Reducing waiting times in lung cancer

ABSTRACT - **Background:** Concern exists over delays in the management of lung cancer patients. Maximum waiting times and a multidisciplinary team (MDT) approach have been recommended in several recent national reports.

**Objective:** Having implemented a MDT approach, we wished to assess whether national recommendations were achievable and to identify the major factors causing delays.

**Methods:** Prospective survey over five months of all new referrals with suspected lung cancer, documenting waiting times at all stages from referral to definitive treatment.

**Results:** Of the total of 92 patients, 57 were outpatients (67% seen within one week, 89% within two weeks of receipt of referral) and 35 were inpatients (all seen within two working days). Patient age did not influence waiting times to first being seen or to investigation. The result of the initial diagnostic test was received within two weeks of first being seen in 86% of patients. All patients received definitive treatment within recommended times from diagnosis. Delays in the early part of the care pathway were largely due to potentially remediable service factors, but unavoidable patient related factors were important in some prolonged diagnostic delays.

**Conclusions:** National recommendations on waiting times are achievable in a high proportion of cases. The probable importance of the MDT approach is discussed.

Lung cancer is the commonest malignant disease in the Western world, with approximately 39,000 new cases and 34,500 deaths registered in England and Wales in 1989. There is concern over the poor survival rate from lung cancer in the UK, which remains at about 7% at five years. Survival is reportedly higher elsewhere in Europe and in the USA, and is strongly related to disease stage, with surgical treatment of early stage disease associated with up to 60% five-year survival. Furthermore, recent studies suggest deficiencies in lung cancer services in the UK. There are low rates of histological diagnosis and treatment in the elderly, with striking variations in management even between specialists and long delays in referral and assessment.

Against this background, the Calman-Hine report on Cancer Services concluded that specialisation in cancer care should improve outcomes and recommended that all patients with cancer should have access to a uniformly high quality of care, irrespective of age or geography. Two further reports, focusing specifically on lung cancer, have made similar recommendations and suggested explicit standards for waiting times through the care pathway (outlined in Table 1). Both reports recommend a multidisciplinary team (MDT) approach to the management of lung cancer, but to our knowledge there have been no published studies of what is achievable by an MDT on management or waiting times. We therefore prospectively audited our lung cancer service at the University Hospital Nottingham (UHNN), where we adopted an MDT approach some years ago. Our principal aim was to assess our service against guideline standards, and in particular, examine where delays in waiting times occurred and the extent to which these were remediable.

**Description of lung cancer service**

**MDT** – The medical members of the core MDT comprise two respiratory physicians, one of whom acts as coordinator and supervises the chemotherapy service; a visiting thoracic surgeon; a visiting clinical oncologist; two

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Table 1. Principal recommendations of reports.

- Encourage uniformity of clinical practice
- Implement comprehensive anti-smoking measures as part of preventive care
- Early recognition of possibility of lung cancer by primary care team, with easy access to outpatient CXRs and speedy reporting, and speedy referral for specialist advice
- Integrated and multi-professional approach to management of lung cancer at all stages, with involvement of oncology nurse specialists
- Investigations done quickly, and results communicated with minimum delay
- All patients, regardless of age, referred and investigated in the same way
- Aim to get histological or cytological confirmation unless otherwise indicated
- Diagnosis communicated by senior member of the team, with nurse present, and a clear management plan discussed with the patient and family
- If the diagnosis is given in hospital, there should be telephonic or written communication with the general practitioner within 1–2 working days
- Short waiting times to surgery, chemotherapy and radiotherapy
- Aim for good symptom control and keep the primary care team involved and up to date
- Cancer units should audit their activity on a regular basis

* SMAC report  † BTS Guidelines

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radiologists (providing computerised tomography (CT), and an interventional service, respectively); and a designated pathologist. Two oncology nurse specialists (ONS) coordinate the care pathway for patients, provide support and counselling, administer chemotherapy, run trials and audit, and promote links with primary care.

**Lung cancer clinic** – The focal point of the service is a designated weekly lung cancer clinic into which all patients with the disease are channelled. The clinic is staffed by a respiratory physician, thoracic surgeon and clinical oncologist with the two ONS, and facilitates multidisciplinary discussion on the case management of all patients.

**Fast track clinic** – In this separate weekly clinic, patients with suspected lung cancer referred by a general practitioner (GP) are assessed and proceed to same day fibreoptic bronchoscopy (FOB), pleural biopsy, or lymph node aspiration.

**Care pathway** – Irrespective of their initial point of contact with the hospital, patients are assessed and followed in the lung cancer clinic. Patients requiring a CT scan are booked onto a designated list five days after the clinic appointment, with an agreed report made available within two days, enabling the patient to be seen again at one week when the CT result is known. There is an agreed 48 hour reporting time for pathology specimens. The aim is for all patients to have a histological diagnosis where possible and be given their diagnosis by a senior medical member of the team (consultant or registrar), with an ONS in attendance.

**Methods**

We studied consecutive new patients referred to the UHN respiratory medicine service with a high suspicion of lung cancer, over the five months March to July 1996. Patients were entered into the study on the day they were first seen. Data were collected using a standardised form to include demographic details when the referral was received; when and where the patient was first seen (general outpatients, fast-track clinic, ward); reason for referral (mass on CXR, etc); and duration of symptoms. As patients were investigated and treatment decided, further information was obtained prospectively on the dates and contribution to diagnosis of all investigations, the final diagnosis, and the dates of giving the diagnosis, agreeing a treatment plan and beginning definitive treatment (where appropriate).

Waiting times were calculated at several points in the assessment and treatment process, including time from receipt of referral to first being seen, time from first being seen to having specific diagnostic investigations, time from first being seen to diagnosis given and time from treatment plan being decided to receiving definitive treatment. The percentage of patients whose waiting times met guidelines was calculated in each instance; the records of patients whose waiting times were longer than recommended were reviewed retrospectively to ascertain the reason for the delay. Delays were ascribed to either patient factors (patient holidays, requirement for multiple investigations before tissue diagnosis could be made, etc) or service factors (delays in appointments, difficulty in finding hospital beds for patients, etc).

**Results**

The 92 patients entered into the study (61 (66%) men, mean (SD) age of 67(11) years), included referrals from 44 GPs and 43 consultants, and 5 admissions via A & E. The main indications for referral were: definite diagnosis of lung cancer at referral (7 patients), mass on CXR (44), pleural effusion (13), abnormal hilum (11), pulmonary collapse/consolidation (5), or other (12). Duration of symptoms at first consultation was: <1 week (4 patients), 1–4 weeks (20), 4–12 weeks (31), and >12 weeks (24). Symptom duration could not be defined in 4 cases, and 9 cases had no symptoms of lung cancer, having had CXRs for other reasons.

**Time to first being seen and to initial investigation**

Most GP referrals (44 cases) were seen within the time recommended by the British Thoracic Society (8, BTS), of one week (29 cases, 66%), and the standing medical advisory committee (SMAC) report's guideline of two weeks (35 cases, 80%), from receipt of referral. Most hospital referrals (43 cases) were inpatients (30 cases, 70%), all of whom were seen on either the same day (23 cases), or on the next working day (7 cases). The other 13 hospital referrals were seen as outpatients (Table 3). Most patients also had their initial investigations performed within recommended times. The

| Interval | SMAC | BTS |
|----------|------|-----|
| GP referral received to first seen | 2 weeks | 1 week |
| First seen to FOB | 1 week | |
| First seen to pathological result of FOB given to patient | 2 weeks | 2 weeks |
| Referral from other hospital doctor to first seen | Inpatient 2 working days 1 week | |
| First seen by GP to thoracotomy | 6-8 weeks | |
| First seen by MDT to thoracotomy | 8 weeks | |
| Decision to treat to starting chemotherapy | 7 working days | |
| Decision to treat to radiotherapy | Urgent 2 working days 4 weeks | Radical 2 weeks | Palliative |
| Referral to clinical oncologist to time seen | 1 week | |

SMAC = Standing Medical Advisory Committee; BTS = British Thoracic Society; FOB = Fibreoptic bronchoscopy; MDT = Multidisciplinary team.
reasons for delays in first seeing patients, and performing initial tests, are summarised in Table 3.

Diagnosis

Lung cancer was diagnosed in 81 patients, with a definitive tissue/cytology diagnosis in 73 (90%), the remainder mainly being unfit for invasive diagnostic procedures. Most patients (62/81, 77%) were given a firm diagnosis within two weeks of first being seen: 80% of those seen at the fast track clinic and 68% initially seen at a respiratory clinic. In 6 of the 7 patients (9%) not given their diagnosis until two to four weeks after first being seen, delays were due to a service factor (delay in performing a percutaneous needle biopsy, PCNB); in one patient the need for diagnostic thoracotomy caused delay. Longer delays (time to diagnosis greater than four weeks) in the remaining 12 patients (15%) were due to patient factors (need for multiple diagnostic procedures, including surgical biopsies, in 11 patients).

The diagnosis was given to the patient by a consultant in 58% cases, by a senior registrar/registrat in 30%, and senior house officer in 4%. In 8% of patients, the name of the doctor giving the diagnosis was not recorded. The ONS saw 72% of patients at the time they were told they had lung cancer, and a further 16% within 24 hours.

Treatment

Treatment plans for patients with a diagnosis of lung cancer were: palliative therapy (53 patients), chemotherapy (20), surgery (7), radical radiotherapy (1). All patients undergoing surgery had a staging CT. During the five month study period 13 patients received palliative radiotherapy. The clinical oncologist saw all patients referred for radiotherapy (radical or palliative) within one week of referral for treatment. Just one patient received delayed chemotherapy, requiring a biliary stent before chemotherapy could start.

Influence of age

Waiting times were similar for all age groups: all outpatients over 80 years were seen within two weeks, 80% within one week. A tissue diagnosis was obtained in all patients under 60 (9 patients), in 45/49 (92%) aged 60–74 years and in 19/23 (83%) of those ≥75 years.

Overall, 85% (78/92) of patients were first seen within the BTS recommended two working days for inpatients and one week for outpatients, with 70% (68/92) not only being seen within such times but also given a firm diagnosis within two weeks. The BTS recommends that the result of the initial test, even if non-diagnostic, be given to the patient within two weeks of the decision to do the test. This target was met for 86% of patients. Most major delays occurred in patients who needed multiple tests to establish a definite diagnosis.

Discussion

We have shown that national recommendations on waiting times for the management of patients with lung cancer11,12 are achievable in a high proportion of cases. We believe that implementing a multidisciplinary approach has been instrumental in meeting these standards but acknowledge that our study was not designed to prove this contention. A lung cancer service requires the involvement of many disciplines if optimum quality of care is to be offered. An MDT approach not only reduces the number of hospital visits for patients but is also essential in avoiding delays resulting from conventional cross-referral between specialists. Integration of radiologists and pathologists in the team shortens waiting times to investigation and diagnosis. The structure of our MDT also facilitates the co-ordinating activity of the specialist nurses, who directly interact with all involved in the patient's care.

Our model centres on a designated weekly multi-
The multidisciplinary lung cancer clinic. This was developed to reflect local needs, since concentrating our 200 new patients diagnosed annually with lung cancer in to one clinic makes the best use of medical and nursing time. This workload justifies both a visiting thoracic surgeon and a clinical oncologist attending the clinic. It could be argued that as only seven patients had surgery during the five months of study, a weekly thoracic surgery clinic was an extravagant use of consultant time. However, one of the goals of an MDT approach is to ensure that all patients who might benefit from specialist input receive it. The surgeon therefore also saw some patients who subsequently turned out to be unsuitable for thoracotomy, as well as patients requiring surgery for diagnosis and treatment of both cancer and other respiratory problems. However, in different circumstances other models may be more appropriate. Another innovation requiring appraisal is our fast track clinic. The purposes of this clinic are to shorten the time between first consultation and diagnosis, to reduce the number of patient visits, and to enable the ONS to make contact with the patient at the first visit. In the present study, patients received a diagnosis more rapidly when first seen in the fast track clinic. However, there are operational disadvantages: the reservation of same-day slots for patients assessed as potentially needing bronchoscopy from the referral letter can result in up to half such slots being wasted.

It remains to be shown that a multidisciplinary approach improves outcome in lung cancer, (though in breast cancer and Hodgkin's lymphoma lower death rates have been reported with specialist care). In this study we have addressed aspects of quality of care, such as communication, patient choice, access to treatments and the palliative approach. We report a high rate of diagnosis given by a senior doctor and early access to specialist nurse skills, but we have focused mainly on waiting times as these are easily quantified and a high quality service is also likely to be quick and efficient.

Speed of throughput may give rise to several concerns. First, some patients may feel they are rushed. However, waiting for referral and diagnosis knowing that the CXR is abnormal, is stressful for both patient and family. Minimising this period of uncertainty should be of psychological benefit. Second, although a rapid diagnosis will increase the chances of patients having operable or limited disease, it may not affect survival in most patients with lung cancer. Third, an emphasis on managing patients with suspected lung cancer may divert resources from other patients. This is as true for lung cancer as any other condition for which care is being improved, and we are not aware of any economic analyses of how resources might best be allocated within respiratory medicine. We have effected multidisciplinary working by reorganising current practices, but in other hospitals extra costs may arise. In summary, we

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**Fig 1. Summary of delays in meeting recommended guidelines – service or patient factors?** Proportions of delays due to service factors and patient factors, where waiting times are longer than recommended, are indicated by the black and white bars. Figures within the bars refer to numbers of patients. FOB = fibreoptic bronchoscopy; PCNB = percutaneous needle biopsy.
consider that the national recommendations on waiting times11,12 are both justified and largely achievable.

However, despite our highly structured multidisciplinary approach, some patients still waited longer than recommended. Some delays are related to potentially remediable service issues (Fig 1). Of particular importance was the need to provide specialist cover for all members of the multidisciplinary team. Gaps in provision of diagnostic and interventional radiology, and in pathology, were important causes of delays in our study and have considerable financial implications. Greater use of the telephone or fax to/from primary care would shorten times to initial clinic appointments. In addition, unless there are dedicated day-case facilities, investigations for possible lung cancer may be inappropriately delayed because of the pressure of acute medical admissions. However, even if all these potentially remediable factors are tackled, there will still be delays due to patient factors (Fig 1). These fall into two categories: 1) the occasional difficulty in making a diagnosis in an individual patient despite multiple tests; 2) the absolute need to respect the patient’s choice as to what, when and whether tests are to be performed. It is therefore important, perhaps particularly for purchasers, to appreciate that a proportion of patients will always fall outside recommended waiting times.

A histological diagnosis of neoplastic disease was confirmed in 90%, the remainder being unfit for diagnostic procedures. Definite histology removes diagnostic doubt, has prognostic significance and is essential for planning both cancer modifying and palliative treatment. It may entail some morbidity, and for some patients a tissue diagnosis is unlikely to change their management. Patients with positive histology are more likely to receive treatment7, but these data are uncontrolled for key confounders. Other data suggest that a histology rate >80% is not associated with longer survival17. An appropriate target rate for histological confirmation remains unknown.

The low resection rate in the UK has received attention as a possible cause of continuing poor survival4. The resection rate of 8.6% in the present report matches the UK average18. At first sight, therefore, we have not increased this by an MDT approach. However, the significance of a resection rate depends critically on its denominator. As a result of active case finding, almost every lung cancer patient at our hospital is referred for specialist care19. Therefore, our data suffer very little from selection bias and our resection rate is a realistic estimate of what is achievable with current referral patterns.

Elderly patients are less often investigated and given active treatment even at equivalent performance status20. In our study, increasing age had no effect on the speed at which patients were first seen. As in previous studies, there was a decline with age in the proportion of patients with a histological diagnosis, which reflects at least to some extent their lack of fitness for investigation. Though concerns have been raised over lower treatment rates in the elderly, no study has yet examined how far these concerns are justified.

In conclusion, an MDT approach can meet national recommendations on waiting times in most patients. There will be a small group for whom longer waiting times are inevitable, either on diagnostic or personal grounds.

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