

Clinical Advice to Cancer Alliances for the Commissioning of the whole Lung Cancer Pathway

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Clinical Advice to Cancer Alliances for the Commissioning of the Whole Lung Cancer Pathway

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Prepared by:

The Lung Clinical Expert Group, which is chaired by Professor David Baldwin and includes representation from the full range of professions involved in delivering lung cancer services as well as patient groups and commissioners.

Audience:

This document was written to advise cancer alliances on the commissioning of lung cancer services and is intended to be used by the cancer alliances, commissioners, lung cancer service providers as well as voluntary organisations with an interest in lung cancer services.

Groups consulted:

This document was produced by the Lung CEG whose members represent a wide range of disciplines and geographical perspectives. The National Lung Cancer Audit and the quality surveillance team were also consulted and involved in the development of the outcome measures.

Purpose:

The purpose of this document is to provide cancer alliances and local commissioners with the knowledge they require to commission high quality lung cancer services. It provides detail on all aspects of lung cancer services. The document also includes a list of the metrics that alliances and commissioners should use to review their local services and sets out expectations in terms of access times to all relevant specialist services.

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1 Executive Summary

Lung cancer is the leading cause of cancer mortality in England and the world. This is because it is common and the majority of people with lung cancer present late when treatment has a limited effect on mortality. Although tobacco smoking causes around 85% of lung cancers, well over half of people are ex-smokers or never smokers at presentation with almost 7000 people who develop lung cancer unrelated to smoking each year in the UK (about the same number as for ovarian or stomach cancer). People in the most deprived socioeconomic quintile are twice as likely to develop lung cancer as those in the most affluent although there are still around 5500 people diagnosed each year in the latter group. The diagnosis, staging, fitness assessment, treatment and supportive / palliative care of lung cancer are complex and require specialist expertise that is not always locally available. There is marked variation in treatment rates in England and marked variation in outcomes. Better outcomes are associated with better facilities and faster diagnostic pathways. It is important that all people have equal access to the best treatment rates if we are to achieve the outcomes seen in other European countries. The local commissioning structure offers flexibility but has the potential to increase variation if evidence based standards for services are not applied. Thus, national guidance should be followed and local flexibility employed to implement the guidance within the local healthcare landscape. Local service planning should involve patient representatives and consideration given to co-commissioning of integral specialist services. The Cancer Alliances should have a central role in coordinating interactions between commissioners and providers.

This national clinical advice to cancer alliances sets out the key evidence based priorities for commissioning high quality, patient-centred services for people wherever they live, taking into account the need to ensure value for money and where possible a reduction in cost. It supports a more integrated approach to commissioning as recommended by the Independent Cancer Taskforce. **A nationally agreed optimal clinical care pathway accompanies this advice to cancer alliances.**

1.1 Two-page summary of key priorities for commissioning services for people with suspected and confirmed lung cancer

The key priorities concern three broad areas: early diagnosis, reducing variation and living with and beyond cancer. This is because these are the ways we can best address poor patient experience, poor survival, unacceptable variation and high morbidity.

1.1.1 Early diagnosis

a. Public awareness (section 5.1)

Commission local, coordinated campaigns that increase public awareness of the symptoms and signs of lung cancer. Methods should be tailored according to local factors such as socio-demographic profile.

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b. Recognition and referral (section 5.2)

Commission the use of primary care based assessment of the risk of lung cancer, including, where available, the use of decision support tools, so that investigation with chest x-ray or direct referral to secondary care is better targeted to those most at risk. Ensure referral is made by the next working day.

1.1.2 Reducing variation

c. Access to specialist care (section 5.3)

Commission the amount of specialist time as specified in section 5.3 to ensure all patients have access to the most advanced care. Recommendations 4-7 should be a corollary of this recommendation, emphasising its central importance in reducing variation. * denotes specialist commissioning.

d. Diagnosis and stage (section 5.4)

Commission services that ensure NICE guidance on diagnosis and staging is followed, specifically:

- i. People with lung cancer, following initial assessment and computed tomography (CT) scan, are offered investigations that give sufficient information about diagnosis and staging to guide management, with the least risk of harm.
- ii. People with lung cancer have adequate tissue samples taken in a suitable form to provide a complete pathological diagnosis including tumour typing and sub-typing, and analysis of predictive genetic profiling that affects treatment options.

e. Treatment with curative intent (section 5.5)

Commission services that ensure people with lung cancer have the best chance of being cured of their cancer by following NICE guidance, specifically:

- i. *People with resectable lung cancer are offered surgical resection.
- ii. *People with resectable lung cancer who are of borderline fitness and not initially accepted for surgery are offered the choice of a second surgical opinion, and a multidisciplinary team opinion on non-surgical treatment with curative intent.
- iii. *People with higher stage lung cancer are offered assessment for multimodality treatment by a multidisciplinary team comprising all specialist core members.
- iv. People with lung cancer stage I–III and good performance status who are unable to undergo surgery are assessed for radiotherapy or chemo-radiotherapy with curative intent by a clinical oncologist specialising in thoracic oncology; those assessed as unsuitable should be offered a second opinion.
- v. *People with lung cancer stage I–III and good performance status who are offered radiotherapy with curative intent have access to and receive treatments that optimise the dose to the tumour while minimising the risks of normal tissue damage, including stereotactic ablative radiotherapy (SABR), image-guided radiotherapy (IGRT) and intensity-modulated radiotherapy (IMRT).

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f. Treatment with palliative intent (section 5.6)

Commission services that ensure people with advanced lung cancer have the best chance of treatment that gives long term survival and maintains overall quality of life, specifically:

- i. People with stage IIIB or IV non-small-cell lung cancer and eligible performance status are offered systemic therapy (first, maintenance, and second-line) in accordance with NICE guidance (including those therapies available through the cancer drugs fund) that is tailored to the pathological sub-type of the tumour and individual predictive factors.
- ii. People with small-cell lung cancer have treatment initiated within 2 weeks of the pathological diagnosis.
- iii. People with lung cancer have access to all appropriate palliative interventions delivered by expert clinicians and teams (see section 2.3.6).

1.1.3 Living with and beyond cancer (section 5.7)

g. Access to services that support living with and beyond cancer

Commission services that ensure people have the same access to care that improves aspects of living with and beyond cancer in line with the National Cancer Survivorship Initiative and underpinned with the Living With and Beyond Cancer agenda, including:

- i. People with known or suspected lung cancer have access to a named lung cancer clinical nurse specialist who they can contact between scheduled hospital visits.
- ii. People with lung cancer are offered a holistic needs assessment at each key stage of care that informs their care plan and the need for referral to other services.
- iii. People with lung cancer are offered a specialist follow-up appointment within 6 weeks of completing initial treatment and regular specialist follow-up thereafter, which can include protocol-led clinical nurse specialist follow-up.
- iv. People with lung cancer are offered care integrated across primary and secondary care with liaison coordinated through specialist nursing teams.

h. Specialist palliative/supportive care in advanced lung cancer (section 5.7.7)

Commission services that ensure people with stage IV (advanced, incurable disease), irrespective of other treatments offered, are also routinely offered a specialist palliative / supportive care assessment at the time of diagnosis in order to improve quality of life, reduce depression and improve satisfaction with care.

i. Information for people with lung cancer (section 5.7.6)

Commission services that ensure that people with known or suspected lung cancer have information about their disease and options for treatment presented to them in a format they can understand, to enable them to make an informed choice, and in line with NICE guidance.

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2 Population Needs

2.1 National and local context

This national advice to cancer alliances sets out the key evidence based priorities for commissioning high quality, patient-centred services for people wherever they live. This evidence based approach will ensure the best value interventions. An effective lung cancer service depends on local services working seamlessly with specialist services that are commissioned directly by NHSE. Specialist services commissioned by NHSE are highlighted in this document with an *.

The advice covers services for diagnosis of suspected lung cancer and staging and treatment for confirmed lung cancer. Separate specialist service specifications / advice to cancer alliances for radiotherapy, thoracic surgery and chemotherapy may be available from NHSE but should not conflict with any of the recommendations in this advice to cancer alliances. Many of the recommendations made here will also ensure high quality care for some non-lung cancers that spread to the lung as well as for people with malignant mesothelioma.

2.2 The Burden of Lung Cancer

Lung cancer is the most common cause of cancer death in men and women accounting for more deaths than breast and bowel cancer combined. The crude incidence rate in England in 2014 was 75.2 per 100,000 population in males and 62.9 per 100,000 population in females. There were 37,453 newly diagnosed cases of lung cancer in England in 2014, 20,127 in males and 17,326 in females. For the last 5 years, there has been a consistent increase in the crude incidence, with over 1000 extra diagnoses in the UK each year. In England, 28,849 deaths were caused by lung cancer in 2014, over 400 more than in 2012.

One-year relative survival in England is 35.1% for women and 30.4% for men for lung cancers diagnosed in 2010-2011†. Five-year relative survival is 8.4% in males and 11.6% in females for the period 2010-2011. Recent data have suggested that 5-year survival is improving further, probably partly explained by higher surgical resection rates. Survival rates in the UK have consistently been shown to be below many other western countries and there is evidence to suggest that this is likely to be the result of both late presentation and/or late referral to specialist care and under treatment. An international study of lung cancer patients based upon tumours diagnosed between 1990 and 2000 showed that a large variation exists in survival for non-small cell lung cancer (NSCLC) by stage. It also showed patients diagnosed with very early stage disease who are surgically treated had an overall five-year survival of 73%. It has been estimated that at least 1,300 lives could be saved per year if our survival rates were as good as the best in Europe.

Commissioning of services that currently achieve the best outcomes in England would be expected to result in a significant improvement in these survival rates as well as improving symptom control and experience of care for patients. Thus, the national emphasis should be to reduce variation by ensuring all services achieve the standards achieved by the best (and the best improve further).

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† survival relative to age and sex matched general population.

2.3 The Clinical Problem

2.3.1 Types of lung cancer

Lung cancer is classified into non-small cell lung cancer (NSCLC) accounting for the majority of cases, and small cell lung cancer (SCLC) accounting for approximately 10%. NSCLC has two major sub-types; squamous cell carcinoma and adenocarcinoma. Approximately 6 to 12% of the latter have driver mutations for which targeted biological systemic therapies are currently available. Many patients may also be suitable for immunotherapy. In the future, the number of targeted treatments is likely to increase. Immuno-genetic classification is important since it has significant implications for treatment. SCLC is generally a more aggressive tumour with NSCLC being more variable. There are a number of less common types of lung cancer.

2.3.2 Prevention of lung cancer

Although environmental factors such as air quality also play a part, the reduction of tobacco smoking has resulted in a large reduction in cancer incidence in the UK and other developed countries. Further reduction of smoking is essential for prevention of many diseases and in lung cancer it is known that people with lung cancer who continue to smoke have worse outcomes at all stages. The well-established smoking cessation services should be recommended to patients at every opportunity, along with smoking cessation advice, on the basis that this would improve survival and mortality. Commissioners should embrace any new tobacco control policy as recommended by the Independent Cancer Taskforce.

2.3.3 Screening for lung cancer

Recent evidence from the US has shown that screening people at risk of lung cancer using computed tomography (CT) reduces mortality rate by 20%. Whilst screening for lung cancer has started in the US and Canada, the position in Europe and the UK is less certain. There is currently a review of the evidence for lung cancer screening being conducted as an NIHR Health Technology Assessment that is due to report in 2017. LDCT is the only method that has shown efficacy, although several biomarkers are the subject of research.

2.3.4 Presentation of lung cancer

The commonest presenting symptoms are breathlessness, cough, haemoptysis, chest or shoulder pain and weight loss. All of these symptoms are non-specific and so awareness of combinations of symptoms in conjunction with baseline risk factors is the best way to identify people with lung cancer. Without this approach, it has been shown that simply doing more chest x-rays does not increase the chance of diagnosing patients earlier. As discussed above, the late diagnosis of lung cancer is responsible for a significant proportion (around 35%) of patients being diagnosed through the emergency route that is both distressing and associated with a very low 1-year survival of 13%.

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2.3.5 Diagnosis, staging and fitness assessment

For the most cost-effective treatment to be offered to patients, the diagnosis, stage and fitness assessment has to be accurate. This is complex but is clearly described in NICE CG 121 (<http://pathways.nice.org.uk/pathways/lung-cancer>). Multiple investigations are often required so it is important to obtain the maximum diagnostic and staging information sufficient to guide management, with least risk, from each test. Frequently, the requirement for tests is decided on an individual basis within a multidisciplinary structure. All patients must have access to the expertise and technology needed. Many services run “diagnostic MDT” meetings as a way of focussing expertise on this important aspect of care and this is regarded as good practice. Some other services use a less structured process with the lung physician coordinating the process and seeking advice as required. All patients presenting via an emergency route with suspected lung cancer should be referred to acute oncology services to ensure timely assessment of symptoms and fitness assessment. The National Optimal Lung Cancer Pathway, developed following extensive stakeholder comment, sets out a nationally agreed process.

2.3.6 Treatment

NSCLC

Lung cancer treatment is determined by stage, morphology (cell type of cancer), fitness and patient preference. For early stage disease in fit patients, surgical resection is the treatment recommended. For less fit patients with early stage disease, surgery is preferred but radical radiotherapy (especially SABR) is an option. In patients, unsuitable for other curative treatment, radio-frequency ablation (RFA) or microwave ablation can be offered. The treatment of later stage disease (principally stage IIIa) can be with surgery, radiotherapy or chemo-radiotherapy. Following potentially curative treatment, adjuvant chemotherapy improves survival for people with node positive disease and tumours >4cm in diameter. Neo-adjuvant chemotherapy (that is, chemotherapy given pre-operatively in resectable disease) has also shown similar survival improvements since publication of NICE CG 121.

The treatment of advanced NSCLC depends on the sub-type and also, for adenocarcinoma, on whether there is a sensitising mutation. The latter may influence both first and second line treatment options. Immunotherapy is another option in first and subsequent line treatment in selected patients.

There are a number of other palliative treatments that are used. These include palliative radiotherapy (for airway obstruction, chest wall pain, metastases, cough control and haemoptysis), endobronchial tumour treatment (brachytherapy, electrocautery, laser ablation, cryotherapy, stent insertion, photodynamic therapy), pleural procedures (fluid drainage, pleurodesis, indwelling catheter) and supportive care (including a full holistic approach and specialist pain control).

SCLC

For advanced disease and all except stage I SCLC, chemotherapy or chemo-radiotherapy is the recommended treatment. Treatment of SCLC depends on whether the tumour can be encompassed in a radiotherapy field, in which case intensive concurrent chemo-radiotherapy is generally offered to fitter patients. A small subpopulation of stage I SCLC patients may be considered for surgical

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resection. The palliative treatments and supportive care listed above also apply to people with SCLC.

2.4 Local context

This is to be determined by local commissioners based on data on the current local outcomes for lung cancer services and the resources available. However, it is important to consider total mortality from lung cancer in relation to other diseases and cancers when deciding priorities, rather than basing decisions comparisons ('league tables') with other geographical areas.

Include the following information to establish the extent of the local needs to improve lung cancer outcomes:

2.4.1 Infrastructure and resources (see also section 8)

For each secondary care provider:

New diagnoses of lung cancer seen in one year.

Number of WTE respiratory physicians with time dedicated to lung cancer.

Number of medical oncologists with at least one third of their clinical time dedicated to lung cancer.

Number of clinical oncologists with at least one third of their clinical time dedicated to lung cancer.

Number of thoracic surgeons with at least one third of their clinical time dedicated to lung cancer.

Each Thoracic surgical unit to have at least 3 thoracic surgeons (Thoracic Surgery Service Specification, NHSE)

Number of WTE radiologists with time dedicated to lung cancer

Number of WTE lung cancer specialist nurses by pay band

Number of WTE lung oncology coordinators

The completeness of the COSD data feed to the NCRS and National Lung Cancer Audit

There is some evidence from the National Lung Cancer Organisational Audit that the availability of services on site influences how frequently they are used and that they have a positive effect on outcomes.(1) This is particularly notable for thoracic surgery and resection rates. Therefore there should be an assessment of the local availability in order to inform where services, to be delivered locally or centrally, should be commissioned from.

Availability of the test and its result of all the following within 7 days:

- PET-CT.
- Ultrasound guided percutaneous biopsy on site.
- Endobronchial ultrasound.
- Medical thoracoscopy on site.

Availability of endobronchial palliation on site.

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2.4.2 Outcome measures (see also section 8)

Crude incidence of lung cancer for last 3 years, and comparison with breast, bowel and prostate cancer.

Crude mortality from lung cancer for last 3 years, and comparison with breast, bowel and prostate cancer.

Age-standardised incidence rate, and comparison with other areas.

Age-standardised mortality, and comparison with other areas.

Proportion of patients diagnosed with stage I and II disease

Proportion of patients alive at one year after diagnosis

Proportion of patients first seen in secondary care as a result of an emergency or urgent hospital admission

Local resection rate** (as a percentage of all diagnoses of lung cancer).

Local radical radiotherapy rate (including the SABR rate).

Local chemotherapy rate; specify proportion of SCLC patients and NSCLC patients who have stage 4 disease and are performance status 0-1.

Local biological therapy rate as a proportion of all patients and of those with confirmed molecular target (currently EGFR positive, T790M EGFR positive, ALK positive).

Local immunotherapy rate.

Local overall 'active treatment' rate

Proportion of patients first seen who are alive at 1 year

Proportion of patients with a non-small cell not otherwise specified diagnosis

Note: further outcomes that may be available include the Key Service Outcomes for thoracic surgery and Health Quality Improvement Partnership's (HQIP) Lung Cancer Clinical Outcomes Project (LCCOP) outcome data on lung cancer surgery.

**rates of treatment refer to proportions of all patients with lung cancer unless otherwise specified.

3 Evidence Review

3.1 Evidence base

This specification draws its evidence and rationale from a range of documents as listed below:

3.1.1 DH

- Improving Outcomes; a Strategy for Cancer – Department of Health (2011) with updates to 2014.
- Cancer Service Specification - Department of Health (2011)

3.2 NICE

- Referral guidelines for suspected cancer – CG27 (2005)
- Improving Outcomes in Lung Cancer (1998)
- Lung Cancer: The diagnosis and treatment of Lung Cancer – CG121 (2011)
- Quality Standard for Lung Cancer (2012)
- Suspected cancer: recognition and referral – NG12 (2015)
- Improving Supportive and Palliative Care for adults with cancer (2004)

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- Quality Standard for end of life care for adults (2011)
- Care of dying adults in the last days of life – NG31 (2015)

3.2.1 Independent Cancer Taskforce Report

Achieving world-class outcomes: a strategy for England 2015-2020

3.2.2 Quality Surveillance Team

Quality Indicators

3.2.3 Peer reviewed publications

See references.

3.3 Why improving early diagnosis is a priority

3.3.1 Brief overview of evidence

There is good evidence to show that late diagnosis of lung cancer is a cause of poor outcomes in England and the UK.(2, 3) In international comparisons, the UK lags behind other countries in lung cancer survival and this is mainly explained by differences in the early survival (0 to 1 year). Rates of diagnosis through the emergency route are also high in England at around 35% with only 13% of these people surviving 1 year (data from 2013).(4) There is also evidence that earlier diagnosis may be achieved through awareness campaigns: the Be Clear on Cancer campaign has resulted in a modest increase in earlier stage disease and an increase in resection rates. However, there is also evidence that people who are diagnosed late with lung cancer have- increasing contact with primary care in the weeks and months leading up to the diagnosis.(5) There is also evidence that the use of the chest X-ray as a diagnostic tool in primary care could be improved with better targeting at those with high risk. (5). There is less scope to reduce delay in secondary care services but there is some evidence that even small changes in the time to diagnosis in secondary care can improve outcomes. Reducing variation in pathways will mean better compliance with 62 day waiting time targets. Screening for lung cancer by CT scanning has been shown to reduce lung cancer mortality rate by 20% in one large trial from the USA. An NIHR Health Technology Assessment report will be produced soon for the consideration of the UK National Screening Committee, whose role is to decide on national screening programmes in England. (6-8).

3.4 Why reducing variation is a priority

3.4.1 Brief overview of evidence

Published evidence shows that there is wide variation in treatment rates and that larger centres achieve higher treatment rates and better surgical survival.(9, 10) However, the benefit of higher treatment rates is mostly confined to the patients whose first secondary care appointment is at a centre.(11) Such patients are 37% more likely to receive surgery for their lung cancer after correction for other factors

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influencing the likelihood of receiving surgery and there are similar findings for chemotherapy treatment rates. Only 30% of lung cancer patients are first referred to a centre so the majority of patients do not benefit from the better outcomes seen at larger centres. Other evidence has demonstrated variation in the pathways of care and functioning of the lung cancer MDT; centres have larger MDTs, more diagnostic services on site and more specialists in lung cancer diagnostics and treatment.(12-14) Faster diagnostic pathways were associated with, in a randomised controlled trial, an improvement in survival(15), and the presence of diagnostics on site (e.g. a PET scanner) has been shown to be associated with better surgical resection rates.(16) It is unrealistic for smaller hospitals to develop the same concentration of expertise and specialist equipment. Thus, a mechanism is needed to ensure that all patients have access to the expertise that should lead to the same approach seen at centres. Asking patients to travel long distances to centres for their first appointment is unlikely to be a successful strategy as lung cancer patients are elderly (median age 73 years) and probably reluctant to travel. Distance to travel has been confirmed as an independent factor in survival (17). The solution is to provide the same expertise locally from the initial appointment with the respiratory physician and throughout the pathway of care, with travel supported where required for specialist treatment. Where these expert services are commissioned from will depend on local factors. The patient and carers will need holistic support throughout the pathway, especially when considering the option of travelling for treatment.

3.5 Why living with and beyond cancer is a priority

3.5.1 Brief overview of evidence

Only 30% of people diagnosed with lung cancer survive 1 year and during this time they have distressing symptoms, especially towards the end of life. Treatment for advanced disease causes significant side effects. People are often elderly. There is evidence that early supportive / palliative care improves quality of life, reduces depression and increases satisfaction with care. In some studies there has been an improvement in survival.(18, 19) For this care to be correctly targeted, there needs to be early and regular assessment of needs. The lung cancer nurse specialist (LCNS) is best placed to provide the essential holistic and supportive care, as well as an expert view of the individual's position on the pathway from pre-diagnosis to end of treatment. The LCNS will have a close working relationship with specialist palliative care services that are often required to meet the needs of patients; early assessment by specialist palliative and supportive care is now available as part of the Enhanced Supportive Care Initiative. Patient experience is reported in the National Cancer Patient Survey. In this survey, patients with a Clinical Nurse Specialist reported much more favourably than those without on a range of items related to information, choice and care. NICE guidance CG21 and the NICE Quality Standard QS17 recommend, as a priority, that all patients should be seen by a LCNS at all key stages of the pathway and at the end of treatment. Recent research has demonstrated an association between increased treatment rates and being seen by a LCNS and that there is an association between higher salary banded LCNS and the frequency that patients are seen, suggesting that organisation of teams of LCNS may be important. The number of new patients seen annually per LCNS is very variable; median 90 (range 10 to 413).(1).

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4 Scope of the lung cancer service

4.1 Aims and objectives of service

To have a pro-active approach to prevention of lung cancer through smoking cessation. This is a priority for all smoking related diseases but in lung cancer the effect extends to better outcomes throughout the pathway. Primary, secondary and tertiary providers should include smoking cessation advice and referrals in their management of patients with suspected and diagnosed lung cancer. New tobacco control initiatives, as recommended by the Independent Cancer Taskforce should be supported.

To ensure there is awareness of the early symptoms of lung cancer within the general population and that there is a high level of awareness and prompt attention given to warning symptoms in primary care with prompt referral in to an appropriate diagnostic test or specialist advice, when required.

Followed by access to expert diagnostic and specialist treatment services.

The aim of the lung cancer service is to then deliver high quality holistic care for patients with lung cancer to increase survival while maximising a patient's functional capability and quality of life and to ensure ready and timely access to appropriate supportive care for patients, their relatives and carers. The service is delivered through primary care (prevention, recognition, referral and supportive and palliative care), and a local lung cancer multi-disciplinary team (MDT), with specialist providers (diagnosis, treatment, supportive and palliative care).

Excellence in outcomes for lung cancer patients is dependent on factors crossing a number of health sector boundaries.

4.2 Service description and care pathway

A service should encourage early referral by primary care through improving awareness and prompt recognition of risk factors and warning symptoms. There should also be prompt referral to the lung cancer service for patients who present through other routes such as emergency admission. All patients in whom lung cancer is suspected should be referred urgently to a Lung Cancer Clinic that is part of an MDT. As this is a common cancer, most acute hospitals will have a lung MDT that is reviewed by National Cancer Peer Review. However, it is essential to recognise that diagnosis, staging and fitness assessment are complex and a high degree of commitment from expert clinicians is essential to ensure the correct treatment is given. (see 5.3).

The complex nature of the pathway, distressing symptoms from the disease itself, diagnostic investigations and treatment mean that patients often have significant need of a patient advocate, guidance and supportive care whilst they face difficult decisions. The lung cancer nurse specialist (LCNS) provides this element of care. LCNS support patients and carers throughout the whole pathway and provide an essential link between the patient, their carers and the variety of clinicians that are involved in the care pathway and may act as their advocate. LCNS also help with the smooth running of the patient pathway, minimising delays between stages.

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The majority of lung cancer patients present with relatively advanced disease where current treatments offer modest survival benefit. For these patients, symptom control and palliation are central to any management plan. Patients who are managed by a lung MDT should be allocated a key worker, usually a LCNS. Specialist palliative care services are often required because of the high level of need of patients with lung cancer; there should be sufficient capacity to ensure all patients have access, utilising the Enhanced Supportive Care Initiative. Specialist supportive / palliative care services are often required because of the high level of need of patients; there should be sufficient capacity to ensure that all patients with stage IV disease, irrespective of any other treatment offered, have access to a specialist supportive / palliative care assessment. Patients with other stages of disease may also benefit from early referral.

The lung cancer service should have clear pathways agreed for patients requiring care at the end of life. This will include services within hospitals, community services and services in the voluntary sector.

As well as being the most important modifiable factor that can reduce the incidence of lung cancer, smoking cessation is an important consideration throughout the pathway. This is because smoking cessation is associated with better outcomes in both early and later stage disease. Patients diagnosed with lung cancer should be advised to stop smoking, especially if they are to undergo radical treatment, as the evidence for benefit here is strongest. Smoking cessation therapies should be offered to all patients and by all care providers involved in the patients' care.

It is recommended that commissioners review the most recent National Cancer Peer Review (or equivalent) report when commissioning this service. There is also a long standing National Lung Cancer Audit (NLCA) that reports activity annually, performance and outcomes by trust and cancer network. The new national Cancer Outcomes and Services Dataset (COSD) is now the main source of data for the NLCA and other cancer intelligence purposes.

4.2.1 The National Optimal Lung Cancer Pathway

The National Optimal Lung Cancer Pathway is appended to this specification. This represents the pathway that all services should aspire to, and be working towards, to ensure compliance by 2020. The pathway is designed to meet the Cancer Taskforce target of a definitive diagnosis by 28 days from referral but will also encourage earlier diagnosis and robust and uniform assessment of patients. It is recommended that the Cancer Alliances use this pathway as a template for the radical improvement that is needed to improve lung cancer outcomes.

A detailed lung cancer management pathway is available on the NICE website and is linked to the recommendations in the relevant guidelines and technology appraisals.

<http://pathways.nice.org.uk/pathways/lung-cancer#content=view-node%3Anodes-symptoms-and-signs-indicating-urgent-chest-x-ray-and-urgent-and-immediate-referral>

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5 Essential service specification for commissioning

The service should be commissioned in line with the requirements of the NICE Quality Standard for Lung Cancer. These 15 standards have been incorporated into this document and are annotated (*qs [number]*).

5.1 Public awareness

The service must be supported by local, coordinated campaigns that increase public awareness of the symptoms and signs of lung cancer, and the benefits of making the diagnosis. Methods should be tailored according to local factors such as socio-demographic profile (qs 1).

5.2 Recognition and referral

Referral to the service must involve the use of primary care based assessment of risk of lung cancer using NICE guidelines, or, where available, the latest decision support tools so that investigation with chest x-ray or direct referral to secondary care is targeted to those most at risk. Ensure referral is made within 1 week of presentation to primary care (qs 2,3). Secondary care services should expect increases in the number of referrals as the threshold for referral is lowered. Increases in referrals have already been seen following the awareness campaigns. This has resulted in a lowering of the proportion of referrals that have lung cancer. Thus, it is necessary for secondary care to have a selection system in place to ensure that only suspected cancer patients are seen in the cancer clinic, and the others are discharged back to primary care or referred on to another more appropriate clinic. This is a way of maximising the use of cancer expertise and avoiding the cost of appointments that have little benefit to the patient. Direct referral for CT from primary care supported by an agreed protocol may also provide an effective route into secondary care for some patients and should be considered. **See the National Optimal Lung Cancer Pathway.**

5.3 Access to specialist care

The service must provide specialist time to ensure all patients have access to the most advanced care. A 'specialist' is defined here as a clinician who attends the Lung Cancer MDT and devotes a major part of their job plan to lung cancer (refer to section 7.2). Treatment that is accurately tailored to the individual will be more cost effective by avoiding inappropriate and unhelpful treatment as well as increasing treatment rates in those patients that will benefit most. Providing adequate specialist time supports recommendations that reduce variation in access to the best and most cost effective care (qs 4-15).

The service must provide the following expert time commitment:

5.3.1 There must be an equivalent of 1 full time respiratory physician with all of their time (10 direct clinical care PAs) spent in lung cancer per 200 new patients per year. This is the approximate expert time currently commissioned from large centres.

5.3.2 There must be local provision of first visits with respiratory physicians, with the

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above expertise and supportive infrastructure. This may mean commissioning these services from the centre where it may be easier to attract doctors with the necessary specialist interest. These clinicians will need to travel to provide services locally.

5.3.2 There must be access to thoracic radiologists with at least one third of their job plan devoted to thoracic imaging.

5.3.4 There must be access, through the MDT, to medical and clinical oncologists with at least one third of their job plan devoted to lung cancer. These services are also specified in the specialised commissioning service specification for chemotherapy and radiotherapy.

5.3.5 There must be prompt access to locally or centrally provided expert diagnostic, staging and fitness assessment including:

- specialist radiological imaging
- bronchoscopy
- endobronchial ultrasound
- thoracoscopy
- radiological biopsy
- thoracic surgical diagnosis and staging*(see also 5.3.6)
- lung function and exercise testing
- specialist diagnostic pathology (see also 5.3.7)

5.3.6 There must be access, through the MDT, to the local thoracic surgical service*. This service is also described in detail in the Thoracic Surgery Service Specification for specialised commissioning.

Surgery offers the best hope of long-term survival for lung cancer patients. Resection rates are low in the UK compared to many other countries and there is good evidence that introduction of specialist thoracic surgeons into MDT treatment planning discussions results in significant increases in resection rates.

NICE Guidance recommends:

- Offer patients with NSCLC who are medically fit and suitable for treatment with curative intent, lobectomy (either open or thoracoscopic) as the treatment of first choice.
- For patients with borderline fitness and smaller tumours (T1a–c, N0, M0), consider lung parenchymal-sparing operations (e.g. segmentectomy or wedge resection) if a complete resection can be achieved.
- Consider surgery in patients with early stage SCLC

5.3.7 There must be access to the centrally provided diagnostic pathology service including molecular diagnostics. The pathology services should operate as per Royal College of Pathologists' guidelines and standards. Laboratories should be accredited by the United Kingdom Accreditation Service (UKAS) either to ISO 15189 or CPA standard) and participate in appropriate NEQAS modules. Where pathology is available, pathologists should complete the Royal College of Pathologists' minimum dataset for lung cancer for discussion at the lung cancer

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MDT. All appropriate tumours should be tested for treatable genetic abnormalities and PDL-1 expression where treatment would be offered.

5.3.8 There must be an MDT meeting at least weekly attended (either in person or via good quality videoconference) by the clinicians specified in 5.3.1 to 5.3.6 above.

- The minimum requirements for membership of an MDT are given below. *It should be noted that MDTs with better outcomes have more than one specialist in each discipline present.*
- This provides intra-MDT peer review of real-time clinical opinion.
- Cross cover should be available for all MDT meetings at all times.
- Consideration should be given to combining smaller MDTs to facilitate this.
- Cross cover should be available for all clinical services at all times.

Membership:

At least one, preferably more, to ensure comprehensive cross-cover of:

- Designated respiratory physician
- Designated thoracic surgeon
- Clinical oncologist
- Medical oncologist (some MDTs have this role provided by a second clinical oncologist). A medical oncologist's attendance in addition to a clinical oncologist is recommended.
- Imaging specialist
- Histopathologist
- Lung cancer nurse specialist
- Specialist in palliative medicine / care
- MDT co-ordinator/secretary
- An individual responsible for data collection and audit
- An NHS-employed member of the core or extended team should be nominated as having specific responsibility for users' issues and information for patients and carers
- A member of the core team nominated as the person responsible for ensuring recruitment into clinical trials and other well designed studies is integrated into the function of the MDT

The team should have agreed guidelines for the management of lung cancer patients with reference to National Guidelines. Teams should as a minimum achieve the median value for compliance with the Quality Surveillance Team quality indicators (included in section 8)

The MDT should have access to a variety of extended services including dietetics, psychological support, rehabilitation and breathlessness services.

5.4 Diagnosis, staging and fitness assessment

Services must ensure NICE guidance on diagnosis and staging is followed, specifically:

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5.4.1 People with suspected lung cancer should be offered a contrast-enhanced computed tomography (CT) scan of the neck, chest and upper abdomen to include liver and adrenals. For those on the 2ww pathway, this should be offered prior to their first outpatient appointment

5.4.2 People with lung cancer, following initial assessment and (CT) scan, are offered investigations that give the most information about diagnosis and staging with the least risk of harm (qs 6).

5.4.3 People with lung cancer have adequate tissue samples taken in a suitable form to provide a complete pathological diagnosis including tumour typing and sub-typing, and analysis of predictive markers (qs 7).

5.4.4 Where diagnostic, staging and fitness tests are not available locally, there must be robust referral processes with the timely turnaround of tests.

5.5 Treatment with curative intent

Services must ensure that people with lung cancer have the best chance of being cured of their cancer by following NICE guidance, specifically:

5.5.1 Offer patients with NSCLC who are medically fit and suitable for treatment with curative intent, lobectomy (either open or thoracoscopic) as the treatment of first choice (NICE 2011). Offer more extensive surgery (bronchoangioplastic surgery, bilobectomy, pneumonectomy) only when needed to obtain clear margins.

5.5.2 People with resectable lung cancer who are of borderline fitness and not initially accepted for surgery are offered the choice of a second surgical opinion*, and a multidisciplinary team opinion on non-surgical treatment with curative intent (qs 8).

5.5.3 People with lung cancer are offered assessment for multimodality treatment by a multidisciplinary team comprising all specialist core members (qs 9).

5.5.4 People with lung cancer who have had surgery with curative intent who have positive lymph nodes and/or primary tumour size of >4 cm are assessed for post-operative chemotherapy by a thoracic oncologist.

5.5.5* People with lung cancer stage I–III and good performance status who are unable to undergo surgery are assessed for radiotherapy (or chemo-radiotherapy, concurrent preferred) with curative intent by a clinical oncologist specialising in thoracic oncology (qs 10). Those assessed as unsuitable should be offered a second opinion*.

5.5.6* People with lung cancer stage I–III and good performance status who are offered radiotherapy with curative intent have access to and receive treatments that optimise the dose to the tumour while minimising the risks of normal tissue damage, including stereotactic ablative radiotherapy (SABR) and image-guided radiotherapy (IGRT) (qs 11).

5.5.7 People with limited stage SCLC are offered potentially curative chemo-radiotherapy, with concurrent chemo-radiotherapy preferred for patients with good

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performance status (NICE 2011)

*A second opinion from a separate MDT or Network is preferred to second opinions from within the same MDT. This avoids institutional commonality of opinion.

5.6 Treatment with palliative intent

Services must ensure that people with advanced lung cancer have the best chance of treatment that improves survival and overall quality of life, specifically:

5.6.1 People with stage IIIB or IV non-small-cell lung cancer and eligible performance status are offered systemic therapy (first, maintenance, and second-line) in accordance with NICE guidance (including those therapies available through the Cancer Drugs Fund) that is tailored to the pathological sub-type of the tumour and individual predictive factors (qs 12). Systemic therapy must be administered in line with the recommendations of the National Chemotherapy Advisory Group and the NCEPOD (systemic anti-cancer therapy).

5.6.2 People with stage III non-small-cell lung cancer and eligible performance status are offered chemotherapy or sequential chemo-radiotherapy.

5.6.3 People with small-cell lung cancer have treatment initiated within 2 weeks of the pathological diagnosis (qs 13).

5.6.4 People with lung cancer have access to all appropriate palliative interventions delivered by expert clinicians and teams (qs 15). These include:

- palliative radiotherapy (for airway obstruction, metastases, cough control and haemoptysis)
- endobronchial tumour treatment (brachytherapy, electrocautery, laser ablation, cryotherapy, stent insertion, photodynamic therapy)
- pleural procedures (fluid drainage, pleurodesis, indwelling catheter)
- supportive care (including a full holistic approach).
- specialist pain control services.

All patients should have access to treatment centres that allow them to have the choice of cisplatin or carboplatin after an informed discussion with the treating specialist.

5.7 Living with and beyond cancer

Services must ensure that people have the same access to care that improves aspects of living with and beyond cancer, specifically:

5.7.1 People with known or suspected lung cancer have access to a named lung cancer nurse specialist who they can contact between scheduled hospital visits (qs 4).

5.7.2 People with lung cancer are offered a holistic needs assessment at each key stage of care that informs their care plan and the need for referral to other services

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(qs 5).

5.7.3 To ensure that 5.9.1 and 5.9.2 are possible there should be a minimum of 1 WTE LCNS per 80 new patients per year.

5.7.4 People with lung cancer are offered a specialist follow-up appointment within 6 weeks of completing initial treatment and regular specialist follow-up thereafter, which can include protocol-led clinical nurse specialist follow-up (qs 14).

5.7.5 People with lung cancer are offered care integrated across primary and secondary care with liaison coordinated through specialist nursing teams.

5.7.6 Commission services that ensure that people with known or suspected lung cancer have information about their disease and options for treatment presented to them in a format they can understand, to enable them to make an informed choice, and in line with NICE guidance. Public health, mental health and palliative care services should all play a part in getting this right. Excellent communication between professionals and patients is particularly important and can avoid complaints and improve patient satisfaction. The Independent Cancer Taskforce have recommended that all consenting patients be given online access to all test results and communications involving secondary or tertiary providers by 2020.

5.7.7 Commission services that ensure people with stage IV (advanced, incurable disease), irrespective of other treatments options offered, are also routinely offered a specialist supportive / palliative care assessment at the time of diagnosis. Where it is being piloted, there may be potential for this to be met by the DH England Enhanced Supportive Care project, currently being piloted as a CQUIN initiative 2016-2018. In a centre where 200 patients are diagnosed with stage IV disease per annum, the referral objectives are being met with a team comprising of 1.5WTE palliative care nurse specialists and 0.2WTE palliative medicine physicians dedicated to lung cancer.

5.7.8 Rehabilitation is an important aspect of supportive care. There should be appropriate assessment of patient's rehabilitative needs across the pathway and the provider must ensure that high quality rehabilitation is provided. This should involve an agreed recovery package and may include:

- Pulmonary rehabilitation delivered pre or post treatment to improve dyspnoea and fatigue
- Nutritional interventions for people at high risk of malnutrition

These commissioning priorities action the key interventions recommended in "Living with and beyond cancer: taking action to improve outcomes", which are:

- Structured Holistic Needs Assessment and care planning;
- Treatment Summaries;
- Patient education and support events (Health and Wellbeing Clinics);
- Advice about, and access to, schemes that support people to undertake physical activity and healthy weight management.

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5.8 End of life care

Services must provide end of life care in line with NICE guidance and in particular the markers of high quality care set out in the NICE Quality Standard for end of life care for adults.

- Engage in a discussion about end of life prior to the terminal stage of illness
- Document these discussions about end of life care

Services should provide end of life care in line with the principles set out in the NHSE endorsed End of life guidance that can be found at:

www.endoflifecareambitions.org.uk

An integrated service should be provided that crosses primary and secondary care, that is coordinated through specialist nursing teams, and includes, where appropriate, use of the Hospice service.

5.9 Data collection and audit

Services must comply with the collection of the mandatory Cancer Services and Outcomes Dataset (COSD) and SACT (Systemic Anti-Cancer Therapy) dataset. If the service is a provider of radiotherapy it must also comply with the collection the RTDS (Radiotherapy Dataset). The care of patients should be regularly audited locally to supplement nationally collected data, where necessary. The MDT should participate in the National Lung Cancer Audit, network-wide audit of lung services and the National Cancer Surveillance programme. Thoracic surgical services should validate their data as required by the Lung Cancer Clinical Outcomes Project (LCCOP).

6 Cancer Alliances

6.1 Cancer Alliances

Cancer alliances have been formed as recommended by the Cancer Taskforce and are the vehicles to ensure that commissioners and providers understand what is required to improve cancers services and to support the implementation of change, cognisant of local factors. Alliances will be important in ensuring that the population covered have equal access to high quality care and in addressing inappropriate variation. Each Cancer Alliance needs to have an Expert Advisory Group (EAG) covering lung cancer. This group is made up of clinicians across the network who specialise in thoracic oncology. It is the primary source of clinical opinion on issues relating to lung cancer within the cancer network and is an advisor to commissioners locally. Each of these groups is represented on the National Clinical Expert Group for Lung Cancer and so each network has contributed to the development of this advice to cancer alliances. The EAG has an on-going role in the development and monitoring of the services to ensure that each provider meets the requirements of the advice to cancer alliances.

The EAG reports to the Alliance Board and is responsible for adapting national

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guidelines for local use, ensuring regional services are available to patients in all locations through referral mechanisms, supporting implementation of the National Optimal Pathway and ensuring standards of care are high by sharing good practice and innovation. They should also collectively implement NICE Improving Outcomes Guidance including the use of new technologies and procedures as appropriate and carry out network and national audits.

Each EAG should agree an up-to-date list of appropriate clinical trials and other well-designed studies for lung cancer patients and record numbers of patients entered into these studies by each MDT. The emergence of the ability to test for a wide range of molecular abnormalities in tumours for the identification of multiple small sub-groups of patients for single centre clinical trials will mean that the cancer networks will need to take an increasingly pro-active role in the promotion of research networks.

6.2 Population covered

Local catchment populations are best agreed by using the expert knowledge of the Cancer Alliance Site-Specific Expert Advisory Groups.

In general, this advice to cancer alliances covers patients registered with an English General Practitioner within the CCG and resident in the European Union and eligible for treatment in the NHS under reciprocal arrangements. Patients from Scotland, Wales and Northern Ireland are not part of this commissioned service and the Trust must have separate arrangements in place.

The service is accessible to all patients with a suspected (or confirmed) lung cancer regardless of sex, race, or gender. Providers require staff to attend mandatory training on equality and diversity and the facilities provided offer appropriate disabled access for patients, family and carers. When required the providers will use translators and printed information available in multiple languages.

The provider has a duty to co-operate with the commissioner in undertaking Equality Impact Assessments as a requirement of race, gender, sexual orientation, religion and disability equality legislation

6.3 Any acceptance and exclusion criteria

The role of local and specialist services is described in this document. Additional detail is to be found in the relevant service specifications (Thoracic surgery, Radiotherapy and Chemotherapy). Co-commissioning of the whole service should be considered, managed through the Cancer Alliance.

6.4 Interdependencies with other services

Primary care clinicians need easy and rapid access to chest x-rays with a rapid turn round time of reports. Local arrangements should be in place for the identification of abnormal CXR reports combined with mechanisms for rapid referral to specialist lung cancer clinics. It is considered good practice to offer CT scanning prior to the specialist appointment. CT should usually be offered prior to their first outpatient

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appointment.

6.5 Interdependencies with other organisations

Planning and monitoring of lung cancer services has been shaped by the availability of increasingly more detailed data. New datasets will be able to increase our ability to compare services and to tailor treatment more accurately to those who will benefit. Thus, there must be support from the local service for data collection to inform local and national service development. The national Lung Cancer Clinical Expert Group, National Cancer Registration and Analysis Service (part of PHE) and the National Lung Cancer Audit group (part of the Royal College of Physicians) must work closely together to ensure the most indicative data are available.

7 Application services standards

7.1 Applicable national standards e.g. NICE, Royal College

Care delivered by the lung cancer service providers must be of a nature and quality to meet the CQC care standards and the relevant NICE quality standards (listed in section 2). The service will also comply with other relevant NICE standards that define best clinical practice.

Imaging and pathology services must be available to the MDT in line with the network agreed guidelines for these services. The pathology services should operate as per Royal College of Pathologists' guidelines and standards. Laboratories should comply with Clinical Pathology Accreditation (UK) Ltd (CPA) and participate in appropriate NEQAS modules. Where pathology is available, pathologists should complete the Royal College of Pathologists' minimum dataset for lung cancer for discussion at the lung cancer MDT.

It is the trust's responsibility to notify the commissioner on an exceptional basis should there be any breaches of the care standards. Where there are breaches, any consequences will be deemed as being the trust's responsibility.

Lung cancer services are required to achieve the two-week wait for all patients where lung cancer is suspected. In addition, the services are required to meet the following standards for all lung cancer patients:

- 31 day wait from decision to treat to first treatment (96%)
- 31 day wait to subsequent treatment (96%),
- 62 day wait from urgent GP referral or screening referral or consultant upgrade to first treatment (85%).
- Future targets are likely to include a definitive diagnosis in 50% of patients by 2 weeks from referral and in 95% by 4 weeks.

Teams should as a minimum aim to achieve the median value for compliance with the Cancer Surveillance quality indicators / CHI measures, and where the team does not achieve remedial action plans should be in place and shared with commissioners in line with the agreed timescales. Further details are available at <https://www.qst.england.nhs.uk>

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The provider must be able to offer patient choice. This will be both in the context of appointment time and for diagnostic/treatment options, including those not available locally.

7.2 Applicable local standards

Infrastructure

For each secondary care provider, there should be access to:

- One WTE respiratory physician direct clinical care (10 Pas DCC) per 200 new diagnoses per year.
 - A first appointment at the local hospital with a respiratory physician
 - Radiologists with at least a third of their job plan devoted to thoracic imaging direct clinical care
 - Medical and clinical oncologists with at least one third of their job plan devoted to lung cancer direct clinical care*.
 - One WTE LCNS per 80 new diagnoses per year
 - Specialist supportive / palliative care services
 - Specialist pulmonary pathologists
 - Fast track, pre-clinic CT pathway
 - Separate diagnostic planning process or MDT from treatment MDT meetings
 - The thoracic surgical service*.
 - Specialist radiological imaging
 - Bronchoscopy
 - Endobronchial ultrasound
 - Thoracoscopy
 - Radiological biopsy
 - Thoracic surgical diagnosis and staging*
 - Lung function and exercise testing
 - Specialist diagnostic pathology (see also 5.3.6)
- *for tertiary centres this refers to new referrals

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8 Key service outcomes and metrics

Specialist provision	Quality Indicator	Rationale	Data source	Alert criteria
	Number of WTE respiratory physicians with time dedicated to lung cancer.	<ul style="list-style-type: none"> Patients receive treatment from specialists that have the skills and expertise to ensure the best possible outcomes 	<ul style="list-style-type: none"> NLCA organisational audit / self-declaration 	Equates to 10PAs of direct clinical care per 200 new patients
	Number of radiologists with at least one third of their job plan devoted to thoracic imaging direct clinical care			Each radiologist should have at least one third of their direct clinical care time devoted to thoracic imaging
	Number of medical oncologists with at least one third of their clinical time dedicated to lung cancer.			Each oncologist should have at least one third of their time devoted to lung oncology
	Number of clinical oncologists with at least one third of their clinical time dedicated to lung cancer.			Each oncologist should have at least one third of their time devoted to lung oncology
	Number of thoracic surgeons with at least one third of their clinical time dedicated to lung cancer. A thoracic surgical unit should have a minimum of 3 full-time general thoracic surgeons (see also Thoracic Surgical Service Specification, NHSE) VATS and open lobectomy available and performed			Non-compliance
	Number of LCNS per 80 new cases of lung cancer per year			There should be at least 1WTE LCNS per 80 new patients
	Number of palliative care nurse specialists	Improvement in quality of life, depression scores and possibly		There should be 1.5 WTE per 200 stage IV patients per

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		survival		annum
	Number of Supportive / Palliative care specialists	Improvement in quality of life, depression scores and possibly survival		There should be 0.2 WTE per 200 stage IV patients per annum
Specialist Team	Quality Indicator	Rationale	Data source	Alert criteria
	There is a lead clinician with responsibility for the lung cancer service	Patients receive treatment from specialists that have the skills and expertise to ensure the best possible outcomes	Self-declaration	No one functioning as the clinical lead for the lung cancer service
	There is an MDT that meets the requirements as specified in the National Advice to cancer alliances (section 5.3.8).	All patients benefit from expert multidisciplinary discussion of their diagnosis and treatment	Self-declaration	Failure to meet criteria
	There is an MDT meeting for treatment planning attended by all the relevant disciplines.	All patients benefit from expert multidisciplinary discussion of their diagnosis and treatment	Self-declaration	The attendance at each individual scheduled treatment planning meeting should constitute a quorum, for 95% or more, of the meetings
	Proportion of new cancer cases discussed at MDT	All patients benefit from expert multidisciplinary discussion of their diagnosis and treatment	COSD/CHI	Target is 100%
	There are clinical guidelines in place which, where available, reflect national guidelines	All patients receive agreed treatment that is consistent and equitable	Self-declaration	Non-use of guidelines or departure from National recommendations without justification
	There are agreed patient pathways in place which meet the National Optimal Lung Cancer Pathway (NOLCP).	Patients are seen, diagnosed and treated promptly; improvement in survival	Self-declaration	All MDTs should have service development plans aimed at achieving implementation of NOLCP by 2018
	Patients reporting good availability of a CNS	Patients have access to LCNS; Holistic care and patient advocacy	CPES	<90%

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Waiting times	Quality Indicator	Rationale	Data source	Alert criteria
	National Cancer Waiting times ¹	Patients are seen, diagnosed and treated promptly	Waiting times data	Nationally agreed targets for separate waiting times
	Diagnostic test result within 10 working days of request	Patients are diagnosed and treated promptly	Self-declaration	
	Pathology NOLCP: sampling date to tumour subtype 3 days and to molecular marker status 10 days	Patients are diagnosed and treated promptly	Self-declaration	Less than 90% compliance

1. These operational standards for waiting times are assessed nationally across tumour sites on an aggregated basis. However commissioners should be provided with the performance for each tumour site.

Audit	Quality Indicator	Rationale	Data source	Alert criteria
	Total number of patients	Workload	NLCA / NCRAS	
	Participation in National Lung Cancer Audit % of expected cases on whom data is collected	Accurate baseline	NLCA	<100%
	CT prior to bronchoscopy rate	Compliance with pathways; rapid diagnosis	NLCA / NCRAS	<95%
	The % pathological confirmation rate for stage 1 and 2 and performance status 0-1	Directly correlated with survival	NLCA / NCRAS	<95%

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	% of patients that present as an emergency	Reflects awareness, early diagnosis and referral	NCRAS	Above 10th centile
	% pathological confirmation rate in patients with PS 0-2	Reflects diagnostic rates; correlated with active treatment	NCRAS /NLCA	<70%
	% patients with recorded stage 1 or 2	Reflects diagnostic rates; correlated with active treatment	NCRAS / NLCA	
	% patients with recorded stage 3a	Reflects diagnostic rates; correlated with active treatment	NCRAS / NLCA	
	% patients with recorded stage 3b or 4	Reflects diagnostic rates; correlated with active treatment	NCRAS / NLCA	
Clinical Outcome	Outcome Indicator	Rational	Data source	Alert Criteria
<i>*Note: These measures should be reported with adjustment for case mix.</i>	The percentage of patients with PS 0-1 having active treatment	Directly correlated with survival	NLCA / NCRAS	<80%
	The percentage undergoing surgical resection (all cases excluding Mesothelioma & confirmed Small Cell Lung Cancer)	Directly correlated with survival	NLCA / NCRAS	<15%
	The percentage of small cell cancer patients receiving chemotherapy	Directly correlated with survival	NLCA / NCRAS / HES / SACT	<65%
	Median LOS for surgery	Patients receive high quality treatment with curative intent	HES / NLCA / NCRAS	Below 10 th centile
	Proportion of patients treated by VATS lobectomy by stage	Patients receive high quality treatment with curative intent	HES / NLCA / NCRAS	

	Proportion of patients receiving SABR	Patients receive high quality treatment with curative intent	HES / NLCA / NCRAS	Below 10 th centile
	Proportion of patients receiving radical radiotherapy	Patients receive high quality treatment with curative intent	HES / NLCA / NCRAS	Below 10 th centile
	One year relative survival by stage*	Reflects early diagnosis and better treatment	NLCA / ONS	Below 10 th centile
	One year survival after surgery*	Patients receive high quality treatment with curative intent	NLCA / LCCOP	Statistical outlier
	Five year survival by stage*	Reflects mostly curative treatment but some early diagnosis	ONS	Below 10 th centile
	30 day mortality*	Surgery	NCRAS / NLCA	Below 10 th centile
		SABR	NCRAS / NLCA	Below 10 th centile
		Radical Radiotherapy	NCRAS / NLCA	Below 10 th centile
Patient experience	Quality Indicator	Rational	Data source	Alert Criteria
	% Having CNS contact recorded (codes Y1/Y2)	Supporting holistic care and patient advocacy	CHI	Below 10 th centile
	% patients reporting being treated with respect and dignity	Supporting holistic care and patient advocacy	CPES	Below 10 th centile
	Number of viable survey questions and % of those questions scoring red	Supporting holistic care and patient advocacy	CPES	Below 10 th centile
	Proportion of patients with stage IV disease offered a	Associated with improved quality of life, depression scores and improved survival in some	HES / NLCA / NCRAS	< 80%

	specialist supportive / palliative care assessment at the time of diagnosis.	studies		
Research and Registration	Quality Indicator	Rational	Data source	Alert Criteria
	Recruitment into trials	All trials should be offered to eligible people	NIHR	Below 10 th centile
	DCO rates, Staging Data, completeness of COSD, SACT and RTDS data uploads (where applicable)		NCRAS	Below 10 th centile

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