One to one: Lung cancer — the need for early diagnosis

If diagnosed in the early stages, lung cancer is curable. However, most lung cancers are detected in the later stages of the disease — when a cure is no longer possible. It is, therefore, not surprising that lung cancer is the leading cause of cancer death in the UK. Dawn Powell talks to lung cancer expert **Professor Stephen Holgate** about the disease and what needs to be done to ensure earlier diagnosis.

PROFESSOR STEPHEN HOLGATE is the chair of the UK Respiratory Research Collaborative and MRC Clinical Professor of Immunopharmacology at Southampton General Hospital

Although breast cancer is the most common form of cancer in the UK, lung cancer is the most common cause of cancer death. One of the reasons for this is that patients are often only diagnosed when the disease has already significantly developed, making it much more difficult to treat. However, according to Professor Stephen Holgate, screening high-risk patients could mean more lung cancers were detected earlier.

Who is most at risk of developing lung cancer?
Lung cancer occurs almost entirely in people who smoke tobacco. The number of men diagnosed with the disease is falling now [previously, significantly more men than women developed lung cancer]. The reason for this is because many males are giving up smoking. However, the amount of women who smoke is increasing — this is very worrying. If this incidence of smoking continues to increase, lung cancer will soon over take breast cancer as the most common cancer in women. This is serious because breast cancer gets a lot of publicity, but lung cancer does not.

Few people are diagnosed with lung cancer below the age of 40, but the incidence rises steeply thereafter — peaking in patients aged between 70 and 79. Why is this is?
It is because of a combination of factors. One of the reasons is that the risk of lung cancer increases the longer a person smokes – therefore, with older people, you have got a longer exposure to smoke. Also, as people are living longer these days, you are getting more people who have been smoking for long periods.

Because of their age, older lung cancer patients are more susceptible to complications. What type of complications can occur?
The commonest problem of lung cancer in older people is their lung capacity. The older you are, the less lung you have; therefore, any airway obstruction caused by a cancer will have a greater impact — independently of co-existing chronic pulmonary obstructive disease (COPD). As well as this, older people tend to have less ability to protect themselves against infection. So, they are more likely to develop pneumonia behind the obstructive effects of the cancer. The systemic effects of the tumour — eg, fatigue or lack of appetite — are also greater in older people mainly because their ability to compensate for these effects is reduced. But, generally, the complications of lung cancer in older people are not that different to those in younger people.

Why do you think there is such a high mortality rate with lung cancer?
The biggest problem is late diagnosis. By the time most lung cancers are diagnosed, it is too late to treat them successfully. In other words, the cancer has spread to local lymphoid tissue or spread into the bone. The problem is that the early symptoms of lung cancer are very difficult to separate from the symptoms of common lung problems. For example, a

patient could have repeated cough or maybe their lung has partially collapsed and is causing breathlessness — these symptoms are characteristic of other lung conditions, so the lung cancer might not be detected at first.

How could lung cancer be detected earlier?
About 20 or 30 years ago, there used to be mass screening for tuberculosis and lung cancer was screened for at the same time. This was effective at picking up early lung cancer, but it was not cost effective. The x-ray equipment used was not strong enough to detect small lesions. Now, we have much improved radiology and much better imaging. The big question now is should we be setting up a screening programme for all patients who have smoked a certain amount?

Do you think there should be such a programme?
We should definitely do something about it — no question about it. If you do catch lung cancer early, it is curable. There was a Medical Research Council screening trial that came up for funding about five years ago that passed all of the scientific criteria, but was not funded because it was too expensive. That was related to the technology as it was five years ago, and I think things have moved on since then. I really do feel that it is time to be screening high-risk patients for lung cancer using the technologies we have today. X-rays are just one way of screening, but there are other ways of doing it. There are two possible ways that haven't been explored properly. The first is biomarkers — when a small cancer develops, chemicals are produced that can be measured in the sputum blood or exhaled breath. There is some work to suggest that there is pattern of chemical characteristic of lung cancer. The second is fibre-optic bronchoscopy, which is when a tube is put down into the lungs and small scraping of the airway is taken. The genes and proteins in the cells are then examined, which can tell you whether or not the lining of the lung is pre-cancerous.

If these screening tools were available, which patients should they be used on?
Lung cancer is 20 to 30 per cent times more common in patients with COPD [which is strongly associated with smoking]. There is a strong basis for screening — we should start off in this population and expand out.

Could GPs use the screening tools you describe?
Potentially, in the long-term, a test where the GP could take a patient's breath into a bag and get it analysed is possible. They are currently doing research in this area at the University of Keel using a technique called mass spectroscopy.

What should GPs being doing to make patients more aware of lung cancer in the first place?
It is not the patient's problem; it is more about how can we get primary care to take a more proactive stance on respiratory symptoms — for example, to get further investigations done. The symptoms of lung cancer will take the patient to the doctor anyway; it is what the doctors do with these symptoms that is important. So I think for an educational programme to be most effective, it probably needs to be targeted more at primary care than at the patient. But as I have already mentioned, it

is difficult because the symptoms of lung cancer are very non-specific.

You are chair of the UK Respiratory Research Collaboration, why was the committee set up?
We set up the UK Respiratory Research Collaboration, as it is called now, because we wanted to raise awareness about under funding in lung research in the UK. When a big survey was done of all medical research in Britain in 2005 by the UK clinical research collaboration, the amount of research going into lung disease versus the impact lung disease was having on the UK mortality and morbidity was the most disproportionate of all diseases. Following this survey, the UKRRC was set up deliberately to get people round the table and say: 'now come on, this is unacceptable'. The first thing we did was to prioritise areas for research.

One of these priorities was researching new treatments for lung disease — does this include late stage lung cancer?
Yes. We have only got one or two drugs to treat lung cancer at present — which when you compare it with the other cancers, is pretty poor. At present, there is a real opportunity for academic medicine, clinical medicine, and the pharmaceutical industry to form a closer partnership. The industry finds it difficult to access patient material and patients themselves. Therefore, the only way of doing this is to forge close links between the industry and the NHS.

During a recent debate about medicine available on the NHS, you argued a randomised control trial was not the only method of assessing whether or not a treatment was effective. What did you mean by that and how does it apply to lung cancer?
The nature of evidence is not just about having a randomised control trial. We wouldn't dream of doing such a trial in a patient dying of cancer — you just wouldn't do it. End of life and palliative care are specific issues here. By speaking to friends and relatives, you can discover if a patient benefited from an intervention may extend beyond any specific therapeutic effect. The point I am trying to make is that in addition to specific therapies, such as drugs and surgery, there are non-specific effects that can be considerable (eg, palliative care). I think these non-specific effects of therapy are very important in terms of the way we deliver healthcare. Things like massage and music — which would be otherwise would be rubbished in the scientific setting — could have a real role to play as part of the doctor's treatment of the patient.

What other areas of research, other than treatment, do we need to investigate?
Prevention. We need a lot more focus on cigarette smoking. This is not only in clinics that help patients give up smoking if they want to, but we also need to have a much more aggressive public health push to get people to give up.

Do you think the smoking ban (which is to be implemented in July) will help encourage people to give up?
It is a wonderful example of how to encourage people to stop smoking. We knew that smoking was related to lung cancer back in the 1950s, but we are now just getting the smoking ban coming through. This shows that there is a different social science behind the strategy. The reason why smoking is being banned in public places is because people smoking injures the lungs of people who don't smoke. If you are doing something that injures somebody else, then that's not acceptable. Previously the view was 'you are doing something that injures yourself, so that is your choice.'

Has the fact that lung cancer is sometimes seen as a 'self-inflicted' illness been a factor in why there is less research in this area compared with other diseases?
There is view — which is changing, I'm glad to say — that the patient themselves is to blame because they have taken the choice to smoke. I think that is misguided because in cardiovascular disease, where smoking is just a big a factor as it is in lung cancer, patients aren't blamed for their behaviour; therefore, the research is being done. It always amazes me that the British Heart Foundation gets a lot more money to spend on research than the British Lung Foundation does. We need a lot more public awareness about supporting the British Lung Foundation to try to get more research funding into this area. That is the only way that the money will get into this area.

Some lung cancers are not classified as self-inflicted — such as mesothelioma. What do you think of the Department of Heath's new framework on mesothelioma?
I think it is great. The thing with mesothelioma is that it can be predicted, with great precision, exactly how many people are going to get it. I think this has what has driven the Department of Health to do the framework.