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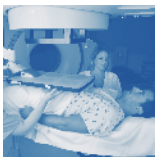

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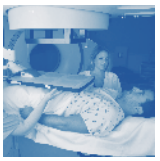

Cancer in adolescents and young adults

ADOLESCENT ONCOLOGY: ORPHANED IN THE SYSTEM

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Snow and Adolescence are the only problems that disappear if you ignore them long enough

(Earl Wilson 1907).

Adolescents and young adults (AYA) are increasingly recognised as a specific, separate population group, deserving of specialised health care provision. Adolescents aged 10-19 years comprise approximately 8% of the population in Australia and have an incidence of malignancy of approximately 150 per million per annum, with cancer proving to be the fourth leading cause of all deaths in the age group.

The aim of this volume of *Cancer Forum* is to increase awareness of the special needs of adolescents and young adults and to identify some of the many reasons why they should receive specific management appropriate to their age and psychological development, in addition to their specific underlying oncological diagnosis, with the aims of benefiting treatment tolerance, compliance and importantly, disease outcomes.

The population addressed in this volume is identified as complex for many reasons. There is a significant lack of an agreed single definition of the age referred to, which renders the provision of single uniform national service planning recommendations difficult. Best is the recognition that adolescents and young adults aged 13-29 years encompass all those making the transition from childhood to adulthood, physically and psychologically, educationally and financially. There are also, not insignificant terminological challenges. The term 'adolescent' is less than ideal, as it has implications for many that tend to typecast the patient as potentially immature, rebellious and often non-compliant. The problems of the 'young adult' are similar, with an equal need for candour, tact, respect and privacy, and with their care provided by choice in age-appropriate facilities within the treatment centre. Appropriate psychological and social support is a very important aspect for these patients, as there are specific recognised psychosocial needs existing within the group and adolescents with cancer.[1] Adolescents then not only have to cope with the recognised physiological and psychological challenges of their age, but also concomitant to their diagnosis, with treatment adverse effects, relationship isolation, educational disruption and employment issues.

The spectrum of tumours seen in adolescents and young adults is different from that of childhood, young adults or elderly people. In addition, more young people aged between 15 and 25 years are diagnosed with cancer than all children aged less than 15 years. During the past 25 years, the incidence of cancer in 15 to 29 year-olds has increased, while the reduction in cancer mortality has been lower than in younger or older patients. Certainly the improvement in the five year cancer survival rate from the mid 1970s to the early 1990s was significantly lower for adolescents and young adults than the improvements noted in either younger or older age groups.[2] Whereas it was once a relative advantage to have cancer during the adolescent and young adult years, patients in this age group now lag behind patients in all other age groups with regard to services, outcomes and trial enrolments.[3] Currently, access to age-appropriate cancer care varies from region to region across Australia. Adolescents may receive cancer care either within a paediatric setting surrounded by staff, facilities and recreation more suitable for infants and young children. Alternatively, it is dispersed across the multiple facets of adult site-specific cancer service provision, where the average age of patients is nearer the 60 to 70 year-old range.

The series of reports in this issue advocate on behalf of all adolescent patients diagnosed with a malignancy, identify the logic underpinning the definition of specific services and address some of the supporting arguments for potential future service and management developments.

Currently, fewer patients in the 15 to 29 year age group are referred to dedicated, comprehensive cancer centres than patients in any other age group and almost 80% of adolescent patients are not enrolled in clinical trials. It appears that the significant difference in outcomes for this patient group are influenced in part by their lack of clinical trial participation, with published data highlighting older adolescent cancer patients having significantly less access to clinical trials than younger patients; a recent report from Australia identified a sharp fall-off in cancer patients above the age of 15 years entered on to clinical trials.[4] This is despite clinical trials for most of the paediatric type malignancies being open to patients from adolescent and young adult age-groups and the increasing development and availability of national disease-specific collaborative group trials within the adult sectors, for which patients

aged 15 years and over are often eligible. This is particularly relevant when the natural history for some disease entities in the adolescent group seems to be different to that observed in children or adults for the same specific tumour types. The current lack of clinical trial enrolment risks the provision of best available treatment advice for adolescent patients. The development of national trial collaborative groups will go some way to better address outcomes and the understanding of biological characteristics, differences and prognostic markers for adolescent malignancies. With proper referral patterns to adolescent units equipped with data managers and strong links to national and international collaborative trial groups, the figures for the younger people enrolled on to clinical, biological and therapeutic collaborative trials should rise.

It is, therefore, increasingly clear that the discipline of adolescent cancer care is the recognition of the way in which the service should be provided, rather than a speciality incorporating a particular set of diseases that affect a defined age group. Adolescents and young adults with cancer should have their care provided by an age-appropriate adolescent cancer service with access to and treatment within therapeutic and biological protocols to ensure improved quality of life and survival outcomes.[5] Cancer care for this age-group should include appropriate transition programs for young adults moving from a paediatric facility to an adult oncology facility. It must also include age-appropriate palliative care to ensure best quality of life for all patients, regardless of outcomes. Due to the fortunate relative rarity of malignancy in this age group, it is unlikely patient numbers alone justify 'separate' specific service provision, but the epidemiological data presented is persuasive of a significant 'critical mass', reflecting not only patient numbers but highlighting a huge, as yet, unmet need. A specific cohesive national strategy for the adolescent group is more likely to be successful in addressing access, survival and compliance issues. Young people are clear that they want specific age-appropriate facilities and support groups, but how this service should be configured will be state and territory dependent and must vary according to the diverse population and geographical needs across the continent. Some of the benefits of specific adolescent oncology units are clear, however staffing and training for adolescent units must be specifically addressed if initiatives of this sort are to succeed. Who should manage this service is open to debate and whether the advantages of a specific adolescent unit always outweigh the medical advantages of sub-specialty units has not been confirmed.

It is however, possible to define new models of care that have the potential to combine the best of adult and paediatric multi-disciplinary sub-specialty teams in order to meet the unique medical and development needs of these young people. The urgent need to address the appropriate care and management of the adolescent cancer cannot afford to be ignored. The current gaps in services, management and outcomes must be addressed in order for the current problems of their care to disappear….as will snow over time.

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Adolescent and young adult (AYA) cancers: distinct biology, different therapy?

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Abstract

That cancer may have a different biology in young adults and older adolescents than in younger or older persons is becoming more evident. This review summarises recent reports that contain such data in five of the common types of cancer in adolescents and young adults: sarcomas, acute lymphoblastic and myelogenous leukaemia, colorectal and breast cancer. The findings, along with those in other cancers and with the unique array of cancer types in adolescents and young adults and their age-dependent incidence patterns, suggest that cancer biology in the age group may be different more often than not. Regardless, there is now sufficient evidence to merit methodical research of the underlying biology of cancer in young adults and older adolescents, with the implication that cancer therapy in the age group cannot be optimised until differences and similarities are established. Initiatives underway to address this need include implementation of the US National Cancer Institute Adolescent and Young Adult Oncology Program Review Group by the LiveStrong Young Adult Alliance, the Aflac/CureSearch Adolescent and Young Adult Cancer Research Program, the Children's Oncology Group Adolescent and Young Adult Committee and a combined effort of the US National Adult Cancer Cooperative Groups.

Whereas the diagnosis of cancer in adolescents and young adults (AYAs) used to have, as a group, a better prognosis than children with malignant disease, survival trends suggest that the prognosis of 15 to 39 year-olds is now worse than in younger patients and may be worse than in older patients, especially those diagnosed between 25 and 35 years, as shown in figure 1. In this chart, Kaposi sarcoma is both included and excluded because of the HIV/AIDS epidemic during the late 1980s and early 1990s that skew the survival progress in young adults. In 2006, AYA oncology became a national agenda in the US with the release of an official report from the AYA Oncology Program Review Group (PRG) that evaluated the problem as part of a joint venture between the US National Cancer Institute and the Lance Armstrong Foundation.[1,2] To implement the recommendations, a LiveStrong Young Adult Alliance was formed and now has 110 organisations in the US, Canada and Australia, with a responsibility to promote and apply the PRG recommendations.[2]

The recommendations covered awareness, prevention/cancer control/epidemiology/risk, biology, access, health insurance, clinical care models, clinical trials/research, special populations, psychosocial/behavioural factors, health-related quality of life and long-term effects. The science task force of the LiveStrong Young Adult Alliance is charged with implementing sub-recommendations of the PRG that address clinical and translational research needs. This commentary reviews the two primary executive recommendations (numbered 1 and 3 in the report) of the PRG report with respect to biology and translational research, and provides evidence published since the report that suggests the biology of cancer is often different when it occurs during the AYA years than at other ages. More detail regarding biologic differences between cancer in AYAs versus other-age patients is provided in a review by the author and colleagues.[3]

AYA Oncology PRG executive recommendation 1: *Identify the characteristics that distinguish the unique cancer burden in the older adolescent and young adult cancer patient.*

Morphobiologic subtypes of cancer in AYAs

At no other time in life is the array of cancer types similar to those affecting AYAs (figure 2). Nearly 90% of all invasive cancers during this age span is accounted for by 10 groups (in rank order): breast cancer, lymphomas, melanoma, female genital tract tumours (ovary and uterine cervix), thyroid carcinoma, sarcomas, testicular cancer, colorectal carcinoma, leukaemias and brain tumours.[3] Breast and colorectal carcinomas begin to occur with measurable proportionality in 20 to 29 year-olds.[3] Most of the specific cancers that are common in AYAs are proportionately more common than in other age groups, including Hodgkin lymphoma, melanoma, testicular cancer, cancer of the ovary and uterine cervix, thyroid cancer, soft tissue and bone sarcomas.[3]

Figure 1: *Improvement in 5-year relative survival of patients diagnosed with any invasive cancer except Kaposi sarcoma from 1976-1985 to 1986-1995 and from 1986-1995 to 1996-2005, US Surveillance, Epidemiology and End-Results (SEER) Program. Kaposi sarcoma is excluded because the HIV era during the late 1980s and early 1990s and the associated transient Kaposi sarcoma epidemic skews the overall results in 20 to 49 year-olds.*

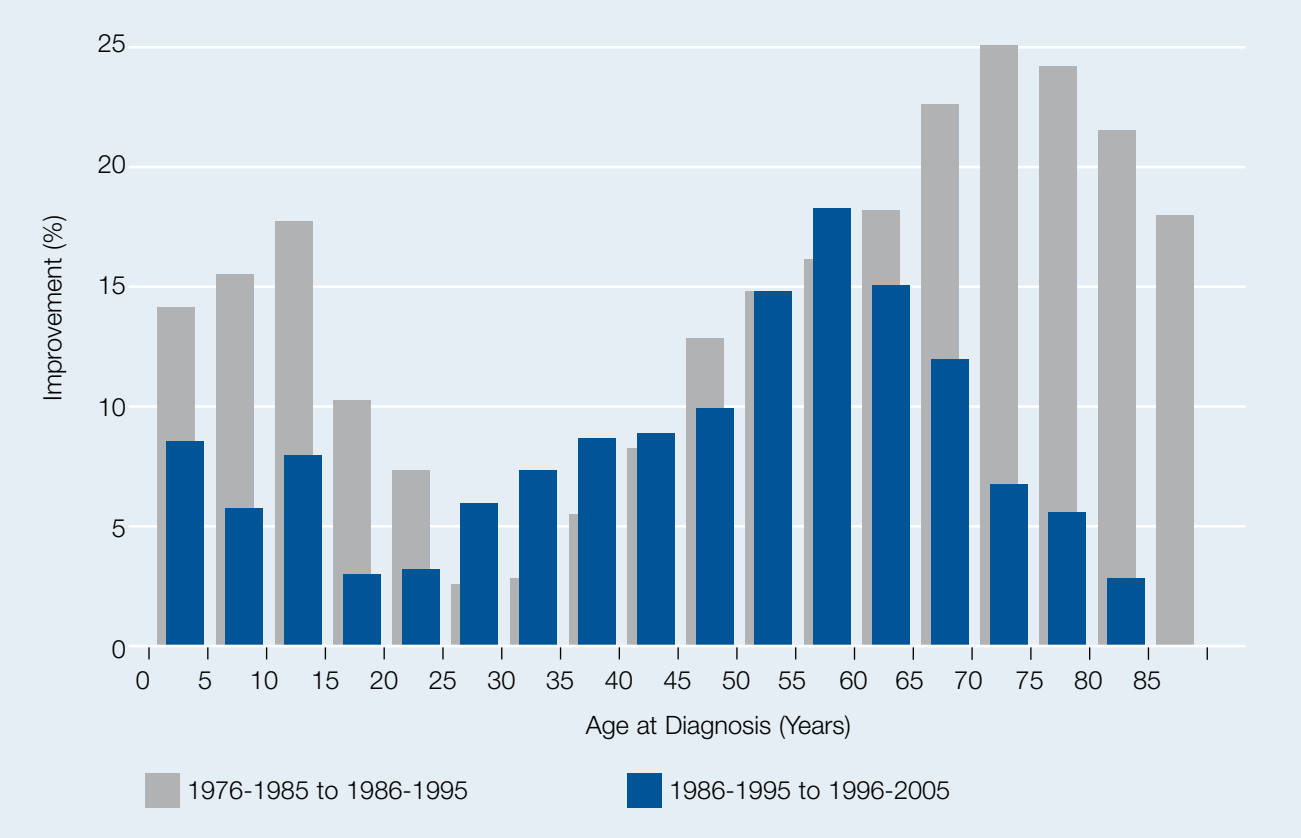
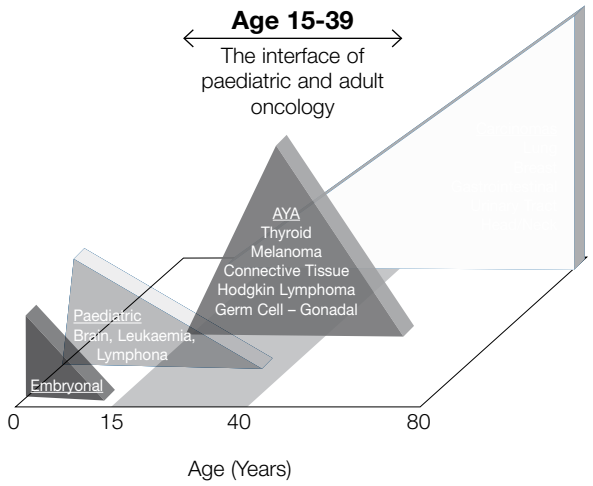


Figure 2
Cancer in 15 to 39 year-olds represents the interface between paediatric and adult oncology.



Different outcomes with the same therapy

In addition to the mounting data for a distinct biology of cancer during the AYA years, additional evidence is suggested by the majority of the common cancers in AYAs that have a different outcome with the same therapy used in younger and older patients. Those with a worse survival rate in AYAs than that in both younger and older patients include breast cancer, colorectal cancer, soft tissue sarcomas, non-Hodgkin lymphomas considered as a group, and the leukaemias in aggregate.[3] Those that have a lower survival in AYAs than in younger patients include acute lymphoblastic leukaemia, Ewing sarcoma, kidney cancer (including Wilms' tumour), neuroblastoma, Hodgkin lymphoma, uterine cervix carcinoma, ovarian cancer (including stromal tumours), brain tumours and liver cancer.[3]

Examples of different biology

Recent reports on the two most common leukaemias in AYAs provide more evidence that the biology of cancer in AYAs is different than it is in younger and older persons. The distinctness is also apparent in sarcomas and in breast and colorectal carcinomas, solid tumours with biologic knowledge that is among the most well developed.

Acute Lymphoblastic Leukaemia (ALL)

Harrison at Newcastle University in England published data from Moorman on the age dependence of malignant karyotypes of acute lymphoblastic leukaemia (ALL).[4] Although their report was focused on the frequency of known cytogenetic abnormalities in ALL, their data do show that the majority of patients who are between 10 and 35 years of age have not been demonstrated to have any of the frequent karyotypes and have either normal cytogenetics, yet-to-be-characterised (unknown) abnormalities, or other

Figure 3: *ALL incidence versus karyotype by age. Karyotype data were derived from Moorman as published by Harrison.[4] The incidence data as a function of individual year of age at diagnosis were obtained from the 1973-2003 database of the US SEER program and shown on semi-log coordinates.*

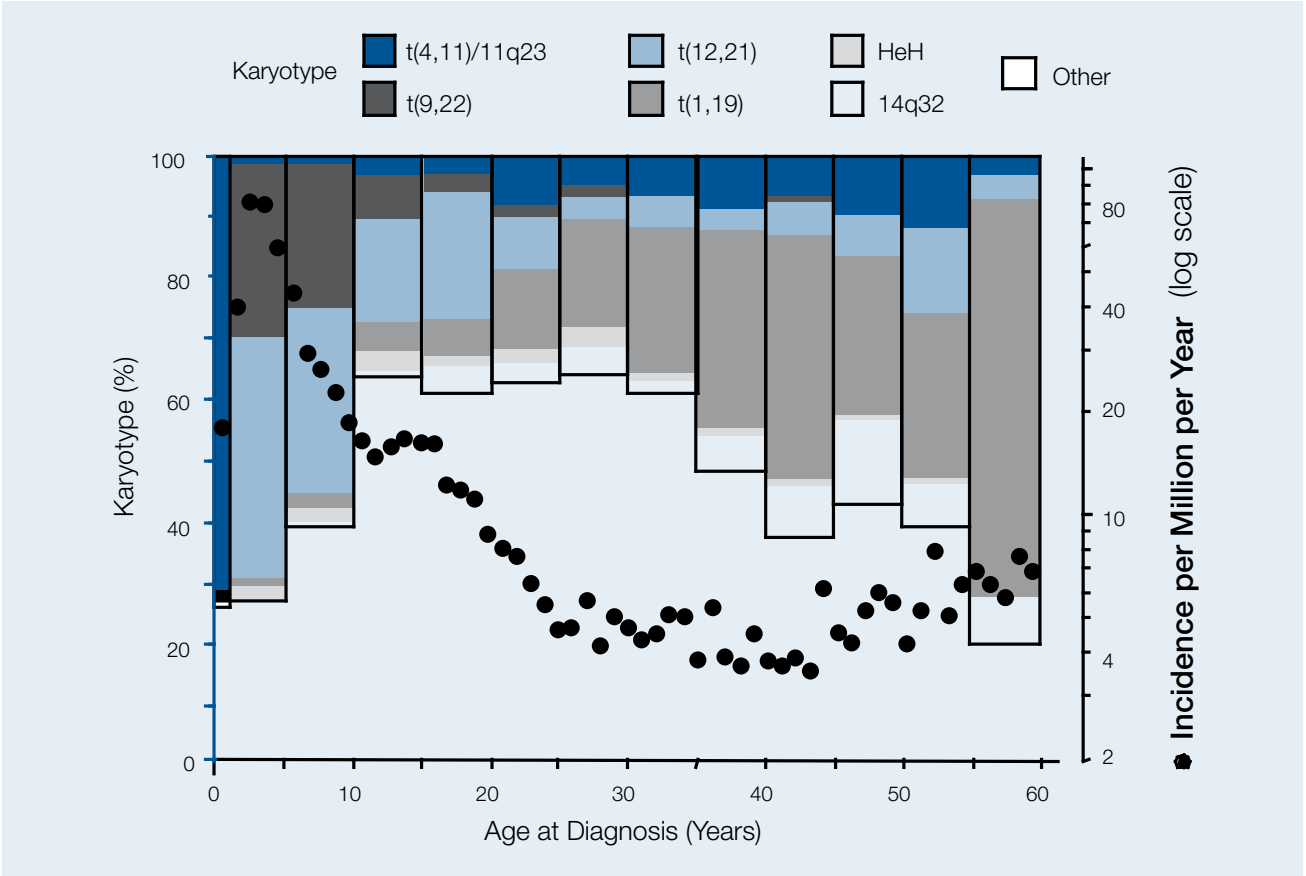
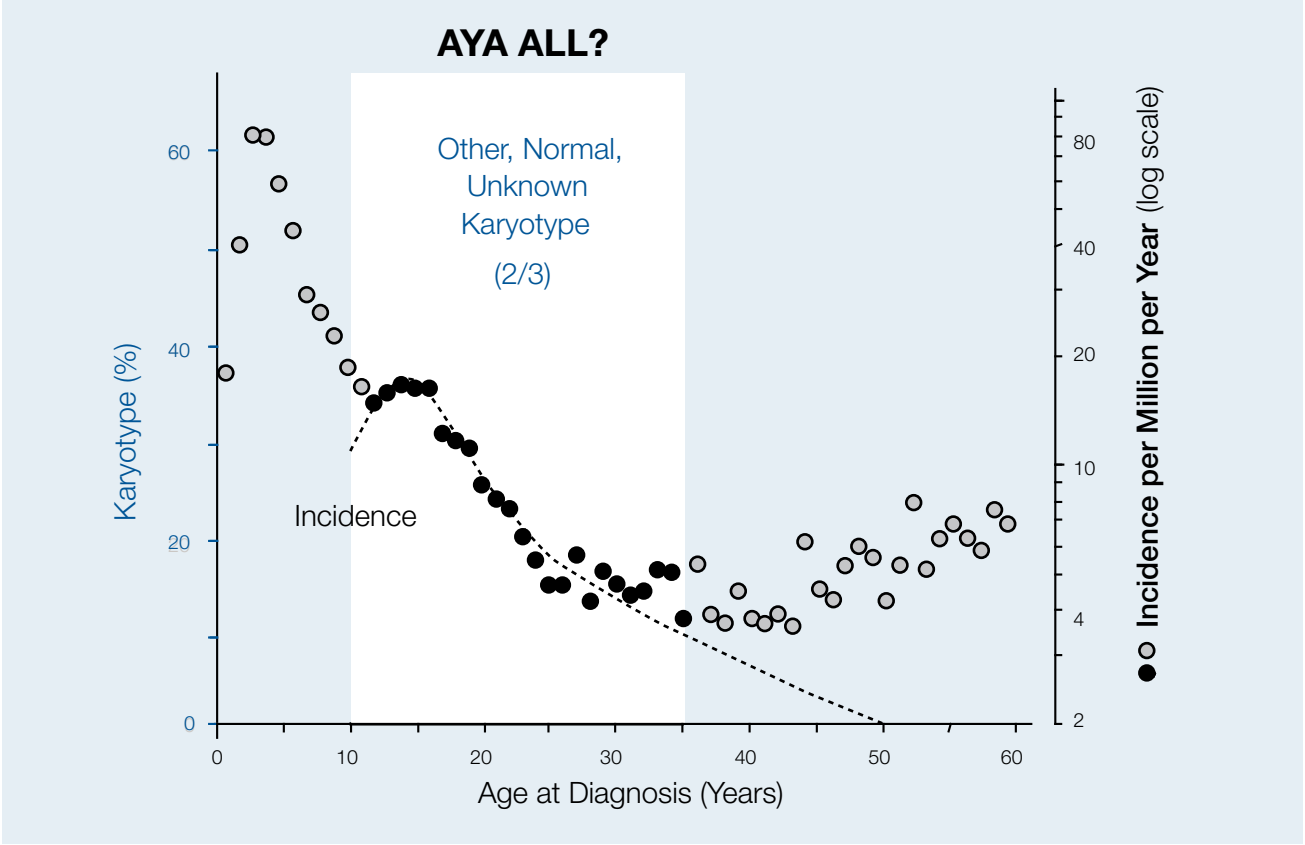


Figure 4: *Adolescent and young adult (AYA) Acute Lymphoblastic Leukaemia (ALL)? The age at which karyotypes other (normal, unknown and other rare) than that show in Figure 3 are indicated by the gray zone. The 2/3 (two thirds) refers to the proportion of all karyotypes that are normal, unknown or rare, in contrast to the less than half in this category in younger and older patients.*



karyotypes that are rare in younger and older persons. In figure 3, their data are shown in columns that are turned upside down from their published graph, with the white area below the coloured bars representing other, normal or unknown karyotypes. Approximately two thirds of the patients 10 to 34 years of age have ALL with other or normal karyotypes. At all other ages the corresponding proportion is substantively lower, 20 to 45%.

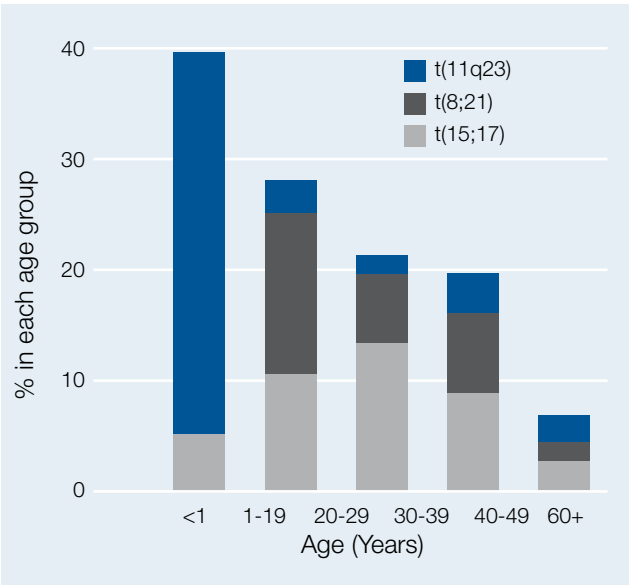
Superimposed on the karyotype bars are the incidence rates of ALL in the US by year of age at diagnosis (circles). Bleyer et al have previously demonstrated that there is an intermediate age peak in the incidence v age pattern that in figure 3 is demonstrated by the solid (black) circles on semi-log coordinates.

These patterns demonstrate an age correlation between incidence and karyotype (figure 4) that together provide new evidence for a type or types of ALL that predominate in AYA patients, suggesting an AYA ALL that should be distinguished from childhood ALL and the types that occur in older adults. If so, the best therapy may be neither a paediatric or adult-derived regimen, but a unique treatment that would best be determined by knowing the underlying molecular mechanism(s) of leukemogenesis and developing therapy accordingly (molecular targeting).

Acute Myelogenous Leukaemia (AML)

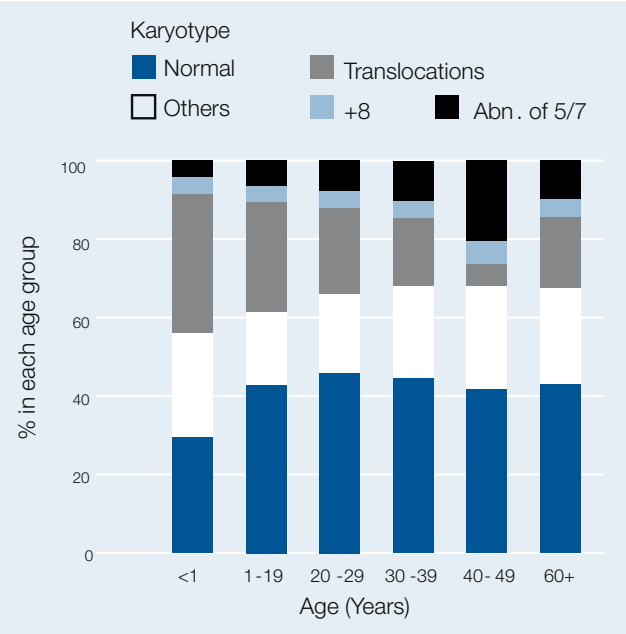
In a special issue of *Blood* celebrating the 50th anniversary of the American Society of Hematology, Rowley's review of the cytogenetics of acute myelogenous leukaemia

Figure 5: *Translocations in AML versus patient age at diagnosis, as modified from Rowley JD.*[5]



(AML) includes new data of the age dependence of AML translocations v age.[5] The age-dependent pattern discloses that t(15,17), characteristic of acute progranulocytic leukaemia, peaks in incidence between 20 and 39 years of age (figure 5), and that t(11q23), a particularly difficult-to-treat type of AML, has its lowest frequency in the age group (figure 5).

Figure 6: *Karyotpes in AML versus patient age at diagnosis, as modified from Rowley JD.*[5]



Of potentially greater significance, and almost identical to the age-dependent pattern in ALL (see above and figure 4), the incidence of the biologic subtype of AML that has a normal karyotype peaks in 20 to 39 year-olds (figure 6). As in ALL described above, these new data implicate a AYA type of AML that either has no (known) cytogenetic abnormality or one that has yet to be discovered. Either way, these data too suggest that AML in AYAs may need a different type of therapy than that currently used in younger and older patients. That t(15,17) AML is predominantly an AYA leukaemia that is best treated with agents that are specific for the translocation (all-trans retinoic acid, arsenic trioxide) is exemplary of this potential.

Sarcomas

Several soft-tissue sarcomas predominate during the AYA years (figure 7). Those with specific cytogenetic abnormalities that imply an AYA-restricted phenomenon are synovial cell sarcoma (t(X;18)(p11.2;q11.2)), alveolar soft part sarcoma (der(17)t(X;17)(p11.2;q25)) and desmoplastic small round cell tumour (t(11;22)(p13;q12)). Two of the three major bone sarcomas, osteosarcoma and Ewing sarcoma, are distinctly AYA cancers (chondrosarcoma is not). Ewing sarcoma is nearly always a t(11;22)(q24;q12) cell. Gain of 1q or loss of 16q in Ewing sarcoma have both been associated with statistically significant poorer outcomes and were more common in patients ≥15 years of age compared to children.[6] The 1q gain and 16q loss may render the sarcoma cells resistant to ifosfamide and etoposide and thereby explain the lack of benefit in AYAs of these drugs in contradistinction to their demonstrated efficacy in children.[7]

Colorectal carcinoma

Colorectal cancers in AYAs have at least three distinguishing biologic features: the highest incidence of microsatelite instability; the highest incidence of the heritable forms – familial adenomatous polyposis, characterised by mutations in the APC gene, and hereditary non-polyposis colon cancer, characterised mutations in mismatch repair genes MSH2, MLH1, and PMS2; and a predominance of mucinous adenocarcinoma.[8] Secondary characteristics that are more prevalent in AYAs are more advanced state tumours, poorly differentiated and signet-ring histologies, a primary tumour that arises in the rectum and proximal colon, and a 40% higher incidence ratio of rectal cancer in females than males between age 25 and 50, in contrast to no sex difference for colon cancer.[3,8-11]

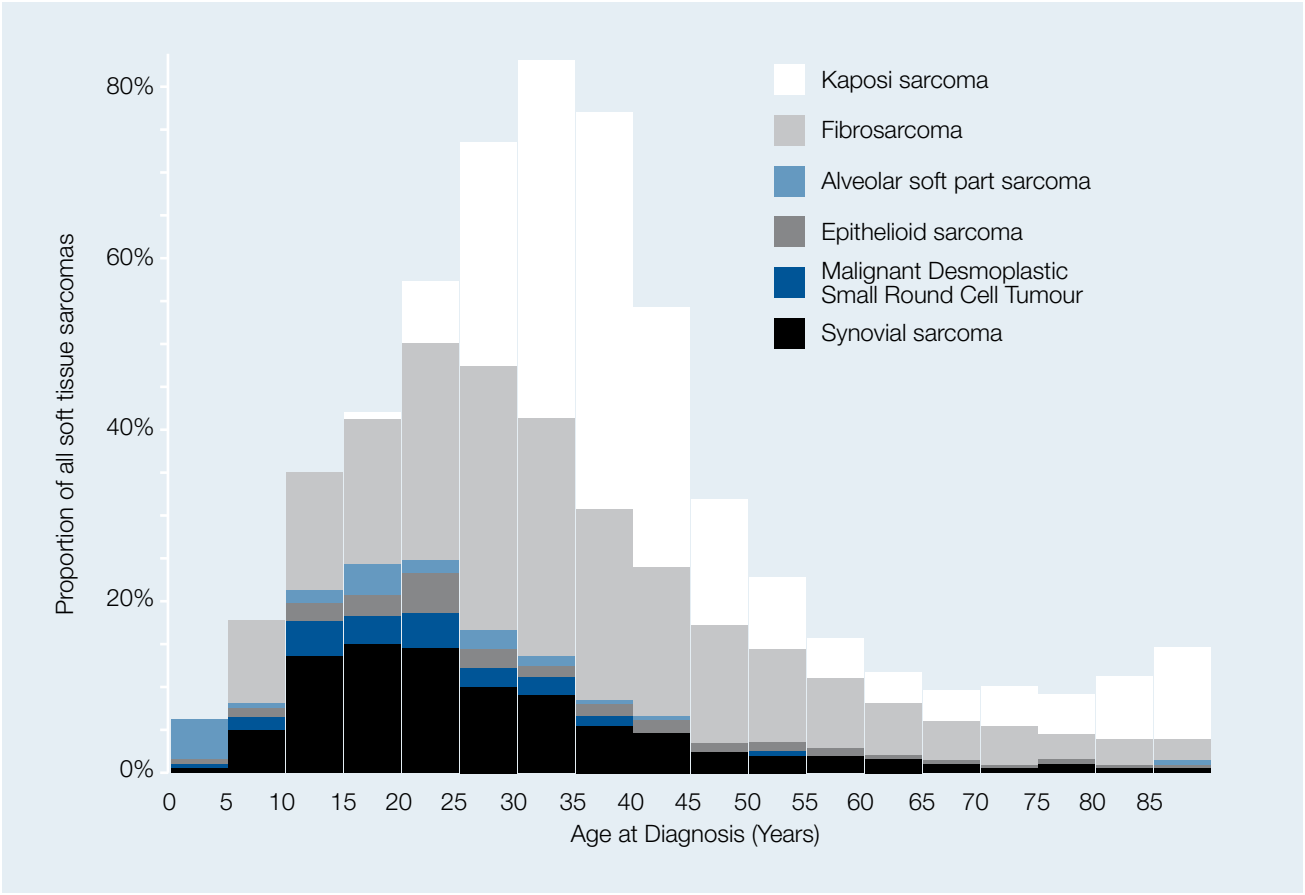
Microsatelite instability characterises both the sporadic non-inherited cancers of AYA colorectal cancer and hereditary non-polyposis colon cancer, but not familial adenomatous polyposis. Mucinous adenocarcinoma occurs in nearly 50% of AYA colorectal cancers compared to 2-4% in older adults. Despite the peak of inherited forms in AYAs, non-inherited, sporadic forms of colorectal cancer predominate the age group.[11] In contrast to older patients, the sporadic cancers usually do not have the K-RAS mutations, loss of heterozygosity at chromosome 17p or 18q, and other mutations in tumour suppressor genes and oncogenes.[12,13] This difference may explain why adjuvant chemotherapy has to date been of little to no benefit in young adults with carcinoma of the colon in comparison with older adults,[14] and it is likely to be increasingly problematic with molecularly targeted agents.

Breast cancer

Below age 45, the younger a woman when diagnosed with breast cancer, the worse the expected outcome, a pattern that is independent of stage and extent of disease at diagnosis, and of histologic type.[3,15] Young women with breast cancer are more likely to have larger tumours with more frequent nodal spread and a greater number of involved lymph nodes than older women.[16] Young women have the highest incidence of tumours that are devoid of both the estrogen receptor (ER) and progesterone receptor (PR) (including lower quantitative progesterone and ER mRNA expression[17]) and also the growth factor receptor ERBB2 known as HER2. These 'triple negative' tumours are associated with a worse prognosis than those cancers that express at least one of the receptors, and has obvious therapeutic implications in that most of the treatments for older patients directed at ER, PR, and HER2 targets (tamoxifen and congeners, aromatase inhibitors, trastuzumab and analogues) are ineffective in most young breast cancer patients. Genomic expression analysis has revealed 367 biologically relevant gene sets significantly distinguishing breast tumours arising in young women, as well as higher epidermal growth factor receptor expression.[16] The difference between young and older women may be more in transcriptome changes such as mRNA rather than in genomic differences. Among women with ER positive RNA tumours, younger cases have been found to express more cell cycle genes and the growth factor amphiregulin, whereas tumours in older women expressed higher levels of four different homeobox genes in addition to ER (ESR1).[17]

Breast cancer in young women has also been reported to have greater de-regulation of the transcription factor phosphatidylinositol 3-kinase (P13K) and pathways

Figure 7: *Sarcomas with peak incidence in AYAs as a proportion of all soft-tissue sarcomas. Data from NCI Surveillance, Epidemiology, and End Results (SEER) Program SEER 17 Registries, 2000-2005, www.seer.cancer.gov/seerstat. www.seer.gov (accessed December 21, 2008). Fibrosarcoma includes periosteal fibrosarcoma, fibromyxosarcoma, pigmented dermatofibrosarcoma protuberans, dermatofibrosarcoma, and fibrosarcoma NOS. The era (2000-2005) avoids the HIV/AID-related Kaposi sarcoma epideimc that occurred in the 1980s and early 1990s.*



involving the MYC oncogene.[17] Among younger women, de-regulation of the P13K and beta-catenin pathways is associated with a worse outcome than those with de-regulation of the oncogenes MYC and SRC. This pattern contrasts with that in older women, in whom a worse outcome is associated with de-regulation of the E2F transcription factors and a concurrent low de-regulation of P13K and MYC.[18]

AYA Oncology PRG Executive Recommendation 3: *Create the tools to study the older adolescent and young adult cancer problem.*

AYA cancer clinical trials and trial participation

With the possible exception of elderly adults over 75 years of age, young adults have the lowest rate of cancer clinical trial participation. Only one in 50 25 to 29 year-olds diagnosed with cancer in the US during the decade ending 2005 were entered on to a national treatment trial,[19] in contrast to one in every two to three children less than age 10 and one in 20 to 25 older adults.[20] Prior analyses have shown that the progress in survival prolongation as a function of age is correlated with age pattern of both the number and proportion of patients entered on to a clinical trial.[21,22] The implication of course, is that improved clinical trial participation and specimen acquisition for translational research is key to acceleration of progress in the treatment of cancer in AYAs. Reasons for the poor clinical trial participation in adolescents probably differs from those in older patients, such as undescribed differences in biology, delays in diagnosis, poor compliance or intolerance of therapy, and treatment by physicians less familiar with their diseases and psychosocial needs.

A large prospective database of AYA cancer patients and specific assessment tools will facilitate research in the age group, including specific recommendations for institutional review boards. Standardisation of search terms and grant coding would enable evaluation of research efforts and progress so that the research that is applicable to the cancers in AYAs can be identified and collated. An improved nosologic classification system could overcome the limitations of the system used for adults (International Classification of Disease) on one hand and that for children (International Childhood Cancer Classification) on the other.[6,23]

AYA biorepositories and translational research

Age-dependent patterns reinforce the need to study the molecular biology of cancer in the AYAs and not just in children or older adults. Until the biology is demonstrated to be the same, cancer in AYAs should not be assumed

to be so. Also, there is a need to collect tumour (and normal tissue) specimens in AYA patients for translational research and tissue biorepositories, a deficiency in tumour banks in general that has been previously noted.[24,25]

AYA oncology, clinical trials and treatment optimisation

The US NCI-sponsored paediatric and adult cooperative groups have launched a national initiative to improve the accrual of AYAs on to cancer clinical trials. In North America, Australia and New Zealand, the Children's Oncology Group (COG) established an AYA committee with goals to: improve access to care through understanding barriers to participation; develop a cancer resource network that provides information about clinical trials to patients, families, providers and the public; enhance adolescent treatment adherence with protocol-prescribed therapy; and increase accrual of adolescents with cancer to trials specifically designed for patients in this age group and disease. In conjunction with the US adult cooperative groups, the COG increased the number of national clinical trials provided to AYA cancer patients by raising the upper age limit to 30, 40 and 50 years of age, depending on the cancer. A measure of success was achieved in 2005-2006, with increased accruals to cancer treatment trials in comparison with the two previous years among AYA patients in comparison to both younger and older patients.[25] A measure of success may be apparent in the categories of cancer with the greatest increase in accrual, leukaemia and lymphoma. These appear to have had an acceleration in the rate of decline in national mortality within the 15 to 29 year age group, in contrast to patients less than 15 years of age who have had an attenuation in their national death rate (Friedman S, Finnigan S, Montello M, Budd T, Anderson B, Trimble EL, personal communication). In 2008, the three major adult cooperative groups in the US adopted a COG regimen for a combined group trial for patients with newly-diagnosed ALL who are less than 31 years of age.

To what extent cancer in AYAs is truly biologically different from what otherwise appears to be the same cancer in other age groups remains to be determined. Meanwhile, there is now enough evidence that merits methodical study of the underlying biology of cancer as a function of patient age, with the full implication that cancer treatment in AYAs cannot be optimised until whatever differences that exist are discovered and enable more effective therapeutic strategies.

Acknowledgement

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STEPS FORWARD: TOWARDS A SERVICE DELIVERY IMPROVEMENT FRAMEWORK FOR ADOLESCENTS AND YOUNG ADULTS WITH CANCER

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Abstract

There is mounting national and international evidence to support targeted improvements in cancer care services for adolescents and for young adults; an age group defined in Australia as those between 15 and 25 years. Both paediatric and adult oncology and haematology services currently provide cancer care for adolescents and young adults. There are many unmet needs under the current service delivery paradigm - both physical and psychosocial. Improving cancer outcomes for young people is clearly multidimensional and must be achieved over time. Cancer Australia brought together a diverse set of stakeholders to form the Adolescents and Young Adults Cancers National Reference Group. With support from CanTeen, a peer support organisation for adolescents and young adults with cancer, the reference group developed a service delivery framework which aims to reduce the impact of cancer on young Australians. Adolescents and young adults are receiving treatment, across many centres throughout Australia, and will benefit from: better coordination of existing services; and, promotion of access to these coordinated services. At present, a broader consultation on the framework for adolescent and young adult cancer care has commenced with state and territory health jurisdictions.

Evidence base

There is mounting national and international evidence to support targeted improvements in cancer care services for adolescents and young adults. The incidence of cancer in adolescents and young adults, defined as those between the ages of 15 and 25, was less than 1% (907:489 male, 418 female; 0.92%) of new cases diagnosed in the overall population in Australia in 2004. Though a relatively small percentage of cancer incidence in the overall population, this is nearly two thirds more than new cases diagnosed in children (610; 0.62%).[1] Fortunately, survival rates of adolescents and young adults with cancer are relatively high and continue to improve.[2] The majority of young people diagnosed with cancer are expected to survive. Better health services for adolescents and young adults can help ensure that young people with cancer optimise their development to live full and healthy lives.

The most common cancers in adolescents and young adults in Australia are melanoma, testicular cancer, Hodgkin's and non-Hodgkin's lymphoma, and cancer of the thyroid. These cancers account for 61% of cancers diagnosed in adolescents and young adults.[3] The most common cancers causing death among young people are brain cancer, bone cancers, leukaemia and lymphoma.[4] Prevalence data provides evidence that adolescents and young people are living longer with a diagnosis of cancer than ever before. For diagnoses in 1998–2004, all cancer five year survival rates were highest for the 20–29 year age group for both males (86%) and females (89%).[2]

Improving cancer outcomes for young people is multidimensional. A Senate inquiry in 2005, *The Cancer Journey: Informing Choice*, identified the particular difficulties confronting young people with cancer and urged an improved model of cancer care to address the problems raised.[5] For example, access to clinical trials for adolescents with cancer is poor. This means that this age group is less likely to have early access to new and experimental therapies. Further issues identified suggest they are less likely to have access to specialised multidisciplinary cancer care where the best results are achieved.[5] They also lack access to referral guidelines for specialist care, often resulting in referrals to either paediatric or adult cancer physicians.[6]

Towards an improved model of care for adolescents and young adults with cancer

Both paediatric and adult oncology and haematology services currently provide cancer care for adolescents and young adults, but existing services may not be meeting their needs. The Clinical Oncological Society of Australia held a national workshop to focus on the needs of adolescents and young adults. Further, to begin to better understand the unique needs of this age group, in May 2007, Cancer Australia brought together a diverse set of stakeholders to form the Adolescents and Young Adults Cancers National Reference Group. At its first meeting, the reference group prioritised the development of a new national service delivery framework which would aim to reduce the impact of cancer on young Australians.[7]

CanTeen, a peer support organisation for adolescents and young adults with cancer, approached Cancer Australia to partner in discussions with individuals and groups across the country. During 2007 and 2008 consultations were held with adolescents and young adults affected by cancer, private and public sector oncologists, surgeons, epidemiologists, researchers, educators, general practitioners, nurses, psychologists and clinicians with experience in paediatric and adult cancer care. Researchers supporting the National Reference Group reviewed the National Service Improvement Framework for Cancer and state and territory cancer plans, as well as similar adolescent and young adult service frameworks in the United Kingdom and New Zealand.[8-13]

The consultation process uncovered needs of adolescents and young adults affected by cancer, as well as the structural impediments to improving the way cancer care services are delivered to young people. Crucial to the process were consultations with adolescent and young adults who have gone through the existing cancer system in Australia.

> *"As a young person who has had cancer and has been part of the system it is vital that we are involved with the solution. Our need through this time is one of the keystones in improving the service delivery framework for adolescents and young adults affected by cancer."* Liam Hunt

Young people with cancer have unique health needs that affect their quality of life, their long-term health, and their engagement in society, education and employment. The interviews pointed to specific physical, practical and psychosocial needs that remain largely unmet for adolescents and young adults under current service delivery protocols. For example, young people with cancer are often told how cancer treatments can affect their fertility. Young people need to consult a fertility counsellor to explore their fertility options and the potential impacts on their lives. However, it is rare that psychosocial impacts, both immediate and long-term, are addressed.

Young people who are in school or university and undergoing cancer treatment may require help to keep up with classes or with reintegration into the classroom. This may require additional educational assistance, liaising with teachers or school administrators, or talking to the school community about cancer. Additionally, the intensity of cancer treatment may have a significant impact on young people's ability to find or maintain work. They may need help with discussing appropriate leave with their supervisors or with their transition into the workplace once they are ready to return to, or start, work. The impacts of cancer may mean that some young people may need help with choosing new and appropriate career options after treatment.

Just as important as the tangible physical and practical needs, young adults raised a host of psychosocial factors that had a particularly acute impact on them as they faced cancer. Young people diagnosed with cancer are not immune from the pressures common to their age group. Adolescents and young adults are in a transformative stage of their psychological development, which affects their social behaviour. As young people become increasingly independent, they make decisions about sexuality, alcohol, drugs and peer interactions. Health professionals must be able to discuss issues with young people openly and honestly and provide support when needed. Age appropriate psychosocial support can positively affect adherence to treatment regimes, pain management, treatment for depression and managing communication with health professionals.[8]

In addition, the years during adolescence and young adulthood are often quite mobile times. Young people may be relocating for tertiary studies or simply travelling to gain life experiences. Coordinated care was identified as a strong need to ensure appropriate follow-up and screening during diagnosis, treatment and supportive care.

Consultations with professionals caring for adolescents and young adults with cancer exposed structural barriers that must be addressed. First, there is little clinical data available on adolescent and young adult cancer outcomes.[13-14] Second, there is only a limited body of evidence to guide the efficacy of clinical approaches to cancer care for adolescents and young adults.[15] Third, there is a relative scarcity of specific training options for all health professionals engaged with adolescents and young adults to broaden their knowledge of cancer in this age group.[11] Fourth, improved research and participation in clinical trials is pivotal to attaining better long-term outcomes for adolescents and young adults with cancer. Bolstering both research and training are necessary to improved cancer care for young people.[8]

Steps forward

The consultation process drew together the needs of adolescents and young adults with cancer and the gaps in knowledge, treatment and services from professional experts. The result is a framework that focuses on aspects of service delivery most likely to increase survival of young people and to enhance short and long-term quality of life outcomes for adolescents and young adults, their families and carers. It articulates an approach for adolescent cancer care that crosses jurisdictional boundaries, is based on the best available evidence and sets an aspirational national standard to achieve and continually refine over time.

Its implementation will better address the needs of young people affected by cancer and improve access to coordinated services and has been achieved through agreement of an expert group drawn from paediatric and adult cancer services, researchers and policy makers from across the country. It will require changes in practice to focus on the needs of adolescents and young adults, in order to build skills in treatment and supportive care, improve access to cancer clinical trials, strengthen professional development in adolescent health and provide access to multidisciplinary cancer care across a broad range of needs – psychosocial, psychosexual, physical, treatment and supportive care, cultural and relationship needs.

A broader consultation on the framework for adolescent and young adult cancer care has commenced with state

and territory health jurisdictions. The aim is to engage cancer services on the agreed framework to guide practice and effectively serve the unique needs of adolescents and young adults facing a cancer diagnosis.

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CHILDHOOD SOLID TUMOURS OCCURRING IN ADOLESCENTS AND YOUNG ADULTS

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Abstract

A small number of adolescents and young adults are diagnosed with solid tumours that typically occur in childhood – the most common are neuroblastoma, Wilms' tumour and rhabdomyosarcoma. In general, these cancers are often more locally advanced or metastatic when they occur in adolescents and young adults compared with childhood presentations. Multidisciplinary and multimodality care is indicated, usually including surgery, chemotherapy and radiotherapy. Although these tumours often respond to treatment, the overall survival of adolescents and young adults is inferior to that of children. Retrospective analyses of subsets of older patients with Wilms' tumour and rhabdomyosarcoma suggest that prognosis is improved when treatment is delivered according to paediatric guidelines. However, tumour biology must, at least in part, account for the differences in outcome observed between adolescents and young adults and children. A paradigm of cooperative care between adult and paediatric oncologists is encouraged – entry on to age-appropriate clinical trials should be standard of care. Taking these considerations into account, a national Adolescents and Young Adults Cancer Service has been established in New Zealand, premised upon multidisciplinary cooperative care for adolescents and young adults with cancer and their families.

A wide variety of cancers occur in adolescents and young adults (AYA) aged 15-29 years, the most common being lymphoma, skin cancer, thyroid carcinoma and tumours of the testis, ovary and female genital tract.[1] The common extra-cranial solid tumours of childhood account for a small proportion of cancers in AYA. However, these cancers are important. Compared with carcinoma, they are particularly responsive to chemotherapy and radiotherapy; for some tumours, prognosis has been shown to improve when treated according to paediatric trials and guidelines. A paradigm of multidisciplinary care involving close cooperation between adult and paediatric oncologists is essential.[2]

Childhood solid tumours are so-called embryonal tumours – their genesis likely represents an arrest of cellular differentiation with retention of foetal characteristics. However, the biological mechanisms responsible for their occurrence later in life, although currently unclear, are likely to result in more aggressive clinical behaviour.[3] The most common embryonal tumours are neuroblastoma, Wilms' tumour and rhabdomyosarcoma; less common are cancers of the liver (hepatoblastoma) and eye (retinoblastoma).

Neuroblastoma

This tumour is the most common and lethal extra-cranial solid malignancy of childhood, accounting for 8-10% of cancers in patients <15 years of age. Neuroblastoma is the most common cancer of infancy – the median age at diagnosis is 19 months and 98% are detected before 10 years of age.[4] An enigmatic cancer, the biological behaviour spans metastatic tumours that regress spontaneously (stage 4S – table 1) to widely metastatic

Table 1: International Neuroblastoma Staging System[3] (abbreviated)

Stage 1	Localised tumour with complete gross excision, with or without microscopic residual disease.
Stage 2A	Localised tumour with incomplete gross resection; ipsilateral lymph nodes negative for tumour microscopically.
Stage 2B	Localised tumour with or without complete gross excision, with ipsilateral lymph nodes positive for tumour.
Stage 3	Unresectable unilateral tumour infiltrating across the midline, with or without regional lymph node involvement; or localised unilateral tumour with contralateral lymph node involvement.
Stage 4	Any primary tumour with dissemination to distant lymph nodes, bone, bone marrow, liver, skin and/or other organ (except that defined for stage 4S).
Stage 4S	Localised primary tumour (as defined for Stage 1, 2A or 2B) with dissemination limited to skin, liver and/or bone marrow – limited to infants <1 year of age.

disease in children older than 18 months that is difficult to cure despite aggressive multimodality therapy. Biological diversity is at least partly explained by genetic changes such as amplification of NMYC oncogene, which confers a dramatically adverse prognosis irrespective of stage.[5] The normal tissue counterpart for neuroblastoma is the sympathetic postganglionic nerve cell; most childhood neuroblastoma arises in the abdomen, in particular from the supradrenal medulla, and is characterised by excessive excretion of catecholamine metabolites in the urine. Distant spread is to lymph nodes, bone and bone marrow. Current treatment strategies stratify intensity of therapy according to age at diagnosis, stage (table 1), histological characteristics and genetic aberrations.[4] Low-risk disease is often treated with surgery alone, intermediate-risk with surgery and chemotherapy, and high-risk with induction chemotherapy, surgery, high-dose chemotherapy with haemopoeitic stem cell rescue, radiotherapy and retinoic acid differentiation therapy. Prognosis varies from >95% overall survival for low-risk neuroblastoma to 40% three year event-free survival for high-risk disease.[4]

Less than 3% of neuroblastomas occur in patients older than 10 years of age. Neuroblastoma in AYA differs from that in children in a number of respects:

- Proportionately more advanced (stage 3 and 4) disease at presentation.[6]
- More frequent location of the primary tumour in the chest and pelvis.[7]
- Unusual sites for metastasis – brain, lungs and pleura.[6]
- Elevated urinary catecholamine excretion in only 40% of cases.[7]
- More indolent course characterised by partial response to chemotherapy, followed by multiple and often widespread recurrences. Initial observations led investigators to conclude that neuroblastoma in AYA has a superior outcome (measured by three year event-free survival) compared with children. However, 10-year overall survival declines to around 20%.[6]
- Despite the poor prognosis, few cases are associated with adverse genetic changes characteristic of high-risk childhood neuroblastoma such as NMYC amplification.[8]

The optimal treatment strategy for neuroblastoma in AYA has not been elucidated. However, given the above information, it is logical to conclude that current stratification schema applying to children are less relevant in AYA, particularly those with low-stage disease. Development of and entry on to age appropriate clinical trials is encouraged. Patients up to 30 years of age with high risk neuroblastoma are currently eligible for treatment on the Children's Oncology Group high risk neuroblastoma trial, which compares the efficacy of a single high-dose chemotherapy course (carboplatin, etoposide and melphalan – CEM) with tandem courses (CEM followed by high-dose thiotepa and cyclophosphamide) after intensive induction chemotherapy.*

Wilms' tumour

Typically, this primary renal cancer has a triphasic appearance under the microscope, incorporating blastema, stroma and epithelium, re-enacting the embryonic development of renal tissue from primitive blastemal cells.[9] Wilms' tumour accounts for 6% of childhood cancers; the median age at diagnosis is three to four years. Occasionally, predisposing syndromes are evident, such as hemihypertrophy, aniridia or Beckwith-Wiedemann syndrome. Rarely, the disease is bilateral. Children present with an asymptomatic abdominal mass, haematuria and/or fever. At the time of diagnosis, the tumour has usually destroyed the kidney. With progression, the renal capsule is breached and the tumour spreads to regional lymph nodes, within the renal vein into the inferior vena cava and to the liver and lungs.[9] Treatment is stratified according to stage (table 2) and histology – anaplasia (presence of markedly enlarged polypoid nuclei) confers worse outcome compared with favourable histology Wilms' tumour. Anaplasia is present in 2% of tumours diagnosed in the first two years of life, increasing to 13% in those older than five years.[10]

The therapeutic approach in North America involves primary nephrectomy, histological confirmation and staging. Vincristine and actinomycin D are administered for stages I and II with doxorubicin and radiotherapy added for stages III and IV. In Europe, patients receive pre-

**Details at www.childrensoncologygroup.org (password-protected)*

operative chemotherapy based on radiological evidence, usually without initial histological confirmation – after six weeks of chemotherapy, nephrectomy is performed with post-operative treatment stratified by staging and histology. Despite this discrepant approach, prognosis is similar with four year overall survival in excess of 90% for stages I-III, and 80% for stage IV.[9]

Only 1-3% of Wilms' tumours occur in patients >15 years of age. In contrast with children, AYA with Wilms' tumour usually present with flank or abdominal pain and systemic symptoms such as weight loss, anorexia and reduced performance status. Patients do not have bilateral disease or underlying predisposition syndromes. Although the pattern of metastasis is similar to children, AYA present with more advanced disease – 10 of 30 AYA and older adults had evidence of spread to lungs, liver and/or mediastinum.[11] Local histological analysis may be inaccurate; initial diagnoses of renal cell carcinoma and primitive neuroectodermal tumour were altered to Wilms' tumour on subsequent central review of pathology. Occasionally, renal cell carcinoma may coexist with Wilms' tumour. Results reported by Reinhard et al and Kalapurakal et al indicate that the outlook for AYA with non-metastatic Wilms' tumour is similar to that of children.[11,12] This is disputed by Izawa et al who described an inferior outcome despite treatment according to contemporaneous National Wilms' Tumour Study Group trials.[13] Inferior results may, in part, represent lack of familiarity with Wilms' tumour among medical oncologists – in one study, the average interval from surgery to initiation of chemotherapy was 4.7 weeks. Greater chemotherapy-related toxicity is encountered – 13 of 30 patients (43%) suffered grade 3 or 4 vincristine-induced neurotoxicity.[11]

Given the above data, the following is recommended for AYA with Wilms' tumour:

- Central histology review.
- Initial nephrectomy if feasible, percutaneous needle biopsy if not. Oncologists should be dissuaded from the European approach described above, as the clinical presentation and radiology of Wilms' tumour in AYA is indistinguishable from renal cell carcinoma.
- Treatment in close collaboration with a paediatric oncology service and entry on to current Wilms' tumour trials conducted by the Children's Oncology Group or International Society of Paediatric Oncology (SIOP) – maximum age limits for these trials are 30 and 18 years respectively.†

Rhabdomyosarcoma

This tumour, the most common soft tissue sarcoma in children, arises from primitive mesenchymal cells destined towards skeletal muscle differentiation. Rhabdomyosarcoma (RMS) in childhood occurs most commonly in the head and neck and uro-genital regions.[14]

There are two distinct histological variants – embryonal and alveolar; the latter displays greater aggression and is characterised by translocations involving PAX and FKHR genes. Embryonal RMS is the dominant subtype in children. In the AYA population:

- Although the absolute number of STS increases, this entity reduces as a proportion of the total number of cancers – 7.7% of all cancers in 15 to 19 year-olds, the fifth most common diagnosis.
- RMS reduces as a proportion of STS with increasing numbers of synovial sarcoma, malignant peripheral nerve sheath tumour and primitive neuroectodermal tumours (and Kaposi's sarcoma in countries where AIDS is prevalent).
- For those with RMS, there is increasing risk of the alveolar variant.[15]

In contrast with embryonal RMS, alveolar RMS occurs most commonly in the trunk and extremities. Risk stratification for childhood RMS takes into account embryonal v alveolar histology, nodal and metastatic spread, site and size, degree of initial surgical resection and age – those older than 10 years have a worse prognosis.[15] AYA with RMS have large, invasive tumours with greater propensity for metastasis.[16] Taking these variables into account, RMS

† *Children's Oncology Group trials www.childrensoncologygroup.org (password-protected). SIOP trial www.ukccsg.org (United Kingdom Children's Cancer and Leukaemia Group – password-protected)*

Table 2: *National Wilms' Tumour Study Group Staging System for Renal Tumours*[8]

Stage I	Tumour confined to the kidney and completely resected. No penetration of the renal capsule or involvement of the renal sinus vessels.
Stage II	Tumour extends beyond the kidney but is completely resected (negative margins and lymph nodes). At least one of the following has occurred: (a) penetration of the renal capsule; (b) invasion of the renal sinus vessels; (c) biopsy of the tumour prior to removal.
Stage III	Gross or microscopic tumour remains postoperatively including inoperable tumour; positive surgical margins; spillage of tumour preoperatively or intraoperatively; regional lymph node metastases; or transected tumor thrombus.
Stage IV	Hematogenous metastases or lymph node metastases outside the abdomen (eg. lung, liver, bone, brain).
Stage V	Bilateral renal Wilms' tumour.

in AYA is undoubtedly more aggressive compared with that in children.

Approximately 70% of children with RMS are cured employing combinations of surgery, chemotherapy and radiotherapy. The outlook is poorer for AYA and adults with RMS – one study reports five year overall survival of 40%. However, if treatment adheres to paediatric therapy guidelines, overall survival increases to 61%.[17] AYA with RMS should receive treatment according to paediatric strategies; current Children's Oncology Group RMS trials include patients up to 50 years of age, and entry on to such trials for this patient group is encouraged.‡[3]

Hepatoblastoma

Malignancies arising in the liver account for only 1.1% of childhood cancers – 80% of childhood liver cancer is hepatoblastoma. The median age at diagnosis is 16 months; 91% of primary liver cancer in children <5 years old is hepatoblastoma, whereas hepatocellular carcinoma (HCC) accounts for 87% of diagnoses in 15 to 19 year-olds. The child with hepatoblastoma usually presents with an asymptomatic abdominal mass. Occasionally, abdominal pain, anorexia, weight loss and vomiting are encountered. Alfafoetoprotein (AFP) levels are raised in >90% of children. Diagnosis is established after tumour resection if feasible, or following percutaneous core biopsy. Spread is most commonly to the lungs and regional lymph nodes.[18] Prognosis is dependent upon the extent of hepatic involvement, extrahepatic extension and completeness of surgical resection. Childhood hepatoblastoma is chemosensitive – platinum analogues, doxorubicin and 5-fluorouracil are used. The outlook for completely resected non-metastaic hepatoblastoma is excellent.

Few cases of hepatoblastoma have been described in AYA and older adults. Systemic symptoms are more commonly noted in older patients who may present with more advanced disease compared with their infant counterparts.[19] The clinical and radiological features are indistinguishable from HCC. A report of 25 cases of hepatoblastoma in adults noted the following – single large tumour usually located in the right lobe associated with cystic changes, calcification and hypervascularity. Reports suggest that hepatoblastoma in older patients is less responsive to chemotherapy.[20] Complete surgical resection is recommended followed by adjuvant "high-risk" chemotherapy (platinum analogues and doxorubicin); for those with initially unresectable disease, a trial of neoadjuvant chemotherapy is indicated. Given the rarity of this tumour in AYA, treatment according to the International Childhood Liver Tumour Strategy Group (SIOPEL) is recommended.□

Retinoblastoma

Although the most common intra-ocular malignancy of childhood, retinoblastoma is relatively rare with approximately 11 new cases per million children <5 years old. The tumour arises from the embryonic neural retina.[21] Retinoblastoma is unique in that 40% of cases are hereditary, with an underlying germline mutation or deletion in the RB1 gene located at 13q14. In such cases, a further genetic RB1 lesion in a neural retinal cell produces the tumour.[22] Infants with hereditary retinoblastoma present earlier compared with non-hereditary cases, are prone to bilateral disease and are at risk of second malignant neoplasm, particularly if treated with external beam radiotherapy. Usually, enucleation is curative for unilateral, sporadic retinoblastoma. In an attempt to preserve vision and reduce the risk of second malignant neoplasm, chemotherapy and local ophthalmic treatment (cryotherapy, laser photocoagulation, plaque radiotherapy) is used for bilateral disease.[21] Overall survival from retinoblastoma is excellent.

Retinoblastoma is exceedingly rare in AYA and older adults – 23 cases are reported.[23] In some cases the cancer may originate within a "benign" retinocytoma. All cases reported are unilateral; one would suspect the disease to be non-hereditary with the absence of a germline RB1 mutation. However, the author treated an infant with bilateral (hereditary) retinoblastoma whose mother was diagnosed with unilateral retinoblastoma as an adolescent – the infant and mother were shown to harbour a germline RB1 mutation. In AYA and adults, the most common presenting features are loss of vision and squint, present for a median of 16 months prior to diagnosis. Ocular examination reveals leucocoria and a "whitish" mass on fundoscopy – the differential diagnosis includes lymphoma, melanoma, metastatic carcinoma, retinocytoma and inflammatory diseases of the retina.[23] In contrast with infants, retinoblastoma in older patients is often not calcified. Diagnosis and treatment involves enucleation. If retinoblastoma is diagnosed in an AYA, referral to a specialist retinoblastoma service is recommended. Particular histological features (eg. progression along the optic nerve past the lamina cribrosa, choroidal infiltration particularly in conjunction with optic nerve involvement) are associated with increased risk of local and disseminated recurrence; patients with unilateral retinoblastoma displaying such features should receive adjuvant carboplatin, etoposide and vincristine.[24] Medical oncologists should be wary of a past history of hereditary/bilateral retinoblastoma – such patients are at risk of developing bone and soft tissue sarcoma, particularly if prior treatment included external beam radiotherapy.[25]

New Zealand AYA Cancer Service

Beginning in the late 1990s, a cancer control strategy was developed in New Zealand to prioritise and coordinate cancer related services, across the spectrum from prevention to palliative care. Objective 4 (goal 3) of the New Zealand Cancer Control Strategy aims to improve the quality of care delivered to adolescents with cancer and their family;[26] this objective was subsequently prioritised for inclusion in the Action Plan 2005-2010[27] (documents available at www.moh.govt.nz/cancercontrol). As a result, a working party was formed within the Ministry of Health – disciplines represented are medical and radiation oncology, psychology, haematology, surgery, nursing, adolescent medicine and paediatric oncology. Work is

‡ *Children's Oncology Group trials www.childrensoncologygroup.org (password-protected)*

□ *SIOPEL trials www.siopel.org (password-protected)*

centred around the development of service specifications which bind District Health Boards to minimum standards of care. The principle is to provide treatment as close to home as possible, yet applying the highest standards of care. The objectives are to: improve the cure rate of AYA with cancer; maximise entry on to age-appropriate clinical trials; and provide optimal, age-appropriate psychosocial support.

A national AYA Cancer Steering Group will coordinate the service delivered in three regions across the country, each with a larger centre incorporating a child cancer unit, and smaller centre eg. in the South Island, the smaller centre in Dunedin is "twinned" with the larger centre in Christchurch. AYA cancer key workers are employed in each of the six centres, coordinating the provision of age appropriate care. Within each centre is a designated AYA cancer clinical leader linked to dedicated psychosocial and clinical trials support. Each AYA with cancer is to be managed within a multi-disciplinary team; those from the smaller centre are supported by linkage to the larger centre using videoconferencing. Importantly, this approach does not rely on the creation of AYA cancer units, but rather fosters a collegial and trusting relationship between adult and paediatric clinicians, concentrating on the broad interests of the AYA patient and their family.

Conclusion

In general, embryonal tumours of childhood are associated with a worse prognosis when they occur later in life. For low-stage Wilms' tumour and embryonal rhabdomyosarcoma, prognosis is improved when treatment is delivered according to paediatric guidelines. However, it is likely that differences in biological behaviour have a significant impact on tumour aggression. Whenever possible, AYA with embryonal tumours should be entered on to age-appropriate clinical trials:

- Uniformity of treatment will permit identification of clinical prognostic variables.
- Analysis of tumour material will elucidate the genetic mechanisms responsible for the greater aggression of these tumours.
- Evaluation of the toxicity of treatment – evidence suggests that AYA experience more side-effects from chemotherapy compared with children.

Finally, the care paradigm for AYA with embryonal tumours, involving close cooperation between adult and paediatric oncologists, should provide the blueprint for cooperative management of AYA cancers in general.

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PSYCHOSOCIAL ASSESSMENT FOR ADOLESCENTS AND YOUNG ADULTS WITH CANCER

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Abstract

Adolescents and young adults with cancer have unique medical and psychosocial needs. In addition to efforts aimed at improving survival, there is acknowledgement of the need to understand how social and emotional outcomes can also be improved for this group of young people. Psychosocial assessment firstly provides an important means of understanding how cancer, its treatment, late effects and its management affect the developmental concerns of young people. Secondly, psychosocial screening also helps identify preventable behaviours that add to the risk burden of young people with cancer and helps guide counselling and anticipatory guidance. Finally, the assessment helps effect a long-term management plan, taking into account complex socio-environmental factors that can affect adherence and transition to adult health care settings.

The field of adolescent and young adult oncology has grown over the last few decades, with greater recognition of the distinct medical and psychosocial needs of young people in this age group. The diagnosis of any severe disease in adolescence or early adult life can be challenging. At the same time almost 80% of children with cancer now survive into adolescence and adulthood due to advances in medical treatment.[1] This dramatic improvement in survival is accompanied by a significant burden of both acute and chronic 'late effects' from the long-term sequelae of chemotherapy and radiation therapy. For example, the Childhood Cancer Survivor Study found that 28% of survivors developed a severe or life threatening condition, while 62% had at least one chronic condition.[2]

The relative lack of improvement in survival in AYA cancer, relative to both younger children and older adults, provides a challenge to clinicians in ensuring the provision of best practice clinical care to this age group. This article will examine the psychosocial concerns of survivors and young people diagnosed with cancer, which provides a rationale for the importance of routine psychosocial assessment in this age group.

Impact of cancer on adolescent development

Adolescence can be a challenging time. The cancer experience directly impacts on every sphere of adolescent development, which risks making the passage through adolescence particularly challenging for survivors of childhood cancers and those diagnosed during adolescence and young adulthood. Young people with cancer not only face the same developmental challenges of adolescence that lead to profound maturation of the body physically, cognitively and psychosocially, but at the same time are having to negotiate the demands of cancer, its management and the monitoring and management of late effects that may develop. As with any major illness, it is not uncommon for young people to regress and become more dependent on their family. While normative in the context of a cancer diagnosis, the challenges for young people and their families is that this is occurring at the very time that healthy young people are becoming more independent of their family. Frequent and prolonged periods of hospitalisation can interrupt school attendance and interfere with the maintenance of peer relationships, which are a critical socialising mechanism for young people. Educational and social isolation further restricts participation in age-appropriate activities, which are an important determinant of psychosocial maturation.[3]

Visible signs of cancer and its treatment risk further highlight the differences perceived by young people with cancer from their peers. Adolescent cancer survivors report lower self-esteem, more social anxiety and body image concerns compared to a healthy comparison group.[4] Adolescence is also a time in which development of a sexual identity matures, as does a capacity to form intimate relationships. Lower self-esteem and social anxiety raise questions about how well AYA cancer survivors negotiate early intimate relationships, which commonly provide the background of confidence for embarking on more meaningful intimate relationships in adult life. How concerns about future fertility affect the way in which young cancer survivors approach intimate relationships is an important area of research with distinct implications for clinical practice.

Academic and psychosocial outcomes

Improved survival of children with cancer has resulted in detailed studies of cognitive and psychosocial outcomes of different types of cancers, using different scales that have assessed different outcome measures.[5-7]

Children and adolescents are at increased risk for neuro-cognitive deficits and learning difficulties as a result of the cancer itself, such as brain tumours, or its treatment, such as cranial irradiation or neurotoxic chemotherapy. Specific impairments of the auditory and visual pathways can further compound learning difficulties.[8] The Childhood Cancer Survivor Study examined the behavioural and social outcomes of adolescent survivors. Although the majority of childhood cancer survivors were found to be psychologically healthy, more survivors were found to have somatic symptoms, depression and/or anxiety, attention deficit and antisocial behaviour compared to the sibling comparison group.[5] Certain subgroups such as those with leukaemia, CNS tumours and neuroblastoma were at particular risk.[6] However, as described previously, lack of participation in education can also result in poor educational outcomes and reduced vocational choices. The lack of social, educational and vocational opportunities that accompany poor physical health are additional factors that have also been shown to contribute to the psychological distress experienced by cancer survivors.[7] As brain maturation continues well into young adulthood, ensuring that young people are engaged in social and educational activities as much as possible is an important aspect of early intervention efforts to improve psychosocial outcomes.

Impact of health risk behaviours on cancer outcomes

The developmental changes of adolescence can reciprocally affect cancer and its management. Exploration and experimentation with various behaviours and roles is common to all adolescents and is a core aspect of adolescent identity formation. In some instances however, experimentation results in risks to the physical and emotional wellbeing of the young person, as well as compromising their successful transition into adult life.[9] Risk behaviours such as smoking, alcohol and other drug use or abuse, and poor eating habits, initiated in adolescence, commonly continue into adulthood, with the risk of long-term health effects.[10-11]

Previously, it was commonly assumed that young people with chronic illness were less likely to participate in risk behaviours.[12] It is now known that this group is just as or more likely to do so.[12-14] A large European study found that young people with chronic illness or disability were significantly more likely to smoke regularly, use cannabis and perform violent or anti-social acts compared to their healthy peers.[14] Although it is debated how well cancer survivorship is consistent with more traditional models of chronic disease,[15] it is known that adolescent and young adult survivors and those who have a cancer diagnosis in adolescence experience a significant disease burden, not unlike young people with chronic illness, which may well increase their likelihood of participating in risk behaviours.

To date, there is conflicting data about the risk behaviours of adolescents and young adults with cancer. Studies have shown that adolescent cancer survivors engaged in smoking and alcohol use and aggressive and antisocial behaviours at a rate consistent with that of age and gender-specific rates of the general population, but are less likely to use marijuana.[16-17] However, other studies have reported reduced involvement in most health-risk behaviours.[18-19] Adolescents with cancer are less likely to report cigarette and alcohol use and binge drinking; they are more likely to engage in sedentary behaviour (television viewing) and less likely to be physically active compared to their healthy counterparts.[18]

Routine psychosocial assessment

Regardless of the prevalence of health risk behaviours in survivors and adolescents and young adults with cancer, a major concern is that AYA patients who engage in particular health risk behaviours may be even more vulnerable than healthy youth to develop adverse health outcomes as a result of the interactions between their behaviour, the cancer and ongoing late effects.[20] For example, the attributable risk of smoking will be much greater in cancer survivors who are already at increased risk of developing secondary cancers and cardiovascular disease. The rationale for efforts to ensure that young people with cancer or adolescent and young adult cancer survivors do not smoke could not be stronger, especially given the growing evidence that clinical approaches to risk reduction counselling in adolescents changes behaviours.[21] This is the same rationale that underpins the value of psychosocial assessment and health risk screening, which can provide a conduit to developmentally appropriate preventive counselling and anticipatory guidance about various concerns, whether health risk behaviours such as tobacco use or unsafe sexual activity, or poor educational engagement.

A useful framework for psychosocial assessment is the HEADSS framework.[22] HEADSS is the mnemonic for Home, Education and Employment, (Eating and Exercise), Activities and peers, Drugs, Sexuality, Suicide and depression and Safety (see table 1).

Adolescents and young adults with cancer, as well as cancer survivors, are a group that have frequent contact with the health care system. They generally have a close relationship with oncology staff who they respect as credible medical experts.[23] This context allows for more opportunities for health risk screening and preventive care than in healthy youth, which is appropriate given concerns of both the prevalence of risk behaviours and their attributable risk. In AYA cancer, it is unknown to what extent routine consultations have been utilised for wider screening. The wider chronic illness evidence suggests that health care providers infrequently discuss health risk behaviours or provide preventive counselling to young people with chronic illness.[24-26] Just like adults, young people greatly value confidential health.[27] Those with chronic disease have voiced greater desire to discuss broader health concerns with their health care provider, including issues such as education and mental health.[28-29] This is a particular challenge for paediatric settings where young people with chronic illness are often seen with their parent(s). Without explicit efforts to see young people alone for at least part of each consultation, this too commonly translates to few opportunities to discuss confidential or sensitive concerns.[30]

Table 1: *The HEADSS framework for psychosocial health assessment (adapted from Goldenring & Cohen)*[22]

Home	Where do you live? Who do you live with? How do you get along with each member? Who could you go to if you needed help with a problem? Have there been any recent changes? Do you feel safe at home?
Education and employment	What do you like about school/work? What are you good/not good at? How do you get along with teachers/your employer and other students/colleagues? Have your grades changed recently? Many young people experience bullying at school/work, have you ever had to put up with this?
Eating	What are your future plans? Do you have meals with your family? Who cooks at home? What do you have? Is anyone worried about your weight? Are you happy with your weight? Do you worry about your weight?
Exercise	How do you get to school or work? Do you play a sport? How often do you do any form of physical activity?
Activities and peers	What do you like to do for fun? What sort of things do you do in your spare time out of school? Who do you hang out with? What sort of things do you like to do with friends? Tell me about parties… Do you belong to any clubs, groups etc? How much TV do you watch each night?
Drugs	Many young people at your age are starting to experiment with cigarettes or alcohol. Have any of your friends tried these or maybe other drugs like marijuana, IV drugs, amphetamines and ecstasy? How about you, have you tried any? If you have, how do you take the drug? What effects do drug-taking, smoking or alcohol have on them/you? Do they/you have any regrets about taking drugs? How much are you taking and how often, and has your use increased recently? How do you afford them?
Sexuality	Some young people are getting involved in sexual relationships; have you had a sexual experience with a guy or girl or both? Has anyone touched you in a way that has made you feel uncomfortable or forced you into a sexual relationship? How do you feel about relationships in general and about your own sexuality?
Suicide and depression	How do you feel in yourself at the moment on a scale of 1 to 10? What sort of things do you do if you are feeling sad/angry/hurt? Is there anyone you can talk to? Do you feel this way often? Some people who feel really down often feel like hurting themselves or even killing themselves. Have you ever felt this way? Have you ever tried to hurt yourself? What prevented you from doing so? Do you feel the same now? Do you have a plan?
Safety	Sometimes when young people are drunk or high, they do not think about what they are doing. Have you ever driven a car when you were drunk or high? Have you ever ridden in a car with a driver who was drunk or high? Have you ever felt that you needed to carry a knife or other weapon to protect yourself?

Consent and adherence to treatment regimens

Specific aspects of adolescent development, such as progression from concrete to abstract thought patterns, a desire for autonomy and separation from parents and increased identification with the peer group, can clash with the demands of cancer treatment and adherence to treatment regimens. The most extreme example of this is outright refusal of treatment. Although most countries including Australia have a medico-legal framework that provides a context for decision-making about consent to treatment for legal minors, this issue remains complex and challenging for the young person, his or her parents and the health care providers involved. It could be argued that the more common developmental challenge for clinicians – of encouraging young people's emerging capacity for self-management while helping parents to take on a more supportive 'backseat' role – is a different manifestation of the same developmental and medico-legal set of issues.[31]

More practically, psychosocial assessment is highly useful as a tool to understand the context in which adherence to any treatment regimen exists (or doesn't). A particular focus should be about identifying 'adherence hooks', that is, reasons why the patient may benefit from particular health outcomes as seen from the young person's point of view. A focus on problem solving that addresses how the young person might develop treatment routines in the context of their day to day activities can be especially helpful.[31] Active participation of the young person in negotiating treatment plans is an important aspect of ensuring that they develop a sense of ownership and control over the disorder and its management.

Transition to adult health care

Finally, the effective transition of health care from the paediatric setting, with its strong focus on family centred care, to the more patient centred aspect of adult health care is also important to consider. This can occur in two ways. One approach is at the time of stable health for adolescent cancer survivors. Their health care can be transferred to adult services in a planned and coordinated manner in order to facilitate developmentally appropriate, risk-based guidelines for surveillance of late effects, as well as providing a different context for ongoing psychosocial assessment.[32] Close attention needs to be paid at this time to ensure that young people who have completed active treatment do not inadvertently use the opportunity of transfer from paediatric to adult services to drop out of care.[33] This highlights the importance of an active transition program. A second approach is a "crisis-oriented transition" that is more likely to occur at the time of a recently diagnosed primary or secondary or recurrent malignancy. In addition to age, type of malignancy and the upper age limit for admission to paediatric programs, psychosocial assessment can also help to identify developmental factors (such as maturity, autonomy, key supports) that may be important in considering whether treatment may be more appropriate in an adult or a paediatric setting.

While there are multiple models of transition, no single model is ideal. Rather, ensuring that each institution has a transition policy and ideally a transition program with close collaboration between paediatric and adult providers and active engagement of young people and their families, is integral to the success of transfer to adult health care.[34-35]

Conclusion

Adolescent and young adult cancer patients present challenges to health care professionals because of the impacts of cancer and its treatment on adolescent developmental tasks and reciprocally, the impact of adolescence on the disease itself. Improving health outcomes for adolescents and young adults with cancer is best achieved when the treatment is managed within a developmental understanding of the life of the young person and their family. The identification of preventable behaviours and mental health concerns through psychosocial screening is a necessary step towards preventive counselling and anticipatory guidance, with the aim of reducing morbidity and mortality from late effects, and improving psychosocial outcomes.

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IMPROVING CARE FOR AYA PATIENTS TREATED WITHIN ADULT HOSPITALS: WHAT CAN BE DONE RIGHT NOW?

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Abstract

As recognition continues to grow in relation to the specific needs of the AYA oncology population, discussion inevitably turns to potential systemic changes that can provide generalised improvements to this population group. While a necessary process, it should not deter discussions relating to how care can be improved 'right now' on an individual practitioner level. There is much that can be learnt from our colleagues working in adolescent medicine that, when applied in an oncology setting, can serve to improve the developmentally appropriate care provided to AYA oncology patients and directly improve outcomes for this vulnerable age group.

All too often the psychosocial and developmental needs of this population are dismissed as superficial to survival outcomes. Yet, the 2006 United States report of the AYA Oncology Progress Review Group identified developmental differences that directly impact upon "care-seeking patterns, adherence to recommended treatment and follow-up care, and ultimately, disease outcomes".[1] Put simply, the thought patterns and behaviours that are directly related to the AYA developmental stage can seriously impact upon treatment and care. Importantly, it is not just the treatment experience that can be impacted by such an approach, but also the quality of survivorship.

The definition of AYA applied in this article is young people aged between 15 and 25, with flexibility to incorporate those older than 25 if their behaviours and lifestyle suggest a closer relationship to their younger counterparts than the adult age group. The challenges faced by AYA patients are more complex and intense than at any other life stage and the vast majority of this population group are currently treated in adult hospitals.[1-2] Understandably, given that the average age of cancer patients treated in the adult health sector is over 60 years, most medical or allied health practitioners do not have extensive experience working with younger patients.

While this may be understandable, as resources need to flow to the areas of greatest need and demand, given its potential impact upon care such lack of available experience is an obvious concern. As recognition continues to grow in relation to the specific needs of AYA cancer patients within the Australian health system, it is incumbent on those who work with these vulnerable young people on a regular basis to identify ways that care can be improved – not just at a systemic level, but at an individual practitioner level.

Young person behind the cancer diagnosis

The Society of Adolescent Medicine recognises the first step in working effectively with AYA patients is to develop an understanding of the developmental changes they are going through.[3] The best care for these patients will come from an appreciation of how diagnosis and treatment may affect the distress levels, self esteem,

family dynamics, need for information and communication, peer relationships, self identity, body image, perceptions of future, existential perspectives and other subjective components of the cancer experience.[1]

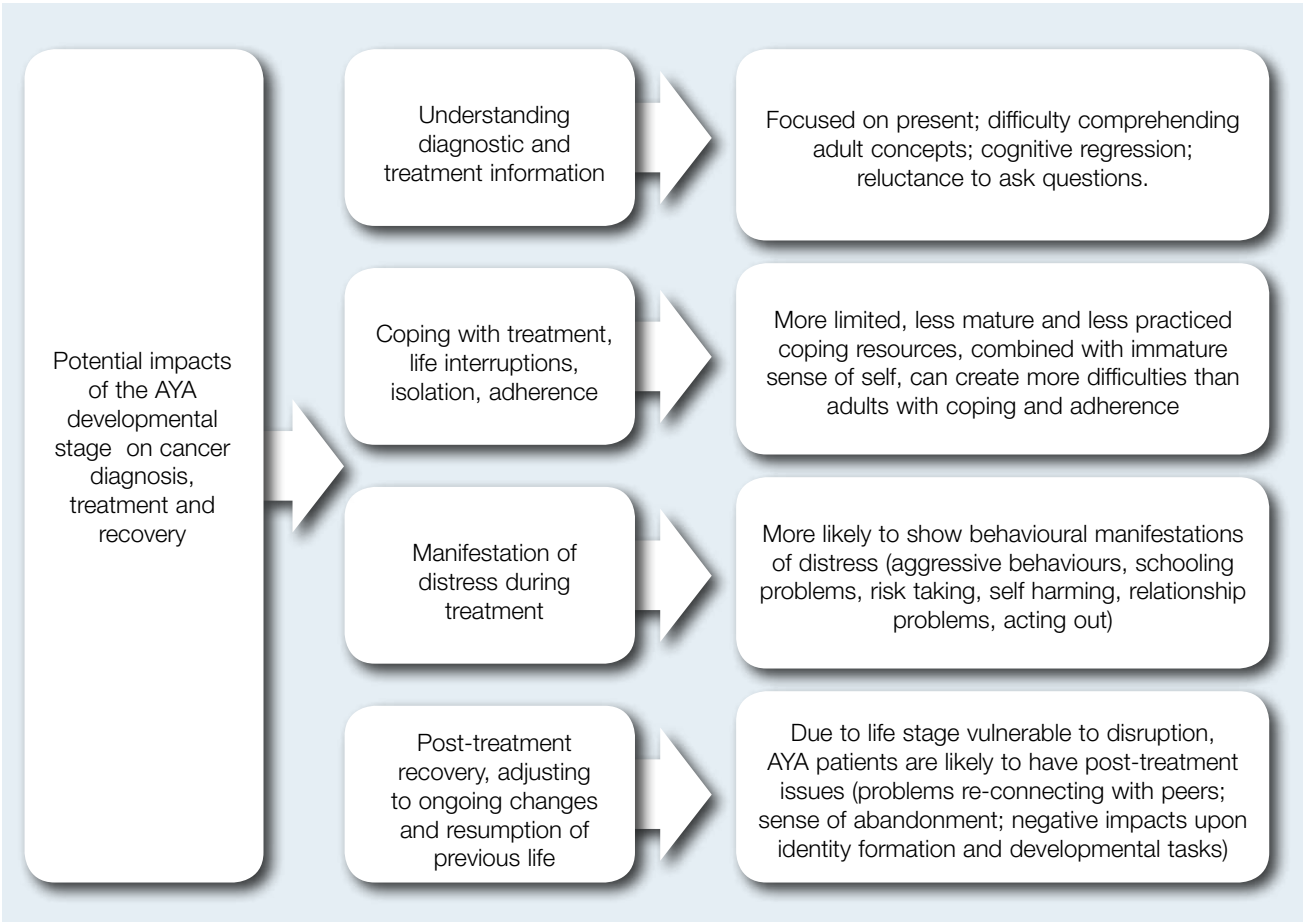
The developmental changes and challenges experienced by a young person, despite a cancer diagnosis, are enormous. They impact upon every realm of human functioning, including physical, cognitive, psychological and social. The considerable physical changes occurring at this time can generate a high level of self-consciousness and a lowering in self esteem, which can result in the seemingly disproportionate responses to the side-effects of treatment such as hair loss, scaring and weight gain or weight loss. Such side-effects can create extremely strong emotional reactions and while they may seem ridiculous through the lens of adult consciousness, for a young person already grappling with a changing body and relentless self-comparison to peers and celebrities, it is a very real concern. The cognitive changes occurring during this time are also meaningful, as this is where the most complex stage of cognitive development, formal operational thought, is achieved.[4] However, even those young people who are capable of complex thinking and understanding complex issues, are more likely than their adult counterparts to be oriented to the present, and may regress in their capacity for complex thought under the extreme stress of a cancer diagnosis and its treatment.[5] These developmental challenges can have direct consequences for communicating with AYA patients, the adherence of the young patient to treatment regimens and their responses throughout treatment to changes in prognosis or treatment plans.

The psychological development of the adolescent and young adult primarily involves developing a self-concept and a strong sense of self. This can be significantly compromised if a large proportion of the AYA's life is taken up with treatment and recovery.[6] To avoid the 'sick role' becoming central to the AYA's sense of self, it is essential that the young patient is exposed to opportunities to be as 'normal' as possible. This includes continuing with schooling, developing intimate relationships, separating from parents, becoming more independent and interacting with peers.

The treatment team has a powerful role in determining whether exposure to such normal developmental experiences can occur and it is incumbent upon them to consider these issues when working with AYA patients. The evolving independence of the young person is a further developmental pressure that can create specific challenges. There may be strong ambivalence associated with the involvement of parents in their care. This can serve to influence the level of communication and negotiation required when parents and other family members are involved.

In combination, these changes create unique physical, psychological and behavioural patterns that can directly affect the cancer experience (see figure 1). Although

Figure 1: *Impacts of AYA development on responses to diagnosis and treatment*



a cancer diagnosis and its treatment will inevitably have a lasting impact upon the young person, the provision of developmentally appropriate care to AYA patients can significantly impact on how they adapt to their experience.[7] Combined with the best medical care available, age appropriate supportive care can minimise the distress experienced during treatment and maximise post-treatment recovery and survivorship.

What can be done to improve care now?

Working with AYA cancer patients in the adult sector may be the only time adult-trained and focused clinicians are forced to work with a younger age group. There are a number of simple strategies that can be used that can have a significant impact upon quality of care. These strategies do not require additional funds, a re-organisation of treating teams, or a revision of treatment protocols. They are all simple, but effective ways to improve the developmentally appropriate provision of care.

Provision of a confidential relationship between patient and practitioner is an integral part of best-practice care. However, a confidential relationship with the AYA patient can be compromised when parents are significantly involved in the care of the young person. AYA patients may be reluctant to disclose information relevant to their care when others are present or may later be informed.[8] A range of issues occurring in the life of the young person may directly impact upon their care; issues such as drug and alcohol use and abuse, sexual experimentation and emerging mental health problems. All of these issues need to be openly and honestly discussed with the AYA patient in a confidential environment. This requires ensuring ample opportunity for the young person to meet with members of their treatment team without parents being present. Indeed, due to the often ambivalent relationship between patient and parent, this should be insisted upon by the clinician.

Young people are at a stage of life where development dictates that they push the boundaries of recognised establishments and authorities. Given this, it is essential that discussions with AYA patients take on a tone of consultation and collaboration, rather than dictating care. An overly controlling approach can have a direct consequence on treatment outcomes and has been shown to impact upon treatment adherence with this age group.[9] Discussions should always be directed to the patient and a paternalistic approach should be avoided, as should the urge to form a united front with the parent against the young person.

AYA patients are unlikely to have the same communication style as their treating professional and it is important that the professionals working with them are mindful of such differences.[10] This involves tailoring the delivery of the information to the age of the patient and recognising that, when under extreme stress, the AYA patient may have increasing difficulty understanding challenging or confronting information. Information should be provided in a number of different ways to improve understanding (verbal, written and audiovisual). It is also important to keep in mind how intimidating the medical environment may be for a young person and this may be characterised by a reluctance to ask questions. This should not be interpreted as a lack of desire to understand what is going on.

Young people are extremely internet savvy. It should be assumed by those working with this age group that this computer literate generation will inevitably turn to the internet to find further information. Providing appropriate websites to access safe, authoritative and age appropriate information is a key part of providing diagnostic information to this age group.

Unlike the paediatric system, the adult health sector generally requires cancer patients to navigate the system solo. This can be a daunting task for any adult, but can present an overwhelming situation for the AYA patient. The designation of a key worker does not require a complex reorganisation of tasks or roles. It can be as simple as a member of the multi-disciplinary treating team acting as a contact and liaison person to offer consistency, advocacy and support. The role of this person as a primary contact should be made explicit to the patient.

The inherent complexities associated with the AYA stage of life necessitate a preventative approach in the psychological and emotional care of these young patients. Recognising that this is an area of oncology care that is generally overstretched, it is appropriate that care is prioritised to those most at risk. The AYA patient automatically falls in to this category. Lack of supportive care has been indicated as a factor associated with adherence issues with this age group.[1] At a minimum, all AYA patients should have access to the support provided by a social worker at the earliest time possible.

In what can seem to be a contradiction to earlier points, working with AYA patients often requires a familial approach. Although it can be a difficult balance to achieve, it is an area of practice that is important to embrace when working with this age group, as the practical needs of the patient are enmeshed with the needs of the family. Issues for consideration include: parental problems at work; increased costs due to travel; issues associated with living away from home; increased family stress; caring for siblings; anxiety and depression of family members; and the needs of intimate partners.[11] The needs of younger siblings are a specific area of concern that should be addressed in a timely manner to reduce the strain on the patient and their family.[12]

Survivorship is an area of AYA oncology care that has very little resources allocated to the provision of services.[6] However, it is of great importance to the ongoing development and functioning of the young person. Disruptions to education, interruptions to the exploration of intimate relationships and issues with ongoing dependence on parents all contribute to post-treatment difficulties. Oftentimes, due to the complexities of the treatment period, it is not until

treatment finishes that the emotional processing of the past months or years occurs. Yet, survivorship supportive care and counselling has been identified by AYA patients as one of the primary unmet needs of this age group.[13] The referral of young survivors to appropriate supportive care post-treatment is a simple and effective way to improve care provision in this area. Additionally, the provision of a full treatment summary detailing treatment received, complications experienced and potential long-term implications is important for this very transient population group.

Conclusion

Working towards improving care for AYA patients requires a collaborative approach across the range of multi-disciplinary professionals involved in their care. While it is undeniable that medical research, treatment protocols, referral pathways, clinical trial access and improved relationships between the paediatric and adult sectors will improve the current disappointing survival rates for this age group, the recognition and understanding of the young person behind the disease and their age-based needs, is also a necessary step. The development of the best treatment plans in the world will not be enough for these young people if an environment that supports their coping and promotes their ongoing development cannot be achieved. Fortunately, this is an area of AYA oncology care that can be improved right now.

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AUSTRALIAN SARCOMA STUDY GROUP: DEVELOPMENT AND OUTLOOK

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Abstract

Sarcomas represent a small, diverse and high impact group of cancers that disproportionately affect the young. There is good data to link outcomes to clinical research participation for many cancers, including sarcomas. Historically neglected because of the rarity of these disorders, Australian clinicians first began to self-organise about a decade ago, to develop the Australian Sarcoma Group, a society designed to increase the focus on sarcomas in Australia. In December 2007, with Cancer Australia funding, the Australian Sarcoma Group took the next step towards establishing an effective clinical research co-operative group, by forming the Australian Sarcoma Study Group. This group has been in existence for only 12 months, but already has a keen multidisciplinary group and a portfolio of research.

Sarcomas in Australia

Sarcomas are a small, complex and heterogeneous group of cancers that have been relatively neglected over the past 30 years. Although the numbers are small by comparison with more common cancer types, the impact upon the community is disproportionate to its incidence. There are about 800 new sarcoma cases in Australia each year, an increase of 40% over the previous decade according to Australian Institute of Health and Welfare data in 1998.[1] The community impact of sarcoma is frequently under-estimated. On average, 17 life years per patient are lost due to sarcomas (three times greater than bowel, lung or breast cancer).[2] In 2003, the total burden of disease measured by

disability adjusted life years (DALYs) due to sarcomas (5879) was comparable to cervical cancer (5231), eight times the impact of germ cell tumours (862) and more than twice that due to all cancers in children (2512).[3] Current treatment costs for sarcomas are very high. The per capita lifetime cost to the community of bone and connective tissue tumours ($29,593) is the 6th highest for any cancer type, or equivalent to the cost of colorectal cancer ($18,246) and breast cancer ($11,897) combined.[4]

In part this community cost is because of the relatively young age of onset of many sarcomas, and the lethality of these disorders. Sarcomas comprise 10-20% of cancer in the young and the overall mortality is about 50%,[5] among the worst for any cancer type in adolescent and young adult patients (AYAs). Cancer in AYAs is an important public health issue in the United States, because there have been no improvements in survival over the past 30 years.[6] The onTrac@Petermac program studies in over 14,000 Australian AYAs with cancer indicate that AYA with sarcomas do substantially worse than children. The five year survival for both osteosarcoma and Ewing sarcoma in AYAs between 1983-2003 is about 45%, compared to 76% for children under 15 years. Despite increasing numbers, according to Australian Institute of Health and Welfare data, public expenditure on cancer in the 15-25 year-old group actually fell by 13% between the years 1993-2001 (the only group in which this occurred).[7]

Survival rates are equally poor for older patients with sarcoma. Response rates for the most active current chemotherapies are disappointing, and there remains no clear role for the adjuvant use of chemotherapies despite almost 30 years of clinical trials. However, as for many rare cancer types, this is changing. The new class of molecularly targeted therapeutics have made impressive proof-of-principle impact in sarcomas (for example, GIST, dermatofibrosarcoma protuberans, giant cell tumour of bone, tenosynovial giant cell tumours, Ewing sarcoma, and others). The impact of these breakthroughs has extended far beyond this smaller patient population, providing important insights into treating more common cancers. A significant proportion of sarcomas are characterised by signature molecular defects, which holds promise for the rational development of molecularly targeted therapies. Indeed the contribution of sarcomas to the current understanding of tumour suppressor gene biology is particularly impressive, and includes the roles of the retinoblastoma cell cycle checkpoint, and the p53 DNA damage checkpoint.

Outcomes for AYA with sarcoma correlate significantly with poor participation in clinical trials in both the US[6] and Australia.[8] Participation rates in clinical trials for Australian AYA sarcoma patients are particularly low (<4%) compared to children with sarcomas (13-46%) or AYA with haematologic cancers (about 10%). Paediatric research groups have failed to recruit AYA patients, because 90% are treated at adult institutions. Of the 14 sarcoma-specific trials registered at the NCI with Australian sites,[9] one (GIST) was open at adult centres; the remainder are only open at paediatric hospitals. The GIST study is supported by the Australasian Gastro-Intestinal Trials Group.[10] As of July 2007, there were literally no multi-institutional clinical trials for adult sarcoma patients in Australia, compared with seven trials in prostate cancer, 37 trials in breast cancer, 16 for lung cancer, six for renal cancer and bladder cancer, and 15 for melanoma. The lack of clinical trials infrastructure is the major barrier to trials access for adult Australian sarcoma patients.

The observations applying to clinical therapeutics into sarcomas also apply to psychosocial and quality of life outcomes research, clinical genetics and molecular research. Sarcomas are over-represented in inherited cancer predisposition syndromes. Australia has outstanding resources for undertaking internationally competitive clinical genetic studies, provided the clinical 'front end' facilitates access for patients. Australia has a vigorous basic and translational research community in sarcomas, with basic research programs in all states. In order to leverage bench resources by systematically improving access to clinically annotated biospecimens, a national infrastructure for patient recruitment, data and biospecimen collection, and storage is needed.

Australian Sarcoma Group – a coalition of the willing

To meet these needs, in December 2007, with funding from Cancer Australia, and under the auspices of Clinical Oncology Society of Australia, the Australasian Sarcoma Study Group (ASSG) established itself as a national Cooperative Cancer Clinical Trial Group and commenced operation in January 2008. The ASSG had historic antecedents. The first recognised musculoskeletal oncology group began in 1998 with the formation of the Orthopaedic Oncology Society of Australia (OOSA). This was a special interest group created under the auspices of the Australian Orthopaedic Association. At that time, the specialty of orthopaedic oncology was a recognised field abroad and the Australian pioneers of the discipline (Professor William Marsden (deceased), Mr Ian Dickinson and Professor Peter Choong) had returned from the United Kingdom, United States and Europe with the knowledge, skills and interest that led to the development of OOSA.

Recognising the importance of establishing a standard of practice, the key orthopaedic oncology surgeons from each state at that time (Ian Dickinson – Brisbane; William Marsden and Paul Stalley – Sydney; Peter Choong – Melbourne; David Wood – Perth) agreed to meet on a regular basis to share their experiences and knowledge with each other and to create a network by which the discipline could be expanded in Australia. It was clear from the outset that surgeons alone could not develop the field without the participation of their multidisciplinary groups, and so OOSA was borne. Through OOSA, the main orthopaedic oncology units in Australia were able to identify themselves to other members and also any special interest that they may have had. Soon other surgeons joined the group and with them pathologists, radiologists, nuclear physicians, medical oncologists and radiation oncologists.

Meeting once a year, OOSA provided a forum by which difficult cases could be discussed, registrars could be educated and themes related to musculoskeletal pathology explored. It was a trend from the start to select a single

tumour and to "do it to death" over a day and a half. With the contribution of overseas participants, a number of very successful meetings were held covering both primary and secondary bone and soft tissue tumours.

In 2000, members of OOSA agreed that the name of the group should be changed to the Australian Sarcoma Group (ASG) to highlight the special interest the group had in sarcomas, and to dispel the notion that this group was primarily orthopaedic in nature. Ian Dickinson, orthopaedic surgeon, became the inaugural president of ASG from 2001 to 2002; Peter Choong orthopaedic surgeon (Victoria) followed for 2003-2004; Mark Clayer orthopaedic surgeon (South Australia) from 2005-2006; and David Thomas medical oncologist (Victoria) from 2007-2008. The present incumbent for the 2009-2010 period is Sandro Porceddu, a radiation oncologist (Queensland), attesting to the multidisciplinary nature of the group and the combined influence that the different specialties are bringing to the practice of sarcoma management around Australia.

Through the ASG, there is now a consensus about the manner in which patients with suspected sarcomas are investigated, exposed to neoadjuvant or adjuvant therapy and their sarcomas resected. Regular interaction among the group has allowed consolidation of practice philosophy, and in latter years the focus of ASG has broadened to include collaborations to support clinical and basic research. All saw the newly created Australian Sarcoma Study Group (ASSG) as the paramilitary wing of the ASG, a vehicle to take sarcoma practice in Australia to a new level where clinical practice was not only integrated with basic and clinical research, but that this research should also cross international boundaries in seeking partnerships with other major centres around the globe. In this regard, over the past two years major strides have been made to foster clinical trials research between Australia and umbrella groups in Europe and North America.

Aims of the Australian Sarcoma Study Group

Today, the ASSG is a thriving association of clinicians, nurses and researchers numbering over 70 members, in stark contrast to its first foray as OOSA where there were fewer than 15 members. Through the ASG and its state led groups, the future of ASSG will be to develop guidelines for the early management of patients with suspected sarcoma at the primary care level, and also for the tertiary level management of this disease. Through a coordinated approach with the ASG, the ASSG aspires to provide a leadership role in the management of primary bone and soft tissue tumours in the Asia-Pacific region and to contribute strongly and meaningfully in a global setting.

The broad aim of the ASSG is to improve outcomes for sarcoma and related tumours in the Australian community by undertaking outstanding international basic, translational, clinical and supportive care research. The foundation goals include:

- taking a leadership role nationally and internationally in basic, translational, clinical and supportive care research;
- identifying unique strengths and opportunities in the Australian environment;
- developing a particular focus on adolescents and young adults; and
- building bridges with local, national and international communities.

The ASSG secretariat was enabled with the appointment of an Executive Officer (Dr Sally Whyte) in March. Since that time, the group has established a constitution, a board with representation from the major states and disciplines relevant to sarcoma care, a scientific advisory committee and a Community and Philanthropy Advisory Committee. These committees have called upon individuals representing most of the clinical and allied health disciplines relevant to treatment of sarcomas, and also with diverse geographical representation. Two groups deserve specific mention. A small but committed group of clinicians from New Zealand are also members of the group, as well as strong paediatric representation at both the board and scientific advisory committee levels. In addition to clinical skill sets, the group has attracted the support of basic and translational scientists from many states, who have an interest in sarcomas.

Research and development

The group's research program was initiated in July 2008 and has three studies in various stages of development. These include a world-first, philanthropically supported kindred study of inherited cancer risk in adult-onset sarcomas, the Australian Sarcoma Kindred Study (ASKS). The ASKS aims to recruit over 600 consecutive cases of sarcoma presenting to adult cancer institutions to better define the spectrum of familial risk, outside the well-known Li-Fraumeni and neurofibromatoses. It will also form a resource for the impending revolution in cancer genetics that is currently being driven by massively parallel sequencing platforms. A second study which has commenced recruitment in November 2008, is the neoadjuvant sunitinib and radiotherapy study in resectable soft-tissue sarcomas (SUNXRT). This world-first study is a single site, phase Ib/II design, and aims to test the Jain hypothesis. The Jain hypothesis states that tumour vasculature is inherently abnormal, and that angiogenesis inhibitors may act to partially 'normalise' the neoplastic vascular tree.[11] It is predicted that this will result in increased oxygenation to tumours which are otherwise hypoxic, and that this will increase the efficacy of radiotherapy. It is known that sarcomas are frequently hypoxic,[12,13] and the SUNXRT study builds on recent Australian research that confirms that hypoxia is associated with bad biologic behaviour in these tumour types (K Khamly and D Thomas; unpublished data). Finally, the ASSG is undertaking a study to investigate the reasons for poor survival in AYA with osteosarcoma and Ewing sarcoma, compared to children with the same diseases. Initial data strongly suggests that much of the excess mortality in AYA populations occurs in males with these diseases, as well as in Hodgkin's lymphoma. This research also showed that a key difference between males and females is that females experience greater toxicity associated with chemotherapy for these cancers, as well

as apparently greater benefit. The study aims to formally examine the pharmacologic handling of a key cytotoxic, doxorubicin, in both children and AYA populations with these cancer types. Excitingly, this study will recruit from both paediatric and adult centres, with plans to open the study in multiple states.

A major achievement has been the contribution of the CPAC. In the first eight months, CPAC has already attracted major philanthropic funding, through linkages to community groups with a focus on sarcomas, including Rainbows for Kate and the Ross Trust. More importantly, these funds are based on community partnerships, with commitment to mutual support and cross-representation between the ASSG and the funding partners. This substantial support will significantly leverage government funds, and accelerate the development of research into this devastating disease.

The future

Work is progressing on the development of a national, consensus clinical dataset, and establishing the mechanisms for data collection across all states. This resource will be linked to biospecimen collection, which is already in train in most centres. The purpose of this project is to be able to undertake a detailed analysis of outcomes for Australian sarcoma patients, using well-annotated datasets, and to facilitate derivation of clinically important correlates of molecular studies. The aim is to implement this database, which has already been piloted in Victoria, across at least three states by early 2009.[1]

** ASSG welcomes new members. The best way to make contact if you have an interest is via the website, which will go live in early 2009 (www.australiansarcomagroup.org). For more information contact the ASSG executive officer, Dr Sally Whyte (+61 3 9656 1111).*

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PALLIATIVE CARE FOR YOUNG PEOPLE WITH CANCER

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Abstract

Adolescents occupy a world between paediatric and adult palliative practice. Here we consider what is particular to adolescence, that physical, cognitive and emotional change during which the adult identity is formed. Some patients will have been progressing through normal development before the onset of disease while others carry their diagnosis from childhood. For all, life-threatening malignancy challenges adolescent development and, equally, development influences how adolescents, families and professionals experience and manage their disease journeys. In writing, we are acutely aware of the differences between adult and paediatric practice, as well as the common ground. Adult clinicians focus on autonomy. Paediatricians are more aware of the adolescent as a child without the experience of independence. This may be crystallised as follows: we want young people to make decisions about their treatments and to be fully informed that they are dying; yet they still need parental permission to go to parties and to stay out late – and they quite possibly consider it completely reasonable for their mothers to choose and buy their underwear. The trick is to recognise and support the child with little experience of life as an adult, while at the same time facilitating their transition to an adulthood that may never be achieved.

"The young…are full of passion, which excludes fear, and of hope, which inspires Confidence".

(Aristotle, Rhetoric Book II)

Young people with cancer are a small but unique group that cross adult and paediatric palliative care. The demands of symptom management are often complex, but perhaps no more so than in other age groups. In this commentary we wish instead to consider what is particular to adolescence, that process of physical, cognitive and emotional change in the transition from child to independent adult. It is an essential and unavoidable evolution during which the adult identity is formed. Some young people with cancer will have been progressing through normal development before the onset of disease, others may carry their diagnosis from childhood. For all, life-threatening malignancy will challenge key processes of adolescent development and, equally, adolescent development will influence how young people, families and professionals experience and manage the disease process.

Adult development is marked physically with puberty and biological changes. Attachments move from parents to peers, through discovery of self in the development and deepening of awareness, an internal thought life emerges alongside emotional and physical independence. It is usually completed as the teens turn into the twenties and culminates in one's new place and role as an autonomous but interdependent adult.[1,2]

The speed, success and challenges of this process depend intensely upon the individual and their circumstances, such as the way in which family and other responsible adults support this transition. The challenge for professionals is to deliver palliative care while fostering and respecting the transition from child to adult and the challenges that this brings into each family's life.[3-5] Some patients will die before transition is completed, others will survive, but with adult identities built on very different experiences and principles to those of their peers.[6-8]

Challenges of care

New independence

Young adulthood is a time when the relationship between parent and child starts to change rapidly as the young person seeks to find a lifestyle and identity outside the family. What is often regarded as 'challenging behaviour' is part of the essential process through which a young person explores their emerging sense of self. They discover and establish healthy autonomy and independence through experiments with diverse personal choices, lifestyles and values that are usually, and necessarily, different from those previously taught by their parents. Peer group identification and physical and emotional independence from their parents and family are crucial factors. Young patients face two conflicting realities – the drive and desire for independence from parents and family, competing with the need for physical and emotional support through illness from that very family from whom they are trying to separate.[3]

New identity

The defining characteristic of adulthood, in western culture at least, is that we are free – we have self-determination and self-government (autonomy) to pursue our goals and mould our lives as individual yet interdependent citizens. But we can only learn and participate in this by experience and the opportunity to understand and assimilate the ideas of success and failure, liberty and responsibility.

Hope is an essential part of healthy and successful development.[6] The adult identity and autonomy that evolves through adolescence is crucially based on a certain sense of immortality that gives both the opportunity to determine and shape one's own future and the perception that any errors or risks on the way will be at worst a temporary irritant, but with no consequences of any note. "It will never happen to me" is the certain foundation that makes risk tolerable and extremes so appetising when the idea of a boundary or abyss into which one may fall, while possible, is never real in a personal sense. Adolescents from communities where premature death through violence is not unusual, may have a different perspective, yet will still engage in 'risk taking' behaviour. For them, the driver may be "what the hell" or "how much can I pack in" given that my time may be short. The whole point of experimentation is to learn what is safe and wise, however risky and whatever the environment.[7]

For young adults with cancer, the threat of death is real and present; the foundations of health, gathering strength, personal potential and an open future on which adult identity is built are shattered.[8-9] The future is not theirs for the taking, but is determined by external restrictions enforced by an unwanted and debilitating disease. Their future may never be realised and at best will be sculpted by limitations and loss, not aspiration or ambition.[10]

New affiliations

Peer group identification is an early and essential medium for and determinant of adult identity. It is the way a young person starts to work out what sort of adult they want to be. They will choose a peer group that has an appearance and way of life that the young person wants to be a part of. They may change affiliations as their adult identity emerges, until they settle in one that suits in the short or long-term.

For the adolescent with cancer the demands of treatment restrict their freedom to socialise with a healthy peer group. School, parties and meeting up with friends are replaced by hospital admissions and days when they just feel too unwell to join in. Matched values, interests and appearance begin and may well end with how one looks and dresses. A teenager with cancer soon starts to look different from their peers – they may lose their hair, their weight may change, puberty may be delayed, they may have suffered some physical mutilation such as a central line, a naso-gastric tube or effects from radical surgery that cannot be hidden.

This separation extends beyond the physical – one cannot be part of a group socially or emotionally unless one can be immersed in its culture, attitudes, values and preoccupations. When facing cancer treatments and

potential or inevitable death, young patients' priorities are pulled elsewhere, the conversation and goals of their peers, so often focused on fashion, fun and sexual relationships, often seem futile and meaningless in a world that has, for them, a new significance. Furthermore, it is a painful reminder that one can never belong in the same way and that one's worth in the tribe, through young eyes at least, simply isn't there. Here is another dilemma – the tension of identification with one's illness and what it demands or with one's peers and what they hope for.

New restraints

During the transition to adulthood, it is in early adolescence that a young person starts to travel independently, go out with friends, stay at home on their own and sleeps elsewhere. As soon as they may, they learn to drive motorcycles and cars or go backpacking. However, the young adult with cancer faces the opposite; they may be too unwell to go out independently, to be at home on their own, or they may even need help to wash, dress or use the toilet. The idea of any viable identification with a healthy peer group starts to vanish.

During adolescence, many young people start to find paid employment, giving them valuable work experience, as well as an income that is independent from their parents. For the young adult with cancer, ill health and hospital attendance make this virtually impossible. Independence from their parents, peer group identification and independent socialisation become even more difficult.

In addition, many families face financial difficulties while their child is unwell, because of consequences on parental employment and an overcompensation for their child's difficulties with expensive gifts, games and technology that achieve little other than more pressure on the credit cards.

Adolescence is a time of sexual development, sexual awareness and exploring sexuality. Much normal adolescent activity and discussion is focused upon it. Restricted independent access to a healthy peer group, anxiety about disability, attractiveness and physical ability for sexual activity or missed opportunities, can be a considerable source of concern for young adults with cancer. While they are unwell, their friends are finding partners, enjoying their first romantic or sexual encounters and moving on with their lives.

New powers, old restrictions

Adolescence is a time when young people should start taking increasing responsibility for their own lives (practical autonomy), weighing up consequences and making decisions. Many of the choices and decisions faced by healthy adolescents are 'safe' in that they are unlikely to have long-term irreversible and detrimental consequences. While it is appropriate that a young adult with cancer is also involved in making decisions about their own life, the type of decisions are very different from those of normal adolescence. There is no easily accessible place to find views outside family or the professionals around them unless their care is in a unit devoted to and geared for such transitional care. That said, there are increasing resources on the web through sites such as www.canteen.org.au.

The development of adult capacity and the skills to make decisions under normal circumstances begins gently and occurs within the family and other social settings that are by and large free from outside eyes. Our patients have experience of healthcare, treatments and their consequences. Some may have the capacity to decide and determine how much they are to know of their illness and its prospects, but many may not have fully mature adult reasoning processes and coping mechanisms. Once healthcare becomes involved, the delegated duties of society lock in and young patients become subject to formal definitions of adult and child that have profound effects on their liberties depending upon which side of their 18th birthday that they lie. Even though the adolescent may have a very developed technical and practical understanding of their illness, there is a very real risk that the decisions are taken primarily by the family and clinicians.

The motivations and desires are to protect and to ensure that mature minds consider consequences or factors that a developing personality may discount or misjudge, but they fail often to see that maturity and adulthood don't automatically bring infallibility in discerning someone else's best interests and that incomplete understanding automatically excludes one from the decision making process. The price may be a patient denied the opportunity to choose how to spend the time they have left.

The professional must facilitate opportunities for the young adult to be fully informed about their disease and prognosis, but must also be aware that few teenagers will have a robust adult identity, values and coping mechanisms. Some will not want to be fully informed of their prognosis or be involved in making decisions and will devolve responsibility to their parents as their way of coping.

New doubts

One generic characteristic of humans is the need to find causes and explanations for events. It is not unusual for a young person to question, challenge or reject their family's belief system. This may be the desire to be independent in thought, or because they must test its robustness and utility in times of need.[11] The young patient may ask the direct and personal questions about why this is happening to them and the meaning of their life. This may become more urgent as time passes.[12,13] Patients may respond in one of at least three ways:

- Regress back to helpless childhood and transfer all responsibility on to family.
- Rail against all things parental and ferment with anger, since one's peers cannot begin to understand.
- Explore spiritual questions and belief systems that the healthy are able to defer to their mid-life crisis or retirement.

This crisis may extend to other members of the family and may need more extensive support. It can also be a source of considerable anxiety when death is imminent.

Approaches to care

Palliative care for young people

Palliative care is a practical philosophy that assists patients and their families to engage and transcend suffering and to bring some control and perspective to the uncertainties that are part of progressive disease. However, it is relevant to all stages of disease and is most effective when integrated fully into oncological practice.[4,12,14-16] Supporting young people to continue the transition to adulthood and to achieve as many realistic goals as possible requires flexible, responsive and tailored care rooted in open, effective communication and partnership with the patient and their family.

Palliative and end of life care can only make meaning of suffering and uncertainty if it is directed to facilitating the means and opportunities to complete outstanding tasks, resolve relationships and achieve some personal resolution. The elements of our practice – symptom control, psychological support, care packages etc are our tools – the means to this end, rather than just simplistic ends in themselves. They should concentrate ultimately upon creating those opportunities for choices to be made.

Involving young people in decisions about their lives

As for anyone, creating decision space for young people is the real objective of palliative care.[17] This is the opportunity to make realistic choices and achieve realisable goals, unimpeded as far as possible by physical, emotional and spiritual distress. Openness and honesty are paramount, but must be sensitive. While all young people have a right to be fully informed, some may not want this information, or want to guide the pace at which it is received; parents may want no disclosure at all. But this is only a short-term advantage to clinicians that presupposes that the patient is unaware of what is going on. There is no evidence to support this.[15] Conversely, distress will inevitably come from helplessness compounded with fears and anxieties that gain size and significance if left to the imagination, rather than being tested against evidence and truthful dialogue.

1. Young adults should have the right to opt out rather than having to earn the privilege of opting in to discussion.
2. If a patient is capable, we take what they say. If they are incapable, then we attempt to maximise that capacity, and in whatever state they are, we should act as far as possible in a way consistent with their wishes and values as far as they are known.[18]
3. Open, honest communication with the young person and their family must begin in the first meeting.
4. It can be helpful to discuss with the family at this point how they would like to receive information – as a family group or individually. It should also be possible to ask the young adult, with the parents present, how much information they want to be given, who should give it to them and who should be present, even if it is difficult and distressing.

This approach will often require careful negotiation with parents to assure them that their child will be given information sensitively and at an appropriate pace and timing. Parents will need support and guidance, as they will need not only to deal with their own grief, but that of their child and siblings.

Facilitating peer group interaction and independence

One of the most crucial elements to build adult identity is peer group identification and interaction. As discussed earlier, young adults with cancer will find it increasingly difficult to identify with healthy peers and we need to optimise their ability to do this.

1. School attendance should be encouraged and supported.
2. Treatment regimes should, where possible, be organised around important social events such as a party or a school trip.
3. Interaction with other young adults with cancer offers an alternative and is important to create a safe space where they really do fit in and become one of the crowd.

Many young people will continue to have ordinary adolescent plans and wishes for the future, even when they know these will not be realised. This can sometimes cause confusion among professionals and parents, who interpret these dreams as 'being in denial' or fear that the young person does not understand that they are going to die. A skilled professional will be able to acknowledge and respect these dreams, while maintaining honest communication and avoiding false reassurance. It is important to balance unachievable goals with goals that can be realised, however short a life may be.

4. Professionals should support young adults to achieve physical independence from parents through arranging home adaptations and appropriate aids in the home.
5. Parents should be encouraged to allow their young adult to go out and socialise with friends, not hold them back because of their illness.
6. Those who are too unwell or disabled to go out with friends independently, should have access to a carer or youth worker who can assist them – bringing a youth worker or carer may be less embarrassing than bringing a parent along. Opportunities to go out with other young people with cancer or disabilities should also be facilitated. These may be organised through a young people's cancer unit or hospice and enable socialisation independently from parents, but with adult support available.

Psychological and spiritual support

Many young adults with cancer do not face the future of endless possibilities embraced by their healthy peers.

There will be restrictions – real or potential – even for those who survive: 'Will I be fertile; will I be attractive; will I get the exam grades I need …?' Those who face death will grieve the things they will not achieve: 'I will never get married; I won't have my own home; I won't have children; I won't learn to drive ...'

They require opportunities to explore their feelings, without fear of upsetting other members of their family or carers. They need the chance to be angry, to ask "why me?" and to explore some of the ways in which they can bring meaning to these questions and their possible answers.

1. It is essential to provide time and space for young adults to express their fears and concerns, to have these acknowledged and to be supported through their grief.
2. Opportunities to socialise with other young adults in a similar situation will facilitate the development of peer support, but we must also provide opportunities for individual and group support from professionals experienced in working with young adults.
3. The whole family should be able to access appropriate psychological support, both individually and together.
4. The needs of siblings must not be overlooked and they should have the opportunity to take part in activities with other siblings (for peer support), as well as receiving individual attention.

Many young people will want to explore and question their spiritual beliefs and chaplaincy that is capable of addressing the diversity of faiths and belief structures must be a core part of every palliative care team.

Teamworking

Interdisciplinary practice is the only way in which to meet the holistic needs of the patient and their family. Shared care with primary care, local paediatric or adult services (where appropriate) is essential, as they have the skills and necessary local relationships. It is frequently wise also to continue close joint work with the oncology team. It has generally been our policy to see younger patients at diagnosis and begin developing a relationship and trust. While it is generally agreed that young adults with cancer should be treated in units dedicated to this age group, there are common values, characteristics and skills that all teams and services should enshrine and cultivate to ensure that the needs of their patients and families are met.[19]

As with palliative care in general:

1. A clear, working understanding of the nature and purpose of specialist palliative care, especially from the point of view of:
   a) its scope
   b) flexibility
   c) responsiveness
   d) the basis of why we do things.
2. Advanced communication skills should be developed in all practitioners, including those whose focus is acute care. They should be capable of working:
   a) Across age groups and generations – families' active caregivers may include siblings, parents and grandparents. They see the world very differently.
   b) Across social groups – a family living on social benefits may have very different needs to a family with two working parents; each will have different advantages and disadvantages.
   c) Across cultural groups – there are some very strong traditions and ways of dealing with illness that must be respected and accommodated in care. We have been speaking of the western democratic model of autonomy that is not shared by many in the world.
   d) Across religious groups – for some, an acceptance of inevitable death from illness represents a rejection of faith.
3. Identification and assessment skills to spot and refer appropriately for:
   a) specialist psychological assessment and support
   b) pastoral and spiritual care
   c) technical care from the spectrum of specialist practitioners such as occupational or physiotherapy, speech and language and dietetics.

This requires necessarily that all clinicians should have a working knowledge and basic skills in the specialities of the team. This is what we mean by interdisciplinary practice.

Breaking our perception and taboos

1. Truth with colleagues and others is a central tenant of good care and should never be compromised.
2. As professionals we cannot make everything alright. Baggage in a family will accumulate around an ill member and may have nothing at all to do with a patient's cancer or their death.
3. Overcome the mutual views that separate paediatrics from adult care – both groups have valuable things to bring to the child in transition. To keep them in childhood is negligent, but to pass them on to adult practitioners without appropriate transition is equally unacceptable. The interdisciplinary care needed for this group and the packages of care and support needed require adult and paediatric services to work as a team in a focused way for each individual.
4. Work in a team requires the active involvement of all players and their being prepared to debate, disagree and dissent as cases are managed. Many views will get the team closer to what is needed and the tension this may generate can be a sign, not of poor teamwork, but of a strong team.[19]

5. Allow crises and emotions, but encourage responsibility in using them to move the patient forward. It is not the upset itself that is to be avoided, it is the remaining in it.

6. Don't be problem orientated, be problem solving. Analyse all interventions on an objective assessment of benefits and burdens; the more difficult the decision, the longer it will take to decide and often the more people who need to be involved. It doesn't matter how long it takes to decide, what matters is that the best decision is reached.

7. Anything goes as long as it is has purpose and potential to move the person on in their conclusions.

8. Everyone in the biological and social family is part of that team and is entitled to support and care in their own right. It is a very good idea for there to be regular reviews of care to which everyone is invited.

Conclusion

Adolescents occupy a world between paediatric and adult practice. In writing this paper, we have become increasingly aware of the different approach and emphasis of the adult and paediatric clinician, as well as the common ground. The adult clinician may focus on the autonomy of the young adult, while the paediatrician may be more aware of the young person's role as a child, who has never yet experienced life independently from their parents. The conflict between the child and adult worlds the young person lives in is highlighted when we consider the following – we want the young person to make decisions about their treatments and to be fully informed that they are going to die, yet they still need their parents' permission to go out to parties and they still need to come home at the time their parents tell them.

The challenge of palliative care for young adults is to recognise and support the child with little experience of life as an adult, yet at the same time facilitate their transition to an adulthood that may never be achieved.

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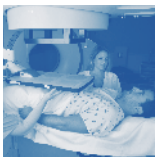

AWARD ORATIONS

MEDICAL ONCOLOGY GROUP OF AUSTRALIA (MOGA)/NOVARTIS CANCER ACHIEVEMENT AWARD

ONCOLOGY AND OPPORTUNITY

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This oration was presented at the Clinical Oncological Society of Australia's Annual Scientific Meeting in Sydney in November 2008.

When I started in oncology, it was a relatively new specialty ready for development and I have watched it develop so rapidly that it has now had to sub-specialise. But for me the diversity of oncology has provided opportunities for a career to date that has been rich in experience and satisfaction.

When I went off to interview for a job in the US, after my first year of advanced training in Ian Cooper's unit at the Peter MacCallum Cancer Centre, the data managers there gave me a banner made of a computer printout. It said "Do oncology, see the world". They now call it oncotourism, but at that time it was quite prophetic.

My career has been itinerant. My oncology training was at Peter MacCallum and at the Alfred with Max Schwarz in Melbourne. It was there under his guidance that I published my first supportive care paper when we published the first ever report in man of the use of DMSO (dimethyl sulphoxide) as an antidote to doxorubicin extravasation.[1] I subsequently performed the largest prospective trial confirming the efficacy of this approach, treating patients at both the Peter MacCallum and the University of Maryland Cancer Centre.[2]

I then travelled to Baltimore, because in those days there were no trials methodology workshops like ACORD, and we had to take ourselves overseas to learn the craft of clinical research. For me it was early phase drug trials. In Baltimore, Joe Aisner had given me the project of writing the definitive paper on the methodology of antiemetic studies for the now discontinued journal, *Cancer Treatment Reports*, as they had begun receiving the first of the antiemetic trial papers.[3] I published the paper with Joe Aisner and Richard Simon, a statistician from the National Cancer Institute. That later became the basis of my MD and 30 antiemetic papers mark a career long research interest.

Very few other problems in oncology have been solved within three decades, but with two new classes of drugs, the 5 hydroxytryptamine 3 (5HT3) receptor antagonists largely controlling acute emesis in combination with steroids, and the neurokinin 1 (NK1) receptor antagonists making a significant impact on delayed emesis, this is largely the case for chemotherapy induced emesis.[4]

The challenge of returning to Australia was how to translate the new drugs trials research into the Australian context. We were all National Cancer Institute investigators and were able to apply for investigational new drugs, but it was a difficult process and could take time obtaining Commonwealth Government approval for the trials, although we had some success investigating new agents including Trimetrexate,[5] and Flavone Acetic Acid.[6] However, there was no drug pipeline. We had to be innovative and keep the early phase trials program open by investigating drug radiation interactions,[7] or ambulatory infusion scheduling of drugs when portable pumps became available.[8] A lucky break came when carboplatin was not patented in Australia. The Victorian College of Pharmacy manufactured it in collaboration with Faulding's and we were able to perform early trials of combinations containing carboplatin in head and neck and small cell lung cancers.[9-10] Subsequently, a similar scenario occurred with paclitaxel and we joined in on the early investigations of that drug.[11] With the Baume report and the development of the CTN/CTX scheme, it became possible to investigate new drugs in a timeframe that was internationally competitive and pharmaceutical company sponsored drug trials became increasingly available. The highlight of my early phase drug trial career was the opportunity to perform a first in man study at the Royal Adelaide Hospital of a GM-CSF antagonist, E21R,

which had been developed in the Hanson Centre on that campus.[12]

Returning to Peter MacCallum from the US, I found a wonderful place to work. Multidisciplinary care with radiation oncology was entrenched. Jim Bishop and I set up the first Bendigo clinic, as a medical oncology outreach; and look at it now with a multidisciplinary cancer centre of its own. It was at Peter MacCallum that I was asked to join their ethics committee and sent off on a short course in bioethics run by Monash University. That subsequently led to a PhD. I was fortunate in having one of the great Australian bioethicists as my supervisor, Peter Singer, who didn't agree with a word that I wrote but made me argue my case so rigorously the result was beyond doubt. I subsequently published it as a book exploring the topic, *Is Death Ever preferable to Life?*[13]

The one thing they don't teach in advanced training is politics. I had my first experience of this as a young oncologist at Peter MacCallum, when I came home from work one day to hear on the news that Peter MacCallum was going to be split between the Royal Melbourne and the Repat. There was a spontaneous public objection which soon had the announcement overturned, but I spent much time subsequently with the Medical Director and a small group of clinicians trying to shore up the survival of Peter MacCallum. The centre subsequently did move and I was part of the Victorian Cancer Review that recommended it move on to the Parkville site, but on its own terms as a powerful group in multidisciplinary cancer care. Politics can change your environment, sometimes dramatically, but even if you don't have a say in the shape of the pile, you still have to reach the top of it, and even when you are at your most despondent about what is going on around you, you must remember that the cream will always rise to the top.

In the early nineties, I had the opportunity to move to the Royal Adelaide Hospital (RAH) to become Director of Medical Oncology. Within 18 months as the hospital re-organised, I had the further opportunity to build from scratch a multidisciplinary cancer centre within this large hospital. In those early days I had a great team of people around me and we had good fun building up this centre, always keeping patient care as the primary focus. I wrote the book *Conquering Cancer* to share some of the information that I gave my patients with a wider audience.[14] Some of our patients and their relatives became great supporters. Our day centre, for example, was named for Jessie Bradman following a generous donation in her memory. I even involved my own family in the cancer centre that took so much of my time, with my son Chris' finance Nicole singing at our annual Christmas celebration.

It was in Adelaide that to solve the clinical problem of exporting multidisciplinary care, I began health services research into the use of videoconferencing. Sid Selva and I set up a telemedicine link between the oncology multidisciplinary meeting at the Royal Adelaide and Darwin Hospital. That has been continuous since 1996 and it is very satisfying to see that oncology has developed in Darwin.[15] With a further initiative from the RAH Cancer Centre, radiotherapy will come to Darwin. We also explored extending the outreach of palliative care to rural South Australia using videophones.[16] During my time at the RAH, I established and ran the outreach clinic at Alice Springs for 13 years. There I gained knowledge of the different ways our Aborigines view cancer and its treatment, and how we can work together to bridge the cultural gap in treating cancer. This was dramatically captured in an aboriginal painting, 'The Cancer Warrior', by a local artist that I was given when I left, along with a spear and boomerangs given by one of my patients because "a warrior needs weapons".

I was also given the opportunity in Adelaide of training an oncologist from India to start an oncology unit at the Christian Medical College Hospital, a large 2000 bed hospital in Vellore in southern India. I have had very rich experiences continuing to visit that unit and subsequently repeating the experience in a similar hospital in Ludhiana in the north.

My research interests had evolved to embrace psycho-oncology because of the qualitative techniques of psychology researchers required to answer the questions posed by my further studies into both bioethics and theology (I have just completed a 1000 patient spirituality study). Again, I was fortunate to develop a great research team trained in the appropriate psychological research techniques. This cross disciplinary research, among many other things, has provided me this year with the opportunity to publish a paper with my son Scott, who is a psychologist.[17] Teaching undergraduates and supervising Masters and PhD students has been a richly rewarding part of my role and I was honoured to address the Australian Medical Students convention in Adelaide at the invitation of my youngest son Robert, and his colleagues.

During more recent times I have been increasingly involved in the big picture national issues. I was involved in the Victorian Cancer Services Review, and their Single Machine Unit Review, as well as a review of the Sydney South West Area Health Service and the South Australian Cancer Plan, and have served on the Boards of the National Breast and Ovarian Cancer Centre and Cancer Australia. During my time as chair of the Medical Oncology Group of Australia my particular focus was on drug availability issues, having previously served on the Australian Drug Evaluation Committee (ADEC) and I set up the first of the annual drug roundtables with all of the key players in drug regulation to discuss issues of mutual interest.

Believing that I had achieved all that I could in South Australia, I was attracted to my current position as CEO, Cancer Council Australia, to pursue a more strategic role. I have a new team and the role has been broad and interesting, with advocacy on cancer policy to the Federal politicians, the excitement of the 20/20 conference in 2008, communicating with and through the media and still being able to pursue psycho-oncologic research. It promises an exciting next phase to my career.

I thank all of those who have supported me, especially my wife and family, all those with whom I have worked and the patients who have enriched my life. However, I particularly value this award because it was awarded by my colleagues and peers. I am most grateful to Novartis and MOGA for this honour.

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TOM REEVE ORATION AWARD

A FORTUNATE LIFE

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Edited version of the acceptance speech of the Tom Reeve Oration Award oration presented at the Clinical Oncological Society of Australia's Annual Scientific Meeting in November 2008.

I have never felt like I was tied down to any one place or any one job. I have had a good life…I have been very fortunate and I am thrilled by it when I look back.

AB Facey, *'A Fortunate Life',* 1981

It was truly a red letter day in my life when David Goldstein phoned to say that I would be this year's Tom Reeve Oration Award recipient. This emotion flowed not only from the honour of having the award bestowed upon me by my peers in the Clinical Oncological Society of Australia (COSA), but also because of the great respect and admiration I have for both Tom Reeve as an individual and for COSA as a society.

Tom became one of my professional heroes by virtue of his achievements in bringing discipline and structure to the provision of cancer services in Australia through the Australian Cancer Network (ACN). As all who have worked with him know very well, he has a remarkable ability to harness the efforts of disparate individuals and craft groups, and to keep them working. The ACN guidelines produced under his stewardship are testimony to this ability, culminating today in the release of the latest edition of *Guidelines for Melanoma,* which has already received international recognition as an evidence-based framework for a non-prescriptive but counter ad hoc approach to patient management.

But there is more to Tom than cancer guidelines and I would encourage everyone here to read his piece *Following Fortune's Path,*[1] which summarises his life experiences and how they molded his philosophy. The lesson here for young oncologists, that I can also endorse, is to keep one's options open and to grasp opportunities as they arise.

My association with COSA dates back to the late 1970s when the society was still in its formative first decade. The concept of a multi-disciplinary disease (rather than craft) focused society was truly visionary and I was privileged to work with two of the founding fathers and early presidents of COSA, Leicester Atkinson and Bob Melville. This was also the time when the Warramirri people consented to the use of the Marryalyan as the official emblem of COSA, symbolising as it does, the realisation of truth through discussion and argument. The gold Marryalyan that comes with the Tom Reeve Award is indeed very special in this context.

A fortunate life

I entitled my address "A Fortunate Life" (with apologies to AB Facey) because whatever I have achieved is the result of my good fortune in having a series of great opportunities come my way, being at the right place at the right time to take up those opportunities and having the support and encouragement of my parents and nuclear family to pursue them.

Opportunity 1: education and training

My first great opportunity, as the son of parents who had no educational opportunity, was to go to medical school in Queensland with the support of Commonwealth and State scholarships. During my time in medical school, I became fascinated with cancer and resolved to devote my career to its study. After graduation and internship, I embarked on specialty training in radiation oncology (in those days "radiotherapy") which was the only medical discipline devoted to cancer. My training at the then Queensland Radium Institute was influenced by inspirational teachers like Kevin Mead, Bruce Kynaston and Nobby Bourne who not only gave me a good clinical foundation for practice, but also encouraged my urge to do research.

Opportunity 2: fellowship to the Gray Laboratory

The visit to Queensland in 1971 by Dr Tikvah Alper, a research scientist from the Hammersmith Hospital, was the catalyst for my research career. Tikvah was a radiobiologist whose most notable, but largely unrecognised insight, stemmed from her studies of the radiation dose response of the agent responsible for propagation of the spongiform encephalopathy called "scrapie" in sheep. Using radiation target theory, she calculated that the infectious agent must be smaller than any known virus and therefore could not be nucleic acid based. This was long before prions were recognised or named.

In any event, I managed to convince Tikvah of my desire to pursue research and she undertook to arrange a fellowship for me at the Gray Laboratory at the Mt Vernon Hospital in Northwood, Middx, on the outskirts of London. The Gray Laboratory was named for Hal Gray and was perhaps the most famous radiobiology facility in the world at that time. This offer was particularly attractive to me as my trail-blazing forebear and role model from Queensland, Rod Withers, had gone to the Gray Lab 10 years earlier. My fellowship was funded by the then British Empire Cancer Campaign and although I received only a subsistence salary of £1800 per annum, it was perhaps the best career move I ever made.

My wife, Desley, and I arrived in London in February 1972 in the middle of a freezing winter compounded by the great coal miners' strike. I was assigned to work with Harold Hewitt, an experimental pathologist who had become famous by producing the world's first in vivo radiation cell survival curve for a murine leukaemia. However, his real interest was in transplantation biology and he gave me the project of investigating the mechanism whereby the transplantation of living tumour cells from one mouse to another was facilitated by a mixture of lethally irradiated cells. This proved to be an enormously challenging project with an intellectually satisfying outcome – the lethally irradiated cells acted as a thromboplastic nidus at the transplantation site. I still count the paper[2] that I wrote under Harold's guidance reporting these results as one of my best, and it attracted some international attention in the context of metastasis formation.

Harold Hewitt's influence on my scientific philosophy was great. A disciple of Karl Popper, he admonished me never to become so emotionally involved in an experiment as to be "disappointed" if the result disproved the underlying hypothesis, or worse, to try to force the data into being "consistent" with the hypothesis. After completing my fellowship with Harold, I spent another year with Jack Fowler on more classical radiobiology related to fractionation effects in normal tissues and tumours, a subject that would figure large in later years in my work with Rod Withers.

Opportunity 3: faculty position at M D Anderson

By 1976, it was obvious that I had educated myself out of a job in Australia if I wanted to pursue radiobiological research. I was extremely fortunate to receive the offer of a faculty position in the Department of Experimental Radiotherapy at M D Anderson Cancer Centre. The chairman of this department, Herman Suit, had just left to take up a new position at Harvard and Rod Withers was left in charge. He organised for me to have a 50/50 split of my time between the lab and the clinic, where I came to work with the legendary Gilbert Fletcher, one of the three founding fathers of American radiation oncology. My clinical responsibilities were circumscribed and focused on fast neutron therapy trials and the use of TBI in the conditioning regimen for bone marrow transplantation. I had argued on radiobiologic grounds that fractionated TBI would yield a better therapeutic ratio than the single dose normally used, and I implemented this regimen at M D Anderson, working with haematologist, Karl Dicke. On the fast neutron front, I worked with David Hussey on the Phase II trials that would ultimately lead to formal testing of fast neutron therapy in the 1980s. I also became involved with the head and neck service, which provided the direction for my future clinical specialisation in this area.

In the lab, I worked with Bill McBride and later Luka Milas on non-specific immunological factors affecting tumour transplantation and with Rod Withers and Howard Thames on analysis of the fractionation effects of radiation on normal and neoplastic tissues. This led to the discovery of a systematic difference in fractionation dependence between acutely reacting and late reacting tissues, and the later publication of one of our most highly cited papers[3] describing a new isoeffect formula for change in dose per fraction.

Opportunity 4: Head of Radiation Oncology at M D Anderson

In 1979, I returned to Australia to the Institute of Radiotherapy at the Prince of Wales Hospital (where I first became involved with COSA), but I had been there only two years when Gilbert Fletcher retired and I was approached by the search committee for his successor to be a candidate. My wife and I thought long and hard about this but finally decided to give it a go, and much

to our surprise, I was offered the position. In deciding to commit long-term to Houston, I was influenced not only by the fantastic research environment it provided, but also the chance to work in a clinical practice environment that to my mind, is the model for an integrated cancer centre; all the medical staff are full-time employees organised into disease and/or site specific multidisciplinary teams. There is a single practice plan for all the professional staff (medical and research), which means that there is no financial incentive for any group to recommend a particular plan or modality of treatment. The hospital is state-owned, but is autonomously governed with the proviso that it contracts to treat all Texans with cancer regardless of their ability to pay. This encouragement of entrepreneurship along with social responsibility works extremely well and has resulted in M D Anderson becoming one of the world's greatest cancer centres. It is certainly a model that has great appeal when compared to the bureaucratic constraints on growth that we face in the public hospital systems of Australia.

As head of radiation oncology, I had much less direct involvement in laboratory research than previously, but I did participate in a number of very productive collaborations with Bill Brock and Fady Geara (predictive assays of radiation response), and Luka Milas and Kathy Mason (integration of radiotherapy with chemotherapy and biologicals). On the clinical side, I was principal investigator on the Fast Neutron Therapy Phase III trials, which showed if anything, a worse therapeutic ratio than could be achieved with photons. (There is a lesson here for proponents of charged particle therapy.) I also continued work with Rod Withers and later Kian Ang on developing new radiobiologically-based fractionation schedules, which were subsequently exported to the Radiation Therapy Oncology Group for formal evaluation. My clinical focus was on head and neck cancer, where I worked closely with Helmuth Goepfert and Ki Hong on protocols aimed at organ preservation and strategies to avoid unnecessary or futile treatments. I was also involved with Charles Balch on a Phase II trial to investigate the use of hypofractionated radiotherapy as an adjuvant in high risk melanomas.

This intramural activity was complemented by my involvement at a number of levels in the National Cancer Institute and with various professional organisations, in particular the American Society for Therapeutic Radiology and Oncology and the American Board of Radiology (ABR), which has the responsibility for certifying the competence of American trained radiologists and radiation oncologists. Perhaps my most significant achievement on the ABR was to lead the push for time-limited certification with the requirement that all radiation oncologists should undergo re-certification every 10 years. As President-elect of the ABR, my obligatory resignation to take up my next major opportunity was my greatest regret in leaving the US.

Opportunity 5: Professor-Director of Radiation Oncology at Peter MacCallum Cancer Centre

The last great opportunity of my professional life came when, in 1994, I was offered the position of Professor-Director of Radiation Oncology at the Peter MacCallum Cancer Centre in Melbourne. Peter Mac was at that time in the throes of reformation under the leadership of its visionary CEO, Dr John Morris. Having succeeded in getting a new facility for Peter Mac built in East Melbourne, John set about recruiting academic leadership in cancer research and each of the clinical disciplines of oncology, with the support and encouragement of a vital board and philanthropic donor base. I arrived in 1995, just after Joe Sambrook, who had come to head the research division. Over the next few years, we were followed by John Zalcberg (medical oncology), Bob Thomas (surgical oncology) and Sanchia Aranda (nursing oncology). Another key early recruit was Rod Hicks, who set up Peter Mac's now world recognised metabolic imaging centre. I found to my delight that the existing medical staff at Peter Mac were enthusiastic about embracing a mode of practice broadly based on M D Anderson's with a research focus driving clinical excellence. Integrated multidisciplinary care, based on disease type/site units, was accepted as the mantra of Peter Mac. At the same time, the academic output of Peter Mac, measured in terms of grants, publications, initiation of clinical trials and number of trainees and graduate students, increased rapidly. This profile attracted support from industry for us to participate in the development of new technologies like PET and later PET/CT and IMRT, as well as to be involved in early stage trials of new drugs and biologicals.

Unfortunately, the halcyon days of the late 1990s were cut short by political winds of misfortune which saw Peter Mac lose its independence for several years, and then, without its visionary CEO, to be re-constituted as a much less entrepreneurial organisation. Under these circumstances, I stepped down as Professor-Director of Radiation Oncology in 2002, but stayed on the staff in a part-time clinical research capacity and also took on the challenge to set up a foundation to support the work of Peter Mac.

Outside of Peter Mac, since returning to Australia, I have been closely involved with the Faculty of Radiation Oncology of the Royal Australian and New Zealand College of Radiologists and have had the good fortune to work with two outstanding leaders, Liz Kenny and Roger Allison, who between them have done so much to improve the quality of radiation oncology services and professional competence in Australia.

I have also had the great pleasure of seeing the Trans Tasman Radiation Oncology Group (TROG) blossom into a world class clinical trials organisation under the leadership first of Jim Denham, then David Ball (in whose tenure as President a fully funded trials headquarters was established), and most recently Bryan Burmeister. The success of TROG and the high level of participation of Australian and New Zealand radiation oncologists in clinical research bode well for the future of our discipline as one pillar of coordinated cancer care.

Closing remarks

There is no question that the quality of cancer services in Australia has improved significantly over the past two decades; and this improvement is now evident as a measurable decrease in cancer mortality. While

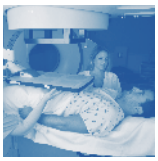
a commitment to research is essential to continuing this improvement, we should never under-estimate the value of doing well what we already know how to do. This is nicely exemplified by the results of a recent international trial, "HeadSTART", on which I was co-PI with Danny Rischin. The trial was designed to test the value of adding an hypoxic cell cytotoxin to standard cisplatin based chemoradiotherapy for advanced head and neck cancer. The results of the trial however, showed that any improvement attributable to the new drug was overwhelmed by the effect of protocol deviations in radiation therapy planning and execution – patients treated according to protocol had a disease-free survival nearly double that of patients with unacceptable deviations.

The importance of doing well what we already know is a very fitting way to end this address, reinforcing as it does, the critical role of cancer treatment guidelines and the contribution of Tom Reeve to their development.

Last and most importantly, I want to thank those who nominated me for this award and to acknowledge the love, support and encouragement I have received from my wife and daughters, Kirstie and Lexi, throughout my career. Without them, there would be no meaning to a successful professional life.

References

1. Reeve T. Following Fortune's Path. Medical Journal of Australia.181:615-619, 2004.
2. Peters LJ, Hewitt HB. The Influence of Fibrin Formation on the Transplantability of Murine Tumour Cells: Implications for Mechanism of the Revesz Effect. British Journal of Cancer 29:279-291, 1974.
3. Withers HR, Thames Jr. HD, Peters LJ. A New Isoeffect Curve for Change in Dose Per Fraction. Radiotherapy & Oncology. 1:187-191, 1983.



REPORTS

SUPPORT FOR RESEARCH 2009

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

In 2009, the value of these grants is over $47 million.

Please note: for research grants spanning more than one year, only funds to be dispersed in 2009 have been included.

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

International Program Development Fund

L Trevena, R Isaac, M Finkel, I Olver University of Sydney	Building a cancer prevention partnership for women in Tamil Nadu, India – linking the Faculty of Medicine University of Sydney, Weill Cornell Medical College (USA), Cancer Council Australia and Christian Medical College Vellore, India	$55,000

Cancer Australia Priority Driven Collaborative Cancer Research Grant

Olver I, Butow P, Luckett T, Grimison P, Toner G, King M, Stubbs J.	Understanding the psychosocial sequelae of surviving testicular cancer.	$130,150
TOTAL RESEARCH FUNDED		**$285,150**

CANCER COUNCIL ACT

Research grants

A Fahrer The Australian National University	Understanding the role of Kleisin beta, a subunit of the condensin II complex, in T cell differentiation	$50,000
TOTAL RESEARCH FUNDED		**$50,000**

CANCER COUNCIL NSW

New research project grants

L Ashman University of Newcastle	Tetraspanin proteins in prostate cancer progression and prognosis	$109,000
M Bebawy University of Sydney	Microparticle-mediated transfer of P-glycoprotein in conferring multidrug resistance in cancer	$107,375
J Byrne University of Sydney	The molecular basis of cell transformation produced by TPD52 overexpression	$88,750
S Chen Westmead Hospital	Randomised trial of diagnostic strategies for invasive aspergillosis in at-risk haematology patients: funding extension	$65,875
R Daly Garvan Institute of Medical Research	Tyrosine kinase profiling of human basal breast cancers	$113,250

M Fabbro University of Sydney	Dynamin inhibitors as new anti-cancer drugs	$112,500
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	$28,778
D Gottlieb University of Sydney	Adoptive immunotherapy for the prevention of Varicella-zoster virus reactivation post stem cell transplant	$98,750
N Haass Centenary Institute	The role of melanoma stem cells in melanomagenesis	$39,000
D Hart University of Queensland	RNA loading of tumour associated antigens and the activation of blood dendritic cells for prostate cancer immunotherapy	$33,050
A Haydon Monash University	SCOT – Short Course Oncology Therapy. A study of adjuvant chemotherapy in colorectal cancer	$33,308
C Jolly University of Sydney	Understanding AID-induced cancer: Unravelling complex mutation and repair pathways	$114,000
T Leong University of Sydney	Randomised Phase II/III study of preoperative chemoradiotherapy versus chemotherapy for resectable gastric cancer	$6,160
K McDonald University of Sydney	The role of IQGAP1 in actively migrating glioma cells and its regulation by miR-124	$113,750
M Murray University of Sydney	Development of personalised dosage protocols for tyrosine kinase inhibitiors in oncology patients	$93,550
M Naylor Garvan Institute of Medical Research	Role of beta1 integrin in prostate development and carcinogenesis	$114,000
G O'Neill University of Sydney	The signalling switch function of the pro-metastatic, adhesion adaptor protein HEF1	$114,000
M Poulsen Princess Alexandra Hospital	Phase II efficacy study of chemo-radiotherapy in PET staged II-III merkel cell carcinoma of the skin	$10,278
S Tangye Garvan Institute of Medical Research	EBV-specific CD8+ Tcells in anti-tumour immune responses in patients predisposed to developing lymphoma	$94,000
M Williams University of Wollongong	A dosimetric Inter-Comparison of Australian Radiotherapy IMRT Systems (ICARIS)	$113,875
J Young University of Sydney	Quality of life outcomes and cost effectiveness of pelvic exenteration for people with advanced rectal cancer	$21,392
Zu Dong Zhang (Avery-Kiejda) University of Newcastle	Targeting p53 isoforms, 40p53 and p53ß, to promote chemo-sensitivity in human melanoma	$38,000
Total new research project grants		**$1,662,641**

Continuing research project grants

M Apte University of NSW	Desmoplasia in pancreatic cancer: role of pancreatic stellate cells in cancer progression	$100,000
B Armstrong University of Sydney	Relationships between prostate specific antigen, sun exposure and vitamin D	$74,220
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
M Boyer University of Sydney	A Randomised, Phase III trial of adding nitroglycerin to first line chemotherapy in advanced non-small cell lung cancer	$98,350
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	$83,274
M Friedlander University of NSW	Intraperitoneal chemotherapy with Paclitaxel and Cisplatin after optimal debulking surgery for ovarian cancer	$39,400

A Kneebone University of Newcastle	A Phase III trial comparing adjuvant versus salvage radiotherapy for high risk patients post radical prostatectomy	$79,000
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	$98,150
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	$100,000
A Swarbrick Garvan Institute of Medical Research	Defining the role for Id1 in breast cancer metastasis	$117,750
L Trevena University of Sydney	A randomised trial of a web-based toolkit for applying evidence in the general practice cervical cancer prevention visit	$93,500
N Verrills University of Newcastle	PP2A: a novel target for leukaemia therapy	$100,000
R Ankeny University of Sydney	Toward a best practice of emerging technologies: PGD and HLA typing for paediatric transplantation	$90,853
T Becker University of Sydney	The tumour suppressor p16INK4a binds the chromatin remodelling factor BRG1 to regulate the cell cycle and senescence	$77,250
R Daly Garvan Institute of Medical Research	A new role for cortactin in head and neck cancer.	$98,750
A deFazio University of Sydney	Chemo-sensitising pathways in ovarian cancer	$99,700
D Goldstein University of Sydney	Adjuvant chemotherapies in resectable pancreatic cancer	$35,965
D Gottlieb University of Sydney	A programme of clinical adoptive immunotherapy for treatment of Cytomegalovirus in stem cell transplant patients.	$99,250
P Greer University of Newcastle	High precision MRI based prostate radiotherapy	$107,250
C Jordens University of Sydney	A qualitative study of the experience of multiple myeloma	$98,063
M Kangas Macquarie University	Treatment of anxiety and depression in head and neck cancer patients	$98,375
J G Lyons University of Sydney	Regulation of keratinocyte differentiation by Snail.	$82,250
K MacKenzie University of NSW	The role of p16INK4a repression in telomere-driven karyotypic evolution and malignant progression	$97,250
C Ormandy Garvan Institute of Medical Research	Does expression of the ets transcription factor Elf5 limit tumour progression?	$99,020
H Rizos University of Sydney	The melanoma-associated ARF tumour suppressor modulates cell proliferation and apoptosis via target protein sumoylation	$82,250
K Scott University of NSW	Secreted phospholipase A2 in prostate cancer	$100,000
D Sze University of Sydney	Characterisation of cancer stem cells in myeloma leading to novel anti-tumour drug development	$91,750
O Ung University of Sydney	SNAC2: A randomised trial of extending sentinel node based management to women with larger or multifocal breast cancers	$97,706
R Ward University of NSW	Methylation in sporadic colorectal cancer extends over a large chromosomal region	$86,250
Total continuing research project grants		**$3,304,076**

Continuing research program grants

P Hogg University of NSW	New arsenical-based cancer drugs	$369,496
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		**$1,169,496**

Strategic research partnership grants

A Biankin Garvan Institute of Medical Research	NSW Pancreatic Cancer Network	$250,000
B Meiser University of NSW	Psychosocial impact of hereditary cancer and the development and evaluation of effective patient education and decision support strategies	$250,267
R Ward University of NSW	The Colorectal Cancer Research Consortium: a model for the integration of biomedical research into patient care	$301,170
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	$249,998
D Whiteman Queensland Institute of Medical Research	PROBE-NET: Progression of Barrett's Esophagus to Cancer Network	$273,519
Total strategic research partnership grants		**$1,574,954**

New innovator grants in pancreatic cancer

Prof Des Richardson	Development of novel and potent anti-tumour agents for the treatment of pancreatic cancer	$100,000
Dr Aiqun Xue	Discovery of prognostic serum biomarkers for pancreatic cancer	$87,100
Total new innovator grants		**$187,100**

Other research programs

Cancer Trials NSW	$1,420,115
Cancer Epidemiology Research Unit	$2,839,000
Centre for Health Research & Psycho-Oncology	$675,000
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
Evaluation of the Cancer Council NSW telephone support groups	$7,667
GPs and Vitamin D deficiency: A survey of knowledge, attitudes and practices	$12,307
Evaluation of Cancer Council Connect	$2,010
Action research for tackling tobacco in community based social services	$27,540
Satisfaction survey evaluation of the Cancer Council Helpline and Call Back service	$20,000
Mapping relative transport disadvantage among people affected by cancer in NSW	$3,000
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	$100,000
STREP Grants Stage 3 consultation for research procurement in pancreatic cancer	$50,000

Evaluation of parental knowledge, attitudes and perceptions about fruit and vegetables	$90,000
Nature and extent of sports sponsorship in children's sporting clubs and opportunities for policy intervention	$25,000
Effects of food marketing on children and parents	$25,000
Youthblock evaluation for Tackling Tobacco Program	$30,000
AHMRC 'Breathe' Project randomised trial	$50,000
Total other research programs and commissioned research	**$5,748,151**
TOTAL RESEARCH FUNDED	**$13,646,418**

CANCER COUNCIL QLD

Research grants

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	$82,000
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	$66,750
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
2008-2009		
N Morrison Griffith University	Lentiviral knockdown of chemokines to target bone metastasis	$46,550
M McGuckin Mater Medical Research Institute	Mucin deficiency and the development of intestinal cancers	$80,000
K Radford Mater Medical Research Institute	A novel strategy for the discovery and validation of the new targets for leukaemia immunotherapy	$80,000
D Munster Mater Medical Research Institute	Human dendritic cell targeted GVHD therapy in a preclinical mouse model	$80,000
R Neale Queensland Institute of Medical Research	Understanding curtaneous papilloma virus infections and their association with squamous cell carcinoma of the skin	$80,000
R Khanna Queensland Institute of Medical Research	Therapeutic lymphoma-specific vaccination for immunocompromised individuals	$79,750
P Webb Queensland Institute of Medical Research	The insulin-like growth factor system, lifestyle and risk and prognosis of ovarian cancer	$80,000
D Nancarrow Queensland Institute of Medical Research	The genetic basis for progression and prognosis of adenocarcinoma of the oesophagus	$80,000
J Young Queensland Institute of Medical Research	The relationship between serrated pathway colorectal cancer and hyperplastic polyposis syndrome	$80,000
A Boyd Queensland Institute of Medical Research	The role of EphA receptor tyrosine kinases in colorectal cancer	$80,000
A Spurdle Queensland Institute of Medical Research	Characterisation of population-based endometrial cancer families: redefinition of familial cancer syndromes	$80,000
M Lavin Queensland Institute of Medical Research	Protection against spontaneous and radiation-induced intestinal cancer by the novel antioxidant CTMIO	$80,000
A Perkins University of Queensland	Kruppel-like factors in cell cycle control and cancer	$80,000
M Roberts University of Queensland	Assessment of topically treated non melanoma skin cancers by sequential optical biopsies using multiphoton microscopy	$80,000
M Francois University of Queensland	Investigating the interplay between VEGF-C/-D and SOX18 in the initiation of lymphangiogenesis	$80,000
B Gabrielli University of Queensland	Histone Deacetylase Inhibitors can inhibit tumour growth via induction of an anti-tumour immune response	$80,000
KN Zhao University of Queensland	Codon modifications redirect expression of HPV 16 E7 oncogene and human oncosuppressor genes (p53 & Rb) in keratinocytes	$80,000
B Murdoch University of Queensland	The impact of treatment for major forms of childhood cancer on language function	$80,000
N McMillan University of Queensland	RNA interference to boost immune responses against cancer	$80,000
A Smith University of Queensland	Investigating the role of NR4A nuclear receptors in melancocyte function and malignancy	$80,000
T Gonda University of Queensland	The role of the MYB oncogene in mammary carcinogenesis	$80,000
M Lavin University of Queensland	ATM-dependent phyophorylation of Rad50 mediates the DNA damage response	$80,000

M Sweet University of Queensland	Profiling the pro- and anti-inflammatory functions of histone deacetylases in macrophages	$80,000
B Gabrielli University of Queensland	Is the heterochomatin checkpoint a useful anti-cancer drug target?	$80,000
A Davidson University of Sydney	A randomised, Phase III trial of adding nitroglycernin to first line chemotherapy in advanced non-small cell lung cancer	$10,000
2008-2010		
K Khanna Queensland Institute of Medical Research	Cep55 overexpression a potential mechanism for tumorigenesis	$55,813
2007-2009		
G Hill Queensland Institute of Medical Research	Rationalising anti-TNF therapy in transplantation	$91,922
Total research grants		**$3,665,710**

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	$110,503
M Kimlin	Queensland University of Technology	$127,417
J Young	Queensland Institute of Medical Research	$117,269
JP Levesque	Mater Medical Research Institute	$120,653
G Kay	Queensland Institute of Medical Research	$127,417
Senior clinical research fellowship		
K Fong	Prince Charles Hospital	$159,728
John McCaffrey Fellowship in Cancer Control		
S Harrison	James Cook University	$24,066
Fellowships total		**$787,053**

PhD scholarships

2009-2011		
PT Nguyen	University of Queensland	$25,500
A Bain	Queensland Institute of Medical Research	$23,500
2009-2010		
B Riddle	University of Queensland	$23,500
2008-2010		
L Thorstholm	University of Queensland	$25,500
K Cato	University of Queensland	$23,500
2007-2009		
J Johnson	Queensland Institute of Medical Research	$25,500
M Kvaskoff	University of Queensland	$11,756
PhD scholarship program total		**$158,756**

Other grants

Travel grants and speaker grant-in-aids	$85,000
Australian paediatric cancer registry	$95,000
Other grants total	**$180,000**

Clinical trial data manager grants

Holy Spirit Northside Private Hospital	
Gold Coast Hospital	
Greenslopes Private 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	**$936,320**

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	**$3,300,000**
TOTAL RESEARCH FUNDED	**$9,277,839**

CANCER COUNCIL SA

Research grants

A Lopez, H Ramshaw, C Mullighan Institute of Medical and Veterinary Science	Eradicating the leukaemic stem cell with a specific therapy	$89,750
S Kumar, D Cakouros Hanson Institute, Institute of Medical and Veterinary Science	Controlling gene expression in normal and cancer cells	$101,500
G Jamieson, P Drew, E Smith, P Devitt, J Kelly, JF Liu The University of Adelaide	Improving diagnosis and treatment of reflux and cancer of the oesophagus by studying changes in microRNAs.	$72,250
R D'Andrea, A Brown, I Lewis, C Mullighan, P Bardy Institute of Medical and Veterinary Science	Klf5 function in acute myeloid leukaemia	$98,188
S Pitson Institute of Medical and Veterinary Science	Regulation and roles of sphingosine kinase 2	$89,750
A Zannettino, T Hughes, A Evdokiou Institute of Medical and Veterinary Science	Can kinase inhibitors be used to inhabit cancer-associated bone loss?	$93,000
Y Hu, G Young, G Margison, R LeLeu Flinders University	Use of dietary factors to prevent damage to genes important for bowel cancer	$72,250
G Saccone, A Blackshaw, J Davison, J Toouli Flinders Medical Centre	Pancreatic spinal afferents	$101,500
D Callen, A Braithwaite The University of Adelaide	Novel approaches to selectively revert cancer cells to a normal state.	$101,500
H Scott, R D'Andrea, G Suthers, P Bardy, T Hughes, I Lewis, C Mullighan, C Hahn Institute of Medical and Veterinary Science	Familial blood cancers	$101,500
P Reynolds, M Holmes The University of Adelaide	Virus and immune therapy for mesothelioma	$89,750
A Cummins, I Roberts-Thomson, J Hardingham The Queen Elizabeth Hospital	Intestinal stem cells	$101,000
G Goodall, G Farshid Hanson Institute, Institute of Medical and Veterinary Science	The role of microRNAs in breast cancer metastasis	$101,526
J Hardingham, T Chataway, P Hewett, T Price The Queen Elizabeth Hospital	A new prognostic multi-marker assay for early stage bowel cancer	$89,750
P Skyes, R Ormsby, W Tilley Flinders University	The reduction of prostate cancer using whole body low dose radiation	$72,250
M Lardelli The University of Adelaide	Investigating the role of the centrally important PSEN1 gene in cancer	$75,000
Total research grants		**$1,450,464**

Senior research fellowships

L Butler	Dame Roma Mitchell Cancer Research Laboratories, Adelaide University Hanson Institute	$98,000
Y Khew-Goodall	Institute of Medical and Veterinary Science, Hanson Institute	$98,000
Total senior research fellowships*		**$196,000**

Research fellowships

N Moore	Dame Roma Mitchell Cancer Research Laboratories, Adelaide University Hanson Institute	$87,000
A Brown	Child Health Research Institute	$87,000
R Gibson	Royal Adelaide Hospital	$87,000
Total research fellowships*		**$261,000**

W Bruce Hall cancer research fellowship

T Bianco-Miotto	Dame Roma Mitchell Cancer Research Laboratories, Adelaide University Hanson Institute	$97,000
Total		**$97,000**

Other research programs

Chair in Cancer Behavioural Research**	$287,409
Chair in Cancer Medicine**	$324,514
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	**$935,344**
TOTAL RESEARCH FUNDED	**$2,939,808**

Research administered by CCSA

Peter Nelson Leukaemia Research Fellowship (commenced April 2008)

H Ramshaw	IMVS Hanson Institute	$100,000

**Budgeted figures based on 1 FTE*
***Academic positions*

CANCER COUNCIL TASMANIA

Research grants

J Dickinson Menzies Research Institute	Elucidation of the role of the integrin alpha 2 gene (ITGA2) in prostate cancer	$45,600
G Woods Menzies Research Institute	Influence of vitamin D and gender on UVB-induced DNA damage, immunoregulation and development of melanoma	$54,400
J Dickinson Menzies Research Institute	The Cancer Council's Tasmanian research fellow - 1st dedicated cancer research position based at the Menzies Research Institute	$115,000

Funded by David Collins Leukaemia Foundation (DCLF)

J Dickinson Menzies Research Institute	Investigating the genetics of familial haematological cancers in Tasmania	$29,132
A Holloway Menzies Research Institute	Investigating novel targets of the RUNX1 transcription factor	$10,000

Other

To be announced	Jeanne Foster scholarships	$5,000
To be announced	Athena Karydis Foniadakis scholarship	$5,000
To be announced	Cancer Council Tasmania scholarship	$10,000
Launceston General Hospital and Royal Hobart Hospital	Clinical trials data managers	$54,500
To be announced	Small grants for new researchers in cancer	$25,000
TOTAL	**FUNDED BY DAVID COLLINS LEUKAEMIA FOUNDATION**	**$39,132**
TOTAL	**FUNDED BY CANCER COUNCIL TASMANIA**	**$314,500**

CANCER COUNCIL VIC

Fellowships

Carden fellowship

D Metcalf Walter and Eliza Hall Institute of Medical Research	Regulatory control of normal and leukaemic cells	$220,000

Colebatch fellowship

K Phillips (on leave of absence for most of 2009) Peter MacCallum Cancer Centre	Reducing the burden of breast cancer	$36,125

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	$35,000 (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		**$510,625**

Research grants-in-aid

D Bowtell, A Möller Peter MacCallum Cancer Centre	Hypoxia signalling in the tumour microenvironment	$99,000
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
L Ebert, W Chen, J Cebon Ludwig Institute for Cancer Research	FoxP3 expression outside the T cell lineage: role in cancer and immune privilege	$79,750
M Hinds, C Day Walter & Eliza Hall Institute of Medical Research	Structure and interactions of apoptosis regulators	$100,000
P Kaur Peter MacCallum Cancer Centre	Biological characterisation of pericytes in cancer and as mesenchymal stem cells	$100,000
JP Liu Monash University	Investigating the control mechanisms of telomere maintenance in cancer: a new interaction between telomerase and GAPDH	$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
J Price, K Hunter, J Wilce Monash University	Role of heat schock factor-1 in breast cancer metastasis	$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	$99,750
G Risbridger Monash University	Defining the relationships between estrogens, prostatitis and prostate cancer	$100,000
C Slape, D Curtis, S Jane Melbourne Health	Molecular analysis of myelodysplasia in the Nup98HoxD13 mouse model	$100,000

E Thompson, P Choong, P Hill, M Henderson, K Pantel University of Melbourne	Epithelial – mesenchymal interconversions in the breast cancer metastatic cascade	$94,700
M Wright Monash University	The role of tetraspanins in adaptive cellular immunity	$96,093
Total new research grants-in-aid		**$1,468,293**

Continuing research project grants-in-aid

Y Antill, I Winship, M Jenkins Peter MacCallum Cancer Centre	Studies into gynaecological cancers associated with the syndrome: hereditary nonpolyposis colon cancer	$60,400
L Bach, G Rice Monash University	Insulin-like growth factor (IGF)-dependent and -independent actions of IGF binding protein-6	$70,000
O Bernard St Vincent's Institute of Medical Research	The role of LIM kinase 2 (LIMK2) in cancer metastasis	$93,500
P Bouillet, G Belz Walter and Eliza Hall Institute	Mouse models to study the function of the BH3-only members of the Bcl-2 family	$100,000
C Christophi, P Angus, V Muralidharan The University of Melbourne	The renin angiotensin system and colorectal liver metastases	$66,875
P Darcy, M Kershaw, J Trapani Peter MacCallum Cancer Centre	Immunotherapy of Lewis Y+ malignancy using genetically engineered T cells	$70,000
W Fairlie, D Huang Walter and Eliza Hall Institute	Understanding apoptosis through selective targeting of pro-survival proteins	$70,000
C Gargett Monash University	Identifying markers of stem/progenitor cells in normal and malignant endometrium	$93,500
P Humbert Peter MacCallum Cancer Centre	The role of scribble in mammalian tumour development	$68,652
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
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
E Nice, P Gibbs, L Lipton Ludwig Institute for Cancer Research	Development of validated biomarker assays for the early detection and surveillance of colon cancer	$70,000
R Pearson Peter MacCallum Cancer Centre	Mechanisms of AKT3 driven malignant transformation	$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
S Russell, H Richardson Peter MacCallum Cancer Centre	A new role for polarity proteins in leukemia/lymphoma	$70,000
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
M Smyth Peter MacCallum Cancer Centre	Combined chemo-immunotherapies that eradicate established tumors	$100,000
D Thomas, P Simmons Peter MacCallum Cancer Centre	Role of WIF1 in bone development and oncogenesis	$70,000
P Thompson, B Vogelstein Monash University biology approach	Towards selective inhibition of oncogenic forms of PI3K – a chemical	$66,750
N Wetzig (Qld), G Gill (SA), O Ung (NSW), J Collins (Vic), D Oliver (WA) Royal Melbourne Hospital	SNAC2: A randomised trial of extending sentinel node based management to women with larger or multifocal breast cancers	$30,000

L Wu Walter and Eliza Hall Institute	Development and functional analysis of human dendritic cell subsets	$70,000
H Xu, M McKay Peter MacCallum Cancer Centre	Cohesin-mediated modulation of mammalian radiosensitivity	$100,000
Total continuing reseach grants-in-aid		**$1,858,923**

Venture grants

$721,000

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

Total venture grants		**$721,000**

Postdoctoral research fellowships

K Baran	Peter MacCallum Cancer Centre	$32,875
J Dudakov	Monash University	$64,750
I Majewski	Walter and Eliza Hall Institute of Medical Research	$32,875
E Naik	Walter and Eliza Hall Institute of Medical Research	$64,750
Two fellowships to be appointed mid-year		$66,250
Total postdoctoral research fellowships		**$261,500**

Postgraduate research scholarships

S Amos	Peter MacCallum Cancer Centre	$5,993
M Anaka	Ludwig Institute for Cancer Research	$23,150
I Elsum	Peter MacCallum Cancer Centre	$23,558
Y Jayasinghe	Murdoch children's Research Institute	$28,760
D Kethesparan	Monash University	$23,558
S Lee	Ludwig Institute for Cancer Research	$28,760
M Ramakrishna	Peter MacCallum Cancer Centre	$23,150
W Rozen	University of Melbourne	$10,112
N Thomas	Monash University	$9,989
C Wong	Peter MacCallum Cancer Centre	$23,150
K Alsop	Peter MacCallum Cancer Centre	$28,067
S Hakim	Monash University	$28,067
E Valente	WEHI	$28,067
M Christie	Ludwig Institute for Cancer Research	$37,003
Total postgraduate research scholarships		**$321,384**

Other

25 summer Vacation Studentships were awarded	$35,850
Support for medical and scientific activities	$292,000
Total other	**$327,850**

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 20 hospital cancer clinics to assist clinicians to enrol patients in clinical trials. $1,419,000

Cancer control research

Cancer Epidemiology Centre	$2,917,000
Victorian Cancer Registry	$2,739,000
The Melbourne Collaborative Cohort Study (Health 2020)	$2,248,000
Centre for Behavioural Research in Cancer	$2,672,000
Knowledge Building (Tobacco Control Unit)	$1,049,000
Total cancer control research programs	**$11,625,000**
TOTAL RESEARCH FUNDED	**$18,513,575**

THE CANCER COUNCIL WA

Research grants

W Greene Murdoch University	The role of the retinoic acid-synthesizing enzymes aldehyde dehydrogenase (ALDH) 1A1 and 1A2 in T-cell acute lymphoblastic leukaemia	$140,000
D Trinder University of Western Australia	The role of iron and HFE in the pathogenesis of colorectal cancer	$140,000
M Ebert University of Western Australia	Bystander signal dynamics in tumour tissue during radiotherapy – simulation models for cellular-level signal propagation	$129,500
L Abraham University of Western Australia	Mechanism of action of novel thalidomide derivates against lymphocyte associated tumour cells	$70,000
D Nelson Curtin University	Modifying the mesothelioma tumour microenvironment: preparing for immune attack	$70,000
M Ziman Edith Cowan University	Quantification and characterisation of circulating cutaneous malignant melanoma cells	$70,000
A Dharmarajan University of Western Australia	A new angiogenesis inhibitor: sFRP-4 and the role of wnt signalling	$58,230
Total research grants		**$677,730**

Edward and Patricia Usher vacation research scholarships

L Bennett Edith Cowan University	Maternal coffee consumption during pregnancy and the risk of childhood acute lymphoblastic leukaemia (ALL) in offspring	$3,000
W Cundawan University of Western Australia	Inhibition of osteoclastogenesis via CYLD/p62 signaling pathway by proteasome inhibitors in multiple myeloma	$3,000
F Go University of Western Australia	Developing spontaneous ependymoma mouse tumour models	$3,000
S Koulikov University of Western Australia	Molecular diffusion and percolation in tissues	$3,000
A Ng University of Western Australia	Expression of kallikreins, kininogens and kinin receptors in human mesothelioma cells	$3,000
M Oke University of Western Australia	The kinetics and mechanism of formation of Pt-DNA adducts by a novel dinuclear platinum complex using advanced NMR methods	$3,000
Total vacation research scholarship		**$18,000**

Early career investigator grants, second round 2008

L Breen Edith Cowan University	Grief and Loss Counselling for people affected by cancer in Western Australia: Towards best practice	$21,664
S Stewart University of Western Australia	Biological Evaluation of the Active Constituents of *Antrodia Camphorata*	$24,684

J Hamzah WAIMR	Intratumoral targeting of IFN to pre-condition solid tumours for effective immunotherapy	$25,000
M Karimi University of Western Australia	Transcriptional control of CR2/CD21 by CBF1 and E2A and its significance to B cell differentiation and the development of B cell lymphoma	$25,000

Early career investigator grants

K Einarsdottir University of Western Australia	Cancer in the adolescent and young adult population: incidence, survival and patterns of care in Western Australia from 1981-2007	$24,860
S Jamieson University of Western Australia	Characterisation of the role of epigenetics in testicular dysgenesis syndrome	$24,600
T Reibel University of Western Australia	HPV and cervical cancer: knowledge and attitudes affecting uptake of HPV vaccination for aboriginal females aged 13-26 years	$21,041
A Sherwood University of Western Australia	Identification and molecular characterisation of novel CD4 suppressor cells that limit anti-tumour immunotherapy	$24,948
Total early career investigator grants		**$191,797**

Cancer Council research fellowship

E Ingley	WA Institute for Medical Research/UWA	$400,000
B Callus	WA Institute for Medical Research	$320,000
Total		**$720,000**

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	$260,000
Total professorial chairs		**$500,000**

Other research grants

Bone Tumour Registry		$30,000
Travel grants		$15,000
Crawford Rural Cancer Research Initiative		$450,000
Total other research grants		**$495,000**
TOTAL RESEARCH FUNDED		**$2,602,527**

CLINICAL ONCOLOGICAL SOCIETY OF AUSTRALIA 35TH ANNUAL SCIENTIFIC MEETING

INFORMATION IN, INFORMATION OUT

The truly multidisciplinary nature of the 2008 Clinical Oncological Society of Australia's (COSA) Annual Scientific Meeting reflected the level of maturity of our organisation and the fulfillment of its aim in bringing together cancer care providers from all disciplines to share information and experiences towards improving patient care.

Our partnerships with the International Association of Cancer Registries (IACR) and the Australia and New Zealand Gastrooesophageal Surgical Association (ANZGOSA), provided fruitful interaction and allowed high quality international and national guests to contribute to robust discussion. In the plenary sessions, a range of speakers covering epidemiology, clinical sciences, supportive care and psycho-oncology represented the wholistic approach to cancer care. The breakout sessions featured excellent input from our guest speakers, as well as high quality proffered papers.

Several innovations were enthusiastically embraced by participants, including the oral poster discussion sessions located alongside the poster displays; the presentation of the Tom Reeve award - congratulations again to Lester Peters - at the fabulous conference dinner (great band!); the "What constitutes a cancer centre" panel discussion and the "Hot Topic" debate on "Who owns our genes", which was a very stimulating way to end our meeting. Most gratifying was seeing the sessions filled by members of each and every COSA group sitting alongside one another, rather than each group running their own 'mini-meeting'.

Congratulations to those who won our 'Best of the Best' oral and poster awards:

Oral presentations*

Yu Yang Soon – Clinical sciences
Duration of chemotherapy for advanced non-small cell lung cancer: a systematic review and meta-analysis of randomised trials.
Abstract #086

Elgene Lim – Translational science
Investigation of stem and progenitor subpopulations in human breast tissue from BRCA1 and BRCA2 carriers.
Abstract #124

Kerrie Clover – Supportive care
QUICA-TOUCH: The first 12 months of screening for distress, pain and psychopathology.
Abstract #134

Sara Beckett – Data trials guidelines
Investigating early childhood immunisations within an Australian case control study of childhood acute lymphoblastic leukaemia.
Abstract #228

Poster presentations*

Jordana McLoone
Skin cancer screening practices among individuals with a strong family history of malignant melanoma: Prevalence and predictors.
Abstract #337

Victoria White
What impact have National Treatment Recommendations had on the management of ductal carcinoma in situ of the breast?
Abstract #359

Carole Harris
Prospective study of vitamin D levels in Sydney patients with a new diagnosis of breast cancer in 2008.
Abstract #389

Nimit Singhal
Geriatric Oncology Program at Royal Adelaide Hospital – analysis of first 50 patients.
Abstract #412

David Speakman
The implications of changing from film to digital mammography for different patient groups.
Abstract #415

Lindy Masya
An interactive computer based decision aid (Annalisa©) balancing evidence and outcome preferences to determine treatment options in rectal cancer.
Abstract #460

Heather Shepherd
Involving patients in reaching treatment decisions motivations, consequences and effects on decision responsibility.
Abstract #470

Teresa Simpson
The impact of cognitive and behavioural sequelae in patients with primary brain tumour on family members.
Abstract #471

Jamie Clarey
Eligibility of Stage IIIB/IV non-small cell lung cancer patients for targeted therapy clinical trials.
Abstract #493

Steven Tipper
Translating information into knowledge and practice: A critique of a novel cancer prevention intervention.
Abstract #520

** For all 'Best of the Best' oral and poster award abstracts, please contact COSA*

Thank you to all participants, including our consumer representatives, and to the 2008 convening committee for all your hard work. Special thanks to Margaret McJannett, without whom the meeting would not be possible. We appreciate your diligence in completing the feedback form, and your comments will be used towards a truly excellent Annual Scientific Meeting in 2009 – don't miss it – see you there (looking a lot less frazzled)!

Eva Segelov
Convenor

AUSTRALIAN BEHAVIOURAL RESEARCH IN CANCER

Behavioural Research and Evaluation (BREU), South Australia

Support for smoke-free hospitality venues in South Australia

On 1 November 2007, a complete ban on smoking was implemented inside all South Australian hospitality venues following a three year phase-in period. Separate surveys were conducted at two time points (during the final phase-in period in early 2007 and four to five months post-legislation in early 2008) to assess community support, attitudes and opinions of licensed venue managers regarding the changes and the impact of legislation and legislation compliance. Overall, community support for the legislation significantly increased; the most common reason for approval was the harmful effects of passive smoking. Results also indicated that the number of individuals who were likely to quit in response to the ban significantly increased to almost 30% in 2008. Awareness, support and compliance among venue managers was high, with a significant increase in approval of the legislation to 86% in 2008. Nearly one third of venue managers highlighted that their staff were still exposed to smoke in outdoor areas as part of their jobs.

Cancer risk factors in South Australia

In 2007, BREU released a report from a state-wide, face-to-face survey of 2507 South Australians tracking knowledge and prevalence of risk factors for cancer. Results indicated the community perceived family history, pollution and pesticides on food as more important risk factors for developing cancer than modifiable lifestyle behaviours such as fruit and vegetable intake, body weight, physical activity and alcohol consumption. The majority of South Australians did not meet dietary recommendations nor recommended levels of physical activity for cancer prevention, and less than half of South Australians reported checking their skin for suspicious spots that may be skin cancer. A small but statistically significant increase in the proportion of overweight or obese South Australians from 2001 to 2007 was observed. The survey highlights the need to invest more resources to increase awareness and encourage healthy behaviours through the creation of healthy environments and infrastructure to facilitate, support and sustain such change in the community.

SMS trials to attract young smokers to the Quitline

In 2007, text messaging by mobile phone (SMS) was introduced as an option for contacting the South Australian Quitline. Evaluation results indicated that an SMS option at the conclusion of television commercials motivated a large group of young smokers to initiate contact with the Quitline. SMS respondents were significantly younger than callers to the Quitline and included a large proportion of smokers living in areas of most disadvantage. Results from a second trial in 2008 were very similar to 2007 in terms of age, area of disadvantage and general periods of responses, however the results suggested programming genre affected responses. Also, during periods of advertising without SMS contact options, young respondents appeared to stop contacting the Quitline, supporting the utilisation of SMS as a viable option for initiating contact with young smokers. Quit attempts and rates will be assessed at a six month follow-up of respondents and will be reported in mid-2009.

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

Colorectal Cancer and Quality of Life study

Colorectal cancer is the second most common invasive cancer in Australia, with over 12,000 new cases diagnosed each year. Over 60% will survive the disease but are faced with ongoing psychosocial and physical problems including: depression; poor self-esteem and body image; fatigue; pain; and nausea. As such, there is increasing interest in how to improve quality of life during survivorship. The Colorectal Cancer and Quality of Life study is a population based longitudinal study, 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, including: support and information from health care providers; satisfaction with medical care; knowledge and uptake of supportive care services; lifestyle factors such as physical activity and stress; and coping factors such as coping strategies and social support. To date the study has produced eight publications and has been presented at nine conferences.

CanChange

The Colorectal Cancer and Quality of Life study 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. There is also a link between distress and lifestyle variables, with distressed colorectal

survivors having increased likelihood of poor lifestyle variables and health outcomes, including smoking, physical activity and obesity. 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 psychosocial outcomes and lifestyle behaviours and includes fortnightly telephone sessions from an experienced health coach over a six month period.

We have recently completed a pilot study demonstrating that CanChange was highly acceptable and potentially effective. These findings have recently been accepted for publication in the journal *Psycho-Oncology* (special issue on physical activity and cancer). A large scale randomised controlled trial will commence early 2009 to test the longer term effectiveness of this approach.

Centre for Behavioural Research in Cancer (CBRC) Victoria

Adolescents' use of purpose-built shade in secondary schools: a cluster randomised control trial

Despite good knowledge of skin cancer, Australian adolescents are typically resistant to sun protection, with education-based interventions likely to have limited benefit. This study examined whether students use or avoid newly shaded areas created by shade-sails installed at schools. We used a cluster randomised trial, involving 51 secondary schools with limited available shade – 25 schools were randomly assigned to have a purpose-built shade-sail installed during winter 2005 at full-sun study sites and 26 schools provided an observation-only control group. The mean number of students using the primary study sites was monitored weekly during spring and summer lunch breaks at pre-test (2004-05) and post-test (2005-06). Over the study period, the mean change in students using the primary study site from pre-test to post-test was 2.63 students in intervention schools and –0.03 students in control schools. There was an intervention effect (p=0.011), with on average 2.67 more students using the newly shaded sites at intervention schools compared with the full-sun sites at control schools. Comparison of the mean change in use of alternate sites in intervention and control schools provided no evidence of shade avoidance. This study provides evidence that secondary school students will use rather than avoid shade-sails in schools, suggesting a practical means of reducing adolescents' exposure to ultraviolet radiation.

National Secondary Students' Diet and Activity (NaSSDA) survey

One in five Australian children are overweight or obese, increasing their risk of chronic disease. The NaSSDA survey is designed to fill a significant gap in existing data by establishing an ongoing commitment to the standardised monitoring of adolescents' body weight, and dietary and physical activity behaviour at both a state and national level. The study is jointly funded by the state and territory Cancer Councils, Cancer Council Australia and the National Heart Foundation of Australia. Pilot testing of the study methods and measures was conducted in 2008. The first round of fieldwork will commence in 2009 and be triennial thereafter. A nationally representative sample of 20,000 secondary school students from years 8 to 11, from over 200 schools will be surveyed. Data on food intake, dietary habits, physical activity, sedentary behaviour and barriers and enablers of physical activity will be collected via web-based survey. Data on the school food and activity environment will also be collected. Anthropometric measurements of height, weight and waist circumference will be taken by trained researchers, in private. A Technical Advisory Group chaired by Professor Louise Baur, comprising Australian researchers with specific expertise in conducting nutrition and physical activity research with children and adolescents, has provided input on the design and conduct of the survey. The results of the survey will help shape future policy and program development in relation to overweight/obesity, with the ultimate aim of reducing health risks among young people.

Centre for Health Research and Psycho-oncology (CHeRP), NSW

Supermarket Nagging and Children's Choices (SNACC)

Childhood obesity is an increasing problem in Australia and parents are increasingly concerned about how to manage their children's eating habits. There is an alarming amount of unhealthy food marketing and advertising directed at children, and research suggests that this may influence children's preferences, purchase behaviour and consumption. Children may place pressure on their parents for food items – the phenomenon where children request foods as a result of food marketing is referred to as "pester power". The prevalence of pester power and how parents deal with this pressure from their children is largely unknown.

CHeRP is conducting research incorporating both face-to-face intercept interviews and focus group discussions with parents to better understand pester power. The intercept interviews will involve 400 parents as they exit a supermarket after a shopping trip accompanied by at least one child. Parents will be recruited from randomly selected supermarkets in the Newcastle region. Focus group discussions will also be conducted with parents in an effort to elicit a greater understanding of parents' perspective of pester power and will explore the role of self-efficacy, stress, attitudes, beliefs, time pressure and parenting issues.

This project will contribute to the growing evidence suggesting the need for policy change to enable parents to gain greater control over their children's food preferences. It aims to assist in determining which policy changes are most important and whether a multi-strategy approach is necessary to promote healthy eating and help overcome obesogenic environments.

National survey of palliative care specialists' referral practices

Cancer specialists can facilitate timely and appropriate access to specialised palliative care (SPC) services.

To better match patients' needs with access to SPC services, we must understand factors associated with referral. A survey of all oncologists, clinical haematologists, respiratory physicians and colorectal surgeons in Australia was conducted to investigate cancer specialists' referral practices, perceptions of, barriers to and triggers for referral of people with advanced cancer to SPC services.

Of the 699 specialists who participated, 48% reported referring more than 60% of patients to SPC services. The most frequent reasons for referral related to symptom control; psychosocial issues rarely triggered referral. The main reasons reported for not referring included the specialist's ability to manage patients' symptoms, the absence of symptoms or rapid deterioration. The significant predictors of higher rates of referral were related to specialist characteristics (female, more than 10 years in practice), perceived SPC service availability and attitudes (a belief that all people with advanced cancer should be referred to SPC services for multi-disciplinary care).

These results suggest that referrals to SPC services are largely precipitated by physical and disease-related characteristics and less frequently by psychosocial concerns. Initiatives are needed to upskill health professionals to better recognise complex needs across the spectrum of needs (physical, psychological, social, cultural and spiritual), where multi-disciplinary SPC services, even accessed for limited periods or in a consultative capacity, may improve patient outcomes. These findings also support the importance of training all doctors in a palliative approach, so that people without complex needs can continue to be cared for by doctors whose substantive work is not in palliative care.

Centre for Behavioural Research in Cancer Control (CBRCC)

SunSmart practices in Western Australian high schools

Australia leads the world in the incidence of skin cancer and melanoma morbidity and skin cancer death rates rival that of the annual road toll. Adolescents are identified as having the lowest skin protection rates of all age groups. Only 33% of adolescents in a recent WA survey wore a hat or used sunscreen when outdoors at peak times. Schools can play a vital role in preventing skin cancer, but there are currently no SunSmart high schools in WA. Research has been undertaken to identify barriers to high schools implementing SunSmart policies. In both government and independent schools administrators and principals were interviewed and teachers were given a self administered questionnaire. To date the research suggests that teachers do not view themselves as role models in respect to sun protective behaviours and many are unaware of any school policy relating to SunSmart. Furthermore, teachers indicated that they desired a tan and a significant proportion did not wear hats, protective clothing or sunscreen when exposed to the sun either at school or during out-of-school hours. The lack of sun protection behaviours by high school teachers, and their lack of awareness about relevant school policies have implications for health promotion. As well as relevant to skin cancer prevention amongst teachers, it is clear that programs are needed to protect high school students.

Personal liberty versus government responsibility: exploring the limits of publically acceptable tobacco control regulation

Tobacco control advocates are accustomed to the accusation they are trying to impose a 'nanny state' on society by infringing upon smokers' 'personal liberties' and 'freedom of choice'. This vitriol usually originates from vested interest groups (or politicians receiving donations from such groups), but what are lay perspectives regarding personal liberties versus government responsibilities? Fifty-six laypeople participated in eight focus groups stratified by smoking status, sex and age-group (18–29 and 30–55 years). Participants' perceptions of "how far is too far?" with regards to government regulation versus personal freedoms were elicited via group discussions. Tobacco was the underlying topic of interest to the researchers, however participants were not overtly prompted to discuss smoking. Participants expressed general consensus about the following three principles: 1) For all risky behaviours governments have a duty-of-care to educate the public thereby enabling individuals to make informed choices; 2) Governments have a duty-of-care to restrict individuals' risky behaviours that impact on others; and 3) For risky behaviours that don't directly impact on others restrictive government intervention should be proportionate to societal cost as a whole. Any individual's behaviour that impacts upon the wellbeing of other individuals is fair game for government restrictions, up to, and including draconian legislation. Governments also have a clear mandate to relegate the cost to society of individuals' risky behaviours via educational and regulatory dissuasive strategies. Therefore, in order to resonate with the laity, public health advocacy should be articulated and contextualised in these terms.

TISSUE BANKING FOR CANCER CLINICAL TRIALS

CLINICAL ONCOLOGICAL SOCIETY OF AUSTRALIA

Tissue banks linked to cancer clinical trials clearly have a vital and growing role in improving patient outcomes, maintaining Australia's international standing in medical research and enabling Australia to remain a country of choice for clinical trial conduct in an increasingly competitive international market. This paper reports on outcomes from a workshop convened by the Clinical Oncological Society of Australia (COSA) in October 2008 to facilitate a collaborative and coordinated approach to the collection, storage and distribution of biospecimens collected as part of cancer clinical trials conducted by Cooperative Cancer Clinical Trial Groups (CCTGs) in Australia.

Biological studies involve correlation of clinical outcomes with markers that predict response to treatment or that have prognostic value through analysis of samples of fixed or frozen tissue. Such studies can also provide information about markers of underlying disease. Research of this type is dependent on the appropriate collection and storage of fixed or frozen tissue and blood samples, as well as mechanisms to facilitate timely access to biospecimens for analysis.

There is considerable interest in linking biological studies with cancer clinical trials and it is increasingly common for trial protocols to include a biological sub-study. Such research has the potential to make a significant contribution to cancer care, providing the capacity for a targeted approach to treatment that is individualised to a patient's needs. Examples of biological studies with therapeutic relevance for cancer include the development of therapies targeting HER2-positive breast cancer and recent data about the influence of K-RAS mutation status on response to cetuximab in advanced colorectal cancer.[1]

Biobanking of specimens from patients enrolled in cancer clinical trials in Australia is currently undertaken predominantly by the pharmaceutical industry. Most of this activity involves collection of blood samples for pharmacogenomic[a] or pharmacogenetic[b] research conducted exclusively by/for the sponsor company, with specimens and data often sent overseas for analysis. Tumour biobanks have been established at many sites in Australia. A number of these have started to work cooperatively – most notably the seven biobanks involved with the Australasian Biospecimen Network – Oncology (ABN), the National Leukaemia and Lymphoma Tissue Bank (NLLTB), the Breast Cancer Biospecimen Resource, the Australian Prostate Cancer Collaboration (APCC) BioResource, the Victorian Cancer Biobank (VCB), kConFab and the Australian Ovarian Cancer Study (AOCS).

a *The study of the human genome to identify genes involved in the mechanism of action or metabolism of drugs.*

b *The study of a limited number of genes involved in the mechanism of action or metabolism of drugs.*

There are currently 13 CCTGs in Australia. Trials overseen by these groups vary in size and complexity, but are typically multicentre studies recruiting patients in several states and territories, and in some cases New Zealand and other countries. While some CCTGs have been actively involved in biobanking, each group typically collects specimens only for a particular trial and there is currently no standardised or systematic approach to biobanking for multisite clinical trials. COSA is ideally placed to facilitate a collaborative and coordinated approach to biobanking of specimens collected as part of cancer clinical trials conducted by CCTGs in Australia.

Workshop overview

COSA convened a one-day workshop of key stakeholders in October 2008, with the aim of exploring a coordinated approach to the collection, storage and efficient utilisation of clinical trial specimens, as well as appropriate mechanisms for funding tissue banking and access within the CCTGs in Australia. The workshop was attended by 50 participants from biobanks, CCTGs and cancer registries, as well as consumers and representatives from relevant cancer organisations such as Cancer Australia.

Workshop presentations

Presentations from international and national experts provided valuable context to guide workshop discussion and included:

- an overview of key statistical considerations to be factored into the design of trials examining biomarkers (Professor John Simes, Director, National Health and Medical Research Council (NHMRC) Clinical Trials Centre and Dr Chee Lee, Researcher, University of Sydney, New South Wales (NSW))
- a summary of the importance of tissue banking in clinical trials, including regulatory and logistical implications of different trial designs (Professor Paul Waring, Professor of Pathology and Laboratory Medicine, University of Western Australia, Western Australia (WA))
- an overview of the development of the National Leukaemia and Lymphoma Tissue Bank (Dr Paula Marlton, Head of Leukaemia and Lymphoma Services, Princess Alexandra Hospital, Queensland)
- an update on the current status of tissue banking in Australia (Ms Heather Thorne, kConFab Manager, Peter MacCallum Cancer Centre, Victoria)
- a summary of outcomes from a review of tissue banks in NSW undertaken by the Cancer Institute NSW (Dr Parisa Glass, Research & Information Advisor, Cancer Institute NSW)

- a suggested list of questions and issues for consideration by workshop participants in relation to the role COSA could play in facilitating a more streamlined, uniform and cost-effective approach to tissue banking for oncology clinical trials conducted by the CCTGs in Australia (Dr Nik Zeps, Research Manager, St John of God Pathology and Radiation Oncology, Sir Charles Gairdner Hospital, WA; incoming Chair of the COSA Research Group).

Recommendations

Participants were asked to consider four issues in relation to tissue banking for CCTGs in Australia:

1. minimum data elements
2. standardised consent/ethics
3. collection and storage of samples
4. distribution of samples and sustainability.

Issues and recommendations were identified through discussion by four self-appointed multidisciplinary groups. Time limitations precluded a full consensus approach and the outcomes reported below summarise key outcomes reported back to the plenary group. All groups recognised the importance of avoiding duplication and building on existing national and international initiatives.

Minimum data elements for a tissue bank linked to cancer clinical trials

The minimum data elements identified for a tissue bank linked to cancer clinical trials related to demographic identification of the trial and specimen, with specific data elements identified for the trial and the specimen itself (table 1).

Standardised consent/ethics

Current issues identified in relation to consent and ethics approval for the collection and storage of tissue samples as part of cancer clinical trials included the need for:

- increased awareness and application of national guidelines for consent and ethics developed by the Australian Health Ethics Committee (AHEC) and issued by the NHMRC,[3] as well as the Harmonisation of Multi-centre Ethical Review (HoMER) project[4]
- public engagement about the benefits of tissue collection and the importance of information collected from specimens held in biobanks.

It was suggested that the ultimate goal in Australia should be to obtain consent for the collection and storage of tissue samples for the purposes of research from all patients at the point of diagnosis. One possibility would be an opt-out rather than an opt-in policy and would ideally include storage of samples for germ line sampling and assessment of somatic mutations. However, there are major health consumer concerns with such an approach and much would need to be done to gain wide acceptability. The need for a streamlined, efficient process that could be applied beyond cancer was identified.

In developing a standardised approach to consent, questions to be considered included the timing of obtaining consent (at diagnosis versus on entry to the clinical trial), as well as who should obtain consent. Other questions included:

- Process for informing the patient or family members about the implications of the information obtained from sample analysis.
- Implications of use of tissue after death.
- Sampling considerations (for example, collection of normal tissue, blood samples and relapse tissue).

A number of possible roles for COSA in facilitating a standardised approach to consent and ethics were identified. This included lobbying for legislation around the process of consent for tissue banking although there was some debate about whether such an approach is appropriate. Other possible roles include liaison with the Royal College of Pathologists of Australasia (RCPA), and undertaking a review of international and national consent procedures. It was also suggested that COSA could be involved in the development of common guidelines, templates and procedures, as well as in public engagement about the altruistic benefits of tissue collection and storage.

Collection and storage of samples

A number of obstacles to the collection and storage of tissue samples by CCTGs were identified, including the

Table 1: *Minimum data elements for a tissue bank linked to cancer clinical trials*

Minimum data elements for the trial*	Minimum data elements for the specimen
Primary questions for the tissue sub-study	Trial name/identifier
Contact details of the trial group/principal investigator	Patient identifier
Type of specimen collected (as defined by the trial protocol)	Tumour type
Type of consent (generic or specific to the trial)	Type of tissue (tumour, blood, plasma, serum, DNA etc)
Potential availability for collaborative research (Y/N/qualified)	Collection method (fresh, frozen, paraffin-embedded etc)
	Date of collection
	Storage location
	Type of consent

**To be based on the World Health Organisation minimum data set for clinical trials.*[2]

lack of pathology contact before trial initiation and lack of standardised approaches to sampling and storage. The absence of financial incentives for pathologists to be involved in the collection, storage and release to third parties of tissue for research purposes was also seen as a barrier. Other identified issues related to the range and complexity of approaches to tissue collection and storage. For example, difficulties associated with certain techniques, such as obtaining frozen samples and limitations of paraffin-embedded samples, can influence the quality of samples. However, despite these issues, there was a view that funders and policy makers are currently unaware of the complexities of tissue collection and storage.

A number of possible solutions to encourage a consistent approach to the storage of tissue samples were identified. Several solutions focused on the need for greater involvement of pathology from the trial outset, including:

- inclusion of a pathologist on trial management committees and, where possible, at each participating site
- scientific acknowledgement of pathology input
- consideration of reimbursement options for pathologists involved in tissue sampling, with the option of a Medicare item number for collection and preparation of tissue by pathologists for the purposes of research.

It was also suggested that pre-definition of a biological or translational research question with a clinical trial that has a clear clinical objective was important to promote clinician engagement and to encourage the collection of a sufficient quantity of tissue of appropriate quality for testing. Other solutions included creation of a virtual network to allow samples to be collected and stored locally, but accessed nationally and a future goal of collecting a second block of tissue to be stored locally for future studies as standard.

Possible roles identified for COSA included collaborating with the RCPA to centralise coordination of pathology input, as well as with appropriate partners to lobby government for a Medicare number to reimburse pathologists for collection of tissue for research purposes. It was also suggested that COSA could be involved in tendering for activities to support localised collection and storage of tissue samples.

Distribution of samples

The heterogeneity of existing tissue banks was identified as a key issue in limiting the distribution of tissue samples for the purposes of clinical research. It was suggested that additional tissue samples collected in relation to a specific clinical trial should be quarantined from translational research samples. Such clinical trial samples should remain under the governance of the Trial Management Committee. In contrast, access to 'open collection' samples for biomarker discovery, pre-clinical studies and translational research should be managed by the respective tissue bank.

The sustainability of tissue banks was considered to be dependent on: international best practice and standard operating procedures;[5] database management and clinical linkages; long-term funding through a range of avenues, including federal and state government, grants and philanthropic groups; and the amalgamation of consortiums to maximise efforts.

The potential role of COSA in advocating for funding was discussed.

Opportunities for funding

A range of potential sources of funding were identified to support the collection, storage and distribution of tissue for oncology clinical trials and translational research in Australia (table 2).

Table 2: *Potential funding sources for tissue banking linked to cancer clinical trials in Australia*

Category	Examples
Government/government bodies	☐ Enabling grants/infrastructure grants (eg. NHMRC, Cancer Australia) ☐ Tax revenue ☐ Medicare items for sample collection
Trial sponsors/commercial entities	☐ Pharmaceutical companies ☐ Health instrument/consumable suppliers
Philanthropic donations	☐ Banks ☐ Health insurance companies ☐ Disease-specific charitable foundations (eg. Leukaemia Foundation)
Non-government organisations	☐ Cancer Councils ☐ Australian Cancer Research Foundation
Overseas funding sources	☐ National Institutes of Health (US) ☐ National Cancer Institute (US) ☐ Department of Defence (US)
Other potential sources	☐ Private hospital associations

Questions to be considered in relation to funding of tissue banks included:

- Who should receive funding – clinical investigators/tissue bank groups/research scientists/health departments/ hospitals?
- Who 'owns' the tissue/specimen?
- What is the long-term cost-effectiveness of targeted approaches to cancer treatment developed through analysis of biomarkers?

Various options that could be considered to ensure long-term sustainability were suggested. Many of these related to cost-efficiencies and included:

- embedding value-added research in clinical trials and making clinical questions more cost-effective
- centralisation, standardisation and linking of approaches and knowledge to improve efficiency and maximise use of available funds
- consideration of cost-efficiencies in shared approaches to infrastructure.

The potential for commercial opportunities/partnerships was highlighted, for example, the option of providing new pathology services to measure known biomarkers. It was also suggested that translational research involving tissue banks could be prioritised, with priority given to collections from randomised controlled trials with linked high-quality clinical data that allow analysis of prognostic and predictive markers. Other possible support activities included the conduct of a national audit of existing biobanks and processes to build and learn from existing initiatives, and engagement of consumer advocacy groups such as Cancer Voices Australia to assist in lobbying for change.

Specific actions to be considered by COSA in moving forward included:

- Joint submission with the RCPA to government in relation to the creation of a Medicare item number for preparation of specimens for the purposes of research.
- Coordination of a committee to seek a five-year funding grant from the Australian Cancer Research Foundation to support a tissue bank coordinating centre.
- Exploration of options for seven-year renewable funding for cancer clinical trial tissue banking.
- Building on the existing NHMRC enabling grant to facilitate new initiatives.
- Commissioning of an analysis of the cost-effectiveness of tissue banking activities, in partnership with the pharmaceutical industry and/or Pharmaceutical Benefits Advisory Committee.
- Appointment of a project officer to assist in building a business case and identifying and engaging relevant stakeholders.
- Consideration of approaches to capture and promote the international value of the Australian situation to international bodies such as the Wellcome Foundation.

Next steps

In closing, Professor Goldstein outlined the following priorities for action by COSA:

- development of a health economic model to support the need for tissue banking
- scoping activities to identify options for tissue banking linked to cancer clinical trials and map existing initiatives
- identification and pursuit of potential funding sources.

Professor Goldstein indicated COSA's commitment to building a business case for tissue banking linked to cancer clinical trials in Australia and emphasised the importance of the meeting in setting a solid foundation and direction for future activities to guide a consolidated approach to tissue banking in Australia. He encouraged ongoing dialogue and collaboration to facilitate progress in this important area.

Acknowledgements

The workshop was sponsored by unrestricted educational grants from Roche Products Pty Ltd (Australia) and Novartis Pharmaceuticals Australia.

COSA gratefully acknowledges the input and support of the workshop facilitator, Professor Ian Olver, speakers and members of the Workshop Steering Committee: Professor David Goldstein (Chair), Professor Stephen Ackland, Dr Anna DeFazio, Dr Anne Thompson, Ms Heather Thorne, Dr Nik Zeps, Dr David Roder, Margaret McJannett and Kathy Ansell.

The workshop report was developed by Dr Alison Evans from Alison Evans Consulting.

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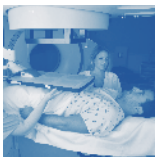
NEWS & ANNOUNCEMENTS



More than 80% back 'alcopops' and tobacco tax

Research commissioned by Cancer Council, Heart Foundation, Public Health Association of Australia and Action on Smoking and Health (ASH), shows that Australians overwhelmingly support increased 'alcopops' and tobacco tax if funds raised are used for preventive health programs.

A survey of more than 1200 Australian adults showed 84 per cent supported the Government's proposed 'alcopops' tax and 88 per cent backed increased tobacco tax, if most of the revenue funded programs to help prevent diseases such as heart disease and cancer.

Cancer Council Australia Chief Executive Officer, Professor Ian Olver, said the Newspoll survey showed Australians strongly supported tax increases that could reduce consumption of harmful products, while raising funds to improve the nation's health.

$393m spike in cancer hospital bill shows reform needed now

A report from the Australian Institute of Health and Welfare released in September showed that cancer had moved from ninth to fifth on the list of most costly diseases to Australia's health system in only four years.

Cancer Council Australia Chief Executive Officer, Professor Ian Olver, said the report showed that cancer treatment costs would be difficult to sustain unless long-term structural change in health funding began now.

"For cancer to jump four places on the list of costly diseases in such a short time is a major concern," he said. "This includes a $393 million increase in annual hospital costs between 2001 and 2005, which reflects the growing number of people developing cancer as our population ages."

Professor Olver said around a third of cancer deaths in Australia were attributed to lifestyle, yet there was no comprehensive national plan and targets for reducing obesity and tobacco use, nor a long-term commitment to a national skin cancer prevention campaign.

"The Rudd Government has made some promising announcements about re-engineering the health system towards better prevention and eliminating the blame game," Professor Olver said. "If Australia is to avoid a potentially unsustainable cancer burden as our population ages, government will need to follow through on these proposed approaches over the long-term."

A million GP visits each year call for government action on skin cancer

In October, new research from the Australian Institute of Health and Welfare and Cancer Australia suggested skin cancer was responsible for almost one million GP consultations in Australia each year.

Cancer Council Australia said this showed why the Federal Government must commit to a long-term SunSmart campaign or face unsustainable medical costs.

Chief Executive Officer, Professor Ian Olver, said if current trends continued Australia would struggle to pay its skin cancer treatment bill. "New data show that GP consultations to treat non-melanoma skin cancer increased by 14 per cent between 1998-2000 and 2005-2007 – from around 836,500 to 950,000 visits each year," he said.

Professor Olver said while the report stated that the full extent of non-melanoma skin cancer prevalence remains unclear, what was clear was that the associated cost burden was enormous – and that SunSmart education campaigns could influence behaviour change to reduce it.

"Skin cancer prevention campaigns work, yet they have only been run at the national level since the summer of 2006-07," he said. "And there is no commitment to a campaign beyond this summer."

Professor Ian Frazer wins Prime Minister's Prize for Science

Cancer Council Australia President, Professor Ian Frazer, has been awarded the Prime Minister's Prize for Science. Professor Frazer created the first vaccine to help protect women against cervical cancer.

Prime Minister Kevin Rudd presented the annual $300,000 award to Professor Frazer at a Federal Parliament ceremony on 16 October, praising him for his contribution to women's health.

A former Australian of the Year, Professor Frazer said it was rewarding to work in a field aimed at finding ways to improve people's lives. "Sometimes it seems almost impossible to believe that something we did all those years ago could have such a dramatic impact on so many people and that down the track cervical cancer will be a much rarer disease as a consequence," he said.

He also said he would put the prize money towards funding research at the University of Queensland, where he was based, in the hope that the philanthropic sector would be led by example to increase their support for biomedical research.

Absent-minded teens – exposed and burnt reveals new Cancer Council research

Teens continue to put themselves at unnecessary risk of skin cancer by spending excessive time in the sun and forgetting to protect themselves, according to new Cancer Council research.

Findings from the Cancer Council's National Sun Protection Survey released during National Skin Cancer Action Week (16-22 November), show teens spend an average of two hours (1hr 51mins) in the sun during peak UV, with almost a third who get sunburnt saying they "forgot" to protect themselves.

Cancer Council Australia Chief Executive Officer, Professor Ian Olver, said that while the research showed adults were behaving more responsibly and burning less, teens weren't absorbing the SunSmart message as effectively.

"One in four teens is still getting sunburnt on a typical summer weekend, compared with just 14% of adults," Professor Olver said. "Adults are clearly getting the message, but we need to more effectively target younger people.

Australian opera singer Deborah Riedel remembered for her commitment to raising cancer awareness

Cancer Council Australia extends its condolences to the family and friends of internationally acclaimed Australian soprano, Miss Deborah Riedel, who died in January after a 10-year battle with cancer. Miss Riedel was Cancer Council Australia's first Ambassador, a role she embraced with great commitment.

In 2007, Miss Riedel organised a gala opera event for Cancer Council Australia at Sydney's Town Hall, which involved pro bono performances from her and a number of Australia's other leading opera performers.

The event helped to raise cancer awareness among a number of Sydney's leading business and political figures; its success typified the energy and conviction Miss Riedel brought to her role as our Ambassador.

We remain grateful for Miss Riedel's important contribution to our work towards reducing the impact of cancer.

Obesity strategy needed to cut cancer rates

World Cancer Day's (Feb 4) theme of childhood obesity highlights the urgency for the Australian Government to adopt its own Preventative Health Taskforce's recommendations for a comprehensive national obesity strategy in 2009.

Cancer Council Australia Chief Executive Officer, Professor Ian Olver, said the International Union Against Cancer's World Cancer Day theme for 2009, with its aim to "encourage an energy-balanced lifestyle", reflected the significance of childhood obesity to lifelong cancer risk.

Professor Olver said amid the ongoing debate around childhood obesity, there were three important, incontrovertible facts: overweight and obese children were at high risk of becoming overweight or obese adults; overweight or obese adults had a significantly increased cancer risk; and Australia had one of the world's highest rates of obese and overweight children.

Professor Olver said the Government had shown good leadership in forming a Preventative Health Taskforce comprising some of the nation's leading experts in chronic disease prevention, which was currently consulting with the community about its draft recommendations.*

"But the test will be the Government's willingness to implement the taskforce's recommendations, which will require tough decisions around food marketing, production and labelling, and building communities that support physical activity," he said.

"With government looking to circulate surplus budget funds to help offset the global financial downturn, World Cancer Day 2009 is also a timely reminder that funding public health programs is a proven investment, providing strong returns through reduced healthcare costs and a healthier, more productive population.

"Obesity cost Australia's health system $2 billion last year and reduced productivity by $3.6 billion – so investing in a strategy to reduce obesity and overweight would make good economic sense, while helping thousands of Australians to reduce their risk of cancer over the long term."

** Available at www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/discussion-technical-1*

Australia's Biggest Morning Tea

Put the kettle on and bust out the biscuit tins – Australia's Biggest Morning Tea is back for its 16th year on Thursday 21st May.

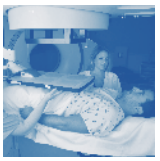
Last year over one million people stirred themselves into action at morning teas across Australia, raising a record-breaking $10 million!

Australia's Biggest Morning Tea is not only a great way to catch up with family, friends and colleagues, it's also an easy way to fundraise for Cancer Council, helping those affected by cancer and their families.

The official tea party date is Thursday 22nd May, however you can host events throughout May and beyond.

If you would like to take part or find out more about Australia's Biggest Morning Tea log on to **www.biggestmorningtea.com.au** or call **1300 65 65 85.** Registered hosts will receive a fundraising pack full of ideas and information including posters, invitations and competitions.

BOOK REVIEWS



Abeloff's Clinical Oncology 4th Edition Expert Consult Premium Edition

MD Abeloff, JO Armitage, JE Niederhuber, MB Kastan and WG McKenna
Churchill Livingstone (2008)
ISBN-13: 9780443066955
2555 pages
RRP: $440.00

This is not a book for the faint-hearted or weak-limbed. My first thought on receiving it was "I'm going to need a block-and-tackle to lift it and reinforced shelving to hold it!" Weighing in at 5kg, it's a book to reckon with.

There are 114 chapters divided into three parts: Part I is entitled 'Science of Clinical Oncology' and discusses the biology and genesis of cancer, as well as diagnostic methods, prevention and treatment of cancer. Part II, 'Problems Common to Cancer and its Therapy', looks at symptom management, palliative care, metastases and problems associated with treatment. There is also a section in here on 'special populations' including the elderly, pregnancy and HIV. Part III, 'Specific Malignancies', does exactly what it says on the page, with 44 disease-specific chapters. I can't think of a malignancy that isn't covered here and includes a chapter on cancer of unknown primary.

Each part is colour-coded and chapters are easily found thanks to the comprehensive, well organised contents pages, which are well presented in decent-sized, clear type.

The book is aimed at medical students, trainees, oncology experts and other physicians who see patients with cancer and it does this very well. It is not for most nurses or allied health professionals and doesn't pretend to be, except for those with a deep interest or thirst for knowledge…or with plenty of money…or strong arms and back.

Each chapter has, on its first page, a summary of key points that the editors claim would "…allow one to pass a board exam." Each chapter presents its subject very thoroughly, to molecular depth in places, and on the whole, well laid out with supporting tables, diagrams and images. The only exception to this is in the chapter on systemic therapy that contains 14 pages of chemotherapeutic agents, their drug class, dosage form, interactions and other information presented as page after page of solid text, all of which is the same size and weight.

The book is well referenced throughout. The 48-page chapter on colon cancer, for example, has 519 references.

The (almost) 290 contributors are all North American-based and as such, some phraseology, spelling, nomenclature and guidelines may confuse. The authors claim that this book is multidisciplinary in its approach, though this is one of those 'lost in translation' moments. The authors are alluding to the fact that the book is a collaboration of oncology disciplines, rather than a more all-inclusive definition of 'multidisciplinary' encompassing nursing and allied health professionals.

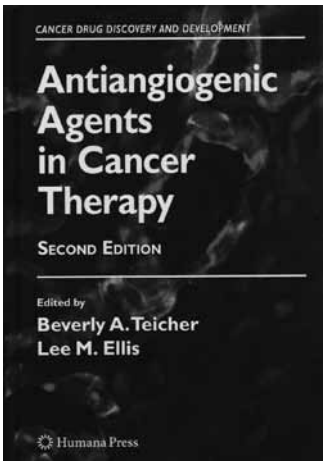
The price of the book includes a full online version which is fully searchable and makes it even more accessible. Once registered, the owner can log on to it anywhere (if you have a computer and internet access, of course). This helps solve the occupational health and safety issues of trying to lift the printed version!

Overall I found this to be an excellent book. It is very easy to 'dip in', search online or find specific oncology information. I wouldn't necessarily spend this sort of money on it as an individual, but it would be a worthwhile investment for an oncology unit for access for all, especially with the online version included. This, for me, would make the cost worthwhile.

John Robinson, Clinical Nurse Consultant, Palliative Care, Fremantle Hospital, Western Australia.

Anti-angiogenic Agents in Cancer Therapy 2nd Edition

BA Teicher, LM Ellis (Editors)
Humana Press (2007)
ISBN: 9781588298706
559 pages
RRP: $US169.00



This text contains a diverse array of chapters, 31 in total, covering the area of anti-angiogenic agents and their role in cancer therapy. With the recent approval of drugs such as Avastin (a humanised antibody to vascular endothelial growth factor), this field has gained prominence as a new therapeutic approach for cancer. Combined with these developments, a renewed interest in basic vessel biology has revealed potentially new targets

such as lymphatic vessels, endothelial precursors and stem cell populations.

Anti-angiogenic Agents in Cancer Therapy is segmented into three areas dealing with the basic biology of angiogenesis, translational research and the application of anti-angiogenic therapy in clinical trials. While this introduces some repetition in the book, as each individual chapter tends to reintroduce certain facts and definitions, it is by no means a major problem and does mean that almost any chapter can be read easily in isolation. Although some of the chapters are relatively short, the book as a whole works well as it has an extensive index which allows key words or phrases to be easily identified in the body of the text. In this way it acts very much as a reference book, to identify important facts, experiments or trials within the individual topics and to provide illustrative references for further reading.

The text should appeal to cancer researchers and students in the area of anti-angiogenic therapy. In particular, it will aid the clinically qualified researchers and oncologists who want to have a broad reference text in this area. Importantly, the book provides information on a number of different cancers, including a good summary of the basic biology in the area and a future perspective on where translational research is heading. A thorough reading of the book will provide a foundation for understanding the general area, which could then be further built on through the scientific and medical journals.

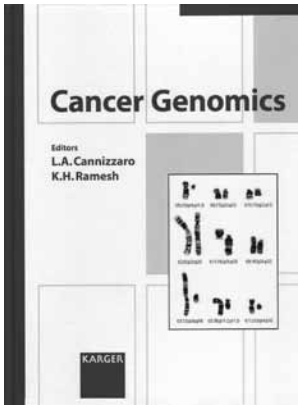
Overall the structure of the book works well. It combines a variety of relatively short chapters focused on the theme of anti-angiogenic therapy with a selection of illustrative figures. The quality of the author list and the effective indexing makes it a valuable and functional text.

Steven Stacker, Angiogenesis Laboratory,
Ludwig Institute for Cancer Research,
Royal Melbourne Hospital, Parkville, Victoria.

Cancer Genomics

LA Cannizzaro, KH Ramesh
Karger (2007)
ISBN: 978-3-8055-8433-3
274 pages
RRP: $US144.75

Cancer Genomics is a special reprint of *Cytogenetics and Genomics Research* (Vol. 118, No. 2-4, 2007), dedicated to the memory of Harold P Klinger, a distinguished cancer geneticist who founded the journal. Electronic versions of the contributions are available on the journal website essentially rendering this book redundant. However, it remains pleasurable to be able scan a hard copy book and while I wouldn't recommend this finely produced edition as bedtime reading, it may serve as a useful desktop reference for cancer researchers from all fields.



The text, which contains 32 articles mostly dating from early 2007, opens with an excellent overview of head and neck cancer from Prystowsky and colleagues. Articles follow on a variety of liquid and solid tumours of both common (breast, prostate and colon) and rare (endometrial stromal sarcoma (two articles), adipocyte tumours and neuroblstoma) occurrence. Some of the articles are more technically inclined (interphase FISH), while others are of general interest, such as discussions of the roles of telomerase or microRNAs in carcinogenesis. In some cases, articles are more suited to a cancer biology text rather than genomics; running microarray experiments coupled with rudimentary bioinformatics adds little to our knowledge about the underlying genomics. Other articles, for example a catalogue of familial cancer syndromes, are less useful than they would have been if a link to an online updatable database had been included.

An area barely touched on in this compilation is the increasingly common use of gene mutation status to drive therapeutic decision making in different common cancers (lung, breast, and colon). Another area untouched, and one that has turned this skeptical reviewer into a convert, is that of sequence analysis of tumours, the so-called cancer genome sequencing project. Although some of the more interesting papers (for example sequencing glioblastoma) have appeared in 2008, the era of the $1000 genome is fast approaching. Perhaps a future edition of *Cancer Genomics* will be able place the methodology described in detail in this current issue in the context of common sequence abnormalities for all tumours.

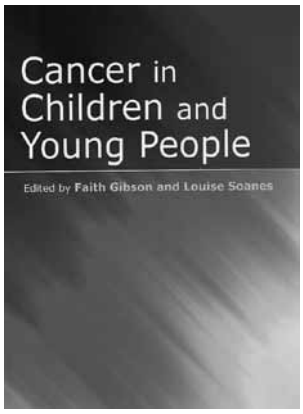
Bryan Williams, Monash Institute of Medical Research, Monash Medical Centre, Clayton, Victoria.

Cancer in Children and Young People

F Gibson and L Soanes (Editors)
John Wiley & Sons (2008)
ISBN: 9780470058671
413 pages

While *Cancer in Children and Young People* is written by and aimed at nurses, the focus on the multidisciplinary paediatric oncology teamwork gives the content of this resource relevance and application to anyone working in the field.

With a variation to the title, this text represents a contemporary second edition of the 1999 UK publication of *Paediatric Oncology: Acute Nursing Care.* This edition reflects a growing recognition that children and young people are no longer cared for collectively, but require different philosophies of care and face different issues according to their age and developmental stage. The editors have also identified that transitions across the disease continuum make classification of care as either acute or chronic, less difficult to differentiate and much less relevant in modern nursing care.



The book is arranged in five sections, four addressing the different treatment modalities – chemotherapy, haematopoietic stem cell transplantation, surgery and radiotherapy. The final chapter is dedicated to late effects and long-term follow-up. The content is strongly grounded in evidence based practice and reflects best evidence from medical, nursing and allied, psychosocial sources. Each section outlines the physiology and empirical underpinnings of the treatment modality, applications, management and side-effects. Specific issues relevant to each treatment are also addressed, such as protective isolation in stem cell transplantation, ethical issues associated with sibling donors and saviour siblings, targeted therapies, use of radiotherapy in palliation and surgical challenges in brain and bone tumours. The final chapter on late effects of treatment outlines the principles of long-term follow-up, physical and quality of life consequences of treatment and discusses the nursing role and health promotion in long-term follow-up programs.

Both editorship and authorship are exclusively British, with little reference to international context. Nursing roles and care settings in different international contexts vary considerably, even between Western countries, and this will influence the relevance of some chapters, such as late effects, neuro-oncological care and haematopoietic stem cell transplantation. This was clearly intended for a British audience.

While the editors demonstrate recognition of the unique challenges facing adolescents with cancer and how their care needs differ, few authors differentiat how care may need to be adapted or address the relevance of developmental stage to different modalities. Fertility preservation was only addressed in the context of stem cell transplantation and late effects follow-up, and body image and sexuality issues were given cursory mention in relation to surgery and health promotion.

However, given the burgeoning field that is adolescent cancer care in the United Kingdom, several dedicated texts have been published recently addressing the issues unique to this population and how their care should be provided.

The multidisciplinary approach to care is emphasised in this useful text. Despite the focus on the role of nurses in care of children and young people, the discussion of issues such as ethical dilemmas, effects of protective isolation on the child and incorporating the child and family in decision-making, gives this resource relevance and applicability to professions other than nursing.

Meg Plaster, Paediatric & Adolescent Cancer Nurse Coordinator, Western Australian Cancer and Palliative Care Network, Western Australia.

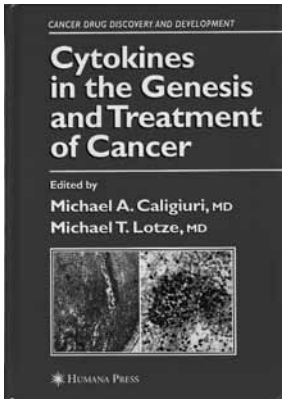
Cytokines in the Genesis and Treatment of Cancer

Caligiuri M, Lotze M (Eds)
Humana Press (2007)
ISBN: 978-0-896-03-820-2
482 pages
RRP: $US179.00

This useful volume, one of the *Cancer Drug Discovery and Development* series by Humana Press, offers an overview of a complex area at the intersection of immunology, growth factors and cancer. Although the editors are authorities in the roles of natural killer cells and dendritic cells in cancer immunology, they have chosen a wide range of experts to survey cytokines and cancer in 24 contributions. The book is divided into four sections: infectious agents, cytokines and cancer; cytokines and carcinogenesis; cytokines and tumour stroma/metastasis; and cytokines in the treatment of cancer.

The first section emphasises the role of cytokines released by the inflammatory process in the promotion of cancers, be it gastric carcinoma induced by H.pylores infection, adult T-cell leukaemia (ATLL) induced by HTLV-1 viral infection or Hodgkins disease associated with EBV infection. It is clear that cytokines can contribute to the oncogenic nature of certain viruses by influencing the proliferation of infected cells, suppressing cellular antiviral tactics and inhibiting apoptosis. The inflammatory process also generates mutagenic free radicals with assistance from cytokines. Disappointingly for Australian readers, the role of HPV-induced cytokines in generation of cervical cancer is not addressed, nor is inflammation from UV exposure and skin cancers considered here.

The section on cytokines and carcinogenesis is the main part of the book and reviews the involvement of key immune-related cytokines such as TNFa, TGFb and ILs-1/4/6 and 10. Murine models are also dealt with in a wide ranging chapter by Mark Smythe from the Peter McCallum Cancer Centre. The paradoxical ability of several of these to act both as tumour regressors and tumour progressors is dealt with in relation to local concentration (therapeutic doses or paracrine/angiogenic levels) and cell context. For example, while TNFa at high doses is vasculotoxic and useful for sarcoma treatment, anti-TNFa treatments appear useful as an adjunct to chemotherapy. The role of altered TGFb signalling via smads in overcoming the tumour suppressive actions of this chameleon cytokine is analysed in detail, explaining how it acts as a tumour promoter for many established cancers such as colon, head and neck cancers and lymphoma.



Priming of natural killer and dendritic cells for tumour attack by interleukin variants is addressed in the chapter by Michael Lotze. The anti-tumour affects of IL-4 and 13, together with their ability to suppress inflammatory

cytokines and chemokines appeared promising, but the clinical ineffectiveness of IL-4 and Il-13 treatments generally has rather led to the use of these cytokines to target cytotoxins to a number of solid tumours, with evident success in glioblastoma, for example. The importance of IL-6 in driving multicentric Castlemans disease (lymph node hyperplasia), and the use of humanised MAbs to IL-6 provide a good example of a disorder where monotherapy is highly effective.

One major omission is the lack of a chapter on IGF-1 (there is one paragraph in the section on multiple myeloma), despite recent strong evidence that IGF-1 deficient rats, mice and humans are resistant to the initiation and progression of a wide variety of cancers (Waters & Barclay (2007) Endocrinology 148, 4533).

The section on stromal interactions contains an excellent chapter on macrophage/tumour cell interactions and stromal cell interactions involving fibroblast TGFb. It is complimented by chapters on tumour-induced angiogenesis and the role of tumour chemokines in promoting neoplastic growth, inflammation and angiogenesis. The angiotoxic actions of TNFa and IFNa are also examined.

The final section deals with successes in treating human cancer with cytokine-based therapies. It is evident that even with accepted treatments such as the use of IL-2 or IFNa in renal cancer and melanoma, and IFNa for CML and Kaposi sarcoma, the percentage of complete remission is generally <20%, albeit in resistant tumours. In some cases, such as IL-12, toxicity was a major issue, and effectiveness unimpressive. For others, the promising results with small scale trials were not evident with large phase III trials. Likewise, combinations of cytokines (many have been trialled) have not provided clear benefit in larger trials over monotherapy with chemotherapeutics or the clinically accepted cytokines referred to above. However, adenoviral infection of dendritic cells with key cytokines does offer improved prospects for tumour vaccines. Similarly, while the prospects for anti-cytokine treatment appear promising, apart from TNFa antagonism there are few clinical results, which need rectification. Finally, the signal benefit of adjunct therapy after chemotherapy, particularly with cytokines G-CSF and GM-CSF, and EPO for fatigue/anaemia, is emphasised in the last chapter.

Overall this book makes a credible effort to cover a very diverse field and is a useful contribution to our understanding of the intersection between immune cytokines and cancer.

Mike Waters, Institute for Molecular Bioscience, University of Queensland, St Lucia, Brisbane, Queensland.

Endometrial Adenocarcinoma: Prevention and Early Diagnosis

M Jimenez-Ayala and B Jimenez-Ayala Portillo
Karger (2008)
ISBN: 9783805584807
91 pages
RRP: $US132.00

This monograph has been comprehensively written by two pathologists (a father and daughter team) and specifically addresses the prevention and early diagnosis of endometrial cancer. The authors have considerable experience in endometrial cytology and wrote the book in response to the increased incidence of endometrial cancer in recent years.

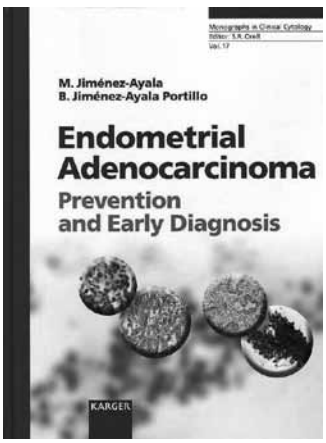
We are made aware that the increase in endometrial cancer in developed nations is thought to be due to a combination of factors including obesity, diabetes, hormonal imbalance and an ageing population. Unlike the successful screening programs for cervical cancer, there is not an effective population screening program for endometrial cancer. Most women with endometrial cancer will present with symptoms of post-menopausal bleeding. An endometrial sample is necessary to obtain tissue for diagnosis.

The terminology in the book is American, as is seen in many textbooks on gynaecological cancer. In the first chapter the book discusses the current status of the prevention and early diagnosis of endometrial cancer. It covers epidemiology, pathogenesis, the effects of hormonal therapy on the endometrium, and the prevention of endometrial cancer by reducing the risk factors such as obesity, diabetes and hypertension in the general population.

The next few chapters highlight the value of endometrial cytology and the techniques of endometrial cytology and histopathology. There are diagrams of the multiple devices that have been available over the years for collecting endometrial cytology and the effectiveness of each. The recommendations of the authors for endometrial cytology are not in accordance with the National Health and Medical Research Council guidelines.

Traditionally, the most common technique for assessing the endometrium has been a dilatation of the cervix and curettage which is performed using a general anaesthetic. In recent years, there have been developments in simple and inexpensive methods of obtaining endometrial tissue for histological examination. We could learn something in Australia with a greater appreciation of outpatient techniques of endometrial sampling.

Other chapters cover topics such as new techniques for the diagnosis of endometrial pathology, cytology of the normal endometrium – cycling and postmenopausal, benign endometrial lesions and the cytopathology of endometrial hyperplasias.



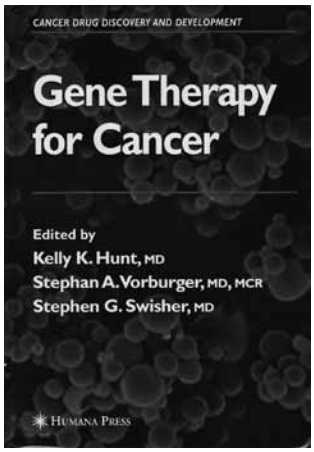
The book is well referenced and contains many histology slides which are clear and add some colour to an otherwise dry textbook. It does not discuss clinical issues nor the management of women with endometrial cancer. The authors hope their monograph is useful to cytopathologists, pathologists, cytotechnologists and students of

these fields. I don't think the book has a wide appeal outside the above areas. Its best use would be as a reference book in a library or on the shelf in a pathology department. At $US132 for a 91 page book, the cost may well dictate whether it will be widely used in Australia.

Jayne Maidens, Department of Gynaecological Oncology, Royal North Shore Hospital, Sydney, NSW.

Gene Therapy for Cancer

Hunt KK, Vorburger SA and Swisher SG (Eds)
Human Press (2007)
ISBN: 987-1-58829-472-2
469 pages
RRP $US175.00



Approximately 70% of all gene therapy trials initiated since the first approved gene transfer study in humans in 1989 have targeted cancer. This predominance of cancer trials reflects both the promise of genetic technologies and the pressing need to improve treatment options and outcomes for advanced and difficult to treat cancer phenotypes.

Gene Therapy for Cancer attempts to provide a comprehensive view of contemporary technologies and approaches, including limitations and future directions. The book is logically structured, with contributions from over 60 specialist researchers and clinicians, divided into three major sections addressing gene delivery technology (vectors), anti-cancer approaches and clinical applications.

Individual chapters are generally detailed, well-illustrated and comprehensively referenced, but not well suited to the non-expert reader seeking an overview and synthesis of the field. This is partially off-set by an informative preface and an excellent chapter on 'Problems, Side-effects and Disappointments in Clinical Cancer Gene Therapy'.

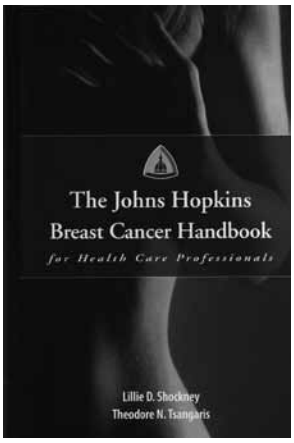
Other shortcomings include inadequate attention to immune-mediated approaches and to enzyme pro-drug strategies. These are important because gene delivery technologies remain far too inefficient to rely on direct tumour cell killing effects alone.

Despite these limitations the book remains valuable, particularly as a reference for the more expert reader with special interest in cancer gene therapy. Overall the book is difficult to recommend for the personal library, but would be a worthwhile institutional acquisition.

Ian Alexander, Gene Therapy Research Unit,
The Children's Hospital, Westmead, New South Wales.

The John Hopkins Breast Cancer Handbook for Health Care Professionals

LD Shockney and TN Tsangaris
Jones and Bartlett Publishers (2007)
ISBN-13: 9780763749927
312 pages
RRP: $95.00



In America, as in many other developed countries of the world, men and women are living longer after a diagnosis of breast cancer. The advances in screening, early detection and improvement in treatments for breast cancer has seen an increase in five and 10 year survival rates.

The aim of this book is to provide knowledge to primary care physicians and others involved in women's health care, with a specific focus on breast health and breast cancer, and the medical and psychological wellbeing of the breast cancer patient post active treatment.

The authors have arranged the book chapters in a step-by-step manner to ensure that all aspects of the breast cancer journey are comprehensively explained, from how to choose a breast cancer unit, long-term follow-up and survivorship care, through to recurrence and metastatic disease.

The chapter authors are all specialists in their fields and have explained complex issues and treatment modalities in a succinct and informative manner. In particular, the chapter on monoclonal antibody therapy gives a good up-to-date account of the latest targeted treatments. The information on the current use of technology, including MRI, will assist practitioners in explaining the benefits and limitations of such tools in the management of their patients.

The book contains a good number of useful tables, figures and in particular algorithms for quick reference purposes, as well as frequently asked questions at the end of each chapter. There is excellent use of clinical trial data from the United Kingdom and Canada in particular, to support many of the recommendations and advice.

The majority of the statistics are American and some of the specific recommendations would need to be adapted to the reader's own evidence-based protocols, however this is a minor and somewhat expected limitation of a book of this type.

There is some inevitable repetition due in part to the design of the chapters, but it would not deter me from recommending the book to the preferred target audience of primary care physicians, advanced breast cancer nurses and general cancer physicians who require a good current knowledge of breast health and in particular breast cancer.

Jenny Cooper, NSW Breast Cancer Institute,
Westmead Hospital, Sydney, New South Wales.

Nothing Personal – disturbing undercurrents in cancer care

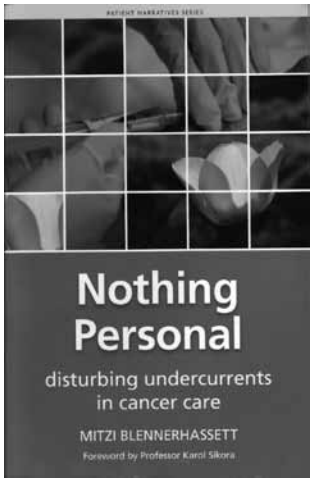
M Blennerhassett
Radcliffe Publishers (2008)
ISBN-13: 9781846190100
192 pages
RRP: $35.00

In this book the author, Mitzi Blennerhassett, tells her story of anal cancer from the patient's perspective. She paints a depressing picture of being poorly understood by both the medical and nursing professions. She talks of trying to maintain a positive approach as her world evolves around cancer treatments and pain.

Mitzi's life, like many of our cancer patients, also has outside influences such as children and a marriage break-up to contend with during her cancer journey. Mitzi discusses ideas such as journaling, poems and art, which all helped her work through personal issues during her journey. Her poems and art are included in the book giving a very personal insight into her journey. At the end of her story she tells of becoming a survivor and how she became an advocate for patient's rights and has continued to work in this area.

The book highlights areas of mismanaged pain relief, poor care, psychosocial and ethical issues. However, at the end of each chapter the issues highlighted are discussed with points on what the patient/health professional interplay entailed and how it could be improved. Mitzi talks of the difficulties of obtaining accurate information from health professionals throughout her experience and what she perceived as the 'us and them' mentality of health professionals. The last chapters discuss the slowly changing health system which, although not Australian, highlights issues we as health professionals must continue to fight for in the best interest of our patients.

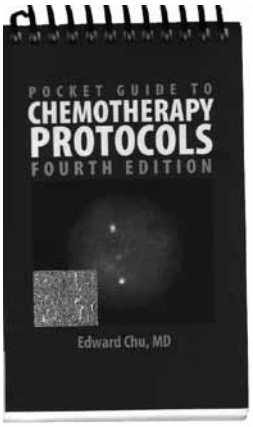
I would recommend this book to all members of the multidisciplinary team working in the oncology area. It would also provide an insight into the patient's perspective for health professionals, students and committee members dealing with oncology patients. I would not recommend this book to a patient at the beginning of their cancer journey, however it may be useful for carers and persons interested in improving patient advocacy.



Elisabeth Coyne, School of Nursing and Midwifery, Griffith University, Queensland.

Pocket Guide to Chemotherapy Protocols 4th Edition

Edward Chu
Jones and Bartlett Publishers (2007)
ISBN: 978-0-7637-5372-6
176 pages
RRP: $48.00



This book is a convenient sized collection of both medical oncology and haematological chemotherapy protocols. The book is spiral bound so it lies flat and takes up minimal space.

Protocols are listed alphabetically by cancer type, starting with anal cancer and finishing with thyroid. The solid tumours protocols for each cancer type are further broken up into single agent regimens, combination regimens, adjuvant therapy, neoadjuvant and metastatic disease. Haemtological protocols are listed under the headings of induction, consolidation and maintenance therapy for clarity. The reference for every protocol is provided at the back of the book.

While this guide is not intended to be an all inclusive list, it is comprehensive. It is also based on published literature and updated regularly. The protocols in this guide are not recommended nor prioritised in any way. This book works best when used as a reference guide as doses or protocols used in the clinical situation tend to be institutional based.

At my unit I shared the book with pharmacists, registrars and nurses. The feedback received was positive and the guide was seen as a useful reference to have. I feel that the book would be very helpful for students and those new to the area of oncology and pharmacy. It is also useful for nurses administering chemotherapy as a quick reference for checking protocols and approximate doses.

Lynn Bussi, Cancer Centre,
Westmead Hospital, Sydney, New South Wales.

Gynecologic Tumour Board: Clinical Cases in Diagnosis and Management of Cancer of the Female Reproductive System

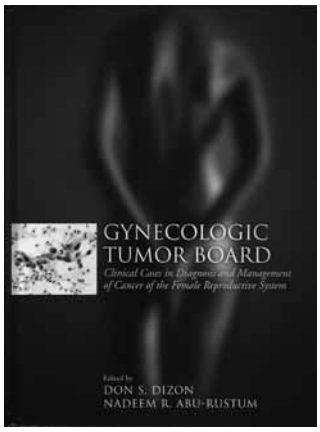
DS Dizon and NR Abu-Rustum
Jones and Bartlett Publishers (2008)
ISBN-13: 9780763743123
212 pages
RRP: $175.00

Gynecologic Tumour Board is considered to be 'a comprehensive reference on the clinical management of reproductive systems cancer in women'. The format of the book is relatively novel – 60 renowned experts present 21

illustrative cases that reflect commonly and uncommonly encountered clinical scenarios found in the gynaecological oncology clinic. Using a case-based structure, the book intends to provide an instructive guide to how important interdisciplinary care is to the woman with gynaecological cancer and to discuss standards of treatment, seminal trials and the important research questions that remain.

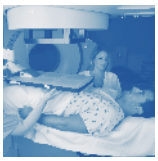
The book comprises four sections: approach to tumours of the ovary; approach to tumours of the uterine corpus; approach to cervical cancer; and approach to vulvar and vaginal cancers. Each section is further divided into a number of chapters which address particular clinical scenarios illustrated by a specific case. For example, the chapter entitled 'Platinum-resistant recurrent ovarian cancer' focuses on a 58 year-old woman with stage IIIC ovarian cancer, with a slow normalising CA 125 in response to adjuvant carboplatin and paclitaxel. Each of these cases is presented by a group of clinicians from a particular tertiary institution in the US supported by the literature. Some readers may find the interview based discussion format that each chapter takes logical and comprehensive, while others may find such a format distracting and difficult to read.

Although the book purports to consider management from diagnosis, through treatment to quality of life and long-term care, and equally to incorporate specialists from across the cancer continuum including allied health professionals, many readers will find the cases are not managed in the way in which we in Australia would consider appropriate multidisciplinary care. Each case is considered by a team of medical specialists from a variety of disciplines, but opinion is not sought from other recognised members of the multidisciplinary team, such as the social worker, specialist nurse or psychologist. Aspects such as quality of life, survivorship and palliative care receive limited attention. The chapters on early cervical cancer and cancer of the vulva briefly discuss sexuality, but neither chapter considers other implications of the cancer and its management on the woman, such as bladder and bowel dysfunction or lymphoedema. Equally the chapter on metastatic cervical cancer, although discussing palliative chemotherapy in great detail, makes no reference to the symptom burden that such women experience and the role of specialist palliative care.



In summary the lack of a comprehensive perspective on the care of women with gynaecological cancer will limit the use of this book as a reference to many. The detailed discussion of clinical management, referenced throughout with recent trial data, will make the text a valuable resource to gynae-oncology fellows who are studying for their exam. The book may also serve as a useful teaching and discussion tool for those unable to provide cases from their own clinical setting.

Kathryn Nattress, Department of Gynaecological Oncology, Sydney Cancer Centre,
Royal Prince Alfred Hospital, New South Wales.



CALENDAR OF MEETINGS

AUSTRALIA AND NEW ZEALAND

Date	Name of Meeting	Place	Secretariat
2009			
March			
11 – 13	11th National Breast Cancer Nurse Conference	Melbourne VIC	Ci Events Tel: +61 3 8696 7070 Email: megan.greasley@cievents.com.au Web: http://bcnc2009.registerevent.net/
12 – 14	21st Lorne Cancer Conference	Lorne VIC	ASN Events Balnarring, Victoria Tel: +61 3 5983 2400 Fax: +61 3 5983 2223 Web: www.lornecancer.org
April			
1 – 5	Australia New Zealand Gynaecological Oncology Group (ANZGOG) & Australian Society of Gynaecologic Oncologists (ASGO) Scientific Meeting	Noosa QLD	ANZGOG ASGO Secretariat Tel: 07 3871 1155 Fax: 07 3871 1232 Email: anzgogasgo@yrd.com.au Web: www.anzgog.org.au/meetings.aspx
4 – 8	The Thoracic Society of Australia and New Zealand (TSANZ) Annual Scientific Meeting	Darwin NT	The Thoracic Society of Australia and New Zealand (TSANZ) Tel: + 61 2 9256 5457 Fax: + 61 2 9241 4162 Email: tsanz@fcconventions.com.au Web: www.thoracic.org.au/asm2009.html
May			
5 – 9	Royal Australasian College of Surgeons Annual Scientific Congress 2009	Brisbane QLD	Royal Australasian College of Surgeons Tel: +61 3 9249 1200 Fax: +61 3 9249 1219 Email: college.sec@surgeons.org Web: www.surgeons.org
7 – 8	Australasian Leukaemia & Lymphoma Group (ALLG) meeting	Sydney NSW	Australasian Leukaemia and Lymphoma Group Tel: (03) 9656 3633 Email: Ariane.Price@petermac.org Web: www.petermac.org/allg
13 – 15	15th UICC Reach to Recovery International Breast Cancer Support Conference	Brisbane QLD	Cancer Council Queensland Brisbane, Australia Tel: +61 07 3258 2200 Fax : +61 07 3257 1306 Email : rri@uicc.org Website : www.reachtorecovery2009.org
17 - 20	42nd Australasian College of Dermatologists (ACD) Annual Scientific Meeting	Broadbeach QLD	Australasian College of Dermatologists Boronia Park, NSW Tel : +61 2 8765 0242 Email : admin@dermcoll.asn.au Website : www.dermcoll.asn.au
June			
18 – 20	Cancer Nurses Society of Australia 12th Winter Congress 2009	Newcastle NSW	Cancer Nurses Society of Australia Email: kim.adler@newcastle.edu.au Web: www.cnsa.org.au/CNSA_Winter_conference.htm
July			
15 – 18	Australian New Zealand Breast Cancer Trials Group (ANZBCTG) 31st Annual Scientific Meeting	Darwin NT	Australian New Zealand Breast Cancer Trials Group (ANZBCTG) Email: asm@anzbctg.newcastle.edu.au Web: www.anzbctg.org/content.aspx?page=asm

CALENDAR OF MEETINGS

Date	Name of Meeting	Place	Secretariat
August			
6 – 8	Australian and New Zealand Head & Neck Society (ANZHNS) 11th Annual Scientific Meeting	Fremantle WA	Royal Australian College of Surgeons Tel : +61 3 9249 1273 Fax : +61 3 9276 7431 Email : conferences.events@surgeons.org Website : www.anzhns.org
12 – 15	Medical Oncology Group Australia (MOGA) Annual Scientific Meeting	Canberra ACT	Medical Oncology Group of Australia Sydney, NSW Tel : +61 2 8247 6207 Fax : +61 2 9247 3022 Email : moga@moga.org.au Website : www.moga.org.au
26 – 28	Australasian Gastro-Intestinal Trials Group (MOGA) 11th Annual Scientific Meeting	Brisbane QLD	Australasian Gastro-Intestinal Trials Group Sydney, NSW Tel: 61 (2) 9562 5072 Fax: 61 (2) 9565 1863 Email: AGITG@ctc.usyd.edu.au
31 Aug – 1 Sep	Australasian Epidemiological Association (AEA) Annual Scientific Meeting	Dunedin New Zealand	Events4you, Tel: +64 3 487 6622 Fax: +64 3 487 6625 Email info@events4you.co.nz Web: www.aea.asn.au/
September			
24 – 27	Palliative Care Australia Together! International Conference on Culture Connections for Quality Care at the End of Life	Perth WA	Palliative Care Australia Tel: +61 2 6232 4433 Fax: +61 2 6232 4434 Email: pcainc@pallcare.org.au Web: www.palliativecare.org.au/Default.aspx?tabid=1699
October			
22 – 25	Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting	Brisbane QLD	Royal Australian and New Zealand College of Radiologists Tel: +61 2 9265 0700 Fax: +61 2 9267 5443 Email: ranzcrasm@tourhosts.com.au Web: www.ranzcrasm.com/
November			
17 – 19	Clinical Oncological Society of Australia Annual Scientific Meeting	Gold Coast QLD	Clinical Oncological Society of Australia Web: www.cosa.org.au

INTERNATIONAL

Date	Name of Meeting	Place	Secretariat
2009			
March			
7 – 11	39th Annual Meeting on Women's Cancer	New Orleans United States	Society of Gynaecologic Oncologists SGO Chicago Headquarters Office 401 North Michigan Avenue 60611 Chicago, United States Tel: +1 312 235 4060 Fax: +1 312 235 4059 Email: sgo@sgo.org Web: www.sgo.org/meetings/2006Annual
8 – 12	14th World Conference on Tobacco OR Health	Mumbai India	Action Council against Tobacco-India Mumbai, India Tel: +91 22 2418 5743 Fax: +91 22 2410 1656 Email: contact@14wtcoh.org Web: www.14wctoh.org
11 – 13	ICTR 2009: 4th International Conference on Translational Research and Pre-Clinical Strategies in Radiation Oncology	Geneva Switzerland	Istituto Oncologico della Svizzera Italiana (IOSI) c/o Clinique de Genolier Department of Radio-Oncology Clinique de Genolier4, route du Muids 1272 Genolier, Switzerland Tel: + 41 22 366 9959 Fax: + 41 22 366 9961 Email: jbernier@genolier.net Web: www.iosi.ch
11 – 14	Primary Therapy of Early Breast Cancer: 11th International conference	St. Gallen Switzerland	St. Gallen Oncology Conferences, c/o ZeTuP Rorschacherstrasse 150 9006 St. Gallen, Switzerland Tel: +41 71 243 00 32 Fax: +41 71 245 68 05 Email: info@oncoconferences.ch Web: www.oncoconferences.ch
22 – 24	8th INCTR meeting on cancer in countries with limited resources	Lara, Antalya Turkey	International Network for Cancer Treatment and Research (INCTR) Institut Pasteur, rue Engeland 642 1180 Brussels, Belgium Tel: +32 2 373 9323 Fax: +32 2 373 9313 Email: cedric@inctr.be Web: inctr.org/meetings/index.shtml
22 – 25	International Network for Cancer Treatment and Research Annual Meeting	Istanbul Turkey	International Network for Cancer Treatment and Research (INCTR) Brussels, Belgium Tel: +32 2 373 9323 Fax: +32 2 373 9313 Email: edupoint@inctr.be Web: www.inctr.org/meetings/index.shtml
23 – 25	TAT 2009: 7th International symposium on targeted anticancer therapies	Amsterdam Netherlands	NDDO Research Foundation c/o MCCM Meeting Management Harmelen, Netherlands Tel: +31 348 443 251 Fax: +0031 348 446 920 Email: tat@mccm.nl Web: www.nddo.org/page_include_tat2009.shtml
26 – 28	2nd International breast cancer conference in Kuwait	Kuwait Kuwait	Kuwait Cancer Control Center (KCCC) Dr Medhat Oteifa Kuwait Cancer Control Centre (KCCC), Surgical Oncology Department Secretary P. O. Box: 42262, Shuwaikh 70653, Kuwait 70653 kuwait, Kuwait Tel: +965 4814651 Fax: +965 4814651 Email: info@ibcc2009.com Web: www.ibcc2009.com
27 – 29	Thoracic cancers: new frontiers and horizons	Delhi India	Rajiv Gandhi Cancer Institute and Research Centre sector V Rohini 110 085 Delhi, India Tel: +91 11 4702 2423 Fax: +91 11 4702 2222 Email: rgcon2009@gmail.com
April			
2 – 4	5th International Conference on Cancer Therapeutics	Madrid Spain	Imedex 4325 Alexander Drive, 30022 Alpharetta, United States Email: meetings@imedex.com Web: www.imedex.com

CALENDAR OF MEETINGS

Date	Name of Meeting	Place	Secretariat
2 – 4	5th ISC International Conference on Cancer Therapeutics: Molecular Targets	Barcelona Spain	Imedex, LLC Kish Woodward 4325 Alexander Drive, 30022 Alpharetta, United States Tel: +1 678 242 0906 Email: k.woodward@imedex.com Web: www.imedex.com/appweb/announcements/wa055-01.asp
3 – 5	Asian Oncology Summit 2009	Singapore Singapore	Asian Oncology Summit, Suzanne Khoo ELSEVIER HEALTH SCIENCES-SOUTHEAST ASIA3 Killiney Road #08-00Winsland House I 239519 Singapore, Singapore Tel: +65-6349 0288 Fax: +65-6733 1817 Email: s.khoo@elsevier.com Web: www.asianoncologysummit.com/home.asp
9 – 11	Algorithm forms of breast cancer treatment Kyoto Breast Cancer Consensus Conference International Convention 2009	Kyoto Japan	Kyoto Breast Cancer Consensus Conference 1F, Kinki District Invention Center 14 Yoshida-Kawara-cho, Sakyo-ku 606-8306 Kyoto, Japan Tel: +81 75 761 5751 Fax: +81 75 761 5718 Email: info@kyoto-breast-cancer.org Web: www.kyoto-breast-cancer.org/international
17 – 18	6th International Chicago Lymphoma Symposium	Chicago United States	International Conference Services Ron Boaz – Conference Coordinator 2101-1177 West Hastings Street V6E 2K3 Vancouver, Canada Tel: +1 604 681 2153 Fax: +1 604 681 1049 Email: icls2009@icsevents.com Web: www.chicagolymphoma.com
18 – 22	100th American Association for Cancer Research Annual Meeting	Denver United States	American Association for Cancer Research (AACR) 615 Chestnut St., 17th Floor 19106 Philadelphia, United States Tel: +1 215 440 9300 Fax: +1 215 440 9313 Email: aacr@aacr.org Web: www.aacr.org
22 – 25	22nd American Society of Paediatric Haematology/Oncology annual meeting	San Diego United States	American Society of Paediatric Haematology/Oncology 4700 W. Lake Ave. 60020 Glenview, United States Tel: +1 847 375 4716 Email: info@aspho.org Web: www.aspho.org
23 – 25	2nd Interconference Breast Cancer Meeting	Sarajevo Bosnia and Herzegovina	ECCO Michel Ballieu av Mounier 83, 1200 Brussels, Belgium Email: nicola@ecco-org.eu Web: www.ecco-org.eu/Conferences-and-Events/IBCM-2/page.aspx/838
30 Apr – 3 May	2009 Oncology Nursing Society (ONS) Annual Congress	San Antonio United States	Oncology Nursing Society 125 Enterprise Drive, 15275 – Pittsburgh, United States Tel: +1 866 257 4667 Fax: +1 877 369 5497 Email: customer.service@ons.org Web: www.ons.org
May			
3 – 6	12th World Congress on Cancer of the Skin	Tel Aviv Israel	Skin Cancer Foundation c/o Kenes International, Geneva, Switzerland Tel: +41 22 908 0488 Fax: +41 22 732 2850 Email: wccs2009@kenes.com Web: www.kenes.com/skin-cancer
6 – 9	Cancer Care Conference 2009	Edmonton Canada	Alberta Cancer Board Lee Elliott 10123 - 99 Street T5J 3H1 Edmonton, Canada Tel: +1 780 643 4423 Email: lee.elliott@cancerboard.ab.ca Web: www.cancerboard.ab.ca
7 – 9	IMPAKT Breast Cancer Conference: Improving care and knowledge in translational research	Brussels Belgium	IMPAKT Secretariat c/o ESMOVia Luigi Taddei 4 6962 Lugano-Viganello, Switzerland Tel: +41 91 973 19 00 Fax: +41 91 973 19 18 Email: impakt@esmo.org Web: www.esmo.org

CALENDAR OF MEETINGS

Date	Name of Meeting	Place	Secretariat
7 – 9	Developments in Cancer Education. 22nd Annual Scientific Meeting EACE	Groningen Netherlands	European Association for Cancer Education dr. J. de Vries P.O. 30.001 BA31 9700 RB Groningen, Netherlands Tel: +31 50 361 9024 Fax: +31 50 361 1819 Email: paog@wenckebach.umcg.nl Web: www.eaceonline.com
8 – 9	4th European International Kidney Cancer Symposium	Berlin Germany	Kidney Cancer Association 1234 Sherman Avenue, Suite 203 60202 Evanston, United States Tel: +1 847 332 1051 Fax: +1 847 810 0290 Email: dyesner@kidneycancer.org Web: www.kidneycancersymposium.com
8 – 14	25th International Papillomavirus Conference and Clinical Workshop	Malmö Sweden	Swedish Papillomavirus Society c/o Destination Oresund Malmo, Sweden Tel: +46 40 300 301 Fax: +46 40 974 000 Email: info@destinationoresund.com Web: www.hpv2009.org
11 – 14	3rd Quadrennial Meeting of the World Federation of Neuro-Oncology jointly with The 6th Meeting of the Asian Society for Neuro-Oncology	Yokohama Japan	World Federation of Neuro Oncology President: Professor Masao Matsutani Ichijoji Bldg.,2-3-22 Azabudai, Minato-ku 106-0041 Yokohama, Japan Tel: +81-3-3589-4422 Fax: +81-3-3589-3974 Email: wfno2009@convex.co.jp Web: wfno2009.umin.ne.jp/
12 – 16	Joint meeting: 7th World Congress on Melanoma and 5th EADO Congress	Vienna Austria	European Association of Dermato-Oncology (EADO) Congress Partner / MCI Wilhelminenstr. 80/82 1160 Vienna, Austria Tel: +43 1 406 22 35 Fax: +43 1 406 31 28 Email: Congress@worldmelanoma2009.com Web: www.worldmelanoma2009.com
29 May – 2 Jun	ASCO 2009 Annual Meeting	Orlando United States	American Society of Clinical Oncology Jean Colvard 2318 Mill Road Suite 800 22314 Alexandria, United States Tel: 571-483-1300 Fax: 571-366-9530 Email: jean.colvard@asco.org Web: www.asco.org
30 -31	2009 American Head and Neck Society annual meeting	Phoenix United States	American Head and Neck Society 11300 W. Olympic Blvd., Suite 600 90064 Los Angeles, United States Tel: +1 310 437-0559 Fax: +1 310 437-0585 Email: admin@ahns.info Web: www.ahns.info/meetings
31 May – 3 Jun	35th Annual Educational Conference	New Orleans United States	National Cancer Registrars Association (NCRA) Lori Swain 1340 Braddock PlaceSuite 203 22314 Alexandria, United States Tel: +1 703 299-6640 Fax: +1 703 299-6620 Email: info@ncra-usa.org Web: www.ncra-usa.org/i4a/pages/index.cfm?pageid=3282
June			
8 – 10	Cancer Genes: Discovery and Exploitation. Institute of Cancer Research Centenary Conference 2009	London United Kingdom	Institute of Cancer Research c/o Hampton Medical Conferences 113-119 High Street TW12 1NJ Hampton Hill, United Kingdom Tel: +44 20 8979 8300 Fax: +44 20 8979 6700 Email: hmc@hamptonmedical.com Web: www.icr.ac.uk/centenary_conf/index.shtml
10 – 13	8th International Gastric Cancer Congress	Kraków Poland	International Gastric Cancer Association c/o The Jagiellonian University Events Office ul.Czapskich 4 / 301 31-110 Kraków, Poland Tel: +48 12 663 38 29 Fax: +48 12 663 38 58 Email: office@8igcc.pl Web: www.igca.info

CALENDAR OF MEETINGS

Date	Name of Meeting	Place	Secretariat
18 – 21	26th International congress of chemotherapy and infection	Toronto Canada	International Society of Chmotherapy c/o Congress Canada 555 Richmond Street WestSuite 1004, P.O. Box 202 M5V 3B1 Toronto, Canada Tel: + 1 416-504-4500 Fax: + 1 416-504-4505 Email: icc09@congresscan.com Web: www.icc-09.com
21 – 25	11th World Congress of Psycho-Oncology	Vienna Austria	International Psycho-Oncology Society (IPOS) Jennifer Alluisi 2365 Hunters Way 22911 Charlottesville, United States Tel: +1 434-293-5350 Fax: +1 434-977-1856 Email: info@ipos-society.org Web: www.ipos-society.org
23 – 27	CARS 2009 - 23rd International Congress and Exhibition on Computer Assisted Radiology	Berlin Germany	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 Web: www.cars-int.org
23 – 27	ISCAS - 13th Annual Conference of the International Society for Computer Aided Surgery	Berlin Germany	CARS Confderence 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 Web: www.cars-int.org
24 Jun – 27 Oct	11th 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 Web: www.imedex.com
25	1st Annual Conference of the National Cancer Intelligence Network	West Midlands United Kingdom	National Cancer Intelligence Network Eventpro UK Limited 2nd Floor, Queens House55/56 Lincoln\'s Inn Fields WC2A 3PX London, United Kingdom Tel: +44 (0) 20 7061 8137 Fax: +44 (0) 20 7061 8461 Email: alison.stone@ncin.org.uk Web: www.ncin.org.uk/
July			
6 – 10	European Association for Cancer Research Symposia 2009	Cambridge United Kingdom	The European Association for Cancer Research Executive Director Mr Robert Kenney School of Pharmacy, University of Nottingham, University Park NG7 2RD Nottingham, United Kingdom Tel: +44 115 9515114 Fax: +44 115 9515115 Email: kathryn.wass@nottingham.ac.uk Web: www.eacr.org/meetings.php
9 – 12	International Academy of Oral Oncology 2009 Congress	Toronto Canada	International Academy of Oral Oncology c/o Eastman Dental Institute University of London256 Gray\'s Inn Road WC1X 8LD London, United Kingdom Tel: +442079151038 Fax: +442079151039 Email: C.Scully@eastman.ucl.ac.uk Web: www.internationalacademyoforaloncology.org
20 – 21	Accelerating access to HPV vaccines. 3rd Stop cervical cancer in Africa	Cape Town South Africa	Princess Nikky Breast Cancer Foundation Pricess Nikky Onyeri Suite 130, Lozumba Complex, Area 10, Garki 23409 Abuja, Nigeria Tel: +234 805 630 5187 Email: nikkybcfoundation@yahoo.com
31 Jul – 4 Aug	13th World Conference on Lung Cancer	San Francisco, United States	International Conference Services Ltd. Suite 2101 – 1177 West Hastings Street Vancouver, BC Canada V6E 2K3 Tel: +1 604 681 2153 Fax: +1 604 681 1049 Email: wclc2009@meet-ics.com Web: www.2009worldlungcancer.org

CALENDAR OF MEETINGS

Date	Name of Meeting	Place	Secretariat
August			
6 – 10	World Congress on Thyroid Cancer	Toronto Canada	University of Toronto World Congress on Thyroid Cancer secretariat 500 University Avenue, Ste. 650 M5G 1V7 Toronto,, Canada Tel: +1 416.978.2719 Fax: +1 416.946.7028 Email: help-ent0909@cmetoronto.ca Web: www.thyroid2009.ca/
September			
4 – 6	Priming knowledge in liver cancer across disciplines. 3rd ILCA annual conference	Milan Italy	International Liver Cancer Association (ILCA) Avenue de Tervueren, 300 1150 Brussels, Belgium Tel: +32 2 789 2345 Fax: +32 2 743 1550 Email: info@ilca-online.org Web: www.ilca2009.org
4 – 8	34th European Society for Medical Oncology Congress	Vienna Austria	ESMO Congress Via La Santa 7 6962 Viaganello-Lugano, Switzerland Tel: +41 91 973 1919 Fax: +41 91 973 1918 Email: congress@esmo.org Web: www.esmo.org
4 – 9	22nd European Congress of Pathology	Florence Italy	SIAPEC – IAP c/o OIC Viale G. Matteotti 7 50121 Firenze, Italy Tel: + 39 055 50351 Fax: + 39 055 500 1912 Email: info@ecp2009.org Web: www.siapec.it
10 – 13	ESUR 2009: 16th European symposium on uro-genital radiology	Athens Greece	European Society of Urogenital Radiology (ESUR) c/o PRC Congress and Travel Public Relations CenterEleni Halividou102, Michalakopoulou Str. 115 28 Athens, Greece Tel: +30 210 771 1673 Fax: +30 210 771 1289 Email: esur@prctravel.gr
24 – 27	The First Global Leadership Forum for Cancer Control	Ottawa Canada	The Campaign to Control Cancer Pat Kelly 117 Peter St.3rd Floor, M5V2G9 Toronto, Canada Tel: 1-416-260-5377 Fax: 1-416-260-5371 Email: events@controlcancer.ca Web: www.controlcancer.ca
25 – 26	8th International Kidney Cancer Symposium	Chicago United States	Kidney Cancer Association Donna Yesner 1234 Sherman AvenueSuite 203 60202 Evanston, United States Tel: +1 847 332 1051 Fax: +1 847 810 0290 Email: dyesner@kidneycancer.org Web: www.kidneycancersymposiium.com
27 – 30	35th European Congress of Cytology	Lisbone Portugal	Sociedade Portuguesa de Citologia c/o Forum d\'Ideias Rua da Juventude Azeitonense, 137B 2925-588 V.N. Azeitão, Portugal Tel: +351 21 218 93 93 Fax: +351 21 218 93 92 Email: cytologylisboa2009@forumdideias.com Web: www.cytologylisboa2009.com
27 – 30	Biomarkers and New Treatment Strategies in Oncology. 37th ISOBM Congress	Amsterdam Netherlands	International Society of Oncology and BioMarkers Dr J.M.G. Bonfrer c/o NKI-AVLPlesmanlaan 121 1066 CX Amsterdam, Netherlands Tel: +31 (0)20 5122785 Fax: +31 (0)20 5122799 Email: a.lansdorp@nki.nl Web: http://isobm09.nki.nl
27 Sep – 2 Oct	FIGO 2009: 19th World Congress of Gynecology and Obstretics	Cape Town South Africa	FIGO 2009 Secretariat Turners Conferences & Conventions PO Box 1935 4000 Durban, South Africa Tel: +27 31 332 1451 Fax: +27 31 368 6623 Email: info@figo2009.org.za Web: www.figo2009.org.za

CALENDAR OF MEETINGS

Date	Name of Meeting	Place	Secretariat
October			
4 – 9	FIGO 2009: 19th World Congress of Gynaecology and Obstetrics	Cape Town South Africa	International Federation of Gynaecology and Obstetrics (FIGO) c/o Turners Conferences and Conventions Durban, South Africa Tel: +27 31 332 1451 Fax: +27 31 368 6623 Email: info@figo2009.org.za Web: www.figo2009.org.za
15 – 17	10th Meeting of the International Society of Geriatric Oncology	Berlin Germany	International Society of Geriatric Oncology Matti S. Aapro, MD c/o IMO - Clinique de Genolier CH-1272 GENOLIER, Switzerland Tel: +41 22 366 9106 Fax: +41 22 366 9207 Email: siog@genolier.net Web: www.cancerworld.org/siog
20 – 24	5th International Conference on Tumour Microenvironment: Progression, Therapy	Versailles France	The International Cancer microenvironment society; The American Association for Cancer research and the National Cancer Institute of France Professor Isaac P. Witz Department of Cell Research 69978 Tel Aviv, Israel Tel: +972-3-6406615 Fax: +972-3-6406613 Email: tumic@post.tau.ac.il Web: www.cancermicroenvironment.tau.ac.il
November			
5 – 7	5th International Congress on Myeloproliferative Disorders and Myelodysplastic Syndromes	New York United States	Imedex, Heather Drew 4325 Alexander Drive, 30022 Alpharetta, United States Tel: +1 770 751 7332 Email: meetings@imedex.com Web: www.imedex.com/calendars/oncology.asp
8 – 11	3rd International Cancer Control Congress	Lake Como Italy	3rd International Cancer Control Congress c/o International Conference Services Suite 2101 - 1177 West Hastings Street V6E 2K3 Vancouver, Canada Tel: +1 604 681 2153 Fax: +1 604 681 1049 Email: iccc2009@meet-ics.com Web: www.cancercontrol2009.com
11 – 14	Cancer in Africa. 7th AORTIC International Cancer Conference	Dar Es Salaam Tanzania	African Organisation for Research and Training in cancer PO Box 186, 7701 Rondebosch, South Africa Tel: +27 21 689 5359 Fax: +27 21 689-5350 Email: info@aortic2009.org Web: www.aortic.org
12 – 14	20th Asian Pacific Cancer Congress	Tsukuba Japan	Asian Pacific Federation of Organizations for Cancer Control Hideyuki Akaza Department of UrologyTsukuba University1-1-1 Tennodai 305-8575 Tsukuba, Japan Tel: +82 298 53 3210 Fax: +82 298 53 3196 Email: akazah@md.tsukuba.ac.jp
27 – 29	2nd multidisciplinary meeting on urological cancers	Barcelona Spain	European Association of Urology (EAU), European Society for Medical Oncology (ESMO) and European Society for Therapeutic Radiology and Oncology c/o Congress Consultants Ms. Monique OosterwijkPO Box 30016 6803 AA ARNHEM, Netherlands Tel: +31 26 389 1751 Fax: +31 26 389 1752 Email: emuc-meeting2009@congressconsultants.com Web: www.emucbarcelona2009.org
December			
5 – 9	2009 American Society of Haematology annual meeting	New Orleans	American Society of Heamatology (ASH) 1900 M Street, NW, Suite 200 20036 Washington, United States Tel: +1 202 776 0544 Fax: +1 202 776 0545 Email: ash@hematology.org Web: www.hematology.org/calendar.cfm

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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Cancer Council New South Wales
Cancer Council Northern Territory
Cancer Council Queensland
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Cancer Council Tasmania
Cancer Council Victoria
Cancer Council Western Australia

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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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www.cosa.org.au or cosa@cancer.org.au

Membership fees for 2009

Ordinary Members: $160
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(includes GST)

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ANZ Children's Haematology and Oncology
Breast Oncology
Cancer Nurses Society of Australia
Cancer Pharmacists
Cancer Research
Clinical Research Professionals
Epidemiology
Familial Cancer
Gastrointestinal Oncology
Gynaecological Oncology
Lung Oncology
Medical Oncology
Melanoma and Skin
Neuro-oncology
Palliative Care
Psycho-Oncology
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Surgical Oncology
Urologic Oncology

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 forum@cancer.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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