

## LUNG CANCER BRIEFING



### The facts about Lung Cancer

- Lung cancer is the most common cancer in the world with 1.3 million new cases diagnosed every year<sup>1</sup>
- Lung cancer is the UK's biggest cancer killer. It is the most common cause of death from cancer for both men and women, claiming over 36,000 lives each year<sup>2</sup>
- Lung cancer is responsible for 24% of all male cancer deaths and 18% of all female cancer deaths in the UK<sup>3</sup>
- The average survival from diagnosis to death in the UK is just six months<sup>4</sup> - 80% of people with lung cancer die within a year of being diagnosed<sup>5</sup>
- Only 20% of people are alive one year after being diagnosed with lung cancer<sup>6</sup>
- The five year survival rate for men is 6.3% and 7.5% for women<sup>7</sup>
- Only 3% of all money spent on cancer research in this country goes towards lung cancer<sup>8</sup>
- Lung cancer is the second most commonly diagnosed cancer in the UK in both men and women<sup>9</sup>
- More women die from lung cancer than from breast cancer: in 2004, 13,000 female deaths were due to lung cancer compared to 12,400 deaths due to breast cancer, and this gap has widened since 1999<sup>10</sup>
- Recent studies indicate that women are more susceptible to developing lung cancer than men<sup>11</sup> and recent findings show the incidence of lung cancer is falling in men but has been rising in women for the last 3 decades<sup>12</sup>
- Lung cancer is uncommon before the age of 40. Only about one case in 100 is diagnosed in people younger than 40. The great majority of lung cancer cases occur in people over the age of 60<sup>13</sup>
- There are about 50 new cases of lung cancer per hundred thousand population each year<sup>14</sup>
- Of the 10,500 operations for respiratory disease in 1999/2000, 40% were for lung cancer<sup>15</sup>

### Types of Lung Cancer

#### Small cell lung cancer

- Lung cancer comprises two main types. Small cell lung cancer is entirely smoking related, very aggressive and hardly ever operable but responsive to cytotoxic (cell-

damaging) anticancer chemotherapy. Although many people respond to treatment, the disease returns in most cases and only 5 to 10% of patients will be cured<sup>16</sup>

#### Non small cell lung cancer

- Non-small cell lung cancer comprises of squamous, adeno and large cell types. Squamous and large cell cancer are almost entirely smoking related whilst adenocarcinoma is the only cell type that develops in non-smokers.

#### Mesothelioma

- A mesothelioma is a malignant tumour that arises within the mesothelium, a thin membrane that lines the chest (pleura) and the abdomen (Peritoneum) and surrounds the lung or the bowel respectively. The pleural mesothelioma is much more common, and its rising incidence is causing concern
- A history of occupational exposure to asbestos can be obtained in about 90% of mesothelioma cases<sup>17</sup>. The other causes of the disease are not fully understood. Neither smoking nor exposure to more modern fire resistant materials, such as fibreglass, is thought to increase the risk of developing mesothelioma
- Wagner et.al. first described the condition of malignant mesothelioma and its association with asbestos in 1960. It was not until the mid 1970s that the dangers of asbestos became universally recognised and action, such as the phasing out of the use of asbestos, began to be taken
- There were 1,848 mesothelioma deaths in Great Britain in 2001<sup>18</sup> (an increase of 70% since 1992)
- The total number of mesothelioma deaths in Great Britain is expected to peak at around 1,950 to 2,450 deaths sometime between 2011 and 2015<sup>19</sup>

#### Carcinoid tumour

- Is a rare and benign tumour disease of the lung (1-2% of all lung cancers). This lung growth affects the organs and glands which produce many of the hormones (neuroendocrine) e.g. thyroid gland. It is more common in a younger age group and the majority of patients have no symptoms at diagnosis

#### Who does Lung Cancer affect?

- Those people who have smoked or still smoke have a higher risk of developing lung cancer. Once somebody has smoked the equivalent of 20 cigarettes a day for 20 years, their chances of getting lung cancer rises with the number of cigarettes smoked per day and the number of years of smoking
- Subsequently 20 cigarettes a day for 40 years gives a 55-fold increase in the risk of developing lung cancer compared to non-smokers. Due to the slow growing nature of lung cancer, the risk of contracting lung cancer does not lower substantially until a patient has quit smoking for approximately 12 years
- It has also been found that there is difference in incidence rates between men and women. For many years lung cancer has been more common in men than women, but

the number of cases in women has risen and is now coming close to that in men. This reflects the rise in the number of female smokers.<sup>20</sup> Additionally female smokers are twice more likely to develop lung cancer than male smokers<sup>21</sup>

### Causes of Lung Cancer

- The most common cause of lung cancer is smoking. It has been found that 90% of lung cancers develop in people who smoke<sup>22</sup>
- Passive smoking is another known cause. The rate of lung cancer in non-smokers rises significantly if exposure is frequent for instance, by living with a smoker or by working in an office where others smoke
- Ten separate studies have shown an increase of up to 30% in the risk of lung cancer among non-smokers living with smokers, compared with non-smokers living with non-smoker<sup>23</sup>
- Other factors involved in the development of this illness include environmental irritants such as fumes from petroleum products (diesel and asphalt for example) or asbestos
- Asbestos is a strong and incombustible fibre which used to be widely used in the past for fireproofing and insulation. Asbestos fibres are small and therefore easily breathed in or swallowed by those who come into contact with them. Blue and brown asbestos are known to be the most dangerous. White asbestos does increase the risk of Mesothelioma, but is not as strong. Another fibre called tremolite may also be a cause. Although White asbestos was banned in 1999 (the last type of asbestos to be banned in the UK), it is still present in many homes and public buildings that were built prior to the ban
- There is also mounting evidence that radioactivity and high concentrations of radon gas in certain parts of the UK can cause lung cancer. Radon gas is produced when uranium decays and becomes radium which then decays and produces radon. Radon gas neither tastes nor smells or has colour. Radon in ordinary houses causes about 1,000 deaths each year in the UK, which is about 1% of all cancer deaths. Those most at risk are smokers as their lungs may already be damaged which makes them more susceptible to radon than non smokers

### Symptoms of Lung Cancer

- Lung cancer may not show any symptoms in its earliest stages, which can make early diagnosis difficult. However if it is diagnosed early, lung cancer is far easier to treat and potentially curable<sup>24</sup>
- Symptoms can arise from the lung itself due to the tumour ulcerating one of the large central breathing airways. The most common symptom produced from this is a persistent cough or change of cough in those people who already have chronic bronchitis, coughing up of blood (haemoptysis), wheezing, chest infections and pneumonia. Other possible symptoms include breathlessness, fatigue, loss of appetite and weight loss. There may also be a persistent pain in the chest or even in one shoulder which is reported in up to 40 per cent of cases.<sup>25</sup> A continuous hoarseness of the voice may indicate that the cancer is pressing on the nerves to the voice box

- Often the tumour shows no signs and the first indications are due to the effects of cancer that has spread to other parts of the body
- It is hoped that if public understanding of lung cancer and its symptoms is improved then this could lead to earlier diagnosis and as a result save people's lives

### **Diagnosis of Lung Cancer**

- Primarily the patient will undergo a chest X-ray or CT scan of their lungs to confirm their GP's diagnosis. Patients may also require an examination of the inside of their lungs to confirm the results of the initial tests

This can be done in three ways:

- Bronchoscope is where a narrow flexible telescope is passed through the patient's nose, down their windpipe and into their lungs to see the tumour
- A needle test when the person's chest is numbed with a local anaesthetic and a needle enters the tumour
- Positron Emission Tomography (PET) scans are considered the most effective way to diagnose disease and evaluate the success of treatment. A person who has a PET scan is injected with a small amount of radioactive tracer. Currently, the most common used is a sugar molecule combined with a radiochemical element called FDG (fluorodeoxyglucose). After the injection, the patient waits about an hour, giving the radioactive tracer time to be taken up by different parts of the body. Being much like glucose this FDG substance is attracted to areas of high glucose metabolism (energy-burning), such as cancer cells. The distribution of radioactivity in the body is measured by a camera within the scanner and an image of uptake across the body is produced. Scanning takes around 30mins. For best results PET is often used in conjunction with CT

### **Treatment of Lung Cancer**

There are a number of different treatments for the various types of lung cancer:

#### **Surgery**

- A person may be advised to have part or all of one lung removed by an operation, this may result in the loss of some of the breathing capacity but an operation will only be suggested if the doctor is happy that the remaining lung(s) will be able to cope with everyday life without causing breathlessness

#### **Drug/X-ray therapy**

- Some tumours are very sensitive to drugs or to special doses of x-rays, which aim to shrink the tumour. As with surgery there is no guarantee of a cure but in the majority of individuals with lung cancer, such treatment has a beneficial effect upon troublesome symptoms

## Radiotherapy

- High-dose x-ray treatment (radiotherapy) involves sitting or lying in front of a large machine for a few minutes on a number of occasions, usually spread over two or three weeks. The treatment is completely painless but people may notice some soreness of the skin rather like sunburn and feel generally tired. However, others notice no ill effects at all. This therapy can take a little time to work and continues to shrink the tumour after the course of treatment is over

## Chemotherapy

- Treatment with drugs is known as 'chemotherapy', this treatment may be given either in the form of tablets or by injection. These drugs then travel in the blood stream helping stop cancer cells wherever they are in the body. Some people feel sick after the treatment but this can be relieved with modern medication. Some drugs can cause hair loss, but this is temporary. Chemotherapy can also affect a person's ability to fight off infections, therefore their progress is closely monitored throughout their treatment

## Mesothelioma

- At present there is no cure for mesothelioma. If it is caught very early it can sometimes be removed by surgery but unfortunately this is rare. The usual treatment for mesothelioma is based on 'active symptom control.' Treatment with steroids, various levels of painkillers, laxatives and drugs to improve the breathing may help

## Prevention of Lung Cancer

- The most important way lung cancer can be prevented is through not smoking or stopping smoking. Cigarette smoking has been identified as the single most important cause of preventable disease and premature death in the UK. Overall, one third of all cancer deaths, including over 90% of lung cancer deaths, are linked to tobacco smoking.<sup>26</sup>
- The risk of lung cancer in an ex smoker will reduce with every year of non-smoking so it is never too late to give up smoking.<sup>27</sup> It is also important that passive smoking is avoided to lower the risk of contracting lung cancer.

## Recent Lung Cancer research

### Survey at the World Congress on Lung Cancer

- The survey included more than 200 physicians - from 35 countries from across the world
- Nearly three-quarters (71%) of physicians taking part in a recent survey at the World Congress on Lung Cancer considered that fear of receiving a diagnosis of lung cancer caused many people to delay seeing their doctor
- The widespread stigma surrounding lung cancer - with the public considering that the disease is self-inflicted by smoking - makes the situation even worse
- Two-thirds of the survey respondents considered that removing the stigma would encourage people to seek help earlier

## Lung Cancer and the Media

- A research study has shown that lung cancer is rarely written about in the media - highlighting that other common cancers, such as breast cancer are written about four times more often than lung cancer<sup>28</sup>

## Lung Cancer research funding

- A recent report by the National Cancer Research Institute found that research into lung cancer receives only 3% of all cancer research funding compared with the high incidence (15%) and mortality (22%) associated with this disease<sup>29</sup>

## British Lung Foundation funded Research

### *Understanding why small cell lung cancer relapses and becomes resistant to further treatment in patients with small cell lung cancer*

- Professor Tariq Sethi from the University of Edinburgh conducted research to investigate why radiotherapy and chemotherapy is initially successful in treating small cell lung cancer but despite this often results in a relapse of the tumour later on. Therefore the survival rate at 2 years after the cancer is first diagnosed is less than 5 per cent.
- The results identified that the cancer cells became resistant to therapy via molecules on their surface called 'beta-1 integrins. When these molecules stick to parts of their environment they become more established and set off a chain of events that prevents chemo- and radio- therapy from working properly
- This research resulted in a better understanding of how lung cancers develop resistance to therapy which will enable drugs to be developed that will target these processes and therefore destroy the cancer cells which are not destroyed in the initial treatment
- This will therefore lead to an increase in the number of people who survive lung cancer

## Policy and Key Issues

- Lung cancer is the poor relation of other cancers, highlighted by the poor survival rates and lack of research funding in comparison to the other major cancer killers. The British Lung Foundation believes it is vital that this balance is redressed in order that people with lung cancer receive the best possible treatment and care available

## Smoking

- Smoking and secondhand smoke are significant risk factors for lung cancer, therefore it is important to discourage people from starting smoking and persuade current smokers to stop
- The British Lung Foundation welcomes the ban on Smoking in enclosed public places and workplaces introduced in Scotland and due to be introduced in Northern Ireland in April 2007. We were also pleased at the overwhelming support of MPs and Peers who voted for a comprehensive ban on smoking in enclosed public places and work places in

the Health Bill. We look forward to the Bill receiving Royal Assent as soon as possible. Together with other charities in the Smokefree Action coalition, we are campaigning for an early implementation date in England of 31 May 2007. This is World No Tobacco Day and we believe gives business and Environmental Health Officers time to prepare for the new legislation. It is hoped that the Welsh Assembly, having already voted comprehensively for a full ban in 2002 and again in 2005 will be able to use the new powers the Health Bill provides to implement the ban in Wales at the earliest possible time

- In order to support this legislation, the British Lung Foundation believes that it is essential to provide effective smoking cessation support to smokers who wish to stop. Primary Care Organisations must provide secure funding to ensure consistency in service provision. Healthcare professionals should also consider innovative ways of reaching people who may wish to use the service, for example, holding drop-in clinics in accessible public places, such as sports clubs and public houses
- In addition, the recent investment in public health awareness campaigns aimed at encouraging smoking cessation and dissuading people from starting smoking should be continued to highlight the health risks associated with smoking

#### Early and accurate diagnosis

- Early diagnosis is vital to improve a person's chance of survival. For radical surgery to be an option, the tumour must be identified at an early stage in its development before it has spread significantly
- Due to the stigma attached to lung cancer, as a result of its association with smoking, many people are reluctant to present at the GP surgery and ignore early symptoms, putting them down to a 'smokers cough'
- Public awareness of the early symptoms of lung cancer and the importance of early diagnosis must be raised to improve survival for this cancer

#### Availability of PET scanners

- PET scans have been shown to be cost effective in two specific areas<sup>30</sup>
  - Assessing whether lung tumours are benign or malignant. (PET is therefore invaluable for those lung cancer patients where conventional testing has not been able to differentiate and the biopsy is inconclusive)
  - The staging of lung cancer, to assess whether or not the cancer is suitable for surgery
- It is estimated<sup>31</sup> based on current knowledge, that PET has a potential role for approximately 25% of patients diagnosed with lung cancer. For those lung cancer patients, where other investigations have been unable to distinguish between benign and malignant tumours, a PET scan result will reduce uncertainty and anxiety and where PET technology spares useless thoracic surgery, the patient's quality of life greatly improves. This is in addition to the obvious cost and time savings associated with avoiding unnecessary surgery
- In one study, 62 out of 102 patients with lung cancer being assessed for major surgery had their management changed after having a PET scan<sup>32</sup>

- Despite this evidence, the UK has fallen behind the rest of Europe and the US in the provision of PET<sup>33,34</sup>. According to the Intercollegiate Standing Committee for Nuclear Medicine in 2003 “state of the art dedicated PET camera facilities should be established in at least 15 sites within the UK in the next three to five years, and in at least 40-60 sites in the next 10 years”. There are currently seven PET-CT sites and one PET site in the UK routinely available for NHS patients, private healthcare sector and research based facilities.
- The British Lung foundation believes that all people with lung disease across the UK should have equal access to imaging facilities.
- In October 2005, the Department of Health published a strategic framework for the provision of PET scanners in England. This document made a commitment to make provision should be made for around 40,000 scans p.a. across England for cancer over 3 - 5 years. Whilst welcoming this announcement, the British Lung Foundation does not believe that this increase in facilities is sufficient to support the need for this type of diagnostic testing and calls on the Government to increase the additional funding to that identified by the Intercollegiate Standing Committee for Nuclear Medicine

#### The UK Lung Cancer Coalition (UKLCC)

- The United Kingdom Lung Cancer Coalition (UKLCC) is a powerful partnership of leading lung cancer experts, senior NHS and Department of Health professionals, charities and healthcare companies. The UKLCC is the nation’s largest multi-interest group in lung cancer and this is the first time all the interested parties have joined together to give people with lung cancer a true voice
- The British Lung Foundation is a founding member and provides the secretariat for this group

#### Action Mesothelioma

- The British Lung Foundation, together with asbestos support groups, mesothelioma charities and healthcare professionals, launched the Action Mesothelioma campaign on 27 February 2006, with the first Action Mesothelioma Day. The campaign aims to raise awareness of this cancer and calls for faster diagnosis, better treatment and care services, more funding for research and measures to prevent future exposure to asbestos. It also urges the Government and the Cancer Tsar to make mesothelioma a national priority.
- The changes and improvements in policy needed in the area of mesothelioma are outlined in the 15 point Mesothelioma Charter, which was presented to 10 Downing Street on Action Mesothelioma Day with more than 14,000 signatures. The British Lung Foundation looks forward to working with the Government to take this forward and provide the improvements needed.

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