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Diagnosing lung cancer earlier in the UK

We read with interest the article by Hubbard *et al* who raise late diagnosis as a key determinant of poor lung cancer survival in the UK.[1] We would like to highlight discrepancies in rates of radical treatment use as another contributory factor. Figures from the Eurocare 4 study[2] suggest 5-year survival figures in Northern Ireland have been higher than in England and Wales or Scotland (table 1).[2–4] This could reflect differences in patient demographics, disease, method of recording or treatment modality. There are no published data that directly compare the health or the stage at presentation of patients with lung cancer in relation to geographical location in the UK. If significant regional differences exist, one might expect to find evidence for differential survival from other cancers as well. Current data do not suggest a survival advantage for cancer patients in general from Northern Ireland over the rest of the UK.

Data on cancer survival in Northern Ireland are collected by the Northern Ireland Cancer Registry (NICR), a population-based registry collecting data from pathological records, hospital discharges and death registrations. Over the last decade the introduction of LUCADA in England and Wales, and CaPPS in Northern Ireland have made it possible to look for regional differences in cancer treatment. In Northern Ireland the number of patients included in CaPPS exceeds that recorded in recent years by the cancer registry. This would suggest most patients have been captured. One-year survival is likely to be influenced by palliative treatments, but 5-year survival is largely influenced by radical treatments, of which surgery is the mainstay. The use of radical radiotherapy may also have some influence, but comparative data are not available. We looked at the surgical resection rate and 5-year relative survival rate for lung cancer in Northern Ireland and compared them with those published for England, Wales and Scotland.[2–4]

Reported rates of surgical resection in all areas of Northern Ireland in 2004–08 exceeded the average for England and Wales for 2008. We believe this may offer a plausible reason for better 5-year survival differences and may be worthy of further study. Regional differences in lung cancer treatment are not new and are as yet unexplained.[5] Addressing the remediable differences in appropriate use of radical treatment in the UK may offer a more immediate potential improvement in lung cancer survival than early diagnosis.

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Authors' response

In our editorial we argue that, as a group, people with lung cancer in the UK present later and have a worse prognosis than people with lung cancer elsewhere in Europe.[1] We believe that delays in the early diagnostic process are central to this problem. At the moment, however, we do not understand enough about the early patient journey from the development of symptoms to initial investigations in primary care to try to intervene to improve the situation. We need to do this if we are to maximise the benefits of currently available treatments such as surgery. We believe that this is an area in urgent need of further research.

Weir *et al* make the point that that there is variation in the outcome for people with lung cancer within the UK and that the reasons for this are poorly understood.[2] In addition to delays in diagnosis, Weir *et al* argue that access to potentially curative surgical treatment may vary geographically and that this, though currently only a treatment option for a small minority of people, may also contribute to variations in survival. We agree.

It is clear that, in addition to understanding the cultural and health service factors which appear to lead to delays in lung cancer diagnosis in the UK, we also need to be sure that, once we have diagnosed lung cancer, people within the UK receive the highest quality of care. To do this we need to determine the extent to which variations in access to care exist, as well as what individual factors—such as comorbidity, performance status and stage—influence treatment decisions for people with lung cancer. The presence of the National Lung Cancer Audit, which now provides more than 5 years of data for people with lung cancer in the UK, is an important and unique tool to do this research. We hope that the analyses using the national audit which are currently being done by us and by other groups will help to shed some light on these questions.

Lung cancer remains an enormous public healthcare problem for the UK and we desperately need new effective treatments for people with lung cancer. We also need to study the diagnostic processes and the delivery of care for people with lung cancer to ensure that, at each stage, we maximise the benefits from the currently available treatments.

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Table 1 A comparison of regional surgical resection rate and 5 year survival

	Total number of lung cancers	Surgical resection rate	1995–99 mean age adjusted 5 year relative survival (SD)*
UK England	27815	10.8	8.6 (0.2)
UK Wales 2008			9.0 (0.9)
UK Scotland 2008	4058	10.6	8.0 (0.5)
UK Northern Ireland 2004–08	4786	12.8	10.2 (1.2)

*Difference in 5 year relative survival for cancers diagnosed between 1995–99 and 1990–94.

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MRI in assessment of lung cancer

We congratulate Fischer *et al* for their significant and well-written article, published in this issue of *Thorax*.[1] The report covers important topics in the imaging of lung cancer staging. The authors report that positron emission tomography (PET)-CT improves discrimination in metastatic disease. They also demonstrated that patients with enlarged lymph nodes on CT require confirmation independent of PET findings, and that a positive PET-CT finding requires confirmation before making a decision about surgery. We would, however, like to discuss and highlight an alternative technique with benefits for lung cancer staging.

Recent advancements in MRI systems (such as improved pulse sequences, utilisation of contrast media and new techniques such as diffusion) have made MRI an increasingly important tool for lung cancer staging. Reports have indicated the ability of MRI to reveal mediastinal tumour invasion and to help identify hilar and mediastinal nodal metastases.[2–4] A series of 115 consecutive non-small cell lung carcinoma patients prospectively underwent CT, MRI and ^{18}F-fluorodeoxyglucose (FDG)-PET, as well as surgical and pathological examinations. The study reported that the quantitative sensitivity (90.1%) and accuracy (92.2%) of MRI were significantly higher than the quantitative and qualitative sensitivities (76.7% and 74.4%) and accuracies (83.5% and 82.6%) of co-registered FDG-PET/CT on a per patient basis ($p<0.05$).[4]

The cost of imaging studies is an important consideration. The nature and complexity of the imaging system and the requirement for continuous production of radiopharmaceutical products makes PET/CT intrinsically more expensive than other imaging methods. The characteristics of MRI make it a safer modality than PET/CT. Unlike the ionising radiation used in CT, the powerful magnetic field and radiofrequency energy of MRI have not been shown to cause cancer or fetal abnormalities. It is important to note that although x-rays are known to cause cancer, the exact risk of developing cancer from CT scans or repeated CT examinations is unknown.[5] We hope that this short comment may encourage investigators to use and study MRI as a new method that offers considerable benefits for lung cancer staging.

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Risk disclosure prior to bronchoscopy

We read with interest the article by Uzbeck *et al*[1] demonstrating increased patient anxiety upon receiving detailed information regarding complications of bronchoscopy, in addition to the letter by Echavarria *et al*[2] documenting the consenting practices of 33 respiratory physicians in the north east of England. A wide variation in practice is identified. The General Medical Council guidance for doctors relating to consent[3] indicates that a physician 'must tell patients if an investigation… might result in a serious adverse outcome, even if the likelihood is very small'. An adverse outcome is defined as one 'resulting in death, permanent or long term physical disability or disfigurement, medium or long term pain, or admission to hospital'. The guidance also indicates that less serious side-effects or complications should be communicated if they occur frequently.

In reviewing the Uzbeck paper and their local practice, Echavarria *et al*[2] feel that the appropriate balance between the disclosure of relevant risks and patient anxiety is one in which a high risk disclosure is advisable. However, it can be argued that this balance can only be struck in the knowledge of local and even personal bronchoscopic practice and performance, and that it is unethical to advise patients of risks that are neither serious nor common.

Many hospitals now utilise computer software to record and analyse bronchoscopic findings and outcomes. These software packages frequently allow the recording of relevant complications or side-effects with free text areas for the documentation of less frequently encountered, but clinically relevant, events. In a review of 1261 fibre-optic bronchoscopies, recorded on InfoFlex5 software (CIMS, Hertfordshire, UK) at Sheffield Teaching Hospitals NHS Foundation Trust over a 24-month period (1 December 2007 to 1 December 2009) 86.5% of patients did not encounter complications of sufficient severity for a record to be created. Data were unavailable for 4.2% of patients; 9.4% had documented bleeding and 2% were noted to have undergone desaturation requiring premature termination of the procedure or considered to be clinically relevant or unexpected. This latter group included those developing pneumothorax following transbronchial biopsy. No deaths were encountered in the patient cohort despite approximately 10% of the patient group undergoing interventional bronchoscopic procedures including laser therapy or stenting.

The quality of statistical output from any database is dependent on the quality of data entry and the consistency between clinicians in identifying and recording relevant complications. For instance, two clinicians may differ in their assessment of a 'clinically relevant' desaturation or bleeding event, and may therefore enter different datasets for a similar clinical experience, thus confounding analysis. However, for major complications, such as intraprocedural death or large volume haemorrhage, this is less likely to occur.

Our data would suggest that, in an appropriately selected patient group, administered to by experienced medical staff with appropriate training and expertise, major risks for bronchoscopy are infrequent and rarely life-threatening. On this basis the more limited information disclosure outlined by Uzbeck *et al*,[1] with resultant lower levels of anxiety for patients may be more appropriate.

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