LUNG CANCER
This working paper has been prepared by Dr N S A Stuart, Consultant Medical Oncologist in Ysbyty Gwynedd following consultation with members of the Welsh Thoracic Society and with clinical oncologists, radiologists, pathologists and thoracic surgeons working in Wales who have an interest in the management of lung cancer. The recommendations in this report have been agreed by CSEG. Further information, regarding recommendation priorities and mechanisms for monitoring their implementation, is available from the Project Office.
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1. INTRODUCTION

The Scale of the Problem

1.1 The challenge of devising a system to effectively manage lung cancer is perhaps greater than any other faced in implementing the Calman-Hine report. Lung cancer is the commonest cancer in the developed world (approximate annual incidence in the UK 75/100,000(1)), it is the commonest cancer in men and is increasing in incidence in women. It will therefore soon be the commonest cancer in women also. Overall its incidence and mortality have risen by over 30% between 1973 and 1987. It is most frequent in social classes IV and V. The average District General Hospital (DGH) with a population of 250,000 will thus have about 190 new patients with lung cancer in their area each year. This is 40% more that either breast or colorectal cancer the next most common tumours. Welsh data are included in Volume 1 and are summarised as follows:

- Average yearly (1984-1988) registrations: 2,311
- Registrations in 1990: 2,336
- Projected new registrations in the year 2000: 2,809
- Deaths from 1985-94: 19,522
- 5 year survival: 6.1%
- Years of life lost for death under 70 years (1985-94): 73,342

Survival data are from the West Midlands Cancer Registry. For other data sources and ICD9 codes see: CSEG Report, Volume 1

1.2 As well as being common lung cancer presents other problems. It frequently presents late when curative treatment is impossible, it is common in the elderly and many patients suffer from other (usually smoking related) diseases. These factors all limit the applicability of curative therapy. The majority of patients therefore die of their disease with less than 10% of patients surviving more than 5 years. Three times as many people die of lung cancer as die of breast cancer. Lung cancer therefore puts a major burden on families, on palliative care services and on general hospital services.

1.3 Because of the high mortality rate in lung cancer there is a tendency to therapeutic nihilism, i.e. the assumption that nothing useful can be done. This attitude may affect clinicians in primary, secondary and tertiary care. As a consequence of this expectation treatment options may not be vigorously pursued and patients may receive less than ideal treatment(2,3).

1.4 Although most patients are incurable at presentation a small number can be cured with appropriate application of current therapies. The difficult logistic issue is to select such patients from the majority and to ensure timely access to specialist treatment particularly surgery. Even when cure is not possible appropriate treatment may prolong life or effectively relieve symptoms. Again careful patient selection is critical.

1.5 Lung cancer is also a disease where specialists in surgery, radiotherapy, chemotherapy and palliative care all have an important role. Good communications and inter-disciplinary links are thus critical if all patients are to receive best care.

Risk Factors

1.6 Lung cancer is unique in having a single, overriding and identifiable cause, i.e. smoking. Lung cancer is therefore almost entirely preventable. Although other risk factors have been postulated, e.g. radon gas and atmospheric pollution the effect of these is small in relation to smoking.

1.7 It is the government's aim to reduce the incidence of lung cancer by reducing the number of adults who smoke to less than 20% by the year 2000(4). It is important to note however, that the effects of smoking continue long after the habit has stopped. Therefore, even if there were a decrease in the number of smokers, the incidence of lung cancer would remain high for many years. This would be largely due to a rise in incidence in females.

1.8 Lung cancer will therefore remain a substantial health problem for the foreseeable future.
2. CURRENT SERVICES

Referral Patterns

2.01 Lung cancer commonly presents with respiratory symptoms with the diagnosis suspected by the General Practitioner on clinical grounds or following chest X-ray. Referral to a physician with an interest in respiratory medicine often follows for assessment and bronchoscopic diagnosis. All DGHs in Wales have at least one such physician.

2.02 Because of its tendency to cause symptoms only at a late stage lung cancer may present in other ways. Patients may present as medical emergencies, e.g. with pneumonia, with the constitutional effects of malignancy, e.g. weight loss, or with symptoms from metastatic disease, e.g. bone pain. In such cases diagnosis may be made by the specialist initially involved or the patient may be transferred to the care of a respiratory physician for diagnosis.

2.03 Following diagnosis a range of referral patterns develop depending on disease stage, patient preference, how local services are structured and on the policy of the doctor responsible for the patients care. It is important to note however that the best treatment for lung cancer is not always clear and that a variation in referral pattern is not necessarily inappropriate.

Diagnostic Services

2.04 The principal techniques for diagnosing lung cancer are chest X-ray, bronchoscopy, and CT scanning. These are available in all DGHs in Wales. A significant number of cases may not be diagnosed with these techniques and others, particularly CT guided biopsy, may be needed.

2.05 Selection of patients for appropriate treatment depends on accurate tumour staging. For this, ultrasound scanning, radionucleotide scanning and MRI may all be needed. These are available in some but not all DGHs.

2.06 Specialist histopathology techniques are rarely needed in the diagnosis of lung cancer. Adequate histopathology techniques should therefore be available in all DGHs in Wales. When difficult or unusual tumours are found many DGHs will send the histopathology material to an outside centre for a second opinion. There is however no formal system for this.

Cardiothoracic Surgery

2.07 About 10% of patients with lung cancer may require surgery. The surgical techniques needed are available only at Regional Cardiothoracic Centres. At present there is only one such centre in Wales based at the University Hospital of Wales (UHW) and Llandough Hospital in Cardiff. Patients in North Wales are referred to the Broad Green Hospital in Liverpool while some patients from South Wales are referred to Bristol.

2.08 Many clinicians working with lung cancer feel that surgical services for lung cancer have suffered because of pressure from cardiac work. This is an area that has seen many recent developments with new techniques and increased numbers of patients. These pressures have restricted the time available for patients with lung cancer, for team-working, audit, research and service development. Commissioners need to be aware of these pressures to ensure adequate surgical time is available for lung cancer patients.

2.09 The thoracic service in Cardiff has its own particular problems. Many of these problems arise from the service being provided on a split site, i.e. cardiac surgery at UHW and thoracic surgery at Llandough Hospital. This has implications for team-working, post-operative care and medical staff training. At present there is no locally agreed solution to this problem.

2.10 The Cardiothoracic Centres serve their local DGHs in a variety of ways. Regular out-reach clinics are held by the cardiothoracic surgeons in some DGHs. Because of the distance between local hospitals and the thoracic centres such DGHs are a minority. In most DGHs communication and referral is by letter, fax or telephone. Geographical problems in Wales are particularly great making out-reach clinics difficult.
Radiotherapy

2.11 Broadly speaking radiotherapy has two roles in lung cancer. Firstly, it plays a valuable role in palliation. Many of the most troublesome symptoms of lung cancer (cough, haemoptysis, pain) may be relieved effectively by radiotherapy. This can often be given as only one of two fractions. Secondly, in a small number of patients, radical radiotherapy may be used to achieve long term disease control in inoperable patients. Such treatment is more effective if given in a novel fractionation scheme (CHART).

2.12 Two radiotherapy centres exist in Wales. Both are in South Wales - Cardiff and Swansea. There are plans to open a radiotherapy treatment facility at Ysbyty Glan Clwyd in North Wales in 1999. At present patients in North Wales travel for treatment to either the Clatterbridge Centre for Oncology in Liverpool or to the Christie Hospital in Manchester. Although patients must travel to a radiotherapy centre for treatment all DGHs have outreach clinics where patients may be assessed prior to treatment or followed-up afterwards.

Chemotherapy

2.13 Chemotherapy plays a relatively small role in the management of lung cancer. Its main role is in the treatment of small cell cancer where it is the dominant modality. Small cell lung cancer however comprises only 15-20% of all lung cancers. In the more common non-small cell cancer the role of chemotherapy is controversial. A recent overview has shown a small increase in average survival as a result of potentially toxic chemotherapy. The balance between benefit and toxicity is therefore unclear and broadly speaking it remains an unproven treatment. This is an area where the view of individual patients is also important.

2.14 At present DGHs in Wales have widely differing arrangements for providing chemotherapy to lung cancer patients. For example it may be:

- provided locally by a respiratory physician.
- provided locally by a haematologist at the request of the respiratory physician.
- provided locally by a visiting clinical oncologist.
- provided locally by a medical oncologist.
- provided at the radiotherapy centre with patients travelling to receive treatment.

Support Services

2.15 Although much palliative care is done in acute hospitals (in the case of lung cancer by respiratory physicians) few acute units have palliative care specialists. Where palliative care specialists are appointed it is often in the community where many developments are funded by charities. Such developments may be uncoordinated and without formal links with the DGH.

2.16 Some parts of Wales have excellent services. Often a hospice acts as a focus for in-patient palliative care and sometimes for other aspects of palliative care, e.g. day-care support, physiotherapy and spiritual support. However, such hospices are often built and run by charities and effective integration with other health services may be a problem.

2.17 Other parts of Wales have no hospice and if patients are unable to be at home they are admitted to the local DGH to receive palliative care. This is rarely ideal. Specialist community nursing services for patients with cancer have been developed in some areas to allow more patients to be cared for at home.

Research

2.18 In the larger centres cancer research is a routine part of the service for people with lung cancer. In smaller hospitals however, clinical research often depends on the enthusiasm of individual clinicians who do this work in addition to their service commitment. Additional funding for research may be provided by local and national charities and by the pharmaceutical industry. Very little money is currently available through the NHS or related bodies such as the MRC.
3. POTENTIAL GAIN FROM IMPROVED SERVICES

3.1 The benefits that might flow from improving services for people with lung cancer are difficult to quantify. The following are areas where benefit may possibly be achieved:

- The majority of treatments for lung cancer are purely palliative. Inadequate care and inappropriate treatment may lead to poor symptom control, poor quality of life and greater distress for people with lung cancer and their families. Improved cancer services may therefore lead to improved quality of life for people with lung cancer. This is perhaps the area with the greatest potential for immediate benefits.

- Although only a small minority of patients are curable it is critical that this group are accurately identified. If even a few patients with curable disease fail to access curative therapy the final cure rate may be significantly decreased. Improved cancer services may therefore lead to an increased cure rate.

- Patients who are incurable may have their survival prolonged by appropriate therapy. This is certainly the case with chemotherapy in small cell lung cancer. Correct management of the complications of lung cancer may also improve survival. If patients receive sub-optimal therapy average survival will be shortened. Improved cancer services may therefore lead to longer average survival.

- Given the poor outcome of patients with lung cancer there is a pressing need for better treatment. Lung cancer is an active area of research where new treatments are constantly under assessment. Research is often hampered by lack of time and interest among clinicians. Improved cancer services may lead to more productive research leading in turn to better treatment and better future outcomes. This is clearly a long-term benefit.

- Because of the lack of adequate research new treatments are often introduced in an ad hoc fashion. Treatments of proven benefit may not be used because of ignorance, lack of interest or lack of resources. Conversely unproved and possibly detrimental treatments may be introduced because of the enthusiasms of individual clinicians or out of therapeutic desperation. Improved cancer services may lead to the rapid and uniform introduction of better treatments and the rapid discarding of ineffective ones. It may also inhibit the introduction of new treatments of no proven benefit.

- The savings that may be achieved by improving services for lung cancer are also difficult to quantify. Savings may however occur in the following ways:
  - If the cure rate is increased the social costs of early death may be avoided as may the health costs incurred by the treatment of relapse and by palliative care.
  - Poor quality care may be expensive care. Patients whose symptoms are poorly controlled make greater demands on the health services, e.g. more GP calls, more hospital admissions. Improved cancer services may reduce these costs.
  - New treatments are often expensive. The inappropriate use of such treatments is wasteful and may be avoided by improved cancer services.

4. CHARACTERISTICS OF A HIGH QUALITY SERVICE

General Points

Team Work

4.01 It is increasingly recognised that a critical factor in producing a high quality cancer service is team work. Working as a team has many advantages:

- teams including a range of specialists will have a broader perspective on treatment options and will be able to choose treatment more appropriately than individuals.
- team working ensures that all aspects of care are given due consideration.
- team working gives an opportunity for discussion, education and dissemination of ideas.
- team members are likely to have a wider range of skills, knowledge, and experience than any individual. Team working allows patients to benefit from all these skills.
- team working provides support for team members and can improve staff satisfaction.
This team working needs to extend from primary care through secondary and tertiary care and should include all stages of the patient’s illness - referral, diagnosis, treatment, palliation and terminal care. Team working is seen as an essential quality indicator for lung cancer services.

Location

4.02 The Calman-Hine report emphasises the importance of local cancer services. Although location is only one aspect of care, local cancer services do have one particular advantage over centralised services - that of access. A high quality cancer service that is inaccessible is of no benefit. Wherever possible therefore, services should be delivered close to the patient’s home. This is particularly important in a common cancer such as lung cancer.

Choice

4.03 The third aspect of quality is informed choice. Patients and their carers need clear information about their condition and about its treatment. They must also be offered an opportunity to be involved in making decisions about their own care. This includes the location as well as the nature of their treatment.

Agreed Guidelines

4.04 The formulation of agreed treatment guidelines is a useful tool in improving quality of care. The use of guidelines has the following benefits:

- guidelines encourage a concentration on evidence as opposed to personal bias or clinical anecdote.
- guidelines encourage a thoughtful, multidisciplinary approach to treatment.
- guidelines are peer reviewable, i.e. they can be compared with those produced by other cancer centres or units.
- guidelines are auditable, i.e. the degree to which they are followed can be assessed.
- guidelines are a useful tool in educating team members and affiliated personnel.

The use of treatment guidelines is an important part of team working and is an indicator of quality care.

Communications

4.05 Good communication is essential for a high quality cancer service to develop. This communication needs to take place both between primary care and the DGH lung cancer team and between the DGH team and the cancer centre.

4.06 Although the mechanism of this communication may vary between units the essential characteristics will be the same:

- good communication must be timely. There must be a facility for rapid communication of urgent results and referrals. The system must be able to sort such urgent cases from the routine. Standards must be set for urgent and non-urgent communications.
- good communication must be two-way. Feedback to the referring clinician or team is essential to good practice. The cancer centre must also ensure that discharge information and other essential information is passed back so that the DGH team is well informed and able to provide continuing care.

Referral and Diagnosis

Referral Patterns

4.07 The majority of people with lung cancer will initially present to their General Practitioner. The GP is therefore central in ensuring that patients with possible lung cancer are referred promptly. GPs should be aware of the warning signs of lung cancer, of the appropriate way to assess patients and of the need for prompt referral.

4.08 GPs should know to whom patients with possible lung cancer should be referred and of the appropriate mechanism for prompt referral. There should be a mechanism for urgent referral of selected cases and there should be a mechanism whereby GPs can seek advice or discuss cases by telephone.
4.09 All new patients should be seen by an experienced clinician ideally a consultant, associate specialist or experienced UTG doctor training in respiratory medicine.

4.10 The cancer unit should work with the local GPs to educate and inform them regarding these matters. Written guidelines for appropriate assessment and referral of people with possible lung cancer may be helpful.

**Referral Times**

4.11 Lung cancer generally progresses only slowly and most tumours have been present for months or years before diagnosis. Modest delays in treatment are therefore unlikely to affect outcome. Delay in assessment and diagnosis will however lead to greater distress for patients and their relatives. People with possible lung cancer therefore deserve prompt assessment.

4.12 Patients referred with suspected lung cancer or with symptoms suggesting lung cancer should be seen in a specialist clinic within two weeks and ideally within one week.

**Diagnostic Services Required and Times**

4.13 The majority of people with suspected lung cancer should have their tumours diagnosed and staged at their local cancer unit. Appropriate diagnostic and imaging techniques should therefore be available. These should include fibreoptic bronchoscopy, sputum cytology, plain radiology, ultrasonography, isotope bone scanning, CT scanning and CT guided biopsy. Although MRI is not essential for staging most lung cancers, it is important in certain cases, e.g. for superior sulcus tumours. It is also likely to become increasingly important. Access to MRI is therefore helpful but not essential.

4.14 Someone with suspected lung cancer may have to go through several steps in reaching a confirmed diagnosis and staging. Setting an acceptable time limit for each step is difficult and may be misleading as unacceptable cumulative delay may still occur. Instead it is preferable to consider the total time from referral to start of treatment, if undertaken locally, or to referral to another centre if not. The target time between receipt of referral and treatment or tertiary referral should be four weeks or less.

**Diagnostic and Treatment Protocols to be Agreed and Detailed**

4.15 The optimum route to diagnosis and staging should be agreed among members of the lung cancer team. This will help to avoid unnecessary or fruitless investigations as well as the delays consequent on them. The use of CT scanning should be based on published guidelines(6).

4.16 Specialised histopathology techniques are rarely needed in the diagnosis of lung cancers. The histopathology techniques employed should be based on published guidelines(7). Facilities should also be available for external review of difficult or unusual lung tumours. Consideration should be given to setting up a Welsh panel of histopathologists with expertise in specific tumour types. Although the use of this panel would not be mandatory it would give helpful guidance to the smaller DGHs.

4.17 Stage-specific treatment guidelines should be explicit and should be drawn up following consultation between team members. Wherever possible these guidelines should be evidence based and take account of any national guidelines. Local guidelines should be reviewed and assessed by the local cancer centre.

**Use of Multidisciplinary Meetings to Confirm Diagnosis and Plan Treatment**

4.18 In many cases of lung cancer diagnosis and the formulation of a treatment plan is relatively simple. However not all cases are. There must be an opportunity for the multidisciplinary team to discuss difficult cases prior to treatment.

**Surgical Treatment**

4.19 Surgical treatment for lung cancer should be delivered in a specialist centre by surgeons with appropriate training and an interest in lung cancer. Surgical treatment should be prompt and waiting times for lung cancer surgery should not be extended because of pressure from cardiac patients. Patients with lung cancer should receive as high a quality of surgical care as patients with cardiac problems.

4.20 Cardiothoracic centres need to develop close liaison with their linked DGHs to ensure referral of appropriate patients. They also need to ensure prompt communication both from the referring hospital and back to the referring hospital after treatment.

4.21 Cardiothoracic centres should have the facility to assess patients for multi-modality treatment, e.g. pre-operative chemotherapy or post-operative radiotherapy. The centre must ensure that such treatment is provided in a timely and seamless fashion.
Finally the surgical team should be active in the assessment and introduction of new surgical techniques for staging and treatment of lung cancer. Examples of recent developments include bronchial stenting, laser therapy, and the use of mediastinoscopy to assess operability.

Radiotherapy Treatment

Radiotherapy is administered only in cancer centres. It is clearly essential that these centres maintain excellence in their treatment. The mechanism of ensuring this are complex and have been addressed elsewhere [reference to RCR documents on quality control in XRT]. It is not for this document to specify criteria for quality in radiotherapy treatment. There are however other issues related to radiotherapy treatment services which need to be considered.

Medical manpower is an important determinant of quality of service. The Royal College of Radiologists has issued guidance on the workload of Consultants in Clinical Oncology. It has shown that in the majority of Radiotherapy Centres consultants see considerably higher numbers. Consultants in clinical oncology must have adequate time to fulfil the quality criteria discussed elsewhere, e.g. audit, research, team working. Time is also required if treatment options are to be discussed thoroughly with patients and if appropriate attention is to be given to the patients' emotional and social problems.

The Joint Council for Clinical Oncology has also issued guidance on waiting times for radiotherapy. These guidelines should be followed in the treatment of lung cancer.

Radiotherapy centres should be active in evaluating and introducing new radiotherapy treatments. A recent example would be the use of CHART for lung cancer. They may also want to develop site-specialisation among their staff with one being identified to take a lead role in lung cancer. The Cancer Centre should work with their linked lung cancer teams in preparing guidelines on the indications for radiotherapy and for the use of new treatments.

Chemotherapy Treatment

Chemotherapy is a specialised technique of cancer treatment and should only be prescribed and administered by those with appropriate training and skills. The Joint Council for Clinical Oncology has published guidelines on the safe administration of chemotherapy. These emphasise the following points:

- cancer chemotherapy should be carried out in designated, properly equipped facilities.
- cancer chemotherapy should be initiated only by medical staff with training and experience of the specific regimens.
- cancer chemotherapy should be administered in an ordered, unhurried and systematic fashion during normal working hours.
- cancer chemotherapy should be administered by properly trained staff. Ideally chemotherapy specialist nurses should be available.
- patients receiving chemotherapy need to be fully informed about the aims of treatment as well as about the side-effects and how to manage them.
- All the above criteria apply to the use of chemotherapy in lung cancer.

Palliative Care

Given that the majority of patients with lung cancer die of their disease, it is essential that high quality palliative care is available. The palliative care service should be led by a consultant trained in palliative care. It should work closely with others involved in the care of people with lung cancer. The palliative care service should act as a focus for a wide range of support services for people with lung cancer and their families. These may include specialist nursing, counselling, physiotherapy and occupational therapy.
5. ORGANISATION, ROLES AND FUNCTIONS TO DELIVER SERVICES

Team Working

Principal Personnel

5.01 The following are the principal personnel in the lung cancer team. Each member should be specifically identified as such:

- Respiratory Physician. The respiratory physician will normally be designated as the lead clinician for lung cancer and will normally be the team leader. In some hospitals more than one respiratory physician may take an interest in lung cancer and may be included in the team. However, only one should be the designated lead clinician for lung cancer.

- Clinical Oncologist. The clinical oncologist will be based at a Cancer Centre and will normally undertake regular clinical sessions at the DGH. He or she will be accredited in the administration of radiotherapy and chemotherapy.

- Chest Surgeon. The thoracic surgeon will be based at a cardiothoracic centre. Ideally they will also undertake regular clinical sessions at the DGH.

- Radiologist. The radiologist would normally be based in the DGH and would have experience of and interest in cross-sectional imaging techniques.

Affiliated Personnel

5.02 The following are the affiliated personnel in the lung cancer team. Each member should be specifically identified as such:

- Palliative Care Physician. Where a palliative care physician has clinical sessions in the DGH they should be a member of the team.

- Medical Oncologist. The medical oncologist may be based in the DGH or in the Cancer Centre with clinical sessions in the DGH. If a medical oncologist is based in the DGH they will be a principal member of the team.

- Respiratory Nurse Specialist. Where a respiratory nurse specialist has been appointed they may wish to extend their role to include the care of lung cancer patients. In other situations a specific appointment may be made or a specialist nurse working in palliative care may wish to work specifically with lung cancer and may form part of the team.

Team Working Roles

5.03 Team working should be as follows:

- All team members will be expected to take an active part in the working of the team. This will include multidisciplinary discussions, joint audit, education and research.

- The respiratory physician should be the team leader. They will have an administrative role in co-ordinating the team and its activities, in producing guidelines for treatment, in co-ordinating audit and encouraging research.

  The respiratory physician will be identified as the lead clinician for cancer and will be responsible for the management of the majority of patients with lung cancer. They will see all referrals from primary care as well as patients with suspected lung cancer referred from their consultant colleagues.

  They will provide a fibreoptic bronchoscopy service for the diagnosis of lung cancer. They will need to ensure continuity of this service working with colleagues in their own DGH or in neighbouring DGHs to provide cover for leave.

- The clinical oncologist will be responsible for radiotherapy treatment of patients diagnosed by the team. They will be responsible for advising on criteria for radical and palliative radiotherapy as well as on the role of new radiotherapy techniques. They will need to co-operate with their colleagues in the Cancer Centre to ensure the advice is consistent and, wherever possible, evidence-lead.

- The thoracic surgeon will be responsible for the surgical treatment of lung cancers diagnosed by the team. They will be responsible for advising on criteria for operability and on the role of new surgical techniques.
• The radiologist will be responsible for ensuring that patients with suspected or definite lung cancer receive appropriate radiological assessment and staging. They will need to work with their radiological colleagues to ensure that guidelines for staging are set up and followed\(^6\). They will also advise other team members on the interpretation of staging tests.

• The palliative care physician will be responsible for ensuring patients receive high quality palliative care. They will work both with team members and with agencies outside the team that also provide support and palliative care.

• The medical oncologist will be responsible for chemotherapy treatment of patients diagnosed by the team. Where there is no medical oncologist either the clinical oncologist or the respiratory physician (if he or she has appropriate expertise in chemotherapy) may be responsible for chemotherapy treatment.

In each case the same quality criteria set out elsewhere will apply.

• The respiratory nurse specialist will assist the team members in giving information to patients and in supporting and counselling patients and their families. They may also play a role in audit and research.

5.04 The team will need to develop a forum for multidisciplinary discussion of patients' management. The format of this meeting may vary from hospital to hospital - multidisciplinary or parallel clinics, joint clinical meetings, or remote discussion by video conference might all be appropriate.

Volume and Outcome

Workload

5.05 There is no scientific data to link workload with outcome in lung cancer. The remoteness of many parts of Wales also makes it difficult to set a minimum caseload for a lung cancer team. Based on the size of the average DGH, the team would normally see 75-100 new cases per year. Workload must however be balanced against access and in remote hospitals a lower number may be acceptable.

5.06 Rather than emphasising minimum patient numbers it is better to concentrate on other aspects of care as set out in this report. In particular it is more important that available patients are concentrated in the hands of one team rather than being diffused among many clinicians.

Role of Private Practice

5.07 Private practice plays a relative small part in the work of most DGHs in Wales. The main principle is that patients should receive the same treatment and have the same priority regardless of status. Similarly the role of team members should be broadly similar for private patients as for NHS patients.

Clinical Research

5.08 Clinical research is an important marker of quality cancer care. Teams that are actively involved in research are more likely to use best current treatment, are more likely to be critical in their appraisal of new treatments and are more likely to introduce proven new treatments quickly.

5.09 The benefits of research should be acknowledged by all concerned in caring for patients with lung cancer. Clinical research should be actively supported by the members of the lung cancer team, by the Cancer Centre, by the NHS Trusts and by the Health Commissioners.

Clinical Audit

5.10 Clinical audit is closely related to research and is also a marker of high quality care. The team should actively audit its own work, its adherence to agreed guidelines and the outcome of its treatment. All team members should be involved in audit.

5.11 It is important that the team audit the outcome not just of patients treated by themselves but of all lung cancer patients in their hospital. Only by doing this can the team be aware of the totality of the problem of lung cancer and improve the quality of care for all lung cancer patients.
Manpower and Training

5.12 Most of the changes suggested by this report are simply to ensure that what is done currently is done well. Most therefore can be introduced without additional manpower. There are however a number of areas where additional resources will be required.

- Additional cardiothoracic input into the DGHs will require more surgical time. With the increasing pressure on surgical time from cardiac disease it will be impossible for the existing cardiothoracic surgeons to devote additional time to lung cancer also. It is inevitable that more thoracic surgeons will be needed. If the number of thoracic surgeons rises there may be an opportunity to review thoracic surgical services more generally, e.g. where should they be based? should new units be opened? should other malignancies (such as oesophageal cancer) also be treated by thoracic surgeons?

- The rise in patient numbers, the rising expectations of cancer patients, and the slow but steady increase in the use of chemotherapy will lead to a demand for more specialist oncology time. Changes in services for lung cancer are unlikely to be sufficient in themselves to require more staff. However, taken together with changes in services for other cancer sites it is inevitable that more oncologists will be needed. This is likely to represent both an increase in medical oncologists (some based in the DGHs) and in clinical oncologists (based in the Cancer Centres).

- If cancer research is to become an integral part of lung cancer treatment it will need some additional resources. The extent of this support will be modest and largely for secretarial, administrative or nursing time.

- If outcome measures are to be routinely collected and assessed this will need additional resources. Information systems will need to be modified to collect data relevant to cancer patients. It is unlikely that this will occur unless resources are specifically applied.

Communications

5.13 The lung cancer team will need facilities for rapid and timely communication between team members. This is particularly the case in DGHs which are some distance from the Cancer Centre and/or cardiothoracic unit and where joint clinics are held infrequently or not at all.

5.14 As a minimum, facilities should be available to fax or E-mail referrals directly to the Cancer Centre and/or cardiothoracic unit. Ideally there should also be facilities to transmit X-ray images for discussion and the possible role of video conferencing should be assessed.

5.15 The team should also hold regular meetings. The frequency and nature of these meetings may vary. A quarterly joint audit meeting would perhaps be a minimum.

Guidelines

5.16 The team should draw up agreed guidelines on the management of lung cancer. This will include an agreed approach on diagnosis, staging and treatment. It will also need to agree an approach to research and which protocols to take part in. The team will need to set targets for speed of diagnosis, time to start of treatment and measures of outcome such as rate of ‘open-and-shut’ thoracotomy, mortality from chemotherapy etc.

5.17 The team will also need to work with General Practitioners to ensure there are agreed guidelines for such areas as referral, follow-up and symptom palliation.

6. MONITORING OF PROGRESS AND PERFORMANCE

Outcome Data

6.1 In order to ensure that a high quality service is delivered it is essential to monitor outcome. This should be carried out on an on-going basis and should be an integral part of cancer services. Outcome data should be collected on all patients diagnosed in the hospital not just those treated by the lung cancer team.

6.2 Initially the lung cancer team should identify its data needs. A variety of national projects are in progress to define a minimum data set for cancer and to identify appropriate outcome measures. Account should be taken of these projects as and when they are published.
6.3 The following data set is suggested:
- Number of new patients, referral date, age, stage (TNM), histology, treatment received, dates of treatments, post-operative mortality, rate of re-admission following radiotherapy or chemotherapy, response to treatment (WHO criteria), relapse date, death date.

The Patient's View
6.4 The lung cancer team should recognise that the patient’s own view of their treatment is important. Patient’s satisfaction needs to be monitored both in general and with regard to specific aspects of care. Further work is needed to clarify the appropriate way to assess patient satisfaction and which aspects of care are felt by patients to be most important.

Role of Research
6.5 Clinical research is considered an important mark of quality in cancer treatment. Although it is difficult to set targets for cancer research a reasonable aim is for at least 10% of patients to be entered into clinical trials.

Cancer Registry Data
6.6 Cancer registries are essential in providing the data on cancer incidence that is necessary for planning and service development. It is therefore essential that the data collected is timely and accurate. This applies to all cancers. At present there is some doubt as to the accuracy of data collected by the Welsh Cancer Registry. It is important that this is resolved.

Quality Assurance
6.7 Quality control is an essential part of any attempt to improve quality. Little work has been done on how quality will be assured in the network of Cancer Centres and Units proposed by the Calman-Hine Report. Whatever system is adopted will need to relate not just to lung cancer but to all cancer sites. Two systems are proposed:
- the written guidelines produced by each lung cancer team should be subject to external assessment. As a minimum they should be assessed by the linked Cancer Centre. A higher level of assurance would be achieved if guidelines were assessed independently.
- the work of the lung cancer team could be assessed by external experts. A similar system has already been applied to Respiratory Units. Such a system could be applied solely to lung cancer or could apply to the work of the cancer unit as a whole. It would be important to agree under who's authority the site visit was undertaken and to whom it should report. This could be i) the team itself ii) the health commissioners iii) an independent body, e.g. a Royal College or the Joint Council for Clinical Oncology.
6.8 Whatever system of quality control is set up will take considerable time and effort. It is also a potentially controversial and divisive issue. In view of this it would be best if discussions and early work were undertaken at a national level following wide consultation.

7. RECOMMENDATIONS
(Superscript letter indicates evidence source)
1. Any hospital treating lung cancer should identify a lead clinician for lung cancer who will normally be a respiratory physician.
2. The lead clinician for lung cancer will, with other clinicians involved in the treatment of lung cancer, form a designated lung cancer team.
3. The lung cancer team will be responsible for ensuring high quality care for patients with lung cancer treated in the hospital and will treat the majority of them.
4. The team members will normally comprise: a respiratory physician (the lead clinician for lung cancer), a clinical oncologist, a radiologist and a thoracic surgeon. It may also include a medical oncologist, a respiratory specialist nurse, a palliative care physician and other staff.
5. The lung cancer team will need regular input from the thoracic surgeon. The mechanism for this input may vary from hospital to hospital. Regular joint or parallel clinical sessions are ideal and should be encouraged.
6. The lung cancer team will draw up written guidelines for the management of lung cancer. This will be done in consultation with clinicians at the local cancer centre and with GPs\(^{(c)}\).

7. The lung cancer team will need to work with the local GPs to ensure patients are referred appropriately and promptly. Separate guidelines on referral may be helpful\(^{(c)}\).

8. The lung cancer team will develop a system whereby individual patients can be assessed in a multidisciplinary fashion prior to treatment. The nature of this system may vary from hospital to hospital. The possibility of using modern technology for video conferences and image transfer to allow multidisciplinary assessment at a distance should be evaluated\(^{(c)}\).

9. The lung cancer team will develop a system for regular multidisciplinary audit to review the agreed guidelines and monitor outcome\(^{(b)}\).

10. Patients with lung cancer need prompt assessment and staging. The key indicator should be the time from receipt of referral to start of treatment (if carried out locally) or to onward referral (if treatment carried out elsewhere). This time should be 4 weeks or less\(^{(c)}\).

11. The lung cancer team should have access to adequate radiology for diagnosis and staging. Necessary techniques are plain radiology, ultrasound scanning, CT scanning and radio-isotope imaging. Facilities should be available for CT guided biopsy\(^{(a)}\).

12. Chemotherapy should only be given by clinicians experienced in the regimens used and where adequate support staff (nursing, pharmacy) are available. In hospitals/Trusts where oncology time is available the medical oncologist or clinical oncologist should be responsible for chemotherapy treatment\(^{(b)}\).

13. The lung cancer team should have access to adequate histopathology services. There should be facilities for external histopathology review of difficult cases. Consideration should be given to setting up a Welsh panel of histopathologists with expertise in particular tumour types\(^{(b)}\).

14. The lung cancer team should be actively involved in clinical research. This will normally be carried out in conjunction with the local cancer centre or with regional or national research programmes\(^{(b)}\).

15. The lung cancer team should collect data on all patients diagnosed with lung cancer in their hospital and should monitor their outcome\(^{(b)}\).

16. Consideration should be given to setting up a system of external review of written guidelines and the work of the team as a whole\(^{(c)}\).

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<tr>
<th>Evidence base:</th>
<th>a. Published national and international papers</th>
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<td>b. Consensus in Wales</td>
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### 8. REFERENCES

9. ACKNOWLEDGEMENTS

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