NHS FT	58.9 ✗	0.97 →	12.9 ✗	0.60 ↓	76.2 ✓	2.04 ↑	77.8 ✓	1.25 →	36.4
RTR South Tees Hospitals NHS FT	67.4 ✓	1.58 ↑	14.0 ✗	0.87 →	87.7 ✓	4.31 ↑	72.1 ✓	1.49 →	40.3
RVW North Tees and Hartlepool NHS FT	68.9 ✓	1.48 ↑	16.7 ✓	1.00 →	67.2 ✓	1.21 →	77.8 ✓	1.56 →	41.7
RXP County Durham and Darlington NHS FT	60.7 ✓	0.97 →	10.4 ✗	0.53 ↓	69.2 ✓	1.27 →	72.2 ✓	0.88 →	36.7

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
N53 Yorkshire and the Humber									
Whole network	59.6 ✖	0.91 ↓	14.9 ✖	0.78 ↓	67.3 ✓	1.19 ↑	71.7 ✓	1.14 →	37.6
RAE Bradford Teaching Hospital NHS FT	59.6 ✖	0.69 ↓	12.2 ✖	0.50 ↓	68.0 ✓	1.13 →	73.9 ✓	1.06 →	37.3
RCB York Hospitals NHS FT	57.7 ✖	0.74 ↓	12.0 ✖	0.56 ↓	62.7 ✓	1.02 →	80.0 ✓	1.56 →	35.4
RCD Harrogate and District NHS FT	67.5 ✓	1.51 →	19.3 ✓	1.02 →	80.0 ✓	2.62 →	71.4 ✓	2.29 →	45.2
RCF Airedale NHS FT	53.7 ✖	0.68 →	16.1 ✓	0.94 →	58.8 ✖	0.91 →	80.0 ✓	1.55 →	40.2
RFF Barnsley Hospital NHS FT	59.0 ✖	0.82 →	14.4 ✖	1.24 →	80.6 ✓	2.19 ↑	69.0 ✖	0.64 →	32.1
RFR The Rotherham NHS FT	59.3 ✖	1.11 →	14.7 ✖	0.58 ↓	75.0 ✓	1.73 →	66.7 ✖	1.26 →	35.2
RFS Chesterfield Royal Hospital NHS FT	52.0 ✖	0.47 ↓	13.6 ✖	0.64 →	47.6 ✖	0.52 ↓	57.1 ✖	0.49 →	29.0
RHQ Sheffield Teaching Hospitals NHS FT	58.9 ✖	0.83 →	16.0 ✖	0.75 →	58.0 ✖	0.86 →	85.5 ✓	3.32 ↑	41.1
RJL Northern Lincolnshire and Goole Hospitals NHS FT	52.4 ✖	0.48 ↓	13.5 ✖	0.55 ↓	60.7 ✓	0.83 →	69.2 ✖	0.67 →	40.0
RP5 Doncaster and Bassetlaw Hospitals NHS FT	57.6 ✖	0.95 →	14.9 ✖	1.15 →	72.9 ✓	1.34 →	70.2 ✓	0.80 →	36.1
RR8 Leeds Teaching Hospitals NHS Trust	66.9 ✓	1.52 ↑	14.3 ✖	0.63 ↓	83.1 ✓	3.10 ↑	64.6 ✖	0.80 →	40.4
RWA Hull and East Yorkshire Hospitals NHS Trust	62.4 ✓	1.02 →	18.9 ✓	1.36 →	63.3 ✓	0.86 →	66.0 ✖	0.66 →	34.6
RWY Calderdale and Huddersfield NHS FT	59.1 ✖	0.91 →	14.6 ✖	0.88 →	72.5 ✓	1.75 →	66.7 ✖	1.78 →	39.2
RXF Mid Yorkshire Hospitals NHS Trust	60.0 ✓	1.10 →	15.4 ✖	0.84 →	71.2 ✓	1.68 →	78.8 ✓	1.82 →	37.1
N54 East of England									
Whole network	59.6 ✖	0.90 ↓	14.5 ✖	0.77 ↓	62.1 ✓	0.99 →	68.0 ✖	0.82 →	37.9
RAJ Southend University Hospital NHS FT	50.8 ✖	0.63 ↓	12.4 ✖	1.07 →	62.9 ✓	1.00 →	57.1 ✖	0.75 →	34.4
RC1 Bedford Hospital NHS Trust	51.3 ✖	0.48 ↓	12.0 ✖	1.12 →	44.1 ✖	0.57 →	30.0 ✖	0.10 ↓	31.8
RC9 Luton and Dunstable Hospital NHS FT	58.0 ✖	0.73 →	20.8 ✓	1.28 →	53.8 ✖	0.63 →	79.2 ✓	1.47 →	38.6
RCX The Queen Elizabeth Hospital, King's Lynn, NHS FT	54.7 ✖	0.57 ↓	8.8 ✖	0.60 →	57.7 ✖	1.01 →	73.9 ✓	0.59 →	32.9
RDD Basildon and Thurrock University Hospitals NHS FT	46.1 ✖	0.41 ↓	13.0 ✖	0.76 →	58.1 ✖	0.90 →	58.8 ✖	0.50 →	34.7
RDE Colchester Hospital University NHS FT	58.8 ✖	1.12 →	12.6 ✖	1.04 →	62.3 ✓	1.08 →	70.0 ✖	1.30 →	37.0
RGM Papworth Hospital NHS FT*	75.0 ✓	0.79 →	50.0 ✓	1.21 →	50.0 ✖	0.69 →	55.6 ✖	0.35 →	66.3
RGN Peterborough and Stamford Hospitals NHS FT	68.6 ✓	1.97 ↑	12.1 ✖	0.58 ↓	60.5 ✓	1.07 →	64.0 ✖	1.10 →	38.4
RGP James Paget University Hospitals NHS FT	69.8 ✓	1.97 ↑	12.9 ✖	0.49 ↓	62.9 ✓	0.95 →	85.7 ✓	3.00 →	40.9
RGQ Ipswich Hospital NHS Trust	65.3 ✓	1.41 →	11.4 ✖	0.50 ↓	55.0 ✖	0.65 →	72.2 ✓	0.86 →	42.9
RGR West Suffolk NHS FT	51.3 ✖	0.54 ↓	17.1 ✓	0.97 →	57.1 ✖	0.81 →	93.3 ✓	3.08 →	37.6

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
RGT Cambridge University Hospitals NHS FT	62.2 ✓	1.20 →	15.1 ✗	0.80 →	84.6 ✓	3.77 →	66.7 ✗	0.76 →	41.4
RM1 Norfolk and Norwich University Hospitals NHS FT	60.6 ✓	0.59 ↓	16.0 ✓	0.62 ↓	62.1 ✓	0.94 →	74.4 ✓	0.92 →	37.1
RQ8 Mid Essex Hospital Services NHS Trust	63.2 ✓	1.16 →	16.6 ✓	1.62 →	70.4 ✓	1.15 →	56.3 ✗	0.40 ↓	38.1
RQQ Hinchingbrooke Health Care NHS Trust	77.5 ✓	2.46 ↑	15.7 ✗	0.57 →	95.2 ✓	13.00 ↑	88.2 ✓	1.99 →	39.1
RWG West Hertfordshire Hospitals NHS Trust	53.8 ✗	0.66 ↓	14.0 ✗	0.96 →	59.4 ✗	0.76 →	48.1 ✗	0.37 ↓	32.2
RWH East and North Hertfordshire NHS Trust	61.1 ✓	1.50 ↑	5.6 ✗	0.26 ↓	63.6 ✓	1.12 →	67.7 ✗	1.22 →	35.8
N55 East Midlands									
Whole network	59.6 ✗	1.03 →	15.7 ✗	1.09 →	60.6 ✓	0.87 →	69.2 ✗	1.09 →	37.3
RJF Burton Hospitals NHS FT	63.8 ✓	0.88 →	24.1 ✓	2.54 ↑	65.7 ✓	1.08 →	73.7 ✓	1.52 →	42.2
RK5 Sherwood Forest Hospitals NHS FT	41.9 ✗	0.63 ↓	6.5 ✗	0.58 →	55.0 ✗	0.68 →	85.0 ✓	5.54 ↑	30.1
RNQ Kettering General Hospital NHS FT	59.3 ✗	0.77 →	21.3 ✓	1.86 ↑	63.9 ✓	0.81 →	50.0 ✗	0.30 ↓	35.9
RNS Northampton General Hospital NHS Trust	61.8 ✓	1.27 →	18.5 ✓	2.23 ↑	59.3 ✗	0.61 →	81.0 ✓	1.32 →	42.6
RTG Derby Hospitals NHS FT	58.8 ✗	0.73 ↓	17.3 ✓	1.09 →	66.2 ✓	1.17 →	71.4 ✓	0.89 →	36.1
RWD United Lincolnshire Hospitals NHS Trust	52.6 ✗	1.00 →	10.8 ✗	0.62 ↓	58.3 ✗	0.95 →	48.6 ✗	0.52 →	31.4
RWE University Hospitals of Leicester NHS Trust	61.6 ✓	1.27 ↑	14.1 ✗	1.08 →	58.4 ✗	0.90 →	70.2 ✓	1.31 →	39.2
RX1 Nottingham University Hospitals NHS Trust	66.7 ✓	1.31 ↑	17.5 ✓	0.96 →	57.9 ✗	0.76 →	77.9 ✓	1.94 ↑	40.3
N56 West Midlands									
Whole network	56.8 ✗	0.77 →	17.4 ✓	1.42 ↑	62.9 ✓	0.98 →	66.7 ✗	0.74 ↓	36.2
RBK Walsall Healthcare NHS Trust	55.8 ✗	0.78 →	11.6 ✗	0.60 →	80.6 ✓	2.76 ↑	58.8 ✗	0.42 →	34.2
RJC South Warwickshire NHS FT	52.8 ✗	0.63 →	11.0 ✗	1.41 →	69.2 ✓	1.26 →	57.1 ✗	0.33 →	32.0
RJE University Hospital of North Staffordshire NHS Trust	61.7 ✓	0.94 →	21.7 ✓	2.09 ↑	72.9 ✓	1.59 →	65.8 ✗	0.65 →	38.2
RKB University Hospitals Coventry and Warwickshire NHS Trust	61.5 ✓	1.30 →	13.8 ✗	0.85 →	53.5 ✗	0.72 →	82.1 ✓	2.52 →	32.2
RL4 The Royal Wolverhampton NHS Trust	55.4 ✗	0.93 →	22.3 ✓	2.79 ↑	48.8 ✗	0.52 ↓	57.1 ✗	0.48 →	32.8
RLQ Wye Valley NHS Trust	63.0 ✓	1.06 →	14.0 ✗	0.96 →	86.4 ✓	5.39 ↑	57.1 ✗	0.32 ↓	36.5
RLT George Eliot Hospital NHS Trust	56.0 ✗	0.75 →	11.0 ✗	1.02 →	53.8 ✗	0.69 →	58.3 ✗	1.19 →	35.0
RNA The Dudley Group NHS FT	48.6 ✗	0.50 ↓	12.9 ✗	1.55 →	65.9 ✓	1.04 →	75.9 ✓	0.99 →	27.4
RR1 Heart of England NHS FT	51.9 ✗	0.60 ↓	17.7 ✓	1.15 →	62.5 ✓	0.91 →	58.1 ✗	0.72 →	38.6
RRK University Hospitals Birmingham NHS FT	63.1 ✓	1.00 →	20.4 ✓	1.42 →	62.5 ✓	0.98 →	61.5 ✗	0.54 →	43.2
RWP Worcestershire Acute Hospitals NHS Trust	53.7 ✗	0.53 ↓	16.3 ✓	1.36 →	64.2 ✓	1.03 →	79.3 ✓	1.43 →	36.7

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
RXK Sandwell and West Birmingham Hospitals NHS Trust	52.4 ✖	0.72 ↓	11.3 ✖	0.70 →	48.6 ✖	0.47 ↓	73.5 ✓	1.29 →	36.0
RXW Shrewsbury and Telford Hospital NHS Trust	61.9 ✓	0.73 →	24.4 ✓	2.08 ↑	47.1 ✖	0.55 ↓	63.6 ✖	0.42 ↓	38.7
N57 South West									
Whole network	60.0 ✓	0.90 →	14.0 ✖	0.73 ↓	59.8 ✖	0.84 →	75.1 ✓	1.36 ↑	40.2
RA3 Weston Area Health NHS Trust	42.4 ✖	0.55 ↓	6.1 ✖	0.33 ↓	42.9 ✖	0.32 →	66.7 ✖	1.09 →	23.9
RA4 Yeovil District Hospital NHS FT	53.1 ✖	0.62 ↓	15.0 ✖	0.75 →	62.5 ✓	1.02 →	81.8 ✓	1.41 →	42.7
RA7 University Hospitals Bristol NHS FT	66.3 ✓	1.09 →	24.2 ✓	1.69 →	74.2 ✓	1.43 →	82.6 ✓	2.06 →	52.1
RA9 South Devon Healthcare NHS FT	59.2 ✖	0.95 →	9.4 ✖	0.47 ↓	61.0 ✓	1.07 →	95.2 ✓	7.74 ↑	44.8
RBA Taunton and Somerset NHS FT	57.8 ✖	0.87 →	15.2 ✖	1.05 →	63.0 ✓	1.08 →	80.0 ✓	1.91 →	37.8
RBZ Northern Devon Healthcare NHS Trust	53.5 ✖	0.77 →	10.9 ✖	0.50 →	57.1 ✖	0.75 →	73.3 ✓	1.39 →	41.8
RD1 Royal United Hospital Bath NHS Trust	61.3 ✓	0.70 ↓	16.0 ✓	0.80 →	65.5 ✓	1.05 →	65.2 ✖	0.71 →	34.1
REF Royal Cornwall Hospitals NHS Trust	65.3 ✓	1.24 →	8.4 ✖	0.38 ↓	50.8 ✖	0.73 →	77.8 ✓	1.84 →	38.6
RH8 Royal Devon and Exeter NHS FT	67.5 ✓	1.23 →	10.6 ✖	0.50 ↓	60.8 ✓	0.93 →	84.8 ✓	2.26 →	39.2
RK9 Plymouth Hospitals NHS Trust	56.2 ✖	0.77 →	13.8 ✖	0.51 ↓	61.2 ✓	0.81 →	62.5 ✖	0.96 →	41.4
RTE Gloucestershire Hospitals NHS FT	62.3 ✓	1.03 →	16.7 ✓	1.08 →	47.5 ✖	0.41 ↓	62.1 ✖	0.47 ↓	34.0
RVJ North Bristol NHS Trust	57.3 ✖	0.79 →	18.7 ✓	1.13 →	72.0 ✓	1.31 →	73.9 ✓	1.49 →	49.5
N58 South East Coast									
Whole network	53.8 ✖	0.75 ↓	12.6 ✖	0.81 ↓	61.7 ✓	0.89 →	56.9 ✖	0.62 ↓	33.6
RA2 Royal Surrey County Hospital NHS Trust	58.8 ✖	1.20 →	21.0 ✓	1.14 →	57.1 ✖	0.60 →	50.0 ✖	0.77 →	39.8
RDU Frimley Park Hospital NHS FT	53.8 ✖	0.68 ↓	15.2 ✖	1.09 →	56.5 ✖	0.71 →	60.6 ✖	0.51 →	38.3
RN7 Dartford and Gravesham NHS Trust	53.7 ✖	0.71 →	11.7 ✖	1.42 →	71.1 ✓	1.05 →	70.0 ✖	1.04 →	26.6
RPA Medway NHS FT	45.6 ✖	0.64 ↓	9.6 ✖	1.12 →	51.4 ✖	0.56 →	50.0 ✖	0.43 →	23.5
RTK Ashford and St Peter's Hospitals NHS FT	58.0 ✖	1.00 →	17.7 ✓	1.17 →	45.8 ✖	0.38 ↓	22.2 ✖	0.17 →	40.8
RTP Surrey and Sussex Healthcare NHS Trust	57.5 ✖	0.87 →	10.0 ✖	0.54 ↓	71.7 ✓	1.61 →	42.1 ✖	0.20 ↓	39.7
RVV East Kent Hospitals University NHS FT	51.8 ✖	0.64 ↓	7.5 ✖	0.38 ↓	57.1 ✖	0.75 →	46.0 ✖	0.33 ↓	28.3
RWF Maidstone and Tunbridge Wells NHS Trust	61.7 ✓	0.84 →	17.7 ✓	0.95 →	68.4 ✓	1.03 →	71.4 ✓	1.23 →	37.4
RXC East Sussex Healthcare NHS Trust	53.8 ✖	0.93 →	12.6 ✖	0.89 →	68.8 ✓	1.29 →	57.1 ✖	0.86 →	37.2
RXH Brighton and Sussex University Hospitals NHS Trust	56.1 ✖	0.86 →	12.5 ✖	0.75 →	77.5 ✓	2.23 ↑	70.6 ✓	1.62 →	31.9
RYR Western Sussex Hospitals NHS Trust	48.8 ✖	0.50 ↓	11.8 ✖	0.65 →	55.8 ✖	0.81 →	69.2 ✖	0.98 →	32.1

Place first seen	Anticancer (%)		Anticancer (OR)		Surgery (%)		Surgery OR		NSCLC chemo (%)		NSCLC chemo (OR)		SCLC chemo (%)		SCLC chemo (OR)		Survival (%)
N59 Thames Valley																	
Whole network	60.9	✓	0.93	→	18.6	✓	1.21	→	57.8	✗	0.71	↓	71.3	✓	1.27	→	36.6
RD8 Milton Keynes Hospital NHS FT	57.3	✗	0.51	↓	23.8	✓	2.07	↑	66.7	✓	1.05	→	77.8	✓	1.10	→	38.5
RHW Royal Berkshire NHS FT	64.4	✓	1.82	↑	13.6	✗	1.34	→	100.0	✓			60.0	✗	1.13	→	29.0
RN3 Great Western Hospitals NHS FT	50.3	✗	0.47	↓	10.8	✗	0.81	→	54.1	✗	0.52	↓	62.5	✗	0.62	→	27.3
RTH Oxford University Hospitals NHS Trust	65.9	✓	1.07	→	25.9	✓	1.32	→	59.3	✗	0.85	→	75.0	✓	1.54	→	42.5
RXQ Buckinghamshire Healthcare NHS Trust	60.7	✓	0.92	→	13.7	✗	0.76	→	52.0	✗	0.57	→	82.4	✓	3.10	→	40.4
N60 Wessex																	
Whole network	60.0	✓	0.89	→	15.9	✗	0.91	→	59.1	✗	0.81	→	77.6	✓	1.67	↑	38.6
R1F Isle of Wight NHS Trust	48.7	✗	0.43	↓	16.2	✓	1.08	→	45.5	✗	0.48	→	60.0	✗	0.50	→	36.4
RBD Dorset County Hospital NHS FT	67.0	✓	1.50	→	16.5	✓	1.28	→	52.9	✗	0.76	→	87.5	✓	2.04	→	35.7
RD3 Poole Hospital NHS FT	66.3	✓	1.81	↑	18.9	✓	1.09	→	71.4	✓	1.43	→	85.7	✓	6.55	→	54.2
RDZ Royal Bournemouth and Christchurch Hospitals NHS FT	54.4	✗	0.60	↓	14.1	✗	0.72	→	58.2	✗	0.68	→	84.6	✓	2.52	→	32.0
RHM University Hospital Southampton NHS FT	62.9	✓	0.93	→	16.9	✓	1.00	→	56.9	✗	0.72	→	87.1	✓	2.48	→	46.6
RHU Portsmouth Hospitals NHS Trust	56.9	✗	0.76	↓	13.0	✗	0.63	↓	66.2	✓	1.23	→	67.4	✗	1.07	→	33.7
RN5 Hampshire Hospitals NHS FT	61.4	✓	0.99	→	16.8	✓	1.21	→	62.5	✓	0.81	→	77.8	✓	1.68	→	32.4
RNZ Salisbury NHS FT	65.4	✓	1.05	→	18.1	✓	0.95	→	53.1	✗	0.69	→	83.3	✓	2.22	→	35.5
N61 London Cancer																	
Whole network	63.1	✓	1.21	↑	17.9	✓	1.50	↑	69.1	✓	1.40	↑	75.5	✓	1.59	↑	39.4
R1H Barts Health NHS Trust	63.5	✓	1.00	→	17.5	✓	1.47	↑	71.6	✓	1.47	→	76.9	✓	1.33	→	39.1
RAL Royal Free London NHS FT	57.3	✗	0.99	→	14.3	✗	1.04	→	68.9	✓	1.63	→	76.7	✓	1.70	→	38.4
RAP North Middlesex University Hospital NHS Trust	72.2	✓	2.68	↑	6.3	✗	0.43	→	90.9	✓	4.96	→	73.3	✓	2.03	→	36.0
RF4 Barking, Havering and Redbridge Univ. Hospitals NHS Trust	54.4	✗	0.72	↓	14.6	✗	1.68	↑	61.8	✓	1.02	→	81.5	✓	1.67	→	35.7
RKE The Whittington Hospital NHS Trust	59.4	✗	1.25	→	26.6	✓	2.46	↑	100.0	✓			50.0	✗	2.33	→	40.5
RQW The Princess Alexandra Hospital NHS Trust	55.9	✗	0.76	→	15.9	✗	1.36	→	65.7	✓	1.33	→	47.6	✗	0.42	↓	34.6
RQX Homerton University Hospital NHS FT	73.6	✓	2.01	↑	18.7	✓	0.91	→	87.5	✓	3.22	→	88.9	✓	3.65	→	37.7
RRV University Colllege London Hospitals NHS FT	84.3	✓	4.59	↑	36.4	✓	3.25	↑	66.7	✓	0.90	→	93.8	✓	12.00	↑	56.6

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
N95 South Wales Regional Cancer Network									
Whole network	60.0 ✖	0.83 ↓	17.6 ✓	1.30 →	61.7 ✓	0.87 →	71.8 ✓	0.91 →	37.3
7A2AJ Bronglais General Hospital	52.4 ✖	0.58 →	11.9 ✖	0.94 →	57.1 ✖	0.71 →	0.0 ✖		33.3
7A2AL Prince Philip Hospital	63.8 ✓	0.60 ↓	24.1 ✓	1.38 →	54.5 ✖	0.84 →	66.7 ✖	0.53 →	44.5
7A2BL Withybush General Hospital	60.0 ✖	0.92 →	16.8 ✓	2.12 →	63.3 ✓	1.04 →	83.3 ✓	1.11 →	33.8
7A3B7 Princess of Wales Hospital	61.1 ✓	1.65 →	22.2 ✓	6.01 ↑	86.7 ✓	2.84 →	75.0 ✓	0.68 →	40.5
7A3C7 Morriston Hospital	62.4 ✓	0.87 →	16.7 ✓	1.03 →	61.4 ✓	0.79 →	70.7 ✓	0.92 →	39.4
7A4C1 University Hospital Llandough	58.3 ✖	0.92 →	10.6 ✖	0.60 →	52.4 ✖	0.57 →	74.3 ✓	1.18 →	29.1
7A5B1 The Royal Glamorgan Hospital	53.1 ✖	0.67 →	23.8 ✓	2.60 ↑	42.1 ✖	0.37 ↓	87.5 ✓	3.40 →	39.6
7A5B3 Prince Charles Hospital Site	69.8 ✓	1.71 ↑	15.1 ✖	0.62 →	87.5 ✓	3.29 ↑	68.8 ✖	0.84 →	43.5
7A6AM Nevill Hall Hospital	64.9 ✓	1.13 →	13.2 ✖	0.73 →	66.7 ✓	1.41 →	83.3 ✓	3.04 →	38.7
7A6AR Royal Gwent Hospital	54.2 ✖	0.50 ↓	20.0 ✓	1.65 →	66.7 ✓	0.89 →	61.3 ✖	0.48 →	33.7
N96 North Wales Regional Cancer Network									
Whole Network	60.7 ✓	0.75 ↓	16.6 ✓	0.80 →	63.7 ✓	1.15 →	78.7 ✓	1.59 →	39.2
7A1A1 Ysbyty Glan Clwyd	59.1 ✖	0.67 →	9.4 ✖	0.31 ↓	64.4 ✓	1.10 →	72.0 ✓	0.91 →	39.2
7A1A4 Wrexham Maelor Hospital	56.7 ✖	0.42 ↓	23.5 ✓	0.95 →	53.1 ✖	0.71 →	76.5 ✓	0.81 →	39.7
7A1AU Ysbyty Gwynedd	67.3 ✓	1.78 ↑	17.6 ✓	1.80 →	72.2 ✓	2.13 →	89.5 ✓	7.80 ↑	38.7
England total	**59.6** ✖	–	**16.0** ✓	–	63.6 ✓		69.1 ✖	–	–
Wales total	**60.2** ✓	–	**17.3** ✓	–	62.2 ✓		73.4 ✓	–	–
Guernsey total	**56.8** ✖	–	**21.6** ✓	–	53.8 ✖		100 ✓	–	–
Range: network									
Min	54	–	13	–	54	–	57	–	–
LQ	59	–	15	–	59	–	67	–	–
Median	60	–	17	–	62	–	71	–	–
UQ	61	–	18	–	66	–	75	–	–
Max	64	–	22	–	78	–	100	–	–
Range: trust									
Min	24	–	0	–	0	–	0	–	–

Place first seen	Anticancer (%)	Anticancer (OR)	Surgery (%)	Surgery OR	NSCLC chemo (%)	NSCLC chemo (OR)	SCLC chemo (%)	SCLC chemo (OR)	Survival (%)
LQ	54	–	12	–	56	–	60	–	–
Median	59	–	15	–	63	–	70	–	–
UQ	64	–	19	–	71	–	79	–	–
Max	88	–	63	–	100	–	100	–	–

*This is a tertiary trust that provides treatment for lung cancer patients, but where patients are not usually first seen. The cases may have been incorrectly allocated to this trust, and instead first seen at another trust in the region. The data should be interpreted with caution.

✓ equal to or exceeds level suggested for this audit year
✖ below level suggested for this audit year

↑ statistically significantly better than national level
→ not statistically significantly different from national level
↓ statistically significantly worse than national level

Table 4: **Treatment measures for Scotland 2015 data**

Place first seen	*QPI 6a* – NSCLC having surgery (%)	*QPI 6b* – NSCLC stage I–II having surgery (%)	*QPI 8* – Patients not undergoing surgery who receive radiotherapy with radical intent (%)	*QPI 9* – Patients with NSCLC not undergoing surgery who receive radical radiotherapy and concurrent or sequential chemotherapy (%)	*QPI 10* – Patients with limited-stage SCLC treated with radical intent who receive both chemotherapy and radiotherapy (%)	*QPI 11a* – Patients with NSCLC not undergoing surgery who receive systemic anticancer therapy (%)	*QPI 11b* – Patients with stage IIIB/IV NSCLC who receive double chemotherapy including platinum as their first-line regimen (%)	*QPI 12b* – Patients with SCLC not undergoing treatment with curative intent who receive palliative chemotherapy (%)
SCAN								
Whole network	**23.2**	**65.4**	**46.7**	**85.3**	**73.3**	**34.7**	**59.0**	**67.6**
Borders	25.0 ✓	83.3 ✓	45.0 ✓	*	*	58.8 ✓	63.6 ✓	100.0 ✓
Dumfries and Galloway	23.8 ✓	84.6 ✓	48.1 ✓	*	*	54.5 ✓	77.8 ✓	75.0 ✓
Fife	18.0 ✓	54.3 ✓	45.1 ✓	71.4 ✓	80.0 ✓	29.0 ✖	50.0 ✖	58.6 ✓
Lothian	25.1 ✓	66.7 ✓	47.3 ✓	90.5 ✓	83.3 ✓	32.4 ✖	57.6 ✖	67.9 ✓
WOSCAN								
Whole network	26.7	71.9	37.4	61.0	67.7	34.9	52.7	77.5
Ayrshire and Arran	24.2 ✓	80.7 ✓	37.3 ✓	40.0 ✖	72.7 ✓	44.0 ✓	62.3 ✓	57.9 ✓
Forth Valley	23.8 ✓	76.9 ✓	26.3 ✓	*	50.0 ✖	43.0 ✓	60.0 ✓	72.7 ✓
Lanarkshire	28.6 ✓	70.5 ✓	36.2 ✓	53.3 ✓	90.9 ✓	45.9 ✓	70.7 ✓	86.5 ✓
Greater Glasgow and Clyde	27.0 ✓	69.6 ✓	39.4 ✓	66.7 ✓	62.2 ✓	27.3 ✖	40.6 ✖	78.5 ✓
NOSCAN								
Whole network	14.6	52.5	33.3	72.7	58.8	44.4	67.3	71.1
Grampian	15.4 ✖	58.5 ✓	25.7 ✓	*	60.0 ✖	34.2 ✖	53.8 ✖	64.5 ✓
Highland	12.3 ✖	52.0 ✓	31.0 ✓	80.0 ✓	57.1 ✖	44.9 ✓	78.8 ✓	68.8 ✓
Orkney	0.0 ✖	–	*	*	–	60.0 ✓	*	–
Shetland	33.3 ✓	60.0 ✓	*	–	*	25.0 ✖	*	–
Tayside	12.2 ✖	45.8 ✖	40.3 ✓	75.0 ✓	*	53.0 ✓	72.3 ✓	77.8 ✓
Western Isles	41.2 ✓	*	*	–	–	50.0 ✓	66.7 ✓	*
Scotland total	**23.3**	**66.9**	**39.0**	**70.4**	**67.0**	**37.1**	**57.6**	**73.8**

✓ equal to or exceeds level suggested in QPI
✖ below level suggested in QPI
*Results suppressed owing to small numbers

Appendix 1: Glossary

Adenocarcinoma	a subtype of non-small-cell lung cancer arising from glandular tissue
Anticancer treatment (active treatment)	a term used to define treatments for lung cancer that have an effect on the tumour itself, not just on symptoms. In lung cancer patients, these are most often surgery, chemotherapy, radiotherapy or a combination of these
Benchmark	a method of comparing processes and outcomes against standards
Biopsy	removal and examination of tissue, usually microscopic, to establish a precise (***pathological***) diagnosis
Bronchoscopy	a procedure for examining the airways by inserting an instrument (bronchoscope) into the trachea and lungs via the nose or mouth. Enables a ***bronchial biopsy*** to be taken
Bronchial biopsy	removal of a small piece of lung tissue during a ***bronchoscopy*** in order to make a ***pathological*** diagnosis
CancerStats	the NCRAS online portal, which provides detailed information about the quality of the COSD data as well as some summary clinical and process measures
Casemix	refers to the different characteristics of patients seen in different hospitals (for example age, sex, disease stage, social deprivation and general health). Knowledge of differing casemix enables a more accurate method of comparing quality of care (***casemix adjustment***)
Casemix adjustment	a statistical method of comparing quality of care between organisations that takes into account important and measurable patient characteristics
Chemotherapy	medicines used in the treatment of cancer that can be given by mouth or by injection
Comorbidity	medical condition(s) or disease process(es) that are additional to the disease under investigation (in this case, lung cancer). In the NLCA, this is recorded when a comorbidity restricts the type of treatment that can be given for lung cancer
COSD	the Cancer Outcomes and Services Dataset (COSD) is the national standard for reporting on cancer in the NHS in England. Trusts submit a data file to the National Cancer Registration and Analysis Service (NCRAS) every month
CT scan	the abbreviated term for computerised tomography. These tests produce detailed images of the body using X-ray images that are enhanced by a computer
Data completeness	a measure of the standard of data submitted to the audit, in terms of both the number of cases submitted and the data on each individual case
Diagnosis	confirming the presence of the disease (see ***pathological diagnosis***)
FEV1	a measurement of lung capacity used by doctors to determine how healthy a patient's lungs are, and can be measured as an absolute amount, or as a percentage predicted (based on gender, age, height)
Health board	an organisation providing healthcare services in Scotland and Wales. A health board may manage one or several hospitals within a region
Hospital trust	an organisation providing secondary healthcare services in England. A hospital trust may be made up of one or several hospitals within a region
Interquartile range	the range of a particular variable excluding the highest quarter and lowest quarter of the values recorded. Can be useful to give a sense of the spread of a set of data without being affected by very high or very low results

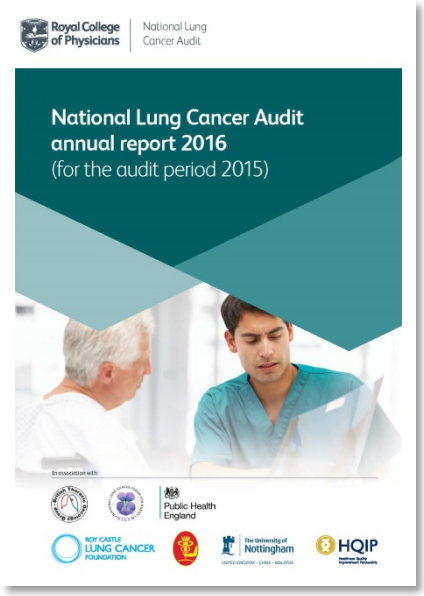
Lung cancer nurse specialist (LCNS)	A nurse specialising in care of people diagnosed with lung cancer (and mesothelioma)
Lead clinician	Healthcare professional in a hospital taking overall responsibility for the services provided for a specific disease area
MDT	multidisciplinary team; a group of healthcare professionals working in a coordinated manner for patient care
Mesothelioma	cancer of the lining of the lung (pleura), caused by exposure to asbestos
NCRAS	the National Cancer Registration and Analysis Service (NCRAS) is part of Public Health England and is responsible for all cancer registration in England
NLCA	National Lung Cancer Audit
Non-small-cell lung cancer (NSCLC)	a group of types of lung cancer sharing certain characteristics, which makes up 85–90% of all lung cancers. Includes squamous carcinoma and adenocarcinoma. See also ***small-cell lung cancer***
NOS	not otherwise specified. In the case of ***NSCLC*** histology, this implies that the pathological diagnosis has not been subclassified to a particular cell type, eg squamous carcinoma, adenocarcinoma
Odds ratio (OR)	Refers to the chance of an outcome happening after risk adjustment, compared with the national average
Operability	in the consideration of surgical treatment of a lung cancer, refers to patients' ability to cope with both the operation and the subsequent reduction of lung volume and function. See also ***resectability***
Pathological diagnosis	refers to a diagnosis of cancer based on pathological examination of a tissue (histology) or fluid (cytology), as opposed to a diagnosis based on clinical assessment or non-pathological investigation (eg ***CT scan***)
Performance status (PS)	a systematic method of recording the ability of an individual to undertake the tasks of normal daily life compared with that of a healthy person
Radiotherapy	the treatment of cancer using radiation, which is most often delivered by X-ray beams (external beam radiotherapy) but can be given internally (brachytherapy)
Registry data	refers to the processed data that the NCRAS produces from a variety of sources, including information submitted via COSD. Using these multiple sources of data, the registration officers at NCRAS are able to produce a completed registration dataset for every lung cancer
Resectability	in the consideration of surgical treatment of a lung cancer, refers to the ability of the surgeon to remove the tumour taking into account its location and stage. See also ***operability***
RCP	Abbreviation for the Royal College of Physicians, the professional body of doctors practising general medicine and its subspecialties
Stereotactic ablative body radiotherapy (SABR)	A modern radiotherapy delivery technique, designed to maximise the dose to the tumour and minimise side effects
Secondary care	care provided by a hospital, as opposed to that provided in the community by a GP and allied staff (primary care)
Small-cell lung cancer (SCLC)	a subtype of lung cancer making up around 10–15% of all lung cancers. See also ***non-small-cell lung cancer***
Squamous carcinoma	a subtype of non-small cell lung cancer

Staging/stage	the anatomical extent of a cancer
Strategic Clinical Network (SCN)	a system within the NHS to organise the integrated care of patients across a geographical region
Surgical resection	an operation to remove abnormal tissues or organs
Tertiary centres	hospitals that specialise in diagnosis and treatment of specific conditions, often handling very complex cases. Other hospitals may refer patients to these centres for specialist treatment

Appendix 2

NLCA toolkit

Improving lung cancer care



Staff working in lung cancer teams want to deliver the best care possible for their patients, but the NLCA analysis shows marked variation in standards of care across different organisations, indicating that this may not always be the case. In the 2016 annual report, we make 13 recommendations to improve care, and here we provide a toolkit to help organisations achieve them.

- Data quality
- Pathology
- Specialist nursing
- Treatment
- Surgery
- Chemotherapy

The NLCA team are always happy to discuss your results, and to offer advice on data collection and service improvement. We may be able to facilitate peer-to-peer assistance in some cases.

www.rcplondon.ac.uk/nlca

01 Data quality

Appoint a **clinical data lead** to take responsibility for understanding the dataset and the data collection process.

Raise the profile of performance data across the wider MDT at governance meetings or by sharing data.

Use **CancerStats** website to review data quality in real time.

Integrate data collection into **MDT meetings**.

Integrate **clinical validation** into the COSD submission process.

Check that **key fields** are completed prior to COSD submission.

Work with NCRAS **data improvement leads** to understand cases **missed by COSD**.

Improve the quality of data submitted to the NLCA.

PS and stage should be recorded in at least 90% of cases.

Complete the FEV1 and FEV1% fields in relevant patients.

Ensure that the COSD 'place first seen' is completed in all submissions.

02 Pathology

At least 80% of cases should be confirmed using pathological methods.

NSCLC NOS rates of more than 15% should be reviewed.

This result should be interpreted in conjunction with the **casemix-adjusted odds ratio**, which might better reflect whether the organisation is an outlier.

Ensure that all pathological diagnoses are submitted to the audit, including those confirmed only by resection. Liaise with the **pathology department** to identify cases.

Review clinical diagnoses and diagnostics protocols if pathological confirmation rate is below optimum.

Ensure that the **pathologist** is an integral part of the lung MDT and understands the importance of **tumour subtyping**.

Ensure that RCPath guidelines are being followed for the reporting of lung cancer samples, including the use of a limited panel of **immunohistochemical markers** for subtyping where necessary.

03 Nursing

Ensure that the LCNS **establishment** is appropriate to the lung cancer **workload**.

Ensure that all nursing posts are **staffed**.

Review the activities of the nursing team and **reduce administrative burden**.

Involve nurses in the **validation** of data submissions, including checking that all **activity is captured** prior to submission.

Ensure that **clear pathways** exist for referral for LCNS input (especially important for **inpatients**).

At least 90% of patients are seen by a lung cancer nurse specialist (LCNS).

At least 80% of patients should have a lung cancer nurse specialist present at the time of diagnosis.

MDTs with low active anticancer treatment rates and low radical treatment rates should perform detailed case-note review to determine the reasons why patients with good performance status did not receive the most effective treatment option.

04 Treatment

Ensure that data on **all treatments** are submitted to the audit.

Review **treatment policies** for small-cell lung cancer patients.

Review **pathway** from diagnosis to treatment to ensure that it is as **expeditious** as possible.

Ensure that good **pathways** exist for access to **modern radiotherapy** treatments.

Take part in the planned **spotlight audit** of curative treatment in 2017.

05 Surgery

Ensure that **all surgical resections** are submitted to the audit.

If data are complete, then review **treatment policies** for early-stage lung cancer in patients with good performance status.

Ensure that the **thoracic surgeon attends** MDT meetings.

Provide a mechanism for access to a **second surgical opinion**.

Take part in the planned **spotlight audit** of curative treatment in 2017.

MDTs with low resection rates for NSCLC should perform detailed case-note review to determine why each resectable patient did not receive an operation, including whether a second opinion was offered to borderline-fit patients.

MDTs with low chemotherapy rates for NSCLC or SCLC should perform detailed case-note review to determine the reasons why each patient did not receive systemic anticancer treatment.

Patients with small-cell lung cancer should receive chemotherapy within 2 weeks of pathological diagnosis.

06 Chemotherapy

Ensure that data on **all treatments** are submitted to the audit.

Review treatment **policies** for patients.

Submit data on patients who do not have chemotherapy to '**significant event audit**' to explore themes.

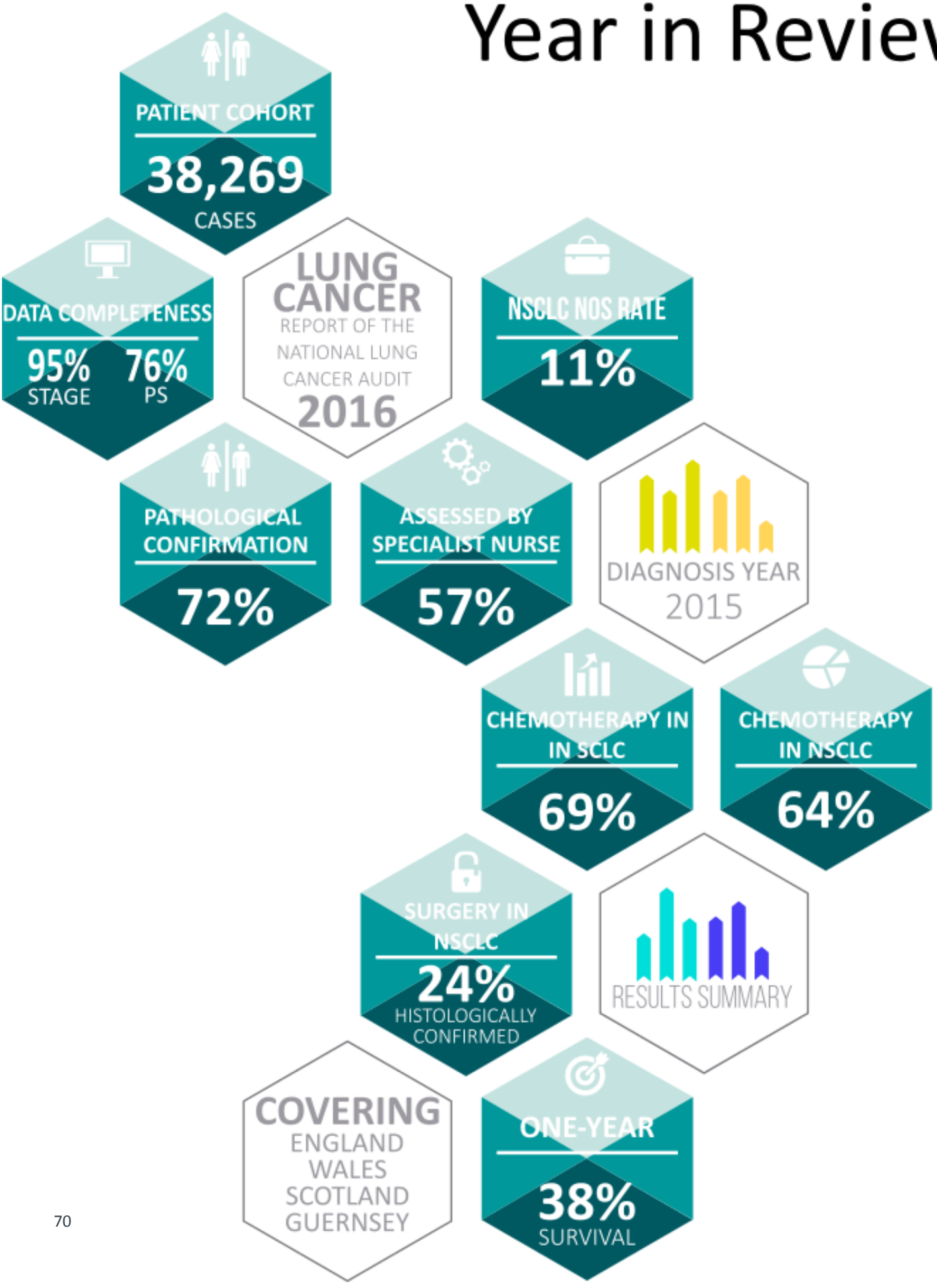
Review **pathway** from diagnosis to treatment to ensure that patients with **SCLC** can access treatment within **2 weeks**.

Review **information/messages** given to patients and carers on the **benefits** of chemotherapy.

Ensure that tumours are subjected to appropriate **molecular testing** to ensure that all treatment options can be considered.

Appendix 3: Partner organisations

National Lung Cancer Audit Year in Review



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