NHS

National Institute for Clinical Excellence

Issue date: **February 2005**

Quick reference guide

Lung cancer

The diagnosis and treatment of lung cancer

Clinical Guideline 24

Developed by the National Collaborating Centre for Acute Care

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Patient-centred care

Treatment and care should take into account patients' individual needs and preferences. Good communication is essential, supported by evidence-based information, to allow patients to reach informed decisions about their care. Carers and relatives should have the chance to be involved in discussions where appropriate.

Grading of recommendations

This quick reference guide summarises the recommendations in the NICE clinical guideline 'Lung cancer: the diagnosis and treatment of lung cancer'. The recommendations are based on the best available evidence and are graded A, B, C, D or good practice point [D(GPP)] depending on the type of evidence they are based on. For more information on the grading system, see the NICE guideline (www.nice.org.uk/CG024NICEguideline).

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 judgment. 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.

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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 ^{18}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, co-ordinated 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.

Abbreviations

CHART	Continuous hyperfractionated accelerated radiotherapy
CT	Computed tomography
FDG	^{18}F-deoxyglucose
MDT	Multidisciplinary team
MRI	Magnetic resonance imaging
NSCLC	Non-small-cell lung cancer
PET	Positron emission tomography
SCLC	Small-cell lung cancer

General principles of care

Information and support

- Give all patients diagnosed with lung cancer verbal and written information on all aspects of their diagnosis, treatment and care, in a form that is tailored to their needs. D (GPP)
- Discuss treatment options and plans with the patient, and make decisions on treatment and care jointly with the patient. Treatment plans should be tailored around the patient's needs and wishes to be involved and his or her capacity to make decisions. D (GPP)
- Encourage patients with lung cancer – particularly those with a better prognosis – to stop smoking. D

Referral

- Offer urgent chest X-ray to patients presenting with haemoptysis, or any of the following if unexplained or present for more than 3 weeks: D
  - cough
  - chest/shoulder pain
  - dyspnoea
  - weight loss
  - chest signs
  - hoarseness
  - finger clubbing
  - signs suggesting metastases (for example, in brain, bone, liver or skin)
  - cervical/supraclavicular lymphadenopathy.
- Offer urgent referral to lung cancer MDT (usually the chest physician) while waiting for chest X-ray results if any of the following are present: D
  - persistent haemoptysis in a smoker or ex-smoker older than 40 years
  - signs of superior vena cava obstruction (swelling of the face and/or neck with fixed elevation of jugular venous pressure – consider emergency referral)
  - stridor (consider emergency referral).

Organisation of care – key features

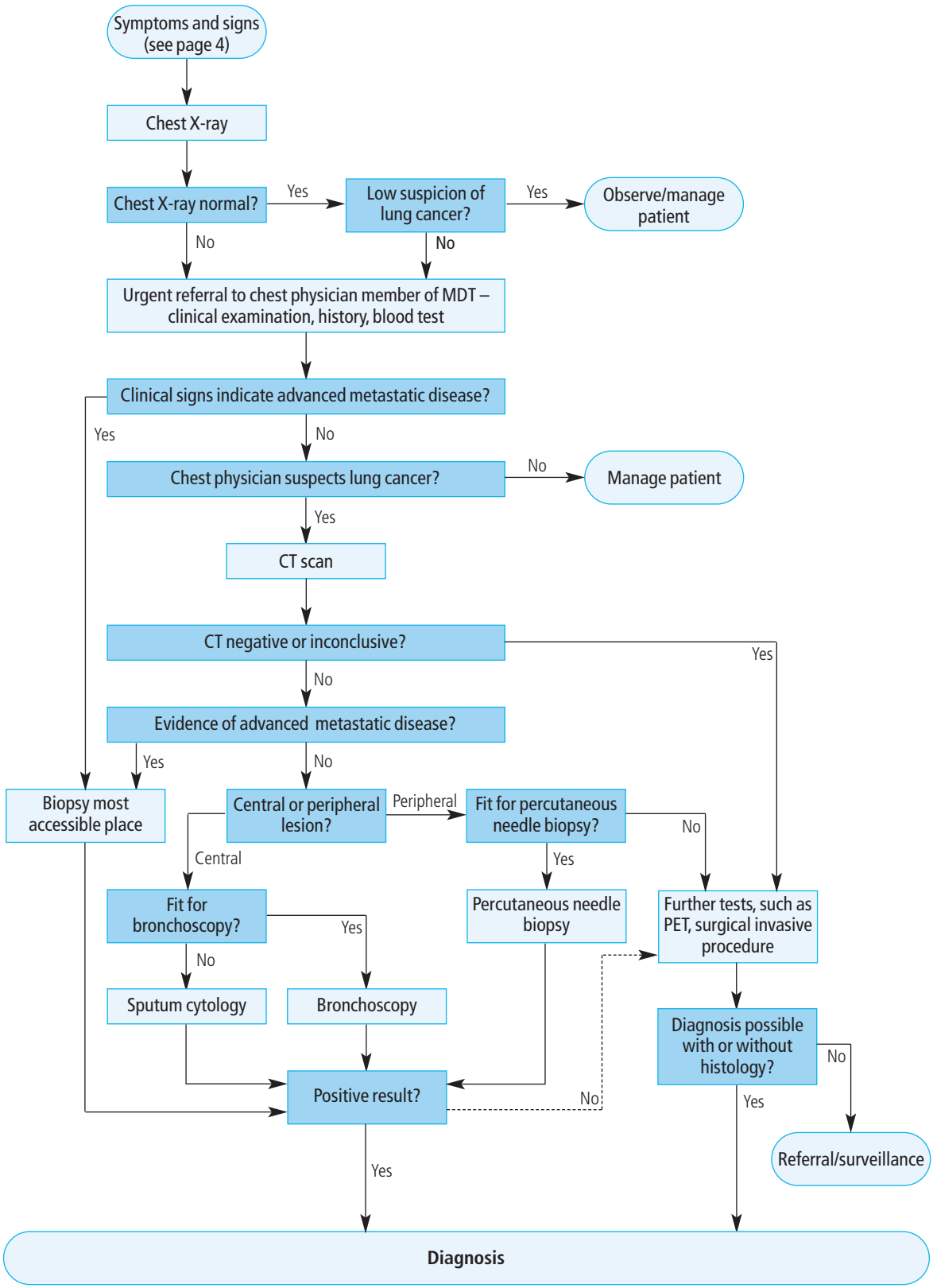
- Lung cancer as an incidental finding: a second copy of the chest X-ray report should be sent to a member of the MDT – usually the chest physician. D (GPP)
- MDTs: discuss care of all patients with a working diagnosis of lung cancer. D
- Early diagnosis clinics: provided where possible, to speed up diagnosis and reduce patient anxiety. A
- PET scanning: every cancer network should have a system of rapid access to FDG-PET scanning for eligible patients. D (GPP)
- Lung cancer nurse specialists: each cancer unit/centre should have one or more trained nurse specialists to provide continuing support to patients, and to facilitate communication between healthcare professionals. D
- Timing of treatment: patients suitable for radical treatment or chemotherapy, or needing radiotherapy or ablative treatment for symptom relief, 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
- Patients' views: use the opinions and experiences of patients and carers to improve the delivery of lung cancer services, and give patients feedback on any action taken as a result. D (GPP)

Performance status scales used in this guideline

WHO (Zubrod) scale	*Karnofsky scale*
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.

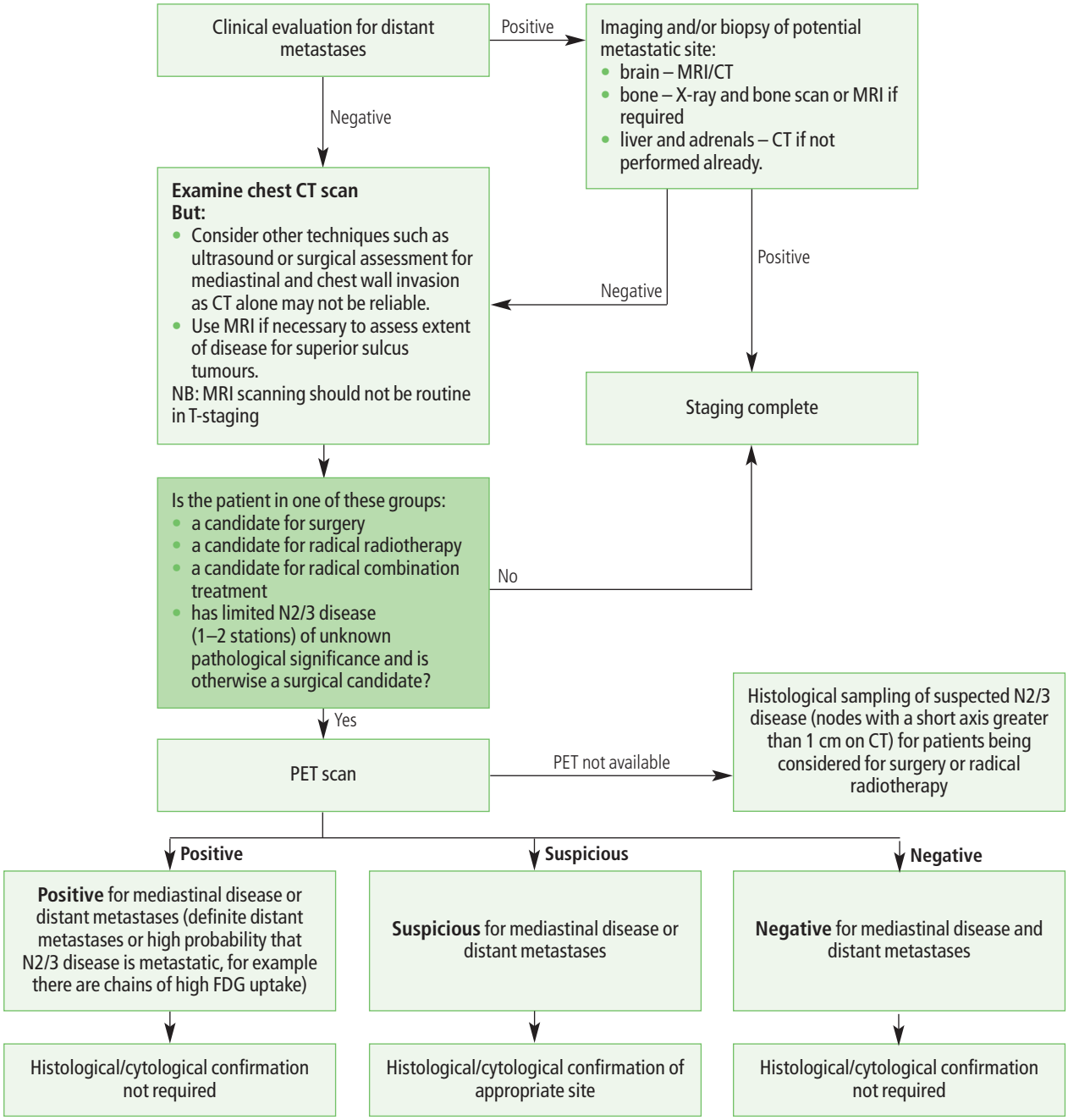
Diagnosis of lung cancer



For full details, see the NICE guideline (www.nice.org.uk/CG024NICEguideline)

Staging of non-small-cell lung cancer

For full details, see the NICE guideline (www.nice.org.uk/CG024NICEguideline)



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)[a]
T2	Tumour with any of the following features of size or extent: – > 3 cm in greatest dimension – involves main bronchus – > 2 cm distal to the carina – invades the visceral pleura 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[b] or with satellite tumour nodules within the ipsilateral primary-tumour lobe of the lung
Regional lymph nodes (N)	
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
Distant metastasis (M)	
MX	Presence of distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis present[c]

a 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.

b 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.

c 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/

Table 2: Stage grouping by TNM subsets

		Tumour			
		T1	*T2*	*T3*	*T4*
Nodes	*N0*	IA	IB	IIB	IIIB
	N1	IIA	IIB	IIIA	IIIB
	N2	IIIA	IIIA	IIIA	IIIB
	N3	IIIB	IIIB	IIIB	IIIB

Key	
	Patients should be offered surgery if there are no medical contraindications and lung function is adequate
	Surgery may be suitable for some patients, based on clinical judgement
	Not suitable for surgery

Treatment of non-small-cell lung cancer

For more details, see below and the NICE guideline (www.nice.org.uk/CG024NICEguideline)

	Stage I	*Stage II*	*Stage IIIA*	*Stage IIIB*	*Stage IV, WHO 0–1*	*Stage IV, WHO 2*	*Stage IV, WHO > 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

a Except within a clinical trial.

b 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.

Surgery (stages I to III)

Stages I and II

- Surgical resection is recommended for patients with no medical contraindications and adequate lung function. D
- Lobectomy is the procedure of choice for patients who can tolerate it. C
- Consider limited resection or radical radiotherapy for patients who would not tolerate lobectomy because of comorbid disease or pulmonary compromise. D
- Aim for clear surgical margins in all patients with stage I or II NSCLC undergoing surgery – usually lobectomy or pneumonectomy. D (GPP)
- Sleeve lobectomy is an acceptable alternative to pneumonectomy for patients with central tumour, and conserves functioning lung. C

Stages II and III

- Aim for complete resection for patients with T3 NSCLC with chest wall involvement who are undergoing surgery, by either extrapleural or en bloc chest wall resection. C
- The MDT should assess patients with stage IIIA (N2) NSCLC because surgery alone is associated with a relatively poor prognosis. D (GPP)

All patients having surgery

- Perform systematic lymph node sampling to provide accurate pathological staging. D (GPP)

Radiotherapy alone (stages I to III)

- 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)
- All patients should undergo pulmonary function tests (including lung volumes and transfer factor) before having radical radiotherapy. D (GPP)

- 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)
- Offer the CHART regimen to:
  - patients with stage I or II NSCLC who are medically inoperable but suitable for radical radiotherapy A
  - patients with stages IIIA or IIIB NSCLC who are eligible for radical radiotherapy and who cannot tolerate or do not wish to have chemoradiotherapy. A
- If CHART is not available, offer 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. D (GPP)

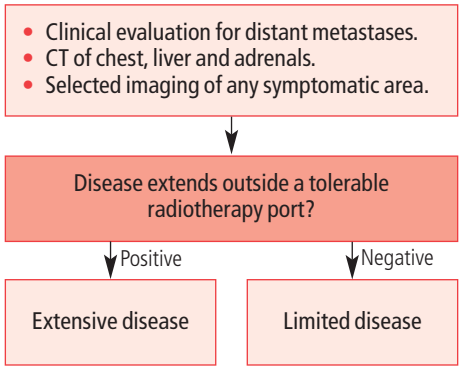
Chemotherapy for patients with NSCLC (stages III and IV)

- Offer chemotherapy 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
- Chemotherapy should be a combination of: D (GPP)
  - a single third-generation drug (docetaxel, gemcitabine, paclitaxel or vinorelbine), plus
  - a platinum drug – carboplatin or cisplatin, taking account of their toxicities, efficacy and convenience.
- Single-agent chemotherapy with a third-generation drug can be offered to patients who cannot tolerate a platinum combination. A
- Consider docetaxel monotherapy if second-line treatment is appropriate for patients with locally advanced or metastatic NSCLC in whom relapse has occurred after previous chemotherapy. A

Combination treatment

- The following treatments are not recommended:
  - preoperative chemotherapy (except as part of a clinical trial) B
  - preoperative radiotherapy A
  - postoperative radiotherapy after complete resection A
  - postoperative chemoradiotherapy for patients whose NSCLC is pathologically staged as II and III (except as part of a clinical trial). B
- Consider postoperative radiotherapy after incomplete resection of the primary tumour, to improve local control. D
- Offer adjuvant chemotherapy to patients who have had a complete resection, with discussion of the risks and benefits. A
- Offer sequential chemoradiotherapy to patients with stage III NSCLC who are not suitable for surgery but are eligible for radical radiotherapy. A

Staging of small-cell lung cancer



Staging classification 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).

Treatment of small-cell lung cancer

- Assessment includes evaluation of the major prognostic factors: performance status, serum lactate dehydrogenase, liver function tests, serum sodium, and stage. D
- Offer all SCLC patients multidrug platinum-based chemotherapy. A
- If the disease responds, offer four to six cycles of chemotherapy. Maintenance treatment is not recommended. A
- Offer patients with limited-stage SCLC thoracic irradiation concurrently with the first or second cycle of chemotherapy or after completion of chemotherapy if there has been at least a good partial response within the thorax. For patients with extensive disease, consider thoracic irradiation after chemotherapy if there has been a complete response at distant sites and at least a good partial response within the thorax. A
- The dose for consolidation thoracic radiotherapy should be between 40 Gy in 15 fractions over 3 weeks and 50 Gy in 25 fractions over 5 weeks. D (GPP)
- Consider prophylactic cranial irradiation for patients with limited disease and complete or good partial response after primary treatment. A
- At relapse, offer second-line chemotherapy only if the disease responded to first-line chemotherapy. The benefits are less than with first-line chemotherapy. D (GPP)

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.
- Supportive and palliative care should be provided by general and specialist palliative care providers in accordance with the NICE Cancer Service Guidance 'Improving supportive and palliative care for adults with cancer' (available from www.nice.org.uk/csgsp). D (GPP)
- Identify and refer without delay patients who may benefit from specialist palliative care services. D (GPP)
- Patients who cannot be offered curative treatment, and are candidates for palliative radiotherapy, can be either observed until symptoms arise and then treated or treated immediately. A
- Non-drug interventions for breathlessness should be delivered by a multidisciplinary group, co-ordinated by a professional with expertise in the techniques (such as a nurse, physiotherapist or occupational therapist). Patients should have access to this support in all care settings. D (GPP)
- Patients should be offered general supportive measures – including drugs – for symptom control, in addition to the specific interventions listed in the table below.

Symptom	*Management*
Breathlessness	• External beam radiotherapy. A • Non-drug interventions (psychosocial support, breathing control and coping strategies). A **Intrinsic airway obstruction** • De-bulking bronchoscopic procedures. D • Endobronchial therapy (photodynamic therapy, brachytherapy) for endobronchial symptoms not palliated by other means. D **Extrinsic airway compression** • Stents. D **Pleural effusion** • Pleural aspiration/drainage for pleural effusion. B • Talc pleurodesis if symptoms improve after aspiration/drainage of fluid. B
Cough	• External beam radiotherapy. A
Haemoptysis	• External beam radiotherapy. A
Chest pain	• External beam radiotherapy. A
Hoarseness	• Referral to ear, nose and throat specialist. D (GPP)
Superior vena cava obstruction	• Chemotherapy and radiotherapy, depending on stage of disease and performance status. A • Stent insertion for immediate relief of severe symptoms or after failure of earlier treatment. B
Symptoms from brain metastases	• Corticosteroids and radiotherapy. D
Spinal cord compression	• Corticosteroids, radiotherapy and surgery where appropriate, within 24 hours. D • Early referral to oncology physiotherapist and occupational therapist. D (GPP)
Symptoms from bone metastases	• Single-fraction radiotherapy if standard analgesic treatments are inadequate. B
Other symptoms	• Management by multidisciplinary groups including supportive and palliative care professionals should address other symptoms, including weight loss, loss of appetite, difficulty swallowing, and depression. D (GPP)

Follow-up

- When patients finish their treatment, a personal follow-up plan should be discussed and agreed with them, after discussion with other professionals involved in the patient's care. The patient's GP should be informed of the plan. D (GPP)
- After completion of treatment, patients with an expectation of life greater than 3 months should be offered the option of protocol-controlled nurse-led follow-up. A
- 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. The review should include thoracic imaging. D
- Routine follow-up should not extend beyond 5 years after attempted curative surgery for NSCLC. D
- Patients who have had palliative radiotherapy or chemotherapy should be followed up routinely 1 month after completion of treatment. The review should include a chest X-ray if clinically indicated. D

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Implementation

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 of the NICE guideline www.nice.org.uk/CG024NICEguideline, 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).

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

The NICE guideline contains full details of criteria for audit.

Further information

Distribution

This quick reference guide to the Institute's guideline on lung cancer contains the key priorities for implementation, summaries of the guidance, and notes on implementation. The distribution list for this quick reference guide is available from www.nice.org.uk/CG024distributionlist.

NICE guideline

The NICE guideline,'Lung cancer: the diagnosis and treatment of lung cancer', is available from the NICE website (www.nice.org.uk/CG024NICEguideline).

The NICE guideline contains the following sections: Key priorities for implementation; 1 Guidance; 2 Notes on the scope of the guidance; 3 Implementation in the NHS; 4 Research recommendations; 5 Other versions of this guideline; 6 Related NICE guidance; 7 Review date. It also gives details of the grading scheme for the evidence and recommendations, the Guideline Development Group, the Guideline Review Panel and technical detail on the criteria for audit.

Full guideline

The full guideline includes the evidence on which the recommendations are based, in addition to the information in the NICE guideline. It is published by the National Collaborating Centre for Acute Care. It is available from www.rcseng.ac.uk/about_the_college/role_of_the_college/nccac_html, www.nice.org.uk/CG024fullguideline and on the website of the National Library for Health (www.nlh.nhs.uk).

Information for the public

NICE has produced a version of this guidance for people with lung cancer, their families and carers, and the public. The information is available, in English and Welsh, from the NICE website (www.nice.org.uk/CG024publicinfo). Printed versions are also available – see below for ordering information.

Related guidance

For information about NICE guidance that has been issued or is in development, see the website (www.nice.org.uk).

> Improving supportive and palliative care for adults with cancer – the manual. *Guidance on cancer services* (2004). Available from 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.

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

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.

Ordering information

Copies of this quick reference guide can be obtained from the NICE website at www.nice.org.uk/CG024quickrefguide or from the Department of Health Publications Order Line by telephoning 0870 1555 455 and quoting reference number N0825.

Information for the public on the guideline ('The diagnosis and treatment of lung cancer') is also available from the NICE website at www.nice.org.uk/CG024publicinfo or from the Department of Health Publications Order Line (quote reference number N0826 for a version in English and N0827 for a version in English and Welsh).

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