Lung cancer is the second most common cancer in the UK and causes the most cancer deaths. There are two main types of lung cancer: small cell lung cancer (SCLC), accounting for about 20% of cases; and non-small cell lung cancer (NSCLC), accounting for 80% of cases. NSCLC includes squamous cell carcinomas (48%), adenocarcinomas (38%) and large cell (14%) carcinomas. Alongside the two main groups of lung cancer are other thoracic cancers, malignant pleural mesotheliomas and tumours of the thymus.

Until recently the various NSCLC pathological types were thought to have fairly homogeneous clinical behaviour and were treated the same, but clinical trials with pemetrexed have highlighted the need for different treatment approaches depending on histology.

Epidemiology
In 2007 there were 39,473 new cases of lung cancer and 35,261 deaths in 2008 from lung cancer in the UK. (In Europe, the highest mortalities are reported in eastern and northern countries; Mediterranean countries have the lowest incidence and mortality.) Lung cancer is rare under the age of 40 years with 85% of cases occurring in those over the age of 60 years.

The incidence of lung cancer is rising among women, mirroring an increase in the number of women who smoke; the male:female ratio has moved from 6:1 in the 1950s to 1.4:1 today.

The overall incidence of lung cancer has fallen by more than 40% since a peak in the 1970s mainly due to a fall in smoking rates among men. Nevertheless, lung cancer remains the most common cause of death from cancer for men and women in the UK.

The death rate from lung cancer remains close to the incidence rate; presently only a quarter of lung cancer patients are alive one year after being diagnosed and just 7% are alive at five years. This is partly because over two thirds of patients are diagnosed at a late stage when curative treatment is not possible. According to Cancer Research UK, one person dies from lung cancer every 15 minutes in the UK.

Early detection of lung cancer is essential to improve treatment outcomes and pharmacists should play an active part in raising awareness of lung cancer signs and symptoms and encourage early referral to GPs.

Pharmacists in all sectors can help with lung cancer prevention through encouraging patients to quit smoking.

Summary
There are two main types of lung cancer: small cell lung cancer and non-small cell lung cancer. Lung cancer remains the most common cause of death from cancer for men and women in the UK and the prognosis for those diagnosed is generally poor.

Early detection of lung cancer is essential to improve treatment outcomes and pharmacists should play an active part in raising awareness of lung cancer signs and symptoms and encourage early referral to GPs.

Pharmacists in all sectors can help with lung cancer prevention through encouraging patients to quit smoking.
Most drug treatments are given with palliative intent: to improve patients’ quality of life and reduce symptoms. Despite many new agents offering improvements in survival, none is curative and surgery remains the best chance of cure.

Risk factors
Smoking is the most significant risk factor for developing lung cancer. Although not all smokers develop lung cancer, most patients with lung cancer have smoked and these individuals still benefit from stopping smoking (see Box 1).

Cancer Research UK estimates that 90% of lung cancers in men and 81% of lung cancers in women are caused by smoking.3 The duration of smoking and number of cigarettes smoked are related to the risk of lung cancer. Other risk factors include exposure to naturally occurring radon gas, industrial carcinogens (such as arsenic and some hydrocarbons) and asbestos.

Diagnosis
Early diagnosis of lung cancer is crucial and pharmacists have an important role in raising awareness of the signs and symptoms of lung cancer, and referring patients with symptoms suggestive of lung cancer.

The National Institute for Health and Clinical Excellence clinical guideline on the diagnosis and treatment of lung cancer5 has been updated and will be published at the end of April 2011. Readers are advised to consult the NICE website (www.nice.org.uk) for the most up-to-date lung cancer guidance.

The 2005 clinical guideline recommends that the following symptoms should prompt urgent referral for a chest X-ray:

- A new cough that does not go away after two or three weeks
- Worsening of a long-standing cough
- Long-standing chest infection
- Coughing that produces blood
- Persistent (lasting more than three weeks) chest or shoulder pain
- Unexplained persistent breathlessness or hoarseness
- Weight loss and unexplained tiredness
- Chest signs and finger clubbing

When referred, patients with symptoms suggestive of lung cancer should be seen within two weeks by a member of a multidisciplinary team that specialises in the management of lung cancer. Pharmacists should ensure any patients they see with these symptoms are encouraged to visit their GP immediately, who can arrange a referral under the NHS “two-week rule”.

Lung cancer patients must be diagnosed within 31 days of the referral and have their first treatment within 31 days of diagnosis. These timescales form part of the cancer wait targets, which ensure that all cancer patients are diagnosed and treated quickly. Chest X-ray is undertaken routinely, but it must be noted that chest X-rays can come back “clear” even in the presence of cancer, so all patients with suspicious symptoms should have a computed tomography scan of the chest and upper abdomen (to exclude liver metastases).

To confirm malignancy a biopsy of the tumour or lymph nodes is required. For central tumours this can usually be achieved by bronchoscopy, whereas fine-needle aspiration is often required for peripheral lung cancers. In cases where it is not possible to perform a biopsy, sputum cytology can be used to test for malignancy. NICE recommends using techniques and procedures that give the most information about the diagnosis and staging with the least risk to the patient.

Disease staging
The diagnosis and investigation stage of the patient journey is critical for those with lung cancer, since there is the potential for curative surgery for a small number of patients. The cancer must be accurately staged to determine its size, any lymph node involvement and whether it has metastasised beyond the original site, in order to plan the best treatment strategy.

Box 1: Smoking cessation
Stopping smoking can deliver substantial health benefits at any age and is strongly recommended. Even patients diagnosed with lung cancer can benefit from smoking cessation. It is known that smoking increases the risk of pulmonary complications after lung cancer surgery6 and smoking can significantly reduce plasma levels of the newer targeted agents such as erlotinib, which is used in the palliative setting.7 Smoking may also cause disease progression and evidence, although limited, suggests that smoking cessation can improve prognostic outcomes after diagnosis of lung cancer.8

Pharmacists are well positioned to advise people to stop smoking and provide information on nicotine replacement therapy. A study into smoking-related behaviour and attitudes in 2008/09 showed that 67% of smokers would like to quit, with over 43% seeking advice from a health professional.7

The NHS has invested heavily in stop smoking services to improve public health as well as reduce the incidence of lung cancers. Cancer Research UK figures state that a lifelong male smoker has a risk of 15.9% for developing lung cancer by 75 years of age, but stopping at 60, 50, 40 and 30 years of age reduces this risk to 9.9%, 6.0%, 3.0% and 1.7%, respectively.7

**Figure 1:** Finger clubbing can be a sign of lung cancer
SCLC

Unfortunately for patients with SCLC, the cancer will nearly always have metastasised by the time it is diagnosed and treatment is generally palliative with very little chance of surgical cure. SCLC is staged simply as either: limited-stage disease, where the tumour is confined to one side of the chest and the involved lymph nodes can be treated with radiotherapy; or extensive-stage disease, which exists beyond these bounds.

NSCLC

For NSCLC staging is more complex and is based on the “TNM” system, where “T” is the extent of the primary tumour (score 0–4), “N” is the absence or presence and extent of regional lymph node involvement (score 0–3) and “M” is the absence or presence of distant metastases (score 0–1).

Information from the TNM system is also used to stage a patient’s disease (from stage I to IV). For example, a patient with stage IIb NSCLC might have disease designated as T3N2M0, T4N2M0, etc. Five-year survival rates for the disease stages are set out in Box 2. More detail on the TNM system can be found at www.radiologyassistant.nl.

Access to PET (18F-deoxyglucose positron emission tomography) scanning is required for patients staged as candidates for surgery or radical radiotherapy to look for involved intrathoracic lymph nodes and distant metastases (which may rule out potentially curative but risky interventions). Patients being considered for surgery are fit enough for the procedure; this involves assessing their physical functioning using measures such as the World Health Organization/European Cooperative Oncology Group “performance status” (see Box 3). It is also important to ensure that patients are aware of the risks before consenting to surgery.

Medical and surgical management of NSCLC and SCLC are described in the accompanying article (p109).

Box 2: Survival by stage

<table>
<thead>
<tr>
<th>STAGE</th>
<th>FIVE-YEAR SURVIVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>58–73%</td>
</tr>
<tr>
<td>Ib</td>
<td>43–58%</td>
</tr>
<tr>
<td>IIA</td>
<td>38%</td>
</tr>
<tr>
<td>IIB</td>
<td>18%</td>
</tr>
<tr>
<td>IIIA</td>
<td>13%</td>
</tr>
<tr>
<td>IIIB</td>
<td>9%</td>
</tr>
<tr>
<td>IV</td>
<td>1%</td>
</tr>
</tbody>
</table>

Box 3: WHO/E COG performance status

<table>
<thead>
<tr>
<th>PERFORMANCE SCORE</th>
<th>SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Asymptomatic — fully active: able to carry on all pre-disease performance without restriction</td>
</tr>
<tr>
<td>1</td>
<td>Symptomatic — fully ambulatory: restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature (eg, light house work, office work)</td>
</tr>
<tr>
<td>2</td>
<td>Symptomatic — in bed &lt;50% of the day: ambulatory and capable of all self-care but unable to carry out any work activities, up and about more than 50% of waking hours</td>
</tr>
<tr>
<td>3</td>
<td>Symptomatic — in bed &gt;50% of the day but not bedridden: capable of only limited self-care, confined to bed or chair more than 50% of waking hours</td>
</tr>
<tr>
<td>4</td>
<td>Bedridden — completely disabled: cannot carry out any self-care activities, totally confined to bed or chair</td>
</tr>
</tbody>
</table>

WHO = World Health Organization; ECOG = Eastern Cooperative Oncology Group

References


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