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Neurologic complications of systemic cancer

OVERVIEW

L Cher
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Austin Hospital, Heidelberg, Vic.

In a previous edition of Cancer Forum (1998 Jul;22(2)) we discussed the management of primary tumours of the central nervous system (CNS). A more common scenario for the oncologist is the patient with cancer who develops neurologic complications. The difficulty is to determine as quickly as possible the anatomical site ("where is it"), which often helps to answer the second question of "what is it". Associations of certain tumours with particular complications can be helpful. For example, adenocarcinomas and melanoma are more common causes of leptomeningeal metastases, while small cell lung carcinoma (SCLC) is the tumour most likely to be associated with paraneoplastic neurologic phenomena.

Management of cerebral metastases

In this forum, Ryan has expertly summarised the issues regarding the management of this common complication. From a neurologic perspective, radiation encephalopathy is a real phenomenon and occurs more commonly in elderly patients. I have seen patients whose neurologic deterioration was rapid and progressive within weeks of radiation. Underlying vascular disease or diabetes may be additional risk factors. However, it is also true that progressive disease has an equally devastating effect on neurologic function. This debate has been seen in primary CNS lymphoma, in which longer survival with chemotherapy increases the risk of whole brain radiotherapy. Patients over the age of 60 are at particular risk. This certainly should inform the decision-making in prophylactic cranial irradiation of SCLC.

Another issue relates to what are appropriate endpoints in trials of brain metastasis therapy. In one pilot study of chemotherapy, patients came off study with progression without reaching the study’s endpoints. In the study of Motexafin Gadolinium that is currently being run in a number of sites in Australia, targeting patients with cerebral metastases associated with non small cell lung carcinoma (NSCLC), neuropsychologic assessments are included. In addition, a blinded panel of neurologists is being used to define patient progression. Imaging is not a criterion and not required. The US Food & Drug Administration has made it clear in these studies that radiologic response criteria are not rigorous or representative enough to ensure registration. In therapies that are not likely to improve the survival of one group, quality of life and neurologic function are appropriate and meaningful endpoints, but the assessment tools need to be improved.

Leptomeningeal metastasis

The data on management of this complication are limited to small and often retrospective data. Early diagnosis can be important as most fixed deficits are not reversible with therapy, except in patients with lymphoma. It is important to think of this condition to make the diagnosis. Other potential approaches include a fortnightly intrathecal injection of slow-release Cytarabine that is associated with fewer injections. Others have used high dose Methotrexate to bypass problems with CSF flow obstruction. Siegel has discussed the importance of systemic therapy, and argued that this is as active as intrathecal therapies.

Neurosurgery and malignancy

Metastatic spinal cord compression is a true medical emergency and, as Rogers discusses, delayed diagnosis is associated with significant neurologic deficits due to paraplegia or quadriplegia. There is no simple formula for identifying which patients are suitable for surgery, but the Regine study certainly should encourage surgical consideration early. The clinical warning signs include persistent back pain, with circumferential radicular referred pain and associated with contralateral sensory loss to pain and temperature. Pyramidal weakness of the limbs may follow. The range of new neurosurgical approaches above that of laminectomy make the procedure applicable to more patients, with the potential to improve quality of life. It still remains difficult to lay out clear guidelines to decide who should, and should not, be operated.

Similarly, the ability to deal with painful brachial plexopathies surgically can make a difference to pain management. A multidisciplinary approach allows for improved management of these complex problems.

Neurologic complications of chemotherapy

As outlined in my paper, it is usually possible to identify specific syndromes associated with certain drugs. Less common reactions need to be considered, and as new drugs, including biological therapies, become available, we may discover new syndromes.

Paraneoplastic neurologic syndromes

While uncommon, these conditions can be devastating for the patient, and are a fascinating window into the interaction between cancer, the immune system and the brain. These syndromes can occur unrelated to malignancy, particularly Lambert Eaton myaesthenic syndrome. Other examples are
as the cerebellar syndrome and op knockonious-mylconia.

As mentioned by Sutton, antineuronal antibodies may not be present and novel antineuronal antibodies can be found in individual patients whose significance is not clear. The most common antibodies (Hu, Ri, Yo) are available in Australia, but the more recently defined ones are not. It is possible to send specimens to one of the US labs such as that of Dr Joseph Dalmau (dalmau@aol.com).

It appears that the antibodies are not likely to be pathogenic, and recent evidence has focused on the role of killer T cells. One model suggests that apoptotic tumour cells are presented to dendritic cells, producing antigen-specific T cells.1

Hopefully, as our understanding improves therapies will also.

We hope you find your updated discussion on the etiology, biology and treatment of brain metastases illuminating, and we look forward to further advances in this field.

Brain metastases: Not the end of the line

Introduction

Fifteen years ago, the development of brain metastases was regarded as such a negative prognostic event that for most patients it meant the cessation of active systemic management, and many were discouraged from having even palliative radiotherapy, which was the standard treatment approach at that time.15 Deaths would occur, with untreated patients having a median survival of only four weeks. However, the intervening years have seen a number of clinical trials and developments in all modalities of oncology that have made this time-frame much more optimistic. This has led to an increased focus on the use of newer chemotherapeutic agents and other treatment modalities and has now resulted in more specific and targeted therapies. In the 1990s, a number of studies have attempted to improve the efficacy of WBRT and radiation sensitisers to reduce the incidence of intracranial recurrence of patients with brain metastases, and to individualise treatment based on a number of patient and disease-related factors. The aim of this approach is to reduce neurological morbidity and mortality in patients with brain metastases, and thus improve both their quality of life and ultimately their survival.

Radiotherapy

Whole brain radiotherapy (WBRT) remains the most appropriate approach at that time. Death quickly ensued, with untreated patients having a median survival of only four weeks. However, the intervening years have seen a number of clinical trials and developments in all modalities of oncology that have made this time-frame much more optimistic. This has led to an increased focus on the use of newer chemotherapeutic agents and other treatment modalities and has now resulted in more specific and targeted therapies. In the 1990s, a number of studies have attempted to improve the efficacy of WBRT and radiation sensitisers to reduce the incidence of intracranial recurrence of patients with brain metastases, and to individualise treatment based on a number of patient and disease-related factors. The aim of this approach is to reduce neurological morbidity and mortality in patients with brain metastases, and thus improve both their quality of life and ultimately their survival.

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Leptomeningeal metastasis

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Leptomeningeal metastasis (LM) is usually a late complication of cancer, often accompanying systemic relapse of tumour. LM can affect any part of the neuraxis. It may seed the neuraxis and are often multifocal.

Clinical symptoms and signs

Clinical symptoms and signs can occur at any level of the neuraxis and are often multifocal. Symptoms and signs can be divided into cerebral, cranial nerve, spinal, and meningeal irritation. Cranial symptoms are those of raised intracranial pressure, as well as cranial nerve palsy or apraxia, cognitive difficulties, episodic loss of consciousness, seizures, dysarthria or dysphasia and dizziness. Involvement of cranial nerves is rare; it is a presenting complaint but cranial nerve signs are often present. Diplopia is the most common symptom, but an extracocular muscle palsy may be present without symptomatic diplopia. Other cranial nerve symptoms include hearing loss, facial weakness, visual loss, dysphagia and hoarse voice. Spinal leptomeningeal disease can result in invasion of spinal nerve roots producing radicular pain, weakness, paraesthesia, and bladder or bowel disturbance. Reflexes are often absent. Meningeal irritation can lead to neck or back pain and neck stiffness. LM can produce virtually any neurological symptom and sign, and must be considered in the differential diagnosis in patients with cancer and neurological symptoms.

Diagnosis

The diagnosis is often difficult to establish, even when strongly suspected clinically. Traditionally, to establish a definitive diagnosis requires the finding of malignant cells in CSF on cytological examination, but several lumbar punctures may be required to establish the diagnosis. A single examination is positive in approximately 50% of cases, and this rises to 85-90% after three procedures. Cytology remains negative in some patients despite repeated testing of CSF from multiple lumbar punctures. These false-negative results may result from strong adherence of malignant cells to the leptomeninges or to the presence of focal rather than widespread leptomeningeal tumour.

Obtaining CSF from a different site than the lumber space, such as performing a cisternal puncture, may improve the yield of positive cytology, and this may be true particularly in patients with predominantly cerebral symptoms. In some instances cytology of venous fluid obtained through an intraventricular reservoir is positive when lumbar CSF cytology is negative. Other techniques, such as protein level, raised cell count, low glucose, raised opening pressure and elevated tumour markers may give an indication of the presence of LM, but they are not diagnostic since they may be abnormal in other conditions. Clinical circumstances CSF cannot be obtained, for example in patients with raised intracranial pressure and in patients with a coagulopathy.

Neuroimaging is an additional tool to assist for LM. Neuroimaging both to help confirm a clinical suspicion of LM and to exclude other cases of neurological symptoms and signs. Magnetic resonance imaging (MRI) may be abnormal in patients with LM, but these abnormalities are often not specific to LM. The use of neuroimaging in the clinical decision-making process in the cancer patient suspected to have LM has been examined. In this study MRI was classified as either positive, suggestive, or negative for LM. Positive scans were those that showed clear leptomeningeal enhancement in the brain, spinal cord or cauda equina, or subependymal enhancement. Suggestive scans included those with spread of enhancement over the convexity of the brain surface but not extending into sulci, superficial cerebral lesions that were in close proximity to the subarachnoid space, or enhancing nodules within sulci.

In this series a diagnosis of LM was made in 77 of the 137 patients (56%). The optimal treatment to patients with metastasis to the leptomeninges.

References

Introduction

The role and value of surgery in vertebral column metastatic disease is still poorly understood. In the opinion of the author this precludes a number of patients from being offered an appropriate surgical option as part of an individualised management strategy.

Until recently, only one study was available in the literature comparing the outcome of a surgical procedure (lamination only) followed by radiotherapy, to radiotherapy alone for epidural metastases. It is over 20 years since its publication. A comprehensive review of the literature relating to the evidence for surgical intervention in spinal metastatic disease recently has been published. The conclusion of the authors was that no guidelines could be provided in relation to surgical management due to insufficient evidence; they did however produce their own recommendations.

The predilection of certain tumours for bone (especially the spinal column) is well documented in clinical and autopsy studies and therefore with an ageing population the expectation would be for an increased incidence of patients presenting with symptomatic metastases.

Apart from direct surgical intervention, in selected cases there may be a role for vertebroplasty and kyphoplasty which would be carried out by specialist interventional radiologists. The place of these interventions in the treatment of metastatic spinal disease is yet to be determined.

What are the aims of surgical intervention?

It must be made clear to the patient and relatives that surgical intervention for symptomatic spinal lesions is not curative; there is currently no data to support the proposition that it will improve survival duration. Surgery can be a powerful palliative tool aiming to improve quality of life; it can do this by providing pain relief and maintaining or restoring neurological function. Patients presenting with paraplegia of greater than 24 hours duration have very low rates of neurological salvage.

Recently, a study has been published in abstract form that looked at 101 patients with malignant spinal cord compression due to solid tumour metastasis. The patients had only a single site of cord compression, and were randomised to surgery (within 24 hours) and radiotherapy or radiotherapy alone. Sixteen patients in each group were unable to walk at study entry. Fifty-six percent of patients in the surgical group recovered their ability to walk, while only 19% in the radiotherapy group achieved the same level of function (p=0.03). Overall, the surgical group retained their walking ability significantly longer (median 126 days vs 35 days, p=0.006). Morphine and dexamethasone use was significantly reduced in those receiving surgery. While survival was not significantly different, there was a trend to longer survival in those receiving surgery.

Surgical procedures

The initial referral, radiotherapy or surgery

Radiotherapy has an initial role when vertebral body height is preserved and the tumour is radiosensitive. Radiotherapy has no role when there is spinal column deformity causing pain or neurological dysfunction, or when bony fragments as opposed to epidural (soft tissue) cause neural compression (spinal cord, cauda equina or nerve root). Surgery can be offered when radiotherapy fails, however, the rate of neurological salvage declines and surgical morbidity increases (particularly wound infection rates) in a previously irradiated field.

Patient selection

This is one of the most difficult and crucial components of management. It is generally agreed that the anticipated minimum length of survival should be three months. Beyond this there are numerous variables that are considered by the surgeon making the assessment. The factors that require consideration include the patient’s systemic condition (nutritional and functional status), the sites of other non-spinal metastases and the impact of chemotherapy and prior irradiation on immunologic function.

MRI is undoubtedly the diagnostic procedure of choice, and can assess for compression at multiple sites.

Surgery can be offered to an appropriate range of candidates whose load of spinal disease may range from a solitary lesion to extensive non-contiguous disease.

Surgical procedures

The gamut of surgical procedures that can be offered to patients is not limited to laminectomy. There is now an extensive range of mechanical devices employed in surgical procedures that provide immediate stability to the affected spinal column. This can have the affect of immediate pain reduction and allow rapid post-operative mobilisation. The spinal column from the cranio-cervical junction to the sacrum can be accessed. The surgical procedures carried out may include decompression alone or a combination of decompression, reconstruction and stabilisation. The surgeon assessing the patient should have expertise in complex spinal surgery.
Thoracic spine

In the thoracic spine anterior pathology at the cervico-thoracic junction or in the upper thoracic region (T1-T3) can be approached via a ‘modified anterior approach’ which requires resection of the medial third of the clavicle and the sterno-clavicular joint.

From T4-T12 a thoracotomy (trans-thoracic approach) provides the best access (figure three).

Posterior approaches in the thoracic spine will usually involve removal of the lamina and on occasions the pedicle to facilitate spinal cord decompression. In select patients who have severe circumferential cord compression anterior and posterior approaches may be combined (figure four).

Figure 4: A post operative film following the resection and reconstruction of a thoracic tumour which had caused severe circumferential spinal cord compression. A mesh cage has been used to replace the vertebral body and from a posterior direction pedicle screws and rods aid spinal stabilisation after resection of the pedicles and lamina.

Lumbar spine

Pathology in the lumbar region is usually approached from the posterior approach, although for débridement, case resection, and bone grafting, a posterolateral approach is used.

Surgical complications

The most common post-operative complication in the majority of surgical series for spinal tumours is wound infection. There is a statistically significant difference in wound infection rates and other major and minor complications in patients who had pre-surgical irradiation and those who did not. 1 Nutritionally-depleted patients undergoing any surgical procedure are known to have a higher risk of infection. There does not appear to be any correlation between preoperative haemoglobin, white cell, lymphocyte and platelet counts and surgical morbidity. Early mobilisation post surgery is important to minimise the risk of pneumonia and deep venous thrombosis; the advent of a variety of internal fixation devices makes this possible and safer.

Conclusions

Patients with spinal cord compression caused by bone instability and/or collapse or progressive neurological deterioration who are being considered for surgical intervention should avoid preoperative radiotherapy. The decision to proceed to surgical intervention can be made only after multiple factors, which importantly include the wishes of the patient, are considered.

References


Brachial plexus surgery and apical lung tumours

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Historically, management of apical lung tumours (superior sulcus tumours or Pancoast tumours) that involve the brachial plexus has been very limited, and usually all that was offered was palliative care. 2 However, several advances have been made in the management of these tumours, such that the aim of treatment now is complete clearance of macroscopic tumour. The surgical approach, as well as changes in the use of induction radiotherapy and chemotherapy have resulted in improved functional and survival outcome in these patients. Based on our experience in treating these patients at the Austin Hospital, we present the following overview of our strategy in managing these difficult tumours.

Clinical presentation and investigation

Patients with apical lung tumours involving the brachial plexus will present with symptoms relating primarily to the lung tumour itself, or alternatively, may present with neurological symptoms, including pain, numbness, wasting or weakness in the ipsilateral hand, and may have a Horner’s syndrome. The mode of presentation may result in a delay in diagnosis (eg hand pain mistaken for carpal tunnel syndrome), however, these tumours are always seen on a chest x-ray, and therefore, diagnostic delay should not be a common occurrence (figure one).

Figure 1: CXR showing left sided apical lung tumour. This tumour extends to the lower thoracic spine (T8-T10), and a few weeks earlier. However, in a few tumours, we have noted significant intra-tumoural fibrosis, which was noted histologically, with replacement of viable tumour by fibrotic tissue. The chemotherapy and radiotherapy protocols are beyond the scope of this paper, however further details are available. 1 In some of our patients, definite reduction in tumour size has followed the pre-operative chemotherapy and radiotherapy, however this is not a universal finding.

The surgical procedure is performed by a thoracic surgeon and a neurosurgeon working together. A modification of the posterior subcapsular approach is used. 3 A thoracotomy approach is utilised with the patient in a lateral position, with the ipsilateral arm brought across the chest to help with lateral mobilisation of the scapula. The dissection exposes the first and second ribs, their articulation with the spinal column, and the upper lobe of the lung. The first priority is to display the lower elements of the brachial plexus, and to dissect the tumour off C8, T1 and the lower trunk. The tumour is then ‘delivered’ into the chest, and the resection proceeds according to the anatomical profile of the tumour, as shown on the pre-operative imaging. We have encountered three types of tumour, and treated each type differently. Type 1 tumours are small and restricted to the upper lung, in which case a segment of lung is resected. Type 2 tumours are more extensive and have required a formal lobectomy. Type 3 tumours have invaded the chest wall, and require resection of chest wall...
neuropathies often disproportionately affect proprioception mediated by the large fibres, while the axonal neuropathies tend to affect pain and temperature pathways. Lhermitte's syndrome is sometimes seen, suggesting central involvement. Importantly, patients with pre-existing neuropathies are at increased risk of severe neurotoxicity with any of the compounds listed below. Therefore patients with known familial (Charcot Marie Tooth) or acquired (diabetic, inflammatory neuropathies) neuropathies should in general not be treated with drugs toxic to the PNS.

Vincristine typically causes an axonal neuropathy with loss of small fibre function predominantly; a dying back neuropathy associated with inhibition of microtubule formation. Common as well are muscle pain, often with jaw pain. Autonomic dysfunction can cause constipation, and even postural hypotension. Foot drop occurs in more severe cases. Bulbar dysfunction has been reported in children at high doses. The taxanes also paradoxically stabilise and promote microtubule assembly, and can cause a significant neuropathy that is typically sensory but may in cases involve motor nerves as well. The pattern is predominantly axonal.

Cisplatin causes a demyelinating neuropathy, that may progress even after the cisplatin has been ceased. It is therefore worthwhile to monitor its progress in any patient, looking for a sensory ataxia and a poor grip for Cisplatin makes a new platinum compound that uniquely has activity in colorectal cancer, and has been likened to a channelopathy, ie paralysis agitans (aka parkinsonism). It has both early and chronic effects, summarised in table one. The phenyloglycanarylglycine dystasiesa with feeling of respiratory obstruction or swallowing difficulty, may be disconcerting for the patient but are not dangerous. They may be reduced by slowing the rate of infusion. The features of the acute neuropathy are also summarised in table one. The acute neuropathy is common, but over time merges with the chronic symptoms.

The acute neurotoxicity seen with oxaliplatin is characterised by electrophysiologic evidence of axonal degeneration and the findings are similar to the clinical manifestations of neurotoxemia, and has been likened to a channelopathy, ie a disturbance of ion channels crucial to nerve function but not associated with morphologic damage. This has led to a number of approaches in small series using anticonvulsants (carbamazepine, gabapentin), calcium and magnesium supplements, glutathione and amifostine. All of these appear to have some efficacy but need to be tested more extensively. This may be even more important as oxaliplatin is moved into the adjuvant setting. It may be possible that similar approaches could be used for the other drugs as well.

Central effects of systemic chemotherapy

Chemotherapy may affect the central nervous system in a number of ways, such as acute encephalopathy, that is often reversible, or a chronic CNS toxicity that may be additive with radiotherapy, such as with methotrexate or intra-arterial chemotherapy. Focal disorders include cerebellar syndromes, such as with high dose cytarabine. Levamisole when combined with 5-FU may cause a multifocal leukoencephalopathy with enhancing subcortical white matter lesions that can be mistaken for cerebral metastases. Transverse myelopathy may occur with intrathecal therapy, or as mentioned above, Lhermitte's phenomenon may be seen with oxaliplatin. Of interest recently neuropsychologic deficits have been reported in patients in association with standard chemotherapy. This is controversial but needs more precise data.

It is important to exclude other causes of these syndromes, such as metastases, leptomeningeal malignancy, or metabolic disturbance.

Acute encephalopathy

The encephalopathy may be characterised by delirium, myoclonus or seizures. Cisplatin has been associated with an acute encephalopathy that may include seizures and focal signs such as cortical blindness, with characteristic MRI appearances of white matter T2 hyperintensities, that may include a posterior leukoencephalopathy. Three patients were recently described, including one patient who died and was found at post-mortem to have an ischaemic L temporal lesion, consistent with the hypothesis that endothelial cell damage may be a pathophysiologic event. Cisplatin encephalopathy is commonly associated with hyponagamaglobulinaemia, which also should be treated, and seizure control is important.

Of the mustard alkylating agents ifosfamide is the most neurotoxic. It is usually reversible and associated with delirium and seizures and may occur for up to six days after therapy. It usually resolves but persistent symptoms have been reported. Risk factors include renal or hepatic dysfunction, low albumin and peritoneal fluid levels. Methotrexate blue has been reported to be effective in reversing the encephalopathy perhaps by compensating for the mitochondrial toxicity of 5-FU but not methotrexate.

We have seen a small number of patients with encephalopathy in association with cyclophosphamide who have partially responded to methylene blue. This is probably the result of more intensive therapy. Methotrexate can cause an acute encephalopathy (48 hours), a subacute encephalopathy in the week following administration and a chronic leukoencephalopathy, most

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**Table 1: Clinical characteristics of platinum peripheral neuropathy**

<table>
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<tr>
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<th>Acute</th>
<th>Oxaliplatin</th>
<th>Chronic</th>
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<tr>
<td>Incidence</td>
<td>45%</td>
<td>85-95%</td>
<td>grade 3/4 in 16%</td>
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<tr>
<td>DLT</td>
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<td>no</td>
<td>yes</td>
<td></td>
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<tr>
<td>Symptoms</td>
<td>paraesthesia, dyseaesthesia, sensory ataxia</td>
<td>paraesthesia, dyseaesthesia, sensory ataxia</td>
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<tr>
<td>Location</td>
<td>extremities</td>
<td>extremities, oral</td>
<td>dyseaesthesia</td>
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<tr>
<td>Trigger</td>
<td>none</td>
<td>rare muscle spasms</td>
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<tr>
<td>Motor symptoms</td>
<td>delayed</td>
<td>acute</td>
<td>delayed</td>
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<tr>
<td>Recovery</td>
<td>slow, incomplete</td>
<td>rapid, complete</td>
<td>less slow, more complete</td>
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<tr>
<td>Schedule dependence</td>
<td>none</td>
<td>yes</td>
<td>probably none</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>ototoxicity</td>
<td>pharyngolaryngeal dyseaesthesia</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>DLT: Dose limiting toxicity</td>
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**References**

commonly associated with whole brain radiotherapy. Usually, the last symptom is common if the methotrexate is given prior to cranial radiotherapy.

Neurocognitive effects of adjuvant chemotherapy

The long-term neurocognitive effects of whole brain radiotherapy have been reasonably studied, although more needs to be understood. With the increasing use of adjuvant therapies, especially in breast cancer, particularly in a wider group of patients for relatively small gains in cure and survival rates, a more careful assessment of subtle effects of therapies needs to be performed. The field has been well reviewed recently.11

These studies are not easy to systematise. Detailed neurocognitive assessment is complex and time-consuming and therefore difficult to perform repeatedly. Other factors may induce such as anxiety, fatigue, disease progression and hormonal changes. In brief, it can be said that neurocognitive deficits have been found in patients given adjuvant chemotherapy that are not seen in breast or lymphoma patients treated with local therapy, or compared to healthy controls. There is not a close correlation between cognitive changes measured and recognised quality of life measurements.

As a result, longitudinal studies are now being performed. Screening tools sensitive to change such as Cogstate (www.cogstate.com) are being used in studies in Australia. It is important to stress that these effects do not equate with “brain damage” (Darby, personal communication).

References


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Investigation and management of paraneoplastic neurological syndromes

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Paraneoplastic neurological syndromes (PNS) are rare, but severely disabling. Both tumour and aetiology in the serum of PNS individuals with cancer who were also affected by sensory neuropathy and proposed that: “the tumour in a patient with sensory neuropathy may contain antigenic determinants not present in other tumours, and that these determinants are shared by some constituent of the central nervous system (CNS). An immune reaction against such tumour determinants might then incidentally damage the CNS”.

This hypothesis has proved to be correct since it has subsequently been confirmed that tumours from affected individuals aberantly express neuronal antigen. However, neuronal antigens are frequently expressed by tumours that are not complicated by PNS and the effector mechanisms that neuronal antigens are frequently expressed by tumours that individuals aberrantly express neuronal antigen. However, This hypothesis has proved to be correct since it has

Diagnosis of paraneoplastic neurological syndromes

In two-thirds of cases affected individuals will present with a neurological syndrome prior to diagnosis of the associated malignancy. PNS are a clinically heterogeneous group of disorders with subacute sensory neuropathy (‘+’ encephalomyelitis), cerebellar dysfunction (+/- brainstem involvement) and limbic encephalitis being the most frequently encountered disorders. However, virtually every neurological syndrome from Parkinsonism to gastrointestinal dysmotility syndromes has been reported as a paraneoplastic complication of cancer. When presented with a patient with an unexplained neurological disorder there are obvious clues in the history to suggest that a neurological syndrome has a paraneoplastic aetiology. For example, a history of smoking and weight loss is typically indicative of an associated lung cancer. Nevertheless, in other cases there is frequently nothing in either the history or examination to alert the investigating physician to the presence of an underlying malignancy, notably even disseminated ovarian malignancy in patients presenting with a subacute cerebellar syndrome can frequently be asymtomatic at the time of presentation with neurological dysfunction. Furthermore, conventional imaging modalities often provide equivocal results and therefore, a definitive diagnosis often rests upon the detection of “paraneoplastic anti-neuronal antibodies” within the serum of affected individuals.

Routine laboratory testing for paraneoplastic anti-neuronal antibodies initially involves testing of patient serum using indirect immunofluorescence (or immunohistochemistry) (figure 1a). Since paraneoplastic antibodies react with antigens that in most cases are specifically expressed in neurological tissues (the Ma1 antigen is additionally expressed in the testis) an appropriate neurological tissue (eg monkey cerebellum) is probed using patient serum and anti-neuronal antibody reactivity is detected using a labeled secondary human-antibody that allows visualisation of specific antibody binding. The tissue distribution of target antigen determines the pattern of antibody binding observed on indirect immunofluorescence. For example, APC-1 is an acronym for anti-Parkinson cell cytoplasmatic antibody (figure 1b) and ANA-1 is an anti-neuronal nuclear antibody (figure 1c). However, the gold standard for the confirmation of paraneoplastic antibody specificity detected using indirect immunofluorescence is western blot of the patient serum against defined recombinant neuronal antigen. The majority of paraneoplastic antigens observed by immunofluorescence methods have been identified by using serum from patients with PNS to screen cerebellar CDNA libraries: the nomenclature preferred by most investigators for paraneoplastic antibodies is a specific marker for an underlying malignancy the Hu antigen, a marker of subacute sensory neuropathy and encephalomyelitis, is expressed by all small cell lung cancers (SCLC) and approximately 15% of SCLC patients will harbour low titre (<1:500) anti-Hu antibodies in the absence of neurological dysfunction. Interestingly this subgroup of patients is more likely to have limited disease stage, complete response to therapy and longer survival.

In patients that are seropositive for paraneoplastic antineuronal antibodies and in seronegative patients in whom a paraneoplastic neurological syndrome is suspected, a number of studies have now been able to demonstrate the usefulness of (‘+) fluoro-2-deoxyglucose positron emission tomography (FDG-PET) when conventional imaging techniques are negative or provide equivocal results. In a study of 43 patients suspected of having a PNS in whom no tumour was identifiable by conventional imaging or bronchoscopy, a hypermetabolic focus suggestive of malignancy was identified in 16 cases. Although a false-positive scan was obtained in a patient with Guillian-Barré syndrome and negative studies were observed in two patients with anti-Hu antibodies12 thereby alluding to some limitations of this investigation modality. FDG-PET is generally proving to be a valuable tool in the tumour diagnosis of patients suspected to have a PNS. Recent advances that acquire and fuse FDG-PET and CT data sets will further assist in precisely defining the anatomical site of malignancy.

Treatment of patients with paraneoplastic neurological syndromes

In the two-thirds of patients that present with a neurological syndrome prior to diagnosis of malignancy it is clearly imperative 

Antigen 1b

- antibody binds to a Purkinje cell cyttoplasmatic antigen – confirmed as anti-β2 antibody by western blot against recombinant antigen. ANA-1 – antibody binds to an antigen that predominantly localised in the neuronal nucleus, is absent from the nucleolus. Some cytotoxic staining is also observed. Antibody confirmed as anti-Hu by western blot against recombinant antigen. (Figures 1a, 1b and 1c reproduced from Advances Atlas of Autoantibody Patterns with permission, courtesy of Professor Richard Marshall) Department of Immunology, University of Birmingham

to establish tumour diagnosis, and in those patients in whom a diagnosis of cancer is already established the onset of the neurological syndrome may coincide with disease recurrence. Therefore the onset of a PNS should prompt rapid investigation and institution of appropriate anti-tumour therapy as soon as possible. In addition to treatment of the underlying malignancy in some cases successful tumour treatment is associated with beneficial effects on the neurological syndrome. This is illustrated by a study in which 51 patients with small cell lung cancer (SCLC), subacute sensory neuropathy/encephalomyelitis and anti-Hu antibodies received conventional SCLC treatment with 26 receiving additional immunotherapy to treat their neurological syndrome. Stabilisation of neurological symptoms was witnessed in 70% and complete resolution and partial response of neurological dysfunction in patients with PNS for several reasons. Firstly, PNS are typically subacute syndromes and most neurological deficits once established are irreversible. Since successful treatment of the underlying malignancy can arrest neurological deterioration it is important that the diagnosis is made early and instigation of appropriate anti-tumour therapy as soon as possible is warranted. Nevertheless, a higher probability of survival of PNS cases at 30 months in this study indicates that there is a subgroup of subacute sensory neuropathy/encephalomyelitis patients with improved overall prognosis. In patients with paraneoplastic cerebellar degeneration (PCD) and anti-Yo antibodies an underlying gynaecological malignancy carries a poor prognosis. The study of Rojas et al., included 18 patients with PCD and anti-Yo antibodies and in 15 metastatic disease was evident at presentation and tumour progression was the cause of death in just over half of the cases, interestingly, patients with breast cancer had a significantly better prognosis than those with gynaecological malignancy and in my own series of eight anti-Yo associated PCD cases a similar improved prognosis was observed in patients with breast cancer. Furthermore, in support of the tumour immunity hypothesis metastatic breast cancer may occur in PCD patients in the absence of a detectable primary lesion even with five years of follow up.

Conclusion

Despite being rare neurological complications of cancer almost all neurologists and oncologists will encounter patients with PNS. PNS are typically subacute syndromes and most neurological deficits once established are irreversible. Since successful treatment of the underlying malignancy can arrest neurological deterioration it is important that the diagnosis of PNS is rapidly established and anti-tumour treatment initiated immediately. The more widespread availability of FDG-PET coupled to paraneoplastic antibody testing can significantly improve the speed of diagnosis, and considered application of test results can potentially have profound effects on patient morbidity, eg Roseneild et al reporting that a partial improvement in neurological function was observed in two patients with progressive neurological deterioration who underwent orchidectomy because of positive testing for Ma2 antibodies and “minimal abnormalities on testicular ultrasound”.

References


Table 1: Some paraneoplastic anti-neuronal antibodies and their clinical associations

<table>
<thead>
<tr>
<th>Antibody</th>
<th>Also termed</th>
<th>Antigen</th>
<th>Neurological syndrome</th>
<th>Associated tumours</th>
</tr>
</thead>
</table>
| Anti-Hu  | ANNA-1 Type II | HuD | Paraneoplastic encephalomyelitis/subacute sensory neuropathy | Small cell lung cancer (80%)
| Anti-Yo  | ACPCA-1 | cdf 62, 34 Purkinje cytoplasmic | Cerebellar degeneration | Ovary-gynaecological Breast |
| Anti-Ri  | ANNA-2 | Nav1,2 Neuronal nuclear | Brainstem-cerebellar (Dopaminous - 50%) | Breast (50%) |
| Anti-Ma  | ANNA-2 | Nav1,2 Neuronal nuclear | Brainstem-cerebellar | Various |
| Anti-Ma2 | Anti-Ta | M2 Neuronal nuclear | Brainstem-cerebellar/limbic | Testis |
| Anti-Tr  | Purkinje cytoplasmic | Cerebellar | Hodgkins |
| Anti-GluR | Glutamate receptor | Cerebellar | Hodgkins |
| Anti-retinal | Recoverin Photoreceptors | Retinopathy | Small cell lung cancer |

The results of the largest trial of immunotherapy in PNS to date recently have been published. This well-designed prospective trial included 20 patients with PNS after exclusion of those patients that were neurologically stable, those with chronic indolent disease and those with long-standing neurological deficits considered to be irreversible. It was planned that all 20 patients receive a total of five plasma exchanges. The first treatment arm comprised of 10 patients without evidence of active malignancy who were seronegative for paraneoplastic antibodies or had a cancer that did not require chemotherapy. This group was administered cyclophosphamide, however, in six out of 10 patients the six-month course could not be completed mainly due to profound leucopaenia. The second group of 10 patients received plasma exchange and standard chemotherapy. In total of the 20 patients improved or stabilised with no significant differences between the two groups. The remaining patients’ neurological status worsened and four died prior to the six-month study endpoint. On the basis of this study it is difficult to evaluate the role of plasma exchange and it should be noted that four of the 20 patients failed to complete the planned five exchanges. My own practice is to administer plasma exchange to cases of PNS that affected patients have an improved neurological syndrome. Stabilisation of neurological symptoms was witnessed in 70% and complete resolution and partial response of neurological dysfunction in all six cases with testicular cancer and anti-Ma antibodies, with one study reporting complete remission and partial response of neurological symptoms in seven patients with anti-Ma antibodies. Notably the improvement observed in all six cases with testicular cancer correlated with a complete response to tumour therapy. It remains to be established whether immunotherapy has any significant role to play in the treatment of neurological dysfunction in patients with PNS for several reasons. Firstly, PNS have been reported to improve spontaneously, although this is an infrequent observation. Secondly, PNS are rare disorders making it difficult to organise placebo-controlled, randomised, double-blinded trials. Finally, PNS are a heterogeneous group of disorders and may not all respond in the same way to a particular immunotherapy regimen. Nevertheless, there is a general consensus that immunomodulatory therapies are ineffective despite numerous case reports of neurological improvement following corticosteroids, ivlg, plasma exchange and cyclophosphamide. While one study has noted that administration of tacrolimus markedly reduced the number of activated T cells within the CSF and peripheral blood of three patients with paraneoplastic cerebellar degeneration, no significant arrest in progression of neurological disability was observed.

The results of the largest trial of immunotherapy in PNS to date
Support for research 2004

The state and territory cancer organisations, which comprise The Cancer Council Australia, are the major sponsors of cancer research and related activities in Australia. Grants are made following a competitive, peer-reviewed assessment from funds derived from donations and bequests.

In 2004 the value of these grants is $23.5 million.

In addition, the grants for breast cancer research made by the National Breast Cancer Foundation are listed. The Foundation has been established by the Federal Government, with an independent Board of Trustees to encourage research in all aspects of breast cancer.

**THE CANCER COUNCIL AUSTRALIA**

Research grants

- D Roos
  Department of Radiation Oncology Royal Adelaide Hospital
  A phase III international randomised trial of single versus multiple fractons for re-irradiation of painful bone metastases
  $40,000

- T Corica, D Joseph
  Department of Radiation Oncology Sir Charles Gairdner Hospital
  Targeted intraoperative radiotherapy for early breast cancer
  $20,000

**TOTAL RESEARCH FUNDED**

$600,000

**THE CANCER COUNCIL ACT**

Research grants

- R Stuart-Harris, D Byrne
  ANU Medical School and The Canberra Hospital
  Coping styles and severity of toxicity from adjuvant chemotherapy for early breast cancer
  $29,000

- D Yip, P Cuff, R Stuart-Harris, D Leong, A Davis
  The Canberra Hospital
  A clinical trials cancer research program in the ACT
  $32,000

- Medical Oncology Unit
  The Canberra Hospital
  Scalp cooling equipment for the prevention of alopecia
  $11,250

- A Gardner, M Eggert
  The Canberra Hospital and University of Canberra Research Centre for Nursing Practice
  A post-intervention consumer satisfaction survey in the haematology/oncology unit
  $3,304

- Cancer Trials NSW
  $10,000

**TOTAL RESEARCH FUNDED**

$85,554

**THE CANCER COUNCIL NEW SOUTH WALES**

Research grants

- M Stockler
  University of Sydney
  The ZEST trial: A double-blind, placebo-controlled trial of Zoledrines Effects on Symptoms and survival Time in advanced cancer
  $65,425

- V Ahern
  Westmead Hospital
  A phase III study of regional radiation therapy in early breast cancer
  $38,362

- H Gunney
  Westmead Hospital
  The timing of androgen deprivation in relapsed or non-curable prostate cancer patients
  $10,650

- R Beddall
  Children’s Medical Research Institute
  Functions of ALT-Associated PMB Bodies
  $157,750

- C Lean
  University of Sydney
  Improved management of thyroid disease by the correct pathological diagnosis obtained non-invasively by magnetic resonance at 3 tesla
  $150,000

- G Halliday
  University of Sydney
  The role of UVA in human skin carcinogenesis
  $99,250

- B Meiser
  University of New South Wales
  A randomised trial of a decision aid for genetic testing for hereditary cancer
  $48,325

- H Mitchell
  University of New South Wales
  The role of helicobacter pylori infection and host cytokine polymorphisms in the aetiology of gastric cancer
  $110,366

**Total research grants**

$680,128

**Continuing research grants**

- P Hogg
  University of New South Wales
  Tumour angiogenesis
  $216,000

- G Marshall
  University of New South Wales
  Defining the cause and improving the treatment of childhood neuroblastoma
  $335,000

- R Sutherland
  The Garvan Institute of Medical Research
  Steroid and growth factor signalling in the pathophysiology of breast and prostate cancer
  $400,000

- J Stevens
  Southern Cross University
  Sentinel node vs axillary clearance trial
  $14,000

- S Tangye
  Centenary Institute of Cancer Medicine and Cell Biology
  Lymphocyte activation and anti-tumour immunity mediated via SAP-associating surface receptors in health and disease
  $70,000

- R Lock
  University of New South Wales
  Molecular mechanisms of drug resistance in childhood acute lymphoblastic leukaemia
  $71,649

- Q Dong
  University of Sydney
  The role of FHL1 and SPINK1 in androgen-independent prostate cancer
  $60,000

- R Mason
  University of Sydney
  Role of 1,25-dihydroxyvitamin D3 in photoprotection
  $76,000

- C Mountford
  University of Sydney
  MRE/MRS applied to breast cancer detection, diagnosis and prognosis
  $70,000

- M Tattersall
  University of Sydney
  When the treatment goal is not cure: A randomised trial of decision aids in patients with incurable metastatic cancer
  $86,200

- R Henderson
  University of New South Wales
  Regulation of beta-catenin nuclear trafficking in cancer
  $80,000

- A Grulich
  University of New South Wales
  Cancer in dialysis patients and kidney transplant recipients: Incidence, risk factors and survival
  $72,400

- P Harvey
  Newcastle Mater Misericordiae Hospital
  Sensitisation of human melanoma to killing by the immune system
  $139,620

- R Ward
  University of New South Wales
  The significance of CpG island methylation in the pathogenesis of hyperplastic polyps and colorectal cancer
  $135,000

- A Defazio
  Peter MacCallum Cancer Institute
  Molecular epidemiology of ovarian cancer study – WA, Tasmania and a national clinical follow-up core
  $69,500

- J Kirk
  Peter MacCallum Cancer Institute
  kConFaB: A consortium for research on familial breast cancer
  $57,000

**Total continuing research grants**

$2,026,369

**Career development research fellowship**

- G O’Neill
  Children’s Hospital Westmead
  Cas proteins and breast cancer cell response to chemotherapy
  $150,000

- To be announced
  $50,000

**Total research fellowships**

$200,000

**Other research programs**

- Cancer Trials NSW
  $1,205,000

- Cancer Epidemiology Research Unit
  $581,600

- Cancer for Health Research & Psycho-Oncology
  $595,000

- Hereditary Bowel Cancer Register
  $218,500

- Quality Cancer Research Project
  $310,000

- Strategic Research Projects
  $83,393

**Total other research programs**

$3,333,493

**TOTAL RESEARCH FUNDED**

$6,239,990
The Cancer Council South Australia

Research grants

A randomized clinical trial of surgery versus surgery plus adjuvant radiotherapy for regional control in patients with completely resected macroscopic nodal melanoma

$6,002

Molecular epidemiology of ovarian cancer: Australian ovarian cancer study – Western Australia, Tasmania and a national clinical follow-up care

$36,000

Identification of mechanisms to regulate VEGF expression in cancer cells

$60,984

The timing of endogenous depilation in resected or non-curable prostate cancer patients

$10,650

Development of a structure activity relationship for the chemopreventive actions of non-steroidal anti-inflammatory drugs

$67,503

A novel non-toxic approach to bone cancer therapy

$62,808

A comparison of screening tests for colorectal neoplasia in average risk asymptomatic subjects

$20,949

Characterisation of a novel angiogenesis gene endomorphin

$59,980

Sentinel lymph node biopsy versus axillary clearance in operable breast cancer

$23,208

Role of the 14-3-3 family of proteins in human GM-CSF and IL-3 receptor signalling in leukemic cells

$54,505

Vascular cell quiescence-promoting protoplatinovial pivotal for prostate cancer metastasis

$73,967

Do dietary interventions protect in a p53 deficient model of colorectal tumorigenesis?

$59,821

Mechanism of caspase-2 activation and its regulation during apoptosis

$69,500

The functions of different presenilin isoforms in cancer

$71,496

The role of bone morphogenic proteins in the ex vivo expansion of cord blood derived haematopoetic stem cells

$61,080

KconFab: A consortium for research on familial breast cancer

$57,000

Analysis of the biology of mutant forms of BCR/ABL resistant to the tyrosine kinase inhibitor imatinib (Gleevec)

$62,189

Mitochondrial mutations in cloned haematological disorders

$71,639

Adjuvant interferon and/or celecoxib for hepatoma

$14,900

Chromosomal fragile sites: The role of cis-acting elements and trans-acting factors in DNA instability in cancer

$65,041

A new technique to simplify gene expression studies in breast cancer

$65,783

Skin cancer and non-Hodgkin’s lymphoma: What is the risk of developing both primary cancers in Tasmania?

$10,000

A pilot study to study risk factors for development of second and subsequent non-melanoma skin cancers

$18,000

Molecular epidemiology of ovarian cancer: Australian ovarian cancer study – Western Australia, Tasmania, and a national clinical follow up

$30,000

A multi-centre randomised double blind controlled trial of oxygen vs. air for the palliative treatment of in terminal ill patients with intractable dyspnea and PaCO2 greater than 55mmHg

$15,000

KconFab: The Kathleen Cuningham Consortium for Research into familial breast cancer

$10,000

The ZEST trial of a double-blind placebo-controlled trial of Zoloft’s effects on symptoms and survival time in advanced cancer

$24,400

Role of the hypoosmolar inducible factor in tumour growth

$61,000

Novel activation of cAMP-dependent kinase regulates 14-3-3 dimerisation and cell survival functions

$69,500

The ZEST trial of a double-blind placebo-controlled trial of Zoloft’s effects on symptoms and survival time in advanced cancer

$24,400

Total research grants

$1,253,084

Senior fellowships

C Ricciardelli, University of Adelaide

$72,000

Menzies Centre for Population and  developing both primary cancers in Tasmania?

$18,000

Total senior fellowships

$144,000

Fellowships

A Evdokiou, Hanson Centre

$62,000

G Buchanan, University of Adelaide

$62,000

R Gibson, Royal Adelaide Hospital

$62,000

Total fellowships

$186,000

W Bruce Hall Cancer Research Fellowship

C Smith, University of Adelaide

$72,000

Peter Nelson Leukaemia Research Fellowship

$77,000

Other research grants

Centre for Cancer Control Research

$459,647

Chair in Cancer Care – I Olver

$100,000

Travel grants

$30,000

Distinguished visitors

$15,000

Student vacation scholarships

$17,500

The Freemasons Cancer Research Scholarship (1)

$25,000

Data Managers Program

$80,000

Prostate Data Managers Program

$25,000

Radiation therapy scholarships (2)

$4,000

Total other research grants

$753,647

TOTAL RESEARCH FUNDED

$2,485,731

The Cancer Council Tasmania

Research grants

Skincare and non-Hodgkin’s lymphoma: What is the risk of developing both primary cancers in Tasmania?

$10,000

Molecular epidemiology of ovarian cancer: Australian ovarian cancer study – Western Australia, Tasmania, and a national clinical follow up

$30,000

A pilot study to study risk factors for development of second and subsequent non-melanoma skin cancers

$18,000

Molecular epidemiology of ovarian cancer: Australian ovarian cancer study – Western Australia, Tasmania, and a national clinical follow up

$30,000

Gene activation and intervention strategies

$10,000

Immunosuppression by carcinogen induced immature dendritic cells:

$10,000

Randomised double blind trial of Amifostine vs placebo for radiation/induced xerostomia in head and neck cancer

$10,000

$18,000

$15,000
D Byram
Launceston General Hospital
Randomised study of radiation therapy or Chemoriff to palliate symptoms of advanced oesophageal cancer
$1,180

R Lord
University of Tasmania
Further analysis of breast cancer using Proteomics
$25,000

Total research grants
$149,180

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**Funded by David Collins Leukaemia Foundation** (amount not included in total research funded)

A Holloway
University of Tasmania
Regulation of gene expression by the AML 1 transcription factor in myeloid cells
$28,380

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**Jeanne Foster scholarships**

A Tukovic
Royal Hobart Hospital
To do a post graduate diploma in oncology nursing through La Trobe University
$960

A Tukovic
Royal Hobart Hospital
To do a post graduate diploma in oncology nursing through La Trobe University
$990

T Hub, S Prayce
Launceston General Hospital
To attend and present a paper at the New Zealand Institute of Medical Radiation Therapy conference
$1,500

J Dalgleish
To attend the 12th “Reach to Recovery” International Conference for Breast Cancer Support Services in Lisbon, Portugal, 2004
$1,500

A Norville
To attend the annual conference of the professional body of radiation therapists in Cairns, 2004
$500

D Walsh
To enrol in a 12 month course, the role of sternal therapy nurse, through the NSW College of Nursing
$1,000

J Hall
To attend the National Breast Care Nurses Conference in Brisbane, 2004
$250

I Cleary
Currently enrolled in the University of Sydney’s School of Medical Radiation Services – to fund Current Issues in Medical Radiations
$500

Total Jeanne Foster scholarships
$7,050

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**Other research grants**

I Roper
Royal Hobart Hospital
Athens Forsaidakis Leukaemia Scholarship for professional development in cancer control
$5,000

C Kirpe
Holman Clinic, Royal Hobart Hospital
Athens Forsaidakis Leukaemia Award
$2,000

I Brough, S Wilson
The Advocate Athol Meyer Award – for excellence in media coverage of an issue cancer control
$1,000

Launceston General Hospital and Royal Hobart Hospital
Clinical trial data managers
$39,000

J Ruffet
Clifford Craig Medical Research Trust
Tasmanian Familial Bowel Cancer Registry
$16,680

To be announced
PhD Scholarship in cancer and chronic disease prevention and management in rural areas
$24,000

To be announced
Tasmanian Accord Workshop for new researcher
$2,500

F Bloomfield
Royal Hobart Hospital
Gynaecological cancer outcome data collection
$5,000

Total other research grants
$95,180

TOTAL RESEARCH FUNDED
$251,410

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**THE CANCER COUNCIL VICTORIA**

**Research grants**

U Ackermann, H Tochin-Dangay, G O’Keefe
[A] (C) AG1478 - A potential PET tracer for the molecular imaging of the EGFR receptor in glioblastoma multiforme
$65,000

A Austin
Austin Health
[1] Ctr 952 - CCR 2061 - CCR 2062 - CCR 2212 - CCR 2213 - ICR 1827 - ICR 1828  - A potential PET tracer for the molecular imaging of the EGFR receptor in glioblastoma multiforme
$65,000

R Anderson
Peter MacCallum Cancer Centre
Cavedon-in-1 regulation of breast cancer growth and metastasis
$65,000

D Bowtell, A de Fazio, D Wyld, D Whitman, D Gentz, M Fredlaender, P Hamett, M Davy, P Bloomfield, N Zepp
Peter MacCallum Cancer Centre
Molecular epidemiology of ovarian cancer: Australian ovarian cancer study - Western Australia, Tasmania and a national clinical follow-up core
$60,000

J Campbell
Peter MacCallum Cancer Centre
Caveolin-1 regulation of breast cancer growth and metastasis
$65,000

J Campbell, K Mitchell, A Dobrovic, G Rice, M Quinn, N Ahmed
Peter MacCallum Cancer Centre
Molecular functional analysis of the chromosome 7q31 tumour suppressor gene ST7
$57,000

J Campbell, K Mitchell, A Dobrovic, G Rice, M Quinn, N Ahmed, N Ahmed
Peter MacCallum Cancer Centre
Biomolecular fingerprints as early diagnostic indicators of ovarian cancer
$70,000

H Cheng
University of Melbourne
Regulation of the tumour suppressor PTEN by phosphorylation and oligomerization
$4,000

P Choong, H Zhou
St Vincent’s Hospital
Urokinase plasminogen activator and oestrogen systems regulate growth and progression in osteosarcoma
$70,000

B Chua, D Joseph, J Harvey, V Ahem, Peter MacCallum Cancer Centre
A phase III trial of regional radiation therapy in early breast cancer
$70,000

P Darcy, M Kendraw, J Trapani
Peter MacCallum Cancer Centre
Preclinical development of gene-engineered T cells for immunotherapy of cancer
$70,000

G Duchesse, N Spyri, A Stapleton, H Gurney, E Beller
Peter MacCallum Cancer Centre
The timing of androgen deprivation in relapsed or non-curable prostate cancer patients
$51,610

M Ernst, P Waring
Ludwig Institute for Cancer Research
The tumour suppressive effect of overexpression of DNA methyltransferases on the intestinal epithelium
$60,000

J Heinricher
St Vincent’s Institute of Medical Research
A novel human DNA damage response protein that interacts with the CHK2 and PML tumour suppressors
$60,000

P Hambly, S Russell, H Richardson
Peter MacCallum Cancer Centre
The role of mammalian sirtuin in proliferation and tumour growth
$70,000

R Johnstone
Peter MacCallum Cancer Centre
Mechanism of action of histone deacetylase inhibitors: novel anti-cancer drugs
$60,000

M Lackmann, P Gibb
Monash University
The role of EphA/ephrin A interactions in osteolytic bone disease: effects of Eph receptor expression on cell adhesion, mobility and viability during various stages of osteolytic progression
$69,000

J Levesque, L Purton
Peter MacCallum Cancer Centre
Use of retinoids and inhibitors of endothelial cell adhesion molecules to enhance mobilisation of haemopoietic stem cells by G-CSF
$69,750

G Lindemann, D Amor, J Goldblatt, M Gattas
Peter MacCallum Cancer Centre
KConFab: A national consortium for research into familial breast cancer
$55,000

C Mitchell
Monash University
Role of the PPP4C lipid phosphate in cell differentiation and polarity
$68,250

S Ngan, S McChesney, J Mackay, B Fisher
A randomised trial of preoperative radiotherapy for stage T3 adenocarcinoma of rectum
$20,000

N Huynh, E Wu
Walter & Eliza Hall Institute of Medical Research
The role of the proto-oncogene PTL1 in haemopoiesis
$60,000

M Plebanek, M McKenzie
Australian Research Institute
The role of a novel suppressive T cell subset, Tr1, in breast cancer immunity and progression
$68,000

H Puthalakath
Walker & Eliza Hall Institute of Medical Research
Post-translational regulation of the pro apoptotic protein BIM
$55,000

J Rossjohn
Monash University
A structural investigation into the role of the alpha-v beta-3 integrin in cancer
$69,000

M Sim, G Berke
Monash University
Pesticide exposure and cancer in fruit growers and orchardists
$40,000

D Thomas, M Trivett
Peter MacCallum Cancer Centre
Interactions between cell cycle and differentiation processes in normal and malignant osteoblasts
$66,000

T Trapani
Monash University
Protein phosphorylation and mitosis
$68,000

J Villalangos
Walker & Eliza Hall Institute of Medical Research
Mechanisms of cross-presentation in dendritic cells
$60,000

E Vincze, W Phillips
Peter MacCallum Cancer Centre
FZD7 signalling in colon cancer
$60,000

J Ewan
Victorian Breast Cancer Research Consortium
SCC gene in the mammary gland and other organs – potential tumour suppressor genes
$38,000

A Ward
Deakin University
Isolation and characterisation of leukemia mutants in zebrafish
$50,000

Total research grants
$1,706,650

**Post-doctoral research fellowships**

L Coutts, Walter & Eliza Hall Institute of Medical Research
$29,250

J Irving, Monash University
$29,250

N Crowe, University of Melbourne
$58,500

V Marsden, Walter & Eliza Hall Institute of Medical Research
$58,500

Total post-doctoral research fellowships
$175,500

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**Postgraduate research scholarships and vacation studentships**

J Becanovic, Monash University
$21,150

M Wall, Peter MacCallum Cancer Centre
$37,150

L Dow, Peter MacCallum Cancer Centre
$21,150

H Gain, Ludwig Institute for Cancer Research
$27,150

K Horan, Monash University
$21,150
E Lee, Walter & Eliza Hall Institute of Medical Research $22,150
Loughrey, Peter MacCallum Cancer Centre $27,150
T O’Neill, Deakin University $22,150
J Stone, University of Melbourne $11,000
L Williams, Peter MacCallum Cancer Centre $22,150
Vacation studentships $20,125
Total scholarships and studentships $244,475

Fellowships
Cardon fellowship
D Metcalf, Walter & Eliza Hall Institute of Medical Research $200,000
Durkan fellowship
A Roberts, Walter & Eliza Hall Institute of Medical Research $95,447
K & H Fraser fellowship
F Colman, Walter & Eliza Hall Institute of Medical Research $100,000
Lions fellowship (variable)
B Anderson, Walter & Eliza Hall Institute of Medical Research $50,000
Total fellowships $445,447

Other research grants
Tissue Bank Coordination Project $154,479
Medical and scientific activities $59,078
Total other research grants $213,557

Cancer Control Research Institute programs
Cancer Epidemiology Centre $761,000
Victorian Cancer Registry $1,314,000
Health 2000 $389,000
Centre for Behavioural Research in Cancer $1,046,000
Centre for Clinical Research in Cancer $1,214,000
VochHealth Centre for Tobacco Control (The Cancer Council Victoria contribution to VochHealth Centre) $375,000
Total Cancer Control Research Institute programs $5,099,000
TOTAL RESEARCH FUNDED $7,884,629

THE CANCER COUNCIL WESTERN AUSTRALIA
Research grants
K White Randomised controlled trial of nurse led education intervention on sexuality and body image for women with breast cancer $54,326
T Rutajcik Shared receptor associated immunoglobulins: influence of targeted knockdown and altered expression of oestrogen signalling in breast cancer $55,000
T Packer Managing fatigue and improving quality of life of men with prostate cancer $52,950
D Ison Genes that perturb the DH to DR transition and their signalling pathways; relevance to T cell leukemogenesis (two year grant) $66,000
B Illacopetta Use of population-based tissue microarrays to identify novel molecular markers of prognosis and response to chemotherapy in colorectal cancer $55,000
B Donovan Investigating the salience of the UV scale to West Australians $42,668
N Zeps, D Brottell Molecular epidemiology of ovarian cancer: Australian ovarian cancer study – Western Australia, Tasmania and a national clinical follow-up core (two year multi-state grant) $109,106
L Kristjanson Fatigue and functional capacity in women undergoing adjuvant breast radiotherapy $41,000
B Dix The role of cell cycle arrest in the regulation of p53 dependent cell death $30,000
L Abraham Transcription factor activity in anaplastic large cell lymphoma $55,000
Total research grants $551,050

Vacation research assistance awards
T Rivera Expression and mutation analysis of the c-myc oncogene in colorectal cancer $2,000
L A Costa MCP-1 and receptor in human mesothelial and malignant mesothelioma cells $2,000
S Williams Gestational breast cancer project: Analysis of unique molecular characteristics using high throughput tissue microarrays $2,000

Total vacation research assistance awards $10,000

John Nott travelling fund
E Klawer Canadian Cancer Registry visit to School of Population Health, UWA $5,000
J L Peix Attend programs that will be of broad interest to surgeons and physicians involved in endocrine surgery $4,987
Total John Nott travelling fund $9,987

Professoral chairs
Chair of Palliative Care Edith Cowan University $100,000
Chair of Behavioural Cancer Research Curtin University of Technology $125,000
Chair of Clinical Cancer Research University of Western Australia $250,000
Total professoral chairs $475,000

Other research grants
iConFab: A national consortium for research into familial breast cancer Genetic Services of WA, King Edward Memorial and Princess Margaret Hospitals $27,000
Children’s Cancer Research Fellowship TVW Institute Child Health Research $15,000
Bone tumour registry $27,000
Total other research grants $69,000
TOTAL RESEARCH FUNDED $1,115,037

QUEENSLAND CANCER FUND
Research grants
C Baldock, YDE Deene, B Healy, A Whitelaker, D Schlact Development of ultrasonic scanner for evaluation of radiotherapy polymer gel dosimetry phantom $72,030
D Bowtell, A deFazio, D Wyld, D Whiteman, D Gertig, M Freudlander, P Hammett, P Blomfield, M Davy, N Zeps, M Brown, University of Queensland Investigating the role of BRCA1 in mammary differentiation and morphogenesis $70,000
B Chua, D Stefip, J Harvey, V Ahern, J Clements, J Gas, D Nicol Characterisation of protstatin ballein gene expression during crosstalk between osteoblasts and prostate cancer cells: A model for prostate cancer bone metastasis $70,000
G Duchesne, N Spar, A Stapleton, H Guinery, E Beller The timing of androgen deprivation in relapsed or non-curable prostate cancer patients $109,610
E Kliewer, Canadian Cancer Registry visit to School of Population Health, UWA $5,000
I Frazer, University of Queensland Mechanisms of UV induction of the melanoma susceptibility gene product p16CDKN2A $72,030
F Gardiner, J Clements, T Walsh, J Bartley, J Gosman, A Pettitt Proteomic approaches to the early detection of prostate cancer $70,000
A Green, K Howwood, D Wyld, A Claoviano Comparison of quality of life and standard end points of chemotherapy in advanced ovarian cancer $72,030
K Halford, S Steigna, J Scott Development and evaluation of a self-directed, couple-based coping program “CanCope” for men with early stage prostate cancer and their partners $72,030
J Hancock, A Harding A biochemical analysis of MAP kinase pathway activation at the plasma membrane $70,000
P Harnett, P Blomfield, M Davy, N Zeps, M Brown, University of Queensland Investigating the role of BRCA1 in mammary differentiation and morphogenesis $70,000
D Hart, K Radford, M Kato, Discovery of breast cancer antigens recognised by cytotoxic T lymphocytes $70,000
N Hayward, G Kay, Mater Medical Research Institute for Multiple Myeloma $72,030
B Dix, D Stefip, J Harvey, V Ahern, A Children’s Cancer Research Fellowship TVW Institute Child Health Research $15,000
T Ratajczak, Steroid receptor associated immunophilins: influence of targeted sexuality and body image for women with breast cancer $55,000
G Hill The role of donor T cell derived IL-10 in the enhancement of leukaemia-free survival after allogeneic SCT $70,000
M Hari, A Harding, A, Queensland Institute of Medical Research A biochemical analysis of MAP kinase pathway activation at the plasma membrane $70,000
M Mater Medical Research Institute Purified Blood DC Vaccination with defined Tumour Associate Antigens for Multiple Myeloma $72,030
N Raymond, G Kay. Mouse models to understand the development of multiple endocrine neoplasia $72,030
G Hill, Queensland Institute of Medical Research The role of donor T cell derived IL-10 in the enhancement of leukaemia-free survival after allogeneic SCT $70,000

A Gardner Characteristics of potential inhibitors of jun-jun interactions $2,000
J Wang Wei Poh A role for PSK3 in metastasis of cutaneous malignant melanoma (COM) $2,000

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Total epidemiology and behavioural research programs $1,798,400

Cancer Epidemiology Unit  $508,600

Senior research fellow program M McGuckin, Mater Medical Research Institute and P Webb  $200,000

Total research grants  $2,843,159

M Kato  DEC-205 C-type lectin receptor-mediated antigen loading to dendritic cells to elicit antigen-specific cytotoxic T lymphocyte responses  $70,000

A Kelso  Functional plasticity of memory CD8 T cells in a model of tumour immunity  $72,030

R Khanna, J Tellam  Molecular characterisation of genetic variants of LMP1 oncogene from EBV-associated malignancies  $70,000

N Kerne, A Kelso  Interleukin 4-driven immune deviation of tumour-specific CTL responses and its implication for tumour clearance  $72,030

D Krause  The role of the touelled-like kinases in the 5-phase checkpoint response  $70,000

M Levin, N Guven  Role of ATX/SMG-1 protein in responding to DNA damage and maintaining genome stability  $70,000

G Lindermann, O Amor, J Goldblatt, M Gattas  ICOnFab: A national consortium for research into familial breast cancer  $70,000

K MacDonald, R Thomas, G Hill  Modulation of graft versus-host disease by the granulocyte-monocyte lineage  $72,030

G Marin, J Hopper, J Artikan, R Kefford, G Giles, B Armstrong  Australian Melanoma Family Study  $72,030

M McGuckin, A Lopez  Exploiting the discovery of the CA125 gene to improve diagnosis, define targets for immunotherapy and understand the biology of ovarian cancer  $72,030

D Moss, D Chin, J David, S Elliott, M Sheerin  A phase 1 trial on adoptive transfer of cytotoxic T cells specific for EBV latent membrane proteins (LMP1 and 2) delivered to patients with nasopharyngeal carcinoma  $70,000

J Neuzill  Queensland Institute of Medical Research  Cancer cell targeting using receptor-specific peptide adducts with vitamin E analogues  $70,000

J Neuzill, L Baexler, A Aziz  Vitamin E analogues as selective inducers of apoptosis in malignant cells: Mechanisms and potential application  $56,800

P Parsons, G Boyle  Understanding and controlling gene expression pathways relevant to skin cancer  $72,030

S Ralph, A Melick  Melanoma and resistance to interferon therapy  $70,000

J Simes, T Hugh, V Gilsbki, S Rordan, M Fink, J Cebon, J Olrophy, D Crawford, T Price  Adjutant interferon and/or Celecoxib for hepatoma  $27,300

R Sturm  University of Queensland  Role of Beta-1 integrin induced osteosructure expression in melanoma metastasis  $72,030

S Subbaraj  Queensland Institute of Medical Research  Sustained CD8+ T cell effectors for protection against cancer: Their regenration by novel Kunjin vaccines  $72,030

R Tindle  University of Queensland  Novel cancer vaccine delivery using recombinant Hepatitis B surface antigen VIP- and DNA vectors  $70,000

J Tonissen, F Clarke  Extracellular thrombospondin and breast cancer cell invasion  $72,030

J Tonks, G Walker  Investigating pocket protein function in development of cancer  $70,000

T Varghese, B Kelly, P Burnett, G Mitchell, J Turner, M Robertson  The impact of a structured intervention to improve doctors’ care of dying patients  $72,030

G Walker, J Tonks, S Pagey, N Hayward, G Kay  Discrimination of the key molecular events that underlie melanoma development  $72,000

E Ward, L Cahill  Dysphagia (impaired swallowing) following surgical removal of the larynx: Factors contributing to the swallowing disorder, and the efficacy of intensive physiotherapy based therapy to improve swallowing outcomes for this population  $43,350

D Young, A Spurdle  Analysis of a novel X-linked gene which interacts with BRCA1 and assessment of its role in breast cancer predisposition  $72,000

K-N Zhao  University of Queensland  Using yeast model to study the functional roles of three early genes in the life cycle of bovine papillomavirus type 1  $70,000

Total research grants  $2,843,159

Fellowships and scholarships

Senior research fellow program M McGuckin, Mater Medical Research Institute and P Webb  $200,000

Clinical research fellow To be announced  $36,050

John McCaffrey Research Scholarship in Cancer Control North Queensland M Nowak, James Cook University  $20,300

Total fellowships and scholarships  $256,955

Epidemiology and behavioural research programs

Cancer Epidemiology Unit  $508,600

Behavioral Research Unit  $526,500

Queensland Cancer Risk Study  $543,300

Prostate Cancer Supportive Care & Patient Outcomes Trial  $320,000

Total epidemiology and behavioural research programs  $1,798,400

Other research grants

QCF/Griffith University: Cancer Support Centre (psychosocial oncology)  $100,000

Familial Adenomatous Polyposis Register  $50,000

Australian Paediatric Cancer Registry  $70,000

Total other research grants  $220,000

PHD program 2004

2004 – 2006

John Earnshaw Scholar 2004 M Jones, Queensland Institute of Medical Research A Ramsay, Queensland University of Technology S Mattarollo, University of Queensland  $70,000

2003 – 2005

John Earnshaw Scholar 2003 L Packer, Queensland Institute of Medical Research K Jaworth, Queensland Institute of Medical Research E Hacker, Queensland Institute of Medical Research R Parkett, Mater Medical Research Institute  $70,000

2002 – 2004

John Earnshaw Scholar 2002 M Rinaldi, University of Queensland S Joseph, University of Queensland L Papp, Queensland Institute of Medical Research  $70,000

John Earnshaw Scholar 2001

R Sirling, Griffith University (took one year deferment 2003)  $70,000

Total PhD program 2004  $228,000

TOTAL RESEARCH FUNDING  $5,346,109

NATIONAL BREAST CANCER FOUNDATION

Research grants

NEW SOUTH WALES

David Jones Scholarship H Davey, University of Sydney  $27,500

Eiste Launder Scholarship J Webster, University of Sydney  $51,200

National Network of Women In Super Scholarship B Thewes, Prince of Wales Hospital  $51,200

Kathleen Cunningham Research Grant G Mann, Westmead Institute for Cancer Research  $106,750

QUEENSLAND

Kathleen Cunningham Research Grant G Cheneweth-Trench, Queensland Institute of Medical Research  $77,000

SOUTH AUSTRALIA

Kathleen Cunningham Research Grant M Botterm, Flinders University of South Australia  $55,000

Kathleen Cunningham Research Grant G Gib, Royal Adelaide Hospital  $99,454

VICTORIA

Breville Scholarship N Fleming, University of Melbourne  $27,500

Goodman Fielder Scholarship Y Artil, University of Melbourne  $27,500

Career Development Award M Kershaw, Peter MacCallum Cancer Institute  $50,000

Kathleen Cunningham Research Grant B Chua, Peter MacCallum Cancer Institute  $50,000

Kathleen Cunningham Research Grant M Gillespie, St Vincents Institute of Medical Research  $83,000

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Research to reality: Translating the evidence.
COSA 30th Annual Scientific Meeting

After a 10-year gap, the Clinical Oncological Society of Australia Annual Scientific Meeting returned to the West, and it was back to the Hyatt once more. In planning the meeting I was conscious to address what seemed to me the raison d’etre of COSA, namely to aim for more umbrella sessions to discuss the big issues for all of us in oncology. Inevitably this meant that there would be fewer opportunities for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of sessions for break out sessions, but the ‘one group-one session’ idea was already becoming redundant in light of a multidisciplinary approach to care, as well as the real danger of...
Further findings from the Canberra Cancer Quality of Life Study

Patients who were married and lived in the city were more likely to believe that cancer was curable, to believe in their ability to control their cancer, and to feel their health was better than the national average. However, these expectations were not reflected in their physical and emotional well-being. The study found that many patients with cancer did not receive adequate information about their illness, and that they were dissatisfied with the care they received. The study also found that patients who had a positive attitude to their cancer were more likely to receive appropriate treatment and to have better outcomes.

Results from the study will be used to improve cancer care in the future.
The results of the survey will be released in March this year.

CBRC

Presentation methods of the UV index

Research suggests that most Australians are aware of the ultraviolet index (UVI) but a majority fail to either recall or utilise it properly. It is currently funded by the Cancer Council Western Australia. CBRC has embarked upon research to suggest the best presentation methods for increasing understanding and awareness of the UVI. The research will involve conducting six focus groups with 16 to 44 year old males and females to discuss the merits and drawbacks of current presentation methods followed by intercept interviews with 600 participants where various UVI presentation methods will be tested, and data gathered on current levels of public awareness, recall, understanding, attitude and utilisation of the index within WA.

Physical activity and cancer prevention project

There is increasing evidence of the benefits of physical activity in preventing cancer. CBRC has been commissioned to investigate whether new ‘messages’ that promote physical activity for cancer prevention are more persuasive than ‘established’ messages about physical activity preventing cardiovascular disease.

CPRC

We are currently recruiting new staff to work on the NHMRC Capacity Building Grant and program grant projects. The program is focused on physical activity and population health and will include specific studies on understanding the implications of current physical activity recommendations for the prevention of cancer and other chronic diseases.

CRRC

Queensland Cancer Risk Study

Behavioural factors such as smoking, sun exposure, diet, alcohol consumption, physical activity and weight gain account for a large proportion of total cancer risk in the population. CBRC is currently engaged in a number of projects to investigate these and other factors that may be associated with cancer risk. Surveys on behavioural factors have tended to focus on single behaviours (eg sun exposure) or have been limited by small sample sizes. The Queensland Cancer Risk Study will focus on trends in general health information, with only a limited focus on cancer risk behaviours and screening activities.

The Queensland Cancer Risk Study is the first state-wide population-based study aimed at providing a ‘snapshot’ of:
- the distribution of risk factors for cancer in Queensland, including behavioural factors and other personal characteristics
- screening activity, and
- knowledge and attitudes towards cancer and cancer risk.

Anonymous computer-assisted telephone interviews will be conducted with approximately 10,000 residents of Queensland aged 16-75 years who will be randomly chosen from the electronic White Pages. Those people choosing to participate in further data collection will complete a self-administered questionnaire.

Information from the survey will assist in the interpretation of trends in cancer incidence and mortality in Queensland, and will help to refine and target current programs and to shape future cancer prevention policy and practice.

Prostate cancer supportive care and patient outcomes

In collaboration with the Royal Brisbane, Princess Alexandra and Townsville General Hospitals and Mackay Urology Department, the Centre for Research in Cancer Control plans this year to develop, and evaluate in a randomised controlled trial, a broad support care intervention for men with prostate cancer. The supportive care needs of men with prostate cancer are closely linked to health-care experiences. This study will also systematically describe the patterns of care for men with prostate cancer at major treatment centres in Queensland, and treatment outcomes during longitudinal follow-up. Approximately 800 men with prostate cancer will be recruited to the study over the next two years. Their quality of life, psychological adjustment and care patterns will be assessed at baseline and over time. Additionally, a telephone-based model of supportive care for men with prostate cancer will be developed and trialled for men who are being treated with curative intent.

Nexis

CHeRP

After six years with CHeRP, Dr Dilhani Bandaranayake will be leaving in February 2004 to take up a position with the Institute for Health Research. Dilhani commenced with CHeRP in 1998, moving from New Zealand to take up a scholarship for her PhD. Since completing her studies, she has been managing the communications skills training project. CHeRP would like to wish Dilhani well in her new position.

The Supportive Care Needs Survey: A guide to administration, scoring and analysis is now available. The CHeRP logo and wide was prepared with contributions from an international group of statisticians and behavioural scientists and is the product of more than a decade of research by CHeRP. Thirteen forms can be obtained by emailing CHeRP@newcastle.edu.au.

CHeRP's Annual Report for 2002-2003 is now available. Copies available by emailing CHeRP@newcastle.edu.au. An update of CHeRP's current projects and staff can be found at its website: www.newcastle.edu.au/centre/cherp.html.

CHeRP have been successful in attracting funds for a number of new projects:
- Mr Chris Paul, Dr John Wiggers, Dr Raoul Walsh, A/Prof Afaf Girgis and colleagues were recently awarded two years funding by the National Heart Foundation for research examining the effectiveness of pro-active telemarketing of a smoking cessation telephone counselling service.
- Fellow researchers, Dr Anthony Shakeshaft and Prof Rob sanction-Fisher, in conjunction with A/Prof Afaf Girgis, were recently awarded three-year funding by the National Health and Medical Research Council to examine the development and psychometric evaluation of two measures of perceived needs, one for young persons with cancer, one for parents.
- A/Prof Afaf Girgis received a consultancy from the Institute for Health Research to review the evidence for the benefit of interventions in primary care to delay the development of the National Service Improvement Frameworks.
- A/Prof Afaf Girgis, Dr Chris Paul and Claire Johnson were recently awarded one-year funding from the University of Newcastle Centre for Research to conduct a national survey of the perceptions and barriers of doctors to the appropriate and timely referral of cancer patients to palliative care.

CBRC

CBRC is delighted to announce that Helen Dixon has been awarded her PhD from the University of Melbourne. Her thesis entitled ‘Portrayal of tobacco use in popular films: an investigation of audience impact’ was jointly funded by an NHMRC Public Health Postgraduate Scholarship and The Cancer Council Victoria. Helen’s project supervisors were Prof Ron Bofland (VicHealth Centre for Tobacco Control) and Prof Susan Paxton (formerly Melbourne University, now LaTrobe University).

CBRC has welcomed Dr Muhammad Saliqah, Senior Scientist & VicHealth Research Fellow and Dr Georgina Sutherland, Behavioural Scientist. Mohammad’s main research focus is on understanding the cultural and socioeconomic determinants of health-related behaviour, while Georgina is currently working on a range of research and evaluation projects related to improving support and information for patients with cancer.

CBRC staff have been awarded a number of NHMRC grants. Dr Susan Donnellan has been awarded an NHMRC New Investigator Grant for three years to conduct a randomised trial assessing a shade development intervention in secondary schools for adolescent skin cancer prevention. Dr Trish T Livinston is Principal Investigator of the project ‘Referral of men newly diagnosed with prostate cancer to a telephone-based support program’, which has been awarded a three-year NHMRC project grant. Prof Rob Sanson-Fisher (Newcastle University) and CBRC’s Dr Victoria White have been awarded a four-year project grant for the project ‘Randomising students and colorectal patients: a randomised control trial’.


CCCR and TCRE

Web-based modules – cancer incidence

In collaboration with the DHS Epidemiology Branch, CCCR has developed a web-based module, showing cancer incidence trends in SA by diagnostic period, socio-economic status, country of birth, and place of residence. Comparisons were drawn between SA incidence rates, those for Australia and other regions of the world. The availability of the module will be advertised widely to science teachers, students at a senior secondary school and tertiary institutions, and including those enrolled in health sciences. Interested members of the public will have ready access. Graphical presentations are available for download for cancer sites, such that they may be downloaded for use in school projects and for related purposes.

Keynote address

A CCCR staff member also presented a keynote address at the CCCR National Cancer Conference in 2003, on the development of the first five-year cancer registry report for the Malaysian state of Penang. Preventive and screening opportunities were highlighted, especially relating to cancers of the female breast, cervix, lung, colon/rectum, and liver.

CCCR staff co-authored two papers submitted for publication in peer-reviewed journals. The first points to secular increases in recorded depth of cutaneous melanomas within thickness categories, however, this increase was not associated with, and is recognised for her work in Australia and the US on environmental approaches to chronic disease prevention and management. She is actively seeking new supervisors to head the Cancer Epidemiology Unit. In addition to Joanne and Liz, the staff of the Centre include Dr Peter Baade, Senior Research Fellow in Biostatistics, and Dr Monica Lands, a behavioural scientist who recently completed her PhD in psycho-oncology at the University of Vienna.

Management and support staff include a research administrator, a data manager, two telephone interviewers and a support staff. The Centre has begun an ambitious and comprehensive cancer control research program focusing on melanoma, other skin cancers, colorectal, ovarian and prostate cancer and is well-equipped for the prevention, supportive care, and treatment outcomes, including quality of life. The Centre for Cancer Control in Cancer Control will work in conjunction with the Cancer Council’s Health Promotion services section as part of an integrated approach to cancer control based on surveillance, research and evidence-based

CBRC recently launched its new website: http://curnet.edu.au/research/cbrc.htm. Due to popular demand we are currently in the process of reclaiming our last four years’ worth of technical reports available electronically. Any comments on the content would be welcomed and should be directed to Owen Carter or carter@cbrcc.affinity.edu.au.

Staff at CBRC made five presentations at the Fourth Western Australian Cancer Conference on 25 November 2003. Prof Rob Donellan delivered a plenary presentation entitled ‘Dreams for cancer prevention’, Geoffrey Jalabuir delivered a presentation entitled ‘WA secondary student sun behaviour’, Owen Carter delivered two presentations entitled ‘The reaction of Bunbury patrons to possible smoking restrictions in pubs’ and ‘Adapting a new SunSmart commercial for 18 to 24 year olds’, and Narelle Wellers delivered a presentation entitled ‘Consumers’ awareness, use and evaluative perceptions of new guidelines’.

CPRC

The Centre worked with the Brisbane City Council to run a second workshop dealing with how aspects of the built environment influence physical activity. The seminar involved talks by our international collaborators and local critics on the PLACE project. Around 150 people attended.

The Institute for Scientific Information (ISI) has identified a recent review paper on how environments influence physical activity. The seminar involved talks by our international collaborators and local critics on the PLACE project. Around 150 people attended.

Several thousand A4 size reports will be reprinted and distributed through the child and family health system in Queensland. The book is based on research carried out by Liane McNaught and deals specifically with sunscreen protection for young children and their parents.

CRRC

The Queensland Cancer Fund has formally established its Centre for Research in Cancer Control, incorporating a Cancer Epidemiology Unit and a Behavioural Research Unit. Associate Professor, Prof Joanne Aitken has been appointed Director of the Centre and Dr Liz Eakin as Head of the Behavioural Research Unit. Joanne is a cancer epidemiologist with a long-standing interest in large-scale, population-based studies of cancer aetiology, early detection and outcomes and was previously Director of Epidemiology at the Queensland Cancer Fund. Liz holds the PhD in clinical psychology and is recognised for her work in Australia and the US on environmental approaches to chronic disease prevention and management. She is actively seeking new supervisors to head the Cancer Epidemiology Unit. In addition to Joanne and Liz, the staff of the Centre include Dr Peter Baade, Senior Research Fellow in Biostatistics, and Dr Monica Lands, a behavioural scientist who recently completed her PhD in psycho-oncology at the University of Vienna.
I have recently conducted a personal prospective audit of 349 consecutive consultations (in 244 patients) presenting to two primary care skin clinics in Perth, WA.

Particular attention was paid to the detection of superficial basal cell carcinomas, given that it is often stated that they are commonly overlooked in primary practice.

All skin malignancy was confirmed by histopathology and each lesion was counted once only in the audit (ie where an initial incisional biopsy was followed by a definitive excision). Only new (non-recurrent) malignancies presenting in the audit period were tallied.

The mean age of patients presenting for a skin cancer check was 51.4 years, with the peak age groups being 46-55 years (28 male, 32 female), and 50-65 years (32 male, 30 female). There were 113 males (46.3%) and 131 females (53.7%) in total.

Seventy-eight skin malignancies were diagnosed in 42 (17.2%) patients. The majority (58/78, 74.4%) were basal cell carcinomas (BCC). Of the BCC sub-types, superficial BCC were the most prevalent (32/58, 55.2%), then nodular (20/58, 34.5%), pigmented (2/58, 3.4%), morphoeic (2/58, 3.4%), mixed superficial/nodular (1/58, 1.7%), and predominantly infiltrative (1.7%).

The mean age of patients with superficial BCC was 58.5; for nodular BCC it was 59.4 years. McCormack et al conducted a retrospective analysis of 3885 BCC histopathology specimens and found corresponding figures of 56.8 years and 63.9 years respectively, a statistically significant difference (P<.001).

Ten squamous cell carcinomas and six Bowenised lesions were found in 11 patients, with a mean age of 66.8 years.

Four melanomas (three superficial spreading, one nodular) were found in three patients, with a mean age of 62 years.

The distribution of nodular BCC was mainly on the head and neck areas (13/20, or 65% of all nodular BCC), contrasted to the predilection of superficial BCC for the trunk (21/32, or 65.6% of all superficial BCC) and limbs (9/32 or 28%). This compares with corresponding figures from McCormack: 65.2% of nodular BCC were on the head and neck, 50.5% of all superficial BCC were on the trunk, while 25.8% were on the limbs.

The differing distribution characteristics of superficial BCC and nodular BCC, as well as the younger age group affected with superficial BCC, lead McCormack et al to hypothesise differing aetologies for superficial BCC and nodular BCC. They suggested that superficial BCC may be related more to intermittent sun exposure or sunburns (as for melanoma), whereas nodular BCC may be more closely related to cumulative, chronic UV irradiation.

The finding of a higher prevalence of superficial BCC than nodular BCC in the present study contradicts the prevailing notion that nodular BCC is the most common subtype. McCormack et al found that only 14.8% of all BCCs tallied in their study were superficial BCC, with 63.8% being nodular BCC.

However, if superficial BCC are frequently overlooked in primary practice, or are treated by destructive means (e.g. cryotherapy, curettage and electrodesiccation) by dermatologists without generating a histopathology specimen, then they will be under-represented in histopathological data.

The significant skin pathology presenting to skin cancer clinics and the finding of a higher prevalence of the superficial BCC subtype is consistent with my personal findings over a longer two-year period.

The audit suggests that superficial BCCs are the most common type of skin cancer in the community. This implies that they are currently being under-diagnosed due to either lack of recognition (commonly being mistaken for a macule/patch of dermatitis, tinea, Bowens etc), or to the primary care physician not having the time required for performing periodic total cutaneous examinations on ‘at-risk’ patients.

J Giacomel
South Perth, WA

References
Jump in non-melanoma skin cancer

The number of Australians treated for the most common forms of skin cancer has increased by more than a third since 1995 and has doubled over the past two decades, recent Cancer Council figures have shown.

The first new non-melanoma skin cancer statistics released in seven years show that 174,000 Australians over the age of 14 were treated for at least one non-melanoma skin cancer in 2002. This compares with 270,000 in 1995 when the last non-melanoma skin cancer survey was done, and 164,000 in 1985 when the first survey was conducted.

The 2002 National Non-melanoma Skin Cancer Survey report was compiled by the National Cancer Control Initiative (NCCI) on behalf of the state and territory Cancer Councils, and launched during National Skin Cancer Action Week in November 2003.

The Chair of The Cancer Council Australia’s Skin Cancer Committee, Mr Craig Sinclair, said the campaign is in response to alarming findings about tanning preferences and perceptions, particularly among young Australians.

“We're seeing the increase where we'd expect to see it – it's the late effect of a post-war change in clothing and sun exposure habits, in a population group that wasn’t exposed to sun protection campaigns during their childhood,” he said.

The report is available online at www.ncci.org.au.

New anti-tanning campaign

The Cancer Councils have launched a new campaign in response to mounting evidence that many Australians think a tan looks attractive and healthy.

The first Australian television campaign highlighting the dangers of tanning, unveiled at the launch of National Skin Cancer Action Week in November 2003, shows the dangers of deliberate tanning.

The community service announcement shows a tattoo of a sun on a young woman’s midriff that becomes animated then travels across her skin, leaving behind a skin cancer which then transforms into a stitched surgical wound and then a large scar. A voiceover warns that tanning can lead to premature ageing, skin cancer and ugly scarring.

The Chair of The Cancer Council Australia’s Skin Cancer Committee, Mr Craig Sinclair, said the campaign is in response to alarming findings about tanning preferences and perceptions, particularly among young Australians.

“Recent research by the Cancer Councils indicates that around half of Australian women prefer a tan, 55% of New South Wales teenagers think people with a tan are more attractive, and a quarter of the Victorian population is trying to get a tan,” Mr Sinclair said.

Focus testing of the television campaign among Australians aged 14 to 35 showed that the audience found it powerful and thought-provoking. The majority said they would be more likely to protect themselves from the sun after seeing the ad. The campaign, which also includes radio community service announcements and posters, has been seen in most Australian states this summer.

The benefit from a book such as this is that it provides readers with the opportunity to update themselves (albeit superficially) in areas outside their major areas of interest and practice. It is difficult keeping up with the many cancer journals, and the 2003 Year Book of Oncology provides a degree of focus, as well as bringing to the attention of the reader papers from journals that one may not normally access (an example being a Danish register-based study on the association between depression and cancer risk, published in the American Journal of Epidemiology). However, this book is subject to several criticisms. The title 2003 Year Book of Oncology is a misnomer. The reviewed papers are from the 2001 and 2002 literature, so they are already outdated by 12 months. The advent of the internet means that books like this lose some of their impact, particularly when the clinician is accessing the literature pertinent to their main area of practice. The choice of papers included in the “2003 Year Book” is obviously very subjective, dependent on the editorial committee’s interests. The standard of expert commentary is generally very good, but in some situations merely represents a rewording of previous material.
of the abstract contents.

In spite of these criticisms, I enjoyed reading the 2003 Year Book of Oncology. I found several papers outside my general area that I would make for interesting presentations at my department's journal club. And I particularly enjoyed the insightful and clinically insightful thoughts provided by Professor Eli Gilatstein in his expert comments. Based on the cost, it is difficult to justify recommending this book be included in your department's library but it still makes a good read if you are able to obtain a copy.

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Advances in Cancer Research
(Vol 87)

GF Vande Woude and G Klein
Published by Academic Press (2003)
RRP: A$278.85

This volume presents six reviews articles in four areas of modern cancer research: cancer cyogenetics, telomerase, cancer viruses and cancer immunology. In general, the articles are up-to-date, thoughtful essays on important aspects of cancer biology and medicine. There are no straightforward answers for cancer clinicians or researchers, but each of these articles points important problems in the field and each gives a brief overview of the future challenges in their field.

Chromosome instability has been an intensely interesting and productive field of cancer research. David Gisselsson describes briefly the history of genetic instability, the importance of fragile sites and tumour specific chromosomal abnormalities. The interesting association between centrosomal abnormalities and carcinoma in situ is discussed in some detail. Telomerase has long been mooted as a major potential target for the development of cancer therapeutics. Although some potent small molecule inhibitors of telomerases have been identified, the anti-proliferative activity of these compounds in cellular systems/extracts is much lower than expected. With the current interest in telomerase as a vaccine and anti-cancer therapeutic, this review by Zhi Chen and David Corey is a timely summary of the challenges for the field.

The major article in this volume is directed towards the centrosomal abnormalities and carcinoma in situ is discussed in some detail. Telomerase has long been mooted as a major potential target for the development of cancer therapeutics. Although some potent small molecule inhibitors of telomerases have been identified, the anti-proliferative activity of these compounds in cellular systems/extracts is much lower than expected. With the current interest in telomerase as a vaccine and anti-cancer therapeutic, this review by Zhi Chen and David Corey is a timely summary of the challenges for the field.

The section explaining the technical aspect of gamma probes is easy to understand and a short section on radiation exposure and safety is particularly useful. At the end of each chapter, a set of clinical "pearls" in dot-point format provide valuable practical tips on performing sentinel node biopsy, particularly for surgeons. The section on pathology handling of sentinel node specimens highlights the current controversy regarding microtmetastases, sectioning techniques and intraoperative assessment. Much of the atlas is dedicated to sentinel node biopsy and lymphoscintigraphy.

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The final chapter relating to colorectal cancer is essentially a single institutional study suggesting that sentinel node biopsy is feasible and accurate for this condition. Overall, the book was quick, and easy, to read. Although the discussions regarding isotope use principally relate to Technetium 99 sulphur colloid (American publication), there is some discussion regarding the use of other colloidal agents used in Australia and New Zealand.

The price for a concise atlas such as this seems high, but I believe that it would serve as a useful reference book for any person with an interest in sentinel node biopsy.

J Kollias
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Royal Adelaide Hospital Cancer Centre, SA

Biologic Therapy of Leukemia

M Kalaycio (ed)
Published by Humana Press (2003)
RRP: A$115.00

This is the fifth monograph in the series Contemporary Hematology and is edited by Matt Kalaycio from the Cleveland Clinic. The book contains five sections, each with one to five chapters, dealing with immunotherapy, cytokines, targeted therapeutics, differentiation agents, and gene therapy. Of the 23 involved authors, 19 are from North America, which is also reflected in the content.

The preface explains that these "new" approaches developed for the treatment of leukemias...”can collectively be classified as truly biologic therapies because they take advantage of the knowledge of biology of leukemia." There is one of the major difficulties with this text. The specified subject matter is extremely broad and largely arbitrarily chosen, as it is arguable that there is far more understood about the "biology" of leukemia cell DNA synthesis, repair mechanisms, nucleotide biochemistry and cell kinetics as they relate to the rational selection of chemotherapy agents (not covered), than the "biology" of interferon responsiveness (one chapter), or the "graft-versus-leukemia" effect (one chapter).

Apart from the issue of content selection, there is also highly variable depth and quality of coverage of the selected topics. There is an interesting and succinct discussion of the use of leukemia-derived dendritic cells (David Claxton) but no coverage of peptide immunisation strategies generally, despite their recent clinical promise. The historical overview of the "graft-versus-leukemia" effect is well-written, but the chapter lacks a discussion of the current understanding of the cellular effector mechanisms or an overview of the diseases where a clinically meaningful effect may be exploited therapeutically.

The discussion of Myelotarg (Gemtuzumab Ozogamicin) is very useful, as much of the structural, biochemical and mechanistic data is not otherwise brought together elsewhere in the literature. Other useful chapters include the review of antistem strategies, and the clinical summary of ATRA development in APML. The chapters on interferons, interleukin-2, and multi-drug resistance were less valuable, with more complete and thorough reviews readily available in the recent published literature.

Another weakness of the text was the variability in the recency of literature cited, with just one chapter including (obviously at the proof stage) citations from the 2002 American Society of Hematology meeting, and most chapters not incorporating data from many major publications after 2001.

Overall, while there were a few worthwhile portions, the book was too uneven in its content and incomplete in its coverage to be highly recommended. Most clinicians treating patients with leukemias would be able find one or two chapters that provided them with a succinct and useful review of an area; they were not following closely in the current literature, but this would rarely justify individual purchase.

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The Breast: Comprehensive Management of Benign and Malignant Disorders
Vol 1 and 2

KI Bland and EM Copeland (eds)
Published by Saunders (2003)
Distributed in Australia by Elsevier
RRP: A$465.30

The Breast: Comprehensive Management of Benign and Malignant Disorders is an impressive two-volume textbook that makes one's palms sweaty with the thrill of the quality and complexity of the contained information. That it has just been published in its third edition demonstrates both the successful formula and esteem with which this book has been regarded since first being published in 1991. Bland and Copeland, with the assistance of the multidisciplinary team of associate editors, have again expertly edited this book into a well-balanced, meticulously referenced, but not overly repetitive, treatise. The authorship list represents a significant proportion of the leading names active in the research and management of breast disease in the US.

There has been substantial revision, updating and reflowing of the book to current issues in this latest edition. Many of the chapters a significant proportion of the references date from the year 2000 onwards. The general layout is the same as the last edition and includes historical perspectives, congenital and benign disease, proliferative and premalignant changes, molecular biology of breast cancer, imaging and biopsy techniques, treatment of early and advanced invasive disease, follow up care, psychological issues and medicolegal issues.

There is an excellent section on "special presentations of breast cancer".

Cancer Forum  Volume 28 Number 1  March 2004
As you would predict from the authorship, there remains an appropriate balance of expertise on the book and a clinical relevance of the material. The section on mastectomy by skin-sparing techniques and reconstruction has been expanded and there is now a section on macromastia and reduction mammoplasty. On the other hand, as the section on systemic therapy remains concise but still covers most of the major issues in hormonal, cytotoxic and biological therapy of recent times. There are now sections on breast ductocytosis and image-guided ablation of breast tumours.

The overall format is somewhat challenging. Despite its considerable size the book has a compact, small print design that is suited to its reference style rather than general readability. The Breast: Comprehensive Management of Benign and Malignant Disorders represents an extremely valuable reference of modern cancer oncology, it is a concise, contemporary, holistic cancer management. The book includes over 750 questions, organised into six main sections: cardiac manifestations and informatics, scientific foundations, cancer diagnosis, therapeutic modalities, multidisciplinary management, cancer management, pediatric oncology, and complications.

Question numbering is in accordance with the companion volume and around five questions are included for each of the 162 chapters of the main text. Only nine chapters do not have accompanying MCOs. The vast majority of questions are of the type with a single correct response and, thankfully, questions address key issues, rather than minutiae. Almost all answers include a useful paragraph of explanation/discussion. Unfortunately, however, the answers do not cite particular journal articles nor do they refer back to the relevant section of the main text. Also, the Review does not include the chapter listing for the main text, nor an index, making it a little difficult to locate questions addressing particular fields.

The book is well-illustrated, with over 50 diagrams, numerous colour photographs and over 100 tables. Summary charts of key clinical points, treatment options, and indications for referral are especially convenient to the general practitioner. It is also well-referenced for those wishing to pursue any articles quoted in the text.

Sections include managing patients with cancer, which discusses the psychological aspects of cancer in primary care, and principles of cancer care, including discussion on cancer prevention, genetic risk assessment, and cancer screening.

The largest section of the book details specific types of cancer including cancer of the lung, breast, gastrointestinal tract, prostate, bladder, ovary, leukemia, lymphoma, skin/ melanoma, head and neck, paediatric cancer and HIV-associated cancer. There is also information on interpreting data and research, information and support for cancer patients and a glossary of some of the more technical terms used in the text.

While the text is written primarily for the GP or primary health care team to help in the daily care of their cancer patients, specialists who work in medical management outside of their specialty also may find the book useful.

My main criticisms is that as this book offers an overview of such a vast field as oncology, those who have a particular interest in one area (eg skin cancer/melanoma) may find insufficient depth in the text. Also, being a British work, the cancer support networks, rates of disease and so on generally have a local UK (rather than Australian) basis.

These minor points aside, this is an impressive book that would serve as a valuable reference for GPs with an interest in contemporary, holistic cancer management.

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South Perth, WA

Cancer Medicine Review

DW Kufe et al (eds)
Published by BC Decker (2003) Distributed in Australia by Elsevier
RPP: $3104.50

This is an excellent collection of multiple-choice questions (MCQs), intended to act as a self-assessment companion to the recent (2003) textbook, Holland-Frei Cancer Medicine-6. The book includes over 750 questions, organised into six main sections: cardiac manifestations and informatics, scientific foundations, cancer diagnosis, therapeutic modalities, multidisciplinary management, cancer management, pediatric oncology, and complications.

Question numbering is in accordance with the companion volume and around five questions are included for each of the 162 chapters of the main text. Only nine chapters do not have accompanying MCOs. The vast majority of questions are of the type with a single correct response and, thankfully, questions address key issues, rather than minutiae.

Almost all answers include a useful paragraph of explanation/discussion. Unfortunately, however, the answers do not cite particular journal articles nor do they refer back to the relevant section of the main text. Also, the Review does not include the chapter listing for the main text, nor an index, making it a little difficult to locate questions addressing particular fields.

Nevertheless, the Review is an accurate, up-to-date resource for self-assessment, which is likely to be of considerable value to those in training and those wishing to maintain their knowledge. It will also be helpful for teaching and will aid in the development of examination questions. Importantly, the Review will be useful, regardless of whether or not the purchaser also has the accompanying textbook, Holland-Frei Cancer Medicine-6.

M Jefford
The Cancer Council Victoria
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The Cancer Sourcebook is one of almost 100 sourcebooks in a large health reference series that is designed to provide basic consumer information about health issues. Running to over 1000 pages, the current edition is divided into six parts.

Part one provides a comprehensive overview of facts and figures about cancer. Incidence and survival statistics are reported for the US population. Part two summarises known and putative causes of cancer and recommends a screening checklist for cancer protection measures. Individual chapters evaluate established causes of cancer well (eg tobacco) and provide a balanced assessment of controversial causes (eg mobile phones). Part three provides good quality summaries of the anatomy, risk factors, symptoms and principles of treatment of many individual cancer sites. More complex cancers are often afforded individual descriptions. For example, the chapter on thyroid cancer distinguishes benign and malignant nodules, and briefly summarises the different types of thyroid cancer. Part four describes treatments available for cancer and includes descriptions of standard medical treatments, developmental therapies (eg gene and vaccine therapies) and unproven treatments. Part five deals with day-to-day coping with cancer and treatments, and part six lists sources of information for further help and information.

A particular strength of the Cancer Sourcebook is its reference to websites and major cancer organisations. The book is also well-written for a lay audience. Sentences are clear, dot points are frequently used, jargon terms are avoided and yet the message is not over-simplified. Despite its size, however, the Cancer Sourcebook is not a complete description of all aspects of cancer and in some areas the book’s strong advocacy for better health lacks a firm basis in evidence. Some tips and screening checklists for protection against cancer are controversial. For example, men over 50 an annual PSA is recommended while for men between 15 and 35, monthly testicular self-examination is reported to increase the chances of finding testicular cancer. The Sourcebook also would be helpful by having a more standardised format of chapter structure for cancers arising at individual sites. One particular area of inconsistency is that of smoking and other harmful lifestyles for consumers, whilst patients ask their healthcare practitioners – a particular strength of this book that complements the list of websites and contact details for further information – yet other chapters lack this detail. The book is also written with a US audience in mind and uses idioms characteristic of American culture.

Finally, the Cancer Sourcebook has no chapters devoted to cancer of the breast or gynaecological cancers, and needs to be combined with the Breast Cancer Sourcebook, the Cancer Sourcebook for Women, Prostate Cancer Sourcebook (see review in this issue), Leukemia Sourcebook and Pediatric Cancer Sourcebook in order to provide a comprehensive compendium of reference. The Cancer Sourcebook is a useful place on the shelves of libraries that serve the public and healthcare organisations that deal directly with the public.

G Beattie
Wesley Medical Centre
Brisbane, QLD

Cancer Sourcebook (4th edition)
K Bellier (ed)
Published by Omnographics (2003)
RPP: US$578.00

The Cancer Sourcebook is one of almost 100 sourcebooks in a large health reference series that is designed to provide basic consumer information about health issues. Running to over 1000 pages, the current edition is divided into six parts.

Part one provides a comprehensive overview of facts and figures about cancer. Incidence and survival statistics are reported for the US population. Part two summarises known and putative causes of cancer and recommends a screening checklist for cancer protection measures. Individual chapters evaluate established causes of cancer well (eg tobacco) and provide a balanced assessment of controversial causes (eg mobile phones). Part three provides good quality summaries of the anatomy, risk factors, symptoms and principles of treatment of many individual cancer sites. More complex cancers are often afforded individual descriptions. For example, the chapter on thyroid cancer distinguishes benign and malignant nodules, and briefly summarises the different types of thyroid cancer. Part four describes treatments available for cancer and includes descriptions of standard medical treatments, developmental therapies (eg gene and vaccine therapies) and unproven treatments. Part five deals with day-to-day coping with cancer and treatments, and part six lists sources of information for further help and information.

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Clinically Relevant Resistance in Cancer Chemotherapy
B Anderson and D Murray (eds)
RPP: US$160.00

This is a reference book for the sub-specialist in oncology with a particular interest in the pharmacologic and molecular mechanisms that underpin drug resistance. The introduction of an increasingly large repertoire of chemotherapeutic agents has seen quite impressive remission rates in certain malignancies, but long-term failure in the more common cancer types. The editors point out that the phenomenon of 'drug resistance', often viewed as rapid occurrence of resistance at the single cell level, is in fact due to a multitude of individual factors. The aim of the book, which forms part of the Cancer treatment and research series, edited by ST Rosen, is to present an integrated review of these multiple mechanisms.

The book is divided into 17 chapters, separately authored, so that at times there is some predictable but acceptable overlap (particularly in chapters that address cyclophosphamide resistance). The authors are from the MD Anderson Cancer Center (Texas, USA), and the Cross Cancer Institute (Alberta, Canada), reflecting the host institutions of the two editors. In the main, most chapters are divided into sections that comprise a relatively brief introduction, a detailed overview of molecular mechanisms, followed by information on their clinical relevance.

The only first chapter, by Davis and Tannock, addresses extrinsic causes of resistance such as drug penetration and repopulation kinetics. Most of the remaining chapters focus on specific pathways or molecular mechanisms of resistance. These include nucleotide membrane transporters, MDR and MRP families, the glutathione pathway in alkylator resistance, the JNK and MAPK pathways, and repair of interstrand DNA crosslinks. There are a number of chapters detailing alkylator resistance, as well as cisplatin resistance. Two chapters are devoted to mechanisms of resistance in myeloid leukaemia.

The final chapter introduces the newer area of genomic studies and drug resistance, and provides a nice overview on information that can be obtained by gene expression profiling, and its use in assessing anticancer drug resistance and sensitivity. Due to rapid progress in the field, recent
The book is divided into three sections: physiology, pathology, and future directions are also covered. A comprehensive textbook that takes into account the cutting edge concepts and management issues arising in an ever-changing field of medicine. The new information presented is relevant, up-to-date and extensively referenced. In particular the sections on genetics (in association with both familial and sporadic ovarian carcinoma, screening and future directions are of particular interest. The largest section, part three, is meticulously but succinctly delivered. From the perspective of a medical oncologist however, I believe that the chemotherapy chapters are perhaps over-abbreviated, but considering the textbook’s overall aim it is well-referenced and to the point.

For readers of Cancer Forum with an interest in managing women with ovarian cancer, this textbook is a valuable addition to their reference library.

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DNA Topoisomerasers in Cancer Therapy: Present and Future
T Andoh (ed)
Published by Kluwer/Plenum (2003)
ISBN: 0-306-47744-0. 188 pages plus index.
RRP: US$112.00

This is a multi-author work describing recent developments in topoisomeraser I- and topoisomeraser II-targetted cancer drugs. The opening chapter is a delightful account by James Wang of his discovery of the first topoisomeraser in the bacterium E.coli in 1968. Professor Wang manages to remind us, in a manner evocative of James Watson’s description of the discovery of the DNA double helix, of the gentle, naive, and inquisitive ways of academic science in those days before it became the business it is today.

The rest of the book is divided approximately equally between discussions of topo I-drugs and topo II-drugs.

The main issues discussed concern the mechanisms of topoisomeraser poisoning and why this leads to cell death. Mechanisms of resistance to topoisomeraser poisoning, mechanisms of degradation of trapped topoisomeraser cleavable complexes, the use of yeast systems to investigate the mechanism of action of topoisomeraser poisons and descriptions of new agents as candidate cancer drugs.

From a clinical oncologist’s point of view, perhaps the two chapters dealing with the latter subject are the most immediately relevant. However, they form only a minor part of the book, and their focus is principally on the science rather than the medicine. These chapters make particularly clear that there are many more classes of topo II- than topo I-active agents in development. The reasons for the paucity of chemical structures active against topo I are not obvious and, given the clinical efficacy of topo I poisons, this work reminds us that drug developers should make more effort in this area.

The great strength of the book lies in its accounts of how the enzymes are poisoned by the drugs, the details of the biochemical responses to the trapped cleavable complexes that lead to cell death and the mechanisms by which cells protect themselves from the drugs and rid their DNA of the trapped cleavable complex. Advances in these areas are not always in concert for the two enzymes, but it is abundantly clear that general progress in unravelling the nature of what happens to the cleavable complex is trapped is proceeding apace. The biochemical details of how the trapped enzyme interferes with transcription and DNA replication, and how the proteosome is recruited to remove the block, are beginning to make riveting reading.

The two chapters on the use of yeast systems to help understand the mechanism of action of topoisomeraser poisons are particularly informative, and their inclusion here is well-reasoned, since it would undoubtedly benefit the field if more investigators were aware of, and adopted, these approaches.

So, in short, the book is a good read and very informative for the scientist interested in the molecular pharmacology of topoisomeraser-targetted cancer drugs. However, I suspect the science is a might intense for the practising clinician, although if they persevered, they would discover that much progress is being made towards answering the question “how does trapping the complex lead to tumour death”. This is an important question to resolve, since knowing the answer is bound to lead to better clinical outcomes, either by the development of new agents, or the better use of the ones we already have.

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Dorland’s Illustrated Medical Dictionary
30th edition
Published by Saunders (2003)
RRP: A$82.50

The 30th edition of Dorland’s Illustrated Medical Dictionary has maintained its established standard.

It has drawn contributions from clinical, laboratory and research fields and is as comprehensive as would be expected in a publication of this calibre.

The vocabulary is not limited to traditional terms, but embraces areas such as complementary medicine and alternative treatments.

The appendices are a useful compendium of established and new knowledge, presented in a readily accessible manner within anatomical areas providing ready access to equivalent names, origin, branches and distribution. An appendix on cancer staging is also a useful addition.

The referencing of individual items is clear and when a distinct anatomical description is made, for example canal, every location of canal is clearly explained and identified so that some time may be spent exploring beyond the originally sought structure. The reviewer found himself doing this on a number of occasions.

The publisher provides the purchaser with a CD-ROM that expands the role of the dictionary, and the website provides a number of benefits for the occasional user and the committed scholar. These add significant value to the standard dictionary approach.

The dictionary provides a valuable resource as a ready reference and frequently provides a level of insight into a subject that would be expected in a monograph rather than a dictionary.

Whenever professionals need to be sure they are using the correct word in its correct sense, Dorland’s is a reliable source and value for money.

T Reeve
Australian Cancer Network
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Exogenous Factors in Colonic Carcinogenesis
W Scheppach and M Scheurlen (eds)
RRP: US$188.00

It is well known that smoking, dietary fat, lack of fibre and lack of exercise increase our risk of cancer. However, even those of us who behave ourselves have to confront an ever-increasing and confusing tyranny of do’s and don’ts. Reports of the carcinogenic properties of heterocyclic amines in red meat have us nervous at barbecues, even if we have no idea what they are or how many or no glasses of red wine? Are we damned anyway by genetic susceptibility, over which we have no control?

While the genetic view of cancer that arose in the 1990s seemed to point clearly to how carcinogens wrought their havoc, the mechanisms are in reality far from simple. Let me propose to potent carcinogens does not always lead to cancer while a blameless life does not always offer protection. Even with the completion of the human genome project is a very long way to go in understanding of gene-gene and gene-environment interactions that determine our risk of cancer.

Exogenous Factors in Colonic Carcinogenesis sets out to identify the interfaces between the genetic background and the environment for the second most common cause of cancer-related mortality in Western society. Compiled from a symposium held in Wurzburg, Germany in the Spring of 2002, its sections include epidemiology, cancer assessment, identification of genetically-determined risk groups and a swag of dietary and lifestyle factors. On the whole the chapters are well-written and referenced, and are fairly accessible to the informed reader. Unfortunately this compilation is spoiled by a very poor layout of chapters often leading to repetition of ideas without any additional insight. I had to read “Colonic cancer is a multisystem disease” a dozen times every time I thought most people who would read such a book might have got it the first.

The opening section ends with the excellent and insightful review by M J Hill on the epidemiology of colorectal cancer
Each of these approaches is discussed in a separate chapter, whether it is timely that the process be reappraised. In the first part of the book, the reader is provided with a comprehensive overview of this challenging area, which provides a highly readable and refreshingly candid appraisal of the benefits that this technology may bring to our understanding of the problem of human cancer.

Part one is rounded out by chapters on technologies that are complementary to the process of gene expression analysis, namely bioinformatics, tissue banking and the construction and use of tissue microarrays. Again these chapters are well written and would be of interest to a wide readership. In the second part of the monograph, individual chapters are devoted to a review of progress to-date using gene expression arrays in the setting of specific human cancers. Given the rapid pace of change, these chapters are likely to become redundant in a relatively short time, but they do provide insights into how the techniques have been used to address key questions in specific cancers. They also provide an excellent summary of both the current status of work, and the particular problems that arise in specific diseases. As such, these chapters would be of great interest to individuals currently involved in, or considering the initiation of, research on the use of gene expression arrays.

Overall, this is a concise, current, well-written and well-edited book. It provides a succinct description of the core technology of gene expression analysis, and a realistic appraisal of its strengths and weaknesses. It is a book that would appeal to a relatively wide range of readers, including clinical oncologists, pathologists, and other healthcare professionals with an interest in cancer and cancer genetics. It would also be of interest to scientists active in the area of cancer, since it provides a comprehensive overview of the challenging area, as well as an authoritative review of achievements to-date in a wide range of human malignancies.

The Gynaecological Cancer Guide: Sex, sanity & survival

M Heffernan and M Quinn

Published by Michelle Anderson Publishing (2003)
RPP: AS249.95

There are many books written about cancer, ranging from the self-help types to the highly technical tomes, but this book by Margaret Heffernan and Professor Michael Quinn is in a class of its own. It is primarily addressed to the women who have been diagnosed with some type of gynaecological cancer, their families and carers. It does not offer quick-fix solutions nor does it minimise the trauma that must accompany any diagnosis of cancer, but it does present an informative and realistic picture.

The first part of the book deals with the physical aspects of the various cancers, describes them and their treatment in easily understood terminology, and also provides practical ideas about how to deal with the emotional, spiritual and sexual aspects of the disease are also addressed, hence the title.

The authors use language that is easily understood, avoiding jargon, but making use of the technical words that any patient will come across when dealing with the health system. An excellent glossary provides explanations for the medical terms.

Throughout the book are quotations from several survivors, at various stages of their journey. These remarkable women speak with pathos, honesty, despair and humour about their situation, and their quotes are collectively a pleasure to read.

A number of contributors have added sections dealing with their own areas of expertise. The section on lung cancer is aimed more at health service providers than survivors, and it tends to highlight the lack of sensitivity and support offered to patients and their partners. The section on complementary therapies is very informative, and goes far beyond the usual relaxation and yoga routine. For those practitioners who are unfamiliar with the term, the book is a well-illustrated and nontechnical introduction to the mainstream medical model, I suggest that this chapter would make interesting reading, if not for their own edification, at the very least to see what their patients are up to!

The chapter on culture presents a minor difficulty. Throughout the book, the message is one of how much culture affects health, that each woman’s response is individual, but nonetheless valid. In this section, the “culture” referred to is Northern African and Middle Eastern. The impression is wrongly given that women from these cultures have a particular and uniform response that is culturally determined. It seems to me that what the contributor is suggesting has more to do with socio-economic status than culture. Beyond that, how does one define patients from Latin America, or the sub-continent, or South-East Asia? If any health professionals are looking to this guide for help in dealing with women from other cultures and have no other resources, I fear that they are likely to offend some of their patients.

This book should find a place in every gynaecological oncology unit, in every women’s health centre, and in every public library. It is a book that anyone who has been touched by gynaecological cancer will find not only informative and challenging, but also uplifting.

E Koussidis
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Head and Neck Cancer

B Brockstein and G Masters (eds)

Published by Kuver Academic Publishers (2003)
RPP: US$150.00

This book is part of the Cancer treatment and research series edited by Steven Rosen of Northwestern University Medical School, Chicago, USA. Approximately 40 titles in this series have been published over the past decade covering a range of topics and speciality areas related to cancer therapy and research.

The volume reviewed, Head and Neck Cancer, was edited by Bruce Brockstein and Gregory Masters from North-Western Health Care and the Robert Lurie Cancer Centre of Northwestern University Chicago. The book has 370 pages and contains 15 chapters covering a range of topics including epidemiology staging and screening, oral pre-neoplasia and chemoprevention, the treatment of early and advanced stage head and neck cancer, modified fractionated radiotherapy and re-irradiation, organ preservation, the management of unseetable disease, new and novel therapies and quality of life. There are 29 contributing authors, including the editors, and a small number of the contributors are recognizable as having a high profile in the head and neck oncology community.

Overall the quality of the information presented in this relatively small book is high. It is important to point out however that the book is not attempt to be a comprehensive textbook on head and neck cancer. Rather its aim is to provide and “update” current treatment practices and research directions that are likely to be of interest to clinicians already working in the field of head and neck oncology or perhaps other general oncologists wishing to keep abreast of a specialty area with which they are not familiar.

Despite the fact that multiple authors have contributed, the editors have done their job well since the writing, in general, is tight and the layout is compact. There is a relative paucity of illustrations and their quality is variable but this does not pose a significant problem. The strength of the book really lies in the breadth of coverage and the extent to which the literature, most of it relatively recent, has been reviewed. Some chapters have over 200 references indicating a high level of effort on the part of contributing authors.

As a practicing head and neck surgeon, this reviewer was critical of the depth of coverage of some clinical aspects of head and neck oncology but one must draw the conclusion that it was never the aim of the book to cover all areas comprehensively.

Of particular interest and benefit to this reviewer were chapters dealing with a pre-neoplasia and chemoprevention (chapter three), modified fractionation in radiotherapy (chapter seven), organ preservation with concomitant chemoradiation (chapter nine), and the management of metastatic disease with chemotherapy and novel agents (chapter 12).

Importantly there is a very large amount of outcome data, all of which is valuable. The emphasis of which is on viral oncogenesis, cancer genetics and molecular markers are introduced and covered succinctly and in a fashion that will not cause the no academic reader to glaze over and go searching for the sports section of the newspaper.

This book is not necessarily for the residents or registrars in specialty training however clinicians doing a specific fellowship in head and neck oncology will find it very useful, along with those already established in mainstream cancer practice.

C D’Brien
Sydney Cancer Centre
Sydney Head and Neck Cancer Institute
Royal Prince Alfred Hospital
Camperdown, NSW
Hematology/oncology secrets: Questions and answers reveal the secrets to diagnosis and management (3rd edition)
ME Wood and GK Philips
Published by Hanley & Belfus (2003)
RRP: A$437.80

This is an authoritative, comprehensive, well-presented textbook minimally constrict its market.

The text is clearly written and displayed, and the illustrations (tables, line drawings, radiographs, clinical and pathological photographs) are excellent in their clarity and relevance. The treatment of the algorithms are helpful in displaying the decision sequences and the range of treatment possibilities – providing a summary after detailed reading or an instant reminder when quick review of a subject is required. The algorithms also instantly display some of the multidisciplinary integration.

The separated discussion and referencing on “radiological imaging concerns” and “radiotherapeutic techniques” within many chapters/cancer chapters is a helpful advance from the first edition.

The editors have enlisted authors from many centres of high reputation to ensure a broad view but it is virtually totally North American in its authorship, its referencing and its general therapeutic approach. This slightly restricts the comprehensive view of some of the therapeutic approaches and will only minimally construct its market.

This is an authoritative, comprehensive, well-presented textbook which will be a very valuable resource for any clinician involved in the management of head and neck cancer.

DE Theile
Clinical Professor of Surgery
Brisbane, QLD

Herb-drug Interactions in Oncology
BR Cassileth and CD Lucarelli
Published by BC Decker (2003)
RRP: A$102.30 (includes CD-ROM copy)

This ultimately useful handbook is immediately striking in two respects. Firstly the misleading title. Anyone seeking specific data on herb-drug interactions will find small reward for their time. Secondly, in a refreshingly altruistic gesture, the entire text is freely available in its most up-to-date form at the Memorial Sloan-Kettering Cancer Centre (MSKCC) website.

This AS-sized text, complete with a CD-ROM mini-disc copy on the inside cover, is a compilation of 131 monograph style summaries of medicinal and alternative medicines (CAM). Many of the CAM have no anti-cancer claims listed but presumably might be, or have been, utilised by cancer patients for other reasons. The majority of the book concerns herbal preparations but hydratine, straight vitamins, and other pure substances are included, as are some non-substance therapies and monographs describing complex programs such as Di Bella multi therapy, hexoy herbal therapy, and the Gerson method. The listings deal with these therapies very much as patients may obtain them or discussions focused around individual components. Readers wanting discussions on broad classes such as anti-oxidants, flavinoids or trace elements should look elsewhere.

The authors have taken an open but objective view in collating their information. They have structured the available information, which in some cases isn’t much, into an easy to use, concise and referenced resource. Each monograph includes a clinical summary, details about constituents, adverse effects, interactions, as well as potential benefits and problems.

This is the product of the MSKCC integrative medicine service – a service established to research and incorporate complementary therapies into mainstream oncology practice. The work is unique in its breadth and its attempt to present only objective information. It also brings together references that would be difficult, if not impossible, to identify and obtain in any sort of timely manner.

How might this text be used? In my estimation this information will prove most useful when a health worker in confronted with the management of a patient who wishes to continue or start CAM. Even though the available objective information for many of these is scant, this book is useful because it delivers a creditably well balanced summary that clinicians can use to quickly orientate their opinions. It represents a useful balance to the folklore and the promotional material of uncertain veracity that presumably might be, or have been, utilised by cancer patients for other reasons. The majority of the book concerns herbal preparations but hydratine, straight vitamins, and other pure substances are included, as are some non-substance therapies and monographs describing complex programs such as Di Bella multi therapy, hexoy herbal therapy, and the Gerson method. The listings deal with these therapies very much as patients may obtain them or discussions focused around individual components. Readers wanting discussions on broad classes such as anti-oxidants, flavinoids or trace elements should look elsewhere.

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Management of Infection in Oncology Patients
JR Wingard and RA Bowden
Published by Martin Dunitz (2003)
ISBN: 1-85656-836-4. 441 pages plus index
RBP: A$365.10

This book provides an excellent overview of the types of infections encountered during immunosuppressive therapy, although its focus is patients with haematological malignancies. It would be a valuable addition to the library of centres treating cancer patients and a useful addition to the texts available to infectious disease physicians, haematologists, oncologists and trainees in these disciplines.

The strength of this book is the detailed analysis of risk factors for infection and the description of management of patients with haematological malignancy or undergoing stem cell transplant therapy. The editors and authors are recognised experts in the field and their practical experience results in a useful text. Of particular use is the description of a thorough approach to assessment of infection risk in the individual patient in the context of underlying condition, prior therapy, and presenting clinical state.

The discussion of patient factors and cancer treatment modalities contributing to the development of infection as well as newer diagnostic approaches and antifungal therapies is up-to-date and reflects current practice. For example, newer therapies such as Rituximab, Alemtuzumab pegfilgrastim and antifungals such as caspofungin and voriconazole are discussed. The chapters dealing with the management of hepatic failure and viral infections use state of the art. Although most topics of importance are covered in this book including respiratory viruses, infection control and vaccination, some such as Strongyloides, hepatitis C and Tuberculosis are not.

Although overall management is discussed, drug treatment details are not comprehensive. For example, doses of drugs, duration of therapy and treatment algorithms are not detailed. Although the title refers to oncology patients, most of the information is geared towards haematology patients and stem cell transplant recipients. The chapter dealing with infection in solid tumour therapy almost exclusively discusses management of the febrile neutropenic patient. In the cases of patients undergoing radiotherapy and surgical oncology patients, are not addressed.

While each chapter can be read as a stand-alone monograph, there is repetition and the editing could betightened. For example the management of febrile neutropaenia and cathereter-related infection is information overload and the use of growth factors are repeated in several chapters. The flow diagrams and tables, where provided, are extremely helpful, for example in the excellent chapter on hepatitis virus infections in patients with cancer, but in some other chapters, summaries or tables are needed. Despite these criticisms, overall this book meets a gap in published information dealing with the complex interplay of the host, microbe and environment which produces the range of infections seen in the immunosuppressed. Recognition of infection patterns as described here will provide a strong, up-to-date knowledge base for approaching the management of the individual patient.

M Slavin
Department of Infectious Diseases
Peter MacCallum Cancer Centre

Managing Breast Cancer Risk
M Morrow and V Craig Jordan
Published by BC Decker (2003)
Distributed in Australia by Elsevier
RBP: A$179.70

This is an excellent, thought-provoking, stimulating and extremely well-researched book. Reading each chapter reminds one of the depth and complexity of breast cancer risk assessment that I have heard at various breast meetings over the past five years.

The book looks specifically at breast cancer risk and is divided into two sections, the first being the evaluation of risk, and the second, risk management strategies. Chapters on clinical risk assessment, familial, endocrine and lifestyle risk factors cover the evaluation of risk section. Two excellent chapters in this section relate to the risk of benign breast disease and the specific risks associated with this, eg atypical ductal hyperplasia and radial scar. A final chapter that puts the breast cancer risk into context with other risks that women are exposed to, in particular, the risk of other cancers such as colon and lung and coronary artery disease.

The second section looks at routine surveillance strategies and has a particularly good chapter on newer imaging techniques, in particular, covering full field digital mammography, computer aided diagnosis (CAD) and the rapidly expanding role for MRI in breast disease. A chapter on epithelial sampling, including ductal lavage, random FNA and core biopsy is included.

The next section of the book is on chemoprevention and an excellent introduction to by Craig Jordan is followed by chapters on Tamoxifen, other SERM's aromatase inhibitors and a thoughtful summation of chemoprevention and its relationship to the quality of life of women at high risk of breast cancer.

The final section on prevention includes a well-balanced discussion on prophylactic mastectomy and oophorectomy and breast reconstruction. I would consider this book to be a must for anyone of the development of functional biology of B and T lymphocytes, the role of infectious agents and molecular genetics.

This is probably the most comprehensive, authoritative and useful book currently available on the topic of non-Hodgkin’s lymphomas and I cannot recommend it too highly.

PM Mauch et al (eds)
Published by Lippincott, Williams and Wilkins (2003)
ISBN: 0-7817-3526-2. 844 pages plus index
RBP: A$415.80

This handsome volume would be a valuable addition to the bookshelf of anyone involved in the management of patients with non-Hodgkin’s lymphomas. The scope of the book is very wide and at 866 pages long, it is able to provide a quite comprehensive treatment of most of the critically important areas in lymphoma biology, aetiology, diagnosis, assessment and treatment. The editors, Peter Mauch, James Armitage, Bertrand Coggi, Ricardo Dalla Favera and Nancy Lee Harris, are world famous experts in lymphoma and the list of more than 100 contributing authors includes many of the leading names in the field from all parts of the world. The book is beautifully produced and has 80 clear colour plates, including clinical photographs, imaging studies and photomicrographs.

The opening chapters provide a historical perspective on the evolution of our understanding of lymphomas and of the early development and subsequent refinements of chemotherapy and radiotherapy. The second section of the book contains chapters on diagnosis, staging and initial evaluation. The chapter by Nancy Lee Harris on REAL and WHO lymphoma classifications is particularly valuable. The description of procedures for primary diagnosis and appropriate handling of specimens is practical and detailed and the imaging section contains useful information on structural and functional imaging, including the role of PET scanning. In the brief third section of the book there are chapters on the principles of modern chemotherapy, radiation therapy and biological therapy. The core of the book is the extensive fourth section that covers, in detail the pathology, evaluation and treatment of individual clinical entities. These disease entities are described in 19 chapters, each devoted to a single disease or related group of diseases such as diffuse large cell lymphoma or the follicular lymphomas. This is the section of the book most useful to clinicians and it provides information in a readily accessible form that is highly comprehensible.

In the fifth short section of the book, there is a useful discussion of late effects of treatment and quality of life in lymphoma patients. The sixth section comprises eight chapters on a range of special topics, including management of lymphoma in children, management of the elderly patient with lymphoma and treatment during pregnancy. The final section contains seven detailed chapters on lymphoma biology, including development and functional biology of B and T lymphocytes, the role of infectious agents and molecular genetics.

This is probably the most comprehensive, authoritative and useful book currently available on the topic of non-Hodgkin’s lymphomas and I cannot recommend it too highly.

J Hallenbeck
Published by Oxford University Press (2003)
RBP: A$49.95

Palliative Care Perspectives is a book designed to be an introduction to the core areas of palliative care for those relatively new to this topic. It is not a textbook nor is it intending to be. Instead it is a sharing of the author’s experiences and his offering of advice to the many practitioners with different problems. Published data and current evidence are used throughout the book to support the author’s views however this does not seem to interfere with the very conversational style of the text.

The book has many personal stories and anecdotes that show the human side to the work of palliative care and also help the author illustrate the effect of interventions. I found the style of writing easy to read, and it was at times almost like having a discussion about palliative care with a colleague.

The author has set out to cover many areas of palliative care to help the reader develop a broad understanding of what palliative care is. The chapters of the book include those expected on pain and symptom management and areas of psychosocial and spiritual care. Some specific information is given in relation to pain and symptom management however the book was not intended to be a clinical manual and is more about the principles of management. It also has a good chapter on communication as well as interesting ones on the palliative care consult and the last 48 hours. The book also contains suggestions as to how various topics can be addressed with patients and families as well as specific ways to phrase those difficult questions, much of which I found useful. Scattered
that they seek.

A major criticism is that while the side effect profile for most drugs is adequate, for a minority of drugs, there are a few specific side effects that have not been mentioned. If this book is to be recommended to patients, it will be important that patients are given instructional and educational drug profiles that suit their individual needs.

Overall this book would serve as a useful resource for those patients and their families, it is written in easy to read language and includes a comprehensive list of both the most common cancer treatment drugs on the market today, including hormonal and biologic drugs, as well as several agents that are either still investigational or not in use in Australia. Each drug is profiled under headings such as drug administration, necessary precautions and side effects specific to that drug. These drug profiles match the profiles on the CD-ROM.

The second section of the book is a wide ranging list of comprehensive management drugs including analgesics, antibiotics, antifungals, antidepressants, anxiety agents, antineuraxone, antiemetics, antidiabetics, antiepileptics, biopsychopharmacotherapies, hormones, diuretics and steroids. This book and the CD-ROM could prove to be a helpful tool for those people educating patients about their treatment. Although there is a vast amount of information in the book and CD-ROM, it is written in easy to read language and includes a comprehensive list of both the most common cancer treatment drugs on the market today, including hormonal and biologic drugs, as well as several agents that are either still investigational or not in use in Australia. Each drug is profiled under headings such as drug administration, necessary precautions and side effects specific to that drug. These drug profiles match the profiles on the CD-ROM.

The book is written in simple language and explains new and difficult concepts in a comprehensible way. There is however far more information in it than the average Australian patient education booklet and although some patients would find it of interest there are others who are overwhelmed with the sheer volume of material presented in the book. For those who are interested it will maintain a consistency of information.

Cancer Forum - Volume 28 Number 1 - March 2004
once again for the American audience. Overall the book provides comprehensive information about the prostate and all other related conditions including sections on health and emotions after cancer, as well as current studies and clinical trials.

R Metcalfe
The Cancer Council Victoria
Carlton South, VIC

**Textbook of Melanoma**

JF Thompson et al
Published by Martin Dunitz Ltd (2004)
679 pages plus index

RPP: A$68.00
This is a substantial publication. Measuring 282 x 222 x 40mm and weighing over 2.8kg it is nearly double the size of previous monographs on the subject. For that you get a clearly set text, high paper quality and an abundance of consistently formatted coloured illustrations and tables. More importantly, the quality of the content lives up to the scale of its presentation.

The international panel of contributing authors is well balanced by geography and discipline. It includes 33 Australians (17 with links to the Sydney Melanoma Unit), 31 from Europe, 23 from the US and representatives from UK, Canada, Brazil and New Zealand.

The 64 chapters are arranged in 14 sections covering history; biology; epidemiology; pathology; staging; diagnosis; surgical management of the primary and of regional nodes; childhood melanoma; local and loco-regional recurrence; surgery for distant metastasis; systemic therapy; non-cutaneous melanoma; melanoma; local and loco-regional recurrence; surgery for melanoma, and the chapter by Michael Millward describes the relevant history of the technique. Neville Davis, Helen Shaw and Bill McCarthy combine to provide an entertaining and informative introductory chapter on the biology; epidemiology; pathology; staging; diagnosis; surgical management of the primary and of regional nodes; childhood melanoma; local and loco-regional recurrence; surgery for distant metastasis; systemic therapy; non-cutaneous melanoma and management guidelines.

Neville Davis, Helen Shaw and Bill McCarthy combine to provide an entertaining and informative introductory chapter on the history of melanoma, from the mummified remains of pre-Colombian Peru through the resection of a metastatic deposit by John Hunter in 1787, the description of the disease by Rene Laennec in 1804, of amelanotic melanoma by Sir James Paget in 1853 and the recognition of the harmful effects of sun exposure by Unna in 1894. Modern surgical treatment dates from the work of Snow in 1892 and particularly the Hunterian exposure by Unna in 1894. Modern surgical treatment dates from the work of Snow in 1892 and particularly the Hunterian exposure by Unna in 1894. Melanoma was reported by Neville Davis, Helen Shaw and Bill McCarthy to provide an entertaining and informative introductory chapter on the history of melanoma, from the mummified remains of pre-Colombian Peru through the resection of a metastatic deposit by John Hunter in 1787, the description of the disease by Rene Laennec in 1804, of amelanotic melanoma by Sir James Paget in 1853 and the recognition of the harmful effects of sun exposure by Unna in 1894. Modern surgical treatment dates from the work of Snow in 1892 and particularly the Hunterian exposure by Unna in 1894.

Gry Halliday’s chapter nicely summarises the role of the local skin immune system in the development of melanoma, while Rick Kefford, Graham Mann and Julia Bishop present a succinct update of the genetics of the disease.

Each of the chapters is separately referenced, and the references are reasonably up-to-date, given the delays that inevitably attend the compilation of the work of 94 authors. For example the chapter on staging refers to the development of the current (2001) AJCC staging system, but only as a footnote, while the bulk of the chapter is devoted to older schemes. This is offset by a good subsequent chapter by Charles Balch, Seng-Jaw Soong and John Thompson that details the studies leading to the development of the new scheme.

The chapters on clinical diagnosis by Bill McCarthy and Gerry Milton and on surface microscopy by Scott Menzies and Wilhelm Stoltz are replete with excellent colour illustrations. For the surgically inclined, the chapters on the various lymph node dissections come with line drawings and operative colour photographs.

Sentinel node biopsy is a major area of current research, well covered by Donald Morton and John Thompson, while Roger Uren and David Krag present the history of the technique. Several subsequent chapters discuss aspects of the procedure, though the need to await the results of the multicenter selective lymphadenectomy trial is acknowledged.

More specialised procedures including isolated limb perfusion and infusion are well described. An important series of randomised clinical trials, which failed to show additional benefit of bio-chemotherapy, were not available at press time. Immunotherapy has long held tantalising promise, but the uncertain role of radiotherapy is concisely reviewed by Graeme Stevens, while Rick Kefford and Ian Olver contribute chapters on management of advanced disease. It is unfortunate that the results of several randomised clinical trials, which failed to show additional benefit of bio-chemotherapy, were not available at press time. Immunotherapy has long held tantalising promise, but the uncertain role of radiotherapy is concisely reviewed by Graeme Stevens, while Rick Kefford and Ian Olver contribute chapters on management of advanced disease. It is unfortunate that the results of several randomised clinical trials, which failed to show additional benefit of bio-chemotherapy, were not available at press time.

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For the surgically inclined, the chapters on the various lymph node dissections come with line drawings and operative colour photographs.
### CALENDAR OF MEETINGS – International

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<th>Date</th>
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<td>27th Annual Oncology Nurses Group Conference</td>
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<td>Web: <a href="http://www.asncongress.org.au">www.asncongress.org.au</a></td>
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<tr>
<td>24-26</td>
<td>31st COSA Annual Scientific Meeting</td>
<td>Canberra ACT</td>
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<td>6-9</td>
<td>Royal Australian and New Zealand College of Radiologists, Faculty of Radiation Oncology Annual Scientific Meeting</td>
<td>Sydney NSW</td>
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<td>7-11</td>
<td>3rd World Assembly on Tobacco Counter Health</td>
<td>New Delhi, India</td>
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<tr>
<td>16-20</td>
<td>4th European Breast Cancer Conference</td>
<td>Hamburg, Germany</td>
<td>EBCC 2004 Secretariat</td>
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<td>18-21</td>
<td>57th Annual Cancer Symposium of the Society of Surgical Oncology</td>
<td>New York City, New York USA</td>
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<td>Illinois, USA</td>
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<tr>
<td>23-26</td>
<td>Australian Health and Medical Research Congress</td>
<td>Sydney NSW</td>
<td>ASP consensus secretary</td>
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<td>27-31</td>
<td>95th Annual Meeting of the American Association for Cancer Research (AARC)</td>
<td>Orlando, Florida USA</td>
<td>American Association for Cancer Research</td>
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<tr>
<td>28 Mar-3 Apr</td>
<td>43rd Annual Meeting of the Society of Toxicology</td>
<td>Baltimore, USA</td>
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<td>31 Mar-3 Apr</td>
<td>12th Congress of the European Society of Surgical Oncology</td>
<td>Budapest, Hungary</td>
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<tr>
<td>29 Apr-2 May</td>
<td>Oncology Nursing Society (ONS) 29th Annual Congress</td>
<td>Anaheim, California USA</td>
<td>ONS, Meeting Services Team</td>
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<tr>
<td>8-13</td>
<td>99th Annual Meeting of the American Urological Association</td>
<td>San Francisco, California USA</td>
<td>Office of Education</td>
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<td>American Urological Association</td>
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<td>2425 West Loop South, Suite 333</td>
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<td>5-8</td>
<td>40th ASCO Annual Conference for the American Society of Clinical Oncology</td>
<td>New Orleans, LA USA</td>
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<tr>
<td>17-19</td>
<td>World Congress on Gastrointestinal Cancers</td>
<td>Barcelona, Spain</td>
<td>Heather Drew, Imexed 70 Technology Drive</td>
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<td>24-27</td>
<td>16th MASCC/ISOO International Symposium Supporting Care in Cancer</td>
<td>Miami Beach, Florida USA</td>
<td>Amy Faber, The Cleveland Clinic Center for Continuing Education C/O UNITECH Communications 9500 Euclid Ave. P17, Cleveland - 44195 - Ohio</td>
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<td>25-29</td>
<td>23rd International Congress of Radiology (ICR)</td>
<td>Montreal, Canada</td>
<td>International Congress of Radiology (ICR) 1740 Cote-Vertu Blvd</td>
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<tr>
<td>July</td>
<td>3-6</td>
<td>Innsbruck, Austria</td>
<td>EACR 18 Secretariat, Federation of European Cancer Societies Avenue E Mounier 83</td>
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<td>18th Meeting of the European Association for Cancer Research</td>
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<td>22-24</td>
<td>International Skin Cancer Congress</td>
<td>Zurich, Switzerland</td>
<td>Reinhard Dummer, University Hospital of Zurich, Department of Dermatology Gloristrasse 31 Zurich - 8091 Switzerland</td>
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<td>Web: <a href="http://www.skincancer.ch/">www.skincancer.ch/</a></td>
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<tr>
<td>August</td>
<td>7-11</td>
<td>Washington, DC USA</td>
<td>Robin Wagner, Concepts in Meetings &amp; Events 1805 Andrews Blvd</td>
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<tr>
<td></td>
<td>6th International Conference on Head and Neck Cancer</td>
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<td>Pittsburgh - 15221 - Pennsylvania</td>
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<td>Web: <a href="http://www.headandneckcancer.org/">www.headandneckcancer.org/</a></td>
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<td>25-28</td>
<td>7th World Congress of Psycho-Oncology</td>
<td>Copenhagen, Denmark</td>
<td>The Danish Cancer Society Strandboulevarden 49 Copenhagen - 2100 Denmark</td>
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<td>Web: <a href="http://www.ipos2004.dk/">www.ipos2004.dk/</a></td>
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<td>September</td>
<td>1-4</td>
<td>Lisbon, Portugal</td>
<td>International Society of Endocrinology (ISE) 51-53 Bartholomew Close</td>
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<td>12th International Society of Endocrinology Congress</td>
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<td>London - ECA 78E United Kingdom</td>
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<td>16-19</td>
<td>SIOP 2004: International Society of Paediatric Oncology</td>
<td>Oslo, Norway</td>
<td>Congres Holland BV PO Box 302 Amsterdam</td>
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<td>23-25</td>
<td>9th Central European Lung Cancer Conference</td>
<td>Gdansk, Poland</td>
<td>Department of Oncology and Radiotherapy Medical University of Gdansk ul Dobinska 7</td>
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<td>October</td>
<td>3-7</td>
<td>Atlanta, USA</td>
<td>ASTRO: 46th Annual Meeting</td>
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<td>American Society for Therapeutic Radiology and Oncology 12500 Fair Lakes Circle</td>
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<td>3-8</td>
<td>10th Biennial Meeting of the International Gynecologic Cancer Society</td>
<td>Edinburgh, Scotland</td>
<td>International Gynecologic Cancer Society PO Box 6387 Louisville, Kentucky, USA</td>
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<td>10-14</td>
<td>6th Congress of the European Association of Neuro-Oncology</td>
<td>Jerusalem, Israel</td>
<td>Orta 1 Nirim St PO Box 932 Tel Aviv - 61092 - Israel</td>
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<td>15-16</td>
<td>11th Hong Kong International Cancer Congress</td>
<td>Hong Kong, China</td>
<td>Heather Drew, Imexed 70 Technology Drive Alpharetta - 30005 - Georgia</td>
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<td>24-28</td>
<td>23rd Annual European Society for Therapeutic Radiology and Oncology Meeting (ESTRO 23)</td>
<td>Amsterdam, Netherlands</td>
<td>ESTRO 23 Secretariat Avenue E Mounier 83 Brussels, Belgium 1200</td>
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<td>September</td>
<td>5-7</td>
<td>Nashville, TN USA</td>
<td>Oncology Nursing Society Institute of Learning 125 Enterprise Drive Pittsburgh</td>
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<td>29th European Society for Medical Oncology Annual Meeting</td>
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<td>10-12</td>
<td>11th Hong Kong International Cancer Congress</td>
<td>Hong Kong, China</td>
<td>11th HKBCC Congress Secretariat Dept of Surgery University of Hong Kong Medical Centre</td>
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<tr>
<td>17-19</td>
<td>1st International Conference for Oncologists and Other Health Care Leaders</td>
<td>New York USA</td>
<td>Barrie Cassileth, Memorial Sloan-Kettering Cancer Center 1275 York Ave New York - 10021 · New York Tel: +1 212 639 3008</td>
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<td><strong>December</strong></td>
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<tr>
<td>3-7</td>
<td>46th Annual Meeting of the American Society of Hematology</td>
<td>San Diego California USA</td>
<td>American Society of Haematology 1900 M street NW Suite 200 Washington DC 20036 USA Tel: +1 20 2776 0344 Email: <a href="mailto:meetings@hematology.org">meetings@hematology.org</a> Web: <a href="http://www.hematology.org">www.hematology.org</a></td>
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<tr>
<td>3-6</td>
<td>27th Annual San Antonio Breast Cancer Symposium</td>
<td>San Antonio Texas USA</td>
<td>Cancer Therapy &amp; Research Center SACI, Rich Marlow San Antonio, Texas, USA Tel: +1 210 349 3009 Email: <a href="mailto:rm@saci.org">rm@saci.org</a> Web: <a href="http://www.saci.org">www.saci.org</a></td>
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<tr>
<td>15-16</td>
<td>4th International Meeting of Hepatocellular Carcinoma: Eastern and Western Experiences</td>
<td>Wanchai Hong Kong</td>
<td>4th HCC-EWE Congress Secretariat Department of Surgery, University of Hong Kong Medical Centre Queen Mary Hospital, Pokfulam Tel: +85 2 2818 0322 Fax: +85 2 2818 1186 Email: <a href="mailto:hccew@hkumc.org">hccew@hkumc.org</a> Web: <a href="http://www.hcc-eew.org">www.hcc-eew.org</a></td>
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<td>2005</td>
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<td>January</td>
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<td>26-29</td>
<td>Primary Therapy of Early Breast Cancer</td>
<td>St Gallen Switzerland</td>
<td>Hans-Jörg Senn, St Gallen Oncology Conferences Rorschacherstr. 150 St. Gallen - 9006 Switzerland Tel: +41 71 243 0032 Fax: +41 71 245 6805 Web: <a href="http://www.oncologiconferences.ch/index.html">www.oncologiconferences.ch/index.html</a></td>
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<td>February</td>
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<td>10-14</td>
<td>American Society for Blood and Marrow Transplantation Annual Meeting</td>
<td>Keystone CO USA</td>
<td>American Society for Blood and Marrow Transplantation 85 West Algonquin Road Suite 550 Arlington Heights Illinois 60005 USA Tel: +1 847 7427 0224 Email: <a href="mailto:mail@abmt.org">mail@abmt.org</a> Web: <a href="http://www.ons.org">www.ons.org</a></td>
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<td>March</td>
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<td>3-6</td>
<td>58th Annual Cancer Symposium of the Society of Surgical Oncology</td>
<td>Atlanta Georgia USA</td>
<td>D.K. Kubis - Society of Surgical Oncology 85 W Algonquin Rd Suite S5 Arlington Heights IL - 60005 Tel: +1 (847) 427 1400 Fax: +1 (847) 427 9656 Web: <a href="http://www.surgonc.org/">www.surgonc.org/</a></td>
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<td>April</td>
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<tr>
<td>16-20</td>
<td>96th Annual Meeting of the American Association for Cancer Research</td>
<td>AABC, California USA</td>
<td>AABC 615 Chestnut Street 17th Floor Philadelphia, PA USA 19106-4404 Tel: +1 215 5440 9300 Email: <a href="mailto:meetings@aacr.org">meetings@aacr.org</a> Web: <a href="http://www.aacr.org">www.aacr.org</a></td>
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<tr>
<td>28 Apr-1 May</td>
<td>Oncology Nursing Society's 30th Annual Congress</td>
<td>Orlando Florida USA</td>
<td>Oncology Nursing Society 125 Enterprise Drive Pittsburgh Pennsylvania 15275-1214 USA Tel: +1 866 6357 4667 Email: <a href="mailto:meetings@ons.org">meetings@ons.org</a> Web: <a href="http://www.ons.org">www.ons.org</a></td>
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<td>2-5</td>
<td>EHA-10: 10th Annual Meeting of the European Haematology Association</td>
<td>Stockholm Sweden</td>
<td>Eurocongress Management Jan van Goyenkade 11 Amsterdam Netherlands NL-1075 HP Tel: +31 20 679 3411 Email: <a href="mailto:eha2005@eurocongress.com">eha2005@eurocongress.com</a> Web: <a href="http://www.ehaweb.org">www.ehaweb.org</a></td>
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<tr>
<td>8-11</td>
<td>9th International Conference on Malignant Lymphoma</td>
<td>Lugano Switzerland</td>
<td>Olga Jackson, Lymphoma Conference Secretary viale Cattaneo 23 Lugano - 6900 Tel: +41 91 921 4561 Fax: +41 91 921 4563 Web: <a href="http://www.lymphcon.ch/">http://www.lymphcon.ch/</a></td>
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<td>23-26</td>
<td>2nd Quadrennial Meeting of the World Federation of NeuroOncology</td>
<td>Edinburgh Scotland</td>
<td>EANO 6 Secretariat Federation of European Cancer Societies Avenue E Mounier 83 Brussels, Belgium 1200 Tel: +32 0 2775 0201 Email: <a href="mailto:eano6@fecs.be">eano6@fecs.be</a> Web: <a href="http://www.2005worldlungcancer.com/2005WLC/">www.2005worldlungcancer.com/2005WLC/</a></td>
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<td>July</td>
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<td>3-6</td>
<td>11th World Conference on Lung Cancer</td>
<td>Barcelona Spain</td>
<td>Heather Drew, Imedex 70 Technology Drive Alpharetta - 30005 - Georgia Tel: +1 770 751 7332 Fax: +1 770 751 7334 Web: <a href="http://www.2005worldlungcancer.com/2005WLC/">www.2005worldlungcancer.com/2005WLC/</a></td>
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<td>October</td>
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<tr>
<td>16-20</td>
<td>ASTRO: 47th Annual Meeting</td>
<td>Denver Colorado USA</td>
<td>American Society for Therapeutic Radiology and Oncology (ASTRO) 12500 Fair Lakes Circle Suite 375 Farifax Virginia 22033 USA Tel: +1 703 327 0170 Email: <a href="mailto:meetings@astro.org">meetings@astro.org</a> Web: <a href="http://www.astro.org/">www.astro.org/</a></td>
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<td>December</td>
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<tr>
<td>2-6</td>
<td>47th Annual Meeting of the American Society of Hematology</td>
<td>San Diego California USA</td>
<td>American Society of Haematology 1900 M street NW Suite 200 Washington DC 20036 USA Tel: +1 20 2776 0544 Email: <a href="mailto:meetings@hematology.org">meetings@hematology.org</a> Web: <a href="http://www.hematology.org">www.hematology.org</a></td>
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THE CANCER COUNCIL AUSTRALIA
The Cancer Council Australia is the peak national cancer control organisation. Its members are the leading state and territory cancer councils, working together to undertake and fund cancer research, prevent and control cancer and provide information and support for people affected by cancer.

MEMBERS
The Cancer Council ACT
The Cancer Council New South Wales
The Cancer Council Northern Territory
The Cancer Council South Australia
The Cancer Council Tasmania
The Cancer Council Victoria
The Cancer Council Western Australia
Queensland Cancer Fund

AFFILIATED ORGANISATIONS
Australasian Association of Cancer Registries
Clinical Oncological Society of Australia Inc
Palliative Care Australia

CEO
Professor A Coates AM, MD, FRACP, AStat

COUNCIL
Office Bearers
President
Professor R Lowenthal MBBS, MD, FRCP, FRACP, FACP
Vice-President
Mrs J Roberts AO SRN
Members
Dr S Ackland MBBS, FRACP
Mr G Brien AM, MBA
Hon H Cowan
Mr H Cuthill
Professor I Frazer BS(Hons), MBChB, MD MRCP, FRCP, FRCPA
Dr S Hart FRACS
Professor D Hill AM, PhD
Dr G Jennings BS, PhD, Dip Ed
Hon S Lenehan BA, DipMan, MBA, FAICD
Mr R McGowan
Assoc Professor S Smiles RN, RM, ICC, BHA, GradDipPSEM
Professor J Ward MBBS, MPHEd, FAFPHM, PhD
Dr K White PHD

CLINICAL ONCOLOGICAL SOCIETY OF AUSTRALIA INC
The Clinical Oncological Society of Australia (COSA) is a multidisciplinary society for health professionals working in cancer research or the treatment, rehabilitation or palliation of cancer patients.

It conducts an annual scientific meeting, seminars and educational activities related to current cancer issues. COSA is affiliated with The Cancer Council Australia.

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President Elect
Prof D Currow BMed, MPH, FRACP
Executive Officer
Ms M McJannett
Council Nominees
Ms K Cameron RN, OncCent, GDirN, MNSc
Dr D Goldstein MBBS, MRCP (UK), FRACP
Professor B Stewart MSc, PhD, FRACI

MEMBERSHIP
Further information about COSA and membership applications are available from:
www.cosa.org.au or cosa@cancer.org.au
Membership fees for 2004
Ordinary Members: $140
Associate Members: $80
(includes GST)

INTEREST GROUPS
ANZ Children’s Haematology and Oncology
Breast Oncology
Cancer Nurses Society of Australia
Cancer Research
Data Managers
Epidemiological
Gastrointestinal Oncology
Gynaecological Oncology
Lung Oncology
Medical Oncology
Melanoma and Skin
Neuro-oncology
Palliative Care
Pharmacy
Psycho-Oncology
Radiation Oncology
Regional and Rural Oncology
Social Workers
Surgical Oncology