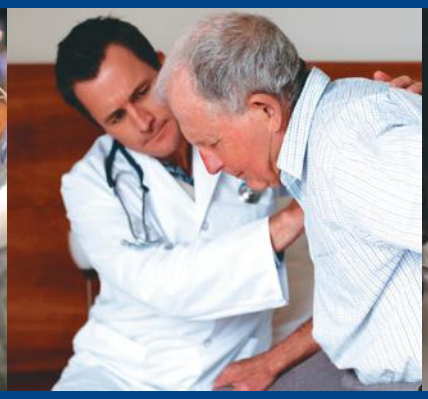
CANCER FORUM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CANCER FORUM

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Contents

Genitourinary oncology

MULTIDISCIPLINARY PROGRESS IN RESEARCH AND TREATMENT OF GENITOURINARY CANCERS

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In introducing this forum on genitourinary cancers, choosing appropriate terminology was problematic. We live in an era that could be characterised for its love of awful neologisms. The beautiful English language surely should have no room for abominable terms such as 'cankle' (calf merging with ankle) or the even more horrible 'chillax'. Medicine has had its share of linguistic catastrophes (neoadjuvant is an example of mixing Greek and Latin roots), but its main transgressions have been in taking perfectly innocent and reasonable terms and twisting their meaning beyond recognition. Below are some recent examples.

Multidisciplinary

The Victorian Cancer Action Plan includes as a goal, "increasing the number of patients assessed and treated by specialist multidisciplinary teams".[1] Does this mean more than one type of medical professional (such as surgeon, medical oncologist, radiation oncologist); or does it mean involvement of more than one professional discipline (such as doctors, nurses, allied health)? It encourages various disciplines to work together, however there has been little agreement on how best to achieve this. When well meaning individuals or organisations attempt to overlay strictures on busy clinicians and clinics, the best intentions are often buried in logistical landslides.

Translational

Even people who claim they are performing translational research can rarely agree on what this term means. Most would understand it as work that moves discoveries in the laboratory through to clinical application. However, this definition is also inadequate, as it could easily cover contracted industry-sponsored research. The Victorian Cancer Agency, in a recent call for applications for funding support for translational research, defined it as: "... a general term encompassing research which focuses on clinical outcomes, quality research principles, multi and cross-disciplinary teams that explicitly address how knowledge created from research will be used to drive advances in an area of patient clinical need. The core elements that distinguish translational cancer research from more traditional bench-top research are patient clinical need and collaboration between research and clinical disciplines."[2] This definition could apply to a wide range of research not usually considered to be 'translational'.

Consumer

In the context of cancer, this term raises the image of someone in a supermarket browsing a range of cancer care products, looking for the ones on special. In many respects the term is almost insulting and dismissive. In other contexts, such as disbursement of public funds for research, it could be justifiably argued that the consumer is the researcher and not the cancer patient. Leading organisations such as the Victorian Cancer Agency, the Cancer Institute NSW and Cancer Australia all actively engage consumers and promote their involvement at all levels of cancer care including research. This engagement is an admirable goal that should be strongly supported. However, there is often substantial confusion about how it should be done. If "consumer representation" degenerates to a single unheard vote on a committee then not only is it ineffective, but it is also a tragic waste of resources. Consumer representation should be an opportunity for the community to participate and enlighten the research agenda; improve researchers' understanding of communities perceptions and priorities; provide a conduit back to the community to communicate research findings; and enhance community engagement in, and support of, research.

Evidence-based

In 2010, we pride ourselves on understanding the scientific basis for many of our treatments and treatment decisions, and call our practice evidence-based. The sad reality is that most of what we do falls outside what the evidence tells us. As soon as we treat a patient whose circumstances would not have met the eligibility criteria for the registration in a clinical trial, we are acting outside the evidence and need to be aware of this. The positive aspect of this is that new research questions are constantly able to be generated and new tools are becoming available to help us answer them.

Outcomes

In common with terms already discussed, there are many valid definitions for this term. From a government perspective, a good outcome might be a hospital coming in under budget. It must be very depressing working in such government departments. From a hospital perspective, a good outcome might be reduction of waiting lists, or ability to tick off key performance indicators, or even improving staff retention. For a basic scientist, a good outcome might be grant success that staves off unemployment for another couple of years. For an academic medical oncologist, a good outcome might be instituting a multidisciplinary translational research program with good consumer representation and leading to better evidence-based medicine. For someone suffering from cancer, either their own or that of a loved one, a good outcome might be living a normal life span, or getting his or her pain under control, or being seen in clinic on time, or even simply getting someone to listen.

This edition of *Cancer Forum* is a celebration of a decade of change in the care of patients with genitourinary cancers. Even more, it is a real attempt at redressing some of the linguistic offences referred to above. As examples:

- Multidisciplinary contributions to this forum from the broad range of oncology clinicians and researchers highlight both the need for, and the advantages of, true meaningful multidisciplinary care of patients with genitourinary cancers.
- Translational - Not only have new biological discoveries been translated into the clinic, but we are now seeing development and application of novel technologies in radiation (Patanjali and Williams)[3] and surgery (Patel and Frydenberg).[4] Grimison and Toner[5] outline some of the research priorities still to be addressed in testicular germ cell cancers. Many of these studies will raise new questions that can be addressed in the laboratory.
- Consumer - Two papers concentrate on quality of life and psychosocial research and interventions (Luckett, King and Stockler[6]; Chambers, Baade and Pinnock[7]). These issues sometimes become overwhelmingly important to the patient and their family, particularly once the immediate medical treatment of the cancer is complete.
- Evidence-based - All of the papers summarise and add to the body of evidence in the literature on which we base our treatment decisions. It is critically important to evaluate these recommendations in the light of Australian issues and access to treatments.
- Outcomes - Every paper in this issue, ranging from screening through basic science, active medical treatment and on to supportive care and psycho-oncology, addresses key issues that can be called major outcomes for cancer treatment and research.

Over recent years, few areas of oncology have undergone a revolution as profound as that concerning genitourinary cancers. Twenty years ago, multidisciplinary care for patients with genitourinary cancers was the exception rather than the rule. Medical oncology has seen the development of effective treatments for metastatic prostate cancer,[8,9] and renal cell carcinoma,[10-15] and treatments for bladder cancer that are as effective but better tolerated.[16] Even testicular germ cell cancer, a highly curable disease, still holds clinical questions that can be addressed by careful research.[17] Radiation oncology has seen dramatic improvements in imaging, planning and delivery contribute to more effective and better tolerated treatment. Uro-oncologic surgery has also seen remarkable improvements in local treatments of prostate, kidney and bladder cancer. Psychosocial and quality of life research has improved our understanding of the impact of genitourinary cancers and their treatment, and how to deal better with these impacts. All of these improvements have resulted from clinical research translating meticulous science into wider practice.

It became clear to many of us several years ago that it would be necessary to institute multidisciplinary (in every sense) care for such patients as part of routine medical practice, as well as in order to facilitate the conduct of clinical trials. With that in mind, the Clinical Oncological Society of Australia's (COSA) Urologic Oncology Group was established in late 2006 and rapidly grew to include a large and eclectic membership. This was the first time in Australia that all disciplines involved in any type of genitourinary cancer came together, with the aims of:

- Providing an inclusive forum for cross-discipline communication between health care professionals involved in the care of patients with urologic cancers.
- Acting as a national body in order to facilitate clinical and basic research in urological cancers in Australia.
- Developing cooperative and complementary laboratory research programs in urological cancer, including development and maintenance of tissue bank resources.
- Facilitation of success in multicentre research grant applications.
- Development of common data sets for collection of clinical information from patients with urological cancer, with a view to development and integration of national databases.
- Providing a key point of contact for industry and other sponsors of clinical trials.
- Promotion of public awareness of urological malignancies.
- Acting as a source of expert advice to government, industry and other bodies.
- Participation in COSA activities, including contributing to the Annual Scientific Meeting.

The development of the Australian and New Zealand Urogenital and Prostate Cancer Trials Group Ltd (ANZUP) was a direct result of this initiative. ANZUP is now the peak group covering all aspects of genitourinary cancer cooperative clinical trials within Australia and New Zealand.

As evident in this Forum, contemporary oncology is not all depression and gloom. We hope you enjoy this edition of Cancer Forum.

Conflict of interest statement: IDD is chair of the COSA Urologic Oncology Group and Chair of the ANZUP Board.

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ADVANCES IN RADIATION THERAPY FOR PROSTATE CANCER

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Abstract

The last decade has seen several new treatment technologies being incorporated into the radiation treatment of localised prostate cancer. More established treatment modalities, such as external beam radiation therapy, are being constantly refined by improvements in imaging, planning software and delivery systems. Newer modalities, such as brachytherapy and proton radiation therapy, are emerging as alternatives to conventional external beam radiation therapy, and will no doubt play a larger part in the treatment of localised prostate cancer in the near future.

Radiation therapy for localised prostate cancer

Localised prostate cancer can be subdivided into low, intermediate and high risk groupings. These risk groups enable the tailoring of treatments according to biochemical, pathological and clinical parameters. This, together with assessment of patient co-morbidities, life expectancy and patient preferences, enables the most appropriate treatments to be recommended to men with localised prostate cancer.

The National Comprehensive Cancer Network guidelines classify localised prostate cancer into four groups according to the risk of recurrence,[1] as follows (see table 1 for T stage definitions):

1. Low risk must have all of the following:

- stage T1-T2a
- Gleason score ≤ 6
- PSA ≤ 10 ng/ml

2. Intermediate risk must have any one of the following:

- T2b-T2c or
- Gleason score 7 or
- PSA 10.1–20 ng/ml

3. High risk must have any one of the following:

- stage ≥ T3a or
- Gleason 8–10 or
- PSA > 20 ng/ml

4. Very high risk

- T3b or T4

Radiation therapy has an important role in the management of patients within all risk groups and has been a standard, curative treatment for prostate cancer for many decades.

Table 1: *(AJCC TNM classification for prostate cancer)*

TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
T1	Clinically inapparent tumour not palpable nor visible by imaging
T1a	Tumour incidental histologic finding in 5% or less of tissue resected
T1b	Tumour incidental histologic finding in more than 5% of tissue resected
T1c	Tumour identified by needle biopsy (eg. because of elevated PSA)
T2	Tumour confined within prostate
T2a	Tumour involves 50% or less of one lobe
T2b	Tumour involves more than 50% of one lobe but not both lobes
T2c	Tumour involves both lobes
T3	Tumour extends through the prostate capsule
T3a	Extracapsular extension (unilateral or bilateral)
T3b	Tumour invades seminal vesicle(s)
T4	Tumour is fixed or invades adjacent structures other than seminal vesicles - bladder neck, external sphincter, rectum, levator muscles and/or pelvic wall.

In recent years there has been increased interest and experience in more specialised forms of radiation therapy such as brachytherapy, along with significant refinements in the delivery of external beam photon radiation (image guidance, intensity modulated radiation therapy) and increasing use of particle therapy such as the application of protons.

Types of radiation therapy used to treat prostate cancer include:

- external beam radiation therapy (EBRT)
- high dose rate (HDR) brachytherapy

- low dose rate (LDR) brachytherapy/ or seed brachytherapy
- proton radiation therapy.

Low risk prostate cancer

In general, the curative treatment options available for low risk prostate cancer include:

- active surveillance – for a select group of low risk patients[2]
- surgery (radical prostatectomy)
- LDR brachytherapy
- external beam radiation therapy (EBRT) (including 3D conformal radiation therapy [3D-CRT] and intensity modulated radiation therapy [IMRT] techniques).

Less commonly used radiation treatment modalities include proton RT and stereotactic body RT.

RT for low risk prostate cancer in Australia takes two main forms – EBRT and LDR brachytherapy (always delivered with I^{125} seeds in Australia). In the US and other countries where the facilities are available, proton radiotherapy and stereotactic RT are increasingly being used to treat low risk prostate cancers.

LDR (seed) brachytherapy

Low dose rate brachytherapy is a standard treatment option for patients with low risk disease, and for some patients with intermediate risk disease. Although no head-to-head randomised control trials have been completed comparing surgery to LDR brachytherapy (one noble attempt to do this failed to accrue patients – the Surgery Versus Internal Radiation in Treating Patients With Stage II Prostate Cancer [SPIRIT] trial),[3] results from published series of patients treated with LDR brachytherapy have comparable outcomes to patients treated with radical prostatectomy.

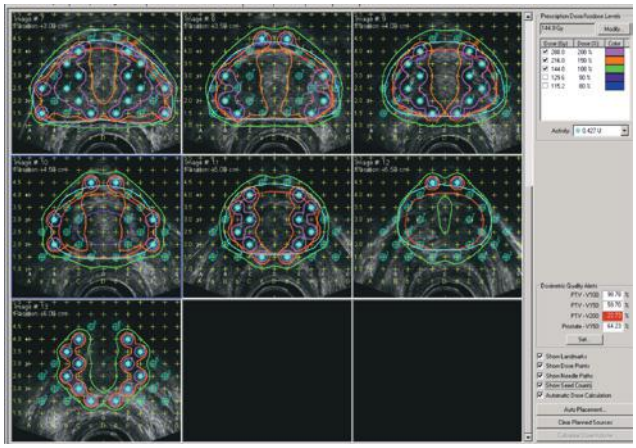
Series from large North American centres, such as the British Columbia Cancer Agency in Vancouver, Canada, the Seattle Prostate Institute in Seattle, US and the Memorial Sloan Kettering Cancer Centre in New York, US, indicate excellent biochemical outcomes are achievable with this form of radiation therapy, for example rates of biochemical relapse free survival of 95% at five years and 86% at 10 years.[4-7]

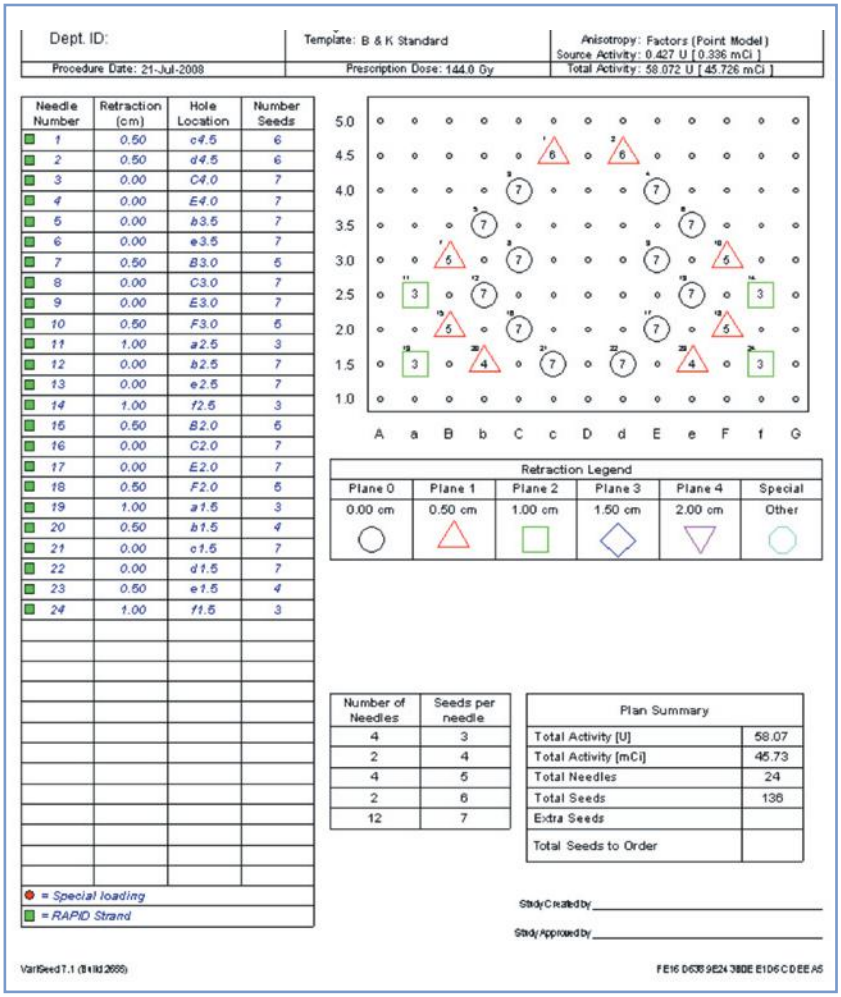
LDR brachytherapy allows escalation of the radiation dose to the prostate gland while delivering a lower dose to surrounding normal tissues, helping to minimise the risk of normal tissue injury to the rectum and bladder.

Patient selection for LDR brachytherapy is of great importance. Those with large prostates and significant lower urinary tract symptoms before treatment are more likely to suffer urinary problems after brachytherapy, and hence are less suitable for this form of treatment.

LDR brachytherapy involves the insertion of radioactive seeds directly into the prostate through the perineum under local, spinal or general anaesthetic using transrectal ultrasound guidance. Approximately 80-140 seeds (depending on the size of the prostate) are placed in the prostate using a standardised template and an individualised treatment plan (see figures 1, 2 and 3).

Figure 1 and 2: *Pre-plan for I^{125} LDR brachytherapy showing placement of seeds on axial ultrasound images taken during the planning volume study (including no. of seeds in each strand) and resultant dose distribution. The printouts are used to guide seed placement in the operating theatre.*





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Anisotropy: Factors (Point Model)
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Procedure Date: 21-Jul-2008
Prescription Dose: 144.0 Gy
Total Activity: 58.072 U [45.726 mCi]

Needle Number	Retraction (cm)	Hole Location	Number Seeds
1	0.50	c4.5	6
2	0.50	d4.5	6
3	0.00	C4.0	7
4	0.00	E4.0	7
5	0.00	b3.5	7
6	0.00	e3.5	7
7	0.50	B3.0	6
8	0.00	C3.0	7
9	0.00	E3.0	7
10	0.50	F3.0	6
11	1.00	a2.5	3
12	0.00	b2.5	7
13	0.00	e2.5	7
14	1.00	f2.5	3
15	0.50	B2.0	6
16	0.00	C2.0	7
17	0.00	E2.0	7
18	0.50	F2.0	6
19	1.00	a1.5	3
20	0.50	b1.5	4
21	0.00	c1.5	7
22	0.00	d1.5	7
23	0.50	e1.5	4
24	1.00	f1.5	3

= Special loading
= RAPID Strand

Retraction Legend

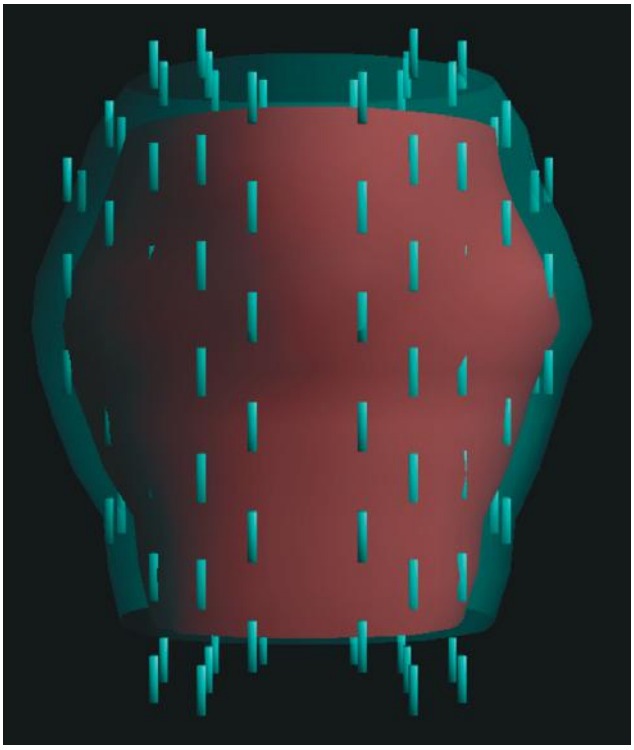
Plane 0	Plane 1	Plane 2	Plane 3	Plane 4	Special
0.00 cm	0.50 cm	1.00 cm	1.50 cm	2.00 cm	Other

Number of Needles	Seeds per needle
4	3
2	4
4	5
2	6
12	7

Plan Summary	
Total Activity [U]	58.07
Total Activity [mCi]	45.73
Total Needles	24
Total Seeds	136
Extra Seeds	
Total Seeds to Order	

Study Created by
Study Approved by

Figure 3: *Brachytherapy planning - seed positioning in 3D (red volume = prostate, blue volume = planning treatment volume. The planning treatment volume is usually the prostate with a margin of 4-5mm to encompass any areas of extracapsular tumour extension).*



LDR brachytherapy is generally well tolerated with the main side-effects being acute and sub-acute irritative voiding symptoms. These usually settle within a few months as the radiation effect is largely limited to the first 6-10 months (the half-life of I^{125} is about two months).

EBRT

External beam radiation therapy for prostate cancer is usually given as a fractionated course of treatment with megavoltage photons delivered in daily treatments, five days a week for a period of seven to eight weeks.

Major advances in the planning and delivery of EBRT for prostate cancer have occurred in the past 5-10 years. These include:

- 3D conformal RT (3D-CRT)
- Intensity modulated radiation therapy (IMRT)
- Volumetric modulated arc therapy (VMAT)
- Image guided RT (eg. with the use of implanted fiducial markers, cone beam CT).

3D-CRT combines modern imaging (CT, MRI) with computerised planning to optimise prostate localisation, delineation and dose distribution. Complex shielding allows better conformation of the radiation dose to the treatment target, enabling tighter margins around the treatment volume and hence lower doses to surrounding normal tissues (see figure 4 and 5).

Figure 4: *A 3D-CRT external beam radiation plan for treatment of prostate cancer, showing doses to the target (prostate – within the blue planning treatment volume) and normal tissues such as the rectum (outlined in brown), bladder (outlined in yellow) and femoral heads (outlined in pink and orange).*

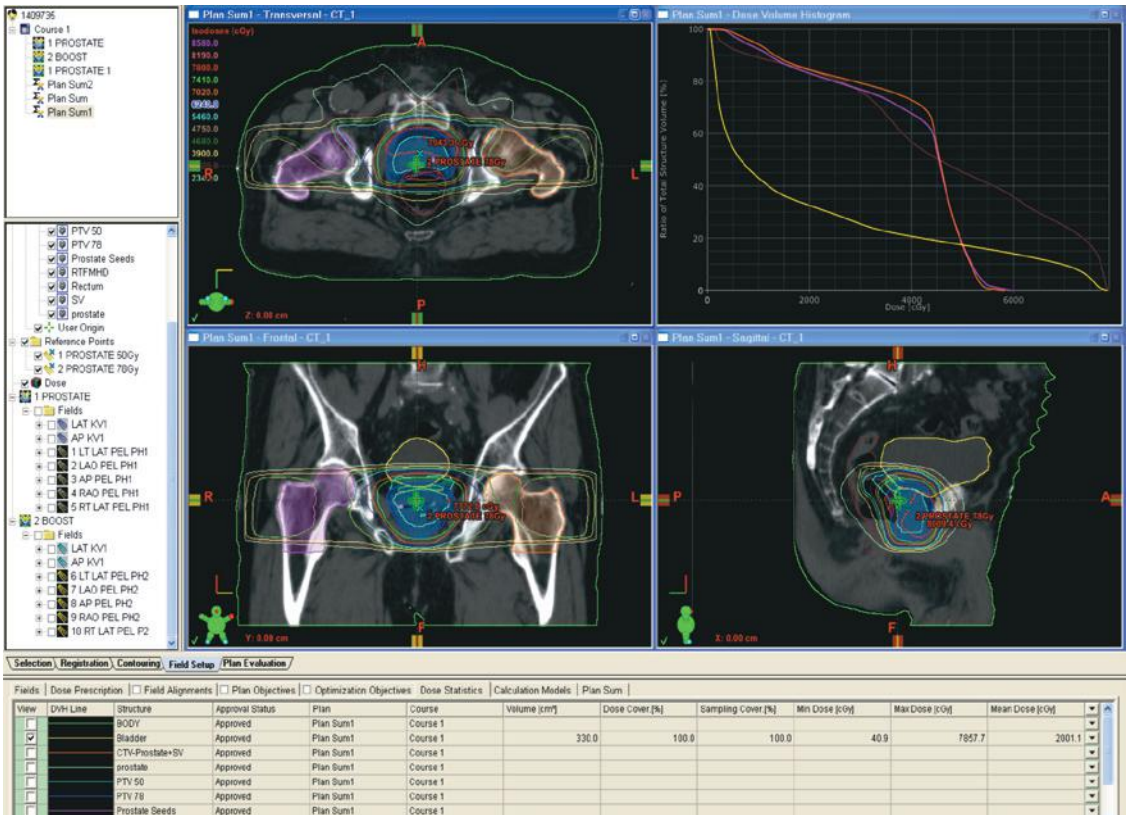
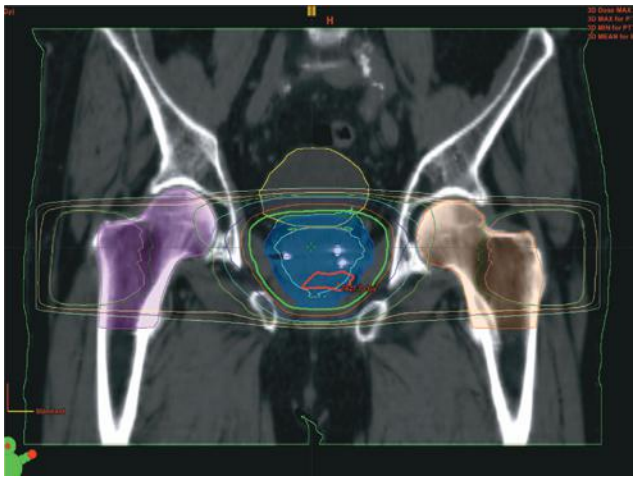


Figure 5: *Coronal CT planning image showing three gold seed fiducial markers (in white) within the prostate.*



IMRT is a form of 3D-CRT where the intensity of the radiation beam is adjusted throughout the course of treatment. By dividing the beam into multiple beamlets of non-uniform intensity, a more conformal dose distribution around irregular targets is enabled, with greater sparing of organs such as the rectum and bladder. This, in turn, can allow safer dose escalation to the target (ie. the prostate) to improve biochemical outcomes.[8,9] IMRT can potentially be improved further by delivering the beam with a gantry that is moving rather than static. This technique is still in its early stages of development, however shows great promise in improving external beam radiation treatment of prostate cancer.[10]

Image guided radiation therapy (IGRT)

Improvements in imaging with CT, MRI and PET scanning have allowed better localisation of tumour volumes and more accurate treatment planning. This has been further enhanced by the ability to combine these different kinds of images.

IGRT is the use of daily imaging (for example with x-rays and/or CT) to track the location of the prostate and surrounding normal tissues during treatment. Commonly used methods include gold seed fiducial markers with daily portal x-rays, cone beam CT and ultrasound (see figure 6).

The main aim of image guidance is to improve treatment accuracy, enabling dose escalation and smaller treatment margins with lower doses to surrounding normal tissues. Long-term data is needed to determine the effects of image guidance and its consequent improvements in treatment accuracy on side-effects and cancer outcomes.

Proton radiation therapy

Protons are a form of particle RT, as opposed to conventional photon RT described above. The physical properties of protons mean that most of the radiation dose is deposited at the end of the particle track (called the Bragg peak), with rapid reduction in the radiation dose after this peak. This provides a sharp dose drop-off at the junction of the prostate with surrounding normal tissues such as the bladder and rectum.

Although proton therapy has been applied successfully to brain and spinal tumours for many years, it has only relatively recently begun to be used to treat prostate cancer. Long-term outcome data is limited and includes patients from multiple risk groups.[11]

The main current drawbacks of proton RT are its cost, cost effectiveness and limited availability. It has also not been shown to be superior to current external beam treatment methods such as IMRT.

Stereotactic radiotherapy to the prostate

Stereotactic RT is another form of targeted RT that delivers higher doses per fraction (hypofractionation), to exploit the radiobiological properties of prostate cancers. This technology is still in its infancy with only limited early data published to date.[12] The larger fractional doses of such therapy do risk inducing higher rates of normal tissue complications, and reliable formal studies of the toxicity are yet to be published.

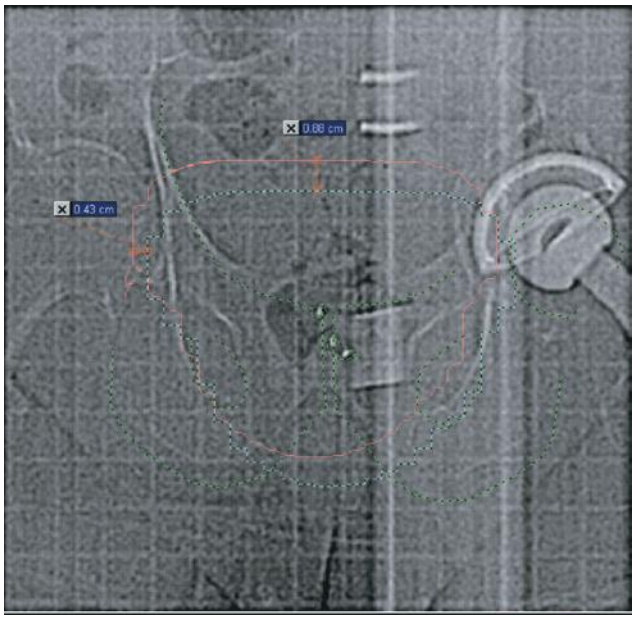
Intermediate and high risk prostate cancers

Curative treatment options include:

- Surgery (radical prostatectomy +/- lymph node dissection)
- EBRT
- HDR brachytherapy in combination with EBRT
- HDR monotherapy
- LDR (seed) brachytherapy with EBRT.

Hormone treatment is often used in combination with EBRT and HDR brachytherapy in these risk groups. Short durations of hormonal therapy (eg. six months) are favoured for patients with intermediate risk disease, whereas longer courses of hormonal therapy (eg. two to three years) are favoured for those with high risk disease.

Figure 6: *Portal x-ray taken of a patient on treatment, showing matching of planned field and treatment fields using fiducial markers.*



HDR brachytherapy with EBRT

Although there have been no randomised control trials to compare EBRT with or without HDR brachytherapy, the addition of HDR brachytherapy as a boost to a shorter course of EBRT has become commonplace. The advantages of HDR brachytherapy include a higher dose per fraction, and rapid reduction in dose outside of the prostate.

HDR brachytherapy is performed by placing catheters through the perineum into the prostate, under anaesthetic, with transrectal ultrasound image guidance. These catheters are placed positioned with a standardised template which is fixed to the perineum (see figures 7 and 8). Planning is based on a CT scan taken with the catheters in situ (see figure 9). Radioactive sources (for example, Ir^{192}) are introduced into the catheters for fixed periods using a remote afterloader unit (see figure 10).

Figure 7: *Set-up for HDR brachytherapy including transrectal ultrasound probe within rectum and template for guidance.*

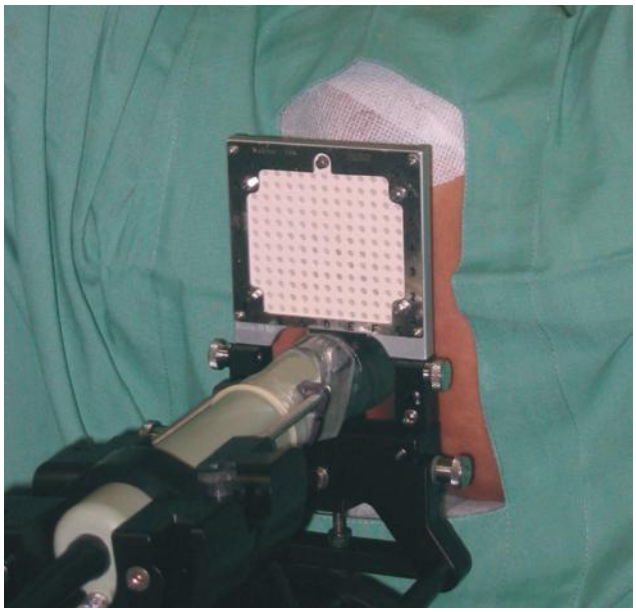


Figure 8: *Brachytherapy catheters in situ and template stitched to perineum.*

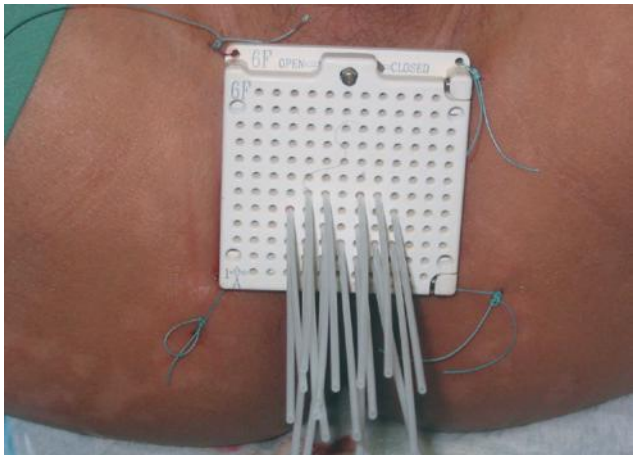


Figure 9: *Axial CT image of HDR brachytherapy catheters in the prostate (bold red outline). The rectum is outlined in purple, the urethra in yellow. Note that urethra is spared the highest doses.*

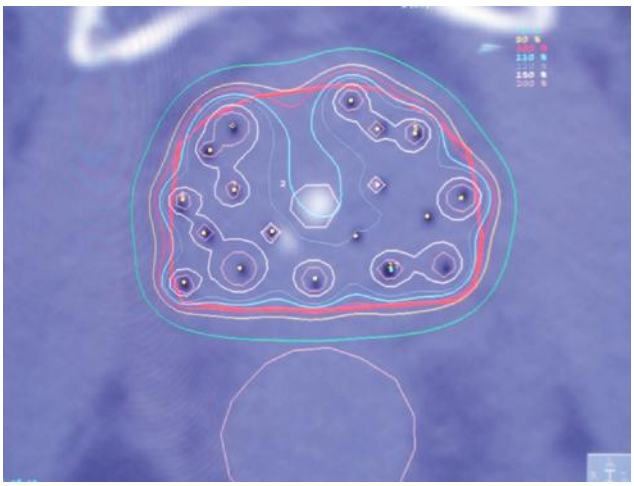
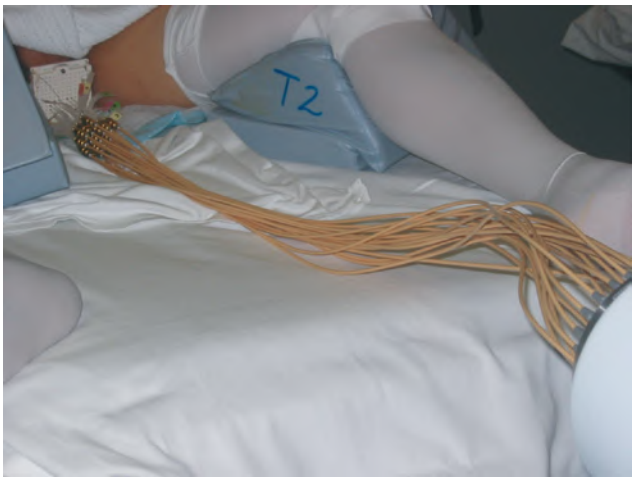


Figure 10: *Catheters connected to remote afterloader on right (Ir^{192} source is within the afterloader and moves in and out via yellow tubes shown).*



A recent review of the literature included patients in the low, intermediate and high risk groups treated with HDR brachytherapy.[13] Rates of freedom from biochemical relapse for patients with intermediate risk disease were 88-100% at five years and 82-92% at 10 years; and for patients with high risk disease were 67-97% at five years, 62-74% at 10 years.

HDR monotherapy

HDR brachytherapy without the use of EBRT is increasingly being used to treat localised prostate cancer. However, the follow-up from such series is still short and further research is needed before this technique can be recommended for wider use.[13]

Post prostatectomy RT

External beam radiation therapy after radical prostatectomy is generally well tolerated and worthy of consideration

in several specific situations. It can be given either immediately following prostatectomy when the PSA is undetectable in the serum (adjuvant), or delayed until the biochemical failure when PSA becomes detectable in the serum (salvage).

The patients who might benefit from postoperative radiation therapy include those with:

- positive surgical margins
- evidence of extracapsular extension (pT3a)
- evidence of seminal vesicle involvement (pT3b)
- rising PSA post prostatectomy.

The advantages of adjuvant RT are that a lower total dose is required (60Gy) than for salvage radiation, and the possibility of increasing cure rates for men with positive margins or pT3 disease. Studies have shown significant improvements in freedom from biochemical relapse, metastasis-free survival, and long-term follow-up of one study showed better overall survival.[14,15,16] However, adjuvant RT involves over-treatment of those whose cancer was destined never to recur even without further treatment.

Technologies such as 3D-CRT and IMRT, discussed above, can also be used to improve the delivery of radiation after prostatectomy.

Whether adjuvant RT or early salvage radiation therapy is superior, will be determined by the RAVES trial being conducted in Australia and New Zealand by the Trans Tasman Radiation Oncology Group, in collaboration with the Australian New Zealand Urogenital and Prostate Cancer Trials Group Ltd, and in the UK by the MRC-led Radiotherapy and Androgen Deprivation in Combination after Local Surgery (RADICALS) study.

Conclusion

Radiation therapy, in its many forms, has an important role to play in the management of localised prostate cancer. Recent advances in imaging, planning and delivery of radiation therapy are aimed at improving outcomes and reducing toxicity for treatment of prostate cancer. Ideally all prostate cancer patients should be referred to a radiation oncologist to further discuss their radiotherapy options and new developments in the field of RT and to facilitate the multidisciplinary management of this common malignancy.

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MAJOR ADVANCES IN SURGICAL TECHNIQUE FOR THE TREATMENT OF GENITOURINARY CANCERS

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Abstract

There have been numerous recent advances in surgical techniques for the treatment of genitourinary cancer. The advent of robotic-assisted laparoscopic radical prostatectomy is certainly a major technical development, however its superiority over the open technique has not yet been proven. Clinical trials of focal prostate therapy have begun, utilising the latest generation of ablative technologies such as cryotherapy and high intensity focused ultrasound. Small renal masses are now managed by active surveillance, nephron sparing surgery and ablative techniques with good success. Finally, extended lymphadenectomy for bladder cancer and high risk prostate cancer not only allows better pathological staging but also improved survival.

Significant advances in the surgery of genitourinary cancers have been made in the last five years. A comprehensive evaluation of all the major changes is beyond the scope of this article. However, we have selected the changes that we consider the most significant in terms of treatment outcomes and future trends.

Prostate: is robotic assisted laparoscopic prostatectomy better?

The development of the robotic-assisted laparoscopic retropubic prostatectomy (RALRP) in 2000 has been a major development in the technique of radical prostatectomy. In the US, this is now the most common approach for surgical removal of the malignant prostate and is gaining popularity in other parts of the world as well.

The proponents for this approach claim that it is associated with shorter hospitalisation, less pain, better cosmesis, shorter catheter time, lower transfusion rates and improved continence and potency rates. Open radical retropubic prostatectomy (ORRP) has also made significant improvements over the last decade and has become less invasive with significantly smaller incisions (8-10cm), quicker discharge from hospital and return to work, lower transfusion rates and much improved continence and potency outcomes (www.intuitivesurgical.com/patientresources/conditions/urologic/dvp.aspx).

In terms of the most important clinical outcomes following radical prostatectomy, there is a lack of high level evidence supporting superiority of RALRP over modern ORRP. A report based on the Medicare database in the US between 2003 and 2005 shows that following RALRP, 28% of men required salvage cancer treatments compared to 9% following ORRP, suggesting that laparoscopic techniques are failing to achieve the most important objective of treatment.[1] This study also showed that urethral stricture rates were 40% higher with RALRP. RALRP is however, clearly associated with lower blood loss but not lower transfusion rates.[2]

In relation to sexual functioning, the study with the highest level of evidence comparing the various methods of radical prostatectomy did not show any difference between ORRP and RALRP,[3] and this result has been replicated in a number of other studies. Claims on websites dedicated to robotic surgery that the RALRP method results in better sexual functioning have not been substantiated by scientific evidence. Continence rates also appear similar to conventional open surgery.

The modern ORRP is usually performed with a small incision and extraperitoneal approach, which minimises bowel disturbance. The operation takes approximately two hours and men are ambulatory and eating normally the next day and discharged two to three days post operatively. RALRP is very similar and the sum of all the multiple incisions is the same as the total length of an ORRP incision. In Australia, hospital stays have also been approximately two to three days. There are numerous conflicting studies showing that both RALRP and ORRP result in quicker return to normal activities. Unfortunately, there have been no large, prospective, well selected longitudinal studies ascertaining when men return to work or unrestricted activities following RALRP.

Satisfaction and regret rates differed substantially between men having RALRP versus ORRP in a Duke Medical Center study. After adjusting for baseline factors, the odds of being satisfied with treatment were four times higher in men who underwent ORRP rather than RALRP; and, the odds of regretting their treatment was three times higher in men who had RALRP rather than ORRP.[4] These counterintuitive findings are most likely due to unrealistic expectations rather than major differences in outcome between the two techniques. Further studies show that long-term satisfaction is independently associated with disease control, continence and potency and not by factors such as return to work time, length of stay and incision length.

In summary, the major technological advance of RALRP has not resulted in any significant improvement in continence or potency. The new procedure may however, be associated with poorer cancer control and higher levels of dissatisfaction and regret. The outcomes of earlier return to normal activities are still controversial.

Prostate: focal therapy is possible

With increasing screening, the burden of prostate cancer disease which may not pose a significant risk to life expectancy is increasing.[5] The therapeutic dilemma for a man diagnosed with low risk prostate cancer lies between the extremes of radical therapy on the one hand and active surveillance on the other. The former maximises the chances of cure at the expense of urinary and sexual morbidity. The latter preserves genitourinary function at the expense of psychological burden, potential for disease progression and economic burden of intensive surveillance.

Traditionally, treatment of the whole gland has been the standard of care as there is no natural surgical plane to allow partial treatment. Prostate cancer has also been regarded as a multifocal disease requiring treatment of the whole gland. Recent studies show that between 10% and 40% of men who undergo ORRP have unilateral disease.[6] This raises the concept of focal ablation of the tumour focus. It has also been shown that in men with multifocal disease, approximately 80% of tumour foci have a volume of less than 0.5cm,[3] which may represent clinically insignificant disease.[7]

Active surveillance appears to be a very suitable therapy for men with low risk disease, however, the major limitation is the ability to accurately identify men with significant disease that is going to progress clinically. As a result, the failure rate or intervention rate is approximately 20% in active surveillance series.[8,9] The oncological safety of active surveillance is also not well established, as the follow-up in cohort studies is still relatively short, although recent publications suggest that of those who come to definitive treatment, 50% may subsequently develop biochemical failure. In addition to this, the potential psychological burden and increased cost of close surveillance may make it less desirable than whole gland treatment by surgery or radiotherapy.

Major technological advances allowing focal treatment of affected parts of the prostate include cryotherapy, high intensity focused ultrasound (HIFU) and photodynamic therapy. This addresses the dilemmas of the untreated prostate in active surveillance, and does so with minimal side-effects, which is the major disadvantage of whole gland therapy. To date only early results of small series from single institutions have been reported. Most series used extended or saturation TRUS biopsy to accurately localise the lesion(s) and exclude contralateral disease (although even with these techniques understaging and undergrading can occur in 20-25% of patients). In a report of hemi-ablation using cryotherapy in 55 men with at least one year follow-up, 95% had stable PSAs and 86% remained potent,[10] however seven men had to be retreated due to cancer in the contralateral half of the prostate.

Another series of hemi-ablation with cryotherapy, with a mean follow-up of 70 months, reported 93% disease-free survival and 48% potency rate.[11] A report on hemi-ablation by Muto, using the Sonoblate 500 HIFU® device in 29 men with unilateral disease, demonstrated that at six months, 10% had positive biopsies, however a further 23% had positive biopsies at 12 months.[12] There was no significant change in urinary symptom scores measured with the validated International Prostate Symptom Score questionnaire. Erectile function was not measured in this cohort.

Photodynamic therapy involves administration of a photosensitising drug followed by delivery of a specific wavelength of light into the appropriate region of the prostate by transperineal needle, resulting in ablation similar to cryotherapy. It is currently in its infancy, however multicentre trials of focal ablation are being planned. Radiofrequency ablation is also a technology which has been used in ablation of solid organs such as kidney and liver. It is currently in early studies for prostate but will soon be studied for focal ablation.

In summary, focal ablation appears to be the middle ground between the untreated tumour of active surveillance and excessive side-effects of whole gland treatment. Cryotherapy and HIFU in very small series, with limited follow-up, do demonstrate some promise, however further studies of all ablation methods are required to determine their real place in prostate cancer treatment. The main barrier preventing adoption of these techniques is effective cancer localisation at the time of biopsy, to ensure that the focal therapy is indeed treating all the cancer present in the gland.

Prostate: lymphadenectomy is therapeutic

The decision of whether to perform a pelvic lymph node dissection (PLND) at all in combination with radical retropubic prostatectomy (RRP), and if so the extent of the dissection, depends on many factors. The likelihood of lymph node disease can be estimated from the Partin tables[13] or Memorial Sloan Kettering Cancer Center nomograms.[14] Most surgeons will perform a limited PLND, or none at all, for men with low risk prostate cancer; however evidence is emerging that men with higher risk prostate cancer should have an extended lymph node dissection.

The first reason for an extended dissection is the higher incidence of lymph node metastases in regions beyond the standard PLND obturator region of dissection. Better staging of disease allows better counselling and implementation of adjuvant therapies such as immediate androgen deprivation therapy. One study showed that an extended PLND (ePLND) including obturator, internal iliac and external and common iliac arteries, resulted in much higher numbers of positive lymph nodes being identified than a standard lymph node dissection (eg. 26% v 12%), with 42% of all positive lymph nodes detected outside the standard template.[15] Similar results in another study suggested approximately 60% of positive lymph nodes would have been been missed if only a standard PLND was performed.

There is accumulating evidence that PLND may also be therapeutic. A study of 13,020 patients from the surveillance epidemiology and end results (SEER) database showed that men who had more than four lymph nodes removed at ORRP had a 23% relative reduction in the risk of prostate cancer death.[16] Another finding was that men who had a more extensive PLND (10+ nodes removed) had a 15% relative reduction in the risk of prostate cancer death, even when the analysis was restricted to men with uninvolved nodes. A further study by Heidenreich has also shown that men with no histopathologic evidence of lymph node involvement after ORRP had a 23% risk of relapse if they had sPLND compared with an 8% risk if they had Eplnd.[15] There are also a number of reports of men with ePLND who had small volume microscopically involved lymph nodes, but achieved 40% long-term disease free survival.[17]

In summary, ePLND dissection is recommended for men who have high risk prostate cancer because it enables better staging and hence further therapies, however emerging evidence also suggests improvement in disease free survival and overall survival, possibly due to the presence of micrometastases that may only be detected using molecular techniques.

Kidney: management of small renal masses

Due to the increased use of diagnostic imaging for evaluating patients with abdominal complaints, incidentally diagnosed small renal masses (SRMs) are being diagnosed with increased frequency and account for between 48% and 66% of renal cell carcinoma diagnoses, resulting in greater surgical intervention over the last three years.[18] Over the last decade there has been growing awareness that these SRMs, typically described as solid renal masses less than 4cm, can be managed in a variety of ways.

Meta-analyses of active surveillance studies have shown that SRMs with a median size of 3.04cm had a median growth rate of only 0.28cm per year.[19] Moreover, 26% to 33% of SRMs demonstrate zero net growth rate when observed for a median of 29 months.[20] While there can be considerable growth rate variability between tumours, only 1% of observed lesions in the meta-analysis progressed to metastatic disease with a median three years follow-up.[19]

Alternative treatments for SRMs which demonstrate significant growth, adverse pathology on biopsy or cause significant psychological distress to the patients, include nephron sparing surgery and various ablative techniques such as radiofrequency ablation and cryotherapy.

Meta-analysis of nephron sparing surgery (NSS) for SRMs with a median size of 3.26cm, have shown a local recurrence rate of 2.6% after a mean follow-up of 54 months.[21] Progression to metastatic disease was observed in 5.6% of these patients. Compared to active surveillance and NSS, the newer ablative techniques have smaller median tumour sizes (2.56cm and 2.69cm) and shorter follow-up times (18 months and 16 months) for cryotherapy and radiofrequency ablation respectively. Following treatment, the local recurrence rate is higher than NSS at 4.6% and 11.7%, however metastatic progression was not different at 1.2% and 2.3% respectively.[21] It is important to note that although local recurrence rates may be higher for the new ablative therapies, it is often possible to repeat the therapy. A particular difficulty arises in determining local recurrence, as contrast enhancement does underestimate the presence of actual residual disease in the treated region,[22] suggesting that biopsy should be used to determine efficacy of treatment.

In summary, the treatment of SRM is still controversial. Accumulating evidence suggests that active surveillance is safe, but for patients in whom this is deemed inappropriate, NSS delivers the optimal oncological outcomes. The new ablative therapies are promising and can be considered alternatives in special circumstances, however local recurrence rates are higher and longer term data are required for better evaluation.

Bladder: the importance of extended lymph node dissection

While it has been long established that regional lymphadenectomy with radical cystectomy for muscle invasive bladder cancer is very important in staging of the patient, and the presence of lymph node metastases is one of the strongest predictors of prognosis, there has been growing evidence that lymphadenectomy has a significant therapeutic role as well. This is not only because it instigates the use of adjuvant therapy in many cases of node-positive disease, but the surgery itself may be therapeutic.

It has been established for over a decade that following surgery alone, five year survival rates may be as high as 14% for patients with macroscopically involved lymph nodes,[23] and up to 50% for patients with only microscopically involved nodes.[24]

The extent of lymph node dissection traditionally involved the internal and external iliac arteries from the obturator fossa to the common iliac bifurcation. More recently an ePLND dissection which includes the common iliac arteries to the aortic bifurcation, and in some series even the distal aorta, has been proposed. The use of a standard template instead of an extended template misses over 34% of positive lymph nodes[24] and ePLND yields a median 22 nodes compared with eight nodes from a standard dissection.[25]

There is now significant data that shows that the number of lymph nodes removed correlates with oncological outcome. Patients with higher lymph node yields have lower loco-regional recurrence,[26] and also risk of developing distant metastasis,[27] irrespective of whether the nodes are positive or negative. A number of studies have also shown that larger numbers of nodes removed are associated with a longer disease free interval and higher disease specific survival. For example, Herr et al reported five year survival rates with 0-5, 6-10, 11-14 and 14+ nodes removed were 33%, 44%, 73% and 79% respectively.[28] In patients with positive nodes, the lymph node density (positive nodes/total nodes) has been shown to also predict survival.[29]

While it has been clearly shown that extended lymph node dissection and the removal of more nodes is associated with better disease control and survival, there are a number of possible theories why. The most likely is that the removal of macroscopic and occult microscopic disease truly improves survival. However, it may be that lymph node count may merely be a confounder for patient health, surgeon or institution factors. For example, a sicker patient with more comorbidities or more extensive cancer may have fewer nodes removed and also have a higher mortality. Another explanation is the "Will Rogers" phenomenon, where better staging results in better prognosis for all stage categories. This occurs when better detection of positive nodes leads to movement of people from previously node negative to node positive. Because of this, removing them from the previously node negative group increases the outcomes of the node negative group. Likewise, the migrated node positive patients have lower volume disease than the already node positive group, so adding them raises the average outcome that group as well. Irrespective of the cause, current treatment of muscle invasive bladder cancer in Australia should include extended lymph node dissection.

There continue to be major and minor modifications to the surgical treatment of urological cancers. The future is most likely a combination of technological advances allowing surgical removal or ablation with minimisation of morbidity. In addition the rapid development of biological treatments such as tyrosine kinase inhibitors for renal cell carcinomas will possibly allow more patients to become operable by the downsizing of tumours.

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MANAGEMENT OF TESTICULAR CANCER

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Abstract

The management of testicular cancer has changed dramatically over the last 30 years. Almost all patients with early stage disease and over 80% of patients with advanced disease can now be cured with optimal treatment in experienced cancer centres. Strategies for stage I seminoma are surveillance, adjuvant radiotherapy or adjuvant chemotherapy with carboplatin. Strategies for stage I non-seminoma are surveillance or two cycles of adjuvant combination chemotherapy. First-line treatment for advanced disease is combination chemotherapy. Salvage treatment for early relapse of advanced disease is standard or high-dose chemotherapy. Current controversies for stage I disease include the appropriate selection of patients with stage I disease for surveillance or adjuvant therapy, the optimal surveillance program and the nature and intensity of adjuvant therapy. Current controversies for advanced disease include the role and timing of high-dose chemotherapy. Priorities for future research are identified.

The majority of testicular neoplasms are germ cell tumours, which arise from the malignant transformation of primordial germ cells that are destined to become spermatids. Testicular germ cell tumours are classified for treatment purposes into two subtypes. About 50% are pure seminoma and are highly sensitive to radiotherapy and chemotherapy. The remainder are grouped as non-seminomatous germ cell tumours (non-seminoma) and include yolk sac tumour, embryonal carcinoma, choriocarcinoma, teratoma with mature or immature elements, and tumours with a mixture of these elements. Tumours with any non-seminomatous component or an elevated alpha-fetoprotein (AFP) are treated as non-seminoma.[1] Mature teratoma is a slow growing chemo resistant tumour that can occasionally undergo malignant transformation to adenocarcinoma or sarcoma if left unresected.

About 80% of patients with seminoma and 60% of patients with non-seminoma have disease restricted to the testis (stage I) at diagnosis. Current research for this group aims to reduce the toxicity of treatment while maintaining high cure rates. Advanced disease includes metastases to infra-diaphragmatic lymph nodes (stage II) and distant metastases (stage III). Serum tumour markers including AFP, human chorionic gonadotrophin (HCG) and lactate dehydrogenase (LDH) play a vital role in diagnosis, prognostication, assessment of response and monitoring for relapse and have recently been incorporated into the TNM staging system.

All patients with testicular cancer should be treated with curative intent, regardless of stage of disease. Best outcomes occur in high volume, specialised treatment centres that use an integrated multidisciplinary approach.[2] Expertise is required in the fields of oncology (urological, medical, radiation), nursing, psychology and andrology. Infertility may occur due to treatment, or even before treatment, so patients should be offered sperm-banking prior to chemotherapy or radiotherapy.

Management of stage I seminoma

At least 80% of patients with stage I seminoma are cured with orchidectomy alone. Of the 15-20% who relapse after orchidectomy, almost all recur initially in infra-diaphragmatic lymph nodes with a predictable pattern of spread. About two thirds of patients who relapse will do so in the first two years, but there is a small risk of relapse extending until 12 years following orchidectomy.[3] The presence of tumour invasion into the rete testis and tumour size greater than 4cm increases the risk of relapse to 31%, but absence of both factors reduces the risk to 12%. Unlike stage I non-seminoma, lymphovascular invasion is not an independent risk factor for relapse.[4]

The appropriate management strategy for stage I seminoma remains controversial. Until recently, almost all patients with seminoma received adjuvant radiotherapy.[5] Traditionally, adjuvant radiotherapy to a dog-leg field (para-aortic and ipsilateral pelvic lymph nodes) was used, reducing the risk of relapse to 5% or less. Potential long-term toxicities include chronic gastrointestinal side-effects, cardiovascular disease, infertility (for pelvic radiotherapy) and radiation induced second malignancies.[3] The small risk of developing a second malignancy has been a major concern with this approach. The Medical Research Council UK has conducted two randomised trials which aimed to reduce long-term toxicity. Treatment with lower doses (20 Gy versus 30 Gy)[6] and smaller fields (para-aortic region versus dog-leg field),[7] were associated with equivalent relapse free survival. Long-term follow-up of these trials is required to determine if less intense radiotherapy achieves the goal of reducing long-term toxicity.

Surveillance for seminoma was introduced by selected centres during the 1980s as an alternative to adjuvant radiation therapy.[4] The main disadvantage of surveillance is the need to follow patients intensively for at least 10 years. Follow-up requires clinical examination, tumour markers and repeated CT scans of the abdomen and pelvis. Poor compliance with surveillance increases the

likelihood of presenting at relapse with bulky disease that requires intensive multimodality therapy.[3] The optimal surveillance protocol has not been defined and published guidelines vary widely. Minimum recommendations are: six to eight visits and four to eight CT scans during the first two years; six to 10 visits and three to eight CT scans during the next three years; then annual visits with zero or one annual CT scan up to 10 years.[8-10] Repeated CT scans may be also associated with a small increased risk of radiation induced malignancies.[11] A current randomised trial conducted by the Medical Research Council is testing if excellent outcomes can be maintained when reducing radiation exposure by substituting MRI for CT and/or reducing the number of scans.

Adjuvant chemotherapy with a single dose of carboplatin has been compared to adjuvant radiotherapy in a recent randomised clinical trial conducted by the Medical Research Council and the European Organisation for Research and Treatment of Cancer.[12-13] Relapse rates were similar for carboplatin compared with radiotherapy, but did not meet the definition of non-inferiority stipulated in the protocol. The pattern of relapse varied - patients treated with carboplatin were more likely to relapse in lymph nodes below the diaphragm, while patients treated with radiotherapy were more likely to relapse above the diaphragm (outside the treatment field). Most acute toxicities were better for patients receiving carboplatin. Patients treated with carboplatin were less likely to develop contralateral germ cell tumours. Carboplatin has not yet been fully accepted as a standard management strategy.[3] Long-term data about relapse and survival is awaited. The optimal number of cycles of carboplatin is not defined.[14-15] Carboplatin is expected to have little late toxicity but longer term follow-up data is required. The incidence of cardiovascular disease and second malignancies do not appear to be increased at a median of nine years of follow-up.[16] It is important to note that patients receiving carboplatin require ongoing follow-up including repeated abdominal and pelvic CT scans.

As a result of the effectiveness of treatment for relapsed disease, all management strategies including surveillance give 97-100% cancer-specific survival in experienced centres.[3] The selected strategy should be tailored to the risk of relapse, patient preference and local expertise and familiarity with the chosen strategy.

Management of stage I non-seminoma

Seventy to 75% of patients with stage I non-seminoma are cured with orchidectomy alone. Of the 25 to 30% who relapse, 60% recur initially in retro-peritoneal lymph nodes and almost all of the remainder in the lungs. A series of studies has shown that about 80% of patients who relapse will do so within one year, 10% during the second year and 5% during the third year. Relapse beyond five years is rare.[8] The strongest risk factor for relapse is vascular invasion of tumour into blood or lymphatic vessels. Other weaker risk factors are high tumour proliferation rate, presence of embryonal cell carcinoma and absence of yolk sac elements. High and low risk patients have a risk of relapse at three years of 35-40% and 10-15% respectively.[17]

Patients with stage I non-seminoma can be managed with surveillance or adjuvant chemotherapy. Each management strategy should give 98-99% cancer specific survival in experienced cancer centres.[1,3]

Patients on a surveillance program require strict follow-up, because delayed detection of relapse in patients with inadequate surveillance may result in bulkier disease at relapse with poorer outcomes. Recommendations vary substantially on the minimum surveillance requirements for stage I non-seminoma: eight to 18 visits and two to seven CT scans during the first two years; six to 10 visits and zero to six CT scans during the next three years; then zero or one annual visit and zero or one annual CT scan up to 10 years.[8-10] The substantial variation in recommendations has led to uncertainty by clinicians about appropriate follow-up schedules.[18] The Medical Research Council recently conducted a randomised trial that compared surveillance with two CT scans during the first 12 months, with five CT scans over 24 months.[19] A similar proportion of patients in each arm relapsed with intermediate or poor-risk metastatic disease at a median of 40 months. The applicability of this trial is limited by the low proportion of patients with high risk disease (10%), the lack of long-term follow-up data on outcomes after relapse and questionable choice of the control arm and the primary measure of effectiveness.

Adjuvant chemotherapy for stage I non-seminoma generally consists of two cycles of chemotherapy with cisplatin, etoposide and bleomycin (BEP). This treatment reduces the risk of relapse to about 2%.[3] Two cycles of BEP does not appear to adversely affect fertility or sexual function.[20]

Disadvantages of adjuvant chemotherapy are over-treatment in those who will remain relapse free without adjuvant therapy - about 90% of low risk patients and about 60% of high risk patients. These patients are at risk of unnecessary long-term toxicity including neuropathy, Raynaud's disease, cardiovascular disease, and rarely secondary haematological malignancies.[3] Another concern is the potential for late relapse in infradiaphragmatic lymph nodes of slow growing chemo-resistant teratoma. This mandates ongoing and long-term follow-up.[21] The Swedish-Norwegian Testicular Cancer Project recently conducted a study using only one cycle of BEP for high risk non-seminoma (and surveillance for low risk non-seminoma).[22] The relapse rate of 3% at a median of almost five years is comparable to two cycles of BEP. Mature data is awaited from this study, however the applicability will remain limited by the sample size and methodology and two cycles of BEP will likely remain the standard for adjuvant chemotherapy.

Retroperitoneal lymph node dissection with or without adjuvant chemotherapy is a third option that is not commonly practised in Australia because of concerns about its acute and chronic complications, including bowel dysfunction and reterograde ejaculation, and because of the excellent results with alternative strategies.[9-10]

Guidelines recommend risk adapted treatment for the majority of patients. Surveillance is generally preferred for compliant patients with low risk disease (as defined

by lack of vascular invasion). Adjuvant chemotherapy is generally preferred for high risk disease, but surveillance remains an option. As for seminoma, treatment should be customised for each patient according to risk of relapse, patient preference and the expertise of the treating team.

Initial management of advanced disease

The majority of patients with advanced disease can still be cured with modern platinum based chemotherapy, however 25% will relapse and 20% will eventually die of their disease.[23] The International Germ Cell Cancer Collaborative Group (IGCCCG) have identified adverse risk factors that predict poorer outcomes: presence of a mediastinal primary site; degree of elevation of tumour markers (AFP, B-HCG, LDH) and; presence of non-pulmonary visceral metastases (ie. not lymph node or lung; eg. liver, brain or bone metastases). The 60% of patients classified with a good prognosis by IGCCCG criteria have a five year survival of 90%. The 25% of patients with intermediate risk disease and 15% of patients with poor risk disease have a five year survival of 80% and 50% respectively.[23] Since publication of this data there has been an increasing proportion of patients in the good prognosis category and outcomes for those in the intermediate and poor prognosis groups have improved.

Non-bulky metastatic pure seminoma involving only infra-diaphragmatic lymph nodes (stage IIA) is usually treated with external-beam radiotherapy. 'Non-bulky' is generally considered to be when the maximum diameter of the nodal disease is <5cm. Some centres use a 3cm cut-off. Relapse occurs in about 10% of patients, with overall survival approaching 100%.[1] Four cycles of single-agent carboplatin appears to be inferior to radiotherapy in stage II seminoma.[24]

Standard initial treatment for all other patients with advanced disease (regardless of risk group) is BEP chemotherapy.[25] Patients with good risk disease receive three cycles of BEP and patients with intermediate or poor risk disease receive four cycles of BEP.[26] Potential long-term toxicity of chemotherapy includes infertility, ototoxicity, Raynaud's phenomenon, peripheral neuropathy, lung disease, cardiovascular disease and secondary malignancies.[26]

A randomised trial conducted by the Australia New Zealand Germ Cell Trials Group (now incorporated in the Australian and New Zealand Urogenital and Prostate Cancer Trials Group Ltd [ANZUP]), has shown that the dose and dose intensity of BEP is important.[27] For good risk disease, a randomised trial conducted by the French Federation of Cancer Centres suggests that four cycles of etoposide and cisplatin (EP) is equivalent to three cycles of BEP.[28] Advocates of BEP favour the shorter duration of treatment and greater evidence base for this approach, while advocates of EP favour the omission of bleomycin with reduction in interstitial lung disease and Raynaud's phenomenon. For intermediate and poor risk disease, randomised trials of more toxic regimens, including VIP (etoposide, ifosfamide, cisplatin)[29-30] and high dose chemotherapy with stem cell support,[31] have been shown to be more toxic than BEP, but no more effective. Alternate regimens that are currently being evaluated in the first line setting include paclitaxel in combination with BEP (T-BEP) and a multi-drug, dose dense regimen of carboplatin, bleomycin, vincristine, cisplatin and BEP. ANZUP is completing a trial of accelerated BEP, cycling cisplatin and etoposide every two weeks instead of every three weeks. ANZUP is advancing a proposal for an international randomised trial to compare accelerated BEP with standard BEP. Current research is also testing intensification of chemotherapy for patients with inadequate fall of tumour markers during BEP chemotherapy.

A key component of the management of advanced non-seminoma is resection of residual masses after chemotherapy.[26] In patients with normalisation of tumour markers, resection of residual masses yields viable germ cell tumour in 10%, mature teratoma in 50% and necrosis in 40%. In contrast, resection of residual masses for pure seminoma is not recommended because the low incidence of viable tumour or chemo-resistant teratoma, and because surgery is technically difficult because chemotherapy induces an intense fibrotic reaction.[26] For seminoma, PET scans can be used to determine the presence of viable tumour that requires further treatment.[32]

Salvage treatment for relapsed disease

Patients refractory to or relapsing after initial treatment for advanced disease can still be cured with salvage treatment. A recent report identified adverse prognostic factors for response to salvage treatment as non-gonadal primary site, absence of complete response to initial chemotherapy, progression free interval of less than three months, degree of elevation of tumour markers at relapse, and the presence of non-pulmonary visceral metastases at salvage.[33] Patients with low risk, intermediate risk and high risk disease have a three year survival of 73%, 59% and 27% respectively. The majority of patients fall into the intermediate group.

Standard approaches for patients who relapse within two years from initial treatment (early relapse) are four cycles of conventional dose chemotherapy (usually paclitaxel, ifosfamide and cisplatin [TIP]), or two to three cycles of sequential high-dose chemotherapy with peripheral blood stem cell support (eg. two cycles of paclitaxel and ifosfamide followed by three cycles of high dose carboplatin and etoposide [TICE]).[26] It is not yet clear if patients should receive high dose chemotherapy as first line salvage treatment for poor prognosis relapse, or if it should be reserved as second line salvage treatment. Patients who relapse more than two years after first line chemotherapy (late relapse) appear to have more chemo resistant disease in which surgical resection of all metastatic tumour may play an important role in management.[21]

Research priorities

Research priorities in the management of stage I testicular cancer are to maintain high cure rates while reducing the potential long-tem toxicity of adjuvant treatment and surveillance CT scans. An important strategy is to identify genetic and molecular predictors of relapse that will better select patients who will benefit from adjuvant therapy and

avoid over-treatment in other patients. Another strategy is the investigation of utility of new imaging modalities such as PET-CT scans to detect occult metastatic disease.

For advanced testicular cancer, more effective regimens are required for patients with intermediate and poor risk disease. One strategy aims to identify pharmacogenetic markers of bleomycin and etoposide metabolism, with use of alternate chemotherapy regimens in patients with high clearance. Another strategy aims to identify molecular predictors of incomplete response or relapse, which will select patients for more aggressive first line chemotherapy.

Most patients treated for testicular cancer will be cured and live for many decades. It is only about 30 years since the introduction of effective chemotherapy and, as a result, we are still learning about the late effects of treatment. Understanding the outcomes in survivors remains an important area of research.

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QUALITY OF LIFE RESEARCH IN PROSTATE AND TESTICULAR CANCER

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Abstract

Health related quality of life research is contributing substantially to the management of prostate and testicular cancer, but in different ways. Both diseases have good prognoses, but their trajectories and affected age groups differ greatly. In early stage prostate cancer, there are many different treatment options to choose between and their relative benefits and harms are unclear. Here, health related quality of life research is providing comparative information about functioning, symptoms, wellbeing and preferences to help inform choice. In advanced prostate cancer, the big questions are about whether and when to have various treatments, rather than about the choices between them. Here, health related quality of life research is focused on determining net effects of treatment by measuring benefits in cancer related symptoms, harms from treatment toxicity and allowing these to be considered alongside modest effects on survival. In testicular cancer, the effects of treatment on survival are substantial and options are fewer. Here, health related quality of life research is focused on minimising the effects of disease and treatment on short and long-term health related quality of life by screening, improving supportive care and modifying treatments.

Prostate cancer and quality of life

Prostate cancer accounts for more than 25% of new cancers in Australian men.[1] It typically affects older men and has a relatively slow rate of progression. With increasingly widespread uptake of prostate specific antigen testing, more prostate cancer is being detected at an earlier stage and more younger men are being diagnosed. For younger men, even modest decreases in functioning may have significant impacts on their health related quality of life (HRQoL) over a long period.

Active treatment options for localised prostate cancer include various forms of surgery and radiation therapy, all of which may be associated with significant adverse effects, particularly urinary symptoms and erectile dysfunction. Since high level evidence about the relative survival benefits of these alternative treatments is limited,[2] decisions about treatments need to take account of patient preferences regarding possible trade offs between estimated treatment effectiveness and various adverse effects. While there have been many studies of HRQoL in localised prostate cancer,[3,4] level I evidence for treatment effects on HRQoL has limitations both in methodology and reporting.[5] High quality level II evidence is available from two large cohort studies in the US and Australia, each of which has included a comparison group from the general population.[6,7] At five year and three year follow-up respectively, these studies have found sexual dysfunction to be common in all treatment groups. Urinary dysfunction is reported to be worst in men who have undergone radical prostatectomy. Bowel function is most impacted in those who have received external beam radiotherapy.

Where a cure is not possible, disease management may continue over many years. Men with advanced prostate cancer are typically treated using hormone therapy and then chemotherapy when the cancer becomes hormone resistant. Chemotherapy and/or radiotherapy may also be used to palliate pain from bony metastases. Side-effects associated with hormone therapy include loss of libido, erectile dysfunction, hot flushes, anaemia, obesity, decrease in muscular strength, fatigue, gynaecomastia and breast pain, decline in physical activity and general vitality, mood changes and depression, nausea, diarrhoea and osteoporosis.[8]

HRQoL assessment

Prostate cancer is well served by disease specific HRQoL questionnaires, with at least 10 validated questionnaires available free for use in non-commercial research.[9] Many of these have been developed for localised disease and assess urinary, bowel and sexual functioning. Because men will vary in the importance they attach to the same symptoms and impacts on functioning, it may be important to include items relating to 'bother' as well as severity.[10] This is the approach taken by the widely used EPIC (see glossary), which is an expanded version of the UCLA PCI (see glossary), with additional items assessing impacts from hormone therapy to the core urinary, bowel and sexual domains. The UCLA PCI and EPIC have been used in the two largest studies of HRQoL in localised prostate cancer referred to earlier.[6,7] As the EPIC is the more comprehensive two, it is a good choice of instrument for future studies of HRQoL in localised prostate cancer.

Only one dedicated questionnaire has been developed for assessment of HRQoL in men with advanced prostate cancer. The QOLM-P14 (see glossary) was developed as an accompaniment to the EORTC QLQ-C30 (see glossary) in

a trial comparing the effect of mitoxantone and prednisone versus prednisone alone in men with metastatic prostate cancer. However, it is not an official EORTC questionnaire and has not followed their rigorous development protocol. The QOLM-P14 contains three scales (impact of pain on mobility, pain relief and drowsiness) and two single items (hair loss and change in taste).[11]

A prostate cancer specific utility instrument has also been developed, called the PORPUS (see glossary).[12] This instrument provides a single index for economic analyses that is more responsive to changes over time than are widely used, generic utility scales like the EQ-5D (see glossary) and HUI (see glossary). The MAX-PC[13] (see glossary) has been designed to assess anxiety in men with prostate cancer undergoing treatment and in the survivorship phase. Disease specific assessment of anxiety may be especially important in studies evaluating the impact on HRQoL of watchful waiting.

Because many men with prostate cancer continue to live active lives in the community for many years, it may be appropriate to supplement a prostate cancer specific questionnaire with one assessing generic concerns. The SF-36 (see glossary) and SF-12 (see glossary) are the most widely used generic HRQoL questionnaires both in prostate cancer and across disease groups, and are included in the long and short forms of EPIC respectively. Using the SF-12 or SF-36 enables researchers to compare their results with data from the general population, to identify any general areas of HRQoL that may be significantly lower in the men with prostate cancer in their sample.

Implications for practice

Evidence that men with early stage prostate cancer sometimes regret their treatment decisions after the long-term impacts on functioning become known, supports the need for more detailed discussions between doctors and patients about potential outcomes.[14] Australian research confirms that both clinicians and patients regard the decision making process as complex and difficult.[15,16] A number of decision aids are available but have not been widely used or evaluated in the Australian setting. The large population-based Australian Prostate Cancer Outcomes Study cohort, referred to above,[7] currently provides the best evidence to inform Australian patients and clinicians about treatment choices. The recent publication in the *British Medical Journal*[7] provides three year HRQoL outcomes, using the EPIC, for all active treatment groups plus active surveillance and control groups. Corresponding five year data have been collected but are yet to be analysed, and will be published in due course.

Future research

Further, high-quality randomised comparisons of survival and HRQoL outcomes between treatment modalities for early stage prostate cancer are needed to improve the evidence base for decision making. Studies are especially needed into the impacts on HRQoL of neoadjuvant hormone therapy and new therapies such as cryotherapy. Australian practice would also benefit from the trialling of decision aids for localised disease. In advanced stage disease, research is needed to determine the optimal time for starting chemotherapy.

Testicular cancer and quality of life

Testicular cancer is the most common non-skin cancer in young men, peaking in incidence between the ages of 15 and 45. Since the introduction of cisplatin based polychemotherapy in the late 1970s, testicular cancer has also become one of the most curable of all neoplasms - almost 90% of men affected by testicular cancer can be cured and more than 95% become long-term survivors. While testicular cancer is relatively rare, the young age of the men it affects, the excellent prognosis and a rising incidence (for example, up 25% in Australia from 1993 to 2003[1]) translate into an increasing number of survivors for whom long-term physical, emotional and social wellbeing are major concerns.[17,18]

Early stage testicular cancer is treated by the surgical removal of the affected testis (orchidectomy) followed most often by surveillance, or less often by adjuvant radiation therapy or chemotherapy. Routine retroperitoneal lymph node dissection is rarely used in Australia or New Zealand, but more often in the US. Advanced testicular cancer is most often treated with cisplatin based chemotherapy, sometimes followed by resection of residual disease.

Long-term HRQoL in testicular cancer survivors has not been significantly associated with treatment type,[19] except where the extremes of treatment intensity were compared. Physical and psychosocial dimensions of recovery are often related.

Impacts on physical functioning and health

Cisplatin based chemotherapy is associated with neurotoxic effects such as peripheral sensory neuropathy (parasthesia, pain), which peak about six months after treatment begins; patients are usually able to adapt to the symptoms and they rarely interfere with daily activities.[17] Ototoxicity is a more frequent long-term problem with tinnitus in approximately 25% of patients and perceived long-term hearing loss in 20%. Hearing loss may have an impact on overall health status and ability to work in some survivors.[20] Raynaud's phenomenon, whereby fingers and toes become painful in low temperatures, affects 20% to 30% of men undergoing cisplatin based chemotherapy.

Impacts on sexual functioning may be associated with all modes of treatment, but are worse after radiation therapy and worst after retroperitoneal node dissection.[21] Reductions in sex hormone levels due to chemotherapy, radiotherapy, or surgery can cause decreased sexual function, depression and decreased general physical function.[22,23] Cisplatin based chemotherapy and radiotherapy are also associated with an increased risk of cardiovascular disease and gastrointestinal disease respectively. Mild, though sometimes persistent gastrointestinal symptoms, such as diarrhoea, occur in around a quarter of patients receiving radiotherapy, while more serious problems such as peptic ulcers occur in 3% to 5%. Renal damage from chemotherapy usually remains subclinical, however 30% to 40% of patients may develop hypomagnesemia and hyperuricemia during treatment.[24] Finally, the risk of a second malignancy is significantly higher for testicular cancer survivors than for the general population out to 35 years beyond treatment.[25]

Long-term psychosocial problems

The diagnosis and treatment of a potentially life threatening disease in the prime of life is, unsurprisingly, associated with psychological distress. While the majority of men make a good recovery following treatment, up to a quarter report subsequent problems with psychological wellbeing, relationships, sexuality, body image or employment.[18] These problems often co-exist, but their inter-relationships are not well understood.[26]

HRQoL assessment

EORTC is currently undertaking international validation of a testicular cancer-specific HRQoL questionnaire, the EORTC QLQ-TC26 (see glossary), to supplement its core measure, the QLQ-C30.[27] This study is being conducted in Australia by the Psycho-Oncology Cooperative Group of Australia (PoCoG) in collaboration with the Australian and New Zealand Urogenital and Prostate Cancer Trials Group Ltd (ANZUP).

The QLQ-TC26 assesses treatment side-effects, satisfaction with care, future perspective, job problems, family problems, sexual activity, communication, body image problems, satisfaction with testicular implant, sexual enjoyment and sexual problems. As in prostate cancer, the SF-36 and SF-12 have been used routinely to assess the generic concerns of testicular cancer survivors who have returned to ordinary lives in the community.

Implications for clinical practice

Until recently, the curative potential of treatments for testicular cancer has overshadowed what were perceived to be short-term impacts on HRQoL. However, recent research shows that a minority of men sustain lasting physical and psychosocial impacts in one or more areas of functioning and wellbeing. Given the excellent prognosis for this patient group, the major question is whether HRQoL might be improved by modifying treatments and care pathways without compromising survival. It seems likely that screening might have a role to play in identifying men for whom psychosocial support may be helpful.

Future research

A more detailed profile is needed of men who experience poor outcomes from testicular cancer and its treatment. Outcomes may tend to cluster in predictable ways and some men may even experience pervasive difficulties across many aspects of their lives. Better understanding of the relationships between characteristics of the men, their disease, their treatments and their subsequent problems would inform the design of tailored, multi-disciplinary screening and intervention program to meet the full spectrum of needs. Existing studies have provided piecemeal data that is insufficient to answer these questions. An ongoing intergroup study initiated by PoCoG in collaboration with ANZUP will provide a comprehensive assessment of psychosocial outcomes, disease and treatment variables in a large cross-section of testicular cancer survivors. A subsequent longitudinal study following patients from diagnosis is also planned.

Conclusion

HRQoL research continues to provide important information to assist in the management of men with prostate or testicular cancer. Treatment for the early stages of both diseases typically achieves a cure, but may come at the cost of long-term impacts on functioning and wellbeing. Future research in localised prostate cancer will provide further information about the relative risks to HRQoL of various treatments that will inform decision-making within the context of men's individual preferences. In advanced prostate cancer, the focus will continue to be on the relative benefits and harms of hormone, chemo and supportive therapies for the palliation of metastatic disease. In testicular cancer, research will aim to find ways of limiting the impacts on HRQoL without compromising established benefits to survival.

Glossary

EORTC QLQ-C30	European Organisation for the Research and Treatment of Cancer Quality of Life Questionnaire – Core 30
EORTC QLQ-TC26	European Organisation for the Research and Treatment of Cancer Quality of Life Questionnaire – Testicular Cancer 26
EPIC	Expanded Prostate Cancer Composite
EQ-5D	EuroQol-5D
HUI	Health Utilities Index
MAX-PC	Memorial Anxiety Scale for Prostate Cancer
PORPUS	Patient Oriented Prostate Utility Scale
QOLM-P14	Quality of Life Module - Prostate 14
SF-36	Medical Outcomes Trust Health Survey Short Form – 36 items
SF-12	Medical Outcomes Trust Health Survey Short Form – 12 items
UCLA PCI	University of California Los Angeles Prostate Cancer Index

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SUPPORTIVE CARE INTERVENTION IN PROSTATE CANCER: RECENT ADVANCES AND FUTURE CHALLENGES

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Abstract

Prostate cancer is highly heterogeneous in its nature, effects, pattern of progression and outcomes. Survival, treatment approaches and mortality, differ substantially by socio-economic and geographic factors, and psychosocial outcomes are also likely to be affected by these factors and other personal characteristics. While a number of therapeutic approaches to supportive care have been found to have efficacy, unless these are responsive to patient preferences and can be integrated into routine clinical services or existing community services infrastructure, these are unlikely to translate broadly in the field. Accordingly, a framework to underpin the development of supportive care interventions is suggested that has application in not only genitourinary cancer, but cancer more generally.

Prostate cancer is the most common invasive cancer among males, with 16,349 men diagnosed in Australia in 2005, more than twice as many than with colorectal cancer.[1] Prostate cancer incidence trends are highlighted by the rapid rise in incidence soon after the introduction of prostate specific antigen (PSA) testing in the early 1990s, followed by a sharp reduction in rates, and then a gradual increase since 2000.[2] Mortality rates due to prostate cancer in Australia started to decrease from 1993 onwards, with these reductions in mortality also being seen internationally.[2] The implications of these trends for supportive care services are that the cohort of men in our community who are living with the consequences of prostate cancer is increasing. In 2004, there were about 100,000 Australian men estimated to be living with a diagnosis of prostate cancer,[3] with prevalence increasing due to current incidence and survival patterns. Hence, an understanding of effective approaches to psychosocial care for these men and their families, and the challenges to be faced in delivering this care in an approach that is both equitable and evidence-based, is crucial for public health in Australia.

Issues with equity

There are important geographical and socio-economic differences in prostate cancer outcomes in Australia. Prostate cancer survival is highest for men living in more

affluent areas and decreases with reducing area-level socio-economic status, and is highest in major cities compared to inner and outer regional areas.[3] Consistent with this survival differential, prostate cancer mortality is also reported to be higher in non-metropolitan areas, with the mortality differential increasing over time.[4] While the cause of this differential could not be established using these ecological data, fewer radical prostatectomies in regional and rural areas, along with lower rates of PSA testing in these areas, remain among the several competing explanations.[4] Given these differences in survival outcomes, that are likely related to access to health care services, it can be expected that there will be differences in access to post-treatment care and support and that this will impact on adjustment outcomes in men.

Supportive care intervention targets

The diagnosis and subsequent treatment of any cancer is, for most people and their families, a major life stress that is followed by a range of distressing psychosocial effects. Accordingly, clinical practice guidelines have been produced both in Australia and North America that detail evidence-based approaches to ameliorating this distress.[5] Effective approaches include cognitive behavioural therapies, relaxation techniques, psycho-education, supportive psychotherapy, peer support and family and couples therapy. They may be delivered in a range of ways, including group and individual formats and face to face and tele-based delivery systems. It remains the case however, that there has not been widespread translation of psychosocial care into standard clinical practice. This has been variously attributed to the low value placed on such care in a disease focused health system, challenges with up-skilling health professionals in this area of practice and patient and family reluctance to seek help, even when distressed.[6,7] One approach to psychosocial care translation that has been widely discussed is where patients and family members are regularly screened for psychosocial distress, and those with elevated distress are referred to appropriate evidence-based care services.[6] In a stepped care model such as this, all patients and family members receive a standard level of psychosocial care. However, further care is targeted to the area of need and the depth of distress, such that more costly and time intensive interventions are utilised for those experiencing or at greatest risk of unremitting distress. This approach is currently being evaluated in Queensland and New South Wales in a Helpline setting for all cancer types, however to our knowledge has not yet been trialled elsewhere in a controlled design.[8] This approach would be expected to also be efficacious for people affected by prostate or any genitourinary cancer, with the proviso that treatment concerns relevant to those specific cancers and gender-appropriate approaches would be addressed.

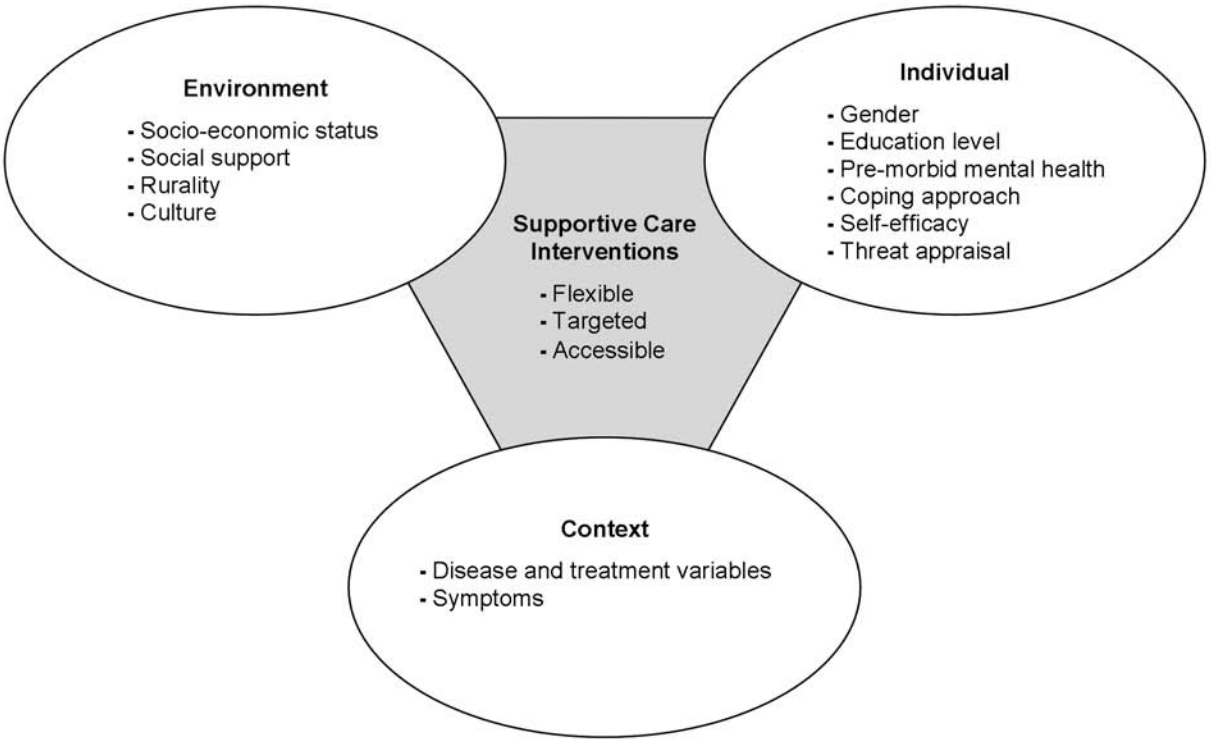
Making interventions relevant

While it is reasonable to propose psychological distress as a therapy target for all cancer types, it is also the case that adjustment outcomes are heterogeneous both within and across cancer types. Put simply, some patients and carers will do better or worse than others due to pre-existing factors. These include socio-economic status, gender, age, family type and social support, co-morbid mental health conditions, extent of disease and treatment severity, as well as factors that may be amenable to change such as threat appraisal, coping approach and self-efficacy. Risk factors for distress that are not amenable to change remain part of the intervention model or approach, in order to identify 'at risk' for distress target groups and factors that may hinder uptake of services. For example, people who have lower levels of education may be at risk for poorer adjustment outcomes, but also less likely to uptake educational programs to mitigate that risk, unless these programs are tailored to address low literacy. Patients who reside in regional and rural areas may experience difficulties not only in accessing medical treatments, but also psychosocial care services, unless those services can be remotely delivered. Men who typically do not utilise mental health services to the extent that women do may be unlikely to access such services, unless these services are sensitive to gender issues and masculine approaches to help seeking. Finally, people are less likely to seek services that do not, at face value, resonate with their own cancer experience. On this view, unless psychosocial care services are integrated with symptom management, they will be less relevant for patients whose immediate concern in the case of genitourinary cancer may be urinary or bowel incontinence, or sexual dysfunction. Figure 1 is a diagrammatic representation of how environment, context and individual variables should be considered when developing interventions.

There are a number of therapeutic psychological approaches that have been found to be effective for men with prostate cancer, that are likely to be broadly applicable to other genitourinary cancers. Lepore trialled a group based psycho-education, plus peer support program for men with prostate cancer, finding that men in the intervention were more likely to maintain steady employment and experience less sexual bother.[9] Men who initially had lower levels of education, lower self-esteem, lower self-efficacy and higher depression, benefitted more. In a recent randomised control trial with 159 men undergoing radical prostatectomy for prostate cancer, Parker et al found that a pre-surgical stress management intervention improved mood and physical functioning, although the effects were modest and prostate specific quality of life was not improved.[10] A group based cognitive behavioural stress management with men previously treated surgically for prostate cancer, found improvements in sexual functioning, with the effect moderated by interpersonal sensitivity,[11] as well as increased benefit finding and quality of life,[12] with the latter mediated by the development of stress management skills.

More recently the Australian Cancer Network has released draft Clinical Practice Guidelines for Advanced Prostate Cancer, where an in-depth systematic review of the evidence for psychosocial intervention for men with advanced prostate cancer was undertaken.[13] This review was widened to include men with prostate cancer of any stage, due to the paucity of research on men with advanced disease. A number of limitations in the research to date were noted, including the use of small convenience

Figure 1: Conceptual framework for supportive care interventions



samples, cross-sectional designs, limited follow-up and a general failure to adhere to Consolidated Standards of Reporting Trials guidelines.[14] In addition, the economic benefits of interventions have also generally failed to be assessed. This may, at least in part, be hampering efforts to have these care models introduced into standard practice within cash strapped health care systems.

Case for peer support

It is notable that the one support model that has been widely introduced in Australia for men with prostate cancer is peer support. To date there are 92 prostate cancer support groups that are affiliated nationally with the Prostate Cancer Foundation of Australia, with individual membership approaching 10,000. Peer support models do not typically lend themselves to control designs due to their community based nature, with one ongoing randomised control study a recent exception.[15] However, despite the lack of high level evidence, the growth of these groups across the country and elsewhere internationally speaks to their face validity and suggests that health professionals and researchers working in this area should consider ways to incorporate peer support into care models and research designs.

Internet: are we there yet?

The internet is a medium that offers opportunities for delivering new types of psychosocial interventions and social support. To date, internet based peer support groups and mailing lists have been the most common type of intervention and have been reported to provide both informational and emotional support. Internet use has been associated with improving self-efficacy variables (confidence in actively participating in treatment decisions, asking physicians questions and sharing feelings of concern) in one large, cross-sectional study. Preferred features of cancer support websites are that they provide: a range of supports; cancer related information;[16] ability to chat to others with cancer; to ask questions of a clinician[17] and; in the case of young adult users, offer some sort of game.[18] Even after a decade of expanding internet use, internet support is not sought as commonly by some groups as others. Less frequent users include ethnic minorities, males and lower socio-economic status men and women.[19] Women may use internet support in different ways to men. A content analysis of messages posted to a breast cancer and a prostate cancer mailing list found that messages posted by breast cancer patients were more frequent and emotion focused. Those from prostate cancer patients were more cancer information focused and less likely to seek emotional support.[20] There are surprisingly few trials of web based time limited psychosocial interventions, despite the many advantages (including limited cost) of this type of intervention, and its emerging success in other health areas. The internet can be particularly useful to provide support for those who are time poor, geographically isolated or disinclined to face to face interactions. We are only at the beginning of the exploration of possibilities using this medium.

Conclusion

A 'one size fits all' approach to education and support for cancer patients cannot address the known inequalities in cancer outcomes. We need more precise quantitative evidence of where the greatest needs are, not only from the perspective of the individual patient, but also

the characteristics and services of the areas in which they live and then evidence-based investigations on how best to meet these needs. This applies not only to people with genitourinary cancer, but to all cancer types. Finally, cross-disciplinary collaboration between clinicians, epidemiologists, psycho-oncologists, nursing and allied health professionals to underpin this is essential.

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New direction for multidisciplinary care: Menopausal Symptoms After Cancer Service

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Abstract

Menopausal symptoms are common following treatment for cancer, particularly breast and gynaecological cancers. The nature, severity and causes of menopausal symptoms following hormone-dependent cancer are likely to differ from those seen in women with spontaneous menopause. Management can be further complicated by the history of estrogen dependent cancer. Multidisciplinary management offers many advantages to cancer patients and health care providers. This paper presents information about the establishment of a novel multidisciplinary clinical service for cancer patients with menopausal symptoms. This paper has been developed to describe some of the factors important in developing the Menopausal Symptoms After Cancer service.

Menopausal symptoms are some of the most common and debilitating side-effects of breast cancer treatments, not only in older women, but in women of all ages and may lead to non-compliance with cancer treatments. Across all trials of adjuvant endocrine therapy, vasomotor symptoms such as hot flushes are the most common side-effect.[1] Up to 20% of breast cancer patients will consider stopping or actually cease endocrine therapy because of menopausal symptoms,[2-3] despite its established role in reducing recurrence. Treatments for other cancers, notably gynaecological malignancies and chemotherapy for cancer in very young women, may also cause significant menopausal symptoms.

Hot flushes, night sweats, sexual dysfunction, poor sleep and tiredness frequently occur following breast cancer treatment.[4] Some authors have suggested that vasomotor symptoms, particularly hot flushes, may be more severe than in women who have not had breast cancer treatment,[2,5,6] however this has not been objectively assessed. Atrophic vaginitis affects many women using endocrine therapy for breast cancer, particularly those using aromatase inhibitors.[7] Sexual dysfunction may be related to atrophic vaginitis, but also to changes in body image, libido and self-esteem.[8,9]

In healthy women, oestrogen containing hormone therapy is the most effective treatment for menopausal symptoms,[10] however recent level one evidence has questioned the safety of hormone therapy following breast cancer. The safety of hormone therapy following some gynaecological cancers is also largely unknown. Long-term sequalae of early menopause is an important health issue for young cancer survivors. Safe and effective treatments for severe menopausal symptoms after cancer are urgently required.

The management of menopausal symptoms has traditionally been by general practitioners and specialist gynaecologists and consists of supportive care, hormone replacement therapy and symptomatic treatments. Many women also use unproven 'complementary' therapies, which may have considerable cost implications.[10] Treatment of cancer patients with menopausal symptoms may be more complex, as GPs and gynaecologists may be less confident about the potential interaction between cancer, its treatment and menopausal therapies.[11] Oncologists may have limited expertise in managing menopausal symptoms. As a result, there is a need for more information on how these symptoms affect women with a prior history of cancer and what long-term health consequences ensue, as well as how best to control them and within what setting.

A multidisciplinary research based public clinic has been established to service the entire state of Western Australia to address the needs of these women. It comprises gynaecologists, breast surgeons, endocrinologist, oncologists, psychiatrist, clinical psychologists, physiotherapist, genetic counsellors, clinical nurse specialist, dietitian and research staff.

This report describes some of the factors important in developing such a service. A summary of these is noted in table 1.

Table 1: *Key considerations when developing the MSAC service*

Service needs:

- Set up working group to establish clinic
- Identify target audience
- Identify goals and outcomes

Patient referral

- Establish protocol for patient referrals
- Market service to key health professionals and peak women's/ health organisations

Clinic staffing

- Identify key personnel required and proposed roles and responsibilities
- Establish budget
- Incorporate Clinical Nurse Specialist (CNS) position into staffing

Database

- Establish a database to collect relevant patient information

Resources

- Identify resources required to set up and maintain a clinic (human, physical, financial, technological)

Assessment protocols

- Establish assessment protocols (clinical, QoL assessments)

Routine investigations

- Identify routine and additional investigations required

Treatment protocols

- Follow existing clinical guidelines

Feedback

- Set up procedures for giving feedback after multidisciplinary meetings

Multidisciplinary meetings

- Appoint central Coordinator (CNS or other)
- Invite health professionals to join multidisciplinary meetings
- Set up meeting schedule in consultation with team members
- Utilise existing templates[12,13]

Rural outreach

- Look at ways to reach patients unable to easily access clinics (scheduling of appointments, phone consults)

Training and education

- Consider training opportunities for health professionals (specialists, GPs, nurses, other health professionals) and the wider community (patients, well women)

Patient information

- Consider patient needs and level of understanding
- Utilise existing resources[14]

Research

- Consider what research can be undertaken with available resources
- Collaborate with others to establish new and exciting research projects
- Investigate funding opportunities to undertake additional research

The service

The Menopausal Symptoms After Cancer (MSAC) clinic was established in 2003, after specialists identified women with cancer had menopausal issues that were not being addressed satisfactorily by other health professionals. The MSAC clinic provides menopause advice and management to women with symptoms and a history of prior breast and/or other cancers. To best utilise existing resources, the clinic runs within an existing general menopause service at King Edward Memorial Hospital (WA's women's and infants health tertiary centre) one full day per week.

Appointments are made for women after the clinic receives a referral from the patient's GP or other health care provider. Patients are triaged by the gynaecologist or GP specialising in menopause, with priority given to premenopausal women considering risk reducing salpingo-ophorectomy, to inform women about potential short and long-term implications of surgical menopause and assist with decision making.

A key to this service has been the training and appointment of a clinical nurse specialist. This role is varied, with duties including patient consults and support, information dissemination, research and administration. The main role for the clinical nurse specialist during consultations (and subsequent visits) is to discuss menopausal concerns with patients, including:

- type, severity and impact of menopausal symptoms
- information about lifestyle options
- impact of the cancer diagnosis
- survivorship issues (ie. fatigue, body image, sexuality, family and relationships)
- general mid-life health and lifestyle issues (ie. diet, weight control and exercise).

Written information supplied to patients includes information sheets developed by the clinic and others on treatments (ie. clonidine, gabapentin, Venlafaxine and vaginal preparations), information developed by national menopause organisations such as the Jean Hailes Institute,[15] ENHANCE group[16] and the Australasian Menopause Society[17] on early menopause, libido, depression and sleep disturbance. Other information and advice developed by the National Breast and Ovarian Cancer Centre on contraception, fertility and familial risk of breast and ovarian cancer are also given to women as required.

Database and protocols

During consultations, information collected is recorded in each patient's hospital record to assist with clinical management. Once patient consent has been provided, patient information is added to a database.

Assessment protocols are established to ensure patients are managed in a uniform manner, but with the capacity to individualise care. This includes collecting information about the index cancer and treatment, family cancer history, previous gynaecological surgery and current medications, gynaecological history, along with previous use of HRT or complimentary therapies and lifestyle issues. Quality of life assessments are collected for each of the patients, including the nature and severity of menopausal symptoms, using the Greene Climacteric Scale.[18]

MSAC clinic staff base treatment recommendations on existing clinical guidelines, as well as the recently published international guidelines for breast cancer patients with menopausal symptoms.[4]

In women with apparent chemotherapy induced ovarian failure, standard protocols have been developed to monitor long-term bone health and ovarian function.[19] Advice about safe and effective contraception after breast cancer is also offered.

Outcomes generated at multidisciplinary meetings are noted in patient files and the patient's GP is sent a letter outlining the recommended treatment pathway. GPs may also be phoned if more in-depth discussion is required. Other health professionals may also be contacted by the clinical nurse specialist or treating doctor to discuss amended treatment plans and feedback from the multidisciplinary discussion.

Multidisciplinary meetings

Multidisciplinary meetings are another key aspect of the clinic. They are held monthly and include both patient discussion and an education component. The current membership includes gynaecologists, gynae-oncologists, breast surgeons, clinical nurse specialist, an endocrinologist, oncologists, psychiatrist, clinical psychologists, physiotherapist, genetic counsellors, dietitian, research staff and medical students.

At each meeting, a number of patients are discussed with a summary of individual patients and their specific clinical problems to be resolved being presented individually. GPs are invited to attend when their patient is being discussed. The discussion points and outcome summary are recorded in patient files under a MSAC stamp and an individualised care plan established.

An outreach of the multidisciplinary meeting is the email provision of relevant publication updates and breaking news from conferences.

Because vast distances sometimes mean patients have difficulty accessing the service, the MSAC clinic attempts to accommodate rural patients by factoring in driving or flying time when making appointments. Where visits to Perth are difficult, telephone consults with the clinical nurse specialist can also be ultilised and rural doctors are also encouraged to phone the clinic and discuss their patients with staff.

Doctors in training in gynaecology, surgery and endocrinology attend the clinics and multidisciplinary meetings. Fifth year medical students assist with consultations and other medical students have had the opportunity to undertake small research projects.

Educational presentations at the meetings include topics ranging from depression, exercise and cancer and bone health, to novel symptom management.

Since 2008, the MSAC clinic has also offered learning opportunities for rural clinicians with an interest in cancer care. The program includes written information on menopause after cancer and guidelines on managing this,[4,6,20,21] a supervised clinical placement at the MSAC clinic, attendance at a multidisciplinary meeting and a supervised clinical placement with a multidisciplinary breast service.

Community based education sessions routinely organised by local groups such as Cancer Council WA, Menopause Support Service, breast and gynaecology cancer support groups and the university extension program provide an avenue for clinic staff to promote clinic services while also talking about menopause management.

Patient information and research

The MSAC clinic highlighted the lack of patient focused information in the area of menopause and cancer. In particular, breast cancer patients indicated the lack of information about menopause was a significant unmet need.[22]

This was addressed by developing a *Menopause for breast cancer patients* information booklet and web based resource. This resource was originally developed for use in WA, but with the assistance of the National Breast and Ovarian Cancer Centre it was launched as a national resource.[14] A similar resource for women experiencing menopause following ovarian cancer has recently been developed.[23]

While the main focus of the MSAC clinic is the clinical assessment and management of menopause symptoms, patient consent ensures data being collected can also be used to answer research questions posed by clinic staff. Currently, women are being invited to participate in a study observing menopausal symptoms experienced by women with and without a history of cancer.

The clinic also provides a platform to undertake treatment trials, both independent and industry sponsored.

A service such as the MSAC clinic provides for individualised evidence based multidisciplinary management in an important area of cancer survivorship. In addition, it allows for unique educational and research opportunities.

Key aspects

- Multidisciplinary care
- Clinical nurse specialist
- Research based
  - database
  - clinical trials access
- Educational resource for patients, community and health professionals.

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Medical Oncology Group of Australia Cancer Achievement Award – Cancer, then and now

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When I graduated in 1972, the most common cancer in males was lung cancer, with cancer overall equally distributed between men and women.[1] In 1980, less than half of all people diagnosed with cancer lived for five years.[2] Today, nearly two thirds of all those diagnosed with cancer survive at least five years and more survive much longer if the cancer is localised at diagnosis. The five year survival for those with localised breast cancer is around 98%.

The mortality reductions from cancer in the last 10-15 years have been dramatic. Most recent information suggests that mortality rates have fallen by around 13% in men and 6% in women over the last decade.[3] Join-point analysis suggests that the change in mortality trends occurred in the late 1980s for both men and women.[4] It may be useful to reflect on the new cancer control programs coming into practice in the 1980s and 1990s and to speculate if they were partly responsible for this dramatic change in cancer mortality.

Major advances in the late 1980s and 1990s were the ongoing population-wide reductions in smoking prevalence, the introduction of new adjuvant treatment for breast cancer and the start of screening activities for breast and cervical screening, as well as the introduction of new and more effective anti-cancer agents such as platinums. In breast cancer, extensive modelling by the US National Cancer Institute would suggest that screening and adjuvant therapy equally contributed to the dramatic reductions seen in breast cancer mortality in the US.[5] The long-term survival improvement in breast cancer, with early detection through screening and more effective post-surgical treatment, provides an important approach or hypothesis that should now undergo rigorous testing in clinical trials in all types of cancer.

It could be a challenge to sustain the mortality reduction realised in the last 15 years, given the predicted increase in the number of cancer patients expected in the next 15 years. These increases in cancer numbers are being driven by ageing of the population and population growth, as well as an increase in some types of cancer.[6] Even with continuing reductions in smoking prevalence, some modelling has predicted that lung cancer will remain the largest cause of cancer deaths in Australia for the next 20 years, with tobacco the major cause. Recently, lung cancer overtook breast cancer as the major cause of cancer deaths in women.[3] The effective control and cure of cancer must go hand in hand with proven interventions to prevent cancer. A further challenge to the current long average life expectancy of Australians will be the influence of increasing obesity and the ongoing lack of physical activity in our population.[7-8] While they are major determinants of health relevant to a range of diseases, obesity and lack of physical activity have now been well established as important risk factors in a number of cancers.[7]

While cancer deaths should continue to reduce as a proportion of incidence, future projections predict increasing numbers of cancers diagnosed and also increasing numbers of cancer deaths for the future.[6]

This challenge will require an ongoing commitment to medical research and its success with medical research breakthroughs. In turn, these need to be quickly implemented as large scale public health programs, important new screening markers or new therapeutics. Such successful research discoveries will need to be as successful as those since the 1980s, if the ongoing reduction in cancer mortality is to be maintained.

The Australian Government's approach has been to imbed major new cancer funding initiatives within an emerging health reform agenda. In the 2008-09 Federal Budget, an additional $1.3 billion was allocated to cancer projects, including adding further depth to the large scale comprehensive cancer centres at Camperdown and Parkville, 10 new regional cancer centres, including one in Canberra, and a planned roll out of digital mammography.

The current Council of Australian Governments' agreement has provided $872 million in 2008-09 for preventative health, with the Government considering the Preventative Health Taskforce Report. There are plans to establish a national preventative health agency to take these initiatives forward. Since the common determinants of health are risk factors for cancer, cardiovascular, respiratory and metabolic diseases, a successful prevention strategy has the potential to improve a range of diseases including cancer.

To focus improvements in many chronic diseases, the Primary Care Strategy and Health and Hospital Reform Commission have provided a number of recommendations for Government addressing the above determinants of health. This reform agenda provides opportunities to reduce risk factors, to improve access, to promote early diagnosis and enable timely interventions to deliver improved evidence-based cancer care in Australia.

New areas for cancer research include new insight into genomic changes leading to new markers, new therapeutic targets and drugs, psycho-oncology, clinical service improvement and an emphasis on making new basic research discoveries lead to clinical practice improvement in a timely fashion. The increase in National Health and Medical Research Council funding for cancer research

from $28m in 2000 to nearly $155m in 2009 represents a major government investment in these opportunities.[9] Better use of data to better inform practice and an emphasis on agreed best practice also provide hope for better cancer outcomes. Such developments provide the basis for optimism that cancer outcomes will continue to improve in the next decade, as they have in the last.

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Tom Reeve Oration Award

Achieving person centred cancer care: reflecting on progress

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Receiving the Tom Reeve Oration Award is a great honour for those of us working in cancer care. I have worked in this field for nearly 30 years and have been actively involved with the Clinical Oncological Society of Australia (COSA) for much of this time. During this time, I have had the privilege of working with Tom Reeve on a number of guidelines projects, as well as with many of the previous recipients of this award. Knowing what Tom and the previous recipients of this award have achieved for cancer care makes this award very special indeed. I am pleased to have this opportunity to pay tribute to Tom and to thank him for his support and mentorship over the years.

In this paper, I will reflect on 'lessons I have learnt' about factors that are important to improving care of people affected by cancer. These lessons include:

- understanding the experiences of people affected by cancer is necessary to improve cancer care
- ongoing learning, research and evidence are critical elements of efforts to advance the field
- professional organisations can positively influence cancer care, and
- multidisciplinary collaborations provide rich opportunities for improving cancer outcomes.

Understanding the experience of people affected by cancer

I completed my training as a registered nurse at Princess Alexandra Hospital in Brisbane in the early 1980s. While approaches to nursing education continue to generate debate within and outside the profession today, the apprenticeship system of training I completed was then, and remains today, incompatible with the requirements of a complex health system.[1] I finished my training, feeling quite dissatisfied with my career choice as a nurse and feeling very disempowered. As a new graduate nurse, I worked in respiratory medicine with people with lung cancer who were experiencing very difficult symptoms which we did not manage effectively. I recall in my second week as the only registered nurse on night duty, being asked to call a family to inform them of their loved one's death. I had very little understanding of the patient's clinical condition, let alone their personal and family circumstances. I do not recall having had any preparation for how to deal with these situations.

I went on to work in a gynae-oncology unit at the Mater Hospital. This was a time when extensive surgery and platinum based therapies were common for treatment for gynaecological cancers. It was also pre-5HT3 antagonist and other modern antiemetic and supportive therapies. In the mid-1980s, I worked in infectious diseases, where I came across several patients with head and neck cancers who had undergone radical surgery. I also cared for some of the first patients diagnosed with AIDS. It struck me that these were among our most marginalised patients and that we desperately needed a system which was more compassionate just in how it provided its health care.

The sorts of disease and treatment related effects that were problems in my early days as a nurse continue to present challenges for us today. For example, a recent systematic review identified that cancer pain prevalence today continues to be high: 64% (CI 58% to 69%) in patients with metastatic, advanced or terminal disease, 59% (CI 44% to 73%) in patients on anti-cancer treatment and 33% (CI 21% to 46%) in patients who had been cured of cancer. Importantly, the review noted that available data suggest pain prevalence rates have not changed substantially from those reported in earlier reviews.[2]

Despite these challenges, what is different today is that supportive care is now mainstream, considered an essential component of cancer services.[3] We have at our disposal many more effective supportive interventions to prevent and actively control treatment related effects,[4] and we place much greater emphasis on educating and empowering patient themselves to self-manage these effects.[5] Today, because we have a much greater understanding of patient and family experiences, we have evidence-based guidelines to direct our responses in such situations[6] and high quality training programs, considered core curriculum, for improving health professionals' skills in supportive care.[7,8]

Ongoing learning, research and evidence

Those early days as a registered nurse were important in helping me to appreciate that good nursing care is concerned with understanding and responding to some of the physical, emotional and practical challenges people can face when diagnosed with cancer, such as emotional distress, fear, nausea or mucositis.[9] But it was also obvious that there was much to learn to be more effective in responding to such challenges.

In the early 1980s, there were limited opportunities for professional development in nursing, with only a few hospital training courses in cancer nursing. I commenced a degree in psychology to fill some of the gaps in my knowledge, completing majors in political science, and a number of courses in sociology along the way. This study helped me to understand that while working at the individual level can do a lot, we also need to work at the systems level. It also instilled an appreciation that research could help to address some of the deficits I saw in cancer care. This type of learning had been an important gap in my earlier nursing training.

I took my first job as a nurse educator at Holy Spirit Hospital in Brisbane, as I said at the interview for that position, "to change the system". After a few years as a hospital educator, I decided that an academic career in nursing would provide me with more opportunities to research ways to improve care of people affected by cancer and to teach others to appreciate the important contribution of nurses in cancer care. For the last 15 years, the focus of my work has been building such education and research programs in cancer nursing. This work started with a joint appointment as senior lecturer between Royal Brisbane Hospital and Queensland University of Technology, where I was tasked to work with senior cancer nurses in Brisbane to upgrade the previous six month hospital certificate course in oncology nursing to a university level postgraduate course. The result was the establishment of the second graduate diploma level course in oncology nursing in Australia (the other being offered in Melbourne at Latrobe University at that time) and the first masters level course in cancer nursing in the country. This transition to university level education for nurses in cancer care represented a major milestone, as for the first time, we had a pathway for nurses to study in their own discipline that recognised the depth, rigour and scholarship needed to underpin our discipline.

With the launch of the Australian Government supported EdCaN resources this year,[7] we have reached yet another milestone. We now have a clearly articulated, evidence-based framework for the professional development of nurses that defines the knowledge, skills and abilities needed to provide safe and quality care for all people affected by cancer. It was quite an extraordinary opportunity to work with Professor Sanchia Aranda from Peter MacCallum Cancer Centre and cancer nurses across the country, to develop this unique framework. The framework is now generating interest among other specialty groups in nursing nationally and among cancer nurses in other countries.

I have also been fortunate to have worked with some outstanding researchers over the past 15 years building a program of supportive care research. Dr Geoff Beadle, a medical oncologist in Brisbane, gave me my first break at a time when psycho-oncology and supportive care research did not have a high profile. Geoff was interested in understanding why people with cancer chose to use complimentary and alternative medicines and provided the opportunity to work with him for my masters research.[10] In those early days, my PhD supervisor, Professor Jake Najman, a renowned health sociologist, patiently worked with our nursing team to teach us the rigour required to be a good researcher. Through Jake's mentorship and support, we received our first National Health and Medical Research Council (NHMRC) grant in 1999, one of the few nursing led teams successful in securing NHMRC grant funding. This grant enabled us to undertake our first randomised control trial of a patient education intervention to improve adherence to opioids for cancer pain.[11]

Sanchia Aranda and I have built a solid collaborative research program over the past 10 years. We have now completed randomised control trials of supportive care interventions for pain,[11] fatigue,[12] breathlessness,[13] support needs for women with advanced cancer,[14] and pre-chemotherapy education.[15] And we have recently received NHMRC funding for a new trial of aetiology based guidelines for managing nausea in advanced disease. The future for research in supportive care is very promising, with the many leaders in psycho-oncology and supportive care research that have been nurtured in Australia. Developments such as the establishment of a psycho-oncology research collaborative (www.pocog.org.au), lead by Professor Phyllis Butow and her team, demonstrate just how much progress has been made in this field.

Professional organisation can positively influence cancer care

When I was a young nurse educator, I worked with a number of nurse leaders who had lobbied and negotiated hard to bring about the transfer of nurse education to the higher education sector. These were women of enormous integrity who had such strong belief in the contribution that nursing makes to ensuring the dignity and wellbeing of people that one couldn't help but be inspired. These nurse leaders, Margaret Vider, Serita Saba and Joan Penridge, would cajole me into attending to various professional meetings of the Royal College of Nursing and other groups, showing me by example how a united professional group can make a difference to patients.

I started to attend the Clinical Oncological Society of Australia (COSA) Annual Scientific Meetings in the early 1990s, when the then COSA nurses' group was noisy and enthusiastic, but probably not very well organised. I was an active participant in the many discussions we had at the time about establishing a separate organisation for cancer nurses. Under the leadership of Laurie Grealish and with the very wise counsel and support from Lawrie Wright (former Executive Officer for COSA) and Alan Coates (former Chief Executive Officer of Cancer Council Australia), we established the Cancer Nurses Society of Australia (CNSA), while still maintaining a strong commitment to ensuring that nurses were part of COSA as the peak multidisciplinary body. Thanks to Laurie Grealish's leadership, CNSA's work had a very clear mission which reflected a commitment to improving the quality of life and outcomes for people affected by cancer through nursing care. I was honoured to be elected as the inaugural National Chairperson for CNSA in 1999 and oversaw a busy period, which included achievements such as the hosting of a regular annual winter congress, establishing the *Australian Journal of Cancer Nursing*, development of standards and guidelines for chemotherapy nursing practice and standards for nursing education, the publication of position statements on issues such as the cancer nursing workforce and the organisation of a grants and awards program for cancer nurses. There are many cancer nursing colleagues and friends who need to be acknowledged for their work at this time. In particular, CNSA Executive Committee members including Maryanne Hargraves, Gabrielle Prest, Tish Lancaster, Margaret Proctor, Cath Johnson and Kate Cameron are individuals who worked tirelessly as volunteers for the society. This experience of working with an effective, productive, professionally organised group, has taught me that unity and commitment to common values and goals is a very powerful force.

Multidisciplinary collaborations provide rich opportunities for improving cancer outcomes

The importance of multidisciplinary teams to cancer care has come to the forefront in recent years. COSA is unique in providing opportunities to promote collaborative cross-disciplinary work. There are from time to time tensions between disciplinary groups, but the strength of multidisciplinary collaborations is evident through COSA's achievements. I can remember my earliest days on COSA Council, feeling very nervous about what contribution I could make as the nursing representative. However, I also remember a number of key people on COSA Council who tried to ensure that the nursing voice, along with other 'non-medical' groups on Council, was heard. The outcomes from these conversations were often different as a result of the multiple perspectives that were considered. I acknowledge recent COSA presidents David Currow, David Goldstein, Liz Kenny, John Zalcberg and Steve Ackland for their commitment to the multidisciplinary nature of COSA.

While early COSA Annual Scientific Meetings were organised around topics of interest to separate disciplinary groups, today's Annual Scientific Meetings provide a very different forum for advancing cancer care. Today, we have a program where the topics which we address are centred around health issues and concerns of patients, and what we bring as different disciplines and as a team to addressing these concerns, rather than being focused solely on disciplinary interests. Our separate professional meetings will continue to be critical for developing our disciplinary base, however the opportunity we have to work collaboratively through our responses as a team of cancer professionals is unique and likely to provide even further opportunities to advance the field. I would like to pay tribute to Margaret McJannet, Executive Officer of COSA, and Ian Olver, Chief Executive Officer of the Cancer Council Australia, for their outstanding leadership in this regard.

Conclusion

Working with people affected by cancer has presented some challenges at times, but it has been enormously rewarding. I have had a very privileged career, being mentored by, and working with, many talented cancer professionals and researchers. The lessons I have described in this paper are very consistent with what COSA stands for as a peak body for cancer professionals in Australia. The future for cancer care in this country is promising, as we continue to build on the type of forum that COSA provides to achieve more person centred approaches to care and improve the journey for people affected by cancer.

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SUPPORT FOR RESEARCH 2010

State and territory Cancer Councils are the major non-government sponsors of cancer research in Australia. Grants are made following competitive, peer-reviewed assessment of funds derived from donations, bequests and other fundraising. Note: for research grants spanning more than one year, only funds to be dispersed in 2010 have been included.

In 2010, the value of these grants is over $47 million.

CANCER COUNCIL AUSTRALIA

Sally Birch Fellowship in Cancer Control

G Howarth School of Agriculture, Food and Wine	Novel, naturally – sourced bioactive factors: therapeutic application of chemotherapy-induced intestinal muscositis and inflammatory bowel disease	$100,000
TOTAL RESEARCH FUNDED		**$100,000**

CANCER COUNCIL ACT

Research grants

C Behm Cancer Council ACT	Investigating the rate of female breast cancer in the ACT	$20,000
A Blackburn The Australian National University	Dichloroacetate: a novel anti-cancer agent.	$30,000
TOTAL RESEARCH FUNDED		**$50,000**

CANCER COUNCIL NSW

New research project grants

L Bendall University of Sydney	The role of sphingosine-1-phosphate in haematopoietic stem cell egress from the bone marrow	$120,000
T Byran University of Sydney	Recruitment of human telomerase to telomeres	$120,000
A deFazio University of Sydney	Pathways of malignant progression in ovarian cancer	$115,250
P Greer University of Newcastle	Real-time dose monitoring for patient safety in radiation therapy	$120,000
M Kohonen-Corish Garvan Institute of Medical Research	Functional characterisation of the putative tumour suppressor gene MCC in colorectal cancer	$120,000
T Liu University of New South Wales	Targeting Myc onco-protein degradation for the treatment of Myc-induced malignancies	$106,500
G Lyons University of Sydney	Restoring epithelial differentiation to squamous cell carcinomas	$120,000
M Baker Macquarie University	A Colorectal Cancer "Interactome" Paradigm that Influences Patient Survival	$100,000
Total new research project grants		**$921,750**

2010 Priority-driven Collaborative Cancer Research Scheme (grants co-funded with Cancer Australia)

B Meiser University of NSW	Too much, too soon? The impact of treatment-focused genetic testing in patients newly diagnosed with breast cancer	$22,020
D Goldstein University of Sydney	LAP07: Randomised multicentre phase III study in patients with locally advanced adenocarinoma of the pancreas: gemcitabine with or without chemoradiotherapy and with or without erlotinib	$28,386
D Hart University of Queensland	RNA Loading of Tumor Associated Antigens and the Activation of Blood Dendritic Cells for Prostate Cancer Immunotherapy	$32,601
A Haydon Monash University	SCOT - Short Course Oncology Therapy. A study of adjuvant chemotherapy in colorectal cancer	$32,855
T Leong University of Sydney	Randomised phase II/III study of preoperative chemoradiotherapy versus chemotherapy for resectable gastric cancer	$6,076
M Poulsen Princess Alexandra Hospital	Phase II efficacy study of chemo-radiotherapy in PET staged II-III merkel cell carcinoma of the skin	$10,139
J Young University of Sydney	Quality of life outcomes and cost effectiveness of pelvic exenteration for people with advanced rectal cancer	$21,101
Total 2010 Priority-driven Collaborative Cancer Research Scheme		**$153,178**

Continuing research project grants

L Ashman University of Newcastle	Tetraspanin proteins in prostate cancer progression and prognosis	$113,000
M Bebawy University of Sydney	Microparticle-mediated transfer of P-glycoprotein in conferring multidrug resistance in cancer	$119,375
J Byrne University of Sydney	The molecular basis of cell transformation produced by TPD52 overexpression	$90,750
S Chen Westmead Hospital	Randomised trial of diagnostic strategies for invasive aspergillosis in at-risk haematology patients: Funding extension	$67,875
R Daly Garvan Institute of Medical Research	Tyrosine kinase profiling of human basal breast cancers	$115,250
M Fabbro University of Sydney	Dynamin inhibitors as new anti-cancer drugs	$114,500
D Gottlieb University of Sydney	Adoptive immunotherapy for the prevention of Varicella-zoster virus reactivation post stem cell transplant	$95,750
N Haass Centenary Institute	The role of melanoma stem cells in melanomagenesis	$116,000
C Jolly University of Sydney	Understanding AID-induced cancer: Unravelling complex mutation and repair pathways	$116,000
K McDonald University of Sydney	The role of IQGAP1 in actively migrating glioma cells and its regulation by miR-124	$110,750
M Murray University of Sydney	Development of personalised dosage protocols for tyrosine kinase inhibitiors in oncology patients	$95,550
M Naylor Garvan Institute of Medical Research	Role of beta1 integrin in prostate development and carcinogenesis	$116,000
G O'Neill University of Sydney	The signalling switch function of the pro-metastatic, adhesion adaptor protein HEF1	$116,000
S Tangye Garvan Institute of Medical Research	EBV-specific CD8+ Tcells in anti-tumour immune responses in patients predisposed to developing lymphoma	$116,000
M Williams University of Wollongong	A dosimetric Inter-Comparison of Australian Radiotherapy IMRT Systems (ICARIS)	$88,375
Zu Dong Zhang (Avery-Kiejda) University of Newcastle	Targeting p53 isoforms, ?40p53 and p53ß, to promote chemo-sensitivity in human melanoma	$115,000
M Apte University of NSW	Desmoplasia in Pancreatic Cancer: Role of Pancreatic Stellate Cells in Cancer Progression	$100,000
L Ashton University of NSW	Long-term health outcomes in survivors of childhood cancer and their families	$100,000

M Baker Macquarie University	Lynchpin protein interactions that drive epithelial cancer malignancy	$100,000
R Clifton-Bligh University of Sydney	Cross-talk between PPARg and MAP kinase pathways in thyroid cancer	$78,500
M Crossley University of Sydney	The role of zinc finger proteins in B cell cancer	$100,000
D Damian University of Sydney	Nicotinamide protection from ultraviolet radiation-induced skin carcinogenesis in humans	$100,000
M Friedlander University of NSW	Accelerated first line chemotherapy for advanced germ cell tumours	$83,636
M Friedlander University of NSW	Intraperitoneal Chemotherapy with Paclitaxel and Cisplatin after Optimal Debulking Surgery for Ovarian Cancer	$30,000
A Kneebone University of Newcastle	A phase III trial comparing adjuvant versus salvage radiotherapy for high risk patients post radical prostatectomy	$49,000
F Mackay Garvan Institute of Medical Research	Role of neuropeptide Y1 receptor in regulatory T cell function - a new angle to treat autoimmunity and cancer	$100,000
K MacKenzie University of NSW	Delineation of the role of telomeres and telomerase in erythropoiesis	$97,425
J Rasko University of Sydney	Dissecting BORIS Function In Neoplasia	$100,000
V Reeve University of Sydney	Protection against photoimmune suppression and skin cancer via oestrogen receptor signalling	$100,000
N Suchowerska University of Sydney	Radiobiological Modelling for Intensity Modulated Radiation Therapy	$70,000
A Swarbrick Garvan Institute of Medical Research	Defining the role for Id1 in breast cancer metastasis	$56,375
L Trevena University of Sydney	A randomised trial of a web-based toolkit for applying evidence in the general practice cervical cancer prevention visit	$73,500
N Verrills University of Newcastle	PP2A: a novel target for leukaemia therapy	$100,000
Total continuing research project grants		**$3,144,611**

Continuing research program grants

P Hogg University of NSW	New arsenical-based cancer drugs	$375,618
M Norris University of NSW	Improved treatment outcomes for children with leukaemia	$400,000
R Reddel Children's Medical Research Institute	Alternative lengthening of Telomeres: a target for cancer treatment	$400,000
Total research program grants		**$1,175,618**

Strategic research partnership grants

A Biankin Garvan Institute of Medical Research	New South Wales Pancreatic Cancer Network	$249,648
R Ward University of NSW	The Colorectal Cancer Research Consortium: A model for the integration of biomedical research into patient care	$162,685
B Meiser University of NSW	Psychosocial impact of hereditary cancer and the development and evaluation of effective patient education and decision support strategies	$129,796
J George University of Sydney	Epidemiology, prevention and management of liver cancer in NSW: Towards a strategic research partnership	$250,000
L Palmer University of Western Australia	Clinical Outcomes and Genetic Epidemiology of high grade Glioma: COGEG	$247,029
D Whiteman Queensland Institute of Medical Research	PROBE-NET : Progression of Barrett's Esophagus to Cancer Network	$264,446
Total strategic research partnership grants		**$1,303,604**

New research program grant - in Pharmacogenomics

S Henshall Garvan Institute of Medical Research	Building capacity in pharmacogenomics across NSW: PRIMe (Pharmacogenomic Research for Individualised Medicine)	$300,000
Total new program grants		**$300,000**

International Cancer Genome Consortium (ICGC)

A Biankin Garvan Institute of Medical Research		$500,000
Total ICGC Grant		**$500,000**

Other research programs

Cancer Trials NSW (CTN)	$1,320,000
Cancer Epidemiology Research Unit (CERU) - Internal + External (Excluding NHMRC funding)	$2,656,000
Centre for Health Research & Psycho-Oncology (CHeRP)	$670,000
45 and Up Cohort Study	$300,000

Commissioned research projects

The Partners/carers study: A longitudinal study of the psychosocial outcomes of the partners/carers of cancer survivors	$41,512
Action research for tackling tobacco in community based social services	$27,540
Satisfaction survey evaluation of the Cancer Council Helpline and Call Back sservice	$30,000
Multiple perspectives on sexuality and intimacy post-cancer, leading to the development and evaluation of supportive interventions	$30,000
STREP Grants Stage 2 prioritisation processes	$30,000
Nature and extent of sports sponsorship in children's sporting clubs and opportunities for policy intervention	$34,000
Effects of food marketing on children and parents	$25,000
Youthblock evaluation for Tackling Tobacco Program	$30,000
Consumer research on front of pack food labelling	$15,000
AHMRC 'Breathe' Project randomised trial	$50,000
Total other research programs and commissioned research	**$5,259,052**
TOTAL RESEARCH FUNDED	**$12,757,813**

CANCER COUNCIL QLD

Cancer Council QLD

Research grants

2010-2011

K Alexandrov The University of Queensland	Development of Rab prenylation inhibitors as anti-cancer therapeutics	$100,000
D Anderson Queensland University of Technology	A behavioural intervention for managing menopausal symptoms in women with breast cancer	$73,575
J Clements Queensland University of Technology	Understanding the functional role of KLK4 in prostate cancer progression: an integrated systems biology approach	$98,250
J Hooper Queensland University of Technology	Understanding a potential mediator of metastasis	$100,000
G Tiralongo Griffith University	Regulation of cancer cell surface sialylation: Towards the development of a novel anti-metastasis drug	$96,717
N Saunders University of Queensland	The role of osteoclasts in the development of ostesarcoma metastases	$100,000
P Simpson University of Queensland Centre for Clinical Research	Improving the outcome of patients with invasive lobular carcinoma of the breast	$92,972

G Leggatt University of Queensland	Suppressor NKT cell trafficking to epithelial precancer	$91,250
T Florin Mater Medical Research Institute	Investigating a novel model of hepatic veno-occusive disease in order to safely prescribe 6-thioguanine	$100,000
A Lam School of Medicine	Solving the Jigsaw: Interactions between angiogenic and mitogenic genes in thyroid cancer	$98,000
T Gonda University of Queensland	MYB regulation of differentiation and apoptosis in breast cancer: Targets and Targeting	$100,000
K MacDonald Queensland Institute of Medical Research	Analysis of a novel regulatory T cell induced by alloreactivity	$100,000
D Richard Queensland Institute of Medical Research	Functional interplay between hSSB1 and the MRN complex	$100,000
B Gabrielli University of Queensland	Synthetic lethality screen targeting a defective checkpoint in melanoma	$100,000
G Boyle Queensland Institute of Medical Research	A novel marker for the detection and treatment of metastatic melanoma	$99,250
M Brown The University of Queensland	The role of the BRCA1 3'UTR in breast cancer	$96,250
C Nelson Queensland University of Technology	S-allylmercaptocysteine as an adjuvant therapy in the treatment of prostate cancer	$96,250
S Vuckovic Mater Medical Research Institute	Impaired human myeloid dendritic cells in multiple myeloma-infiltrated bone marrow	$100,000
J Nikles The University of Queensland	n-of-1 trials of pilocarpine vs placebo for dry mouth in palliative care patients	$81,680
A Barbour Princess Alexandra Hospital	Genome-wide analysis of oesophageal cancer: towards biomarkers of response and outcomes of therapy	$80,538
M Parat The University of Queensland	Does PTRF-cavin control endothelial cell migration and angiogenesis?	$100,000
D Markovich The University of Queensland	Sulfate's role in ageing	$100,000
S Kisely The University of Queensland	Why are psychiatric patients more likely to die of cancer? An epidemiological study of cancer incidence and staging	$86,250
C Schmidt Queensland Institute of Medical Research	Analysis of the anti-tumour immune response and its target antigens in resected Stage III B/C melanoma	$96,250

2009-2010

A Mellick Griffith University	Targeting bone marrow derived cells in breast cancer	$82,000
J Neuzil Griffith University	Molecular mechanism of susceptibility of endothelial cells to vitamin E analogues	$82,000
H Blanchard Griffith University	Design, synthesis and biological evaluation of inhibitors of galectins: targets in cancer and inflammation	$80,750
D Hart Mater Medical Research Institute	Generation of multiple myeloma specific cytotoxic T lymphocytes and their maintenance in vivo by dendritic cells	$82,000
C Schmidt Queensland Institute of Medical Research	Immunological determinants of clinical outcome in metastatic melanoma	$79,800
P Parsons Queensland Institute of Medical Research	Sending cancer to sleep: drug-induced senescence in solid tumours	$81,750
A Lopez Queensland Institute of Medical Research	Breast cancer stem cells as a model for therapy	$82,000
N Hayward Queensland Institute of Medical Research	The role of miR-211 in melanoma	$82,000

A Boyd Queensland Institute of Medical Research	Elk4 regulation of Mc1-1: a therapeutic target in malignant glioma	$82,000
I Tonks Queensland Institute of Medical Research	The role of pocket proteins in melanocyte homeostasis and transformation to melanoma	$82,000
M Gandhi Queensland Institute of Medical Research	Biomolecular profiling in PET/CT directed diffuse large B cell lymphoma	$82,000
M Auret Queensland Institute of Medical Research	Tissue specific microRNA and the endocrine bias of Men-1-related tumorigenesis	$82,000
J Hooper Queensland University of Technology	A new receptor activated pathway in prostate cancer and bone metastasis	$82,000
L Chopin Queensland University of Technology	Novel natural antisense ghrelin mRNA transcripts and their role in breast and prostate cancer	$82,000
K Fong The Prince Charles Hospital	Novel microRNAs in pulmonary neoplasia	$82,000
I Yang The Prince Charles Hospital	Genome wide association study of protective alleles in lung cancer and chronic obstructive pulmonary disease	$81,375
N McMillan University of Queensland	NRAi and immunity	$82,000
S Roberts-Thomson University of Queensland	Secretory pathway calcium regulation and breast cancer	$68,220
R Sturm University of Queensland	Spheriod cell growth in melanocytic development and differentiation	$82,000
R Gardiner University of Queensland	Molecular strategies for staging prostate cancer	$82,000
2008-2010		
K Khanna Queensland Institute of Medical Research	Cep55 overexpression a potential mechanism for tumorigenesis	$55,813
Total research grants		**$3,964,940**

Strategic research partnership grant (2009-2013)

R Gardiner	University of Queensland	$250,000
Total strategic research partnership grant		**$250,000**

Fellowships

Senior research fellowships		
G Walker	Queensland Institute of Medical Research	$115,476
M Kimlin	Queensland University of Technology	$133,151
J Young	Queensland Institute of Medical Research	$122,546
JP Levesque	Mater Medical Research Institute	$126,082
Senior clinical research fellowship		
K Fong	Prince Charles Hospital	$166,916
Fellowships total		**$664,171**

PhD scholarships

2010-2012		
KM Chia	University of Queensland	$26,450
A Neill	Queensland Institute of Medical Research	$24,450

2009-2011		
PT Nguyen	University of Queensland	$26,450
H Corbett	University of Queensland	$24,450
2009-2010		
B Riddle	University of Queensland	$24,450
2008-2010		
L Thorstholm	University of Queensland	$26,450
K Cato	University of Queensland	$24,450
PhD scholarship program total		**$177,150**

Other grants

Travel grants and Travelling Fellowships	$80,000
Australian paediatric cancer registry	$108,000
Other grants total	**$188,000**

Clinical trial data manager grants

Holy Spirit Northside Private Hospital	
Gold Coast Hospital	
Greenslopes Private Hospital	
Mater Hospital	
Nambour General Hospital	
Premion	
Princess Alexandra Hospital	– Division of surgery – Haematology and medical oncology department – Radiation oncology department
Radiation Oncology Services	– Mater Centre
Royal Brisbane and Women's Hospital	– Gynaeoncology – Medical oncology – Radiation oncology – Surgery (Brisbane Colorectal Group)
Royal Children's Hospital	
The Prince Charles Hospital	
The Wesley Research Institute	
Toowoomba Hospital	
Toowoomba Regional Cancer Research Centre	
Townsville Hospital	
Data managers total	**$1,225,060**

Epidemiology and psycho-oncology research programs

Prostate cancer and supportive care outcomes trial
Vitamin D and prostate cancer
Prostate cancer sexuality intervention
Trial of a telephone-delivered rehabilitation program for colorectal cancer patients
Psychosocial care needs of people diagnosed with cancer
Colorectal Cancer and Quality of Life

Skin cancer management study	
Descriptive Epidemiology Reports	
Lung cancer and clinical practice survey	
Beating the blues after cancer	
Epidemiology and psycho-oncology research programs total	**$3,689,877**
TOTAL RESEARCH FUNDED	**$10,159,198**

CANCER COUNCIL SA

Research grants

M Lardelli The University of Adelaide	Modulation of Presenlilin protein function by protein truncation	$99,675
S Hodge, P Zalewski, H Jersmann Royal Adelaide Hospital	Cigarette smoke, zinc and thiol metabolism as determinants of disease progression and increased cancer risk in COPD	$103,250
G Booker, A Abell University of Adelaide	Novel antagonists of Gankyrin as potential anti-cancer agents	$84,250
S McColl, M Brown University of Adelaide	Are the chemokine decoy receptors D6 and CCX-CKR novel extrinisic suppressors of malignant melanoma?	$103,250
C Hahn, H Scott, R D'Andrea, P Ekert SA Pathology	GATA2 is a new predisposition gene for familial Acute Myeloid Leukaemia	$103,250
Dr Claudine Bonder, Dr Stuart Pitson,IMVS	A novel pathway controlling endothelial progeniotr cell (EPC) fate	$91,250
M Fenech, E Milne, W Hague, M Miller CSIRO Human Nutrition	Which nutritional factors determine DNA damage in babies?	$51,625
G Goodall, P Gregory, Y Khew-Goodall IMVS	Identification of microRNAs that regulate the properties of breast cancer tumour initiating cells	$103,822
J Melo, D Hewett, B Johnson, T Hughes IMVS	Transcriptional and post-transcriptional regulation of the BCR-ABL gene in chronic myeloid leukaemia	$103,250
C Prestidge, B Boyd, M Brown, D Keefe, A Davey University of South Australia	Improving colorectal cancer therapy using a novel nanotechnology based delivery system	$103,250
S Grist, P Sykes, G Suthers Flinders University	Double strand break repair deficiency in somatic cells as an index for inherited breast cancer and ovarian cancer risk	$91,250
Y Hu, G Young, G Margison, C Kerr, L Cobiac Flinders University	Defining biomarkers of colorectal cancer prevention by dietary or chemopreventive agents and translation to human intervention studies	$84,300
F Al-Ejeh Hanson Institute	The target creation strategy: an approach to generate novel methods for targeted internal radiotherapy	$89,968
D Callen, A Abell, C Sweeney University of Adelaide	Restoration of p53 activity in tumours: a new approach involving the p53 coactivator ANKRD11	$90,500
N Harvey, A Abell, C Sweeney Hanson Institute	Defining the role of macrophages in lymphatic vascular development	$86,250
Total research grants		**$1,389,140**

Senior research fellowships

L Butler	Androgen signalling in the normal human breast: role and implications for breast cancer risk, Dame Roma Mitchell Cancer Research Laboratories, Adelaide University Hanson Institute	**$98,000**

Research fellowships

N Moore	Medroxyprogesterone acetate (MDA) action in the normal human breast: implications for breast cancer risk in users of homran replacement therapy, Dame Roma Mitchell Cancer Research Laboratories, Adelaide University Hanson Institute	**$84,742**

W Bruce Hall cancer research fellowship

T Bianco-Miotto	Epigenetic mechanisms and therapies in prostate cancer, Dame Roma Mitchell Cancer Research Laboratories, Adelaide University Hanson Institute	**$84,742**

SA Cancer Data Development Project **$1,453,500**

Other research programs*

Chair in Cancer Behavioural Research**	$287,409
Chair in Cancer Medicine**	$324,000
Organisational Grants	$45,157
Travel grants and distinguished visitors	$30,870
Student vacation scholarships	$15,435
Data managers program	$222,579
Microarray bioinformatics	$44,247
PhD scholarship	$10,290
Total of other research programs	**$979,987**
TOTAL RESEARCH FUNDED	**$4,090,111**

Research administered by CCSA

Peter Nelson Leukaemia Research Fellowship

H Ramshaw	IMVS Hanson Institute	$100,000

* All figures are budgeted figures, when appropriate based on 1 FTE
**Academic positions

CANCER COUNCIL TASMANIA

Cancer Council TAS

Research grants

G Woods Menzies Research Institute	Role of vitamin D3 and metallothionen in protection against melanoma	$86,250
J Dickinson Menzies Research Institute	ITGA2: characterisation as a potential biomarker in prostate cancer	$48,125
J Dickinson Menzies Research Institute	Cancer Council Tasmania's Research Fellow - 1st dedicated cancer research position based at the Menzies Research Institute (final year)	$115,000
Total research grants		**$249,375**

Other

Launceston General Hospital and Royal Hobart Hospital	Clinical trials data managers	$54,500
J Scott Procope project - University of Tasmania	Determining the best ways to provide psychological support to Tasmanian men diagnosed with prostate cancer and their loved ones	$77,000
Total Other		**$131,500**

Scholarships

To be announced	Jeanne Foster scholarships	$5,000
To be announced	Athena Karydis Foniadakis scholarship	$5,000
To be announced	Cancer Council Tasmania scholarship (UTAS Honours student)	$10,000
To be announced	CancerPLUS	$3,000
Total Scholarships		**$23,000**

Funded by David Collins Leukaemia Foundation (DCLF)

A Holloway Menzies Research Institute	Investigating novel targets of the RUNX1 transcription factor	$48,950
J Dickinson Menzies Research Institute	Identification of suscuptibility genes fro haematology malignancies	$35,000
Sub Total	**FUNDED BY DAVID COLLINS LEUKAEMIA FOUNDATION**	**$83,950**
Sub Total	**FUNDED BY CANCER COUNCIL TASMANIA**	**$403,875**
TOTAL FUNDING		**$487,825**

CANCER COUNCIL VICTORIA

Fellowships

Carden fellowship

D Metcalf Walter and Eliza Hall Institute of Medical Research	Regulatory control of normal and leukaemic cells	$226,000

Colebatch fellowship

K Phillips Peter MacCallum Cancer Centre	Reducing the burden of breast cancer	$144,500

Dunlop fellowship

G McArthur Peter MacCallum Cancer Centre	Development of targeted therapies for cancer	$144,500

Lions fellowship

B Anderson Walter and Eliza Hall Institute of Medical Research	Coeliac disease and increased risk of cancer – novel therapeutic approaches	$22,000 (approx)

Early Career Clinical Cancer Research Fellowship

K Herbert Peter MacCallum Cancer Centre	The use of novel therapies in haematopoietic stem cell transplantation	$75,000
Total fellowships		**$612,000**

Research grants-in-aid

C Clyne Prince Henry's Institute of Medical Research	Characterising the cancer-promoting role of LRH-1: Molecular mechanisms and animal model	$98,250
L Ebert, J Cebon Ludwig Institute for Cancer Research	Regulatory T cells specific for human tumour antigens	$90,250
P Fuller, A Drummond Prince Henry's Institute of Medical Research	Molecular pathogenesis of granulosa cell tumours of the ovary	$100,000
Y Haupt Peter MacCallum Cancer Centre	A role for E6AP in the regulation of p53 in response to stress	$100,000
R Hicks, G McArthur, J Desai Peter MacCallum Cancer Centre	The role of glucose metabolism in oncogene addiction	$98,250
L Purton, K W Ng St Vincent's Institute of Medical Research	Roles of retinoic acid receptors in bone and haemopoiesis	$100,000
J Rood, M Brown, G Carter Monash University	Clostridium-directed enzyme prodrug therapy (CDEPT): an innovative approach to treating cancer	$96,250

J Rossjohn, J McCluskey Monash University	A structural and functional investigation into tumour rejection by NKT cells	$99,250
S Selemidis, E Williams, G Drummond Monash University	Novel pharmacological targets for suppression of tumour angiogenesis	$100,000
M Southey, D Goldgar University of Melbourne	Identification of the breast cancer susceptibility gene on chromosome 4 with next generation sequencing	$88,512
T Stewart Peter MacCallum Cancer Centre	Use of anti-CCL2 mAb therapy as an adjuvant to reduce tumour growth and tumour-induced immunosuppression	$100,000
S Tabrizi, J Brotherton, M Stevens University of Melbourne	The population impact of human papillomavirus vaccination on circulating genotypes	$80,250
Total new research grants-in-aid		**$1,151,012**

Continuing research project grants-in-aid

O Bernard St Vincent's Institute of Medical Research	The role of LIM kinase 2 (LIMK2) in cancer metastasis	$93,500
D Bowtell, A Möller Peter MacCallum Cancer Centre	Hypoxia signalling in the tumour microenvironment	$100,000
I Campbell, K Polyak Peter MacCallum Cancer Centre	Identification of epigenetic and miRNA targets in primary ovarian cancer associated fibroblasts	$100,000
L Campbell, H Nandurkar, R MacKinnon St Vincent's Health	The identification of a leukaemia gene up-regulated by snytenic chromosome 20 deletion in acute myeloid leukaemia	$100,000
A Dobrovic Peter MacCallum Cancer Centre	Somatic DNA methylation and cancer predisposition: A new approach to identifying individuals at risk of cancer	$99,000
C Gargett Monash University	Identifying markers of stem/progenitor cells in normal and malignant endometrium	$93,500
M Hinds, C Day Walter & Eliza Hall Institute of Medical Research	Structure and interactions of apoptosis regulators	$100,000
B Jenkins, A Mansell, R Ferrero Monash University	Cross-talk between cytokine and pathogen recognition receptor networks in the pathogenesis of gastric cancer	$98,900
P Kaur Peter MacCallum Cancer Centre	Biological characterisation of pericytes in cancer and as mesenchymal stem cells	$100,000
A Kneebone (NSW), S Williams (VIC), G Duchesne (VIC), R Fisher (VIC), M Frydenberg (VIC)	A phase III trial comparing adjuvant versus salvage radiotherapy for high risk patients post radical prostatectomy	$98,000
JP Liu Monash University	Investigating the control mechanisms of telomere maintenance in cancer: a new interaction between telomerase and GAPDH	$100,000
B Parker, P Hertzog Peter MacCallum Cancer Centre	Suppression of Type I interferon defence pathways as a mechanism for breast cancer metastasis to bone	$97,150
R Pearson Peter MacCallum Cancer Centre	Mechanisms of AKT3 driven malignant transformation	$100,000
W Phillips Peter MacCallum Cancer Centre	Molecular mechanisms of action of PI3-kinase mutations: Studies in single cells using a novel microinjection approach	$100,000
G Pietersz Macfarlane Burnet Institute Medical Research and Public Health	Cell penetrating peptide-mediated delivery of multiple CD8 and CD4 T cell for Epitopes for breast cancer vaccines	$92,346
J Price, K Hunter, J Wilce Monash University	Role of heat schock factor-1 in breast cancer metastasis	$100,000
G Risbridger Monash University	Defining the relationships between estrogens, prostatitis and prostate cancer	$100,000
B Sarcevic St Vincent's Institute of Medical Research	Identification of SAP180 and RBP1 as novel CDK substrates important for regulation of the pRb tumour suppressor	$100,000

A Shulkes, J Ischia, G Baldwin, D Bolton University of Melbourne	ProGRP as a biomarker for prostate cancer	$100,000
C Slape, D Curtis, S Jane Melbourne Health	Molecular analysis of myelodysplasia in the Nup98HoxD13 mouse model	$100,000
M Smyth Peter MacCallum Cancer Centre	Combined chemo-immunotherapies that eradicate established tumors	$100,000
E Thompson, P Choong, P Hill, M Henderson, K Pantel University of Melbourne	Epithelial – mesenchymal interconversions in the breast cancer metastatic cascade	$95,700
M Wright Monash University	The role of tetraspanins in adaptive cellular immunity	$98,706
H Xu, M McKay Peter MacCallum Cancer Centre	Cohesin-mediated modulation of mammalian radiosensitivity	$100,000
Total continuing reseach grants-in-aid		**$2,366,802**

Venture grants

$600,000

The Venture Grants Scheme was developed to foster a pathway for 'blue-sky' research – good ideas that might not attract conventional research funding but that, if successful, would have important outcomes.

The four projects in this scheme are funded on a milestone basis, with funding allocated for ongoing work only following achievement of the previous milestones.

Total venture grants	**$600,000**

Postdoctoral research fellowships

Y Makanji Prince Henry's Institute of Medical Research	Identification of ovarian cancer-specific isoforms of the serum hormone, inhibin, as a basis to develop an improved diagnostic test	$66,250
A Frew Peter MacCallum Cancer Centre	Chemoimmunotherapeutics - combining histone deacetylase inhibition with immunostimulatory monoclonal antibodies for the treatment of established solid tumours	$33,125
One fellowships to be appointed mid-year		$33,125
Total postdoctoral research fellowships		**$132,500**

Postgraduate research scholarships

K Alsop	Peter MacCallum Cancer Centre	$28,583
M Anaka	Ludwig Institute for Cancer Research	$23,558
M Christie	Ludwig Institute for Cancer Research	$37,698
I Elsum	Peter MacCallum Cancer Centre	$5,993
S Hakim	Monash University	$28,583
D Kethesparan	Monash University	$15,982
M Ramakrishna	Peter MacCallum Cancer Centre	$9,816
E Valente	WEHI	$28,583
C Wong	Peter MacCallum Cancer Centre	$23,558
One 'science' and one 'medical' postgraduate scholarship to commence January 2010		$67,234
Total postgraduate research scholarships		**$269,588**

Other

20 summer Vacation Studentships were awarded	$28,000
Support for medical and scientific activities	$278,000
Total other	**$306,000**

Clinical research

The Cancer Council supports clinical research via our Clinical Trials Office. The CTO conducts state, national and international clinical trials initiated by and endorsed by the Victorian Cooperative Oncology Group. The CTO also administers the Cancer Trials Management Scheme, awarding grants totalling $830,000 to 22 hospital cancer clinics to assist clinicians to enrol patients in clinical trials.	$1,303,000

Cancer control research

Cancer Epidemiology Centre	$4,354,000
Victorian Cancer Registry	$2,455,000
The Melbourne Collaborative Cohort Study (Health 2020)	$1,224,000
Centre for Behavioural Research in Cancer	$2,786,000
Knowledge Building (Tobacco Control Unit)	$935,000
Total cancer control research programs	**$13,057,000**
TOTAL RESEARCH FUNDED	**$18,494,902**

THE CANCER COUNCIL WA

Research grants

L Fritschi WA Institute for Medical Research	Health hazards at work: how big is the problem?	$70,000
E Ingley WA Institute for Medical Research	The Src Homology 2 (H2) interactome	$70,000
U Kees Centre for Child Health Research	Microenvironmental interactions in acute lymphoblastic leukaemia mediated by connective tissue growth factor	$140,000
P Leedman WA Institute for Medical Research	Role of a novel nuclear receptor coregulator in colorectal cancer	$70,000
E Milne Centre for Child Health Research	Elucidating the aetiology of childhood acute lymphoblastic leukaemia	$69,763
F Pixley University of Western Australia	CSF-1R regulated macrophage motility and infiltration and the role of c-Cbl	$140,000
D Ravine WA Institute for Medical Research	Dissecting a novel microtubule stabilizing mechanism	$70,000
Total research grants		**$629,763**

The Lions Cancer Institute research grant

G Yeoh University of Western Australia	Establishing the cellular and molecular mechanisms which link liver progenitor cells, inflammation and hepatocellular carcinoma	$70,000
Total the Lions Cancer Institute research grant		**$70,000**

Edward and Patricia Usher Vacation research scholarships

T Colgan University of Western Australia	Developing a method to isolate notch-induced cancer cells	$3,000
J Freeman Edith Cowan University	Characterisation and quantification of circulating Melanoma cells	$3,000
E Tieu University of Western Australia	Can vitamin D1 ά-hydroxylase (CYP27B1) hydroxylate the novel vitamin D derivatives, 20-hydroxy vitamin D2 and 17,20-dihydroxyvitamin D2?	$3,000
C Moulton University of Western Australia	Evaluation of a Monte Carlo computer simulation model for biochemical diffusion in realistic tissue structure	$3,000

H Ong University of Western Australia	Molecular profiling of therapeutic targets for patients with otherwise untreatable metastatic cancer	$3,000
X Ong University of Western Australia	Can Vitamin D 24-hydroxylase (CYP24) inactivate the potential anti-cancer drug 20-hydroxyvitamin D2?	$3,000
Z Wong Curtin University of Technology	Determining the effect malignant mesothelioma has on the function of dendritic cell subsets	$3,000
S Yeung University of Western Australia	Analogues of the anticancer natural product 4,7-dimethoxy-5-methyl-1-3-benzodioxole	$3,000
Y Koh University of Western Australia	Investigating the potential treatment of osteoporosis and breast cancer metastases by inhibition of RANK-RANKL signalling pathway	$1,000
R Pettigrew Centre for Orthopaedic Research	Correlation of $\alpha v\beta 3$ integrin expression in tumour cells to bone metastases and tumour burden	$1,000
K West Edith Cowan University	The association of maternal meat consumption during pregnancy with risk of acute lymphoblastic leukaemia (ALL) in children	$1,000
Total vacation research scholarship		**$27,000**

Early career investigator grants

S Davies WA Institute for Medical Research	Regulation of mitochondiral RNA processing in prostate cancer	$25,000
M Manzur WA Institute for Medical Research	Vascular normalization and cancer therapy	$25,000
A Samuels Centre for Child Health Research	Metabolomic profiling of glucocorticoid resistance in acute lymphoblastic leukaemia	$24,263
K Thompson Centre for Child Health Research	Transcriptome sequencing to identify novel gene fusions in a rare, aggressive carcinoma	$23,498
Total early career investigator grants		**$97,761**

John Nott travel grant

P Malycha Royal Adelaide Hospital	Travel to Western Australia to advise on the Breast Cancer Audit and affairs of the Royal Australian College of Surgeons	$3,000
Total John Nott Travel grant		**$3,000**

Professorial chairs

Chair of Palliative Care Research	Edith Cowan University	$115,000
Chair of Behavioural Cancer Research	Curtin University of Technology	$125,000
Chair of Clinical Cancer Research	University of Western Australia	$275,000
Total professorial chairs		**$515,000**

Other research grants

Bone Tumour Registry		$30,000
Travel Grants		$15,000
Total other research grants		**$45,000**
TOTAL RESEARCH FUNDED		**$1,387,524**

Clinical Oncological Society of Australia 36th Annual Scientific Meeting

Awareness, Access, Action

The 2009 Clinical Oncological Society of Australia Annual Scientific Meeting again explored some very interesting and relevant aspects of cancer care on Queensland's Gold Coast, after being officially opened by Professor Jim Bishop.

In keeping with this year's theme, there was a strong focus on cancer awareness, including the success of preventative measures such as abstinence from smoking reducing the incidence of lung cancer over time as presented by Simon Chapman, the ongoing controversy surrounding cancer development from mobile phone use by Bruce Armstrong, and the incorporation of screening for psychological distress by Barry Bultz as the sixth vital sign.

Barriers to cancer care access were discussed. Cultural, financial and geographical barriers, including the delivery of care in non-urban Australia, as well as developing nations. Lynley Aldridge introduced the topic of care in patients from linguistically and culturally varied backgrounds. David Goldstein related the difficulties in servicing non-metropolitan centres. Nick Coatsworth led a panel of professionals with international experience in oncology care in developing countries.

Physical and supportive care action plans were presented by a quality international and local faculty. The topics spanned paediatric to geriatric oncology, molecular to clinical, with a number of tumour sites being represented, notably thoracic and neuro-oncology. Jacques Grill discussed long-term survivorship in paediatric tumours, while Catherine Terret considered the evidence for therapeutic options in the elderly. Tony Mok gave a very energetic presentation on emergent therapies in lung cancer, while Norm Laperriere related stereotactic radiotherapy options in cranial and spinal malignancies. Dermot Ball and Christine Carrington provided guidelines for the safe administration of chemotherapy agents. Bernard Park and Kate Drummond outlined cardiothoracic and neurosurgical nuances.

There was reflection on the physical, financial and psychological burden of cancer, culminating in the Hot Topic Debate on Cancer Care Funding chaired by Jenny Brockie. Charlie Teo discussed the impact of repeat neurosurgery. Bruce Mann presided over a session concerned with the financial cost of cancer to the health system. Ian Olver presented the results of a trial investigating the impact of prayer on wellbeing. The involvement of allied health and community representatives was exemplary, especially in the social program. The Tom Reeve Oration was delivered by the incumbent winner of the award, Patsy Yates.

Congratulations are extended to all prize winners, in particular the Best of the Best and Luminous Awards. Thank you to all participants, including industry sponsors, for sharing your knowledge and experience, and the organising committee for their facilitation of this year's meeting – COSA is in good hands for 2010!

Art Kaminski
Local Convenor

Australian Behavioural Research in Cancer

Centre for Health Research and Psycho-oncology (CheRP), New South Wales

Validity, reliability and clinical feasibility of a needs assessment tool for use in people with progressive cancer

Ensuring people receive cancer care according to the complexity and severity of their needs, independent of diagnosis or prognosis, has become an important focus. However, implementing care based on the assessment of needs has its own challenges, including how to define need, and how and when to assess need.

Psychometric properties of a newly developed needs assessment tool, Progressive Disease Cancer, were initially explored in a study with health professionals from various disciplines completing the tool to assess levels of physical and psychosocial concerns of simulated patients with advanced cancer and caregivers in taped consultations. A further validation study was conducted to assess the reliability, validity and acceptability of the revised tool in a specialist palliative care service by comparing items in the tool with items from the Palliative Care Problem Severity Score, the Resource Utilisation Groups - Activities of Daily Living and the Australian Karnofsky Performance Scale.

Results from both studies suggest the tool has high levels of reliability, validity and acceptability. Furthermore, it is an efficient tool that can be used by health professionals with a range of clinical expertise to identify individual patients' and caregivers' physical and psychosocial concerns, facilitating a better match of services and resources to the types and levels of needs identified.

ENRICH (Exercise and Nutrition Routine Improving Cancer Health) program: a lifestyle intervention for cancer survivors and their partners and caregivers

Lifestyle behaviours such as maintaining a healthy weight and being physically active, can reduce cancer survivors' co-morbidities, protect against recurrence and cancer specific mortality and improve quality of life. However,

while cancer survivors are an important target population for health promotion efforts, they have been largely neglected as a specific target group in health programs to date. In addition, partners/carers of cancer survivors are at risk of diminished psychosocial health and share many of the behavioural risk factors of their partners/family members who have cancer.

The ENRICH program aims to improve the lifestyle risk behaviours of cancer survivors and their partners/carers, by providing education and skill development in a series of motivational health coaching sessions and via linking to existing resources to support life-long behaviour changes. ENRICH was developed in reference to Bandura's Social Cognitive Theory and is guided by a chronic disease self-management model. ENRICH will be evaluated via a wait-list randomised control trial (n=150). Participants recruited via cancer support groups will complete one week of pedometry and self-report measures at baseline, eight and 20 weeks. Content of the face-to-face sessions (six x 2 hour sessions over eight weeks) includes a home walking program, a resistance training program and education/skill development on healthy eating.

Behavioural Research and Evaluation Unit (BREU), South Australia

Workplace diet and exercise interventions

The Cancer and Behavioural Science (CaBS) research group is a collaboration between Cancer Council SA and Flinders University, examining participation in healthy lifestyle choices that have been associated with decreased risk of cancer and other chronic diseases. Led by Professor Carlene Wilson and Dr Amanda Hutchinson, the group has conducted a review of published material on diet and physical activity interventions in the workplace with the aim of undertaking translational research focused on generating participation in overweight preventing behaviour. Results indicated the importance of motivation and/or rewards in promoting healthy lifestyle choices within the work context.

To date an honours student in psychology has conducted a randomised, control study on the benefits of providing free fruit in the workplace. Employees' consumption of fruit increased during the program, particularly in those who were not meeting the guidelines in terms of daily fruit intake.

Effect of chemotherapy on cognition in cancer patients

Chemotherapy has been shown to result in cognitive impairments, particularly in women with breast cancer. The CaBS group is currently examining the nature of the impairments associated with different cancer treatments for colorectal cancer.

Smoking behaviour among secondary school students

Results of the South Australian component of the triennial Australian Secondary Students' Alcohol and Drug Survey (ASSAD) showed approximately 5% of students aged 12-17 years are current smokers, representing a significant decrease from 7% in 2005. The survey of 2870 students from 61 randomly selected schools across the state revealed highest rates of smoking among those reporting a close friend or family member who smoked, those who had a higher disposable weekly income and those self-reporting lower ability at school.

Diet, physical activity and sun protection behaviour among secondary school students

As part of the ASSAD survey, BREU commissioned questions concerning diet, physical activity and sun protection behaviours. Despite an increase over time in the proportion of adolescents consuming the recommended amount of vegetables, breads and cereals, and in the proportion who engaged in the recommended amount of physical activity, the majority of South Australian adolescents are not meeting Cancer Council SA dietary or physical activity recommendations. Furthermore, engagement in some unhealthy behaviours (sedentary lifestyle and eating fast food) has increased.

One in three adolescents reported a preference for 'no tan' - a slight improvement from previous years. While a comparison of results showed little change in the rate at which adolescents reported they were sunburnt in the previous summer, a significant decrease was seen in the rate of severe sunburn reported during their lifetime. Despite these results, a continuing decline was seen in the proportion of adolescents who "usually" or "always" take precautions to reduce sun exposure, despite an increase in awareness of the association between UV radiation and sunburn with skin cancer.

Overall, the results of this survey suggest that many adolescents are putting themselves at an increased risk of future health problems by not practising sun protective behaviour, and by not meeting recommendations for adequate fruit and vegetable intake, or adequate levels of physical activity.

Centre for Behavioural Research in Cancer (CBRC), Victoria

Effects of current and plain cigarette package design on smokers' cigarette evaluation

The tobacco industry has increasingly responded to bans on advertising and promotion of tobacco by making cigarette pack design the cornerstone of its marketing strategy. Tobacco company research has found that the sensory experience of smoking a cigarette can be manipulated simply by changing the design elements of the pack. Consequently, there have been calls for the introduction of "plain" cigarette packaging that would remove all colours and imagery from packs, with only a brand name in standard small font permitted.

This program of research will be one of the first outside the tobacco industry to examine the impact of both current cigarette packaging and plain packaging on smokers' health risk related appraisals of cigarettes when smoked. Three experimental studies will be conducted. The first will assess the extent to which elements of current pack design are responsible for inducing misperceptions about cigarette harm among smokers that carry over

into their smoked experiences of cigarettes. The second study will assess whether plain cigarette packaging compared to branded packaging might induce smokers to appraise the same cigarettes, when they are smoked, to be stronger, less palatable, higher in health risks and lower in quality. The final study will assess the relative effects of plain versus branded packaging and current versus 100% front of pack pictorial health warnings on consumer perceptions of pack imagery, health risks and inferred sensory attributes. This research will provide timely evidence for policy makers that will guide corrective regulatory efforts in Australia and other countries.

IMPROVE: Improving Management by Participatory Research in Oncology; the Victorian Experiment

Cancer patient outcomes and survival depend on timely access to clinical services, including elements of supportive care. While the role of these in achieving optimal results is known for common cancers, there is a scarcity of information regarding less common cancers. IMPROVE seeks to document cancer outcomes for patients with less common forms of cancer (renal, diffuse large B-cell lymphoma, multiple myeloma). The study will determine whether there are any shortfalls in the care provided to patients, using medical records to map patterns of care. As well as investigating the adequacy of care, the study will explore the experience of care from the patients' and their carers' points of view. The study aims to identify any gaps and unmet needs, in both clinical management and the personal needs of patients, their families and carers. The study will work closely with doctors and other service providers, consumers, community and government agencies to identify gaps and translate the findings into improvements in care, survival and quality of life for cancer patients across Victoria. The study is a collaborative project led by the Cancer Epidemiology Centre at the Cancer Council Victoria, with clinicians from across Victoria's Integrated Cancer Services as co-investigators.

Centre for Behavioural Research in Cancer Control (CBRCC), Western Australia

People's awareness of the relationship between energy consumption and expenditure, and its potential application to food labelling

One strategy to decrease the 53% rate of overweight and obesity in Australian adults is to empower healthier food selection via improved nutrition labelling. Health advocates propose the front-of-pack Traffic Light system to facilitate 'at-a-glance' decision making. The Australian Food and Grocery Council has pre-empted such calls by voluntarily introducing the Percent Daily Intake (%DI) panel. Kelly, Hughes, Chapman et al. (2009) empirically demonstrated Traffic Lights enable a 'quicker' selection of healthy food products than %DI, but a hybrid system combining both the %DI system with Traffic Light colours would be most 'easy' to use overall. These equivocal results question the superiority of Traffic Light over the %DI system. CBRCC is currently testing a novel food labelling model whereby kilojoules are translated into Equivalent Walking Time (EWT) based upon a 70kg male (as per %DI) with average BMR walking at 5 km/h (Naismith's Rule) (3.5 MET). For example, a Mars Bar [53g, 1012kJ] has an EWT of 61 minutes. Sixty-four Western Australian adults are participating in eight focus groups stratified by sex, age (18–34 v 35–55 years) and socioeconomic status (blue v white collar). Discussions are exploring awareness of the relationship between energy intake versus expenditure, and the pros and cons of current nutrition labels and the %DI, Traffic Light and EWT labelling systems. Is it surprising to the average person that to 'burn off' the kilojoules contained within a single Tim Tam biscuit would require 24 minutes of walking, or 47 minutes for a carton of Choc Chill? Would such knowledge help steer them towards healthier eating patterns? If the answer to these questions is 'yes', it could be developed into an intrinsically appealing food labelling system potentially superior to the existing %DI or proposed Traffic Light systems. Data collection is scheduled to be completed by January 2010.

Viertel Centre for Research in Cancer Control (VCRCC), Queensland

Colorectal cancer and quality of life study

We have been conducting a population-based longitudinal study of colorectal cancer survivors which aims to identify the predictors of quality of life in approximately n=2000 colorectal cancer survivors up to five years post diagnosis. The study is in its final year of data collection and has collected data on physical symptoms and the factors that improve recovery and quality of life.

CanChange

The Colorectal Cancer and Quality of Life study has shown that at 12 months post-diagnosis, 61% of colorectal survivors are overweight/obese, 62% are insufficiently active and 22% are high risk drinkers. To address this, we have developed a lifestyle intervention, (CanChange), that is telephone delivered to improve the reach of the intervention. CanChange is designed to promote improvements in lifestyle behaviours and includes fortnightly telephone sessions from an experienced health coach over a six month period.

HELP Study – Psychological distress screening by a cancer Helpline

Up to one third of people affected by cancer experience psychological distress, however screening rarely occurs in routine clinical practice. This study investigated the feasibility of cancer helpline operators screening callers for their level of distress using a brief screening tool (Distress Thermometer, DT). Consecutive cancer patients and carers who contacted Cancer Council Helpline from September-December 2006 (n=341) were invited to participate. Our data suggested that it was feasible for a community based cancer helpline to screen callers for distress using the DT.



LETTERS TO THE EDITOR

A reply to this letter, from the National Health and Medical Research Council, is also published in this issue.

National Health and Medical Research Council grant funding: can the process be improved to achieve its objectives?

There is a fundamental flaw in the structure of the National Health and Medical Research Council (NHMRC) review panels. They are largely disciplinary in nature, but not functional. This means that basic, translational and clinical research applications are all in the one basket. Yet the objectives of these different research phases cannot be fairly compared.

Basic research seeks to identify and develop some new aspects of medical research. Translational research takes the results of basic research into the clinic. Clinical research is the ultimate endpoint of all research.

Ideally, basic research should be supported from the intellectual aspect only, on the basis that any new knowledge is good knowledge. On the other hand, the endpoint of translational research is to bring the state of the art to the clinic, whereas clinical research applies directly to patient care. How can these three different phases of medical research be judged by the same criteria and by the same reviewers?

Everyone would agree that clinical research is poorly served by NHMRC. Many would say the same about translational research. I expect that basic researchers are not so happy either, because there are so many applications in this category.

Can we admit that there is a problem within the NHMRC. If so, then what needs to be done?

A major change would be to categorise proposals by their research phase, ie basic, translational or clinical research. Then we can find out the spectrum of such grant applications. Money should be apportioned to fund these phases so as to achieve the right balance. What is the right balance? Perhaps each has equal importance and should have equal funding, although we need to allow for the fact that there are many more basic researchers. I expect that this would be far from the current funding situation, which does not seek to achieve any balance between the research phases.

Reviewers should be required to nominate both their discipline and research phase experience. Whereas discipline is the major criterion for reviewer selection for basic research, this diminishes in importance as we move to translational and clinical research, as long as reviewers have experience in these phases.

The different research phases actually have different endpoints, and it is inappropriate to judge them under the same endpoints. New endpoints can be defined as follows:

- Basic: new knowledge.
- Translational: new clinical approaches.
- Clinical: impact on patient management and prognosis.

The composition of the review committees needs to be revised. Members should be selected by discipline for basic research, as is the case now. However, separate committees should be set up for translational and clinical applications. It is just as important that members have the relevant experience in these research phases as they have the disciplinary knowledge.

Once a score has been determined, projects are currently funded above a certain, fundable threshold. No allowance is made for the fact that the evaluation process has an uncertainty of perhaps 30% or more. Yet projects are scored to 1% (or less?) to establish the funding cut-off. This is not science. Perhaps it is better to ballot the marginal group than to so improperly misuse statistics at a government level.

The quality of the reviewing system is in need of upgrading. There are for too many junior reviewers on the panels. Professors should be capable of a higher level of reviewing, and if there are not enough professors to go round, they could farm off and supervise reviews by more junior staff and sign-off on them.

This brings us to the problem is anonymity. Why should a senior reviewer be afraid of an open review system? In this case reviews would be much more serious undertakings. We publish papers and risk our reputations, why not our reviews as well? No serious scientist would object to a critical review that is positive in approach, but picks up errors and omissions. We are usually grateful for such reviews, rare that they may be.

The easy way forward is to ask reviewers if they wish their reviews to be anonymous or not, and so move towards a more transparent system.

At present, applicants can nominate a non-reviewer, but without knowledge of who is doing the reviewing, this is a rather useless exercise. A better approach would be for applicants to identify low level reviews. If a reviewer receives, say, three such low level ratings, then they are dropped from the system. By the same token, an applicant who complains more than three times could have future complaints ignored, so complaints will be used sparingly. This has the benefit of giving an applicant a means of rebuttal of a low level review, which is otherwise denied. The current system denies the applicant a right

to question low level reviews, but the reviewer is free to continue to wreck damage with more superficial reviews.

This increasing emphasis on journal ratings and citations needs to be moderated. How many citations did Einstein have within five years of his prime publications? I expect there were very few. Why, because very few people were working in the field. High citation indices belong to review journals for obvious reasons; everyone refers to reviews. Clinical journal papers may have a major impact on clinical practice, but few citations, because normal operating procedures are not publishable. Basic research papers may have high citation indices, because a new technique or concept is picked up by many laboratory researchers, which is fair enough. However, in many cases, they have may have no clinical impact at all. So why should clinical researchers be so disadvantaged by a system that is not applicable to their activity?

The task that NHMRC faces is enormous. Does NHMRC actually know how fruitful its funding is? NHMRC consumes a lot of federal funds, and now, regrettably, has the Cancer Councils captive to its review process. It carries a heavy responsibility, but is it actually doing its job in bringing new medical technology and practice into the clinic?

Professor Barry J Allen PhD DSc
Centre for Experimental Radiation Oncology
Cancer Care Centre, St George Hospital
2 October 2009

Reply to Barry Allen from the National Health and Medical Research Council

Thank you for this opportunity to comment on the thoughtful article by Professor Barry Allen.

As the national agency responsible for supporting health and medical research, National Health and Medical Research Council (NHMRC) processes will always be of intense interest to members of the research sector. NHMRC processes have improved over time, in part due to the constructive feedback provided by members of the sector. All systems of peer review will have critics, and this is especially true when success rates for the NHMRC's research funding schemes are around 20-25%.

NHMRC recognises four categories of health and medical research – biomedical research, clinical research, public health research and health services research. Each is important to NHMRC. The main criterion for NHMRC funding is excellence, but in all research categories there is also a strong emphasis on outcomes and relevance to improving health. NHMRC review panels have a combination of clinical and biomedical members to ensure that the relevance of improving health is always recognised.

Clinical research is well served by NHMRC. During the period 2000-2009 NHMRC, expenditure on 'clinical medicine and science' exceeded $1.1 billion. In addition, NHMRC recently announced a further $107m funding for 190 projects in 'clinical medicine and science' commencing in 2010. Numerous examples exist of outstanding clinical research funded via the project grant and program grant funding schemes.

It is important to remember that NHMRC organises and administers the peer review process, but applications are reviewed by peers, both external and internal to the grant review panels. In 2009, project grant applications were reviewed by one of 45 review panels. Readers of *Cancer Forum* may be interested to know that specific panels were convened to assess applications in the following categories: cancer biology; cancer biology - signalling; clinical cancer; and haematology and tumor immunology.

In addition, panels were convened to consider applications in related areas such as large scale clinical trials, public health, pharmacology, endocrinology and health services/ primary care. The Large Scale Clinical Trials panel was established in 2009 to ensure that these studies are reviewed by a panel specifically constituted for this purpose. While the panel is not discipline specific NHMRC ensures that its expertise covers the breadth of applications received, in addition to possessing high level clinical trials expertise.

This variety of review panels provides significant scope for applications in the cancer field to be appropriately grouped and suitable membership selected to provide high quality peer review. External assessors, who are independently selected by the NHMRC Academy, are more likely to match the applicant in both discipline and research category and bring valuable additional expertise to panel deliberations.

The membership of NHMRC peer review panels is carefully selected to ensure the required expertise and experience is present to review all applications received. Senior researchers are very well represented on panels. It is also very important to the future of health and medical research in Australia that the assessment process is open and transparent to the best and brightest mid-career researchers, including through their participation on review panels. Our assessment processes benefit from their involvement.

The membership of NHMRC review panels is kept confidential for a period to ensure the integrity of the process. However, the membership of all project grants review panels is published on the NHMRC website at the conclusion of the process. The membership of program grant panels is known to applicants at the time of interview. NHMRC practice is consistent with the international standard for peer review (including publications) that anonymity is preferable.

Review panels use a seven point scoring system to establish an order of merit. Once the order of merit is established the review panel confirms the relative ranking

of each grant. Review panels do not attempt to score individual applications to 1% or less, as assumed.

We note Professor Allen's concerns regarding the use of journal ratings and citations to judge research achievement. NHMRC policy specifically cautions against the uncritical use of these measures.

Each year NHMRC obtains external reviews of applications to its various funding schemes. In 2009, around 4000 external reviews were obtained for project grant applications alone. A very large number of researchers support NHMRC processes by providing external reviews and this contribution deserves acknowledgment.

NHMRC does accept that the quality of external reviews can vary, and this is best addressed by the review panel. The review panel is aware of the identity and expertise of the external reviewer and this knowledge provides a perspective on the review that is unavailable to the applicants.

NHMRC does have excellent information describing how its funded research has contributed to world medical and scientific knowledge. NHMRC also has a significant collection of information about research that has translated into improved health outcomes and can cite numerous examples. However, NHMRC does face a major challenge to track and communicate the many positive outcomes that are generated by its supported research and researchers. This is in part due to the time that often elapses between the end of a grant and the translation of findings.

All members of the research community share a responsibility to continually consider and broadly communicate the improvements to health that flow from our work. It may be that *Cancer Forum* can assist in this regard by highlighting the achievements of Australian cancer researchers, including the great number receiving NHMRC support.

Thank you again for the opportunity to respond.

Professor James Best
Chair, NHMRC Research Committee

Mr Michael Nutt
Director, NHMRC Research Activity Section

Professor Elim Papadakis
Executive Director, NHMRC Investment Branch

NEWS & ANNOUNCEMENTS

Tobacco tax, bowel cancer should be 2010-11 budget priorities

Cancer Council Australia has recommended that an increased tobacco tax and an expanded bowel cancer screening program should be priorities for the 2010-11 federal budget, if the Rudd Government is to back its moves towards healthcare reform with decisive action.

Releasing Cancer Council Australia's pre-budget submission to Treasury in November, Chief Executive Officer, Professor Ian Olver, said the Government had campaigned on improved disease prevention and consulted appropriately for almost two years. Next financial year was the time to deliver.

"When it comes to reducing death and disease caused by smoking, the best measure available to Government is tobacco tax, particularly among people on lower incomes," Professor Olver said.

"Increasing cigarette prices by 21 per cent would prompt 130,000 Australian adults to quit smoking and prevent 35,000 children from becoming addicted to nicotine. It would also raise an extra $1.3 billion in annual revenue – more than enough to fund public health initiatives like the Bowel Cancer Screening Program."

Professor Olver said the National Bowel Cancer Screening Program had the greatest unrealised potential to immediately prevent cancer deaths, with a fully implemented program saving 30 lives per week by picking up early-stage cancers.

"Yet instead of providing two yearly screening for all Australians aged 50 and over, the program is only available once off to people turning 50, 55 and 65," he said. "At a minimum we want to see 60 and 70 year-olds added, which would identify an additional 630 early stage bowel cancers each year."

The pre-budget submission was accompanied by an album of personal stories as part of Cancer Council Australia's "Get behind bowel cancer screening" online campaign www.getbehindbowelscreening.com.au.

Bondi 'crime scene' puts tanning in the frame

Sydney's iconic Bondi Beach became a massive 'crime scene' in November as part of a new Cancer Council campaign that graphically depicts the dangers of tanning.

Startled beachgoers were greeted by the sight of 1700 towels stretched across the sand, each emblazoned with a 'crime scene' chalk outline of a 'victim'. The towels were a graphic representation of the 1700 Australians who die each year from skin cancer.

Professor Olver said the 'Don't be a victim' campaign was aimed mainly at Australian teens, many of whom continued to desire a tan, despite the well publicised risks.

"Newly analysed data from our National Sun Survey shows that 43 per cent of teens believe a suntan 'looks healthy'," he said.[1] "Peer pressure is largely to blame, with 71 per cent of teens saying their friends thought 'a suntan was a good thing.'"

Professor Olver said that with one in four teens still getting sunburnt on a typical summer weekend, Cancer Council believed it was time to send an "unambiguous message" about the deadly risks of tanning.

"More needs to be done to educate younger Australians about the dangers of getting sunburnt," said Professor Olver. "We hope this campaign will help get the message to sink in that a tan just isn't worth the risk."

1. National Sun Protection Survey 2006-07. While some data from this survey has been previously released, this is the first time these specific statistics have been released.

Government commended for continuing 'five ways' skin cancer campaign

Professor Olver welcomed the announcement by Health Minister Nicola Roxon in November of an additional $2.5 million to continue the successful 'five ways' multimedia campaign for the fourth consecutive summer.

He said that of all the cancers that cause substantial death and disease in Australia, skin cancer was the easiest to prevent through behaviour change, with almost all cases caused by unsafe exposure to ultraviolet radiation.

"The Government's campaign clearly sends the right message," he said. "Protect yourself from the sun in five ways: wear a hat and protective clothing; seek shade; put on wraparound sunglasses; and apply sunscreen.

"We hope to see an ongoing commitment from Government, with increased funding next year as the national preventative health agenda gathers momentum."

Poor chemical controls heighten health risks for small business employees

Thousands of Australian workers employed by small to medium sized businesses (SMEs) are being put at increased risk of exposure to hazardous materials because owners are failing to put in place proper controls.

At the November 'kNOw cancer in the workplace forum' organised by Cancer Council Australia and the ACTU, Dr Peta Miller, from Safe Work Australia, reported that less than half of SMEs undertook monitoring for hazardous substances in the workplace and that of those who did monitor, they did not adequately represent worker exposure.

"One of the significant barriers to effective implementation of controls by SMEs has been the relatively complex nature of guidance advice under the current regulatory framework," she said. "Notices tend to be too detailed and technical for SMEs to fully comprehend, so labelling becomes critical."

Dr Miller said that with the new internationally agreed labelling system for hazardous workplace chemicals to be introduced in Australia in 2012, with clearer, more simply worded descriptions and easy to understand safety data sheets, far more SMEs were expected to comply.

Cancer Council Australia Chief Executive Officer, Professor Ian Olver, welcomed the introduction of clearer labelling for chemicals.

"While there are obvious examples like quitting smoking, minimising exposure to the sun and participating in screening programs, we also need to do more when it comes to the less publicised risks, like preventing exposure to chemicals that are known carcinogens."

Unsafe handling of chemicals poses health risk to farming communities

Australian farmers and their families are being exposed to some of the most dangerous chemicals available, with little training or regulation.

Dr Liz Hanna, from the National Centre for Epidemiology and Population Health at the Australian National University, told the 'kNOw cancer in the workplace forum' in November that her study (2003) of 1050 farming households in north east Victoria found that 95 per cent of households were using agricultural chemicals, yet only 40 per cent of farmers had undertaken a chemicals user course.

"Agricultural chemicals are of particular concern as they interrupt biological pathways that we share with the pests they are designed to kill," Dr Hanna said. "They are among the most dangerous chemicals we have on the market, yet there is no monitoring in place to encourage safe handling."

Dr Hanna said there was minimal regulation of agricultural chemicals use in Australia because they were used on farms instead of factories. Occupational health and safety regulations existed for large farms employing staff, however 95 per cent of farms in Australia were family owned and operated.

Chair of Cancer Council Australia's Occupational and Environmental Cancer Committee, Terry Slevin, said that not enough attention had been paid to the issue and the farming community deserved better.

"We need to make sure all farmers are trained in safe handling practices and that there is credible and frequent monitoring to ensure the health of farmers and their families."

Poor management of workplace cancer claims exacerbates employee anxiety

Associate Professor Tim Driscoll, from the University of Sydney's School of Public Health, told the 'kNOw cancer in the workplace forum' in November there was an understandable uncertainty by employers when it came to concerns about cancer clusters.

Professor Driscoll, who investigated concerns about a cancer cluster at the National Gallery in 2008, as well as conducting a number of similar investigations, said most concerns could be reasonably quickly cleared up by following a systematic process focusing on exposures and emphasising communication and education.

According to Professor Driscoll, employers could help to avoid prolonged, costly, anxiety-provoking and sometimes adversarial situations by calling in an expert, such as an epidemiologist or occupational physician, early to talk with staff, assess the concerns and advise whether there is a need for further investigation. "This can ease concerns and avoid a cascading effect that may ultimately result in long-term problems for employees and the organisation," he said.

"We need to take any claim of cancer in the workplace seriously, as many workplaces still have problem exposures that are not well controlled. However, if no carcinogenic (cancer-causing) exposure is identified, it is extremely unlikely that work-related exposures would be responsible for an apparent cluster of cancers. This has been the experience in a large number of studies around the world."

Cancer Council Australia Chief Executive Officer, Professor Ian Olver, said that while all claims of cancer clusters merited some level of investigation, there was a need for more information and education for employers and employees, as well as better internal communication.

Events News

Daffodil Day 2009

Thanks for a blooming good effort!

Cancer Council was once again delighted by the generosity of everyday Australians, who rallied together to raise over $8 million for Daffodil Day in 2009. This money will be used to help Cancer Council continue to provide for research, education and support for the one in two Australians diagnosed with cancer by the age of 85.

And so a big thankyou is extended to all who took part, whether by registering to help us sell merchandise, or by picking up a daffodil gift on the day.

Daffodil Day will be back in August this year. To pre-register your interest visit www.daffodilday.com.au or phone 1300 65 65 85.

Australia's Biggest Morning Tea

Australia's Biggest Morning Tea time is almost here! Sign up now to host an event in May and help us raise the funds we need to keep working towards reducing the impact of cancer in Australia.

The official date this year is May 27, however you can join in the fun by hosting a party or drinking a cuppa anytime during May.

All you need to do is visit www.biggestmorningtea.com.au or phone 1300 65 65 85 to receive a host kit. The website

is full of great ideas and recipes to help get you started, and you can also check out our gallery featuring everyday Australians doing the 'I'm a little teapot'.

Last year our hosts and guests raised more than $10.6 million, and we are sure we can do even more this year.

This year Cancer Council has joined forces with Trafalgar to give morning tea hosts the opportunity to go in the running to win one of three overseas holidays including "Handmade Thailand" holiday valued at $2600, "Handmade Vietnam" holiday valued at $6600 and "Handmade India" holiday valued at $10,000.

Biggest Morning Tea guests also have the opportunity to be rewarded. For each $10 or more guests donate to your morning tea, they will receive an entry to win a "Europe – created for you" holiday package valued at $12,800.

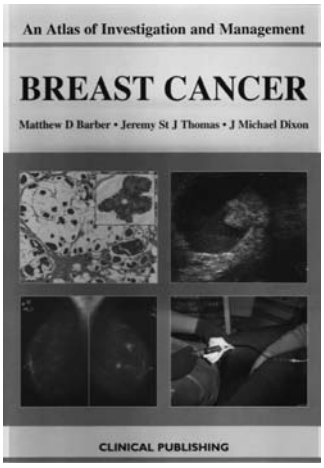
Terms and conditions can be found at **www.biggestmorningtea.com.au**



BOOK REVIEWS

An Atlas of Investigation and Management – Breast Cancer

Matthew D Barber, Jeremy St J Thomas and J Michael Dixon
Atlas Medical Publishing (2008)
ISBN: 9781904392958
118 pages
RRP: $US99.95



This is a nicely presented book that would be valuable in the library of any breast unit. Breast disease, and in particular breast cancer is addressed in a systematic way, with chapters on anatomy, assessment, symptoms, screening, DCIS, and then the epidemiology, pathology, staging and treatment of breast cancer. The final chapter is devoted to the complications of the treatment of breast cancer.

The authors are two surgeons and a pathologist from the Western General Hospital in Edinburgh. This leads to a consistency throughout the book that is often lacking in multi-authored books, and it is written in clear prose and in a pleasingly direct manner.

The illustrations are superb, with excellent examples of clinical presentations and patholgoical specimens. The Edinburgh Unit has been pioneering in its introduction of oncoplastic techniques in the surgery for early breast cancer and this area is well convered in this atlas. The examples of radiological images are not up to the high standard set elsewhere, one area where the book could be improved.

The text represents a comprehensive outline of breast cancer and its management. It is presented as an overview rather than an indepth textbook. This means that the book will be of use to those entering rather than already expert in the field of breast cancer. For the former, it is an excellent primer.

Some of the discussion reflects practice in the UK and is not particularly relevant to Australia. The section on axillary staging is an example, where the 4-node sampling procedure is presented along with sentinel node biopsy, in a way that a reader new to the area may conclude that both are reasonable options. This does not reflect Australian thinking, where sentinel node is now standard.

The main shortcoming of the book is a reflection of the authorship list. This is largely an atlas of breast cancer diagnosis and surgery, rather than of comprehensive multidisciplinary breast cancer management. Systemic therapy is not covered in nearly the same depth as surgical therapy, and radiotherapy receives little attention. It may be these areas were given less attention than surgery because they tend to be less visual, however images of radiotherapy acute and late effects would be a useful addition. Similarly, the welcome section on complications of the treatment of breast cancer is mainly focused on poor cosmetic outcomes or complications of breast reconstructive procedures. Complications of adjuvant therapies are only briefly covered and the psychosocial complications barely mentioned.

In summary, this book belongs on the bookshelf of a breast unit. Those most likely to use it are medical, nursing and allied health staff who are entering the field of breast cancer and need an accessible way to understand the concepts of breast cancer treatment.

Bruce Mann, Breast Service, The Royal Melbourne and Royal Women's Hospital, Melbourne, Victoria.

Cancer - Principles & Practice of Oncology Volumes One and Two (8th Edition)

Vincent T. DeVita Jr, Theodore S. Lawrence and Steven A. Rosenberg
Wolters Kluwer Health/Lippincott Williams and Wilkins (2008)
ISBN 978-0-7817-7207-5
3200 pages
RRP: $751.30

This textbook is considered the authoritative reference text for oncology and the 8th Edition continues this tradition. It is set out in a logical format starting with the molecular biology of cancer. As would be expected, there are new expanded sections on genomics and proteomics, as well as covering telomeres and cell immortalisation. In discussing the principles of oncology, causation, epidemiology and the principles behind each of the major treatment modalities, detailed sections on each of the major drug classes cover their use and toxicities. There is also a large section on biotherapeutics with the growth of targeted therapies, and subsequently the design issues which arise in clinical trials of these agents.

The section on the practice of oncology starts with prevention and screening and moves to diagnostic techniques, highlighting many that also cross over to treatment such as the interventional radiologic techniques. There is also a comprehensive section on endoscopy. The

bulk of this section on practice covers the tumour types by anatomical location and each chapter is set out in a similar order for ease of navigation, focusing on the multimodality management of each cancer. Although adverse effects are described in the section related to treatment modalities, common side-effects such as myelosuppression, emesis, fatigue and organ toxicities have their own chapters.

Psychosocial issues and rehabilitation are covered, along with a specific chapter dealing with survivorship. An interesting collection of topics related to the practice of oncology entitled 'Societal Issues in Oncology', provides the opportunity to discuss ethics, quality, health disparities and regulatory issues, while 'Information Systems in Oncology' examines the cancer presence on the internet and the evolution of the electronic medical record.

The two volume set concludes with a chapter on complementary therapies, followed by the consideration of newer therapies spanning robotic surgery to nanotechnology.

As expected, each chapter is very well referenced, which makes this book a valuable resource. However, to me, the most valuable capability was to be able to access the full contents online. Moreover it is fully searchable, and in testing this I found it much easier to find what I needed by electronic searching than by referring to the 112 page index. As well as the text itself, the online resources include all of the images, which are searchable and can be downloaded. Further, there is a quiz section where the readers can test their knowledge on a large range of topics from the book. To keep current the website gives access to PPO updates and focus articles in the form of monographs on recent topics.

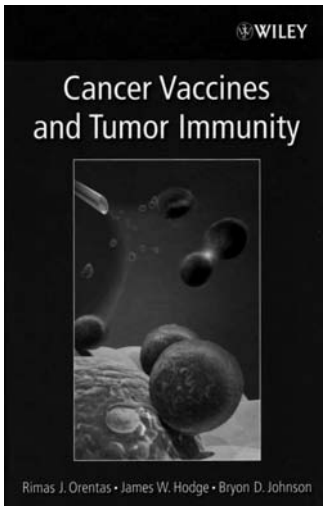
Rather than designed to be read from cover to cover, this is a definitive reference book which should sit on each oncology specialist's shelf. It is greatly enhanced by its additional online presence.

Ian Olver, Cancer Council Australia, Sydney, NSW.

Cancer Vaccines and Tumor Immunity

Orentas RJ, Hodge JW, Johnson BD (eds)
John Wiley & Sons (2008)
334 pages
ISBN-13: 9780470074749
RRP $185.00

Admit it. Whenever you look at a paper or a book that is exactly on the topic of your own research interest, the first thing you do is to see whether they have cited you. After all, once in a while it is nice to have your papers cited by someone other than yourself. Sadly for most of us, all too often we do not find our names there. Please tell me it's not just me. Anyway, the only possible conclusion is that the author is too ignorant to recognise work of pivotal importance. Any other explanation is too bitter to contemplate.



It is therefore with regret that I inform you that the authors and editors of this book are clearly too ignorant to recognise work of pivotal importance. This is a pity, because on the face of it this book otherwise could be useful at several levels and contains eminent authors who really ought to be on top of their fields. Cancer immunology has undergone a reinvigoration in recent years with the discovery of new principles underlying active regulation of immunity and the subsequent clinical application of these findings with sometimes quite striking results. The field is evolving rapidly and such changes are often left out of books like this due to the long lag time for publication. It is gratifying to see that it contains well written sections relating to regulatory T cells and blockade of inhibitory costimulatory molecules including CTLA-4, but also several others of relevance. It is also very good to see discussion of some of the other areas plaguing the field, such as how to interpret immune responses, or the shortcomings of conventional clinical response evaluation criteria.

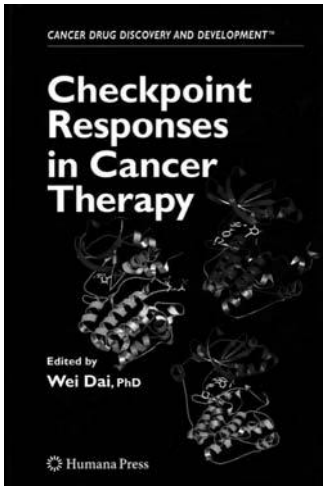
Despite this, I found this book strangely frustrating to read. A quick look at the section headings and chapter titles gives the impression that the book is a comprehensive overview of the biology of both innate and adaptive immunity, and a good summary of attempts to exploit this. However, many chapters are almost autobiographical and often entirely restricted to a single model system developed by that author's group. As examples, chapter 2 on carbohydrate vaccines uses the term "our group" with dangerous frequency. The chapter on antigen-specific cancer immunotherapy concentrates exclusively on HPV, ignoring a huge range of other research activity and relevant models. Other chapters similarly concentrate on the authors' own isolated areas, including listeria or EBV. Some chapters appear to be broader but again miss some of the key published data. For example, chapter 10 on allogeneic whole cell vaccines somehow manages to miss all of Peter Hersey's important work. An exception to this litany of complaints is chapter 4 on toll-like receptors, an excellent overview of the area written by the eloquent Danny Speiser and Art Krieg.

I was excited to have the opportunity to review a book where the title precisely reflects my research interest. Sadly, and not just because they missed all my papers, this one is too patchy and too parochial to be of broad interest and I cannot recommend it.

Ian Davis, Ludwig Institute for Cancer Research, Austin Health, Heidelberg, Victoria.

Checkpoint Responses in Cancer Therapy

Wei Dai (Editor)
Humana Press (2008)
ISBN: 9781588299307
314 pages
RRP: $US169.00



This volume summarises a broad range of potential and current therapeutic checkpoints relevant to cancer.

I found the presentation generally consistent and well set out. The topics addressed ranged from those checkpoints associated with older, empirically identified, non-targeted therapeutic agents (such as etoposide and paclitaxel), to those which are very early in preclinical development and clearly form the basis for rationally designed therapeutic agents. As an example of the latter, the chapter on the spindle checkpoint, for which selective agents are yet to enter the clinic, promises much for tumours exhibiting aneuploidy.

Excitingly, there were several chapters on pathways in early clinical development. Of particular interest to this reviewer was the chapter on the p53 pathway, given the significant efforts to bring MDM2 antagonists to the clinic. This target is amplified or over-expressed in over 10% of all cancers, and one of the authors of this chapter, Lyubomir Vassilev, has played a major part in developing the lead compound in the clinical arena, nutlin 3a. Watch this space with interest.

Lastly, the section on understanding how histone deacetylase inhibitors effect anti-tumour activity reminds us that not all novel therapies arise from clear and rational bases. We still do not know how these agents work, nor why they seem to be particularly effective in some cancer types, but not others.

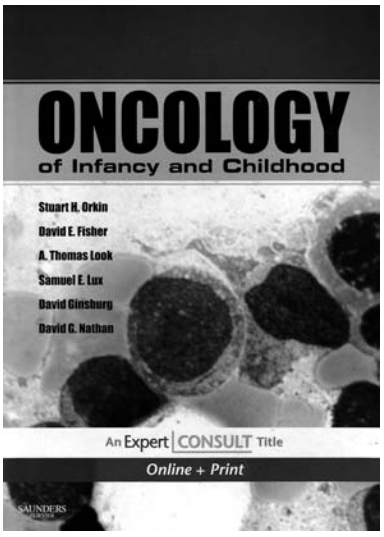
David Thomas, Peter MacCallum Cancer Centre, Victoria.

Oncology of Infancy and Childhood

Stuart H. Orkin, David E. Fisher, A.Thomas Look, Samuel E. Lux, David Ginsburg and David G. Nathan
Saunders Elsevier (2009)
ISBN: 9781416034315
1368 pages
RRP: $305.00

This is a concise and complete look at cancer in infancy and childhood and at 1368 pages, is not bedtime reading. There are 34 chapters divided into five sections. Section I, 'The Biology of Cancer', includes epidemiology of leukaemia, angiogenesis, molecular basis of human malignancy, targeted approaches to drug development and cytogenetics, and molecular pathology of paediatric cancer. Section II, titled 'Pediatric Cancer Therapeutics,' discusses treatment modalities. Section III, 'Haematologic Malignancy', discusses the leukaemias and lymphomas with an excellent chapter on infantile leukaemia. Section IV, 'Solid Tumours', includes all of the solid tumours that are related to paediatrics. Section V, 'Supportive Care', contains excellent information on oncological emergencies, symptom management, palliative care and a great chapter on childhood cancer survivorship. This chapter is really appropriate for all clinicians who care for paediatric patients with cancer. There is a plethora of information on late effects of both chemotherapy and radiotherapy. It discusses the future direction of the treatment of the child with cancer and also specific testing that may be available to identify the child that may be at high risk for late effects.

This book is appropriate for the expert paediatric oncologist, trainees and nursing and allied health staff. From a nursing perspective, I found this book had great information regarding the cancer diseases, had a fantastic collection of diagnostic imaging and a very concise and up-to-date chapter on the nursing care required to give holistic care to these patients and their families. There is also a very good chapter on the topical issue of childhood cancer survivorship. There are excellent slide shows with most chapters demonstrating the indicated disease.



This book is well referenced, with one 52 page chapter having 748 references. Of the 92 contributors, 58 were from the the Dana-Farber, Boston or the Children's Hospital, Boston. The rest of the contributors were from North America, except one contributor from Ireland.

This is an excellent reference book for all clinicians caring for the child with cancer. It is concise, yet loaded with great information. I would recommend this book to anyone with a strong desire to learn about oncology of infancy and childhood.

Dianne Cotterell, Clinical Nurse Consultant, Paediatric Oncology, John Hunter Children's Hospital, Newcastle, NSW.

Radiation Oncology Advances

Søren M. Bentzen, Paul M. Harari, Wolfgang Tomé and Minesh P. Mehta
Springer (2008)
ISBN 978-0-387-36743-9
341 pages
RRP: €106.95

Firstly, the authors are to be congratulated for producing a single reference book that attempts to summarise recent developments in the rapidly advancing area of radiation oncology. More so than most other medical specialties, the practice of radiation oncology continues to evolve as technological and molecular advances surge ahead. While these advances can affect all aspects of clinical practice, the book is divided into four broader sections.

The first, 'Advances in Imaging and Biologically-Based Treatment Planning', largely focuses on advances in target delineation and tracking and summarises the state of play in image guidance and functional imaging modalities.

The second section, 'Advances in Molecular Biology and Targeted therapies', gives an excellent overview of the current understanding of cellular and molecular radiobiology and how this relates to the exciting new field of targeted therapies. Some of these concepts are further explored using head and neck SCC and malignant gliomas as clinical examples.

Section three, 'Advances in Treatment Delivery and Planning', describes some of the newer technologies available for external beam radiation delivery and gives a summary of various models used to calculate normal tissue complication probabilities, as well as potential methods for optimising treatment using biological parameters.

The last section, 'Clinical Advances', highlights some of the developments in multi-modality management for several common tumour sites and discusses the role of cyto-protective agents in clinical practice.

These varying subjects will be of interest to both the busy clinician trying to stay abreast of recent technological advances and to more junior trainees who are relatively new to the discipline.

While the book makes good use of multiple diagrams to illustrate particular points, some of these are difficult to interpret in isolation and are often not well explained within the text. Similarly, the average clinician may find it difficult to follow some of the explanations relating to mathematical modelling equations, particularly those describing normal tissue complication probabilities.

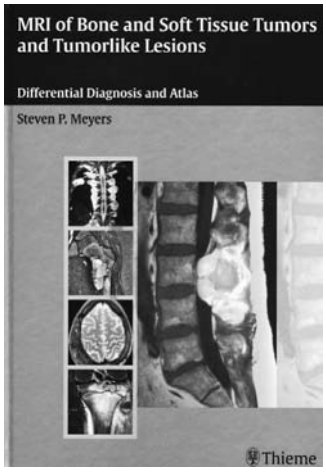
Regardless, each section manages to give a good overview of the covered topics and directs the reader to more indepth reviews and articles when appropriate. As with any text that attempts to update advances in a rapidly evolving field, there are some chapters with information that is not necessarily the most up-to-date by the time of publication, particularly those relating to clinical examples.

Despite this, the book will serve as a valuable compact reference that provides a good basis from which to gain a broad understanding of both the technological and clinical advances in radiation oncology that will lead us into the next decade.

Dominic Lunn, Radiation Oncology Registrar, Princess Alexandra Hospital, Brisbane, QLD.

MRI of Bone and Soft Tissue Sarcomas and Tumorlike Lesions

Steven P Meyers
Thieme (2008)
ISBN-13: 9783131354211
798 pages
RRP: $515.00



Magnetic resonance imaging is a vital part of the initial staging and ongoing management of connective tissue tumours. It appears that currently, over 60 million MRI scans are performed annually, indicating the widespread uptake of this phenomenally powerful technology.

This monograph presents the first (to my knowledge) comprehensive text on the use of MRI in the diagnostic imaging of connective tissue tumours. It has almost 3000 images of benign and malignant tumours, or diseases which may form part of a reasonable differential diagnosis. It is curious how much of the diagnosis of sarcomas (and related diseases) depends on the imaging data; integration of the clinical presentation, imaging and pathology is now regarded as essential in any diagnostic work-up of a potential sarcoma. Indeed, I would have liked to have seen a summary statement in this text, to the effect that multidisciplinary integration is a vital part of care of patients with sarcomas.

While the richness of the images is a strength, the book is presented as a series of sometimes overwhelming tables. For example, the tables on the incidence of various tumours is both comprehensive, but also curiously inconclusive, as marked (and unexplained) differences in incidence are reported from US and European sources.

Minor quibbles aside, this text is likely to provide an excellence reference for the training sarcoma radiologist and others with a passionate interest in this field.

David Thomas, Peter MacCallum Cancer Centre, Victoria.

CALENDAR OF MEETINGS

AUSTRALIA AND NEW ZEALAND

Date	Name of Meeting	Place	Secretariat
2010			
April			
14 – 16	10th Biennial Behavioural Research in Cancer Control (BRCC) Conference	Freemantle WA	Cancer Council Western Australia 46 Ventnor Avenue 6005 West Perth, Australia Tel: +61 8 9212 4399 Email: BRCC2010@cancerwa.asn.au
May			
4 – 7	Royal Australasian College of Surgeons Annual Scientific Congress 2010	Perth WA	Royal Australasian College of Surgeons College of Surgeons' Gardens 250 - 290 Spring Street East Melbourne VIC 3002 Tel: +61 3 9249 1200 Email: college.sec@surgeons.org Website: www.surgeons.org
July			
14 – 16	Sydney Cancer Conference Profiling risk, personalising treatment and predicting outcomes	Sydney NSW	Cancer Research Network Room 302, Medical Foundation Building 92-94 Parramatta Road Camperdown NSW 2050 Australia Tel: +61 2 9036 3478 Email: merilynh@health.usyd.edu.au
September			
12 – 18	Australia & Asia Pacific Clinical Oncology Research Development (ACORD) Workshop 2010	Sunshine Coast QLD	Australia & Asia Pacific Clinical Oncology Research Development (ACORD) Website: www.acordworkshop.org.au
15 – 17	Australia & New Zealand Society of Palliative Medicine	Adelaide SA	Australia & New Zealand Society of Palliative Medicine PO Box 238 Braidwood NSW 2622 Website: www.anzspm.org.au
October			
TBC	3rd Biannual Australian Lung Cancer Conference	TBC	Australian Lung Foundation PO Box 847 Lutwyche QLD 4030 Email: enquiries@lungfoundation.com.au Website: www.lungfoundation.com.au
November			
9 – 11	Clinical Oncological Society of Australia Annual Scientific Meeting	Melbourne VIC`	Clinical Oncological Society of Australia Tel: +61 2 8063 4100 Email: cosa@cancer.org.au website: www.cosa.org.au

INTERNATIONAL

Date	Name of Meeting	Place	Secretariat
2010			
March			
3 – 5	St Jude-Viva Forum in Paediatric Oncology	Singapore	National University Health System Ms Mee Cheng Teng Viva Children's Cancer Centre University Children's Medical Institue Kent Ridge Wing National University Hospital 5 Lower Kent Ridge Rd 1199074 Singapore, Singapore Tel: +65 6772 5466 Fax: +65 677 5433 Email: Mee_Cheng_TENG1@nuh.com.sg
4 – 6	8th International Symposium on Targeted Anticancer Therapies	Bethesda Untied States	MCCM Meeting Management M.W. Lobbezoo P.O. Box 77 3480 DB Harmelen, Netherlands Tel: +31 88 0898100 Fax: +31 88 0898109 Email: tat@mccm.nl
7 – 11	16th International Conference on Cancer Nursing	Atlanta United States	International Society of Nurses in Cancer Care Sarah McCarthy 375 West 5th Avenue Suite 201 V5Y 1J6 Vancouver, Canada Tel: +1 604 630 5516 Fax: +1 604 874 4378 Email: info@isncc.org Website: www.isncc.org/conference
9 – 10	ESMO Conference on Sarcoma and GIST	Milan Italy	European Society for Medical Oncology (ESMO) Communication Department Via L. Taddei 4 6962 Viganello, Switzerland Tel: +41 91 973 19 00 Fax: +41 91 973 19 02 Email: media@esmo.org
15 – 18	5th Latin American Congress for Palliative Care	Buenos Aires Argentina	Latin American Association for Palliative Care Carolina Monti Belgrano 141 2900 San Nicolás, Argentina Tel: +54 3461 433351 Fax: +54 3461 433351 Email: alcp.cmonti@gmail.com Website: vcongresoalcp.org/pagina-de-inicio
18 – 20	6th International Conference Clinical Cancer Prevention	St. Gallen Switzerland	St. Gallen Oncology Conferences c/o ZeTuP Rorschacherstrasse 150 9006 St. Gallen, Switzerland Tel: +41 71 243 0032 Fax: +41 71 245 6805 Email: info@oncoconferences.ch Website: www.oncoconferences.ch
18 – 20	Molecular Imaging in Radiation Oncology (MIRO)	Brussels Belgium	European Society for Therapeutic Radiology and Oncology (ESTRO) Muriel Hallet Avenue Mounier 83 1200 Brussels, Belgium Tel: +32 2 775 9340 Fax: +32 2 779 5494 Email: info@estro.org
21– 24	AACR Translational Cancer Medicine 2010	Amsterdam Netherlands	ECCO - the European CanCer Organisation Avenue E. Mounier 83 1200 Brussels, Belgium Tel: +32 2 775 0201 Fax: +32 2 775 0245 Email: info@ecco-org.eu

23 – 27	7th European Breast Cancer Conference	Barcelona Spain	ECCO Michel Ballieu 83 av Mounier 1200 Brussels, Belgium Email: nicola@ecco-org.eu Website: www.ecco-org.eu/Conferences-and-Events/EBCC-7/page.aspx/840
April			
3 – 7	5th International APOCP Conference	Istanbul Turkey	Asian Pacific Organization for Cancer Prevention Prof. A. Murat Tuncer (President) Tahran Cad. 40 / 1 Kavaklidere 06700 Ankara, Turkey Tel: +90 312 437 89 00 Fax: +90 312 437 84 66 Email: info@apocp.net Website: www.apocp2010.net
8 – 9	Chromatin Dynamics in Development and Disease	Bethesda United States	National Cancer Institute-Center for Cancer Research Brenda Boersma 31 Center Dr 20892 Bethesda, United States Tel: +1 301 402 5055 Email: boersmab@mail.nih.gov
9 – 11	Asian Oncology Summit 2010	Bali Indonesia	Asian Oncology Summit 2010 Suzanne Khoo ELSEVIER HEALTH SCIENCES-SOUTHEAST ASIA, Killiney Road #08-00, Winsland House 239519 Singapore, Singapore Tel: +65 6349 0288 Fax: +65 6733 1817 Email: s.khoo@elsevier.com
15 – 17	7th EONS Spring Convention	The Hague Netherlands	ECCO Michel Ballieu 83 av Mounier 1200 Brussels, Belgium Email: nicola@ecco-org.eu Website: www.ecco-org.eu/Conferences-and-Events/EONS-7/page.aspx/645
28 Apr – 1 May	2nd European Lung Cancer Conference	Geneva Switzerland	European Society for Medical Oncology (ESMO) Communication Department Via L. Taddei 4 6962 Viganello, Switzerland Tel: +41 91 973 19 00 Fax: +41 91 973 19 02 Email: media@esmo.org
29 Apr – 3 May	34th ONS Annual Congress	San Antonio United States	Oncology Nursing Society Gynisha M. Peeks 125 Enterprise Drive 15275-1214 Pittsburgh, United States Tel: +1 412 859 6301 Fax: +1 412 859 6167 Email: gpeeks@ons.org Website: www.ons.org
30 Apr – 2 May	10th Panarab Cancer Congress	Algiers Algeria	Arab Medical Association Against Cancer Adda Bounedjar BP 190 ZABANA BLIDA 09000 Blida, Algeria Tel: +213 6 61651010 Fax: +213 2 5419011 Email: amaac2010@yahoo.fr
May			
6 – 9	1st Southeast European Conference of Chemotherapy and Infection	Varna Bulgaria	1st Southeast European Conference of Chemotherapy and Infection Prof. Dr Krasimir Metodiev 55, Marin Drinov str. 9002 Varna, Bulgaria Tel: +359 52 634 107 Fax: +359 52 634 107 Email: seecch2010@abv.bg

6 – 9	2nd IMPAKT Breast Cancer Conference	Brussels Switzerland	European Society for Medical Oncology (ESMO) Communication Department Via L. Taddei 4 6962 Viganello, Switzerland Tel: +41 91 973 19 07 Fax: +41 91 973 19 93 Email: media@esmo.org
14 – 15	5th Baltic Congress of Oncology	Riga Latvia	Latvian Oncology Association Viesturs Krumins, president 4 Hipokrate str. LV-1079 Riga, Latvia Tel: +371 29 485649 Fax: +371 6 539160 Email: aivars.stengrevics@aslimnica.lv Website: www.5BCO-2010-Riga.info
18	Breast Cancer Research 2010 Conference	London United Kingdom	Breast Cancer Campaign Conference Manager 113-119 High Street TW12 1NJ Hampton Hill, United Kingdom Tel: +44 208 979 8300 Fax: +44 208 979 6700 Email: campaign@hamptonmedical.com
20 – 23	6th Chinese Conference on Oncology (CCO)	Shanghai China	Chinese Anti-Cancer Association Xi-Shan Hao No.47, Binshui Road, Hexi District, Tianjin, China 300060 Tianjin, China Tel: +86 22 23359958 Fax: +86 22 23526512 Email: bgs@caca.sina.net Website: www.caca.rog.cn
25 – 29	12th International Psycho-Oncology Society World Congress of Psycho-Oncology	Quebec City Canada	International Psycho-Oncology Society 2365 Hunters Way 22911 Charlottesville, United States Tel: +1 434.293.5350 Fax: +1 434.977.1856 Email: info@ipos-society.org Website: www.ipos-society.org
June			
5 – 9	57th Society of Nuclear Medicine Annual Meeting	Salt Lake City United States	Society of Nuclear Medicine 1850 Samuel Morse Drive 20190 Reston, United States Tel: +1 703 708 9000 ext. 1229 Fax: +1 703 708 9274 Email: MeetingInfo@snm.org Website: www.snm.org
15 – 19	4th World Congress of International Federation of Head & Neck Oncologic Societies	Seoul South Korea	IFHNOS 2010 Secretariat Meci Inernational Convention Services, Inc. Rm. 1906, 19th floor Daerung Post Tower #1 212-8 Guro-dong, Guro-gu 152-05 Seoul, South Korea Tel: +82 2 2082 2300 Fax: +82 2 2082 2314 Email: ifhnos2010@meci.co.kr Website: www.ifhnos2010.org
23 – 26	CARS 2010- Computer Assisted Radiology and Surgery- 24th International Congress and Exhibition ISCAS - 14th Annual Conference of the International Society for Computer Aided Surgery CAD - 12th International Workshop on Computer-Aided Diagnosis	Geneva Switzerland	CARS Conference Office Mrs. Franziska Schweikert Im Gut 15 79790 Kuessaberg, Germany Tel: +49 7742 922 434 Fax: +49 7742 922 438 Email: office@cars-int.org
26 – 30	21st Meeting of the European Association for Cancer Research	Oslo Norway	ECCO Michel Ballieu 83 av Mounier 1200 Brussels, Belgium Email: nicola@ecco-org.eu Website: www.ecco-org.eu/Conferences-and-Events/EACR-21/page.aspx/1105

30 Jun – 3 Jul	12th World Congress on Gastrointestinal Cancer	Barcelona Spain	Imedex Imedex Customer Service 4325 Alexander Dr. 30022 Alpharetta, United States Tel: +1 678-242-0906 Fax: +1 678-2420920 Email: meetings@imedex.com Website: www.imedex.com
July			
19 – 23	International Conference on Modern Cancer Management	Abuka Nigeria	Society of Oncology and Cancer Research of Nigeria Mrs Adebola Oyewole 102 Bashorun Road, Ashi Bodija Sectariat PO Box 29822, 20000 Ibadan, Nigeria Tel: +234 802 343 1487 Fax: +234 2 241 0995 Email: info@socron.net Website: www.socron.net
August			
18 – 22	2010 World Cancer Congress	China	International Union Against Cancer (UICC) 62 Route de Frontenex 1207 Geneva, Switzerland Tel: +41 22 809 1811 Fax: +41 22 809 1810 Email: verhagen@uicc.org Website: www.worldcancercongress.org
29 Aug – 3 Sep	13th World Congress on Pain	Montréal Canada	International Association for the Study of Pain (IASP) c/o Meeting Makers 76 Southbrae Drive G13 1PP Glasgow, United Kingdom Tel: +44 141 434 1500 Fax: +44 141 434 1519 Email: iasp2008@meetingmakers.co.uk Website: www.iasp-pain.org/AM/Template.cfm?Section=Home
September			
15 – 17	15th Congress of the European Society of Surgical Oncology (ESSO)	Bordeaux France	ECCO Michel Ballieu 83 av Mounier 1200 Brussels, Belgium Email: nicola@ecco-org.eu Website: www.ecco-org.eu/Conferences-and-Events/ESSO-2010/page.aspx/1135
October			
3 – 5	IFHNOS 2010 World Tour	Frankfurt Germany	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
6 – 10	APACT 2010	Sydney Australia	Asia Pacific Association for the Control of Tobacco c/o Event Planners Australia 547 Harris Street NSW 2007 Ultimo, Australia Tel: +61 2 9213 4051 Fax: +61 2 9213 4099 Email: info@apact2010.org
7 – 9	IFHNOS 2010 World Tour	Istanbul Turkey	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org

8 – 12	35th European Society for Medical Oncology Congress	Milan Italy	ESMO Congress Via La Santa 7 6962 Viaganello-Lugano, Switzerland Tel: +41 91 973 1919 Fax: +41 91 973 1918 Email: congress@esmo.org Website: www.esmo.org
10 – 12	IFHNOS 2010 World Tour	St. Petersburg Russia	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
14 – 16	IFHNOS 2010 World Tour	Bangalore India	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
18 – 20	IFHNOS 2010 World Tour	Manila Philippines	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
19 – 22	Colon Cancer in Murine Models and Humans III	Bar Harbor United States	The Jackson Laboratory Erin McDevitt 600 Main Street 04609 Bar Harbor, United States Email: erin.mcdevitt@jax.org Phone: +1 207 288 6659 Fax: +1 207 288 6080
19 – 22	16th World Congress of Senologic International Society and 29th National Congress of the Spanish Society of Senology and Breast Disease	Valencia Spain	Senologic International Society (SIS) and Spanish Society of Senology and Breast Disease (SESPM) Teresa Marti c/ D. Juan de Austria, 36 - p.8 46002 Valencia, Spain Tel: +34 96 394 2210 Fax: +34 96 394 2210 Email: sisbreast.valencia@grupoaran.com Website: www.congresomundialsis.com
21 – 23	IFHNOS 2010 World Tour	Shanghai China	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
23 – 26	13th International Gynecologic Cancer Society Biennial Meeting	Prague Czech Republic	International Gynecologic Cancer Society Erica Bard Riley, MA PO Box 6387 40206 Louisville, United States Phone: +1 502 891 4575 Fax: +1 502 891 4576 Email: adminoffice@igcs.org Website: www.kenes.com/igcs

25 – 27	IFHNOS 2010 World Tour	Rio De Janeiro Brazil	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
26 – 29	International Cancer Week	Abuja Nigeria	Federal Ministry of Health / Breast without Spot initiative Professor Ifeoma Okoye Centre for Continuing Education and Research in Radiology University of Nigeria Teaching Hospital, Ituku Ozalla Enugu state, Nigeria. 234 Enugu, Nigeria Email: okyeij2002@yahoo.co.uk Phone: +234 803 772 5980 Fax: +234 4 245 2813
28 – 30	IFHNOS 2010 World Tour	Mexico City Mexico	International Federation of Head and Neck Oncologic Societies (IFHNOS) Dr Jatin Shah 1275 York Avenue 10065 New York, United States Tel: +1 212 639 7233 Fax: +1 212 717 3302 Email: shahj@mskcc.org Website: www.ifhnosworldtour2010.org
28 – 30	Geriatric Oncology: Cancer in Senior Adults - 11th Meeting of the International Society of Geriatric Oncology	New York United States	International Society of Geriatric Oncology (SIOG) Matti S. Aapro, Executive Director c/o IMO - Clinique de Genolier Route du Muids 1272 Genolier, Switzerland Email: siog@genolier.net Phone: +41 22 366 9106 Fax: +41 22 366 9207
November			
7 – 10	NCRI Cancer Conference	Liverpool United Kingdom	National Cancer Research Institute Sharon Vanloo 61 Lincoln's Inn Fields PO Box 49709 WC2A 3WZ London, United Kingdom Tel: +44 207 438 5453 Email: ncriconference@ncri.org.uk Website: www.ncri.org.uk/ncriconference
16 – 19	22nd EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics	Berlin Germany	ECCO - the European Cancer Organisation Davi Kaur ECCO - the European Cancer Organisation Avenue E. Mounier 83 B-1200 Brussels, Belgium Tel: +32 2 775 0201 Fax: +32 2 775 0200 Email: ena2010@ecco-org.eu Website: www.ecco-org.eu/Conferences-and-Events/EORTC-NCI-AACR-2010/page.aspx/1386
28 Nov – 3 Dec	96th RSNA Scientific Assembly and Annual Meeting	Chicago United States	Radiological Society of North America 820 Jorie Blvd 60521 Oak Brook, United States Tel: +1 630 571 7879 Fax: +1 630 571 7837 Email: reginfo@rsna.org Website: www.rsna.org
December			
9 – 12	33rd Annual San Antonio Breast Cancer Symposium	San Antonio United States	CTRC Research Foundation Rich Markow, Symposium Coordinator d.b.a. San Antonio Breast Cancer Symposium 7979 Wurzbach Rd., Rm. U-531 78229 San Antonio, United States Email: Rmarkow@ctrc.net Phone: +1 210 450 5912 Fax: +1 210 450-5009

2011			
March			
16 – 19	12th International Conference Primary Therapy of Early Breast Cancer	St Gallen Switzerland	TBC
25 – 26	EORTC EANO conference 2011: Trends in Central Nervous System Malignancies	Bucharest Romania	ECCO - the European CanCer Organisation Avenue E. Mounier 1200 Brussels, Belgium Email: info@ecco-org.eu Phone: +32 2 775 0201 Fax: +32 2 775 0200

CANCER COUNCIL AUSTRALIA

Cancer Council Australia is the nation's peak 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.

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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 Cancer Council Australia.

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Further information about COSA and membership applications are available from:
www.cosa.org.au or cosa@cancer.org.au

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Ordinary Members: $160
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INTEREST GROUPS

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Information for contributors

Cancer Forum provides an avenue for communication between all those involved in the fight against cancer and especially seeks to promote contact across disciplinary barriers.

To this end articles need to be comprehensible to as wide a section of the readership as possible. Authors should provide sufficient introductory material to place their articles in context for those outside their field of specialisation.

Format

Cancer Forum welcomes original articles about medical, scientific, political, social, educational and administrative aspects of cancer control. All manuscripts should be submitted by email to info@cancerforum.org.au as MS Word documents.

Length: 2000-2500 words.

Font: Arial - 20pt for title, 12pt for headings and 10pt for text.

Following the title, include your full name, organisation and email address.

Include an introductory heading and sub-headings that describe the content.

Number pages in the footer.

Abstract

All manuscripts must include an abstract of approximately 200 words, providing a summary of the key findings or statements.

Illustrations

Photographs and line drawings can be submitted via email or on disk, preferably in tiff or jpeg format, or as transparencies or high quality prints.

If images are not owned by the author, written permission to reproduce the images should be provided with the submission.

Referencing

Reference numbers within the text should be superscripted and placed after punctuation.

The list of references at the end of the paper should be numbered consecutively in the order in which they are first mentioned and be consistent with the National Library of Medicine's International Committee of Medical Journal Editors' *Uniform Requirements for Manuscripts Submitted to Biomedical Journals.*

> eg. Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. N Engl J Med. 2002 Jul 25;347(4):284-7.

A full guide is available at www.nlm.nih.gov/bsd/uniform_requirements.html

The Editorial Board will make the final decision on publication of articles and may request clarifications or additional information.

Manuscripts should be emailed to:

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