

# Lung cancer

The diagnosis and treatment of lung cancer

**Clinical Guideline 24**

February 2005

Developed by the National Collaborating Centre for  
Acute Care

**Clinical Guideline 24**  
**Lung cancer: the diagnosis and treatment of lung cancer**

**Issue date:** February 2005

This document, which contains the Institute's full guidance on lung cancer, is available from the NICE website ([www.nice.org.uk/CG024NICEguideline](http://www.nice.org.uk/CG024NICEguideline)).

An abridged version of this guidance (a 'quick reference guide') is also available from the NICE website ([www.nice.org.uk/CG024quickrefguide](http://www.nice.org.uk/CG024quickrefguide)). Printed copies of the quick reference guide can be obtained from the NHS Response Line: telephone 0870 1555 455 and quote reference number N0825. The distribution list for the quick reference guide can be found at [www.nice.org.uk/CG024distributionlist](http://www.nice.org.uk/CG024distributionlist)

Information for the Public is available from the NICE website ([www.nice.org.uk/CG024publicinfo](http://www.nice.org.uk/CG024publicinfo)) or from the NHS Response Line (quote reference number N0826 for a version in English and N0827 for a version in English and Welsh).

**This guidance is written in the following context:**

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Health professionals are expected to take it fully into account when exercising their clinical judgement. The guidance does not, however, override the individual responsibility of health professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

National Institute for Clinical Excellence

MidCity Place

71 High Holborn

London WC1V 6NA

[www.nice.org.uk](http://www.nice.org.uk)

ISBN: 1-84257-920-7

Published by the National Institute for Clinical Excellence

February 2005

© Copyright National Institute for Clinical Excellence, February 2005. All rights reserved. This material may be freely reproduced for educational and not-for-profit purposes within the NHS. No reproduction by or for commercial organisations is allowed without the express written permission of the National Institute for Clinical Excellence.

# Contents

<b>Introduction</b> .....	<b>4</b>
<b>Patient-centred care</b> .....	<b>5</b>
<b>1 Guidance</b> .....	<b>8</b>
<b>Abbreviations</b> .....	<b>8</b>
1.1 <i>Access to services</i> .....	9
1.2 <i>Diagnosis</i> .....	10
1.3 <i>Staging</i> .....	12
1.4 <i>Surgery with curative intent for patients with NSCLC</i> .....	14
1.5 <i>Radical radiotherapy alone for treatment of NSCLC</i> .....	15
1.6 <i>Chemotherapy for patients with NSCLC</i> .....	15
1.7 <i>Combination treatment for NSCLC</i> .....	16
1.8 <i>Treatment of small-cell lung cancer</i> .....	17
1.9 <i>Palliative interventions and supportive and palliative care</i> .....	18
1.10 <i>Service organisation</i> .....	20
<b>2 Notes on the scope of the guidance</b> .....	<b>22</b>
<b>3 Implementation in the NHS</b> .....	<b>22</b>
<b>4 Research recommendations</b> .....	<b>24</b>
<b>5 Other versions of this guideline</b> .....	<b>26</b>
<b>6 Related NICE guidance</b> .....	<b>27</b>
<b>7 Review date</b> .....	<b>27</b>
<b>Appendix A: Grading scheme</b> .....	<b>28</b>
<b>Appendix B: The Guideline Development Group</b> .....	<b>31</b>
<b>Appendix C: The Guideline Review Panel</b> .....	<b>34</b>
<b>Appendix D: Technical detail on the criteria for audit</b> .....	<b>35</b>
<b>Appendix E: Staging classification and performance status scales</b> .....	<b>37</b>
<b>Appendix F: Treatment matrix for non-small-cell lung cancer</b> .....	<b>41</b>

## Introduction

In England and Wales, nearly 29,000 deaths were attributed to lung cancer in 2002. Lung cancer is the most common cause of cancer death for men, who account for 60% of lung cancer cases. In women, lung cancer is the second most common cause of cancer death after breast cancer.

Survival rates for lung cancer are very poor. In England, for patients diagnosed between 1993 and 1995 and followed up to 2000, 21.4% of men and 21.8% of women with lung cancer were alive 1 year after diagnosis and only 5.5% of both men and women were alive after 5 years. For Wales, the latest figures on survival for people diagnosed between 1994 and 1998 showed 1-year relative survival of 20.5% for both men and women and 5-year relative survival figures of 6% for both men and women. These figures are around 5 percentage points lower than the European averages, and 7–10 percentage points lower than those of the USA.

Lung cancers are classified into two main categories: small-cell lung cancers (SCLC), which account for about 20% of cases, and non-small-cell lung cancers (NSCLC), which account for the other 80%. Non-small-cell lung cancers include squamous cell carcinomas (35% of all lung cancers), adenocarcinomas (27%) and large cell carcinomas (10%).

## Patient-centred care

This guideline offers best practice advice on the care of adults who are suspected of having, or are diagnosed with, lung cancer.

Treatment and care should take into account patients' individual needs and preferences. People with lung cancer should have the opportunity to make informed decisions about their care and treatment. Where patients do not have the capacity to make decisions, healthcare professionals should follow the Department of Health guidelines – *Reference guide to consent for examination or treatment* (2001) (available from [www.dh.gov.uk](http://www.dh.gov.uk)).

Good communication between healthcare professionals and patients is essential. It should be supported by the provision of evidence-based information, offered in a form that is tailored to the needs of the individual patient. The treatment, care and information provided should be culturally appropriate and in a form that is accessible to people who have additional needs, such as people with physical, cognitive or sensory disabilities, and people who do not speak or read English.

Unless specifically excluded by the patient, carers and relatives should have the opportunity to be involved in decisions about the patient's care and treatment.

Carers and relatives should also be provided with the information and support they need.

## Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

### Access to services

- All patients diagnosed with lung cancer should be offered information, both verbal and written, on all aspects of their diagnosis, treatment and care. This information should be tailored to the individual requirements of the patient, and audio and videotaped formats should also be considered.
- Urgent referral for a chest X-ray should be offered when a patient presents with:
  - haemoptysis, or
  - any of the following unexplained or **persistent** (that is, lasting more than 3 weeks) symptoms or signs:
    - ✧ cough
    - ✧ chest/shoulder pain
    - ✧ dyspnoea
    - ✧ weight loss
    - ✧ chest signs
    - ✧ hoarseness
    - ✧ finger clubbing
    - ✧ features suggestive of metastasis from a lung cancer (for example, in brain, bone, liver or skin)
    - ✧ cervical/supraclavicular lymphadenopathy.
- If a chest X-ray or chest computed tomography (CT) scan suggests lung cancer (including pleural effusion and slowly resolving consolidation), patients should be offered an urgent referral to a member of the lung cancer multidisciplinary team (MDT), usually a chest physician.

### Staging

- Every cancer network should have a system of rapid access to <sup>18</sup>F-deoxyglucose positron emission tomography (FDG-PET) scanning for eligible patients.

### **Radical radiotherapy alone for treatment of non-small-cell lung cancer**

- Patients with stage I or II non-small-cell lung cancer (NSCLC) who are medically inoperable but suitable for radical radiotherapy should be offered the continuous hyperfractionated accelerated radiotherapy (CHART) regimen.

### **Chemotherapy for non-small-cell lung cancer**

- Chemotherapy should be offered to patients with stage III or IV NSCLC and good performance status (WHO 0, 1 or a Karnofsky score of 80–100) to improve survival, disease control and quality of life.

### **Palliative interventions and supportive and palliative care**

- Non-drug interventions for breathlessness should be delivered by a multidisciplinary group, coordinated by a professional with an interest in breathlessness and expertise in the techniques (for example, a nurse, physiotherapist or occupational therapist). Although this support may be provided in a breathlessness clinic, patients should have access to it in all care settings.

### **Service organisation**

- The care of all patients with a working diagnosis of lung cancer should be discussed at a lung cancer MDT meeting.
- Early diagnosis clinics should be provided where possible for the investigation of patients with suspected lung cancer, because they are associated with faster diagnosis and less patient anxiety.
- All cancer units/centres should have one or more trained lung cancer nurse specialists to see patients before and after diagnosis, to provide continuing support, and to facilitate communication between the secondary care team (including the MDT), the patient's GP, the community team and the patient. Their role includes helping patients to access advice and support whenever they need it.

# 1 Guidance

The following guidance is evidence based. Appendix A shows the grading scheme used for the recommendations: A, B, C, D or good practice point – D(GPP). Studies of diagnostic accuracy are graded A(DS), B(DS), C(DS) or D(DS). Some recommendations in this guideline have two grades because they are based on both diagnostic and effectiveness evidence. A summary of the evidence on which the guidance is based is provided in the full guideline (see Section 5).

The development of this guideline for England and Wales coincided with the review by the Scottish Intercollegiate Guidelines Network (SIGN) of its lung cancer guideline for Scotland. To minimise duplication of effort, elements of the systematic review for this guideline were shared between the NICE guideline development group and the guideline development group working on the SIGN guideline.

## Abbreviations

<b>CHART</b>	Continuous hyperfractionated accelerated radiotherapy
<b>CT</b>	Computed tomography
<b>DS</b>	Diagnostic studies
<b>FDG</b>	<sup>18</sup> F-deoxyglucose
<b>GP</b>	General practitioner
<b>GPP</b>	Good practice point
<b>MDT</b>	Multidisciplinary team
<b>MRI</b>	Magnetic resonance imaging
<b>NSCLC</b>	Non-small-cell lung cancer
<b>PET</b>	Positron emission tomography
<b>SCLC</b>	Small-cell lung cancer
<b>SIGN</b>	Scottish Intercollegiate Guidelines Network

## **1.1 Access to services**

- 1.1.1 All patients diagnosed with lung cancer should be offered information, both verbal and written, on all aspects of their diagnosis, treatment and care. This information should be tailored to the individual requirements of the patient, and audio and videotaped formats should also be considered. **D(GPP)**
- 1.1.2 Treatment options and plans should be discussed with the patient and decisions on treatment and care should be made jointly with the patient. Treatment plans must be tailored around the patient's needs and wishes to be involved, and his or her capacity to make decisions. **D(GPP)**
- 1.1.3 The public needs to be better informed of the symptoms and signs that are characteristic of lung cancer, through coordinated campaigning to raise awareness. **D(GPP)**
- 1.1.4 Urgent referral for a chest X-ray should be offered when a patient presents with: **D**
- haemoptysis, or
  - any of the following unexplained or **persistent** (that is, lasting more than 3 weeks) symptoms or signs:
    - cough
    - chest/shoulder pain
    - dyspnoea
    - weight loss
    - chest signs
    - hoarseness
    - finger clubbing
    - features suggestive of metastasis from a lung cancer (for example, in brain, bone, liver or skin)
    - cervical/supraclavicular lymphadenopathy.

- 1.1.5 If a chest X-ray or chest computed tomography (CT) scan suggests lung cancer (including pleural effusion and slowly resolving consolidation), patients should be offered an urgent referral to a member of the lung cancer multidisciplinary team (MDT), usually a chest physician. **D**
- 1.1.6 If the chest X-ray is normal but there is a high suspicion of lung cancer, patients should be offered urgent referral to a member of the lung cancer MDT, usually the chest physician. **D**
- 1.1.7 Patients should be offered an urgent referral to a member of the lung cancer MDT, usually the chest physician, while awaiting the result of a chest X-ray, if any of the following are present: **D**
- persistent haemoptysis in smokers/ex-smokers older than 40 years
  - signs of superior vena caval obstruction (swelling of the face/neck with fixed elevation of jugular venous pressure)
  - stridor.

Emergency referral should be considered for patients with superior vena caval obstruction or stridor.

## **1.2 Diagnosis**

- 1.2.1 Where a chest X-ray has been requested in primary or secondary care and is incidentally suggestive of lung cancer, a second copy of the radiologist's report should be sent to a designated member of the lung cancer MDT, usually the chest physician. The MDT should have a mechanism in place to follow up these reports to enable the patient's GP to have a management plan in place. **D(GPP)**
- 1.2.2 Patients with known or suspected lung cancer should be offered a contrast-enhanced chest CT scan to further the diagnosis and stage the disease. The scan should also include the liver and adrenals. **D(GPP)**

- 1.2.3 Chest CT should be performed before:
- an intended fibreoptic bronchoscopy **A; C(DS)**
  - any other biopsy procedure. **D(GPP)**
- 1.2.4 Bronchoscopy should be performed on patients with central lesions who are able and willing to undergo the procedure. **B(DS)**
- 1.2.5 Sputum cytology is rarely indicated and should be reserved for the investigation of patients who have centrally placed nodules or masses and are unable to tolerate, or unwilling to undergo, bronchoscopy or other invasive tests. **B(DS)**
- 1.2.6 Percutaneous transthoracic needle biopsy is recommended for diagnosis of lung cancer in patients with peripheral lesions. **B(DS)**
- 1.2.7 Surgical biopsy should be performed for diagnosis where other less invasive methods of biopsy have not been successful or are not possible. **B(DS)**
- 1.2.8 Where there is evidence of distant metastases, biopsies should be taken from the metastatic site if this can be achieved more easily than from the primary site. **D(GPP)**
- 1.2.9 An <sup>18</sup>F-deoxyglucose positron emission tomography (FDG-PET) scan should be performed to investigate solitary pulmonary nodules in cases where a biopsy is not possible or has failed, depending on nodule size, position and CT characterisation. **C; B(DS)**

## **1.3 Staging**

### **1.3.1 Non-small-cell lung cancer**

1.3.1.1 In the assessment of mediastinal and chest wall invasion:

- CT alone may not be reliable **B(DS)**
- other techniques such as ultrasound should be considered where there is doubt **D(GPP)**
- surgical assessment may be necessary if there are no contraindications to resection. **D(GPP)**

1.3.1.2 Magnetic resonance imaging (MRI) should not routinely be performed to assess the stage of the primary tumour (T-stage; see Appendix E) in NSCLC. **C(DS)**

1.3.1.3 MRI should be performed, where necessary to assess the extent of disease, for patients with superior sulcus tumours. **B(DS)**

1.3.1.4 Every cancer network should have a system of rapid access to FDG-PET scanning for eligible patients. **D(GPP)**

1.3.1.5 Patients who are staged as candidates for surgery on CT should have an FDG-PET scan to look for involved intrathoracic lymph nodes and distant metastases. **A(DS)**

1.3.1.6 Patients who are otherwise surgical candidates and have, on CT, limited (1–2 stations) N2/3 disease of uncertain pathological significance should have an FDG-PET scan. **D(GPP)**

1.3.1.7 Patients who are candidates for radical radiotherapy on CT should have an FDG-PET scan. **B(DS)**

- 1.3.1.8 Patients who are staged as N0 or N1 and M0 (stages I and II) by CT and FDG-PET and are suitable for surgery should not have cytological/histological confirmation of lymph nodes before surgical resection. **A**
- 1.3.1.9 Histological/cytological investigation should be performed to confirm N2/3 disease where FDG-PET is positive. This should be achieved by the most appropriate method. Histological/cytological confirmation is not required: **B(DS)**
- where there is definite distant metastatic disease
  - where there is a high probability that the N2/N3 disease is metastatic (for example, if there is a chain of high FDG uptake in lymph nodes).
- 1.3.1.10 When an FDG-PET scan for N2/N3 disease is negative, biopsy is not required even if the patient's nodes are enlarged on CT. **B(DS)**
- 1.3.1.11 If FDG-PET is not available, suspected N2/3 disease, as shown by CT scan (nodes with a short axis > 1 cm), should be histologically sampled in patients being considered for surgery or radical radiotherapy. **D(GPP)**
- 1.3.1.12 An MRI or CT scan should be performed for patients with clinical signs or symptoms of brain metastasis. **D(GPP)**
- 1.3.1.13 An X-ray should be performed in the first instance for patients with localised signs or symptoms of bone metastasis. If the results are negative or inconclusive, either a bone scan or an MRI scan should be offered. **D(GPP)**

### 1.3.2 **Small-cell lung cancer (SCLC)**

- 1.3.2.1 SCLC should be staged by a contrast-enhanced CT scan of the patient's chest, liver and adrenals and by selected imaging of any symptomatic area. **D(GPP)**

## **1.4 Surgery with curative intent for patients with NSCLC**

A matrix summarising the treatment of NSCLC can be found in Appendix F.

- 1.4.1 Surgical resection is recommended for patients with stage I or II NSCLC who have no medical contraindications and adequate lung function. **D**
- 1.4.2 For patients with stage I or II NSCLC who can tolerate lobar resection, lobectomy is the procedure of choice. **C**
- 1.4.3 Pending further research, patients with stage I or II NSCLC who would not tolerate lobectomy because of comorbid disease or pulmonary compromise should be considered for limited resection or radical radiotherapy. **D**
- 1.4.4 For all patients with stage I or II NSCLC undergoing surgical resection – usually a lobectomy or a pneumonectomy – clear surgical margins should be the aim. **D(GPP)**
- 1.4.5 Sleeve lobectomy offers an acceptable alternative to pneumonectomy for patients with stage I or II NSCLC who have an anatomically appropriate (central) tumour. This has the advantage of conserving functioning lung. **C**
- 1.4.6 For patients with T3 NSCLC with chest wall involvement who are undergoing surgery, complete resection of the tumour should be the aim by either extrapleural or en bloc chest wall resection. **C**
- 1.4.7 All patients undergoing surgical resection for lung cancer should have systematic lymph node sampling to provide accurate pathological staging. **D(GPP)**
- 1.4.8 In patients with stage IIIA (N2) NSCLC detected through preoperative staging, surgery alone is associated with a relatively poor prognosis. Therefore, these patients should be evaluated by the lung cancer MDT. **D(GPP)**

## **1.5 Radical radiotherapy alone for treatment of NSCLC**

A matrix summarising the treatment of NSCLC can be found in Appendix F.

- 1.5.1 Radical radiotherapy is indicated for patients with stage I, II or III NSCLC who have good performance status (WHO 0, 1) and whose disease can be encompassed in a radiotherapy treatment volume without undue risk of normal tissue damage. **D(GPP)**
- 1.5.2 All patients should undergo pulmonary function tests (including lung volumes and transfer factor) before having radical radiotherapy for NSCLC. **D(GPP)**
- 1.5.3 Patients who have poor lung function but are otherwise suitable for radical radiotherapy should still be offered radiotherapy, provided the volume of irradiated lung is small. **D(GPP)**
- 1.5.4 Patients with stage I or II NSCLC who are medically inoperable but suitable for radical radiotherapy should be offered the CHART regimen. **A**
- 1.5.5 Patients with stages IIIA or IIIB NSCLC who are eligible for radical radiotherapy and who cannot tolerate or do not wish to have chemoradiotherapy should be offered the CHART regimen. **A**
- 1.5.6 If CHART is not available, conventionally fractionated radiotherapy to a dose of 64–66 Gy in 32–33 fractions over 6½ weeks or 55 Gy in 20 fractions over 4 weeks should be offered. **D(GPP)**

## **1.6 Chemotherapy for patients with NSCLC**

A matrix summarising the treatment of NSCLC can be found in Appendix F.

- 1.6.1 Chemotherapy should be offered to patients with stage III or IV NSCLC and good performance status (WHO 0, 1 or a Karnofsky score of 80–100), to improve survival, disease control and quality of life. **A**

- 1.6.2 Chemotherapy for advanced NSCLC should be a combination of a single third-generation drug (docetaxel, gemcitabine, paclitaxel or vinorelbine) plus a platinum drug. Either carboplatin or cisplatin may be administered, taking account of their toxicities, efficacy and convenience. **D(GPP)**
- 1.6.3 Patients who are unable to tolerate a platinum combination may be offered single-agent chemotherapy with a third-generation drug. **A**
- 1.6.4 Docetaxel monotherapy should be considered if second-line treatment is appropriate for patients with locally advanced or metastatic NSCLC in whom relapse has occurred after previous chemotherapy. **A**

### **1.7 Combination treatment for NSCLC**

A matrix summarising the treatment of NSCLC can be found in Appendix F.

- 1.7.1 Patients with stage I, II or IIIA NSCLC who are suitable for resection should not be offered preoperative chemotherapy unless it is part of a clinical trial. **B**
- 1.7.2 Preoperative radiotherapy is not recommended for patients with NSCLC who are able to have surgery. **A**
- 1.7.3 Postoperative radiotherapy is not recommended for patients with NSCLC after complete resection. **A**
- 1.7.4 Postoperative radiotherapy should be considered after incomplete resection of the primary tumour for patients with NSCLC, with the aim of improving local control. **D**
- 1.7.5 Adjuvant chemotherapy should be offered to NSCLC patients who have had a complete resection, with discussion of the risks and benefits. **A**

- 1.7.6 Patients who are pathologically staged as II and III NSCLC following resection should not receive postoperative chemoradiotherapy unless it is within a clinical trial. **B**
- 1.7.7 Patients with stage III NSCLC who are not suitable for surgery but are eligible for radical radiotherapy should be offered sequential chemoradiotherapy. **A**

## **1.8 Treatment of small-cell lung cancer**

- 1.8.1 Patients with SCLC should be offered an assessment that includes evaluation of the major prognostic factors: performance status, serum lactate dehydrogenase, liver function tests, serum sodium, and stage. **D**
- 1.8.2 All patients with SCLC should be offered:
- platinum-based chemotherapy **A**
  - multidrug regimens, because they are more effective and have a lower toxicity than single-agent regimens. **A**
- 1.8.3 Four to six cycles of chemotherapy should be offered to patients whose disease responds. Maintenance treatment is not recommended. **A**
- 1.8.4 Patients with limited-stage SCLC should be offered thoracic irradiation concurrently with the first or second cycle of chemotherapy or following completion of chemotherapy if there has been at least a good partial response within the thorax. For patients with extensive disease, thoracic irradiation should be considered following chemotherapy if there has been a complete response at distant sites and at least a good partial response within the thorax. **A**
- 1.8.5 Patients undergoing consolidation thoracic irradiation should receive a dose in the range of 40 Gy in 15 fractions over 3 weeks to 50 Gy in 25 fractions over 5 weeks. **D(GPP)**

- 1.8.6 Patients with limited disease and complete or good partial response after primary treatment should be offered prophylactic cranial irradiation. **A**
- 1.8.7 Second-line chemotherapy should be offered to patients at relapse only if their disease responded to first-line chemotherapy. The benefits are less than those of first-line chemotherapy. **D(GPP)**

### **1.9 Palliative interventions and supportive and palliative care**

This section focuses on palliative interventions and supportive and palliative care for patients with lung cancer and therefore only evidence specific to lung cancer was reviewed. An absence of evidence does not imply that nothing can be done to help, and supportive and palliative care multidisciplinary teams – in particular specialist palliative care teams – have an important role in symptom control.

- 1.9.1 Supportive and palliative care of the patient should be provided by general and specialist palliative care providers in accordance with the NICE guidance 'Improving supportive and palliative care for adults with cancer' (see Section 6 for details). **D(GPP)**
- 1.9.2 Patients who may benefit from specialist palliative care services should be identified and referred without delay. **D(GPP)**
- 1.9.3 External beam radiotherapy should be considered for the relief of breathlessness, cough, haemoptysis or chest pain. **A**
- 1.9.4 Opioids, such as codeine or morphine, should be considered to reduce cough. **A**
- 1.9.5 Debulking bronchoscopic procedures should be considered for the relief of distressing large-airway obstruction or bleeding due to an endobronchial tumour within a large airway. **D**
- 1.9.6 Patients with endobronchial symptoms that are not palliated by other means may be considered for endobronchial therapy. **D**

- 1.9.7 Patients with extrinsic compression may be considered for treatment with stents. **D**
- 1.9.8 Non-drug interventions based on psychosocial support, breathing control and coping strategies should be considered for patients with breathlessness. **A**
- 1.9.9 Non-drug interventions for breathlessness should be delivered by a multidisciplinary group, coordinated by a professional with an interest in breathlessness and expertise in the techniques (for example, a nurse, physiotherapist or occupational therapist). Although this support may be provided in a breathlessness clinic, patients should have access to it in all care settings. **D(GPP)**
- 1.9.10 Patients with troublesome hoarseness due to recurrent laryngeal nerve palsy should be referred to an ear, nose and throat specialist for advice. **D(GPP)**
- 1.9.11 Patients who present with superior vena cava obstruction should be offered chemotherapy and radiotherapy according to the stage of disease and performance status. **A**
- 1.9.12 Stent insertion should be considered for the immediate relief of severe symptoms of superior vena caval obstruction or following failure of earlier treatment. **B**
- 1.9.13 Corticosteroids and radiotherapy should be considered for symptomatic treatment of cerebral metastases in lung cancer. **D**
- 1.9.14 Other symptoms, including weight loss, loss of appetite, depression and difficulty swallowing, should be managed by multidisciplinary groups that include supportive and palliative care professionals. **D(GPP)**
- 1.9.15 Pleural aspiration or drainage should be performed in an attempt to relieve the symptoms of a pleural effusion. **B**

- 1.9.16 Patients who benefit symptomatically from aspiration or drainage of fluid should be offered talc pleurodesis for longer-term benefit. **B**
- 1.9.17 For patients with bone metastasis requiring palliation and for whom standard analgesic treatments are inadequate, single-fraction radiotherapy should be administered. **B**
- 1.9.18 Spinal cord compression is a medical emergency and immediate treatment (within 24 hours), with corticosteroids, radiotherapy and surgery where appropriate, is recommended. **D**
- 1.9.19 Patients with spinal cord compression should have an early referral to an oncology physiotherapist and an occupational therapist for assessment, treatment and rehabilitation. **D(GPP)**

### **1.10 Service organisation**

- 1.10.1 All patients with a likely diagnosis of lung cancer should be referred to a member of a lung cancer MDT (usually a chest physician). **D**
- 1.10.2 The care of all patients with a working diagnosis of lung cancer should be discussed at a lung cancer MDT meeting. **D**
- 1.10.3 Early diagnosis clinics should be provided where possible for the investigation of patients with suspected lung cancer, because they are associated with faster diagnosis and less patient anxiety. **A**
- 1.10.4 All cancer units/centres should have one or more trained lung cancer nurse specialists to see patients before and after diagnosis, to provide continuing support, and to facilitate communication between the secondary care team (including the MDT), the patient's GP, the community team and the patient. Their role includes helping patients to access advice and support whenever they need it. **D**

- 1.10.5 Patients who have lung cancer suitable for radical treatment or chemotherapy, or need radiotherapy or ablative treatment for relief of symptoms, should be treated without undue delay, according to the Welsh Assembly Government and Department of Health recommendations (within 31 days of the decision to treat and within 62 days of their urgent referral). **D**
- 1.10.6 Patients who cannot be offered curative treatment, and are candidates for palliative radiotherapy, may either be observed until symptoms arise and then treated, or be treated with palliative radiotherapy immediately. **A**
- 1.10.7 When patients finish their treatment a personal follow-up plan should be discussed and agreed with them after discussion with the professionals involved in the patient's care. GPs should be informed of the plan. **D(GPP)**
- 1.10.8 After completion of their treatment, patients with an expectation of life of more than 3 months should have access to protocol-controlled, nurse-led follow-up. **A**
- 1.10.9 Patients who have had attempted curative surgery for NSCLC or radical radiotherapy should be followed up routinely by a member of the MDT for up to 9 months to check for post-treatment complications. Thoracic imaging should be part of the review. **D**
- 1.10.10 For patients who have had attempted curative surgery for NSCLC, any routine follow-up should not extend beyond 5 years. **D**
- 1.10.11 Patients who have had palliative radiotherapy or chemotherapy should be followed up routinely at 1 month after completion of treatment. A chest X-ray should be part of the review if clinically indicated. **D**
- 1.10.12 Patients with lung cancer – in particular those with a better prognosis – should be encouraged to stop smoking. **D**

1.10.13 The opinions and experiences of lung cancer patients and carers should be collected and used to improve the delivery of lung cancer services. Patients should receive feedback on any action taken as a result of such surveys. **D(GPP)**

## **2 Notes on the scope of the guidance**

All NICE guidelines are developed in accordance with a scope document that defines what the guideline will and will not cover. The scope of this guideline was established at the start of the development of this guideline, following a period of consultation; it is available from the NICE website ([www.nice.org.uk/page.aspx?o=32707](http://www.nice.org.uk/page.aspx?o=32707)).

The guideline offers best practice advice on the care of adults who are suspected of having or are diagnosed with lung cancer. The guideline is relevant to primary and secondary healthcare professionals who have direct contact with patients who are suspected of having, or are diagnosed with, lung cancer, and make decisions about their care.

The guideline covers adults older than 18 years who are suspected of having, or are diagnosed with, lung cancer.

The guideline does not cover the diagnosis or management of mesothelioma, lung metastases from cancer arising from outside the lung or the prevention of lung cancer, nor does it cover children.

## **3 Implementation in the NHS**

### ***3.1 Resource implications***

Local health communities should review their existing practice for the diagnosis and management of lung cancer against this guideline. The review should consider the resources required to implement the recommendations set out in Section 1, the people and processes involved and the timeline over which full implementation is envisaged. It is in the interests of patients that the implementation is as rapid as possible.

Relevant local clinical guidelines, care pathways and protocols should be reviewed in the light of this guidance and revised accordingly.

Information on the cost impact of this guideline in England is available on the NICE website and includes a template that local communities can use ([www.nice.org.uk/CG024costtemplate](http://www.nice.org.uk/CG024costtemplate)).

### **3.2 General**

This guideline should be used in conjunction with the NICE guidance listed in Section 6.

### **3.3 Audit**

A national cancer dataset has been developed by the NHS Information Authority in collaboration with clinicians and the Department of Health. A data subset for lung cancer has been derived by the Intercollegiate Lung Cancer Group to support the National Lung Cancer Data Project (LUCADA), a national ongoing audit programme for lung cancer. Many of the recommendations in this guideline are auditable through this dataset. All English Cancer Networks are being encouraged to take part in this programme which began its national roll-out in July 2004. A copy of the dataset and further details of the LUCADA project can be found at [www.nhsia.nhs.uk/ncasp/pages/audit\\_topics/cancer.asp?om=m1#lung](http://www.nhsia.nhs.uk/ncasp/pages/audit_topics/cancer.asp?om=m1#lung) or [www.rcplondon.ac.uk/college/ceeu/ceeu\\_lung\\_home.htm](http://www.rcplondon.ac.uk/college/ceeu/ceeu_lung_home.htm)

The audit criteria highlighted in Appendix D are based on the recommendations selected as key priorities for implementation. Only two of these highlighted criteria fall within the LUCADA dataset. Audit criteria, exceptions and definitions of terms for those recommendations that are not included in LUCADA are specified.

## **4 Research recommendations**

The Guideline Development Group has made the following recommendations for research, on the basis of its review of the evidence. The group regards these recommendations as the most important research areas to improve NICE guidance on lung cancer and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline (see Section 5).

### **4.1 Access to services**

- 4.1.1 Further research is needed into whether the use of low-dose CT in early diagnosis of patients at high risk of developing lung cancer has an effect on the mortality of lung cancer. A randomised trial should compare no intervention with low-dose CT performed at baseline and then annually for 5 years.
- 4.1.2 Further research is needed into the symptoms and signs associated with early- and late-stage lung cancer and the factors associated with delay in presentation. For patients diagnosed with lung cancer, analysis should be undertaken of the symptoms at presentation, the time between onset of symptoms and presentation, the stage at presentation and the reasons for delay in presentation.

### **4.2 Chemotherapy for NSCLC**

- 4.2.1 Further research is needed into whether chemotherapy or active supportive care result in better symptom control, quality of life and survival for patients with advanced NSCLC of performance status 2.

### **4.3 Combination treatment for NSCLC**

- 4.3.1 Research is needed to compare concurrent chemoradiotherapy with alternative fractionation schedules (such as 55 Gy in 20 fractions or CHART) with sequential chemoradiotherapy for patients with NSCLC. Outcomes measured should include detailed recording of the impact on quality of life and on toxicity.

### **4.4 Supportive and palliative care**

- 4.4.1 The management of common problems such as cachexia, anorexia, fatigue and breathlessness experienced by patients with lung cancer needs further research. Specifically, research is required into clinically meaningful outcome measures for the treatment of the cachexia-anorexia syndrome. For example, does the level of physical activity as measured by an activity meter relate to performance status, quality of life and use of health and social care services?

### **4.5 Service organisation**

- 4.5.1 For patients who have had attempted curative treatment and have completed their initial follow up, trials should examine the duration of follow-up and whether regular routine follow-up is better than symptom-led follow-up in terms of survival, symptom control and quality of life.
- 4.5.2 The impact of the time between first symptom (or first detection if asymptomatic) and the treatment of lung cancer on patients' survival and quality of life should be investigated.

## **5 Other versions of this guideline**

The National Institute for Clinical Excellence commissioned the development of this guidance from the National Collaborating Centre for Acute Care. The Centre established a Guideline Development Group, which reviewed the evidence and developed the recommendations. The members of the Guideline Development Group are listed in Appendix B. Information about the independent Guideline Review Panel is given in Appendix C.

The booklet *The guideline development process – an overview for stakeholders, the public and the NHS* has more information about the Institute's guideline development process. It is available from the Institute's website and copies can also be ordered by telephoning 0870 1555 455 (quote reference N0472).

### **5.1 Full guideline**

The full guideline *Diagnosis and treatment of lung cancer* is published by the National Collaborating Centre for Acute Care; it is available from its website ([www.rcseng.ac.uk/about\\_the\\_college/role\\_of\\_the\\_college/nccac\\_html](http://www.rcseng.ac.uk/about_the_college/role_of_the_college/nccac_html)), the NICE website ([www.nice.org.uk/CG024fullguideline](http://www.nice.org.uk/CG024fullguideline)) and on the website of the National Library for Health ([www.nlh.nhs.uk](http://www.nlh.nhs.uk)).

### **5.2 Quick reference guide**

A quick reference guide for health professionals is also available from the NICE website ([www.nice.org.uk/CG024quickrefguide](http://www.nice.org.uk/CG024quickrefguide)) or from the NHS Response Line (telephone 0870 1555 455 and quote reference number N0825).

### **5.3 Information for the public**

A version of this guideline for people with lung cancer, their carers, and for the public is available from the NICE website ([www.nice.org.uk/CG024publicinfo](http://www.nice.org.uk/CG024publicinfo)) or from the NHS Response Line (telephone 0870 1555 455 and quote reference number N0826 for an English version and N0826 for a version in English and Welsh). This is a good starting point for explaining to patients the kind of care they can expect.

## 6 Related NICE guidance

Improving supportive and palliative care for adults with cancer – the manual. *Guidance on cancer services* (2004). Available from [www.nice.org.uk/csgsp](http://www.nice.org.uk/csgsp)

The development of this guideline included a review of the following technology appraisal. The appraisal is therefore now obsolete and has been replaced by the guideline.

- Doxorubicin, paclitaxel, gemcitabine and vinorelbine for non-small-cell lung cancer. *NICE Technology Appraisal* No. 26 (2001). Available from [www.nice.org.uk/TA026](http://www.nice.org.uk/TA026)

## 7 Review date

The process of reviewing the evidence is expected to begin 4 years after the date of issue of this guideline. Reviewing may begin before this if significant evidence that affects the guideline recommendations is identified. The updated guideline will be available within 2 years of the start of the review process.

## Appendix A: Grading scheme

The classification of recommendations on intervention and the levels of evidence used for intervention studies in this guideline are adapted from the Scottish Intercollegiate Guidelines Network (*SIGN 50: a guideline developers' handbook*) and are summarised below. The classification of recommendations and levels of evidence for the accuracy of diagnostic tests are adapted from *The Oxford Centre for Evidence-Based Medicine levels of evidence* (2001) and the *Centre for Reviews and Dissemination report* Number 4 (2001). They are summarised in the tables on page 29 and are being used on a pilot basis.

### Classification of recommendations on interventions

Recommendation grade	Evidence
A	<ul style="list-style-type: none"> <li>• At least one meta-analysis, systematic review, or randomised controlled trial (RCT) rated as 1<sup>++</sup>, and directly applicable to the target population, <b>or</b></li> <li>• A systematic review of RCTs or a body of evidence consisting principally of studies rated as 1<sup>+</sup>, directly applicable to the target population and demonstrating overall consistency of results, <b>or</b></li> <li>• Evidence drawn from a NICE technology appraisal</li> </ul>
B	<ul style="list-style-type: none"> <li>• A body of evidence including studies rated as 2<sup>++</sup>, directly applicable to the target population and demonstrating overall consistency of results, <b>or</b></li> <li>• Extrapolated evidence from studies rated as 1<sup>++</sup> or 1<sup>+</sup></li> </ul>
C	<ul style="list-style-type: none"> <li>• A body of evidence including studies rated as 2<sup>+</sup>, directly applicable to the target population and demonstrating overall consistency of results, <b>or</b></li> <li>• Extrapolated evidence from studies rated as 2<sup>++</sup></li> </ul>
D	<ul style="list-style-type: none"> <li>• Evidence level 3 or 4, <b>or</b></li> <li>• Extrapolated evidence from studies rated as 2<sup>+</sup>, <b>or</b></li> <li>• Formal consensus</li> </ul>
D(GPP)	<ul style="list-style-type: none"> <li>• A good practice point (GPP) is a recommendation for best practice based on the experience of the Guideline Development Group</li> </ul>

## Levels of evidence for intervention studies

Level of evidence	Type of evidence
1 <sup>++</sup>	<ul style="list-style-type: none"> <li>High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias</li> </ul>
1 <sup>+</sup>	<ul style="list-style-type: none"> <li>Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias</li> </ul>
1 <sup>-</sup>	<ul style="list-style-type: none"> <li>Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias</li> </ul>
2 <sup>++</sup>	<ul style="list-style-type: none"> <li>High-quality systematic reviews of case-control or cohort studies</li> <li>High-quality case-control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal</li> </ul>
2 <sup>+</sup>	<ul style="list-style-type: none"> <li>Well-conducted case-control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal</li> </ul>
2 <sup>-</sup>	<ul style="list-style-type: none"> <li>Case-control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal</li> </ul>
3	<ul style="list-style-type: none"> <li>Non-analytical studies (for example, case reports, case series)</li> </ul>
4	<ul style="list-style-type: none"> <li>Expert opinion, formal consensus</li> </ul>

## Classification of recommendations on diagnostic tests

Grade	Evidence
A(DS)	<ul style="list-style-type: none"> <li>• Studies with level of evidence Ia or Ib</li> </ul>
B(DS)	<ul style="list-style-type: none"> <li>• Studies with level of evidence II</li> </ul>
C(DS)	<ul style="list-style-type: none"> <li>• Studies with level of evidence III</li> </ul>
D(DS)	<ul style="list-style-type: none"> <li>• Studies with level of evidence IV</li> </ul>

DS, diagnostic studies.

## Levels of evidence for studies of the accuracy of diagnostic tests

Levels of evidence	Type of evidence
Ia	<ul style="list-style-type: none"> <li>• Systematic review (with no or minor variations in the directions and degrees of results between studies) of level-1 studies, which are studies that use: <ul style="list-style-type: none"> <li>– a blind comparison of the test with a validated reference standard (gold standard)</li> <li>– a sample of patients that reflects the population to whom the test would apply</li> </ul> </li> </ul>
Ib	<ul style="list-style-type: none"> <li>• Level-1 studies</li> </ul>
II	<ul style="list-style-type: none"> <li>• Level-2 studies, which are studies that have only one of the following: <ul style="list-style-type: none"> <li>– the population is narrow (the sample does not reflect the population to whom the test would apply)</li> <li>– a poor reference standard is used (defined as that where the ‘test’ is included in the ‘reference’, or where the ‘testing’ affects the ‘reference’)</li> <li>– the comparison between the test and reference standard is not blind</li> <li>– the study is a case–control study</li> </ul> </li> <li>• Systematic reviews of level-2 studies</li> </ul>
III	<ul style="list-style-type: none"> <li>• Level-3 studies, which are studies that have at least two of the features listed for level-2 studies</li> <li>• Systematic reviews of level-3 studies</li> </ul>
IV	<ul style="list-style-type: none"> <li>• Evidence obtained from expert committee reports or opinions and/or clinical experience without explicit critical experience, based on physiology, bench research or ‘first principles’</li> </ul>

## **Appendix B: The Guideline Development Group**

### **Dr Jesme Baird**

Chair, Director of Patient Care, The Roy Castle Lung Cancer Foundation

### **Ms Caroline Belchamber\***

Senior Oncology Physiotherapist, Poole Hospital, Dorset; Chartered Society of Physiotherapy

### **Dr David Bellamy**

General Practitioner, Bournemouth, Dorset; Standing Committee of General Practitioners, Royal College of Physicians, London

### **Ms Denise Blake**

Lead Pharmacist, North London Cancer Network, and Chair British Oncology Pharmacy Association; Royal Pharmaceutical Society of Great Britain

### **Dr Colin Clelland**

Consultant Pathologist, John Radcliffe Hospital, Oxford; Royal College of Pathologists

### **Dr Dennis Eraut**

Consultant Chest Physician, Southend Hospital, Essex; British Thoracic Society

### **Dr Fergus Gleeson**

Consultant Radiologist, Churchill Hospital, Oxford; Royal College of Radiologists

### **Dr Peter Harvey**

Consultant Clinical Psychologist, St James's University Hospital, Leeds; British Psychosocial Oncology Society

### **Ms Patricia Hunt**

Palliative Care Nurse Specialist – Lung Cancer, Royal Marsden Hospital, London; Royal College of Nursing

### **Ms Barbara Leung**

Clinical Nurse Specialist – Lung Cancer, Birmingham, Heartlands Hospital; Royal College of Nursing

### **Ms Katherine Malholtra\***

Superintendent Physiotherapist, Royal Marsden Hospital, London; Chartered Society of Physiotherapy

### **Ms Theresa Mann<sup>‡</sup>**

Formerly Cancer Support Service Specialist Nurse, CancerBACUP

### **Ms Maureen McPake**

Lecturer in Radiotherapy, Glasgow Caledonian University; Society of Radiographers

**Ms Catriona Moore<sup>‡</sup>**

Cancer Support Service Specialist Nurse, CancerBACUP

**Dr Martin Muers**

Consultant Physician, The General Infirmary at Leeds; British Thoracic Society

**Dr Mike O’Doherty**

Senior Lecturer in Imaging Sciences, Guys, Kings and St Thomas' School of Medicine, and Consultant in Nuclear Medicine, Guy's and St Thomas' NHS Foundation Trust, London; British Nuclear Medicine Society

**Dr Nick Rowell**

Clinical Oncologist, Maidstone Hospital, Kent; Royal College of Radiologists, Faculty of Clinical Oncology, and Cochrane Lung Cancer Group

**Ms Denise Silvey**

Clinical Nurse Specialist – Lung Cancer, Birmingham Heartlands Hospital; Royal College of Nursing

**Dr Colin Sinclair**

Consultant Anaesthetist, Cardiothoracic Surgery, Royal Infirmary of Edinburgh; Royal College of Anaesthetists

**Mr Peter Tebbit**

National Policy Adviser, National Council for Hospice and Specialist Palliative Care

**Professor Tom Treasure**

Consultant Thoracic Surgeon, Guy’s and St Thomas’ Hospital, London; Society of Cardiothoracic Surgeons

**Dr Andrew Wilcock**

Reader and Consultant in Palliative Medicine and Medical Oncology, Royal College of Physicians Clinical Effectiveness Unit

**Ms Judy Williams\***

Senior Physiotherapist, Poole Hospital, Dorset; Chartered Society of Physiotherapy

**Professor Penella Woll**

Consultant Medical Oncologist, Weston Park Hospital, Sheffield; Royal College of Physicians

\* Shared seat on Guideline Development Group

‡ Shared seat on Guideline Development Group

***NCC-AC staff on the Guideline Development Group***

Dr Jennifer Hill, Project Manager

Mr Ian Hunt, Clinical Consultant

Ms Veena Mazarello Paes, Research Associate

Ms Guldem Okem, Health Economist

Ms Rachel Southon, Information Scientist

Ms Louise Thomas, Research Associate

Mr David Wonderling, Health Economist

## **Appendix C: The Guideline Review Panel**

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring its quality. The Panel includes experts on guideline methodology, health professionals and people with experience of the issues affecting patients and carers. The members of the Guideline Review Panel were as follows.

### **Mr Peter Robb (Chair)**

Consultant ENT Surgeon, Epsom and St Helier University Hospitals and The Royal Surrey County NHS Trusts

### **Joyce Struthers**

Patient representative, Bedford

### **Dr Peter Duncan**

Consultant in Anaesthetics and Intensive Care Medicine, Royal Preston Hospital, Preston

### **Anne Williams**

Deputy Director of Clinical Governance, Kettering General Hospital NHS Trust

## Appendix D: Technical detail on the criteria for audit

The audit criteria highlighted in below are based on the recommendations selected as key priorities for implementation. Only two of these highlighted criteria fall within the LUCADA dataset. Audit criteria, exceptions and definitions of terms for those recommendations that are not included in LUCADA are specified.

Recommendation	Criterion	Definition of terms
<p>All patients diagnosed with lung cancer should be offered information, both verbal and written, on all aspects of their diagnosis, treatment and care. This information should be tailored to the individual requirements of the patient and audio and videotaped formats should also be considered.</p>	<p>Percentage of patients diagnosed with lung cancer that are offered information, both verbal and written, on all aspects of their diagnosis, treatment and care. This information should be tailored to the individual requirements of the patient and audio and videotaped formats should also be considered.</p>	
<p>Urgent referral for a chest X-ray should be offered when a patient presents with:</p> <ul style="list-style-type: none"> <li>• haemoptysis, or</li> <li>• any of the following unexplained or persistent (that is, lasting more than 3 weeks) symptoms or signs: <ul style="list-style-type: none"> <li>– cough</li> <li>– chest/shoulder pain</li> <li>– dyspnoea</li> <li>– weight loss</li> <li>– chest signs</li> <li>– hoarseness</li> <li>– finger clubbing</li> <li>– features suggestive of metastasis from a lung cancer (for example, brain, bone, liver or skin)</li> <li>– cervical/supraclavicular lymphadenopathy</li> </ul> </li> </ul>	<p>Percentage of patients that present to a GP with the following symptoms and signs who are offered an urgent referral for a chest X-ray:</p> <ul style="list-style-type: none"> <li>• haemoptysis, or</li> <li>• any of the following unexplained or persistent (that is, lasting more than 3 weeks) symptoms or signs: <ul style="list-style-type: none"> <li>– cough</li> <li>– chest/shoulder pain</li> <li>– dyspnoea</li> <li>– weight loss</li> <li>– chest signs</li> <li>– hoarseness</li> <li>– finger clubbing</li> <li>– features suggestive of metastasis from a lung cancer (for example, brain, bone, liver or skin)</li> <li>– cervical/supraclavicular lymphadenopathy</li> </ul> </li> </ul>	
<p>If a chest X-ray or chest CT suggests lung cancer (including pleural effusion and slowly resolving consolidation), patients should be offered an urgent referral to a member of the lung cancer multidisciplinary team (MDT) usually a chest physician.</p>	<p>Percentage of patients with a chest X-ray or chest CT suggestive of lung cancer (including pleural effusion and slowly resolving consolidation) that are offered an urgent referral to a member of the lung cancer multidisciplinary team, usually a chest physician.</p>	

Recommendation	Criterion	Definition of terms
Every cancer network should have a system of rapid access to FDG-PET scanning for eligible patients.	Percentage of eligible patients within the cancer network that have an FDG-PET scan.	Rapid means rapid enough to ensure time to diagnosis and treatment standards are achieved
Patients with stage I or II NSCLC who are medically inoperable should be offered the continuous hyperfractionated accelerated radiotherapy (CHART) regimen.	Percentage of medically inoperable patients with stage I or II NSCLC who are treated using the continuous hyperfractionated accelerated radiotherapy (CHART) regimen.	
Chemotherapy should be offered to patients with stages III and IV NSCLC and good performance status (WHO 0, 1 or a Karnofsky score of 80–100) to improve survival, disease control and quality of life.	This is covered by the LUCADA dataset.	
Non-drug interventions for breathlessness should be delivered by a multidisciplinary group, coordinated by a professional with an interest in breathlessness and expertise in the techniques (for example, a nurse, physiotherapist or occupational therapist). Although this support may be provided within a breathlessness clinic, patients should have access to it in all care settings.	Percentage of patients with lung cancer that experience breathlessness who have access to support from a multidisciplinary group with an interest in breathlessness and expertise in non-drug interventions (for example, a nurse, physiotherapist or occupational therapist).	
The care of all patients with a working diagnosis of lung cancer should be discussed at a lung cancer MDT meeting.	This is covered by the LUCADA dataset.	
Early diagnosis clinics should be provided where possible for the investigation of patients with suspected lung cancer, because they are associated with faster diagnosis and less patient anxiety.	Percentage of patients with putative lung cancer who are seen in an early diagnosis clinic.	
All cancer units/centres should have one or more trained lung cancer nurse specialists to see patients before and after diagnosis, to provide continuing support, and to facilitate communication between the secondary care team (including the MDT), the GP, the community team and the patient. Their role includes helping patients to access advice and support whenever they need it.	Percentage of patients seen by a trained lung cancer nurse specialist before and after diagnosis, who provides continuing support, facilitates communication between the secondary care team (including the MDT), the GP, the community team and the patient, and helps patients to access advice and support whenever they need it.	

## Appendix E: Staging classification and performance status scales

There are two systems for staging lung cancer – one for NSCLC and one for SCLC. There are a number of scales that report performance status. Table 4 below compares the WHO (Zubrod) and Karnofsky scales.

**Table 1: The TNM staging classification system for NSCLC**

Primary tumour (T)	
TX	Primary tumour cannot be assessed, or tumour proven by presence of malignant cells in sputum or bronchial washings but not visualised by imaging or bronchoscopy
T0	No evidence of primary tumour
TIS	Carcinoma in situ
T1	Tumour < 3 cm in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (that is, not in the main bronchus) <sup>a</sup>
T2	Tumour with any of the following features of size or extent: <ul style="list-style-type: none"> <li>– &gt; 3 cm in greatest dimension</li> <li>– involves main bronchus</li> <li>– &gt; 2 cm distal to the carina</li> <li>– invades the visceral pleura.</li> </ul> Associated with atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung.
T3	Tumour of any size that directly invades any of the following: chest wall (including superior sulcus tumours), diaphragm, mediastinal pleura, parietal pericardium; or tumour in the main bronchus < 2 cm distal to the carina, but without involvement of the carina; or associated atelectasis or obstructive pneumonitis of the entire lung
T4	Tumour of any size that invades any of the following: mediastinum, heart, great vessels, trachea, oesophagus, vertebral body, carina, or tumour with malignant pleural effusion or pericardial effusion <sup>b</sup> or with satellite tumour nodules within the ipsilateral primary-tumour lobe of the lung

<b>Regional lymph nodes (N)</b>	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis to ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes involved by direct extension of the primary tumour
N2	Metastasis to ipsilateral mediastinal and/or sub-carinal lymph nodes
N3	Metastasis to contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene or supraclavicular lymph nodes
<b>Distant metastasis (M)</b>	
MX	Presence of distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis present <sup>c</sup>
<sup>a</sup> The uncommon situation where the invasive component of a superficial tumour of any size is limited to the bronchial wall (and may extend proximal to the main bronchus) is classified as T1. <sup>b</sup> Most pleural effusions associated with lung cancer are due to the tumour, but in some patients cytopathological examination of pleural fluid (on more than one specimen) is negative for tumour, and the fluid is non-bloody and not an exudate. In such cases, where clinical judgement also dictates that the effusion is not related to the tumour, effusion should be excluded as a staging element, and the patient should be staged T1, T2 or T3. <sup>c</sup> Separate metastatic tumour nodules in the ipsilateral non-primary tumour lobe(s) of the lung are also classified M1.	

Source: Mountain CF, Libshitz HI and Hermes KE. *A handbook for staging, imaging, and lymph node classification*. [www.ctsnet.org/book/mountain/](http://www.ctsnet.org/book/mountain/)

**Table 2: Stage grouping by TNM subsets**

		<b>Tumour</b>				<b>Key</b>	
		<b>T1</b>	<b>T2</b>	<b>T3</b>	<b>T4</b>		
<b>Nodes</b>	<b>N0</b>	IA	IB	IIB	IIIB	Patient should be offered surgery if no medical contraindications and adequate lung function	
	<b>N1</b>	IIA	IIB	IIIA	IIIB		
	<b>N2</b>	IIIA	IIIA	IIIA	IIIB	Surgery may be suitable for some patients, based on clinical judgement	
	<b>N3</b>	IIIB	IIIB	IIIB	IIIB		
						Not suitable for surgery	

**Stage IV = M1**

**Table 3: Staging classification system for SCLC**

**Limited stage disease**

Defined according to the possibility of encompassing all detectable tumour within a 'tolerable' radiotherapy port. This includes patients with disease that:

- is confined to one hemithorax
- involves ipsilateral hilar lymph nodes
- involves ipsilateral and contralateral supraclavicular lymph nodes
- involves ipsilateral and contralateral mediastinal lymph nodes
- can be with or without ipsilateral pleural effusions, independent of cytology.

**Extensive stage disease**

Defined as disease at sites beyond the definition of limited disease. This includes patients with

- metastatic lesions in the contralateral lung
- distant metastatic involvement (such as in brain, bone, liver or adrenals).

**Table 4: Performance status scales**

<b>WHO (Zubrod) scale</b>		<b>Karnofsky scale</b>	
0	Asymptomatic	100	Asymptomatic
1	Symptomatic, but ambulatory (able to carry out light work)	90	Normal activity, minor symptoms
		80	Normal activity, some symptoms
2	In bed < 50% of day (unable to work but able to live at home with some assistance)	70	Unable to work, cares for self
		60	Occasional assistance with needs
3	In bed > 50% of day (unable to care for self)	50	Considerable assistance
		40	Disabled, full assistance needed
4	Bedridden	30	Needs some active supportive care
		20	Very sick, hospitalisation needed
		10	Moribund
		0	Dead

Reprinted from Detterbeck FC et al., editors (2001) *Diagnosis and treatment of lung cancer: An evidence-based guide for the practicing clinician*. Philadelphia: WB Saunders, p 40, with permission from Elsevier.

## Appendix F: Treatment matrix for non-small-cell lung cancer

This table is a summary of – but not a substitute for – the recommendations on treatment for NSCLC in Section 1, and should be read in conjunction with them.

	Stage I	Stage II	Stage IIIA	Stage IIIB	Stage IV, PS 0–1	Stage IV, PS 2	Stage IV, PS > 2
Surgery							
Radiotherapy followed by surgery							
Surgery followed by radiotherapy							
Preoperative chemotherapy and surgery	a	a	a				
Surgery followed by chemotherapy							
Surgery then chemo- and radiotherapy		a	a				
Radical radiotherapy							
Chemotherapy and radical radiotherapy				b			
Chemotherapy						a	
Symptomatic treatment, including palliative radiotherapy							

### Key:

First choice for eligible patients

Suitable for some patients (see recommendations)

Not recommended

<sup>a</sup> Except within a clinical trial.

<sup>b</sup> May be first choice of treatment for patients with good performance status and localised disease that can be safely encompassed in a radical radiotherapy treatment volume.