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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Overview

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Surgical resection of lung cancer has cured millions of people worldwide since its principles were established in the early part of the last century, however most lung cancers cannot be resected at the time of presentation and diagnosis. Thus chemotherapy, radiotherapy and palliative care have played a major role in treating symptoms of more advanced disease and to enhance quality of life in those who can't be cured. This vast experience worldwide of trying to get on top of the problem has made all those involved with treating lung cancer aware that the adage "prevention is better than cure" relates to this situation perhaps more than any other preventable disease. In fact, it would not be an understatement to say that smoking has caused the greatest public health problem in the history of the world. It is obvious that its addictive properties have held people firmly in its grip, so that smoking cessation programs require just as much energy to implement to effect change as all the treatment regimes used to treat its harmful effects.

However, smoking cessation must be a priority for all countries. When one sees patients who have lost their health from smoking, then see people smoking from a box of cigarettes with "Smoking Kills" written in big letters, it leaves you asking the same question for both situations – why? Do people want health? There is a

time however when reality strikes – when a person is faced with the reality that they have an untreatable lung cancer and it is the end. As doctors you can't help feeling an intense despair at the situation – especially if, as a surgeon, you have to tell patients you can't operate on them for one reason or another. You wonder, with all the information available, why cigarette companies don't run workshops to support people they've made addicted – why we as doctors have to mop up after them while they sell products which create so much havoc for humanity. As if giving up smoking is not enough, 50% of lung cancers arise in people who have stopped smoking years before. Does anyone really want to have cancer?

This issue of Cancer Forum addresses all the current issues relevant to specialists treating lung cancer, and coincides with the final stages of the development of the first NHMRC/ACN Clinical Practice Guidelines for the Management of Lung Cancer.

Guidelines are evidence-based, but these articles cover a much broader range of areas with discussion and interpretations by the individual contributors.

In Australia, the beginning of the new millennium has started with the recognition of the need for surgeons to have good oncologic principles leading to the formation of the Surgical Oncology section of the Royal Australasian College of Surgeons. Many other Australasian organisations specially dedicated to cancer management such as the Australian Cancer Network and COSA and the Lung Cancer Consultative Group of the Australian Lung Foundation work together to support specialists treating lung cancer, and are forming a stronger voice for issues relating to lung cancer. Incredible advances have been made over just a few years to stop smoking in the workplace and public places, and more recently in gambling facilities. This has had a dramatic effect in Australia on smoking awareness, which will benefit everyone from now on, and help promote health rather than inevitable illness.

Management of lung cancer has improved so much due to expanding knowledge in all areas. In relation to surgery for lung cancer, principles established early in the last century still hold, and form the basis for current treatment. Compared to 100 years ago, dramatic developments in technology have changed the whole practice of surgery. Rubins[1] pointed out however that the survival of stage 1 lung cancer in the two periods 1947 to 1969 and 1981 to 1994 were the same although perioperative mortality dropped significantly. Preoperative assessment, cardiac evaluation and surgery, inotropes, intensive care, antibiotics, CT scanning, PET scanning and above all, pulse oximetry and computers have been pivotal in this improvement in surgical survival.

CURRENT ISSUES

1. Correct diagnosis and delayed diagnosis

Currently there are several issues being discussed worldwide to improve lung cancer management. Firstly there is the issue of correct diagnosis of lung cancers. Liu Yurun[2], in Beijing, in a review of 1061 cases of primary lung cancer misdiagnosed as other diseases addressed this issue of the difficulties of diagnosis. Treatment delays, resulting from different reasons have been looked at in a UK study by Bozcuk[3], and in a Japanese mass screening group by Kashiwabara[4]. It was suggested that survival in lung cancer, apart from classical prognosticators, was strongly dependant on route of referral in early stages and use of combined-modality treatment in locally advanced disease, and that a one-year delay in detection of cancers under 2cm on mass screening did not affect prognosis.

2. Population-based screening for lung cancer

Early detection – using helical CT population-based screening – is addressed by another author in the following articles.

3. Management of small lung cancers – thoracoscopic wedge resection or lobectomy?

Although the Lung Cancer Study Group's research[5] found that lobectomy was better than wedge resection, many writers continue to evaluate the same issue hoping lesser procedures can be done for screening detected small cancers. In fact, just looking at 1cm cancers, Miller[6] found 18 patients developed recurrent cancer, and node metastases were detected in seven of 100 patients, leading them to the conclusion that lobectomy was still the operation of choice. It is still a contentious issue however for screen-detected cancers, and will take further studies to convince everybody.

Is it possible to detect pre-cancerous nodules? It is of interest that cancers showing pure ground glass attenuation on CT are being detected more and more and formed the basis of several reports[7,8]. That by Kodama[7] suggested that some of these will never progress to clinical disease, however a prior history of lung cancer raised the possibility of cancer as a diagnosis in some of their patients, leading to their excision. Because of difficulties in pre and intraoperative diagnosis, minimally invasive surgery may be appropriate to diagnose and cure such lesions.

4. Can investigative procedures be improved upon?

Is fluorescence bronchoscopy and virtual bronchoscopy with 3D visualisation of images going to help? Another author in the following articles addresses these issues.

5. TNM staging difficulties

Is current staging adequate? The current TNM classification has obvious strengths and along the way there are always difficulties with some tumours' classifications. As the system is based on prognoses of different combinations being the same, time will show how to classify some rare situations when data are mature. One area of common interest to surgeons is pleural involvement (T2). A study by Saito[9] looked at Touch Cytology of pleural surfaces over lung cancers. Overall, taking an impression of the surface of the lung using a glass slide at the time of surgery and staining it, revealed malignant cells in 17% of cases compared to 7% of pleural lavage. As well, malignant cells were identified in a significant number of patients without pleural malignancy detected on standard histology. This is one advance which may further tighten diagnostic criteria for T2, and is easily applied.

6. Technique of surgical resection

Is an open thoracotomy and node dissection better than thoracoscopic lobectomy (VATS) and node dissection, or vice versa? So far only good results for thoracoscopic surgery have been presented[10,11] and show virtually no difference between the gold standard of open resection and thoracoscopic resection, in terms of cancer outcomes. In a prospective trial aimed to determine the long-term prognosis of video-assisted thoracoscopic lobectomy versus conventional lobectomy for patients with clinical stage 1 T1N0 lung cancer, Sugi and colleagues[10] studied 100 consecutive patients. Lymphnode dissections were performed in a similar manner in both groups, with no differences in the number of dissected nodes in the two groups. The conclusion was that VATS lobectomy with node dissection achieved an excellent five-year survival, similar to open lobectomy. Some dispute the safety of this procedure however, and surgeons are a little hesitant of the

potential morbidity and the difficulty in teaching and training in this area to take it on in most units. Time will tell how this current vogue develops. Cost of staples for endoscopic procedures is limiting in countries trying to reduce costs, and as time in hospital is not magically reduced by the procedure to compensate for the expense, there may not actually be a reason to embark on these procedures. If the overall outcomes are the same, then, in terms of cancer management, this is purely a technical question relating to patient preference and surgeons' skill to perform the surgery.

7. Understanding lung cancer biology

How can tumours be better characterised? Are serum and tissue biomarkers of the cancer cells predictive of outcomes, or is there a need for adjuvant treatment post-surgery? Bozzetti[12] studied the biological parameters on CT-guided fine needle aspirates from peripheral primary non-small cell lung cancers, showing it is possible to get information other than histology from a needle biopsy. Buccheri[13] also studied serum biomarkers in early stage lung cancer in an effort to guide selection of surgical candidates. They studied CEA and Tissue Polypeptide Antigen in patients with operable non-small cell lung cancer. Other biological assessments of lung cancers are ongoing to characterise patients better, and this area will become more relevant to surgeons as different interventions may result from the biological marker assessment. As well, early detection may be a possibility with a serum biomarker.

8. Management of stage 3a N2

Is the current surgical approach for stage 3a N2 correct? Ever since the Roth[14] and Roselle[15] studies were published on the management of stage 3a disease, indicating that neoadjuvant therapy then surgery is appropriate for resectable lung cancers with ipsilateral mediastinal node involvement, more experience has been gained. Ichinose[16] from the Japanese Clinical Oncology Group reported recently on 466 completely resected stage 3a N2 patients, and Bedini et al[17] reported their experience with maximal loco-regional treatment with cisplatin-enhanced high dose radiotherapy then surgery for initially non-respectable stage 3 lung cancer. Obviously with their successes, this treatment is becoming the acceptable way of dealing with this advanced disease. What is important is to appreciate that since these studies have been done, PET scanning has been introduced and this will probably be shown to be of vital importance in showing if a tumour is active or not after the chemo/radiation treatment. This may result in less surgical intervention if PET activity of the tumour and mediastinum was not demonstrable post-treatment, and if survival were shown to be the same, then this would be a significant achievement.

9. Use of PET and PET/CT in the surgical management of lung cancer

This brings us to the issue of PET scanning and its place in surgical management. This forms the basis for a separate discussion so I will not further elaborate.

In the following articles, specialists address the issues current in their specialties. It is hoped with pooling of all our resources in Australia, smoking-related lung cancer can be eradicated. The significant changes in society regarding smoking indicate people understand they can make a decision about their own health, and that no matter what has happened in the past with advertising and recommending smoking, times have changed and this is no longer fashionable. When completed, the use of the Clinical Guidelines for Lung Cancer Management, and recognition of our major advances in treating lung cancer in this country, brings us to the forefront in lung cancer management in the world. However, as long as people keep succumbing to lung cancer, we have to both increase preventive measures and use the newest treatment modalities

available. Multidisciplinary management will ensure there is the best care for the patient throughout any of these treatment programs.

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The thoracic physician and lung cancer in 2003

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As the biggest cause of cancer death in the Western world, lung cancer is frequently encountered in the day-to-day practice of adult thoracic physicians. The vast explosion of knowledge, ranging from emerging molecular fundamentals to new imaging modalities to new drug therapies, means that the knowledge base required by a thoracic physician is both substantial and continually expanding.

Lung cancer guidelines, like the NHMRC/ACN Clinical Practice Guidelines for the Management of Lung Cancer (in final stages), are designed to help optimise clinical management, but are not “cookbook recipes”, and require judicious interpretation and application to each individual patient. For instance, how do we explain to a patient the relative benefit of a particular therapy? Should we use concepts of median survival, one-year or two-year survival, reduction in hazard ratio, disease-free survival, Kaplan-Meier curve (all will coalesce in time), time to relapse, complete or partial response rate, quality of life? How do we apply population statistics from a study to our individual patient? What if our patient is slightly different from the

trial patients?

What then is the role of the thoracic physician in combating this common and devastating disease?

From the early days of smoking (or other carcinogen exposure) to the terminal stages of the disease, the patient with lung cancer is likely to need help and support from a variety of medical and allied health practitioners.

One of several models that can be envisaged defines the thoracic physician as an advocate for the patient, guiding and coordinating through the complexities of specialist and sub-specialist diagnosis and treatment. Undoubtedly, many other health care providers will also be involved in patient care, but the thoracic physician often carries out the initial steps of diagnostic evaluation and "breaking the bad news". Many thoracic physicians also participate in further evaluation such as functional and anatomical staging and management decisions.

So specifically, how does the thoracic physician fit into the "continuum of care" for the individual going through the stress of suspected lung cancer, in which the continuum of care refers to the entire process from prevention to detection, diagnosis, treatment, follow-up, and palliative care?

PREVENTION

Clearly, as smoking causes the vast majority of lung cancer, maximum effort must be applied in this area. Our role is not only to advise our own patients and their families, but also to help disseminate the relatively simple and effective smoking cessation strategies available to us currently[1,2,3,4].

EARLY DETECTION

This is a very topical area with the realisation that the five-year mortality from lung cancer has not changed appreciably over time. The role of helical CT screening is addressed in this series and the CXR screening component of the long awaited prostate, lung, colon, ovary (PLCO) study will be very interesting when results are to hand (www3.cancer.gov/prevention/plco), bearing in mind the lengthy time to completion for such studies. The workload from any such screening will be considerable if we assume rates of nodule detection as in the ELCAP, IELCAP and Mayo Clinic studies.

There is increasing recognition that tumours develop from a multi-step accumulation of acquired key genetic defects, and some of the malignant transformation can be recognised morphologically. Dysplasia and carcinoma-in-situ are well-recognised preneoplastic lesions for proximal SCCs, for instance[5]. However, we are learning more about atypical adenomatous hyperplasia for bronchioloalveolar cell carcinoma (which is no longer diagnosed if there is stromal invasion) to diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIP-NECH), an exceptionally rare lesion associated with the development of multiple carcinoid tumours. The attraction for research in this area is that intervention at this stage may be more effective than once the tumour is invasive.

New diagnostic tools for preneoplasia are becoming increasingly available, ranging from fluorescence bronchoscopy[6] to novel biomarkers such as hnRNP[7]. Indeed, with the realisation that phase III chemo prevention studies require large patient cohorts, major resources, and many years to yield a definitive result, it is becoming clear that a more productive approach to development of clinically useful chemo preventive agents is to perform short-term studies examining the effect of interventional agents on "intermediate

endpoints" ie molecular, imaging, and histologic endpoints in populations at high risk for developing invasive cancer. A major focus of current research is therefore the identification of appropriate biomarker endpoints[8].

DIAGNOSIS

The traditional role of the thoracic physician in clinical and bronchoscopic diagnosis and staging is becoming more refined by modern techniques, such as endobronchial ultrasound to identify lymph node enlargement and guide Wang needle biopsies to improve the accuracy of clinical staging. Nonetheless, thorough inspection of the bronchial tree with fibreoptic bronchoscopy remains an indispensable mainstay of lung cancer management. For example, we recently bronchoscoped a patient suspected of having a right lower lobe malignancy and found two other unsuspected tumours in the contralateral lung (a total of three), each of which was histologically proven to be a distinct synchronous tumour.

"Breaking the news" is as important an issue for the thoracic physician as for any other practitioner who has to do this. Recent joint initiatives between the Medical Oncology Group (MOG) and the Thoracic Society of Australia and New Zealand (TSANZ) to develop workshops for advanced trainees in thoracic medicine to practise and optimise this key communication skill, attest to the recognised importance of this interaction.

Advances in molecular characterisation of lung cancer, including cytokeratin and thyroid transcription factor (TTF) expression by adenocarcinomas of primary lung origin, and molecular profiling by microarray analysis are leading to improvements in diagnostic accuracy, reducing misclassifications of primary and secondary tumours within the lung, and thus supporting improved clinical management decisions.

Accurate anatomical and functional staging of lung cancer patients remains a cornerstone of good lung cancer management, and often is a responsibility of the thoracic physician. There is guidance from many quarters such as the forthcoming CAN Australian guidelines, ASCO, ATS/ERS[9], COIN (the Royal College of Radiologists' Clinical Oncology Information Network), BTS[10], SIGN (Scottish Intercollegiate Guidelines Network) in addition to primary research papers. Some of these have helped identify problematic issues, eg investigation of adrenal lesions (not enhanced CT, MRI, PET, delayed contrast CT with washout, FNA biopsy), but the lag time between guidelines and new research findings means that the thoracic physician continues to benefit from interaction with our radiology colleagues. For instance, the belief that detailed staging may be not be cost-effective in NSCLC patients planned for curative intent treatment with no adverse symptoms or signs has been challenged by a recent paper from the Canadian Lung Oncology Group[11].

Prognostic factors are being studied intensively with the aim of trying to identify those who may benefit from adjuvant therapy, and current studies of adjuvant chemotherapy following surgery are eagerly awaited.

TREATMENT

Apart from medical treatment of lung cancer symptoms such as obstructive pneumonitis or pain, a major role of the thoracic physician is to encourage the patient to actively participate in the decision-making process towards choosing definitive therapy. In Australia, lung cancer management appears fairly diverse[12], and there is increasing recognition of a need to involve the patient in evidence-based decision-making[13,14].

In this regard, we are fortunate to have a multidisciplinary approach at our institutions that allows the patient efficient and timely access to a coordinated team of dedicated sub-specialists.

Some of the advantages of a multidisciplinary approach are that management is planned proactively via an

exchange of professional opinions, as opposed to the linear approach of one specialist after another; imaging and pathology can be reviewed ensuring accurate TNM staging; interaction of all disciplines encompassing up-to-date diagnostic and therapeutic approaches is mutually educational for all members of the team, is conducive to provision of a clear and consistent message to patients, and enables consideration of novel therapies and clinical trials.

Our pulmonary malignancy conferences include nursing staff, thoracic physicians, thoracic surgeons, a radiation oncologist, a medical oncologist, a chest radiologist/nuclear medicine physician, a pathologist, palliative care physicians, and social workers. During assembly of the attendees each week, Medline citations relevant to lung cancer are displayed by data projection to facilitate timely incorporation of emerging evidence into the conference proceedings. Our meetings are generally well-attended and widely regarded as important for optimal patient care and useful for organisational quality assurance. They do however operate within a dedicated "culture", and with commitment of time, resources, and organisation, all of which contribute to their smooth running. A multidisciplinary approach could take a variety of alternative styles to suit different local environments. We have found that an essential component to a successful multidisciplinary approach is a standardised dataform and database. In recognition of this, the Australian Lung Foundation's multidisciplinary Lung Cancer Cooperative Group has indorsed the idea of establishing a database that would be available to institutions that facilitate the organisation of such meetings, with data consistent with the minimum common cancer dataset proposed by the NCCI.

Thoracic physicians have a primary role in the assessment and sometimes management of airway complications of lung cancer. Some are trained in medical thoracoscopies, laser bronchoscopy, stenting and photodynamic therapy, techniques that are important in a particular patient subset. While the surgeon appropriately makes the final decision regarding patient fitness for resection, thoracic physicians can usefully inform this decision by accurate clinical assessment and interpretation of complex lung function indices and exercise physiology. Thoracic physicians have primary responsibility for recognition and treatment of co-existing reversible airway disease contributing to poor lung function independently of lung cancer, so that treatment options are considered in the light of optimal lung function. Apart from local complications of lung cancer and pulmonary side effects of cancer treatments such as chemotherapy and radiation therapy, patients with lung cancer frequently have co-existing emphysema and always require maintenance of maximal lung function, which demands an ongoing commitment from the thoracic physician.

There is a raft of novel targeted therapies being developed for killing lung tumour cells[15]. Several of these will be orally bioavailable, making it likely that thoracic physicians will require a detailed working knowledge of them to use them effectively.

Patients with locally advanced lung cancer not infrequently have a multitude of factors contributing to dyspnoea, including lobar collapse, pleural effusion, emphysema, main pulmonary vessel compression, and radiation pneumonitis. The thoracic physician is often able to assist and contribute to palliative management decisions by suggesting approaches that are most likely to relieve dyspnoea in such complex situations.

In summary, we believe that the thoracic physician has a key role in helping to provide effective multidisciplinary care for patients with lung cancer. More than simply diagnosing lung cancer or recurrence, the thoracic physician is part of a team comprising thoracic surgeons, radiation oncologists, medical

oncologists, radiologists, palliative care and pathologists. In this model, one medical practitioner who could be a thoracic physician or any other team member, coordinates and judiciously “tailors” the ever-expanding diagnostic and therapeutic options available to each patient. The ultimate aim is not only to improve patient management via enhanced and timely multidisciplinary communication, but also to communicate effectively with patients, their families and carers, and their family doctors. The role of the thoracic physician is thus clearly dynamic, and should continue to evolve in concert with the multiplicity of new developments that are occurring in lung cancer.

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Systemic therapy of lung cancer: where are we in 2002?

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At a time when our understanding of the molecular biology of cancer was supposed to lead to major advances in therapy, it is disappointing to report that the major lung cancer 'story' of 2002 (table one) is likely to be the failure of the new molecularly-targeted agent Iressa (an inhibitor of Epidermal Growth Factor Receptor EGFR-signalling) to improve the survival of patients with metastatic non-small cell lung cancer (NSCLC) above that obtained with 'modern' chemotherapy. It is also perhaps a sign of this time that the release of this information[1], in advance of any publication or presentation at a scientific meeting, appears to have been made because of the sensitivity of the result for the price of the sponsor's shares and the need to avoid any hint of withholding price-sensitive data – in a year when corporate governance in general (and in biotechnology firms in particular) has been a major theme.

By the time you read this, the results of the two Iressa phase III trials will have been presented at the ESMO

meeting in October. The design of the studies tells us a lot about where we are and where we (might) be going. These were big (>500 patients) international studies. Patients having first-line chemotherapy for stage IV or 'wet' IIIB NSCLC were randomised to standard chemotherapy or standard chemotherapy plus Iressa. Iressa was given continuously and there was a matching placebo. The trials were double blind. Survival was the primary endpoint, but symptom control and quality of life were also assessed.

What was considered 'standard chemotherapy'? The two Iressa phase III trials had carboplatin plus paclitaxel and cisplatin plus gemcitabine as their standard chemotherapy regimens – Australian centres were included in the trial where it was carboplatin and paclitaxel.

So what went wrong? Until we see all the final data it is impossible to satisfactorily answer that question. Perhaps it was something very mundane, like very poor compliance with the daily oral medication. But I would speculate that the problem was the failure to really select the patients where inhibition of EGFR signalling could be therapeutically useful. The Iressa trials did not select patients whose cancers overexpressed EGFR, but included all NSCLC. While over 80% of NSCLC are found to actually overexpress EGFR[2], this does not necessarily mean that 80% of NSCLC will benefit from inhibiting this pathway. Advanced cancers, particularly epithelial cancers, are genetically very heterogeneous, and dependence on a single aberrant pathway for cell survival is likely to be the exception rather than the rule. We cannot expect the same paradigm in NCSLC as in cancers like GISTs where there is a very narrow spectrum of genetic changes and one clear causative activating mutation[3]. To make progress in molecular therapy in NSCLC we will need to understand not only the range of genetic changes that can occur, but what is actually occurring and important for an individual patient. Individual tumour profiling will be costly and complex, but perhaps necessary.

Over the past 10 years we have seen the introduction of many new cytotoxics with some activity as single agents in advanced NSCLC. This resulted in the potential for multiple combinations with cisplatin, with carboplatin, with other older agents like ifosfamide, and among the new cytotoxics themselves. All the two-drug and many of the three-drug combinations have now been tested in phase III trials, and in 2002 we can at last make some overall conclusions about the 'best' ones. There is no evidence for any clinically important efficacy differences between the five regimens suggested in table two, and any one can be considered a suitable standard of care for metastatic NSCLC patients with good performance status. Differences in the spectrum of side effects or in the number of treatment visits per cycle may lead oncologists to favour one over another for individual patients.

Three presentations at ASCO 2002 reported phase III trials where paclitaxel, gemcitabine or docetaxel alone was compared to that drug plus a platinum. The message from all these trials was the same – the two-drug combination was better than the single agent. Most important was the trial comparing paclitaxel plus carboplatin to paclitaxel[4]. Five hundred and sixty one patients were entered and randomised to paclitaxel/carboplatin or paclitaxel. Response rate, time to progression, and median survival were all significantly better with paclitaxel/carboplatin. Although laboratory haematological toxicity was worse with combination, there was no difference in clinically important haematological toxicity, non-haematological toxicity or quality of life.

Subgroup analyses of elderly patients (age ≥ 70) and performance status two patients gave the same conclusions. In patients belonging to either of these important patient groups, cisplatin-based regimens are unacceptably toxic and performance status two patients were not included in the major phase III trial

evaluating carboplatin and docetaxel. For them, either paclitaxel/carboplatin or gemcitabine/carboplatin is therefore my recommendation. There will still be a 'borderline' group of patients, with performance status two and elderly with some comorbidity in whom supportive care or single agent chemotherapy will be appropriate.

What about adding a third cytotoxic agent? While all conceivable triplets have not been tested, it is now clear that there is unlikely to be a significant benefit from doing so. Additional toxicity and (importantly) additional cost means that three-drug combinations must remain experimental. Similarly, there is no current evidence to support using a two-drug, non-platinum combination. The impetus to do so has been the hypothesis that (particularly cisplatin) combinations are more likely to impair patients' quality of life than non-platinum ones. At ASCO 2002, an important European/Canadian trial was reported where quality of life was the primary endpoint[5]. Patients (n=502) received vinorelbine plus gemcitabine or either drug plus cisplatin. There was no difference in quality of life. Tumour response rates and time to progression were better with cisplatin, resulting in more tumour symptoms balancing out the less toxicity in the vinorelbine/gemcitabine arm. The financial costs to the health care system of chemotherapy for metastatic NSCLC patients have been debated before – we must therefore await clear evidence to use non-platinum combinations.

Finally, for chemotherapy of metastatic NSCLC, 2002 saw the presentation of the results of the UK Big Lung Trial (BLT)[6]. The BLT should be the last of the trials where 'best supportive care' is an acceptable treatment option for good performance status NSCLC patients. Seven hundred and twenty five patients were randomised in the UK to chemotherapy or supportive care, 80% of the chemotherapy patients received an old three-drug combination of cisplatin plus mitomycin C plus either ifosfamide or vinblastine. Reflecting the unusual nature of NSCLC practice in the UK, less than 40% of the patients entered on the trial actually had stage IV NSCLC; 7% had stage I or II disease! (These figures don't include the companion trial where patients with localised disease could be randomised to chemotherapy followed by radiation therapy or radiation therapy alone.) Survival was significantly better with chemotherapy, and the results look pretty identical to the 1995 meta-analysis. Chemotherapy did not produce any detrimental effect on patients' quality of life.

It hasn't been a good year for small cell lung cancer. Recent survival gains in this disease have come from defining the optimum use and timing of radiation therapy for limited disease patients[7,8]. Apart from the Japanese trial (published this year but really old news from 2001) showing benefit from irinotecan[9], there are no positive results to report. A large US trial (587 patients) compared standard platinum/etoposide chemotherapy to the same chemotherapy plus paclitaxel for extensive disease patients[10]. Not only was survival not improved by adding paclitaxel, there was a significant increase in toxic deaths in the three-drug arm despite the routine use of G-CSF.

Which leads us back to Iressa. Despite the failure of this drug to improve on the results of first-line chemotherapy, there has been clear evidence presented in 2002 that when given alone, it can induce significant tumour shrinkage and result in improvement in symptoms in patients with NSCLC who have previously been treated with chemotherapy. Two large but uncontrolled multinational phase II studies were done (there was randomisation in both studies to different doses of Iressa but not to a control arm)[11,12]. The combined total of patients was 416. The response rates in terms of tumour shrinkage were between 10% and 20% of patients (higher in patients treated in Japan than elsewhere), while 30%-40% of patients reported improved symptoms and quality of life. These results are clearly not due to chance or spontaneous remissions of disease, but right now it is unknown how regulatory agencies will view this uncontrolled data if

(when) it is submitted to them. My bet is that in Australia there will be difficulty obtaining registration and subsidised reimbursement without a controlled trial.

Table two gives my perspective on current standard care and what new systemic agents might lead to future advances. All the approaches in table two are in phase III trials. Metastatic NSCLC continues to be a priority for companies developing new agents, because of the very high incidence of the disease and the paradigm from other cancers that agents useful in metastatic disease may increase cure rates in earlier stages. We will see results from many more trials of standard chemotherapy versus standard chemotherapy plus molecular/biologic agent announced in the next few years. For the smaller group of patients, with good performance status and locally advanced disease, concurrent platinum chemotherapy and radiation is unlikely to be displaced but we are less clear on exactly what drug combination to use concurrently to maximise efficacy and minimise in-field toxicity. Specific radiation enhancers (and protectors) may provide further therapeutic gain in this groups of patients, as may further refinements in radiation planning and delivery systems. For operable patients, neoadjuvant chemotherapy still lacks definitive proof of benefit, but results of trials where the chemotherapy used is one of, or close to, the current standards for metastatic disease will provide more substantive data. We will also expect to see results from more trials of adjuvant chemotherapy following surgery, and within two to three years a new meta-analysis of surgery ± adjuvant chemotherapy.

One hesitates to even speculate on where any advance in systemic therapy of SCLC will come from. An international phase III trial is currently open to (hopefully) validate the result of the Japanese irinotecan trial. If so, we will have a new two-drug standard for extensive disease patients and a strong lead for limited disease patients. Adding a third cytotoxic agent (paclitaxel, topotecan) as part of initial therapy or after response has not proved fruitful. SCLC is truly a malignancy where we need a new approach, and great hope rests on the large international trial of a ganglioside-based vaccine for limited disease patients who have completed combined modality therapy. If this shows benefit, then we have reason to look with much more interest at immunological approaches to this disease. If not, then perhaps the only good news will be that the incidence of SCLC seems to be falling!

At least it was a good year for mesothelioma.

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LUNG CANCER IN THE NEW MILLENNIUM

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Contemporary management of non-small cell lung cancer in Australia

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HISTORICAL BACKGROUND

In 1955, Bromley and Szur reported on 66 patients with a pathologic diagnosis of lung cancer who had been treated with high dose radiotherapy and who had then proceeded to surgery[1]. In 24 (46.7%) no tumour was identified in the resected specimen, and in a further 14 (22.5%) tumour was said to be present but degenerate. Eleven patients had oat cell carcinoma and since it is not stated how many of these were disease-free at operation the result cannot be taken to apply exclusively to non-oat cell carcinoma, although at the very least 13 (19.6% of 53) of the complete responders must have had non-small cell lung cancer. Hence we have known for almost half a century that radiotherapy is an extremely active treatment for non-small cell lung cancer, yet a series of randomised trials involving patients with inoperable lung cancer and conducted after Bromley and Szur's report showed little or no survival advantage associated with

the use of radiotherapy in comparison with best supportive care[2-4].

How do we explain this paradox? There are three possible explanations.

1. It could be that all patients develop metastatic disease, and the effect of radiotherapy confined to the primary site, no matter how powerful, cannot alter the natural history of the disease, which is determined by secondary deposits outside the thorax. That is certainly true of small cell lung cancer, for which systemic chemotherapy has been shown to be superior to locoregional radiotherapy alone[5]. But if it were also true for non-small cell lung cancer, then surgery would likewise be ineffective, which clearly it is not, at least for early stage disease[6].
2. It could be that any benefit resulting from local disease eradication is counterbalanced by the toxicity of treatment. This certainly appeared to be the case in a recently reported French randomised trial of postoperative radiotherapy for completely resected non-small cell lung cancer, in which the potential advantages of superior local control in the radiotherapy arm were completely offset by treatment related deaths[7]. These complications appeared to be due to excessive dose, excessive dose per fraction, and bad technique.
3. The wide eligibility criteria and outmoded staging procedures used in these older trials resulted in prognostically heterogenous populations. As a result, the benefits of radiotherapy may have been masked by the inevitably poor outcomes in that proportion of patients who were understaged or had poor performance status. This appears to be the most likely explanation for the inconclusive nature of these early studies.

Unfortunately, an effect of these disappointing trial results was the almost complete extinction of radiotherapy research in lung cancer, at least in the UK, for several decades, during which an attitude of nihilism prevailed and was propagated by a generation of clinical teachers. That this attitude was still prevalent in Victoria in the early 1990s was evident in a survey of clinicians who cared for lung cancer patients during 1993[8]. In this study, 12% of patients did not have a histologic diagnosis, and a large proportion (25%) received no specific anti-tumour therapy.

THE 1990S

The last decade has seen dramatic changes in the role of radiotherapy in patients with lung cancer. Previously used almost entirely as a palliative treatment, radiotherapy is now recognised as an important part of the multimodality treatment of both small cell and non-small cell lung cancer, with high level evidence supporting its use in selected patients as a means of prolonging their lives. This quiet revolution has occurred as a result of a number of factors, including better patient selection, better treatment planning and delivery, the use of combined chemotherapy and radiotherapy, and recognition of the importance of overall treatment time. We will review these developments one by one.

Patient selection

Performance status

It is now generally accepted that performance status is the most important prognostic factor in lung cancer[9], yet there is no reference to it in one of the most influential older trials[2]. Inclusion of patients with poor performance status whose survival is likely to be only a few months in randomised trials introduces

background noise that can obscure treatment benefits which are evident only in fitter patients. Most contemporary treatment protocols employing a radical approach restricting eligibility to patients whose performance status is ECOG 0 or 1.

Stage

Anatomical extent of disease is also an important prognostic factor, and it is self-evident that patients who have metastatic disease will obtain only limited benefit from a treatment that is confined to the primary site. When patterns of relapse were analysed in an Australian trial for patients thought to have locoregional non-small cell lung cancer, 27% failed initially at distant sites[10]. It now appears that a proportion of these patients with metastatic disease can be identified by the use of F-18 fluorodeoxyglucose (FDG) PET scanning as a staging procedure, thus sparing them potentially futile and toxic treatment. It could be anticipated that the exclusion of these patients would produce a prognostically more favourable group of patients through the process of stage migration. In our own institution, we have compared the survival of two cohorts of patients with non-small cell lung cancer, one staged before FDG PET became available, and the other in whom FDG PET was used routinely as a staging tool[11]. Although the treatments used in both groups were similar, the use of FDG PET was associated with a marked increase in median survival from 16 to 31 months (P = 0.01). This suggests that future studies of novel radiotherapy-based treatments for non-small cell lung cancer might most usefully be confined to patients staged with FDG PET.

Tumour volume

The TNM staging system reflects to varying degrees both disease extent and location in relation to surgical resectability. When surgery was the only effective form of therapy, this was understandable, but now that there is strong evidence that non-surgical treatments can also improve survival of patients with non-small cell lung cancer, the usefulness of the current system is under scrutiny. From a radiobiological point of view, the volume of the primary tumour is probably more relevant than its location. Two recent retrospective studies of patients treated with radiotherapy found no influence of stage on survival, but the effect of tumour volume was highly significant[12,13]. This issue is currently being investigated in an Australasian context in a prospective study of the Trans Tasman Radiation Oncology Group (TROG protocol 9905).

Improved treatment planning and delivery

The widespread application of computer technology to treatment planning and delivery has been one of the most spectacular developments in radiation oncology in the last decade. It is now possible to define the target (for irradiation) using fused CT and FDG PET images, and to establish the anatomical relationship in three dimensions (3D) of the target to critical normal structures with unprecedented precision. The 3D view provided by the planning computer has led to the introduction of highly conformal techniques in which the region of high dose is shaped as closely as possible to conform to the shape of the target, thus minimising dose to surrounding normal tissues (figure one). The dose distribution can be calculated in 3D and this enables objective analysis of dose volume relationships in critical organs, rather than the traditional method in which the radiation oncologist eyeballs a simulator film to determine whether or not a treatment volume is “safe” (figure two). This has allowed dose escalation without complication to levels above 100 Gy[14]. Whether this will lead to better local control and longer survival remains to be seen. However, it would seem reasonable to expect that improved precision will lead to a lower incidence of serious toxicity, such that the problems observed in the French postoperative study[7] do not occur again.

Combined radiotherapy and chemotherapy

The result of the meta-analysis published in the British Medical Journal[15] in 1995, which revealed a 13% reduction in risk of death associated with the use of platinum-based chemotherapy in combination with radical radiotherapy, is well known, but several points are worth reiterating. The first is that in most of the studies, the chemotherapy was given before radiotherapy, so the result does not reflect the potential benefit of concomitant radiotherapy and chemotherapy. Second, the benefit was not confined to patients with stage III disease, but was also observed in stage I and II patients, although because of smaller numbers the effect was not statistically significant.

There are good theoretical reasons why concomitant radiotherapy and platinum-based chemotherapy should be more effective than the two treatments given sequentially. There are at least three randomised trials which have confirmed an advantage for the concomitant versus sequential approach[16-18], and the use of both treatments together should now be regarded as the standard of care.

Overall treatment time – CHART

The idea that some cancers repopulate at an accelerated rate during radiotherapy was first proposed by Withers[19], and it is now widely accepted that to avoid this potential cause of treatment failure, overall treatment times should be kept short. This may be one reason why concomitant chemoradiation has proven more effective than sequential treatment. In a landmark study, Saunders and colleagues demonstrated that by giving a course of radiotherapy over 12 days instead of 42, local control could be improved, which in turn translated into a statistically significant survival advantage[20]. The acronym given to the regimen developed by Saunders was CHART (continuous hyperfractionated accelerated radiotherapy), but in order to complete treatment in such a short time, it was necessary to treat patients three times a day, seven days a week. This has proven almost impossible to implement in practice, and as we have demonstrated, similar benefits might be achievable with chemoradiotherapy, without the inconvenience of CHART[21]. Nevertheless, the results of the CHART trial have confirmed that it is possible to prolong survival with a non-surgical treatment, and that this is a result of improved local control, an observation that proved so elusive to the early investigators.

RADIOTHERAPY FOR NON-SMALL CELL LUNG CANCER IN AUSTRALIA IN 2002

The remarkable advances that have occurred in the last decade in the radiotherapeutic management of non-small cell lung cancer give cause for more optimism than was the case in 1992, but significant problems remain. We can deliver treatment with much more precision than ever before, but this requires accurate delineation of the target. In our own department, we have shown significant variation in tumour volume delineation by different radiation oncologists[22] – we do not know how much of a problem this is in other departments, and whether it is associated with a risk of geographic miss. What account is taken during the planning procedure of tumour movement during the respiratory and cardiac cycles – the so-called 4th dimension?

We now have a much stronger evidence base on which to make recommendations to our patients about the most effective treatment, but will our resources allow us to implement best evidence? At a joint meeting of the Medical Oncology Group of Australia and the Faculty of Radiation Oncology, held in the Barossa Valley in August 2002, the participants were asked how they would manage a hypothetical case of inoperable non-small cell lung cancer. The majority recommended a combination of chemotherapy and radiotherapy, with 30 opting for induction, rather than concomitant chemotherapy, even though the available evidence favours

the concomitant approach. Of the 30, only two stated they would recommend that approach by choice, the remainder indicated that it was a strategy forced on them by the long waiting times for radiotherapy. It is to be hoped that as the next decade evolves, the acquisition of new evidence for the best management of lung cancer will be matched by our ability to deliver it.

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LUNG CANCER IN THE NEW MILLENNIUM

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FDG PET: Revolution or evolution in the management of non-small cell lung cancer?

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INTRODUCTION

Lung cancer is currently the leading cause of cancer-related death in both men and women in most Western countries. In Australia there is a falling incidence in males that is not matched in females, tracking smoking trends[1]. Non-small cell lung cancer comprises 75-80% of all new cases of lung cancer[2]. Early diagnosis of lung cancer is difficult, and screening is currently limited to investigational studies. The lack of specificity of radiologic screening techniques means that many unnecessary biopsy procedures are required to exclude malignacy in lung nodules identified in asymptomatic individuals. Alternatively, serial imaging is required to

exclude the progressive enlargement that chartacterises malignant nodules. This “watchful waiting” approach carries the risk of disease dissemination during surveillance. At the time of clinical diagnosis, most patients are symptomatic and have what is considered to be locoregionally-advanced disease. Many also have systemic metastases at presentation. Even in those cases in which an apparently complete resection is able to be achieved, over 50% relapse, with the majority of these relapses occurring at distant sites[3,4]. Early systemic relapse is likely to reflect the presence of metastatic disease that was not detected by conventional staging techniques at the time of initial diagnosis. When surgery is not indicated, suitable patients with locoregionally-confined disease have a chance for prolonged survival and even cure with radical platinum-based chemoradiotherapy[5]. Five-year survival rates, however, remain poor. Selected patients with stage III disease are now also being treated with neoadjuvant chemotherapy prior to surgery in an attempt to improve long term survival. Improvements in radiotherapy delivery using conformal techniques offer the hope of improving local control by administering higher tumour doses while sparing adjacent normal tissues. These more aggressive treatments aimed at improving the still disappointing cure rates come at considerable cost both to the healthcare economy and in terms of morbidity to patients. Accordingly, their appropriate use relies on accurate patient selection and precise definition of tumoural extent. In particular, accurate staging avoids futile aggressive over-treatment of patients with incurable disease.

Unfortunately, conventional staging has significant limitations. Although primary tumoural relations are generally well-defined on CT scanning due to high contrast between the tumour mass and adjacent aerated lung, secondary consolidation of lung beyond obstructing bronchial lesions can impair characterisation of true tumour extent. This is particularly relevant to radiotherapy planning, where the aim is to minimise radiation dose to normal structures. Clinical staging of the mediastinum with CT or MRI is based on lymph node size and is therefore unable to identify nodal metastases that are less than one centimetre in diameter or to differentiate between malignant and enlarged reactive nodes. Recognising the limitations of CT, pathological mediastinal lymph node sampling has become an established technique but has associated morbidity and is also prone to sampling errors. Assessment for systemic metastases is also problematic, with limitations in both the sensitivity and specificity of conventional staging techniques often requiring a number of complementary imaging tests to be performed and in selected cases, biopsy of suspicious lesions. In the post-therapeutic settings, it is not possible to reliably differentiate viable tumour from fibrotic, or necrotic elements, even with well-visualised masses. Clearly, more accurate staging techniques would be advantageous.

PET scanning with fluorodeoxyglucose (FDG) utilises the fundamental biochemical differences in glucose metabolism between normal cells and cancer cells to differentiate between benign and neoplastic processes. As a glucose analogue, FDG is preferentially trapped inside tumour cells[6] and its accumulation in cancer cells can be detected with high resolution by PET. The potential applications of FDG PET in patients with known or suspected lung cancer are discussed below.

THE ROLE OF PET IN THE DIAGNOSIS OF LUNG CANCER

Although FDG uptake can also occur in inflammatory or granulomatous processes, the ability of PET to differentiate between benign and malignant tissues allows the diagnostic use of FDG PET in evaluation of pulmonary masses. In a recent meta-analysis, FDG PET was found to have a high accuracy for differentiating benign from malignant lung nodules[7]. These data have been supported by Australian experience[8] and results from Germany[9]. In addition to providing accurate differentiation of benign from malignant tissues, FDG PET

also simultaneously provides staging of those nodules or masses identified to be malignant. In a small proportion of cases an alternative primary will be found, with implications for both management and prognosis.

THE ROLE OF PET IN THE STAGING OF NEWLY-DIAGNOSED NSCLC

In patients with histological confirmation of NSCLC, PET has proven to be more sensitive and specific than conventional staging for staging of the mediastinum[10-13]. Importantly, a recent meta-analysis[14] has firmly established the superior accuracy of metabolic staging compared to anatomical staging for this purpose. The summary point estimates of diagnostic performance were 92%, 90% and 93% for overall accuracy, positive and negative predictive values respectively for PET and 75%, 50% and 85% for CT. An additional benefit of FDG PET is its ability to accurately detect distant metastases[15-18]. A recent German meta-analysis, including more than 1000 patients in whom detection of systemic disease was also evaluated, also confirmed the superior diagnostic value of PET compared to conventional staging[19].

In a large study with clinical-pathological confirmation, poor correlation was found between the presence of mediastinal nodal metastases and nodal size[20]. On the other hand, a study which included extensive dissection of mediastinal lymph nodes (18-28 lymph nodes recovered per dissection) after CT and FDG-PET staging has shown that enlarged lymph nodes visualised at CT but negative at PET were free of metastatic involvement in 92% of cases[12], attesting to the high negative predictive value of PET (a function of test sensitivity). All imaging techniques are, however, imperfect for the detection of small volume disease as a function of their finite spatial resolution. An additional issue for the sensitivity of disease detection by PET is the avidity of cancer cells for FDG. Tumour volume and FDG-avidity determine the contrast between cancer deposits and adjacent normal tissues. Patterns of uptake have been described for specific histologic subtypes[21] but overall, most NSCLC has high FDG-avidity.

In addition to being the most accurate non-invasive method available to characterise mediastinal lymph node status in the preoperative staging of NSCLC, PET changes management in up to 30% of cases[22,23]. The use of PET in preoperative staging results in a different stage from that determined by standard methods in about half of patients, with up-staging around twice as common as down-staging with PET. This means that the predominant impact of PET is to lead to less aggressive therapy. In particular, detection of systemic disease prevents futile aggressive local therapies.

The impact of FDG PET may even be greater in patients with NSCLC who are being considered for radical radiation therapy[24]. The majority of such patients have this decision based on the presence of stage III disease following conventional staging procedures, and most also die of distant metastases despite treatment with curative intent. Failure to control local disease or the existence of occult disease outside the radiation treatment volume could both account for this. Recent evidence from our group suggests that underestimation of disease extent by conventional staging techniques is an important factor. We have recently reported[25] an increase in the incidence of PET detection of distant metastases with increasing conventional stage from stage I (7.5%), through stage II (18%) to stage III (24%, p=0.016). In no case was the PET-detected metastasis found to be false positive. In a meta-analysis primarily including earlier stage disease, unexpected extrathoraxic metastases were detected with FDG-PET in 12% of lung cancer patients, and the therapeutic management was changed in 18% of patients as a result of PET findings[19].

THE ROLE OF FDG PET FOR THERAPEUTIC PLANNING

Definition of local tumour relations can be compromised by secondary collapse or consolidation, but is important when planning radiation treatment volumes. One of the significant advances in radiotherapy of recent times has been the development of advanced treatment delivery techniques that allow use of higher radiation doses to the tumour while sparing adjacent normal tissues. Such techniques are vitally dependent on accurate definition of tumour and normal tissue boundaries. PET imaging allows the differentiation between tumour and atelectasis, resulting in a smaller target volume in patients with bronchial obstruction and sparing of normal lung tissue and guides appropriate inclusion or exclusion from treatment of involved and uninvolved lymph nodes[26-28]. This has become particularly important with more sophisticated radiotherapy delivery[29,30].

THE ROLE OF FDG PET FOR THERAPEUTIC MONITORING

Preoperative evaluation has shown that FDG uptake by tumour, assessed by PET, can provide important prognostic information which could be useful in clinical decision-making[31,32]. Post-treatment evaluation of response to therapy with PET appears to be more accurate than with CT[33,34]. We have shown that metabolic response within 12 weeks after radiotherapy is strongly predictive for survival in NSCLC[35]. Guidelines for the use of FDG-PET in monitoring of tumour response after chemotherapy have been suggested by an EORTC committee[36].

We have also demonstrated that FDG PET scanning is helpful for the surveillance of residual masses beyond six months from treatment[37].

IS PET COST-EFFECTIVE IN THE MANAGEMENT OF NSCLC?

In addition to the significant benefits for patients that can be obtained with more appropriately targeted treatments, PET may also benefit healthcare providers by leading to an overall reduction of treatment costs because significant numbers of patients will receive less expensive palliative therapies rather than more expensive radical treatments. In the Australian healthcare environment, a prospective study of patients undergoing FDG PET for evaluation of a broad range of indications related to non-small cell lung cancer demonstrated a change in management in 67% of cases, with the vast majority of management changes that could be assessed being confirmed to be appropriate[38]. Since the majority of these changes were to avoid futile expensive and toxic therapies, there are potential savings to the community and benefits to the patient.

The process of introducing funding for new forms of technology, such as PET, in Australia is now vested with the Medicare Services Advisory Committee (MSAC). This committee advises the Minister for Health and Ageing on the strength of evidence supporting the clinical efficacy, safety and cost-effectiveness of new procedures and whether they are worthy of Government funding. In the case of PET, the potential cost implications of widespread funding circumvented the usual MSAC application process and led to a national review[39]. As a result of this review, interim funding was granted for a limited number of sites to collect further Australian data regarding the utility of FDG PET in a range of indications. At approved sites, FDG PET is now eligible for Medicare funding for the indications of diagnosis of solitary lung nodules that are unsuitable for and have failed histopathological characterisation and for the pre-operative staging of lung carcinoma.

Australian[8] and international[9,40] data support the cost-effectiveness of FDG PET for the evaluation of solitary pulmonary nodules. A recently published randomised control trial demonstrated the cost-effectiveness of

FDG PET in preoperative evaluation of NSCLC patients by reducing unnecessary thoracotomies[41]. The potential cost benefits of PET have been demonstrated by a decision tree analysis that incorporated the effect of more accurate mediastinal nodal staging[42,43]. The Gambhir model has been utilised to evaluate the role of PET using Australian costings yielding evidence of potential costing savings[44]. Additional savings could result if PET is used to exclude patients with occult distant metastases from surgery and is supported by cost-effectiveness studies[45]. In the US, Medicare and many third party insurers have approved reimbursement for PET with FDG for the staging of NSCLC. In the UK, the Royal Society of Surgeons has accepted PET as part of the recommended staging for pre-surgical evaluation in lung cancer, and the use of FDG PET for lung cancer staging is now contained within the guidelines issued by the British Thoracic Society and the Society for Cardiothoracic Surgeons as it is in the recommendations of German Consensus Conference. Ongoing prospective studies will further clarify the issue of cost-effectiveness. For most indications, FDG PET is used in addition to other diagnostic modalities.

FUTURE DIRECTIONS

Future technical developments with novel tracer markers will enable even more accurate staging by looking at more specific tumour targeting such as DNA synthesis[46]. Availability of combined PET and CT devices[47] will probably become the staging procedure of choice for evaluation of lung cancer due to their ability to provide simultaneous evaluation of both the structural relations of tumour deposits but also more sensitive and specific biological characterisation.

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Helical CT screening for lung cancer

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WHY CT SCREENING FOR LUNG CANCER SHOULD WORK

A technique which can detect a growing pulmonary malignancy when it is small should allow more effective therapy and a better outcome for patients. Henschke and her colleagues in the Early Lung Cancer Action Project (ELCAP) screened 1000 asymptomatic smokers or former smokers aged over 60 with low-dose helical CT and conventional chest X-rays[1-3]. On screening, 23% had non-calcified pulmonary nodules detected by CT, while only 7% had abnormalities detected by conventional chest X-ray. Of those with nodules on CT (27), 12% were eventually diagnosed as malignancy, of which 85% were stage I tumours.

There are now other published studies, from Japan[4-7], the US Mayo clinic study[8], Finland[9] and Germany[10,11]. In all of these except Finland, the proportion of cancers detected by CT that are early stage is extremely high – 80% or more in the American and Japanese series. This experience compares very favourably to normal clinical practice – of lung cancers presenting in Victoria in 1995, only 20% were localised[12].

The cancer detection rate varies from 27 per 1000 screened in the ELCAP series to around five per 1000 in one of the Japanese series. To detect this number of cancers, a substantial proportion of the individuals screened have initially positive results: over 50% in the Mayo clinic, 35% in the German, and 23% in the ELCAP studies. Most of these can be managed by further non-invasive diagnostic tests without needing surgical exploration, but clearly in some of these series the numbers of people with a false-positive CT result and the necessity for work up is excessive. The ratio of the number of cancers detected to the number of individuals who test positive is the predictive value of screening (PPV). In other screening contexts such as breast and colorectal cancer, this is around 10% for cancers detected. The ELCAP study comes close to this at 12%, while the Mayo clinic series shows a predictive value of only 2%. There are substantial differences in the interpretation of CT scans in terms of what constitutes a positive test.

WHY SCREENING MIGHT NOT WORK

This evidence alone is enough to convince some people that the technique is valuable[13,14]. Others are not convinced[15-18]. Surely detection of previously unrecognised disease, with a stage distribution much better than is normally seen, is sufficient proof of benefit? However, past experience of cancer screening shows that even an improved stage distribution in the patients detected with cancer is not a guarantee that those patients have benefited from the procedure. The worry about why screening may not work is based largely on the results of earlier randomised trials, which assessed chest X-ray and sputum cytology. For example, in a randomised trial of chest X-ray in smokers in Czechoslovakia[19], in the screening group 53% of tumours were early staged, 25% were operable, and five-year survival was 23%, compared to figures of 21%, 16% and zero survival in the unscreened group. However the rate of lung cancer deaths over the subsequent 15 years was actually higher in the screened group.

In the other major randomised trial of chest X-ray and sputum cytology screening, the Mayo clinic randomised trial[20], in the intervention group the five-year survival was over 30%, compared to around 15% in controls. Yet again, the death rate showed from about four years onwards an excess of mortality in the intervention group compared to the control group. So both these randomised trials show higher death rates from lung cancer in the screened than in the unscreened group.

A meta-analysis of five randomised trials of lung cancer screening gives an overall mortality ratio in screened versus unscreened populations of 1.07, with 95% limits of 0.95 up to 1.20[21]. However, in Australia, 25% of general practitioners say they recommend regular chest X-rays for older men and heavy smokers[22].

There are a number of recognised biases in screening studies[23]. The first is lead-time bias – that is, moving the diagnosis forward without necessarily moving death later. However, the survival rate of lung cancer is so poor that it seems difficult to see how lead-time bias could affect long-term survival. Several authors have concluded that the main effect causing the increase in mortality in the Mayo lung project and other trials is overdiagnosis bias, that is the detection and treatment of cancers detected by screening that never would have progressed to clinical disease during a person's lifetime[20,24-26].

If conventional chest X-ray and cytology pick up some such lesions, spiral CT may well identify them more frequently. Overdiagnosis is an accepted issue in screening for breast cancer, prostate cancer, cervical cancer, and melanoma amongst others. Indeed, an inevitable consequence of introducing new screening or diagnostic techniques is that clinical or pathological entities are identified whose natural history is unknown, and the natural history may be more indolent than expected[24,25]. In the Mayo clinic study the excess of

incident lung cancer cases in the screened group was restricted to early stage cases, whereas the incidence rate of late stage cases was similar in both groups[20]. But while the diagnosis of biologically indolent conditions can easily be seen to lead to an increase in the incidence rate of detected tumours in the screened group, it should not lead to an excess of mortality. Black has suggested[27] that some such deaths may have been due to the interventions following diagnosis, or to what he calls "sticky diagnosis" bias, that is death occurs after a clinical diagnosis, so death is attributed to the disease that was diagnosed. In that sense any excess mortality from lung cancer after diagnosis of pseudo-disease would itself be an artefact. Black elsewhere argues that the only true way to deal with this is to analyse randomised trials of screening in terms of their impact on total mortality, but unfortunately the sample size requirements of such an approach are extreme[28,29].

Others argue that overdiagnosis is unlikely in lung cancer, on the basis of the rapid change in survival rate with staging of clinical detected disease, or because most untreated lung cancers will progress and cause death within five years[30]. However these arguments are using observations on clinically detected and treated lung cancers to apply to screen detected lesions, which may be very different.

Does helical CT confer enough improvement in diagnosis that therapy will be effective, in contrast to screening by chest X-ray or cytology? Lead-time bias, over diagnosis of pseudo-disease, failure of treatment, and prevalence-duration bias are all reasons why it is possible that patients diagnosed with small, early stage tumours after helical CT may not be better off than if they had had no such screening.

THE DEBATE

Screening is always controversial. Helical CT screening for lung cancer is at the stage breast cancer screening was at 40 years ago, with the demonstration that it can pick up small lesions and lead to the diagnosis of small lung cancers. We have no randomised trial evidence of benefit, only evidence based on clinical series compared with historical controls, which have been shown in other screening techniques to be not only of little evidential value, but positively misleading. We have the conventional view, as expressed frequently, that it is only on the basis of randomised trials that we can establish the effectiveness of a screening technology[17,31,32]. But we have the alternative view that just as one would say that a dramatic cure for mesothelioma would not need a randomised trial to show its benefit, because the normal natural history is so poor, it may be that CT screening for lung cancer produces such a dramatic difference in survival that evidence based on historical or concurrent comparisons in a non-randomised setting may be sufficient[33-35].

Others have felt that a sceptical approach to lung cancer screening is yet another way in which patients with lung cancer are poorly dealt with. The advocacy group ALCASE (the Alliance for Lung Cancer Advocacy Support and Education) have asked "why has much of the world turned its back on people with lung cancer?" and stated that "people with lung cancer deserve the same respect, sympathy, empathy, and care that all other people who are diagnosed with cancer receive"[36].

THE NATIONAL CANCER CONTROL INITIATIVE (NCCI) PROJECT

An NCCI working group is addressing several questions on helical CT. The major work on CT screening, in terms of large -scale studies, is in North America and Europe. With cervical, breast, and colorectal cancer, Australia was little involved until overseas evidence was sufficient to show that the screening techniques were beneficial. Then Australia had to decide if the results of the trials were applicable to Australia, address

the logistic and cost questions, and decide if and how to set up such screening. Should we do the same for this new screening technique? Or should we be much more intimately involved with its development? Should we set up our own randomised trial in Australia to assess whether the screening technique reduces mortality at an acceptable cost? Should we join with one of the existing European or North American trials, in order both to contribute to it and to learn from the process, and so that our clinical experience stays abreast of the developing technical and scientific issues? If randomised trials carried out wholly or largely overseas do show benefits, will the results be applicable to Australia? Is the Australian clinical experience of lung diseases different? Are the prevalence rates and the clinical and pathological features of pulmonary nodules different in Australia, and do they vary within Australia in terms of smoking, asbestos exposure, or other characteristics of the patient? What will be the cost, logistic, and cost-benefit issues around CT screening? The NCCI group will not fully answer all these questions. Its objective is to provide a reasoned discussion paper and some recommendations for further work. This report should be complete by the end of 2002.

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Peer support groups for prostate cancer: a snapshot in 2002

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ABSTRACT

Over the last decade, peer support programs for men with prostate cancer have been reported in North America and Canada (Us Too and Man to Man), and in British Columbia (Prostate Support and Awareness). Such groups have also emerged across Australia, and more recently these groups affiliated with the Prostate Cancer Foundation of Australia (PCFA) as the Support and Advocacy Committee. Forty four groups exist under the umbrella of the PCFA, with each Australian state and territory represented. To date, however, empirical data has not been gathered on the activities of these groups. This report describes the first stage of a three-phase project to examine the current activities of these groups, how they assist men with prostate

cancer, and consequently determine future program development needs.

In all, 41 group leaders were surveyed (93% response). Group membership consisted mostly of men who had been diagnosed with prostate cancer, with an estimated 3,300 men currently members. Groups were predominantly peer supervised. Other types of overall management and group facilitation were health professionals, and a shared role between a man who had had prostate cancer and a health professional. The mean time of group operation was four years and five months. The main sources of support for groups were local state councils and hospitals who provided assistance such as meeting rooms, photocopying and postage, a health professional to facilitate meetings, special training for members, and funds. Three groups described receiving no support from any source. The main activities undertaken by groups were general discussion meetings, group education sessions with guest lecturers, regular newsletters, and one to one telephone support by members with no special training.

Group leaders described doctors as referring men to their groups “sometimes” and as working “somewhat closely” with their groups. Working with doctors helped groups by providing expert information and advice to them, acting as a source of referral to and promotion for groups, and adding professionalism and credibility to them. In all, 63% of participants described wanting to work more closely with doctors in these ways. A key difficulty described by group leaders was that the responsibility for managing the group often fell to the same individuals, with difficulties experienced in recruiting other members to take on leadership roles in the group.

The present study demonstrates the depth of activity in peer support for prostate cancer in Australia and suggests that work to develop further collaborative relationships between these groups and health professionals may be needed. Prostate cancer support groups express a desire to work more closely with health professionals, and in particular doctors such as urologists and radiation oncologists. Further work to build on this preliminary study is in progress.

INTRODUCTION

Peer support programs are based on the premise that shared experience is a valuable coping resource that assists individuals to adjust to and cope effectively with stressful events. A number of studies using case comparison[1,2], post-test[3] and descriptive designs[4,5] are available that suggest peer support programs are helpful for people with cancer. In these studies, peer support programs rate high levels of consumer satisfaction, and assist by providing unique information about coping from the perspective of shared experience, reducing social isolation, normalising the cancer experience and assisting with specific fears such as loss of masculinity and body image concerns. As well, patients have reported feeling less anxious and more optimistic about the future after involvement in peer support programs.

In addition, for specific groups where the incidence of cancer is low and social stigma or isolation may be a particular problem, peer support programs may be a preferred style of psychosocial intervention[6]. Further benefits are that being community-based, these programs are often easily accessed and are usually free of charge or low cost[7]. Prostate cancer peer support groups potentially provide a cost effective and valuable

service to men with prostate cancer, and the evaluation and development of these groups is important for the psychosocial care of men with prostate cancer in our community.

Over the past five to 10 years, prostate cancer support groups that provide emotional and informational support to men with prostate cancer have emerged across Australia. A recent development has been the affiliation of these groups with the Prostate Cancer Foundation of Australia (PCFA), with 44 groups registered as part of its Support and Advocacy Committee. The PCFA is the single largest network of prostate cancer peer support groups in Australia. However to date, empirical data describing membership and the styles of support offered to men has not been obtained. As well, while anecdotally some group leaders have described to the current research team a lack of support from health professionals for their activities, this aspect has not yet been investigated.

At the national meeting of the Australian Prostate Cancer Collaboration in 2001, members of the PCFA Support and Advocacy Committee requested the assistance of the APCC Education Committee in investigating these issues. Accordingly, a collaborative group including representation from the PCFA, the APCC and state/territory Cancer Councils was formed to undertake a three-phase project to address these aims. Phase one, that is reported here, was designed to describe the current activities of prostate cancer support groups affiliated with the Support and Advocacy Committee of the Prostate Cancer Foundation of Australia. In particular this included:

- The type of support services or activities provided by groups;
- The sources of leadership utilised by groups;
- Sources of support accessed by groups to maintain their activities;
- The nature of interactions of groups with their local health professionals and health care services;
- Perceived barriers to maintaining group activities; and
- Perceived needs for further or future support.

METHOD

Participants

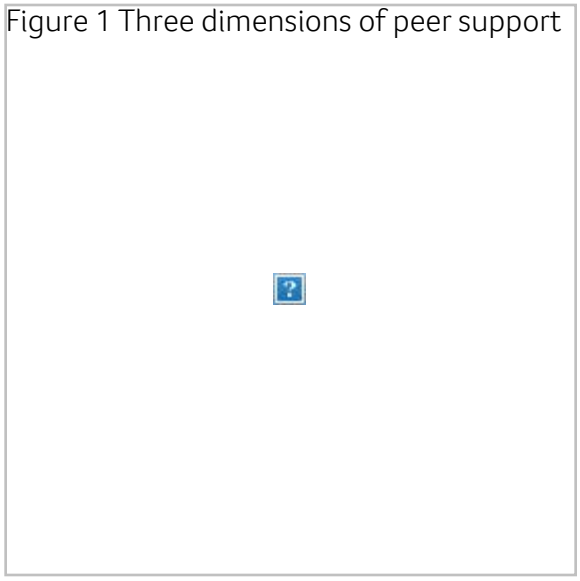
A cross-sectional descriptive mail survey of the group leaders of 44 community-based prostate cancer support groups who are affiliated with the PCFA was undertaken. Participants were recruited by mail through the PCFA. In all, 41 group leaders participated (93% response). Table one describes the geographical location of groups that were surveyed and the approximate membership served by these groups.

Materials

The survey questionnaire was developed to assess the study objectives and included both closed and open-ended questions. The framework for the study was drawn from a recent review of peer support in cancer[8] (see figure one). Thus, the type of supervision utilised by groups, the interpersonal context in which support is offered, and the mode of delivery were assessed. Before being administered to participants, the

questionnaire was reviewed by members of the PCFA and the APCC to ensure that it was of low subject burden and appropriate to the needs of these groups. Only minor revision was required.

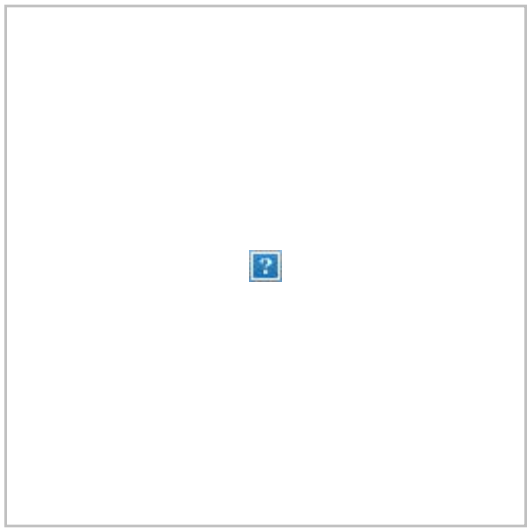
Figure 1 Three dimensions of peer support



RESULTS

Support activities

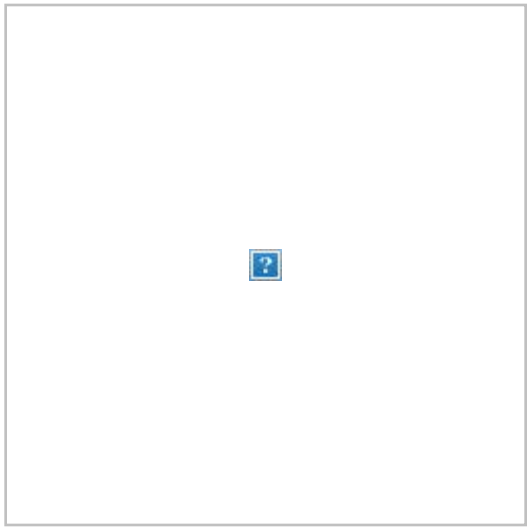
Participants indicated that their group membership consisted predominantly of men who have had prostate cancer. Based on the figures provided we estimate that 3,300 men in Australia are currently involved in these groups (see table one). However, as record-keeping practices amongst groups vary, this is an approximate figure. For example, some groups utilised a range of strategies to update their mailing lists, such as telephone contact with members, monitoring meeting attendance, regular reminders in newsletters asking members to notify any change of status and annual mail list updates. However, other groups undertook no activities to update mailing lists. Some groups indicated that the partners of men with prostate cancer were also involved, as well as health professionals, family members and well men with an interest in prostate cancer.



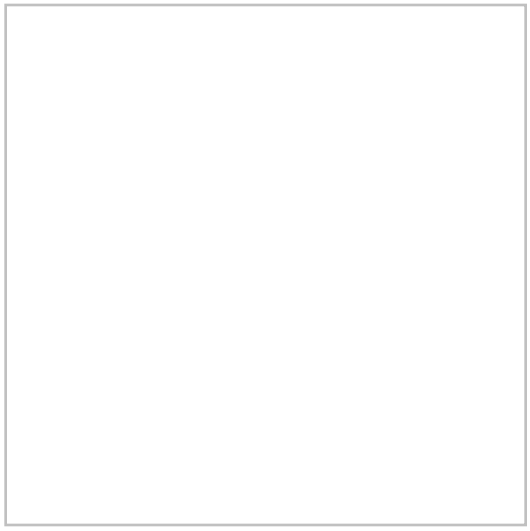
Groups were managed overall, and monthly meetings facilitated, mostly by men who had been previously diagnosed with prostate cancer (76% and 71% respectively). Other types of overall management and group facilitation were health professionals (17% and 29%) and a shared role between a man who had had

prostate cancer and a health professional (7%). The time period over which groups had been operating ranged from newly formed (less than one month) to eight years, with the mean time of group operation being four years and five months.

The most common ways that groups advertised or promoted their activities were through newspapers (80%), the existing membership (73%), health professionals (63%), other community groups (45%) and radio (38%). In terms of support for the groups themselves, just over half of all groups described state/territory Cancer Councils (56%) and the PCFA (51%) as sources of support for their groups, with a third describing hospitals (32%). However, the main sources of support were state councils and hospitals (see table two). Support provided included meeting rooms (81%), photocopying and postage (63%), a health professional to facilitate meetings (27%), providing special training for members (17%) and funds (15%). Three groups described receiving no support from any source.

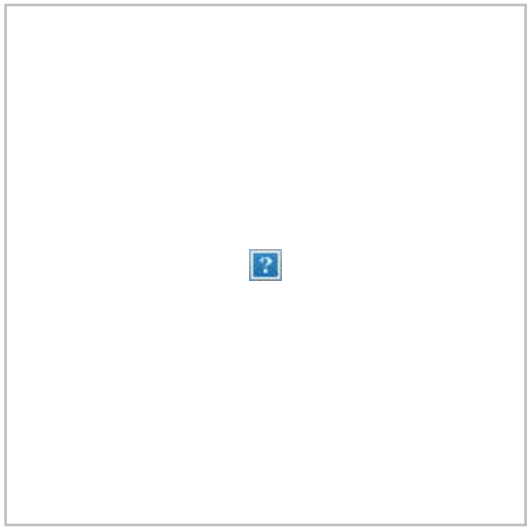


Group leaders were asked to indicate what types of activities their groups undertook. The median number of support activities undertaken by groups was five, with a range of 11 out of 12 possible options. Table three lists the percentage of groups undertaking these various activities. Participants were then asked to indicate the main activities undertaken by their groups. Main activities indicated by more than a quarter of participants were group general discussion meetings (93%), group education sessions with guest lecturers (81%), regular newsletters (42%), and one to one telephone support by members with no special training (37%). These support activities were also indicated by group leaders as those most utilised by their members: group general discussion meetings (93%), group education sessions with guest lecturers (71%), regular newsletters (42%) and one to one telephone support by members with no special training (29%). The frequency of group meetings varied from fortnightly, to monthly, to quarterly. The mean number of attendees at these meetings was 23 people (SD=15.5), but this varied with some groups reporting on average 80 men attending their meetings.

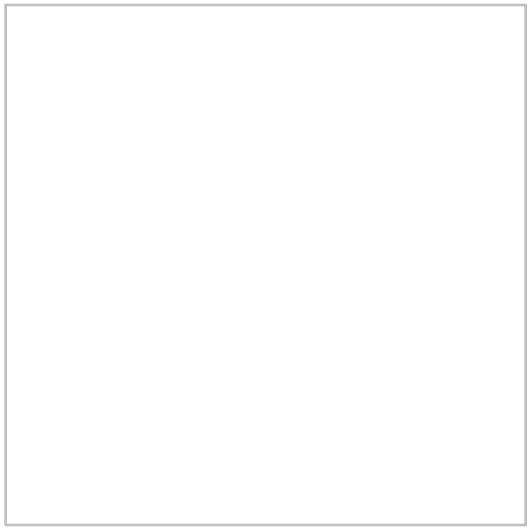


Relationships with doctors

Participants were asked to indicate how often doctors referred patients with prostate cancer to their groups on a Likert type scale of one, “not at all” to three, “sometimes” to five, “very often”. Scores ranged from one to five, with a mean score of 2.3, a low to mid range figure that approximates to “sometimes”. Table four indicates the relative distribution of scores for this question.



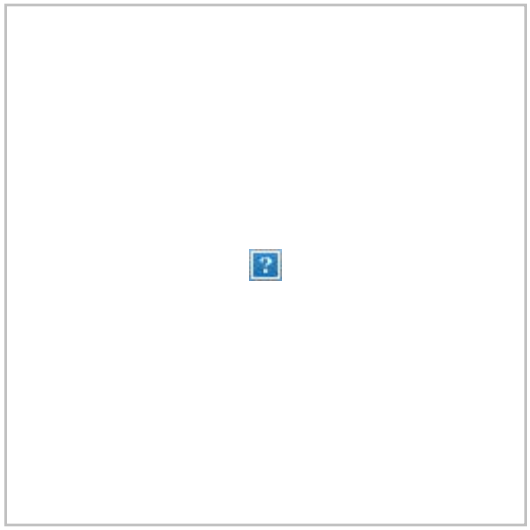
Next, participants were asked to indicate how closely they worked with doctors on a Likert type scale of one, “not at all closely” to three “somewhat closely” to five “very closely”. Results demonstrated a similar pattern with scores ranging from one to five and mean score for this question of 2.6, a mid-range figure that approximates to “somewhat closely”. Table five indicates the relative distribution of scores for this question.



Participants were asked in an open question to describe how working with doctors helped their groups. Responses were grouped in three themes: as providers of expert information and advice to the group (for example guest speakers, treatment updates, advice about prostate cancer generally); as a source of referral to and promotion for the group; and adding professionalism and credibility to the group. In all, 63% of participants outlined ways they would like to work more closely with doctors, and these included increased contact and support from doctors, referral of patients by doctors to the group, and transfer of information about prostate cancer from doctors to groups. Participants described having varied relationships with doctors, with some doctors very supportive of their activities and other doctors having no involvement.

Challenges of managing prostate cancer support groups

Participants were then asked in two open questions to describe what difficulties they experience in running prostate cancer support groups and what, from their point of view, would help them to run these groups more effectively. Table six describes these responses, listing those items most commonly described first. A key difficulty was that the responsibility for managing the group often fell to the same individuals, with difficulties experienced in recruiting other group members to take on leadership roles in the group.



DISCUSSION

The present report describes a wide range of prostate cancer related activities being undertaken by what is essentially a voluntary group of committed consumers. Most groups are managed and led by men who have

had prostate cancer, although a sizeable subgroup either shares this responsibility with health professionals or are professionally led. While group activities undertaken range across support and advocacy, the groups are primarily occupied with the task of supporting men with prostate cancer and their families. A variety of methods is used to provide this support, for example one group works through e-mail and the Internet, however most groups support men through regular group meetings. Finally, the level of group membership and attendance at meetings indicates that these groups are very active and are being utilised by men, and so are an important part of the prostate cancer supportive care context in Australia. Given that men are less inclined to seek emotional support or psychological help compared with women these groups may present an avenue of support for men that is more acceptable to them and thus more likely to be utilised[9-11].

Although the majority of these groups are peer-led, most groups work closely with a range of health care service providers, in particular state/territory Cancer Councils and hospitals, and many would find it helpful to work more closely with these organisations and other health professionals. Although over half of the groups indicated ways they would like to work more closely with doctors, it is encouraging to note that a sizeable number (29%) reported that they currently worked moderately closely or very closely with doctors. Health professionals, and in particular clinicians, are important gatekeepers and stakeholders in the psychosocial care and support of their patients. Work to improve the relationship and link between prostate cancer support groups and health care providers is a priority for the future development of these groups, and the improvement of supportive care for men with prostate cancer and their families.

The PCFA network of groups is an excellent example of a community-based support program that has emerged out of community need. A central aspect of community-based programs is that control of decision-making about priorities rests with the community or target group, who then themselves enact and develop the action plan. Optimally, this leads to the development of a community culture that facilitates ongoing and self-generated learning, support and empowerment within the community itself[12]. However, this can create challenges. First, because of the voluntary nature of such movements, the work and responsibility for action can fall upon a few individuals, and this may not be sustainable in the long run. Second, because community-based programs may develop outside of mainstream services, a lack of integration between conventional services and community-based programs can develop, particularly when world views differ. This again highlights the need for work to develop understanding and collaborative links between services.

In response to these issues, the current project team is working on a second phase of this project to identify how these groups work with men, from the perspective of group members. A third phase is also planned to look more closely at the relationship between these groups and health professionals, and strategies to optimise this interaction. Finally, we would like to thank the group leaders of the support groups who participated in this study, for their openness and willingness to work with us on this project.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Special report: Radiotherapy Summit 2000 – Overview

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OVERVIEW

The Cancer Council New South Wales is to be congratulated for facilitating a conference to bring together consumers, the profession, and representatives of government to openly discuss problems relating to accessing radiation oncology services. Sadly, since the Summit two years ago, few things have changed. The problems discussed in the following pages are still with us and are still causing unnecessary suffering for cancer patients.

The inadequacy of radiotherapy services results in a complex on-flow of problems. More than 2,000 patients per year in NSW, who would otherwise have benefited from radiotherapy, are not treated for a number of reasons. This may result in much suffering for patients and their families, and in some situations may

compromise cure. For those patients who can access radiation treatment, the delays in commencing therapy may be considerable. The burden for cancer patients and their families should not be underestimated. Treatment capacity is directly related to equipment and staff infrastructure. The shortage of staff exceeds the shortage of equipment, with a number of linear accelerators lying idle.

The conference allowed for broad expression of concern and opinion. There is a general consensus that lack of access to radiotherapy services is justifiably of great community concern, and not just a concern of the profession. Governments at all levels need to heed this concern, and work with the profession and the community to urgently address this crisis.

Radiotherapy treatment is not expensive, and is cost effective. It is not interchangeable with surgery or chemotherapy. We must heed the examples set by other countries, such as Canada, as to how to reverse the trend in declining services and staff attrition, and actively commit to providing access to all Australians who require such treatment.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Access to radiotherapy: the gap between policy and practice

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INTRODUCTION

The development of radiotherapy services in Australia has failed to achieve the benchmarks set in successive government reports and policy documents. Purchase of radiotherapy facilities and development of radiation therapy units has depended to a significant degree on the activism of individuals, the support of local hospital management, and community philanthropy.

The 1996 report by the Australian Health Technology Advisory Committee (AHTAC), Beam and Isotope Radiotherapy, documented 42 prior reports, reviews and plans for radiotherapy services[1]. While the number of treatment facilities has increased, access to radiotherapy remains a critical issue throughout Australia,

with the report of the Better Health Commission in 1994 describing it as the most important priority in cancer services.

Both the federal and NSW governments accept an utilisation rate of 50% for radiotherapy among cancer patients to be desirable target, in line with international recommendations[2]. The introduction of Commonwealth Health Program Grants in 1987 laid the basis for the development of an effective private radiotherapy system. The change in the access of patients in NSW Area Health Services to radiotherapy over time is shown in table one.

Eleven new linear accelerators were commissioned in the NSW public sector over the course of the second five-year plan within comprehensive cancer care centres, but there remains a substantial gap between utilisation rates actually achieved and the target rate of 50-55%. There remain long waiting lists in some centres, from two to nine weeks in August 2002. Radiation oncology departments function under considerable pressure to simply maintain services, with little time for development initiatives that are essential to guarantee state-of-the art care. In a recent national survey, one third of the linear accelerators are outmoded and the average age of equipment in the public sector was 7.6 years compared with 4.5 years in the private sector[3].

In contrast to the outcry over access to elective surgery and new therapeutic drugs, the public constituency for radiation therapy has been muted. Some possible reasons why radiotherapy has not been a driving issue at federal and some state policy levels are:

- Lack of conviction of the health benefits to be gained from expanding access beyond the current level. On the basis of gross comparisons it has been claimed that survival is comparable among cancer patients with higher and lower levels of access.
- Beliefs that where radiotherapy access is constrained, adequate medical and surgical alternatives exist.
- Doubt about the effectiveness of radiotherapy, or a belief that it is old technology that will be replaced imminently by breakthroughs in medical oncology.

PERCEPTIONS AND EVIDENCE IN RADIOTHERAPY

1. The effectiveness of radiation therapy is well established

Radiation therapy plays a major role in the cure of cancer. Curative outcomes are measured by survival and disease-free survival. However, as the principal indications for radiotherapy were developed prior to the widespread use of randomised control trials, the evidence for effectiveness relies on the results of survival, for some indications, in large case series. There are many examples of medicine where the effectiveness of treatment is unquestioned despite the lack of evidence from randomised control trials. This includes the use of insulin for diabetic ketosis, chemotherapy for childhood leukaemia and disseminated testicular cancer, and surgery for stage I/II non-small cell lung cancer. Radiotherapy for such conditions as cancers of the nasopharynx, cervix and anal canal is supported by unequivocal evidence of efficacy with respect to the valid outcomes of survival and disease-free survival.

Many indications for the use of radiotherapy are accompanied by high levels of evidence. The applications of radiotherapy that have expanded recently have relied on randomised control trials for evidence of

effectiveness. The best examples are the use of radiotherapy in the treatment of breast cancer after breast-conserving surgery[4], and the use of adjuvant radiotherapy to reduce local recurrence and improved survival, with or without chemotherapy, in carcinoma of the rectum[5].

Radiation therapy also has a substantial role to play in palliative care. The treatment of bone metastases for pain relief and to prevent disability from pathological fracture, alleviating chest systems in lung cancer, and reducing neurological symptoms in brain metastases are accompanied by high response rates. It reduces the requirement for narcotic analgesics and other alternative treatments, which are costly and less effective[6].

In both the curative and palliative setting it usually is not possible to substitute other treatments for radiotherapy and achieve the same effect and cost-effectiveness.

2. Radiotherapy is a cost-effective treatment
Radiotherapy must compete against other modalities. Public funding of radiotherapy is inordinately influenced by the initial capital cost of radiotherapy facilities. The unit cost of care is a far more relevant yardstick. Cost-effectiveness, as judged by the cost per year of life saved or cost per quality adjusted life year (QALY), is the appropriate basis upon which the cost of radiotherapy should be compared to alternative treatments if available.

Labour costs are the dominant contributor to unit cost of care, because capital cost should be distributed over a lifetime of use[7]. The capital component is a relatively small component of treatment costs. Capital cost should therefore not be permitted to form a barrier to expansion of plant and equipment, though it may be a motivation for seeking alternative methods of financing.

Radiotherapy is a relatively inexpensive treatment. In 1999, in Kingston, Ontario, the cost per case was estimated to be C$4,200 including automation of equipment and all operational costs. Australian data from 1991 calculated that each year of life saved through radiotherapy costs approximately A$7,200[8]. As a life-extending treatment, therefore, the cost of radiotherapy compares very favourably with other interventions such as intravenous low-osmolar contrast media for diagnostic radiology ($57,000/LYG to $111,000/LYG for high risk patients)[9] and renal dialysis ($14,000 and $64,000 per year depending on the site of delivery)[10].

The more recent widespread use of radiotherapy for breast conservation following lumpectomy offers no survival advantage over mastectomy, but improves quality of life. When measured as cost per QALY by researchers in the US health system, radiotherapy ranks as a treatment of acceptable costs with estimated in 1995 as US$28,000/QALY[11].

The availability of information on the cost and cost benefit of radiotherapy treatment is not matched by the availability of data on the cost of alternative treatment provided when access to radiotherapy is constrained. In the absence of radiotherapy for bone metastasis, patients may receive less effective, costly and quality-diminishing treatment with narcotic analgesics; the supportive care costs of someone with brain metastasis denied access to radiation therapy is unquantified; and the costs of chemotherapy substituted for radiotherapy cannot be readily identified. The invisibility of costs imposed on the health system when access to radiotherapy is diminished is an impediment to rational planning for radiation therapy. The data required for proper marginal analysis of benefit needs to be collected. However, on the figures available, radiotherapy appears to be a cost-effective investment.

3. The 50%+ target referral rate for radiotherapy is a justifiable benchmark
The Inter-Society Council for Radiation Oncology that initially promoted an access benchmark of 50% or

more of incident cases of cancer receiving radiotherapy. This refers to radiotherapy at any time in the evolution of the illness.

The benchmark is based on expert consensus and has subsequently been adopted by the World Health Organisation and by the federal and NSW governments. The most accessible empirical support for the benchmark lies in the observation that referral rates in areas well supplied with radiotherapy services approach or exceed this level. Within NSW[12] as table one shows, Area Health Services such as Southern and South East Sydney achieve high rates of utilisation. This is associated either with high capacity of adjacent radiotherapy services or effective visiting radiation oncology services

It is difficult to accept that these access rates are due to over-utilisation. Although patterns of over-utilisation may exist in relation to complexity of service, it is less likely to be a factor in access to a service that is dominantly supplied through the public sector, and for which few elective indications exists.

The risks of oversupply in this benchmark are small and considerably outweighed by the risks of restricted supply. In any event, the rising annual frequency of cancer further limits the risks of oversupply. It is important that the benchmark be validated by empirical means and updated with trends in the incidence and stage distribution of cancer, and changes in indications for radiation therapy.

Published reports for common tumour sites suggest a higher optimal utilisation rate[13,14]. The Commonwealth government has commissioned an evidence-based estimate of the optimal utilisation rate for all tumour sites that will be completed in June 2003. Until then, it is appropriate to accept the rates achievable in areas of good supply as a relevant benchmark.

4. Cancer outcomes suffer when access to radiotherapy is impaired

The lack of access affects referral rates for radiotherapy for breast cancer among rural patients where breast conservation rates are lower than the referral rate in metropolitan areas, and mastectomy rates are higher[15]. There is evidence of unacceptable delays for palliative radiotherapy coincident with longer waiting lists and constrained access[16]. Insufficient information is available on whether constrained access for radiotherapy leads to lower rates of organ-sparing treatments in laryngeal cancer and prostate cancer.

THE NSW RADIATION ONCOLOGY PLAN

In NSW, radiotherapy has been included among a limited number of specialty services planned on a statewide basis, and two five-year plans – concluding in 2000 – were endorsed and substantially implemented. The planning has been facilitated by the implementation of a radiation oncology information management system, and improvements to the central cancer registry that provides detail about the distribution of demand and service delivery throughout the state. The strategic approach in NSW, though lacking somewhat in implementation, is laudable.

Planning for radiation oncology in the early 1990s resulted in a substantial increase in the rate of installation of new equipment (figure one)[17].

Despite the plan however, there has been only limited progress towards achieving the target referral rate of 50%. This has occurred because of a number of factors.

1. Trends in cancer incidence
Major screening programs for breast cancer and ad hoc screening for prostate cancer led to an increase in cancer incidence that was greater than expected. The timeliness of cancer registry data needs to be improved so that projections will be more accurate.

2. Expansion of indications for radiotherapy
The evidence for the effectiveness of adjuvant radiotherapy in breast and rectal cancer has greatly increased the proportion of these cases now eligible for radiotherapy.

3. Delays in facility development
Planning and procurement for radiotherapy facilities, particularly those that involve opening new centres, have been subject to delays – with the result that the installation of linear accelerators has fallen short of planned installation (figure two). The 1996-2000 plan will finally be completed in February 2003 with the opening of the Campbelltown service.

4. Workforce
Supply of radiation oncology professionals, and in particular radiation therapists, has deteriorated radically in the late 1990s from a situation judged adequate in 1995[1]. Supply of radiation therapists is now at crisis levels, with a substantial proportion of available capacity idle, owing to a lack of staff.

5. Increasing complexity of care
New treatment modalities involve a far more complex array of radiation fields and fractions, and may have reduced throughput. Perhaps more so because the rate of equipment upgrade has not kept pace with the changes in X-ray therapy, or because work in radiotherapy units has not been sufficiently re-engineered to reap potential productivity gains from new technology.

SUMMARY

The proportion of patients with cancer who have access to radiotherapy remains well below the target set by the Better Health Commission when radiotherapy provoked such concern at state and federal level in 1994. A coordinated approach is necessary to plan for equipment and staff and to implement that plan in a timely fashion. The strategic approach of NSW Health is laudable and a similar approach is necessary in other states and at a federal level because of the split in funding mechanisms.

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The Australian radiation oncology workforce: forethought or afterthought?

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LUNG CANCER IN THE NEW MILLENNIUM

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Barriers to rural patients electing to have radiotherapy

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INTRODUCTION

Problems of access – geographical, financial, social or psychological – may deter the patient from undertaking what would be considered the treatment of best practice for their condition. This is particularly the case for radiation therapy, with its need for centralised services in the midst of a large country with a widely dispersed population. Despite government promises of equity in health care for all Australians, little has been done to improve access to city radiotherapy centres for rural patients. This paper will concentrate

on the extra barriers that rural patients face in making a decision about the treatment of their cancer.

RURAL DEMOGRAPHICS

According to the 1996 census, 29% of Australians live in rural or remote Australia. Rural residents are classified among the lower socio-economic sections of Australian society, and with more than 50% of cancer patients aged over 65, a large proportion of rural cancer patients are likely to be on pensions or lower fixed incomes. Even minimal extra expenses associated with opting for treatment by radiation may become a major impediment.

For those still in the workforce but likely to be earning lower incomes than their metropolitan counterparts, the seven weeks of lost income associated treatment – plus travel and accommodation expenses – can be equally burdensome, and alternative methods of treatment may appear more attractive.

For mothers with families, barriers may relate more to social separation than financial problems, but are no less real – as evidenced by the greater proportion of mastectomies performed in rural areas.

Interestingly, these problems are not necessarily lessened for rural patients by the establishment of regional radiotherapy units. Rather, the hub to which patients must travel is shifted, with extensive travel and long-term accommodation away from home still required by many patients.

SOCIAL PROBLEMS OF ACCESS

Long periods of separation from personal support systems would obviously affect the treatment choice for some patients. The problem of separation is aggravated because government-funded patient accommodation and travel schemes (PATS) do not contribute towards carer/spouse expenses to accompany the patient unless physical problems require it.

Particular study is required to assess the needs of Aboriginal and Torres Strait Islander peoples in this regard.

TRANSPORT TO URBAN CANCER TREATMENT CENTRES

Most country towns have little or no public transport suitable for patient use. Several transport schemes are funded to help rural patients access health care, but none of these are relevant to the needs of radiotherapy patients, which require access five days a week over a seven week period. Even the most willing of families is unlikely to be able to provide private transport over a seven week period. The current options for patients include a private car, taxi transport subsidy for short distances and community transport programs.

ACCOMMODATION NEEDS OF RURAL PATIENTS IN THE CITY

Although most accommodation is basic in quality, and is often in disused nurses' homes attached to the treating hospital, most rural patients speak highly of their accommodation, and satisfaction appears to be based on the informal networking between patients that occurs in the community areas of the accommodation.

This is particularly important for those patients from the smaller rural towns, for whom it may be the only support network they will encounter during the course of their disease.

Boondi Williams, an Aboriginal Health Worker from Alice Springs commented that many city residences are

inappropriate for the needs of Aboriginal patients, and radiotherapy is often refused by her patients for this reason.

FINANCIAL COSTS OF ACCESSING TREATMENT

Government patient assistance schemes are designed to assist rural and isolated people who need specialist treatment, which is not available locally. They are administered by the local health services. The guidelines differ from state to state. They are based on a system of partial reimbursement of travel and accommodation expenses for those patients who live more than a specified distance from the treatment centre.

PATS are designed to meet the needs of patients with general medical problems, and except the South Australian model, none meet the needs of radiation patients who have to make many visits for treatment and stay away from home for extended periods. A number of difficulties have been identified:

- Full “up-front” payment of expenses by the patient is required, before claim for reimbursement can be lodged.
- A non-reimbursable contribution of $30-$35 per visit is required in each state, which appears discriminatory to those undergoing radiotherapy.
- Long delays frequently occur in reimbursement of expenses, placing unnecessary financial burden on patients.

There is no reimbursement of the expenses of accompanying carer unless the carer is attending on medical grounds.

It is essential that all PATS consider the special – and unavoidable – requirements of treatment by radiation, and make provisions within their guidelines so that all rural patients may access treatment by radiation should it be recommended.

PATIENT EDUCATION

Patients frequently comment about the lack of printed material available to them to help make the decision whether or not to undergo radiotherapy. Pamphlets are not available in GPs and surgeons’ waiting rooms, but rather in the waiting rooms at oncology centres where only those patients who have already decided in favour of radiotherapy have access.

Such material must also be suitable for those from multicultural backgrounds, or those who have trouble with the printed word. In 2001, The Cancer Council NSW expanded its Cancer Information Service to include specific services for Arabic, Cantonese, Mandarin, Greek and Italian patients.

Surveys also showed that more information is needed about the available help with transport and accommodation costs, with only 40% of breast cancer patients making any claim for available subsidies and more than 80% reporting a lack of information on what help is actually available to them.

EDUCATION OF NURSES AND GENERAL PRACTITIONERS

It is a regular consumer complaint that GPs seem unaware of what treatment by radiation actually involves and what side-effects can be expected. Consumers also complain that GPs appear to be unaware of the recent advances in radiotherapy. This is of particular concern to members of prostate associations.

Wendy Hyde, a Rural and Remote Oncology Nurse, commented that she is often called upon to explain to patients just what treatment by radiation involves, and has found a lack of printed material suitable for her needs.

VOLUNTARY AND CHARITABLE ORGANISATIONS

Excellent organisations exist with the aim of lessening the burden of city treatment for rural cancer patients. CPAS (Cancer Patients' Assistance Scheme) in NSW is one such example. CPAS runs its own city accommodation complex, Jean Colvin Hospital, which supplies support, inter-hospital transport, help with side-effects, and nearby accommodation for family. Its members also raise money to help rural patients with the expenses involved.

CPAS branches in country towns often help with the "up-front" expenses of travel, and are then reimbursed themselves, which can make the difference between treatment being accessible or not. However, CPAS does not exist in the majority of towns, and its existence in any town at any time depends upon the benevolence and volunteer spirit of the townsfolk.

RURAL CONSUMER REPRESENTATION

Although rural patients are the most disadvantaged when it comes to accessing treatment and have the most need to lobby for change, their involvement at decision-making levels of government, professional, support and advocacy groups is limited by the same problem of access.

Attendance at meetings is expensive in terms not only of travel and accommodation, but also in terms of the time lost from work. It is important that funds are made available to allow rural consumers to have a voice on cancer issues.

CONCLUSION

Although treatment by radiation has become theoretically more accessible to rural patients with the establishment of fly-in/fly-out consultant services, the difficulty of accessing urban treatment centres still constitutes a major (and often insurmountable) problem for many rural Australians.

It is a matter of great urgency that all PATS schemes are modified to accommodate the specific requirements of treatment by radiation.

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Radiotherapy services beyond the major metropolitan areas: a debate

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INTRODUCTION

While the population of Australia is concentrated in predominantly coastal conurbations, particularly the large sprawling capital cities, a significant proportion are scattered in non-metropolitan towns and cities – the regional centres and rural Australia: the "bush". It is well recognised that residents of rural areas and some regional cities are disadvantaged in the level of health care they receive. In general practice, surgical and medical specialties, obstetrics and cancer services, they are under-served. It is therefore not surprising that access to both radiation oncology opinions and radiotherapy services is far from ideal.

Evidence about access to and utilisation of radiotherapy in metropolitan and rural or regional areas was presented throughout the meeting and also discussed in an open forum that took the form of a debate: "Home and Away".

While the data, debate and discussion concentrated on New South Wales health issues, they can be generally extrapolated to the other states and territories that together comprise the largest island on earth with this unique coastal concentration of people around an inhospitable centre.

OPTIONS

The two options provided and explored were the still very "traditional" visiting oncology service with patients transferred to metropolitan treatment centres, and the more contentious and still relatively unusual radiotherapy centre in a larger regional town in rural Australia. Clearly underpinning the arguments from both sides were issues that are not unique to rural Australia: equity of access, under-utilisation of radiotherapy as an appropriate cancer treatment, cost, staffing difficulties and the absolute need to ensure treatment is of the highest quality.

Key issues

- equity of access
- under-utilisation of radiotherapy in cancer care
- cost
- staffing
- maintaining high quality care

Those arguing for the establishment of more radiotherapy centres in non-metropolitan areas could cite low utilisation rates. Overall, only 36% of rural cancer patients in NSW receive radiotherapy. Yet in the major urban areas, the overall figure is only 39%. Indeed some rural areas, eg New England, exceed metropolitan utilisation. This is an argument for the excellent visiting oncology service to that area from a large teaching hospital in Sydney.

Radiotherapy is almost unique among treatment in the need to delivery therapy on a daily basis, often for several weeks. Access to metropolitan treatment centres, therefore, remains a major problem because of distance, geography, cost of travel and/or accommodation, inadequate government financial assistance and dislocation from family and support.

Evidence was presented from reports and personal experience that patients will often opt for what some consider alternative treatments eg chemotherapy or mastectomy to avoid the "tyranny of distance" in undergoing radiotherapy. Yet, as there cannot be a linear accelerator in every town, even with a centre in each major regional city, many rural patients will need to travel those same long distances or experience the same dislocation as those who today must travel to the capital cities.

The cost efficiency of small centres was debated. Invoking the use of the most modern of communications technology was suggested as a means of overcoming problems of technological isolation. The centre at

Albury-Wodonga on the NSW/Victoria border is clearly an example of such successful arrangements.

There is little doubt that one of the greatest problems facing radiotherapy in Australia, and by all accounts Canada, the UK, Europe and New Zealand, is the shortage of qualified staff in radiation oncology, radiation therapy (radiographers, technologists) and radiation physics. The causes of attrition and emigration are numerous. The demographic changes that have reduced the number of school leavers for whom there is great demand from all professions and employers also impact on this equation. Those favouring a rural care delivery model argued that regional training colleges, the delights of rural living and the low cost of living are attractive. Countering that argument, generally voiced by those in regional centres already charged with the difficult tasks of staff recruitment and retention, are other problems including the provision of adequate continuing professional development, recruitment and a more migratory workforce.

On the other hand even metropolitan Sydney has major problems retaining radiation physicists and therapists so that up to five linear accelerators may lie idle due to their absence. This critical situation may reinforce the argument against reliance on rural centres.

Staffing issues

- recruitment
- retention
- competition for staff
- nationally
- internationally
- provision of adequate continuing professional development
- cover for leave – especially in small or rural centres

Those promoting the benefits of the visiting oncology clinic service rightly emphasised that the need is for access to radiation oncologists and their expertise and opinion, and not to linear accelerators per se. Such visiting oncologists can provide effective services with uptake as high as in the city (eg New England), while at the same time offering the benefit of city-based, non-radiotherapeutic, highly specialised surgical and investigational services not available locally.

Countering that argument is the benefit of a seven day a week, 24 hour a day oncology service provided by the radiation oncologist in the local rural radiotherapy centre.

COMMENT

Of course, the situation is not “either/or”. In Australia, both models are to be found and the situation is constantly changing. In NSW, suburban radiotherapy centres have been developed, some as spokes of larger, more central hubs. Two regional cities already have radiotherapy centres.

Recent years have seen a new centre open in North Queensland in the public system. Another metropolitan

(Brisbane) centre will be commissioned soon, and the private sector has expanded from one to three centres in different localities.

In Victoria since 1992 regional and suburban public centres have opened and expanded. The private sector has increased from one to four linked centres. The state and federal governments have also agreed to establish a trial of three single machine centres in small regional cities, each "spoked" to a metropolitan "hub" centre. They are established as part of a trial that will measure access (including any increase) and quality of care. Results are 10-15 years away, but should answer the key question of whether a small centre can provide the same quality of care that its larger hub centre in the capital city should provide.

Many of these developments have occurred not through detailed planning by governments. In the private sector, generally, expansion has followed from business planning rather than taking public health need and planning as the impetus. As with any government-funded system, politics have also played a role. Many observers decried a lack of planning in Australian radiotherapy service provision, be it visiting services or the building of new centres. The Canadian models were reviewed: the British Columbia planned, centralised system and the less directed, "centralised" Ontario model. While over 40 reports have reviewed Australian radiotherapy services in the last 20 years, few have led to significant planned change.

CONCLUSION

These two models, as was pointed out, are not mutually exclusive and must not be. They already and increasingly coexist as more regional services open. Community needs and demands have already resulted in and even funded some regional radiotherapy centres. The linkage of such centres to metropolitan departments, the Single Machine Unit Trial and the introduction of modern technology should ensure high quality treatment.

More such centres will undoubtedly be planned and established with time. Rate-limiting factors are more likely to be lack of staff and funding than any philosophy or dogma.

Meantime, the lack of both central planning of cancer services and the development of comprehensive cancer care – whether it be entirely in a regional centre or in part regional and part metropolitan – are as much a concern as the under-provision of radiotherapy and where it should be provided. Sadly, there has been too much complacency that Australian cancer outcome statistics "look alright" and that cost-shifting exercises are easier and cheaper, so that there has not been enough planning. The drive for better and more accessible radiotherapy services could become the catalyst for even greater and better change.

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The Australian radiation oncology workforce: forethought or afterthought?

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BACKGROUND

The focus of this session was on workforce issues relating to the three pivotal service-specific groups in radiation oncology: radiation therapists, medical physicists and radiation oncologists.

The most recent figures for current and projected staffing requirements come from the National Strategic Plan for Radiation Oncology, August 2001[1]. The Tripartite Committee, comprising representatives from the Australian Institute of Radiography (AIR), the Australasian College of Physical Scientists and Engineers in

Medicine (ACPSEM) and the Royal Australian and New Zealand College of Radiologists, Faculty of Radiation Oncology, projected workforce requirements out to 2010[1].

This paper reviews the major points raised at the Summit and unapologetically gives emphasis to the immediate critical deficiencies amongst radiation therapists and medical physicists over the longer-term issue of radiation oncologist shortfalls.

RADIATION THERAPISTS

The Australian radiation therapist workforce reached crisis point some time ago. In NSW alone, in November 2000, this major staffing shortfall resulted in an estimated 6.5 linear accelerators standing idle in a region serviced by a total of 34 machines, of which 29 are in the public sector.

In addition, growing numbers of radiation therapists leave our workforce each year. In November 2000, 88 of 859 full-time equivalent (10.2%) radiation therapist positions were vacant. Reasons for rising attrition rates are summarised below:

- Comparatively poor remuneration for the level of training and responsibility required
- Lack of career development opportunities and participation in non-service activities
- Low morale from perceived lack of recognition in the workplace
- Limited flexibility of work arrangements

Of particular note, a quarter of radiation therapists leaving NSW centres did so to travel and work overseas, mainly in Canada and Britain, as Britain had undertaken a recruitment drive to redress its own staffing shortfalls. The opportunity to travel, higher remuneration packages and a fast-tracked visa acquisition process proved successful tactics in this campaign.

The issues of radiation therapist recruitment and retention and traditional staffing models need addressing. Potential solutions include the following:

1. Financial considerations

Improvement in pay is undeniably important in order to recruit and keep staff in the workplace. In the public health sector in some Australian states, the award wage structure is highly restrictive. The government employer has exploited its monopoly position to keep wages below market conditions. This is unsustainable in the face of international competition. Although negotiations between governments and the industrial bodies representing radiation therapists are continuing, it is unlikely that substantial changes in remuneration will be achieved until there is freedom from such an out-dated system.

2. Optimising recruitment

As a potential career choice, radiation therapy has a weak profile. Targeting career advisers and school leavers to increase awareness of this profession has begun in NSW schools. Increasing university training positions so that intake exceeds expected losses is vital but difficult, due to the competing agendas and funding restrictions on university faculties. An increase in training positions at Newcastle University will not begin to redress the problem until at least 2005. It was suggested at the Summit that a project officer employed by the AIR could develop and coordinate these activities as well as streamline the assimilation of

overseas radiation therapists recruited to the Australian workforce.

3. Reducing attrition of students and trained staff
The University of Sydney has committed to lessening attrition from undergraduate courses. The scheme has been developed whereby students with radiation therapy on their selection list will be referred to participating departments to allow students to experience this first hand and to improve the profile of the profession. However, this places an extra burden on already stretched departments and is only helpful if high moral is demonstrated in the centre (often not the case).

Changes to traditional workforce structure are required to make conditions more attractive. Most radiation therapists would value having more career path options. This might include specialisation in a chosen area of interest, provision for further training and education, and research opportunities. Academic radiation therapist positions are already being created, aiming to foster research activities for radiation therapists within the scope of their service responsibilities.

Improving flexibility of work practices, including increasing numbers of part-time and job-share arrangements, will be mandatory to best utilise the skills of the 70% majority female workforce, in particular. Updating or retraining courses will facilitate radiation therapists returning to the workforce after intervals away for family or other reasons.

4. Management of junior graduates
Radiation therapists in their first year after qualifying occupy Professional Development Year (PDY) positions. In some Australian states these are part of the total radiation therapist allocation. This means that if centres are fully staffed, they have no capacity to take on (and further train) junior staff. It also means that services desperate for radiation therapists may employ several PDYs who may be required to take on duties beyond their level of experience. Creating supernumerary PDY positions "protected" from the general radiation therapist pool is more costly in the short term but is an economical investment for future workforce strength and stability.

MEDICAL PHYSICISTS

The medical physicist workforce in Australia and New Zealand also experiences severe shortfalls often overlooked, due to the small numbers in the profession and the fact that this problem is hidden from the patient and public arena. In late 2001, there were 130 established radiation oncology medical physicist positions in Australia. It has been calculated that to meet the benchmark level of service, 211 medical physicists were required: a deficit of 81 positions. It is common for newer technologies such as electronic portal imaging and multi-leaf collimators to be installed but under-used, due to the medical physics staff being unable to extend their services from "routine" patient treatment.

Currently, general physics graduates are employed as medical physicists and forced to take on duties for which they have little training. Approximately one-third of employed physicists are still in training but counted in the full-time establishment.

The salary scales of medical physicists in the USA and Europe are two to five times higher than in Australia, resulting in many senior medical physicists seeking employment overseas. There are no radiation oncology medical physicists in training to take up positions as they arise[2].

Key areas that need to be addressed include the following:

- Establishment of funded trainee medical physicist positions (registrar) in hospitals.
- Establishment of radiation oncology medical physicist tertiary education opportunities with the goal of filling existing vacancies.
- Expansion of workforce to achieve maximum utilisation of radiation oncology equipment.
- Review of remuneration for the level of responsibility and autonomous decision-making required and in keeping with international levels.

Potential solutions to the medical physicist problem include:

1. Funded medical physicist registrar positions in hospitals
The federal government is financially supporting a feasibility study addressing strategies to implement the ACPSEM training, education and accreditation (TEA) program, with the ultimate goal of formalising medical physicist basic training. Funded trainee registrar positions are required to realise this objective.

2. Radiation oncology medical physicist tertiary education
In an attempt to maintain high standards of knowledge and skills the ACPSEM has conducted an accreditation program on a professionally voluntary and cost recovery basis. Courses for dedicated post-graduate study need to be more feasible for tertiary institutions to conduct (for example grant/scholarship schemes or increasing course numbers by taking overseas students).

3. Expansion of workforce to achieve maximum utilisation of equipment
Medical physicist workforce requirements are closely linked to equipment utilisation. Consequently, investment into any radiation oncology technology needs to be linked to the appropriate medical physicist staffing, ensuring full and safe utilisation of that equipment.

4. Review of remuneration in keeping with international levels
Increases in salary reflecting the level of responsibility held by medical physicists is an important factor in stemming the attrition of medical physicists overseas or to other, better paid technical professions with the inherent costs associated with such staffing losses.

RADIATION ONCOLOGISTS

At present, full-time Australian radiation oncologists on average see in excess of 300 new patients per year compared with an evidence-based benchmark of 190 new patients per year[3]. Although debate continues surrounding the ideal number of patients treated annually by radiation oncologists and the optimal patient referral ratios for radiation therapy, it is obvious within the profession that more radiation oncologist positions (and therefore training registrar positions) will need to be created to ensure timely service expansion. Treatments are becoming increasingly complex, and this requires more time to be spent with each patient. Appropriate forward planning and maintaining government commitment to projected medical staff requirements is an ongoing task of the profession, in cooperation with AMWAC, employers and other planning groups.

COMMENT

It is vital that the long-standing radiation oncology workforce deficiencies – especially in the radiation therapist and medical physics groups – be addressed urgently if ongoing deterioration of service and/or serious radiation accidents are to be prevented, in a service already stretched to breaking point. Sadly, decisions relating to radiation oncology services (like other health-related issues) continue to be made reactively, often purely on political grounds. Until conditions are improved for our workforce on a long term and stable basis, Australia is going to continue to struggle to offer the first-class service that it is otherwise more than adequately equipped to deliver. The world-wide shortage of staff and the opening of the global market means that all countries that wish to have adequate radiation oncology services must plan their workforces, otherwise constant poaching of staff will drive wages beyond sustainable limits.

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Strategic investment and new technology in radiation oncology

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INTRODUCTION

Radiation oncology is considered high-cost because of the high initial capital expenditure and the recurrent funding necessary to maintain full function of the department. Therefore, there is great interest in ensuring that this expenditure is used in as most effective a fashion as possible. In fact, relative to its usefulness, the overall cost of radiation oncology, relative to its usefulness, is less than other forms of cancer treatment[1-8]. The equipment can be used to treat patients over many years and therefore the capital costs are spread out over long periods of time. Over the lifetime of the machinery the most significant cost has been identified as labour and not capital[9-11]. Irrespective of the cost-efficiency of radiation oncology, it is imperative that any

costs are justified and radiation oncology treatment delivery is evidence-based.

Strategic investment in radiation oncology in Australia is required to improve the delivery of service that is currently troubled by long waiting lists and old equipment, and may ultimately lead to sub-optimal patient care. The broad areas that may be considered for investment in radiation oncology include improvements in:

- treatment quality by either reducing toxicity (eg improved and more efficient shielding technology, conformal radiotherapy, intensity modulated radiotherapy) or increasing local control (eg concurrent chemotherapy, conformal radiotherapy with dose escalation, altered fractionation, clinical trials);
- quality assurance methods, particularly in response to increased automation of treatment;
- planning and treatment efficiency (this includes optimising staffing levels, investigating more efficient methods of treatment and planning, ensuring appropriate fractionation, improved staff education/training);
- “client” satisfaction (the “clients” are the patients, patients’ families, referring doctors and the staff);
- service delivery (reduce waiting lists for treatment, maintain adequate resources, optimise utilisation of resources, ensure rural access, machine reliability, have contingencies for periods of inadequate service, ensure better education about radiotherapy efficacy so that appropriate patients are referred for treatment, co-ordination of services including specialised techniques); and
- modern treatment techniques and new technologies (machine replacement criteria, forward automatic replacement rather than reactive replacement of old equipment when it finally breaks down, purchase of new technology), and by establishing:
- standard minimum guidelines for staff and equipment resources between departments to allow quality care, and for these guidelines to be reviewed regularly to keep up with technology changes;
- standard treatment guidelines and systematised care plans;
- knowledge-sharing rather than departments re-inventing the wheel (eg common commissioning protocols for new linear accelerators);
- efficient, networked information systems;
- efficient outcome evaluation; and
- adequate investment in research and development.

Though there are many areas where strategic investment may help improve radiation oncology delivery, this

paper will concentrate on the new technologies and how these might be considered for investment.

VALIDATING NEW TECHNOLOGIES

As methods of improving the therapeutic ratio of local tumour control over toxicity are developed, the complexity of such treatment has grown enormously[3,12-19]. Innovative techniques will always require investment of money and resources, outcome evaluation and perhaps changes in the organisation of clinical practice[15,17,18,20]. In addition, the pressure on radiation oncology resources is likely to grow with a significant shift in the age of the population, and the increasing utility of radiation oncology in the management of cancer[12]. It is estimated that approximately 50% of cancer patients should receive radiation during the course of their illness[12,21] yet in most areas of NSW this referral rate has not been achieved. At the same time as growth in radiation utilisation is necessary, the purchasers of cancer services are exerting significant pressures to reduce costs and improve efficiencies[22].

Areas in which new technologies have already been appropriately validated in radiation oncology include the use of conformal radiotherapy[17,18,20,23], the replacement of fixed shielding blocks with multi-leaf collimation[24,25], three-dimensional planning systems[24], computer controlled treatment delivery[26-28] and co-registration of diagnostic images and CT planning images[19], just to name a few. However, one of the frustrations in radiation oncology is that despite evidence existing for some of these technologies, very few have been implemented on a large scale in Australia and New Zealand. A recent national survey of Australian resources showed that 32% of linear accelerators have multi-leaf collimation and 27% have electronic portal imaging despite the evidence supporting their widespread use[29]. Electronic data systems reduce error in transfer of treatment data, yet 22% of linear accelerators do not have this technology[29].

It should not be assumed that all improvements come at huge costs. There are some instances where technology advances have led to significant savings and/or patient benefits. Studies have identified improved better local tumour control and lower toxicity associated with investments in technology[17,19]. Multi-leaf collimation studies have identified a reduction in unit cost, an improvement in efficiency as well as obvious occupational health and safety improvements associated with replacing the manufacture and use of heavy shielding blocks for treatment with multi-leaf collimators[17,18,23-25]. Radiation oncology information systems allow a more automated data collection, reducing data handling, which could potentially lead to administrative savings. These systems should provide greater availability of outcome data including data on service provision, patient satisfaction, quality of life, as well as the more common oncology outcomes of survival and local tumour control.

Given that there will always be a need to consider strategic investment into new technology, it is also responsible management to not adopt technology without adequate evidence that it may improve outcome or efficiency[3]. Research and development of some of these new technologies with appropriate assessment of efficacy and economics must also be encouraged, both philosophically and financially. However in Australia, the adoption of new technologies occurs in a relatively haphazard and not necessarily evidence-based way. It is often difficult to obtain funds for the appropriate installation of new technologies, despite the existence of evidence to support widespread implementation. In addition, the automatic replacement of outdated equipment or its upgrading is not coordinated and often under-funded.

When considering investments in technology it would be appropriate to follow these steps:
1. determine the appropriateness of a new procedure consistent with the overall health strategic plan;

2. determine safety, efficacy, and cost-effectiveness;
3. discriminate between appropriate and inappropriate indications for the new technology;
4. devise quality improvement methods and health care service delivery considerations to optimise the use of new technology;
5. facilitate change across radiation oncology departments to ensure widespread access; and
6. evaluate outcomes such as local control, survival, quality of life, as well as evaluating health service delivery such as the proportion of a population of patients receiving appropriate treatment, treatment efficiency statistics, etc.

However, if this process is formalised, there needs to be acceptance by budget holders that once a technology is validated as improving care (improved patient outcomes, improved efficiency of staff, etc) then appropriate funding needs to be made available in as short a time as possible to maximise access for patients. Currently the process is slow and poorly coordinated, leading to poorer quality of care.

BENCHMARKING: THE DEVELOPMENT OF APPROPRIATE MEASURES

It is important to consider the way that productivity benchmark statistics are collected when issues of new technology and increasing complexity of treatment arise. If fields per time, or patients per time, continue to be used as benchmark productivity statistics, pressure may be exerted on departments to increase their fields per hour and forego the complexity of treatments. This has the potential to restrict measures that may have been introduced into clinical practice to improve the therapeutic ratio. This will have particular impact on departments with a complex case-mix. It is therefore imperative that not only should we have measures that consider complexity, but we also must continue to review treatment outcomes and treatment quality.

In Australia and New Zealand, the Basic Treatment Equivalent (BTE) has been developed in an attempt to measure linear accelerator throughput with some consideration of complexity[33]. It has been validated in departments of radiation oncology in Australia and New Zealand[34] and confirmed that traditional consideration of fields per hour and patients per hour are poor at reflecting throughput. It is important that a measure that considers complexity is used to measure throughput, otherwise the continually evolving complexity increases used to treat patients will not be reflected in output measurements. It is also clear that the main measures to be considered need to be tied to outcome (ie improved survival, local tumour control, patient satisfaction, quality of life and quality of treatment).

OTHER CONSIDERATIONS

Investment in new technologies should not be considered in isolation. Consideration of investment for initiatives to improve the evidence base for radiation oncology and evidence-based treatment guidelines[35-36], access to radiation oncology for rural patients, research into better therapies, appropriate data collection and outcome measurements should also occur when deciding upon appropriate strategic investment. However, the new technologies may facilitate the development of some of these other initiatives as well..

Staff profiles also need consideration when investing in technology. The implementation of new technologies may require new expertise within a department and this will need to be factored into budgets and business plans. For example, there may be savings made in administration for automating some of administrative services but at a cost of increasing the need for specialists in electronic information management.

RECOMMENDATIONS

The broad recommendations regarding strategic investment are:

- Develop a detailed strategic plan including issues regarding service delivery, investment in new technologies, staffing levels, criteria for machine and information and planning software replacement.
- Create a central committee with appropriate representation to ensure enactment and adequate funding of the strategic plan and to provide ongoing review.
- Develop guidelines for acceptable minimum equipment standards and the maximum acceptable age of equipment before automatic replacement.
- Upgrade equipment automatically, according to set criteria.
- Maintain up-to-date staff profiles with regular review, to reflect changes in technological complexity.
- Ensure appropriate use of benchmarking measures that include consideration of complexity.
- Co-ordinate implementation of radiation oncology services, including specialised techniques.
- Validate new technology.
- Review and invest in cutting edge technology and research.

The current focus on the inadequacies in radiation oncology services across Australia and New Zealand provides an opportunity to create an improved model. The success or failure of the initiatives listed above will depend upon both the radiation oncology providers and the policy-makers accepting responsibility and working co-operatively for the good of the whole community.

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Special report: Radiotherapy Summit 2000 - Overview

Access to radiotherapy: the gap between policy and practice

Barriers to rural patients electing to have radiotherapy

Radiotherapy services beyond the major metropolitan areas: a debate

The Australian radiation oncology workforce: forethought or afterthought?

Strategic investment and new technology in radiation oncology

Australian behavioural research in cancer

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CANCER FORUM

LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Australian behavioural research in cancer

This is a regular feature in Cancer Forum describing behavioural applications in cancer prevention.

Australia has five behavioural research centres: the Cancer Prevention Research Centre (CPRC) of the University of Queensland, the Cancer Education Research Program (CERP) of The Cancer Council New South Wales, the Centre for Behavioural Research in Cancer (CBRC) of The Cancer Council Victoria, the Centre for Behavioural Research in Cancer Control (CBRCC) at Curtin University of Technology Perth, and the Centre for Cancer Control Research (CCCR) of The Cancer Council South Australia.

The Centre for Health Promotion and Cancer Prevention Research (CHPCPR) has changed its name to Cancer Prevention Research Centre (CPRC).

This report has been edited by Cathy Swart (CPRC) from the reports received.

NEW RESULTS

CENTRE FOR CANCER CONTROL RESEARCH (CCCR) AND THE TOBACCO CONTROL RESEARCH AND EVALUATION PROGRAM (TCRE), SA

Cancer statistics monograph series
In June 2002, the CCCR distributed its third publication in this cancer statistics monograph series, entitled Cancers of the respiratory organs, throat and mouth. In August, the fourth publication was distributed,

entitled Cancers of the female breast and gynaecological organs. About 1,240 South Australian women are diagnosed annually with cancers of these sites, about three-quarters of them breast cancers. Cancers of the breast and gynaecological sites account for about a quarter of all cancer deaths in South Australian women. A major emphasis is being given to screening to reduce numbers of deaths from breast and cervical cancers. Population screening with mammography was introduced in 1991, following a two-year pilot. It was directed primarily at 50-69 year olds, where the evidence of benefit was strongest. By 1997-2000, the female breast cancer death rate had reduced by about 19% in 50-69 year olds and 15% in older women. This is attributed to the combined effects of earlier detection from mammographic screening and advances in treatment, especially in adjuvant therapy. Compared with data for the 1980s, the percentage of invasive breast cancers found with diameters under 15mm has increased three-fold, although smaller increases are evident in women born in countries where English is not is not the main language. This has highlighted the need for promotion among these women to ensure that they are well represented in mammography and other early-detection programs.

Over the past 20 years, death rates from cervical cancer have reduced by approximately two-thirds in South Australia, with most of this reduction being attributed to the Pap smear. The monograph specifies the high-risk groups, where further promotion of the Pap smear is required. It also underscores the increasing proportion of cervical cancers comprising adenocarcinomas and adenosquamous cell carcinomas. Their epidemiological features differ from those of the more common squamous cell lesions, with screening and broader management implications. South Australia has the lowest death rate in Australia from cervical cancer, but further headway will require more sophisticated screening promotion among those women still at high risk. This monograph, as for earlier releases, was directed at providing secondary school and tertiary students, including students in the health field, with information on cancer trends in South Australia, and opportunities for prevention and improvement in outcomes. The next monograph release will address the topic of surviving cancer, with an emphasis on psychosocial aspects.

The 12345+ Food and Nutrition Plan: Ten years and beyond
The Cancer Council South Australia and CSIRO Nutrition and Health Sciences developed The 12345+ Food and Nutrition Plan in 1991. The booklet – a simple guide to healthy eating and weight control – is the Cancer Council's most requested resource, with over 150,000 copies ordered between January 1998 and September 2001. There are several other food guides currently produced in Australia, including The Healthy Eating Pyramid and more recently The Australian Guide to Healthy Eating. In light of these existing resources, we wanted to determine whether there was a need to continue producing The 12345+ Food and Nutrition Plan.

A total of 20 in-depth interviews were conducted with dieticians and other health professionals who use or do not use the booklet. The need for a simple guide to healthy eating was clearly identified in this evaluation. Preliminary results showed that users were extremely positive about the simplicity of the resource and its relevance to significant client groups, especially those with low literacy levels. Non-users, however, felt the information was not in line with current recommendations and therefore not best practice. The Cancer Council South Australia will review the booklet in light of these findings.

CANCER EDUCATION RESEARCH PROGRAM (CERP), NSW

Screening for colorectal bowel cancer: a community survey
Randomised controlled trials have shown that screening for colorectal cancer with faecal occult blood tests (FOBTs) produces a modest, but significant, reduction in mortality. However, there is little evidence to

indicate the feasibility or acceptability of population screening for colorectal cancer in Australia, and there is currently no organised approach. As part of a computer-assisted telephone survey, Professor Jill Cockburn and colleagues examined the extent and modality of screening for colorectal cancer among NSW residents aged over 40 with varying degrees of familial risk. The results indicated that 5.7% of those at average risk aged 40-49, 18.4% at average risk aged 50+, and 7.9% at above average risk report having had at least one faecal occult blood test (FOBT) in the previous five years. Of those at average risk, 24% aged 40-49, and 32% aged 50+ indicated an intention of having FOBT in the next two years, compared with 25% of those at above-average risk. This study provides important baseline data with which to compare the progress of both pilot screening programs and more widespread implementation of colorectal cancer screening in Australia. Further results from this study have been published in the Australian and New Zealand Journal of Public Health (June 2002).

CANCER PREVENTION RESEARCH CENTRE (CPRC), QLD

Enhancing multidisciplinary care of women with breast cancer
It is well recognised that best practice in the management of breast cancer involves a multidisciplinary approach to care. This approach has been found to have a positive influence on the psychosocial well-being and survival of women with breast cancer. GPs would like to be more involved in the continuing care of their breast cancer patients, and play a key role in the multidisciplinary team. In the primary care setting, GPs are uniquely placed to provide to the breast cancer patient appropriate information, referral, treatment options, counselling and support, and follow-up. An 18-month project was initiated by Queensland Health in conjunction with the Brisbane North Division of General Practice and the Cancer Prevention Research Centre at the University of Queensland.

The project aimed to explore ways to enhance the current role of the GP in the care of women with breast cancer. This entailed developing, implementing and evaluating a strategy designed to improve communication between tertiary and primary sector providers following referral of patients to a hospital breast clinic. Qualitative and quantitative methods were used to survey GPs, medical consultants, breast care nurses and administrative staff at the breast clinics of two major public hospitals in Brisbane. An initial survey identified communication needs and perceptions. This informed the development of a communication protocol that was pilot-tested, then evaluated in a follow-up survey. The protocol involved a registered nurse from the breast care clinic, the streamlining of pathology reporting, and the use of a dedicated fax machine and customised forms in the breast clinic. The results of the evaluation suggest that the protocol has certainly improved communication. Review and refinement of the protocol is continuing during the introductory period.

RESEARCH IN THE PIPELINE

CBRC

Australian secondary students alcohol and drug survey (ASSAD)
CBRC is coordinating the seventh survey of tobacco and alcohol use among Australian secondary school students that is currently taking place across Australia. David Hill and Victoria White are the principal investigators. Jane Hayman, the national coordinator of the study, obtains prevalence estimates of tobacco smoking and alcohol drinking among secondary school children throughout Australia at three-yearly intervals. Since 1996, questions about secondary students' use of illicit substances and non-prescription pain

killers have also been included. Approximately 30,000 12-17 year-old male and female secondary students across Australia are being asked to complete a questionnaire to collect self-report data on use of tobacco, alcohol and other licit and illicit substances.

The ASSAD study is a valuable tool in tracking smoking prevalence amongst Australian secondary school students over time. In results recently published in the Australian and New Zealand Journal of Public Health, comparisons across survey years showed that while fewer 12-15 year-olds were current smokers in 1999 than in 1996, the proportion of current smokers in 1999 and 1996 among 16 and 17 year-olds was similar. It was concluded that the rise in the prevalence of smoking among younger secondary students seen in the 1990s seems to have stopped and smoking prevalence has declined.

CCCR & TCRE

Perceptions of treatment and service provision of patients with advanced cancer
A preliminary report has recently been submitted to the Palliative Care Program within the Commonwealth Department of Health and Ageing. The report reviewed the literature from 1980- 2001 on Information given to patients receiving treatment for their advanced cancer. It sought to place into context the substantial changes in cancer care within the last 20 years, examining research findings in regard to cancer beliefs, attitudes and knowledge. A final report on Patient perceptions of treatment and service provision will draw together the implications for clinical policy of findings from both patients and their care-givers in a longitudinal study and be submitted to the Commonwealth by the end of the year. We anticipate responding with health promotion material to the current public attitudes around death, dying and cancer pain.

Hospitality smoking bans are popular among all patrons
TCRE has investigated support for smoking bans in bar and gaming venues, among those who regularly frequent such venues. New findings indicate that, contrary to some claims by the hospitality industry, smokers are in a minority among regular bar and hotel patrons. Although the rate of reported smoking is the highest amongst regular front bar drinkers – and even among this group, smokers are a minority. Support for smoke-free venues among regular patrons is high, with most patrons (including regular front bar patrons) reporting that visiting these venues would become more enjoyable if smoking were banned altogether. TCRE is currently planning future surveys to investigate this issue further.

CERP

Training in communication skills from a distance: an oxymoron or reality?
Researchers from the Cancer Education Research Program, The Cancer Council NSW/University of Newcastle, the Medical Psychology Unit and Department of Cancer Medicine at the University of Sydney, along with clinical colleagues from a number of major Australian oncology clinics, have been awarded a National Health and Medical Research Council grant aimed at improving outcomes for people with cancer through the training of oncologists in communication skills.

The consultation skills training program will be based on the current best advice from the National Breast Cancer Centre and National Cancer Control Initiative document Clinical practice for the psychosocial care of adults with cancer (currently in draft form), and will focus on recognising emotional and psychological cues from patients and initiating appropriate management.

The program will consist of 10 hours contact over a period of six months, with the first two sessions being

interactive face-to-face workshops. Clinicians will rehearse aspects of the consultations with actors as simulated patients, and self-appraise the way that they dealt with psychological issues. These sessions will be facilitated by an oncologist and a psychologist or psychiatrist with experience in consultation skills training. All of the remaining four sessions will be conducted by video-conference, with the facilitators working from a central location and the clinicians and actors participating from one of the four remote locations.

Randomised controlled methods will be used to assess the effectiveness of the program in terms of improving patients' quality of life, preventing patients' psychological morbidity and reducing the risk of burnout amongst doctors.

The project will be managed by Michele Bandaranyake now that her PhD thesis has been submitted.

CPRC

Genetic science, molecular biotechnology and the public's perceptions of future prospects for the prevention and cure of cancer
Neville Owen and Andrew Wilson from CPRC and the School of Population Health, and Wayne Hall and Shirlene Badger from the Institute for Molecular Biosciences at the University of Queensland, together with Jeff Dunn and Joanne Aitken from the Queensland Cancer Fund will be carrying out an exploratory study on factors that may be shaping the public's perceptions of future prospects for the prevention and cure of cancer. The context of the study is people's beliefs about the likelihood of future cures for cancer or the prevention of cancer.

Media coverage of the 'promises' of genetic and molecular technologies may influence people's understanding of, and motivation to act on, preventive messages promoted by cancer organisations (and other bodies concerned with primary prevention of chronic disease). Additionally, mixed messages in relation to advances in bio-molecular treatment of disease and potential 'cures' for cancer may create decisional ambiguity and compromise adjustment for cancer patients and their families. Health messages about not smoking, maintaining a healthy body weight, following healthy dietary guidelines and being physically active may be undermined by the explicit or implicit promises of cure and prevention through applications of molecular and genetic technologies.

'Technological optimists' argue that higher levels of awareness of advances in genetic science and molecular biotechnology are associated with greater health awareness. If the optimists are right, then those who have high levels of knowledge will have higher levels of interest, motivation and intention to undertake personal preventive actions to reduce cancer risk. This could happen if more information encouraged people to identify their risks and take steps to change them, and to present early for treatment. 'Technological pessimists' argue that higher levels of awareness of advances in genetic science and molecular biotechnology are associated with 'unrealistic optimism' about future prospects for a cancer cure and 'technological' prevention. If this were true, they will have lower levels of interest, motivation, intention and/or personal preventive actions in relation to cancer risk. This project will assess levels of awareness among Queensland adults of the 'promises' of health benefits flowing from advances in genetic research and molecular biotechnology and how this may impact of prevention-related beliefs and behaviours.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Breast Cancer

REVIEWED BY:

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DETAILS:

K Hunt et al
Published by Springer (2001)
ISBN: 0-387-95190-3.
477 pages plus index.
RRP: US$59.95

Breast cancer is the first in the series of the M D Anderson Cancer Care Series and as stated in the preface written by Drs Buzdar and Freedman from M D Anderson: “Each volume of this series will offer a detailed, comprehensive description of the M D Anderson approach to a particular type of cancer.”

“They have chosen to emphasise the day-to-day aspects of practice minimising literature reviews and discussion of approaches not yet incorporated into routine practice”.

They also state that their aim is to describe the entire range of related services available for a particular

cancer site. Despite being on one topic it is a solid tome of 500 pages with, as they say, very little of it devoted to pages of references. Despite the comment of referencing not being their primary objective, there are references to both M D Anderson studies and national studies within the text. This does allow the rationale for most of the treatment guidelines to be followed but it is a far from full historical review of the development, in most areas.

There are useful summaries of each chapter, headed key practice points and a suggested reading list at the end of each chapter.

It is certainly inclusive! It is hard to find a stone that hasn't been turned. Pages are devoted to the timing of post surgical shoulder exercises!

In my view there is excessive use of abbreviations that slowed my reading of the information considerably.

It is understandably not an international view of breast cancer but an American, and more narrowly still, an M D Anderson view, but this is the declared aim of the publication.

It is a useful reference for the management of breast cancer but I would doubt that Australian readers would find it their preferred source of information.

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BOOK REVIEWS

Breast Cancer

Breast Cancer - A Guide to Detection and Multidisciplinary Therapy

Cancer and Pregnancy

Cancer Precursors, Epidemiology, Detection and Prevention

Cancer Prevention: the Causes and Prevention of Cancer - Volume 1

The Cancer Sourcebook for Women - 2nd Edition

Clinical Pathology of Soft Tissue Tumours

Colorectal Cancer

Controversies in Lung Cancer: a Multidisciplinary Approach

today.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Breast Cancer – A Guide to Detection and Multidisciplinary Therapy

REVIEWED BY:

A Rodger
William Buckland Radiotherapy Centre
The Alfred Hospital
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DETAILS:

MH Torosian (ed)
Published by Humana Press (2002)
ISBN: 0-86903-839-4. 342 pages plus index.
RRP: US$125.00

There are probably too many textbooks on breast cancer, and I have been involved relatively recently in two. I may, therefore, be prejudiced, but this is one that probably adds little to the sum of our knowledge on the subject. Furthermore, while the authors almost achieve an adequate description of improving the reader's knowledge of the detection of breast cancer, they singularly fail to give any credence to the philosophy that therapy is directed or decided in a multidisciplinary way. And while it is expansive though not always accurate on therapy, this book makes no pretence of discussing and advocating care of patients.

In his foreword Robert Young MD describes the book's great strength as its multidisciplinary format. However, I recognise only compartments of treatment, some excellently presented (chapter seven on breast reconstruction) while others repeat, often with no consistency, what is described before or later. Thus in chapter four (clinical classification), sentinel node biopsy is noted as a technique whose role remains to be determined, but in the next chapter on breast conserving surgery the indications for its use are clearly defined and extolled.

In another example, locally advanced disease is covered in breast conserving surgery (chapter five) and the subsequent one on mastectomy. While chapter six sticks to mastectomy, the previous one on breast conserving surgery strays frequently on to more ablative surgery. Parts of the early chapters on imaging and diagnostic techniques are repeated in later sections. One is left wondering if the editor did any work. Repetition and omission abound mixed with inconsistency and inaccuracy.

The authors of chapter eight on radiotherapy wax eloquently and at length on the absolute indication for radiotherapy when high dose, marrow-ablative chemotherapy regimes are indicated – and this in 2002. (Indeed, a whole chapter is devoted to such chemotherapy later in the section addressing controversies.) The same authors throw in pedantic statements like "bolus is used every other day… but daily bolus or a boost to the scar is not needed" for post-mastectomy radiotherapy: no evidence, no justification.

The radiation oncologists discuss systemic therapy and the management of locally advanced disease as if hormone therapy, the elderly and the frail do not exist. The exception is radiotherapy for bone metastases, where several excellent randomised trials are ignored and single fractions of palliative radiotherapy are reserved for such sick and old patients in preference to more protracted and more costly and longer but no more effective fractionation regimes. And they ignore the most significant cause of radionecrotic rib fractures: a high dose per fraction. They need also to ask themselves why they have such a high rate of pneumonitis at 5%.

It is also amazing that in an eight page chapter on surgery for metastatic disease, there is not one mention of orthopaedic intervention but whole pages about excision of lung and liver metastases. When did you last request that?

This book omits entirely any thought towards the psychosocial support of patients and their families. The breast care nurse is not mentioned. Breast screening is reduced to a paragraph – but the chapter on imaging is otherwise excellent. Palliative care beyond palliative radiation or systemic therapy or unusual surgical interventions is not featured.

There is no clear discussion or use of staging systems, yet there is the usual recommendation for over-investigation at diagnosis, contrary to ASCO guidelines. In fact, it is as though guidelines and evidence do not exist – only local policies or habits seem to prevail, and they are not cross-referenced to the references tagged on to each chapter.

The special clinical situations of six chapters on T0N1-2 disease, cancer in pregnancy and breast lymphomas or sarcomas are good. The final section of another five chapters on current controversies and research – on breast conservation without radiotherapy, high dose chemotherapy, managing the IMC and the misnamed "immunotherapy and gene therapy" – is also interesting and easy to read. But why, in 2002, is the anti HER-2/neu monoclonal antibody reduced to one paragraph and not even named, yet adoptive immunotherapy warrants seven pages?

Most regrettable of all in this disorganised, compartmentalised and poorly edited book is the lack of any indication that anyone has a clue about or an involvement with multidisciplinary care.

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Cancer and Pregnancy

REVIEWED BY:

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DETAILS:

E Barnea et al (eds)
Published by Springer (2001)
ISBN: 20011-85233-374-X.
302 pages plus index.
RRP: US$139.00

This book is a unique look at two common events, which are linked only rarely. It attempts to both review the current knowledge of specific cancers occurring during pregnancy, and also to compare and contrast the biological scenarios of pregnancy and oncogenesis.

Cancer during pregnancy presents many challenges, which are not encountered by individual clinicians with any great frequency. Thus, having this book to refer to may prove useful at the bedside. The book may be used by obstetricians, oncologists, surgeons, specialist nurses, midwives and others. The book is edited by gynaecologists and so is often slanted to this field. Additionally, as a source of background and reference,

pathologists, epidemiologists and other researchers will find it interesting.

Some clinical chapters give useful management algorithms and best practice guidelines. They are on the whole short, readable and well-referenced. It may have been more useful to include illustrative cases from chapter 12 in each relevant chapter. The ethical challenges are also well laid out in a scholarly, but readable, way.

The book becomes somewhat controversial, contrived, and less useful, when tackling “philosophical” issues of comparing and contrasting the biology of pregnancy and cancer, although the chapter on HCG is speculative but very provocative and well-referenced.

My main criticisms are the apparent lack of editorial control leading to widely different styles (including reference systems), and level of detail which makes reading the book cover to cover frustrating: “grazing” is thus recommended! I would also have welcomed a detailed chapter on fertility issues.

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Flow Cytometric Analysis of Hematologic Neoplasms

Gastrointestinal Oncology: Principles and Practice

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Cancer Precursors, Epidemiology, Detection and Prevention

REVIEWED BY:

R Ward
Dept of Medical Oncology
St Vincent's Hospital
Darlinghurst, NSW

DETAILS:

E Franco et al (eds)
Published by Springer (2002)
ISBN: 0-387-95188-1. 410 pages plus index.
RRP: US$89.00

Over the last few years it has become apparent that molecular changes are evident in the earliest pre-neoplastic lesions, and indeed in some ostensibly normal cells. These findings have prompted studies on the precursor lesions of cancer, as it has been suggested that accurate identification of these lesions will translate into effective chemotherapeutic and other prevention strategies. This first edition text presents epidemiological data on the importance of precursor lesions at all the major anatomical sites. The text is divided into five sections. The first provides very basic information on biological markers of carcinogenesis

and the pathological terminology used to describe neoplasms. Section two deals with methodological issues related to sample collection and interpretation of data. In my opinion, these sections of the book are of limited value as they present a superficial account of the topic and contain information that would certainly be well known to individuals working in the medical or allied health fields.

The strongest and most interesting section of the book is part three, which deals with precursor lesions at each of the important anatomical sites. It was immediately apparent that there was a great deal of variability in the focus of each of these chapters. Some authors focused entirely on the epidemiological aspects of the disease (for example the colon and rectum), while others (endometrial chapter), incorporated an analysis of the latest controversy surrounding the pathological classification of relevant precursor lesions. The most interesting chapters were those that sought to integrate the epidemiology, pathology and molecular biology of the disease (for example the bladder chapter). Unfortunately, there were few chapters that presented such an analysis. Sections four and five discuss chemoprevention, screening and the policy recommendations of various agencies.

Overall, I found this book made interesting reading and certainly some chapters would serve as an excellent reference text. Unfortunately, other chapters were quite brief and adopted a less comprehensive approach to their topic. It is likely that future editions of this book will correct some of these deficiencies and improve its value as a comprehensive reference text.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Cancer Prevention: the Causes and Prevention of Cancer – Volume 1

REVIEWED BY:

J Dunn
Queensland Cancer Fund
Brisbane, Qld

DETAILS:

G Colditz et al (eds)
Published by Kluwer Academic Publishers (2000)
ISBN: 0-7923-6603-4. 335 pages plus index.
RRP: US$135.00

This is the first volume in a series focussing on the causes of human cancer and its prevention. Produced by the Harvard Centre for Cancer Prevention, this series provides a companion to research published in the journal Cancer Causes and Control.

The book consists of 26 concise chapters, all by American authors, and is divided into two parts of equal emphasis – the first on causes of cancer and the second on cancer prevention.

The section on causes of human cancer broadly describes the contribution of various factors in cancer

incidence. Chapters are devoted to smoking, dietary factors, obesity, physical activity, occupation, genetics, infectious agents, reproductive factors, socio-economic status, pollution, ultra-violet light, radiation, prescription drugs, and electro-magnetic fields. Almost all chapters have a similar structure, providing a clear, if brief, summary of the state of the evidence and including a plain English list of summary points and recommendations.

Occasionally, the American context of the book produces recommendations that differ from current Australian guidelines. For example, dietary recommendations to reduce red meat consumption to once a week or less, and advocating folic acid supplements to reduce cancer risk, which do not form part of the current NHMRC dietary guidelines for Australians. The fifteenth chapter provides a summary to the section on causes of cancer and incorporates a simple but sensible guide for cancer prevention priorities.

The second half of the book focuses on preventing cancer and proposes a social strategy to address the major risk factors of tobacco prevention and cessation, dietary change, physical activity, alcohol consumption and others. Once again, each chapter provides a useful summary of the literature and dot-point lists of summary points and recommendations.

This book might be useful for students and health professionals interested in a general overview of cancer causes and prevention. It scans the topic in one easy-to-read text, provides extensive reference lists at the end of each chapter and identifies recommended readings. However, it is written for the North American context and it may not contain the level of detail health professionals specialising in cancer may require.

At US$135 it is expensive and with evidence about the causes of cancer continually evolving, how-to manuals like this may need to be priced more realistically given their potentially short shelf life.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

The Cancer Sourcebook for Women – 2nd Edition

REVIEWED BY:

K Sundquist
The Cancer Council NSW
Sydney, NSW

DETAILS:

K Bellenir (ed)
Published by Omnigraphics (2002)
ISBN 0-7808-0226-8. 2002. 560 pages plus index.
RRP: US$78.00

The Cancer Sourcebook for Women is part of the American Health Reference Series, which provides basic consumer health information for the general community. As a reference source of general information about specific cancers occurring in women it is informative and comprehensive. It offers practical advice in easy-to-read language for the consumer. The book is also suitable for public libraries, academic libraries serving health sciences programs, and medical libraries with community outreach services.

Material in this book has been collected from a wide range of government agencies, professional associations, and periodicals, so the writing styles are quite different in each section. As it is primarily a

reference book this does not matter, as it is most likely that readers would search for specific information, and not read the book in its entirety.

The new edition of The Cancer Sourcebook for Women provides updated information on the types of cancer that occur in women. It includes general information and statistics, and descriptions of specific types of cancer. Tips for screening and prevention are given, along with the latest research findings. The book includes a section on treatments and coping strategies, plus an extensive list of organisational resources for help and information.

A chapter on breast cancer is included, however readers are advised that the subject is treated in greater depth in a separate volume, The Breast Cancer Sourcebook, which is part of the same series.

The book's 73 chapters are arranged in 10 parts:

- Breast cancer
- Cervical cancer
- Endometrial cancer
- Ovarian cancer
- Other gynaecologic cancers and related concerns
- Cancer screening and prevention
- Treatment options
- Recent research and clinical trials
- Coping strategies

Additional help and information includes a glossary of cancer terms, a directory of resources available in the United States, useful websites and a comprehensive index

Information about risk factors, screening methods for early detection, symptoms, diagnostic tests and current treatment options for cervical, endometrial, ovarian and other female cancers is provided. Specific concerns about related gynaecological issues such as fertility after cancer treatment are also addressed.

Complementary and alternative therapies are explained, and consumers are advised that if they are considering these therapies then they need to discuss this decision with their doctor or a nurse, as they would any other therapeutic approach. A useful list of suggested questions to ask their health practitioner is included.

Overall, the information is excellent, and complex topics are clearly explained. As a reference book for the consumer it is a valuable resource to assist them to make informed decisions about cancer and its treatments.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Clinical Pathology of Soft Tissue Tumours

REVIEWED BY:

P Allen
Flinders Medical Centre
Adelaide, SA

DETAILS:

E Montgomery et al (eds)
Published by Marcel Dekker Inc (2001)
ISBN: 0-8247-0290-5.
770 pages plus index.
RRP: US$225.00

This chunky, 16 x 24 x 3.7 cm book by 27 authors is edited by Elizabeth Montgomery of the Pathology Department of the John Hopkin's University and Alan Aaraon of the Department of Orthopaedic Surgery, Georgetown University Hospital, Washington DC. It is written by pathologists, plastic and orthopedic surgeons, radiologists, adult and paediatric oncologists, radiotherapists and a specialist in rehabilitation medicine.

The 20 chapters are divided into three sections. The first concerns the clinical evaluation and initial diagnosis

of soft tissue tumours (three chapters). The next evaluates the pathology of soft tissue tumours (12 chapters) and the third covers the management (five chapters).

The pathology section, which makes up most of the book, is handled in a professional fashion by authors who are well-known experts in the field, and all chapters are of a uniformly high quality. However, I was surprised to read that the famous Australian pathologist, Rupert Willis, has been awarded a posthumous knighthood, apparently by a Southern University of The Great Republic (pages 543 and 566).

The editors' stated aim is "to provide a single and concise multidisciplinary reference". Certainly, the different disciplines are represented, but the various chapters are not well correlated. For example, the important chapter on radiological imaging gives an excellent overview of soft tissue organ imaging, but the pathology is weak.

The chapter on surgical management briefly reviews the surgery of lipomas, hemangiomas, benign tumours of peripheral nerves and desmoids before proceeding to an excellent account of the general principles of the surgery of soft tissue, soft tissue reconstruction and surgery without radiotherapy. Sarcomas in various locations are discussed, followed by atypical lipomas, paediatric sarcomas and the treatment of metastases. The overall approach is sound, but many different sarcomas are lumped together. For example, fibrosarcoma in childhood appears as a single entity, with no reference to the comparatively good prognosis of infantile fibrosarcoma (page 624). Similarly, the other chapters concerning treatment are bedevilled by references to all soft tissue sarcomas as a single entity.

The rehabilitation chapter explores an aspect that is too often neglected and provides interesting and relevant information, but once again the authors' knowledge seems to be confined to rehabilitation. Thus figure one on page 734 illustrates an "inoperable soft-tissue sarcoma" on the dorsum of the forearm in a patient of unstated age. The authors have not troubled to find out the diagnosis, even for this illustrated case.

To do justice to the book's title, it would be necessary for radiologists, pathologists, surgeons and oncologists to discuss each specific entity in a coordinated manner. That is the standard approach at clinical meetings, but I have never seen more than lip service paid to this admirable method in any soft tissue tumour textbook. No doubt it would take much more work and time to edit such a book but until that is done, multi-authored soft tissue books are likely to have more in common with loose alliances of freedom fighters than with a coordinated war against sarcomas.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Colorectal Cancer

REVIEWED BY:

E Stickland
Austin & Repatriation Medical Centre
Heidelberg, Vic

DETAILS:

I Taylor et al
Published by Health Press (2002)
ISBN: 1-903734-08-8.
72 pages plus index.
RRP: £12.00

This new edition, soft covered book is one of a series of Fast Fact guides published by Health Press. It is a relatively inexpensive text and would make a valuable reference for any oncology unit library.

It is quite simple to read and its target audience could be nurses and other allied health care professionals wanting a disease-focused clinical update. It could also be used as a pocket guide for junior medical officers/students beginning in the colorectal cancer area, given its size, descriptive content and publication date of 2002.

It is evidence-based and provides the reader with a simple guide to the management of colorectal cancer.

Chapters include: epidemiology and pathophysiology, clinical presentation, diagnosis and staging, screening high-risk families, treatment of the primary disease, large bowel obstruction, advanced and recurrent disease, multidisciplinary management and a section on future trends. It has an amazing amount of colour figures, tables and pictures that further assist the reader to understand the management of colorectal cancer. The layout and excellent use of diagrams, photos and imaging graphics present an informative guide to clinical practice.

Although there is reference to UK and US statistical data in the epidemiology section, there is reference to worldwide variation in incidence and it is therefore pertinent in an Australian setting.

My only criticism is that the guide is disease-focused and does not provide any significant reference to the experiences of a person diagnosed with colorectal cancer undergoing treatment, or the impact on the patient and their family/carers. It mentions the need for a support system and supportive services. The section on multidisciplinary management only covers multi-modality management as it describes the treatment of colorectal cancer by the clinical disciplines. This section could be further enhanced to include a summary of the recent evidence surrounding the psychosocial needs of a person diagnosed with colorectal cancer and the role of the multidisciplinary team in attending to these needs.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Controversies in Lung Cancer: a Multidisciplinary Approach

REVIEWED BY:

D Ball
Peter MacCallum Cancer Institute
East Melbourne, Vic

DETAILS:

B Movsas et al (eds)
Published by Marcel Dekker (2001)
ISBN: 0-8247-0274-3. 520 pages plus index.
RRP: A$195.00

In my experience, the aspect of their knowledge base which troubles our trainees most as they approach their final exam is the difficulty they have in resolving controversy in such a way as to please the examiners. Our registrars need to be reminded that there are many disagreements even among experts on how to best manage particular oncological problems, usually related to an absence of high level evidence, and that the examiners are (or should be) just as aware of those unresolved issues as are the bewildered candidates.

This book, edited by a multidisciplinary trio of surgeon, medical oncologist and radiation oncologist, has brought together a large number of experts in the field to address the major controversies in lung cancer

(both small cell and non-small cell). Sometimes this is done in a debate format, with one team taking the affirmative, and the other the contrary position on topics such as the timing of chest irradiation in small cell lung cancer, the role of extended resections in patients with stage IIIB non-small cell lung cancer, and the value of 3D conformal radiotherapy. That respected authorities can take opposite points of view on these clinically important subjects should reassure our registrars that they are not the only ones who are confused! Sometimes the contrary argument is unsustainable, as for example Dr Sandler arguing against prophylactic cranial irradiation (PCI) in small cell lung cancer. His grudging concession that "PCI should be offered at this time as part of the therapeutic regimen in patients with limited small cell lung cancer" appears among such statements as: "The potential benefit from PCI is so small (~5%) that a meta-analysis became necessary to identify any impact at all," and: "Although meta-analyses have achieved recent popularity, not all statisticians are convinced of their accuracy."

The debate format, which requires participants on occasion to make statements that differ from their privately held views, does enliven discussion and makes for much more enjoyable reading than a ponderous catalogue of published studies spared critical appraisal which seems to be commonplace in recent oncology textbooks.

Unfortunately, not all the contributions are in debate format, and not all deal with controversy. For example, the chapter entitled "Evolving role of chemotherapy in stage IV non-small cell lung cancer" does not address any particular controversy, but does make a brief reference to tirapazamine, which in its unqualified form is not particularly helpful to the reader. I think these more traditional chapters could have been omitted bringing the areas of genuine controversy into sharper focus.

So, like the curate's egg, this book is good in parts. I do not know where our registrars are likely to find a more interesting account of the major controversies in lung cancer management as they stand in 2002. Next time one of them asks you if patients with N2 non-small cell lung cancer should be treated with chemoradiation, or with induction chemotherapy followed by surgery, don't inflict on them your personal prejudice, but instead point them in the direction of this book, where they can read both sides of the argument.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Flow Cytometric Analysis of Hematologic Neoplasms

REVIEWED BY:

P Presgrave
Dept of Haematology
Wollongong Hospital
Wollongong, NSW

DETAILS:

T Sun
Published by Lippincott Williams & Wilkins (2002)
ISBN: 0-7817-2964-5.
266 pages plus index.
RRP: A$427.90

This is the second edition of Tsieh Sun's book on the use of flow cytometry in the diagnosis of haematological malignancies. From a clinical viewpoint it represents a timely update as the classification of these disorders has undergone extensive revision since publication of the first edition in 1993. The new REAL and WHO classification systems encompass many new entities, and immunophenotyping plays a central role in diagnosis. However, as the author correctly states, some of the entities described in REAL and WHO have yet

to be studied in a uniform manner using flow cytometry.

The book begins with a brief introductory chapter on the principles of flow cytometry. This explains the basic components of a flow cytometer and the principles of computer analysis of the derived signals and generation of scatter plots. This is provided in sufficient detail to aid understanding of subsequent chapters by those from different disciplines. An outline of the classification of haematological neoplasms follows, including a discussion of the developmental stages of normal T and B-lymphocytes and antigenic expression profiles, which is central to the classification of the corresponding T and B cell malignancies. Supplementary tests are then reviewed including cytochemistry, immunohistochemistry, molecular diagnostics and cytogenetics. A useful chapter then highlights the major criteria that are used in flow cytometry to distinguish haematological neoplasms from normal leucocytes, including immunoglobulin light chain restriction, aberrant phenotypes and selective loss of antigen expression. Selection of appropriate monoclonal antibody panels is discussed, with an up-to-date table of cell specificity and clinical application of most monoclonal antibodies used in flow cytometry.

The bulk of the book consists of a series of 38 case studies. Each case consists of a brief clinical history with flow cytometry findings. The relevant morphology is then discussed and illustrated with colour plates. In most cases the number and quality of illustrations is markedly improved over the first edition. A detailed discussion of the immunophenotype in each disease is then given, including recognised variants and immunophenotypic features that help in differential diagnosis. Relevant molecular studies and a brief overview of the clinical manifestations of the disease are also included. For easy reference, each case has clear tables summarising important morphological and laboratory features of diagnosis.

One of the main strengths of the book lies in the fact that it provides flow cytometry findings in the context of other diagnostic information. This approach makes it a very practical aid to diagnosis. Common lymphoid malignancies such as SLL, CLL and follicular lymphoma are covered in detail. However, many haematologists will find the chapters on rarer disorders, such as T-CLL, LGL and mantle cell lymphoma more useful, as these diseases are much less likely to be seen by the average haemato-pathologist and may lead to greater diagnostic confusion. I would highly recommend this book to any haematologist or pathologist involved in the diagnosis of haematological malignancies.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Gastrointestinal Oncology: Principles and Practice

REVIEWED BY:

P Chapuis
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University of Sydney at Concord Hospital
Concord, NSW

DETAILS:

D Kelsen et al
Published by Lippincott Williams & Wilkins (2002)
ISBN: 0-7817-2230-6.
934 pages plus index.
RRP: A$442.20

This multi-authored textbook is written by experts mainly from the US but with some contribution from co-authors from Europe, Canada, South Africa and Japan. It aims to provide a comprehensive review of the common GI malignancies encountered in both developed and developing countries. The emphasis is on a clear understanding and update on the essentials of the biology, natural history, prevention, diagnosis and multidisciplinary care of patients. The text covers in detail these aspects for cancer of the oesophagus,

stomach, hepatobiliary system, large bowel, anal canal, and perianal skin and GI neuroendocrine tumours.

The book is presented in eight sections. The first half of the book reviews the principles and application of epidemiology, pathology, and molecular biology as relevant to GI tumours, together with chapters on principles of medical and radiation oncology and surgery. There are also chapters dealing with organ imaging, nutrition and quality of life issues. The second half of the book deals with organ-specific chapters, and there are two chapters devoted to GI lymphomas and stomal tumours.

Each section follows a common theme with a discussion of relevant information on epidemiology, screening and early diagnosis, pathology, staging and multidisciplinary care. The book is largely non-surgical but there is sufficient surgical emphasis, and operative technique is not overlooked.

Overall, this is a well-produced textbook printed on non-reflective paper and amply illustrated with clear line diagrams, summary tables and good quality black and white photography. Some of the latter key photomicrographs of surgical specimens, laparoscopic and endoscopic views and light microscopy are reproduced in colour as a separate composite atlas at the commencement of the book. In future, it would be better to intersperse these throughout the body of the text. Not surprisingly with a book of this size (some 934 pages plus index) there is some repetition. However, this does not detract from the overall impact, and each chapter largely stands alone yet fits into the overall scheme.

This book has something for everyone interested in GI malignancies. There is sufficient surgery to be instructive to non-surgical readers and still be valuable to trainees. Overall, it is pitched at senior students and especially advanced trainees in both medical and radiation oncology, but non-specialists will also find it useful for revision and update. A big appeal is the comprehensive bibliography at the end of each chapter, with most references drawn from the English language literature over the past 10 years.

It is impossible for one reader to give an authoritative resumé of all chapters. This reviewer read the section on large bowel cancer with interest, which in part was disappointing and one-sided. For example, there was no discussion on the subject of minimal invasion of an adenomatous polyp. The chapter on the classification and staging of bowel cancer made no reference to ICAT (International Comprehensive Anatomical Terminology) and attempts made to standardise staging as promoted by the international working party report commissioned by the World Congresses of Gastroenterology in Sydney in 1990. Indeed in this section, there is failure to draw distinction on the extent of tumour spread at diagnosis and treatment in a manner that has a clinically useful correlation with prognosis and simply defining tumour spread preoperatively. It needs to be stressed that to date, there is no reliable preoperative staging system that correlates accurately with survival. This needs to be clarified and reference to preoperative staging remains speculative at this time. Also, TNM staging although widely used in North America includes only an optional “R” classification to signify “local residual tumour” and does not assign a stage in such cases. This needs to be changed if there is to be consensus and the adoption of one internationally agreed to staging system.

The chapter dealing with laparoscopic surgery is somewhat hypothetical, and the perceived advantages of this technique still await confirmation from randomised controlled trials. Currently there are many cohort studies that would suggest that although this technique is feasible in expert hands and comparable to open surgery in terms of achieving clear margins and an adequate lymphovascular clearance, it is expensive and the potential for port-site recurrence remains a concern. There is still no long-term data on survival using this type of surgery. The use of radiotherapy for colon cancer is interesting, but remains controversial. There is little information on the use of laser technology for palliation of locally advanced tumours perhaps

combined with endoluminal brachytherapy, or the use of stenting for obstructing tumours. A discussion on the use of selective chemotherapy in colon cancer would have been welcomed. TME surgery in rectal cancer is somewhat one-sided. No attempt is made to address issues of case selection and other confounding variables when discussing the place of this operation. What is important in TME is the precise mobilisation of the rectum along strict anatomical planes using either sharp or diathermy dissection. In this regard, the surgical importance of recognising the perirectal fascia and the retrorectal plane is clear. Also, more could have been said of the importance of methodological differences when reporting local recurrence after curative excision of rectal cancer.

Overall, these are fine points of controversy, which in no way distract from what is an excellent first edition on an important subject. This book belongs on the shelf of hospital libraries.

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Gastrointestinal Oncology: Principles and Practice

Gene Therapy of Cancer: Translational Approaches from Preclinical Studies to Clinical

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Gene Therapy of Cancer: Translational Approaches from Preclinical Studies to Clinical Implementation 2nd Edition

REVIEWED BY:

P Russell
Oncology Research Centre
Prince of Wales Hospital
Randwick, NSW

DETAILS:

E Lattime et al (eds)
Published by Academic Press (2002)
ISBN: 0-12-437551-0. 524 pages plus index.
RRP: A$321.90

This is a fantastic book for anyone interested in gene therapy for cancer. It covers most of the major areas that require consideration for such strategies. These include gene delivery (using retroviral vectors, non-infectious and expression systems, parvovirus vectors, lenti-viral vectors, replication-selective adenoviruses, liposomes and plasmids, the use of ribozymes and antibody-targeting), immune-targeted gene therapy and

vaccine strategies. The latter includes discussion of epitope-specific immunotherapies (targeting mutated ras genes), genetic immunisation using dendritic cells loaded with tumour DNA or RNA or by the use of gold particles. Sections on immunotherapy include adoptive immunotherapeutic techniques, and genetic modification of haematopoietic stem cells. Specific therapies, such as oncogene or tumour suppressor gene targeting, antisense downregulation of apoptosis, anti-angiogenic gene therapy, manipulation of drug resistance genes in stem cells and clinical trial results using oncolytic viruses (replication-selective viruses) are also discussed. One omission is a description of transcriptional targeting to provide specificity of delivery of the genes of interest, where promoter and enhancer elements of a gene expressed in a given tissue or tumour type are used to drive expression of the therapeutic genes. When gene-directed enzyme prodrug therapy is to be used, transcriptional targeting can provide additional specificity to that obtained by injecting the organ of interest. Finally, the place of combined therapies, using gene therapy plus ionising radiation for treating cancer, is examined.

Each chapter in the book is written by a world-renowned researcher(s) in the field and includes an excellent coverage of basic biology through to the use of very recent strategies, together with future perspectives. The book covers preclinical work through to clinical trials, pointing out the advantages and drawbacks that have been identified to date. The referencing is excellent and comprehensive. I strongly recommend this book to gene therapists, including virologists and molecular biologists determining vector structures, researchers performing preclinical studies, immunologists determining immunological strategies, oncologists conducting clinical trials and pathologists, as well as pharmaceutical companies.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Integrated Cancer Care: Holistic, Complimentary and Creative Approaches

REVIEWED BY:

K White
School of Nursing & Public Health
Edith Cowan University
Churchlands, WA

DETAILS:

J Barraclough
Published by Oxford University Press
ISBN: 0-19-263095-4.
287 pages plus index.
RRP: A$120.00

In the past two decades there has been considerable growth in the complementary health area. It is widely acknowledged that a range of complementary therapies is widely used by cancer patients. Australian studies have identified that between 22-50% of patients use one or more of these interventions1,2. Discussion of

complementary therapies can evoke strong responses from cancer health professionals. This text aims to move beyond the rhetoric that often surrounds discussion of complementary therapies and explore the role, benefits, limitations and contraindications of integration of complementary therapies into mainstream cancer care.

Jennifer Barraclough, a consultant in psychological medicine, has drawn together a diverse range of authors to explore this topic. The 25 chapters provide a historical review, exploration of the evidence and research in this area, and personal patient experience as well as the views and experiences of health professionals in using different forms of complementary therapies.

The book is organised into three core sections. The first section focuses on the recent history of complementary treatments, research in complementary treatments and health service planning. Section two explores the use of specific therapies in cancer care, including acupuncture, aromatherapy, massage, art therapy, homeopathy, hypnosis and meditation. There are some surprises in what is considered complementary, for example the chapter in nutrition would normally appear in most mainstream cancer nursing and supportive care books. The third section explores professional settings. This section describes the experiences of consumers and health professionals in implementing or using these types of treatments. Professor Michael Baum's reflection as a sceptical surgeon highlights the position many cancer health professionals come from, with the gradual recognition that there are potential benefits from some complementary therapies for patients, and the different worldview presented by these therapies can be beneficial for all health providers.

As highlighted in the preface, there are varying styles of presentation in the chapters, from academic to personal experience. This approach does not detract from the overall style of the text, or its readability. It does, however, appear to influence how critically research has been reviewed and in one case, a potential selection bias in which studies are cited.

Overall, this is a an informative, and to the most part balanced, presentation that provides cancer health professionals with the opportunity to learn from others' experiences, and explore the benefits – as well as the limitations – of complementary therapies relating to cancer practice. The main thesis of the text is that it is through integrating these therapies alongside mainstream cancer care that benefits to both patients and health professionals will be achieved.

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1. BR Cassileth. "Complementary and Alternative Cancer Medicine." Journal of Clinical Oncology, 17 (1999): 44-52.
2. E Ernst, BR Cassileth. "However useful are unconventional cancer treatments?" European Journal of Clinical Cancer, 35, 11 (1999): 1608-1613.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Liver-directed Therapy for Primary and Metastatic Liver Tumours

REVIEWED BY:

Ian Davis
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Repatriation Medical Centre
Heidelberg, Vic

DETAILS:

M Talamonti et al (eds)
Published by Kluwer Academic Publishers (2001).
321 pages plus index.
RRP: US$220.00

Sometimes you look at the liver and it's all too hard and unpleasant. It's very tempting to push it to one side and just eat the chips. Even in units with a special interest in cancers involving the liver there can be uncertainty and a lack of consensus about how to proceed. Many of us have tried surgical approaches, ablative therapies, infusions into the hepatic artery as well as systemic therapies. Most of us can recall an occasional responder, but in general, the outlook for these patients is very poor and I have often wondered if our interventions have helped or harmed them. We need a clear and coherent overview of the state of the

art so as to allow better application of the science. A diet of chips alone is no good for anyone.

This book might just be the gravy we need. It contains a series of comprehensive reviews of all aspects of management of cancers involving the liver. The chapters cover topics ranging from the clinical and epidemiological features of liver malignancies, through the various imaging options, covering surgical approaches including a very good chapter on liver transplantation, and on to other local, regional and systemic therapies. There is a good number of figures, although some of these lose their impact being printed only in black and white. The chapter on imaging in particular contains many useful example radiographs. The biliary epithelium is not forgotten, although there is very little mention of combined chemoradiotherapy. Even paediatric liver tumours rate a mention in the last chapter.

It is difficult to find too many faults with this book. I became weary of reading the epidemiology of HCC time and again, and this could have been trimmed by the editors. On inspection of the author list one could be forgiven for thinking that only American authors know anything about this field. Brachytherapy is mentioned only in passing in the discussion of cholangiocarcinoma. A closing chapter on experimental approaches such as targeted therapies, immunotherapy or other biological therapies such as antiangiogenic agents or small molecule inhibitors would have rounded the book out well.

The book is expensive at US$220 for 312 pages but I have found it to be a very useful reference. It will appeal to both surgeons and physicians involved in the care of these patients and I recommend it strongly to any unit with an interest in the management of these patients. That probably means most of us, so you'll need to keep your strength up: make sure you eat your vegies too.

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LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Modern Management of Cancer of the Rectum

REVIEWED BY:

A Meagher
Darlinghurst, NSW

DETAILS:

R Audisio et al (eds)
Published by Springer (2001)
ISBN: 1-85233-287-5. 230 pages plus index.
RRP: US$119.00

The three editors of this multi-author book are to be congratulated for their efforts. They have been able to produce a readable 17 chapter, 234 page text which largely covers the modern management of rectal cancer. Most chapters are written by acknowledged experts in their respective fields. Some of the authors include Bruce Minsky, who writes chapters on pre-operative and post-operative radiotherapy; Jeff Milson, who writes chapters on restorative procedures and laparoscopic rectal cancer surgery; David Schoetz and Patricia Roberts, who write on abdomino-perineal resection; Warren Enker, who writes on total mesorectal excision; Victor Fazio, who writes on surgery for rectal cancer; Heidi Nelson, who writes on surgery for locally recurrent rectal cancer; and Phillip Quirke, who writes on pathology and staging.

As is always the case in multi-authored books, there is overlap in many of the chapters. For example, some ground covered in chapter six on restorative procedures is re-visited in chapter eight on total mesorectal excision. Nonetheless, the somewhat different perspectives and opinions regarding details of surgical treatment are interesting.

Whilst the "standard" chapters on the various surgical approaches to rectal cancer and on adjuvant treatment are the cornerstones of the book, there are some excellent perspectives on this disease found in other chapters. The first chapter on the history of the treatment of rectal cancer is fascinating – starting with a long quote from John Arderne from 1376. A separate chapter on rare types of rectal cancer – including carcinoid tumours, lymphomas, melanomas, neuroendocrine tumours, vascular lesions and sarcomas is particularly useful to practising specialists. An outstanding chapter on quality of life and palliative care in rectal cancer patients is ahead of its time, and highlights the need for further work in this area.

As in all texts, very recent work cannot be included. For example, reference has not been made to the Dutch trial on total mesorectal excision with or without pre-operative radiotherapy. Important results of the most recent NSABP trial on post-operative adjuvant treatment also have not been referenced.

In all, this is a well-written book giving the views of many accomplished leaders and authors in this field. Doctors, whatever their speciality, who treat patients with rectal cancer will find the book interesting and informative. Perhaps most interesting are the chapters on fields outside one's own specialty.

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National Cancer Control Programmes, Policy and Managerial Guidelines 2nd Edition

REVIEWED BY:

J Dunn
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Brisbane, Qld

DETAILS:

Published by World Health Organisation (2002)
ISBN: 92-4-154557-7.
180 pages.
RRP: US$37.80

The first edition of this book was produced following a meeting of a Working Group on National Cancer Control Programs at WHO in 1991. This second edition has been produced by the Cancer Control Program of Noncommunicable Diseases WHO following a meeting on national cancer control programs in developing countries held in 2000. The intention of the monograph is to provide advice to guide the development of effective cancer control programs internationally, and in particular in developing countries. In summary, the

book aims to provide a framework for policy development and program management in cancer control, which is able to be translated across differing socioeconomic and cultural contexts.

Part one overviews the medical and social context of cancer to provide a rationale and background for the establishment of a cancer control program. Part two goes on to discuss approaches to cancer control, introducing the principle of the prevention and early detection of cancer, cancer treatment, palliative care, cancer research and surveillance. Part three overviews the development of a national cancer control program and briefly describes activities in cancer control in various countries. Finally, part four gives advice about how to identify priorities for action.

The book covers quite some territory. Limitations in this approach relate to the level of detail included on some subjects. However, such an approach is consistent with the aim of the book and it would be expected that readers could then go elsewhere for more detailed information. The breadth of the book will be useful in that it provides a single reference point for those seeking to develop a conceptual framework in support of their cancer control activities. The content of the book is well presented, with good use of diagrams and case studies to enhance readability.

This book would serve as an excellent resource for the many NGOs and health agencies interested in cancer control. Also, it is likely to be of value as a student text for those involved in conducting tertiary courses addressing this important topic.

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Normal Tissue Reactions in Radiotherapy and Oncology

REVIEWED BY:

G Lamoury
Garvan Institute
Darlinghurst, NSW

DETAILS:

W Dörr et al
Published by Karger (2002)
ISBN: 3-8055-7284-0. 200 pages plus index.
RRP: US$171.50

Experimental studies of the biological effects of radiotherapy began soon after the discovery of x-rays in 1895. Holthusen published the first clinical study on chronic normal tissue damage in 1936. However, there is still much that is unknown. Today, in the era of radiation dose-escalation and combined therapies (with their synergistic and supra-additive effects), it is increasingly critical that our knowledge of this area is furthered.

Normal Tissue Reactions in Radiotherapy and Oncology, by Wolfgang Dörr et al, is a compendium of current experimental concepts and evolving knowledge of the effects of radiotherapy on normal tissue. It is part of the Frontiers of Radiation Therapy and Oncology series.

It is comprised of 25 valuable and well-structured papers by 72 contributors, all of which were presented at the International Symposium on Normal Tissue Reactions in Radiotherapy and Oncology held in Marburg in April 2000.

The central focus of these papers is the understanding of the mechanisms involved in the biological effects of radiation at the cellular and molecular levels, and the management of these side effects aimed at improving the therapeutic ratio overall. A major prerequisite in current day management of such effects is the detailed and appropriate scoring of acute and late toxicities, if necessary, supplemented with additional diagnostic procedures, eg ultrasound for skin changes and FDG PET for lung changes. Clinical management approaches to dealing with various side effects of radio- and radiochemotherapy must be explored and designed for the individual organs affected. A few examples of this have been presented in the book.

The various categories into which the papers fall include current concepts in radiation biology, anaemia-associated fatigue in cancer patients, clinical management of side effects, radiation protection, stereotactic radiosurgery, and radiation physics and IMRT. The final two chapters deal specifically with the application of such techniques in head and neck, and prostate cancer.

The papers are written by a consortium of clinicians and scientists, and therefore one of the limitations from which the book inevitably suffers is the inconsistent writing styles, and the fact that the book does not appear to “flow” in a logical sequence of chapters.

Nevertheless, it benefits from the enormous advantage of the accumulated expertise of several leading scientists and specialists in the area of radiation research. The book is pitched at a broad audience, one that includes specialist radiation oncologists and clinical oncologists, medical and radiation physicists, radiation technicians, specialist cancer nurses, and cancer research scientists involved in the translational research chain. In particular, I recommend it as a valuable resource to be included in the radiobiology reading list of trainee radiation oncologists in Australasia.

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LUNG CANCER IN THE NEW MILLENNIUM

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Oncology

REVIEWED BY:

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DETAILS:

R Spence et al (eds)
Published by Oxford University Press (2001)
ISBN: 0-19-262982-4. 513 pages plus index.
Price: A$89.95

With one in three people suffering from cancer at some stage in their life, it may be considered self-evident that cancer education would be an important component of medical school curricula. Unfortunately, it is not always the case. The evaluations of oncology education both in Australia and overseas have shown deficiencies in the cancer knowledge of graduates and variability in the oncology curricula1,2.The Oncology Education Committee of The Cancer Council Australia has played a pivotal role in the strengthening of oncology education to medical students in Australia, culminating in 1999 in publication of an Ideal Oncology Curriculum, which provides recommendations for standards of oncology education in Australia. The Ideal Oncology Curriculum does not mandate a specific oncology text, and with the advent of the Internet, it may

be argued that textbooks are a thing of the past. Thus the arrival of the new oncology textbook from the Oxford University Press may naturally lead to the question – why another book?

According to the text's two editors, the text arose as a result of requests from students to provide a comprehensive textbook on cancer management – casting doubt on the claims that textbooks may be passé. The book aims to provide "a comprehensive, single reference taking the patient-centred, disease-oriented approach and covering both principles and system-based approach to cancer that fits with the modern integrated medical curricula". It seems like an ambitious claim. Yet, despite its small 513-page size, the book packs in a lot of information. Its 25 chapters are grouped into two sections – general principles, including epidemiology, molecular biology, pathology, principles of treatment, palliative care and psychology, and chapters focusing specifically on common cancers. There is a separate chapter on oncological emergencies.

The text, edited by a surgeon and a medical oncologist, has 30 contributors, mostly from Ireland. It is easy to read and extensively illustrated with tables, diagrams, photographs and case scenarios. Each chapter is preceded by an outline and ends with a comprehensive reading list, including Internet resources.

Some important concepts however, seem to be omitted – for example I have not been able to find any mention of quality of life. In contrast to the Ideal Oncology Curriculum, this text devotes much less attention to decision-making, communication or ethics. The latter is mentioned in a three-sentence paragraph entitled 'ethics of surgical oncology'.

The latest in the cancer therapies, for example monoclonal antibodies, are mentioned only briefly, demonstrating once again that when it comes to the latest information, a textbook begins to date the day it is published. But the reading list offers directions for further exploration and the cases included in most chapters add a useful, more "applied" perspective to the basic knowledge.

Oncology is not without limitations, but it tries to make up for them by its user-friendly layout and good presentation, delivering a broad overview of cancer management that is easy to read, yet reasonably comprehensive. It comes pretty close to fulfilling its ambitious claim and would be a useful addition to a library of not only a medical student but also other health professionals.

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1. MB Barton, R Simons. "A survey of cancer curricula in Australian and New Zealand Medical Schools 1997." Med J Aust, 170 (1999): 225-7.
2. E Robinson, CD Sherman, RR Love (eds). "Cancer education for undergraduate medical students: curricula from around the world." Geneva: International Union Against Cancer (UICC), 1994

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Ovarian Cancer

REVIEWED BY:

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Westmead, NSW

DETAILS:

M Stack et al
Published by Kluwer (2001)
ISBN: 0-7923-7530-0. 381 pages plus index.
RRP: US$220.00

This book is part of a series on Cancer Treatment and Research edited by Steven Rosen. The book itself is edited by two of the contributors and has 68 contributors in all, which does lead to some overlap and repetition. The book is divided into two parts. The first third deals with the treatment of ovarian cancer and the second two-thirds with recent advances in research.

The section on treatment has several chapters on early detection of ovarian cancer, which were well-written and comprehensive, and included information on risk assessment, genetic testing and potential new serum markers. The chapter on diagnosis and treatment covers basic principles and the rationale for treatment well. A chapter on ultrasound and ovarian cancer was included, but is redundant as most of the information presented was covered in the chapter on early detection.

Once I got to the section on research, things became more difficult. Many of the chapters were too detailed and covered information so specialised that I suspect most practising clinicians would have difficulty following the text, let alone understanding it. The only exceptions to this were the chapters on telomerases and malignant transformation, and angiogenesis and metastasis that I found interesting and (relatively) easy to understand. The chapter on cytopathology of the ovary seemed misplaced in the research section of the book as well as being misnamed, since it dealt mainly with basic histopathology rather than cytopathology and did not present any new information. The colour plates included in this chapter would have augmented the text well, except they were too small.

The book suffers from poor copy editing. Occasionally the font size changes from paragraph to paragraph for no apparent reason, some references are not fully cited, and in one chapter the same figure was reproduced twice under different headings. These may be small points, but they are distracting when reading the book and not what you would expect from such an expensive book.

Overall, it is not clear who is the target audience for this book. The section on treatment gives a good basic review of diagnosis and treatment. However, the section on research is more highly detailed than your average clinician treating ovarian cancer would refer to on a regular basis. It does provide up-to-date information on new and emerging research in ovarian cancer, and highlights those areas that may become clinically relevant in the future. Perhaps it is best suited as a reference book for a departmental library, although at US$220.00 it is not great value for money.

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Pancreatic Cancer

REVIEWED BY:

J Gani
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DETAILS:

J Cameron
Published by B C Decker (2001)
ISBN: 1-55009-131-X. 263 pages plus index.
RRP: A$323.44

This short book with a distinguished list of authors covers the whole topic of this common, but still problematic, disease very well. It deals thoroughly with the most important aspects of pancreatic cancer and its management in a clear, concise and practical way.

Some chapters are particularly good for the busy practising clinician. They cover some aspects that are not well-covered in other texts. These chapters include the molecular genetics chapter and the familial pancreatic cancer chapter.

All aspects of management are covered, although the emphasis on the opinions of the chapter authors

slightly detracts from the comprehensive nature of the book. Nevertheless, all the authors are authoritative and the illustrations are excellent.

The enclosed CD ROM is an excellent addition to the book, as it allows people who travel with laptops to take this information with them without cumbersome additional literary material. Unfortunately, however, though the tables could be downloaded for presentation purposes into PowerPoint, the majority of the figures could not be used. This may have been intentional.

All in all, I believe this to be a good book for any general surgical or gastroenterological trainee to have read. It is the sort of book specialist upper GI surgeons might well keep on their shelves (or laptop computer), even if it is just used to show the illustrations to patients. Every medical library should contain this monograph and I will be recommending it to my medical students.

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LUNG CANCER IN THE NEW MILLENNIUM

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Prostate Cancer: Principles and Practice

REVIEWED BY:

A Dowling
St Vincent's Hospital
Melbourne, Vic

DETAILS:

W Kantoff et al (eds)
Published by Lippincott Williams & Wilkins (2002)
ISBN: 0-7817-2006-0. 735 pages plus index.
RRP: A$427.90

This book provides a comprehensive overview of all aspects of prostate cancer. It is well-written and set out, with clearly defined sections.

The editors aimed to 'connect basic and clinical sciences' and to 'provide a current and comprehensive assessment of the field for all involved in research and treatment of prostate cancer'. They have certainly achieved these objectives.

The book is divided into eight sections. It commences with biology, which includes prostate cancer

prevention. Epidemiology, then diagnosis and staging are discussed, including pathology and the use of tumour markers such as serum PSA. The remaining sections deal thoroughly with the various treatment options available for early prostate cancer through to hormone-refractory disease.

The treatment of early prostate cancer is divided into single and multimodality treatment, each given their own section. Surgery and radiation (including a chapter on brachytherapy), along with adjuvant and neo-adjuvant hormone therapies, are discussed. The treatment of advanced and then hormone-refractory disease follows, and the book concludes with snapshots of 'where to from here' with hormone refractory disease – current standards and future directions.

All aspects of the multidisciplinary care of prostate cancer are considered – mainstream and well-recognised treatments, as well as some which must still be regarded as largely experimental and outside the setting of a clinical trial, such as intermittent hormonal therapy. It is very pleasing to see a chapter dedicated to the psychosocial considerations of therapy. This chapter deals with (amongst other issues) the feared complications of erectile dysfunction facing men post-treatment. Urinary problems are dealt with only cursorily in this chapter, but are covered in more detail (as is erectile dysfunction) in the section on early prostate cancer.

There are many useful chapters, including some topics not usually combined in the one convenient textbook. Management of radiation injury to the bowel, and orthopaedic considerations for metastatic prostate cancer, are good examples. The chapter on quality of life in prostate cancer details the need to explore the impact of therapies on men and their families. This chapter is included in the early prostate cancer section and, perhaps because of this, unfortunately does not emphasise the importance of quality of life at the other end of the disease spectrum, namely hormone-refractory prostate cancer. In these men, these issues are often more important as therapies have not been shown to extend survival and can be potentially quite toxic in this patient group.

A thorough chapter on pain and symptom management in the hormone-refractory disease section guides the clinician through the often-complex issues surrounding these patients. It even includes practical advice on how to convert from one opioid to another and how to control constipation.

This book is certainly well worth reading for all those with an interest in the management of prostate cancer.

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Radiation Oncology Management Decisions

REVIEWED BY:

M Jackson
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Royal Prince Alfred Hospital
Camperdown, NSW

DETAILS:

K Chao et al (eds)
Published by Lippincott Williams & Wilkins (2002)
ISBN: 0-7817-3222-0. 729 pages plus index.
RRP: A$177.10

This is described as a pocket manual for trainees in radiation oncology and claims to cover all cancer sites and tumour types. At 768 pages and over 1kg, it cannot really be described as suitable for the pocket but otherwise meets its objectives very well. Two of the editors are well known for the standard textbook, Principles and Practice of Radiation Oncology, and the 110 contributors, mostly from the United States, include many distinguished names.

After some excellent general chapters covering the principles of radiation oncology, the individual chapters

address specific disease sites. The book is presented in dot point form, with a large number of tables and diagrams. Many of these will be familiar from Principles and Practice of Radiation Oncology. This format makes it easy for checking information and for revision purposes, but difficult to read in large amounts.

The illustrations are generally of good quality, although the four pages of colour pictures are not well reproduced and add little to the book. The planning films and CT scans with target volumes and dose distributions marked are particularly useful. Each chapter contains a short and useful reference list and the appendix lists some of the commonly used drugs and their doses. This is quite helpful, as they are listed by generic name with the American trade name in brackets. Some of the entries, such as Powdered Opium and Belladonna, are very traditional and make an interesting contrast with the high technology sections of the book.

Generally, I would recommend this for trainees who wish to have a reasonably priced and fairly brief summary of radiation oncology, presented in a way that makes it easy to find important information.

Inevitably, it is written in a dogmatic style and does not fully address some of the controversies and alternative treatment options. It is ideally suited to quick revision before a case presentation or to occupy a few spare minutes during the day. It would be useful for radiation oncologists who do not often treat a particular disease and wish to check on the details of treatment.

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Guest editor: P Cole

Second Neoplasias Following Chemotherapy, Radiotherapy and Immunosuppression

REVIEWED BY:

H Sommerville
Oncology Department
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Westmead, NSW

DETAILS:

U Ruther et al (eds)
Published by Karger (2000)
ISBN: 3-8055-71167-X. 362 pages plus index.
RRP: US$172.25

As survival times lengthen and overall remission rates increase for patients undergoing organ transplantation treatment or for a large number of malignancies, the potential risk of developing therapy-associated secondary malignancy is becoming an area of increasing concern and attention. Secondary tumours may occur following successful treatment of the primary tumour with chemotherapy, radiotherapy

and/or immunosuppressive therapy. Malignancy may also occur following organ transplantation and long-term use of immunosuppressive therapy.

This excellent new book presents information and data in an orderly, readable manner. The early chapters detail basic concepts of tumour biology and discuss some specific carcinogens and mechanisms of action of certain chemotherapeutic agents and immunosuppressants and inductors.

The role of proto-oncogenes and variants of tumour suppression genes is discussed in some detail, as is the role of DNA repair, mutator genes and apoptosis. This discussion is of particular interest for researchers and clinicians alike.

In later chapters, the potentially mutagenic and carcinogenic effects of cytostatic agents commonly used as chemotherapeutic agents are discussed in some detail, as is the tumorogenic effect of radiotherapy.

The role of other “risk” factors for second malignancy is discussed. Individual agents and chemotherapy regimes are examined, as is dosage and method of delivery.

As survival time and remission rates increase, more information is becoming available on rates of “therapy-related” second malignancy, and much work is now being done to study ways of modifying existing protocols to try and minimise the risks of second malignancy.

The detailed chapter on immunosuppression and immunoindicators will be of interest to scientists and clinicians working in the area of organ transplant, and includes a brief discussion of a future where organ transplantation can take place without immunosuppression.

A later chapter focuses on malignancy following organ transplantation, and immuno therapy, immunosurveillance and tumour recognition are the subject of a detailed chapter incorporating an overview of the immune system and general concepts in tumour immunology and surveillance.

A second section of the book focuses on the clinical presentations in a variety of settings: following chemotherapy, radiotherapy, bone marrow and other organ transplantation.

Finally, there is a large section on new therapies including vaccines, surveillance and monitoring of long-term survivors, as well as the role of supportive and cytoprotective therapies and information from clinical experience.

Overall, this book discusses current therapies and how “findings on the underlying processes will lead to innovative changes in existing therapeutic concepts”.

Ongoing surveillance following successful treatment of malignancy or successful transplantation is an increasingly complex and expanding area of medicine.

This book is of particular interest in discussing the basic biologic and genetic factors involved.

Early detection, as these authors point out, is a pre-requisite for successful treatments of secondary neoplasms or those developing during long-term immunosuppressive therapy. Ongoing studies and books such as this are vital to inform the many clinicians in various disciplines involved in this long-term surveillance.

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CANCER FORUM

LUNG CANCER IN THE NEW MILLENNIUM

November 2002 | Vol 26 Issue No 3
Guest editor: P Cole

Statistical Methods in Medical Research

REVIEWED BY:

P Jelfs
Population Health Unit
Australian Institute of Health and Welfare
Canberra, ACT

DETAILS:

P Armitage et al (eds)
Published by Blackwell Science (2002)
ISBN: 0-632-05257-0.
794 pages plus index.
RRP: A$193.60

This is the fourth edition of this text. Again, it is a comprehensive volume from three eminent authors. This text should be available in all workplaces that deal with epidemiological data. It provides not only a clearly written theoretical approach to statistical analysis, but also practical examples that the readers can use to get them started in their work. I would have liked to see more examples to assist the readers in grasping the techniques, but numerous references to other texts may help in this regard. This is a weighty volume at just

over 800 pages, and should therefore be treated as a reference book. The comprehensive index guides the readers to techniques that are appropriate for their situation.

The introductory chapters should be read by all as they remind readers of the basic approaches to analysis that are applicable to more complex techniques. Chapters on probabilities, analysing count data, regression, correlation and comparative methods are all as one would expect. The new chapter on Bayesian methods is worth reading and the chapters on clinical trials, survival analysis and statistical methods in epidemiology are very useful to those in the cancer epidemiology and trials field. Throughout the book there are numerous practical tips in the application of statistical techniques contained in the discussion.

The book is well laid out, with formula referencing, clear presentation of algebraic characters, good graphs, tables and highlighted examples. The book is very dense with text, takes careful reading and covers the topics comprehensively.

In summary, the authors state their purpose as “to guide the medical research worker with no particular mathematical expertise but with the ability to follow algebraic formulae, and more particularly the concepts behind them”(xi). I think that in this volume they go a long way to achieving this purpose. At a price of just under $200 it is a valuable investment.

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Controversies in Lung Cancer: a Multidisciplinary Approach

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Thyroid Cancer

REVIEWED BY:

T Reeve
Australian Cancer Network
Sydney, NSW

DETAILS:

H J Biersack et al (eds)
Published by Springer (2001)
ISBN: 3-540-41390-1.
294 pages plus index.
Price: US$99.00

There have been several books published on thyroid cancer in recent years, raising the interest of the reviewer as to why a cancer which is rare (<1% of all cancers) and of excellent prognosis, excites such intense interest. It is, however, the commonest endocrine cancer, the cause of more deaths than all other endocrine tumours combined, and is the subject of considerable clinical, technical and molecular biological interest.

This volume is primarily from clinics in Germany, with some input from the US, and the editors' essay that there are new diagnostic and therapeutic changes over the last 10 years. These are addressed in this comprehensive compact text.

The book is divided into three parts, each addressing a significant area of interest and facilitating easy reference: the basics, differentiated thyroid cancer and medullary thyroid cancer, and thyroid cancer of children from Chernobyl.

Attention is drawn to the need for high-level quality in diagnosis at clinical, technological and histological levels if credible data is to be recorded. The cost of collecting data is noted as a deterrent to the accurate accumulation of incidence material. It is reported that the increasing incidence of thyroid cancer in both sexes, especially in its early stages, is at least in part due to improved diagnostic techniques that lead to earlier detection. The increase is mainly due to papillary thyroid cancer Conversely, anaplastic cancer has fortunately become rare. Where there has been established iodine deficiency, which has been supplemented, there has been a marked increase in papillary cancer.

For those clinicians with an interest in the thyroid gland the histopathology, immunohisto-chemistry and molecular biology are clearly and succinctly addressed, the role of fine needle aspiration biopsy (FNAB) being appropriately acknowledged and molecular techniques that may enhance FNAB in pre-surgical decision-making clearly identified. Pathogenesis, anatomical and molecular malignant transformation, invasion and metastases are addressed.

The published reports on familial differentiated thyroid cancer are reviewed, and advice on management of patients and their families is proposed.

Diagnosis of thyroid cancer by conventional means is clearly outlined, together with emphasis on prevalence and risk assessment. The wide range of prevalence of thyroid nodules diagnosed by ultrasound is reported as being due to the use of different equipment.

In the current surgical approach to non-medullary thyroid cancer, the arguments for and against total thyroidectomy are clearly stated and clearance of all lymph tissue from the central cervical compartment along the tracheo-oesophogeal groove is recommended as part of the primary surgery to prevent recurrence. This approach is being embraced in Australia. The effect of removal of lymph nodes on survival is not known.

Part two of the book is devoted to treatment of differentiated thyroid cancer, follow-up protocols, functional imaging and magnetic resonance imaging. A special chapter is given over to thyroid cancer in Chernobyl children and reports that the children have excellent prognosis if optimally treated (ie like adults).

Radioiodine therapy is recommended for patients with assumed residual or recurrent thyroid cancer, and consideration is given to the dilemma in regards to RAI131 therapy in patients with an elevated thyroglobulin and negative radioiodine scan.

Ablation is not considered necessary when tumours less than 1.5cm are completely confined to the thyroid gland.

The side effects of radioiodine are clearly addressed.

Percutaneous radiotherapy (EBRT) remains an arguable form of treatment, with an increasing number of proponents than hitherto. It is suggested that a prospective trial to determine benefit of EBRT adjuvant to surgery and radioiodine therapy is urgently required.

Thyroid hormone is supported as life-long therapy at the lowest level of effective TSH suppression.

A chapter is given to redifferentiation therapy of thyroid carcinomas and retinoic acid. This approach is based on experimental data that differentiated functions of thyrocytes and of iodine metabolism can be reinduced by retinoic acids. The results of clinical application in 49 patients are encouraging and worthy of study.

Follow-up is discussed around the view that surgical excision of as much thyroid as possible, ablation of remnants or metastases, and surveillance are the key stones and various protocols can be successfully built around them.

Functional imaging and magnetic resonance imaging are well presented, although illustrations of MRI are somewhat cramped and some are moderately difficult to interpret.

The Chernobyl accident and resultant thyroid cancer in young children from Belarus are well covered. Part three addresses medullary cancer of the thyroid (MCT), and is comprehensive and authoritative. It is essayed that MCT comprises 8-12% of thyroid cancer and presents in sporadic and hereditary forms.

It is also stressed that family history may not lead to a diagnosis of hereditary disease. Genetic and biochemical screening may be required to differentiate it from sporadic disease. Missing from the disease constellation is the description of bronchial carcinoid, well-described in the work of the late Professor Joe Shepherd of Hobart.

The importance of calciton in diagnosis, a road map to imaging, together with sound therapeutic advice based on surgical clearance of the thyroid and a directed follow-up program complete this useful book.

The book is compact, well-edited, authoritative and has an extensive bibliography. It would be useful on the shelves of a surgical department with a strong interest in endocrine surgery, or to the endocrinologist with an interest in thyroid cancer.

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LUNG CANCER IN THE NEW MILLENNIUM

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Guest editor: P Cole

Tumour-suppressing Viruses, Genes and Drugs

REVIEWED BY:

G McArthur
Peter MacCallum Cancer Institute
East Melbourne, Vic

DETAILS:

H Maruta (ed)
Published by Academic Press (2002)
ISBN: 0-12-476249-2. 415 pages plus index.
RRP: A$214.57

The battle against cancer is entering an exciting new phase, with the development of therapies targeting the underlying genetic defects in an individual patient's cancer. Tumor-suppressing viruses, genes and drugs is therefore a timely and exciting book covering the many advances in basic cancer research that are directly leading to new therapies. Included are concise reviews of the biology underlying many leading candidate molecules and pathways such as the RAS and TGF-beta pathways. The breadth of material is welcome, covering "older" targets like RAS, p53 and receptor tyrosine kinases but importantly including "newer" targets like integrins, cytoskeletal molecules and specific cell cycle proteins. This emphasis makes the book a

handy acquisition for clinical researchers interested in novel therapeutic targets.

Basic cancer researchers interested in the clinical development of new discoveries will also find the material useful. Chapters including functional rescue of p53, integrin antagonists, tyr kinase inhibitors, farnesyltransferease inhibitors, oncolytic viruses, ribozymes, CDK-inhibitors and inhibitors of angiogenesis illustrate strategies to develop therapeutics following the identification of a new target.

The book contains a broad discussion of molecular strategies to modulate the function of target molecules including gene therapy and viruses (with a clear discussion of the challenges in this difficult area by David Kirn), and small molecules.

There are some newer developments that are not covered. In particular, therapies that target transcription such as retinoids, HDAC-inhibitors and other strategies to modulate the function of transcription factors (with the exception of p53) are not discussed. Also, novel approaches to directly target the apoptosis machinery, such as Caspases and BCL-2 family proteins, that are currently under pre-clinical and clinical investigation are not discussed.

Nonetheless, this book will be an excellent acquisition for all those interested in the new field of molecular oncology like basic researchers, clinical researchers and students.

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News and announcements

WE'RE MOVING

The Cancer Council Australia is moving. From 11 November, The Cancer Council Australia, the Clinical Oncological Society of Australia (COSA) and the Australian Cancer Network (ACN) can be found at the University of Sydney's Medical Foundation Building in Camperdown. Our contact details are:

Level 5, Medical Foundation Building
92-94 Parramatta Road
Camperdown NSW 2050
GPO Box 4708, Sydney NSW 2001
Telephone: (02) 9036 3100
Facsimile: (02) 9036 3101
Email: info@cancer.org.au
Website: www.cancer.org.au

Clinical Oncological Society of Australia
Telephone: (02) 9036 3100
Facsimile: (02) 9036 3101
Email: cosa@cancer.org.au

Australian Cancer Network
Phone: (02) 9036 3120

Fax: (02) 9036 3121
Email: acn@cancer.org.au

NEW STAFF

ACN Medical Director
The Australian Cancer Network welcomes Professor Bruce Barraclough as Medical Director. Prof Barraclough is Chairman of the Australian Council for Safety and Quality in Health Care. He is also Chairman of the Board of the Institute of Clinical Excellence in New South Wales, a member of the Australian Medical Council and the Medical Services Advisory Committee, and is immediate pPast President of the Royal Australasian College of Surgeons. His hospital appointments include Professor and Director of Cancer Services for the Northern Sydney Area Health Service based at the Royal North Shore Hospital, a clinical school of the Faculty of Medicine, University of Sydney. His clinical and research interests are in the field of endocrine surgery.

New Finance and Business Manager
Our new Finance and Business Manager, Robert Firth, comes to The Cancer Council after spending 15 years in the not-for-profit sector. Most recently he held the position of Deputy General Manager and Financial Controller with Musica Viva Australia, the fine music presenter and educator. Prior to Musica Viva, Rob was Financial Controller at the University of Sydney Union, the services organisation providing food, retail, recreational, social and welfare services to campus users. Rob holds a Bachelor of Business degree from the University of Technology Sydney, and a Superannuation Certificate. He is a Justice of the Peace, and advanced to Fellow with CPA Australia this year.

CLINICAL TRIALS OPEN FORUM FOR CONSUMERS

On 24 October, The Cancer Council Australia hosted an open forum for consumers to discuss clinical trials in cancer. The forum, held at the Sydney Opera House (the venue hire was generously waived), was attended by about 70 people who heard background briefings on clinical trials; discussed the benefits and challenges associated with them; and how consumers can become involved.

The meeting was aimed at boosting understanding and awareness of clinical trials in cancer, and harnessing support for increased participation.

Keynote speakers included Professor Martin Stockler, from the NHMRC Clinical Trials Centre who explained what clinical trials are, why they are run, who runs them, and who takes part in them; Professor Alan Coates AM, Chief Executive Officer of The Cancer Council Australia, who discussed the benefits of trials and why participation rates are so low; and Dr Norman Swan, from Radio National's Health Report, lead ethics experts and a pharmaceutical industry representative in discussion of the ethics involved in clinical trials.

A full report of the open forum will appear in the March issue of Cancer Forum.

PARLIAMENTARY BRIEFING – TOBACCO CONTROL

'Tobacco control – an investment in Australia's future' was the subject of the second breakfast meeting this year of The Cancer Council's Parliamentary Cancer Information Network. Speakers David Hill, Director of The Cancer Council Victoria and Chair of the National Expert Advisory Committee on Tobacco, and Michelle Scollo, Co-Director of the VicHealth Centre for Tobacco Control and author of Tobacco Control: A blue chip investment in public health, addressed federal MPs at the meeting in Parliament House, Canberra.

For a copy of the newsletter Cancer Update – which summarises the presentations given at the briefing – please email info@cancer.org.au

HOPE BLOOMS ON DAFFODIL DAY

Throughout August daffodils were in full bloom, helping The Cancer Council Australia spread the message of hope for all touched by cancer.

Daffodil Day continues to be the largest national cancer awareness day in Australia, raising over $9 million to fund the cancer control initiatives, patient support and education services of our eight state and territory member organisations.

Daffodil Day relies heavily on the supporting retail outlets to sell event-related merchandise. These products include silk ribbons, pens, enamel pins and the popular Dougal teddy bear. The continued dedication and support from our national corporate partners ensures our event-related merchandise and corporate message remains visible to the public.

The Cancer Council Australia would like to thank Coles, Kmart, Bi-Lo, Mobil QUIX, First National Real Estate, Amcal, ANZ, Katies, Rockmans, Spotlight, the HIC network of Medicare offices, Miller's Fashion Club, 1626, Crossroads, Silhouette and Ezibuy.

For the first time, a limited number of Dougal bears were available online at wishlist.com.au. This promotion was an instant success and we would also like to thank wishlist for their support.

Following the loss of his younger brother, Robin to cancer in 1999, John Williamson committed himself to assisting The Cancer Council Australia raise additional funds for Daffodil Day. $1 from each sale of his new single, "Salisbury Street", written in memory of his brother, will be donated to the cause by John's record company, EMI Music Australia.

For more information on the event, please visit the Daffodil Day website – www.daffodilday.com.au – or call 1300 656 585.

AUSTRALIA'S BREAST CANCER DAY

ABCD went extremely well for all states, who are confident that they will reach their fundraising targets. Merchandise was extremely popular and the introduction of the new ABCD website and the community service announcement also assisted in making the event a success.

AUSTRALIA'S BIGGEST MORNING TEA

Australia's Biggest Morning Tea was a success again in 2002, raising $5.82 million and beating the national target of $5.5 million. More and more Aussies are taking time out to enjoy a cuppa for cancer research during May and support The Cancer Council Australia.

2003 celebrates marks the tenth year of ABMT, and we are confident the event will continue to be successful for many more years to come.

NATIONAL SKIN CANCER ACTION WEEK: 17-23 NOVEMBER 2002

Eight out of 10 cancers diagnosed in Australia are skin cancers and as a result, over 270,000 Australians are being treated with the disease each year.

Through media communications strategies, National Skin Cancer Action Week aims to increase the awareness of the need for sun protection and to encourage greater sun protection activity.

This year, The Cancer Council is celebrating 21 years of the Slip Slop Slap message, which first featured in television announcements in 1981.

National Skin Cancer Action Week is an initiative of The Cancer Council Australia's National Skin Cancer Steering Committee.

FIND A SPECIALIST

A "Find a specialist" page is now live on The Cancer Council Australia's website. The page provides consumers with information on types of cancer treatment available, the specialties within cancer care, how to choose a specialist, where to get more information, and a list of links that direct consumers to membership lists of five medical colleges and societies.

Currently listed is the Colorectal Surgical Society of Australia, the Australian and New Zealand Head and Neck Society, Australasian Chapter of Palliative Medicine, the Thoracic Society of Australia and New Zealand and the Urological Society of Australasia. We hope that information from other bodies will soon be added to this important consumer resource.

UICC TRANSLATIONAL CANCER RESEARCH FELLOWSHIPS (TCRF)

Three fellowships a year: US$55,500 each
In 1997, the International Union Against Cancer (UICC) launched an international fellowships scheme aimed at improving the translation of basic, experimental, and applied research insights into their clinical or population applications in the form of new ideas, diagnostics, drugs and treatments, vaccines, and other effective cancer prevention or intervention strategies. The three fellowships currently offered are funded, by AstraZeneca UK Limited, Aventis Pharma Recherche-Développement, France, and Novartis Pharma AG, Switzerland.

Potential candidates and hosts are invited to submit (together) project proposals in the bridging areas that effectively connect cell and molecular biologists to patients in the clinic or to populations in the field.

The award value for the each 12-month long fellowship is US$55,500. Selections will be made by an international panel of experts and based on the scientific evaluation.

Completed applications, including all supporting documentation, must reach UICC by the annual application closing date of 1 December 2002.

AMERICAN CANCER SOCIETY UICC INTERNATIONAL FELLOWSHIPS FOR BEGINNING INVESTIGATORS

Six to eight fellowships a year: US$40,000 each
These fellowships are funded by the American Cancer Society with the objective of fostering a flow of knowledge, experience, expertise, and innovation between countries. The (previous requirement for hosts to

be located in the USA no longer applies.

The 12-month long fellowships are intended for beginning investigators and clinicians, who are in the early stages of their careers. Funding preference will be given to candidates who propose to conduct cancer research projects in the following areas: pre-clinical, clinical, epidemiology, psychosocial, behavioural, health services, health policy and outcomes, and cancer control.

Eligible candidates should hold assistant professorships or similar positions at their home institutes and have a minimum of two and a maximum of ten years of postdoctoral experience after obtaining their MD or PhD degrees or equivalents.

Between six to eight Fellows are selected each year for awards with an average value of US$40,000 for travel and stipend support. A competitive selection takes place once a year, based on the scientific review of the submitted material by an international panel of experts. Completed applications with all supporting documentation must reach UICC by the application closing date of 1 December 2002.

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