Mapping Rural and Regional Oncology Services in Australia

March 2006

Clinical
Oncological
Society of
Australia

Table of contents

Introduction

There is a growing body of evidence showing that the 670,000+ Australians who live outside state capital cities[1] are at risk of significantly poorer survival rates following a cancer diagnosis than people with similar diagnoses in the major metropolitan centres.[2]

For example, a report published in the *Medical Journal of Australia* in 2004 showed that people with cancer in regional NSW were 35% more likely to die within five years of diagnosis than patients in cities. Mortality rates increased with remoteness. For some cancers, remote patients were up to 300% more likely to die within five years of diagnosis.[3] The limited evidence on cancer in indigenous people in non-metropolitan areas also indicates significantly poorer treatment outcomes than those in the mainstream.[4]

People with cancer in rural and remote areas are diagnosed at a later stage than their urban counterparts[3] and are more likely to die from cancers such as lung, cervical and uterine cancer the further they are located from large cities.[5]

Specific indicators of reduced access to cancer care services in rural and remote Australia include poorer "state of the art" diagnosis, staging and treatment of prostate cancer;[6] less breast-conserving surgery;[7] and an apparently lower probability of completing treatment when referred for radiotherapy for rectal cancer.[8]

More generally, the problems of diagnosing and treating cancer in regional Australia reflect disadvantages across the healthcare spectrum experienced by all rural and remote communities. Improved cancer care should be a rural health policy priority, because cancer as a disease group kills more Australians than any other cause and its impact is felt disproportionately in regional areas. The evidence indicates that reducing inequality in cancer outcomes requires a combination of improved primary healthcare and access to specialist multidisciplinary services.[9]

Conversely, improving cancer treatment services in regional Australia would create flow-on benefits to overall healthcare outcomes in rural and remote communities, as outlined in the recommendations on pages 5-7.

Opportunities for Reform

As the evidence base around metropolitan-regional cancer treatment disparities grows, so too does the commitment in principle from Australian and state-territory governments to reduce inherent healthcare inequities more generally.

The National Service Improvement Framework for Cancer, endorsed by both national and state/territory governments through the Australian Health Ministers' Council, identifies improved cancer control in regional Australia as a high-priority area.

The "Healthy Horizons" framework prepared by the Australian Health Ministers' Advisory Council and the National Rural Health Alliance features a number of principles clearly relevant to cancer control, such as addressing the highest priorities first (cancer prevalence and mortality should qualify it as a high priority), improving indigenous people's health, effecting workforce reform and improving service coordination.[10]

The Council of Australian Governments has also flagged a collaborative approach, releasing a communiqué on 10 February 2006 promising to "provide better care for people in the community, including in rural and remote Australia" as part of a $1.1 billion reform package.[11]

In cancer-specific terms, we are seeing an unprecedented commitment such as the Australian Government's *Strengthening Cancer Care* package, including the establishment of Cancer Australia, and the emergence of state cancer plans and agencies, all of which have committed to reducing metropolitan-regional inequities.

In such a climate of shared purpose, there is a key opportunity for governments to work closely with healthcare professionals at the frontline of caring for people with cancer from regional Australia to facilitate necessary reforms.

The Clinical Oncological Society of Australia (COSA) is Australia's peak multidisciplinary society representing cancer care professionals. COSA's Regional and Rural Oncology group has completed this mapping exercise as part of an ongoing contribution to building the evidence base around regional cancer management to help inform the development of much-needed improvements in service provision.

To gain a comprehensive picture of regional and rural oncology services, the survey's aim was twofold:

1. Map existing cancer services in rural and regional Australia.

2. Compare these services with two metropolitan tertiary centres (Royal Prince Alfred and Peter MacCallum Cancer Centre) and one large regional centre (Mater Hospital Newcastle).

The results detail how rural and remote Australians have relatively poor access to cancer treatment and support consistent with the higher levels of mortality and morbidity they experience when compared with populations in large cities.

We also take this opportunity to provide cost-effective short- and longer-term recommendations aimed at addressing the problem, based on the data in this report and the experience of regional cancer-care professionals.

It is hoped that this new analysis of the problem and proposed solutions will be useful to governments in their efforts to reduce the unacceptable burden of cancer in rural and remote Australia.

Recommendations

The existence of some regional cancer-care capacity and a range of guidelines, studies and recommendations, provide a strong foundation on which to expand services in a cost-effective, strategic way.

The immediate challenge for governments – both national and state – is to pull these many strands together and invest in improved coordination and an expansion of existing resources to deliver much needed improvements in cancer-care services for Australia's substantial rural and remote population.

The findings in this report and an ongoing study of this issue by the Clinical Oncological Society of Australia indicate that the next steps towards equity should be:

- formal recognition of the problem and a collaborative government response;
- building regional oncology centres of excellence;
- establishing a national quality assurance framework; and
- short-term capacity-building measures while the reforms above roll out.

Formal recognition, collaborative response

There are encouraging signs that governments are becoming increasingly focused on the problems of cancer care in regional Australia and are working more strategically to improve outcomes.

Initiatives such as the Australian Government's rural mentoring program, commitments in state government cancer plans and the emergence at both federal and state level of dedicated cancer control agencies present opportunities to begin building now to reduce the imbalance between rural/remote and city patients over the longer term.

The Council of Australian Governments (COAG) is scheduled to meet in June 2006 and expected to discuss a number of healthcare reforms, including improved coordination of chronic disease management and Medicare support for case-conferencing of cancer specialists. The Australian Health Ministers' Advisory Council has also agreed to a rural health reform agenda, aimed at addressing high-priority issues as a matter of urgency.

This may be an ideal time for governments at both levels to consider and agree to actions to address specific areas of cancer care for people in rural and remote areas. Proposed solutions, which would require commitment and collaborative approach, are outlined as follows.

Regional oncology centres of excellence

Based on the evidence and the experience of cancer care professionals working in regional areas, the establishment of "regional oncology centres of excellence" would be the most cost-effective and efficient way to roll out a sustainable framework for reducing disparities in treatment outcomes between urban and rural Australia.

Moreover, the establishment of regional oncology centres also has the potential to yield wide-ranging benefits in other areas of clinical practice and contribute to overall improvements in rural/regional life. The problems of attracting and retaining GPs and allied health professionals would potentially be reduced in centres that offer services such as multidisciplinary cancer care.

The logical starting point for building regional oncology centres of excellence would be treatment facilities that already have radiotherapy capacity.

Rationale

Around half of all cancer patients require radiotherapy. Radiation oncology is therefore essential to the provision of multidisciplinary cancer care. While it is the most expensive treatment modality in terms of capital outlays and maintenance, and the least mobile due to hardware requirements, in terms of cost versus efficacy radiotherapy is the most cost-effective treatment to administer once the infrastructure is in place.[12]

There is, therefore, a strong case for building multidisciplinary cancer centres in the 10 non-metropolitan centres that already have radiotherapy infrastructure. These are:

> Coffs Harbour, Port Macquarie, Wagga, Wollongong (NSW); Albury-Wodonga, Ballarat, Bendigo, Geelong, Latrobe Valley (Vic); and Townsville (Qld).

There is commitment from the Northern Territory Government to fund radiation oncology services in Darwin, which could form the basis of a multidisciplinary centre to service the Top End. At the time of writing there were signs that additional services were also being considered for the NSW North Coast. (In Newcastle, a multidisciplinary cancer treatment service already operates at the Newcastle Mater Hospital, servicing people in the NSW Hunter region.)

The combined population of these 11 centres is more than 1.5 million people. It is estimated that an additional 700,000 people live within 150km of these centres. Based on current cancer prevalence rates, this equates to around 630,000 people living in or relatively near these centres who are likely to be diagnosed with cancer by age 75 and who, under current arrangements, would in many cases need to travel considerable distances to access multidisciplinary care in a state capital city.

Attracting two medical oncologists and a range of allied health service providers to each centre where radiation services already exist is the most cost-effective way to introduce multidisciplinary cancer care into the regions. It would also be consistent with the Australian Medical Workforce Advisory Committee's recommendations around practitioner-to-patient numbers according to critical population mass. In addition to treating substantial local populations, these centres would operate as relay points for supporting remote services and communities, providing mentoring and referral links for rarer cancers. They would also serve as a template for setting up future centres in regional areas with similar populations that currently have no radiotherapy capacity.

In the opinion of experienced rural/regional cancer care professionals, the establishment of regional cancer centres would also help to attract GPs and other clinical practitioners to regions where there are current shortfalls, by contributing to an overall culture of local medical best-practice.

An informative example of the potential of regional oncology centres of excellence is the centre at Albury-Wodonga, a former outreach facility that now features five resident oncologists, a clinical trials unit, oncology pharmacist and a two-machine radiotherapy service. Outreach clinics are performed within the region from Albury-Wodonga. Reported benefits include an increase in the number of new patients able to be treated locally from 150 to 750 a year, an eight-fold increase in chemotherapy day treatments performed locally, the establishment of multidisciplinary clinics and more than 10% of new patients participating in a clinical trial.[13]

A national quality assurance framework

Medical groups have done considerable work developing guidelines to underpin best practice in cancer care in Australia, yet there is no national framework for ensuring such guidelines are universally adopted.

The Australian Medical Workforce Advisory Committee has released a number of recommendations on infrastructure requirements for cancer services; the Australian Cancer Network is developing a model for accrediting cancer services and credentialing individual practitioners and has produced (with NHMRC endorsement) a range of clinical practice guidelines; and the Medical Oncology Group of Australia has scoped minimum standards for medical oncology services for rural and remote Australia.

There may be a role for the Australian Government's new national cancer agency, Cancer Australia, to endorse these and other similar documents and negotiate, with appropriate federal and state/territory government agencies, a framework for their adoption as standard practice.

The application of evidence-based guidelines would be particularly helpful in regional centres, which currently lack the economies of scale to develop their own mechanisms for quality assurance.

Shorter-term capacity building

There are a number of shorter-term measures that would help reduce inequities in treatment outcomes while longer-term reforms are being developed. These include:

- Investment in clinical data systems to audit, monitor and plan oncology services;
- Investment in psychosocial support services for people in rural and remote areas, who have been shown to have significantly inequable access to such services;
- Support for distance education, mentoring and innovative models such as telemedicine in remote areas; and
- Improved coordination of government-funded travel and accommodation schemes for cancer patients and their families in remote areas.

By formally identifying improved cancer care in rural and remote Australia as a policy priority in the context of existing government reform frameworks, formal structures can be put in place to develop targeted solutions to the challenges outlined above.

Executive Summary

This report provides a snapshot of regional cancer treatment services in Australia and how they compare across states, within states and in terms of remoteness.

The methodology used to obtain the data is explained on page 13. Essentially, the process involved surveying oncologists, chemotherapy nurses and other staff in Australia's 157 regional hospitals administering chemotherapy (RHAC) about aspects of service provision and local patient populations.

The survey highlighted problems caused by the absence of sufficient clinical data systems. For example, it is difficult to assess/benchmark numbers of health professionals per population or per cancer case, as information such as numbers of new patients presenting to a service is not necessarily collected.

There were, however, extremely high rates of practitioner participation in the survey, with a 100% response rate in NSW, the Northern Territory and Victoria, 95% in Queensland and 85% in Tasmania.

Three criteria sets were used to review the data collected:

1) Distribution by State
2) Hospital Peer Group
3) Remoteness Area

The majority of Australia's RHAC were in remoteness areas 1& 2, defined as "inner regional" and "outer regional" (see definitions, page 17).

Variations in care exist between states and between the regional sites and the metropolitan sites benchmarked. The variations in care are described in detail in the report. Variations of care highlighted include:

- Ordering of chemotherapy by a non-medical oncologist;
- Administration of chemotherapy by a non-oncology certified chemotherapy nurse;
- Availability of cytotoxic administration guidelines;
- Availability of dedicated palliative care specialists/doctors; and
- Provision of psychosocial support services

Medical Oncologists

Medical oncologists are trained in the management of malignancies and specifically in the prescription of chemotherapy and other medical treatments for cancer.

Only 21% of all RHAC had a resident medical oncology service; 41% had access to a visiting service, with access ranging from weekly to as little as once in six months. An additional 38% of RHAC had neither a resident nor visiting medical oncology service but were administering chemotherapy. This was more likely to occur as remoteness increased; medical oncologists mostly worked in facilities in remoteness areas 1 and 2 (see page 17).

Chemotherapy Orders, Preparation and Administration

Most chemotherapy agents have a narrow range of safe and effective doses, requiring the precise calculation of dosages, monitoring of side-effects and monitoring of response. While adequate doses can cause severe and sometimes life-threatening side-effects, inadequate doses of chemotherapy can have an adverse impact on cancer survival and effective palliation.[14] An effective chemotherapy regimen aims to carefully balance these risks.

Medical oncologists write the majority of chemotherapy orders in 100% of benchmarked metropolitan centres but only 58% of RHAC reported the majority of orders written by a medical oncologist. RHAC in SA (27%), WA (47%) and QLD (58%) had the lowest proportion of orders written by a medical oncologist.

As remoteness increased, the ordering of chemotherapy by medical oncologists decreased, with general physicians, general practitioners and “other” doctors ordering chemotherapy. The degree of supervision and involvement by medical oncologists or haematologists is not always clear.

Chemotherapy trained nurses administered chemotherapy in only 61% of RHAC Australia-wide. In Northern Territory, South Australian and Western Australian RHAC, chemotherapy was mostly administered by GPs (66%, 68%, 32% respectively) or other trained nurses (100%, 50%, 32% respectively). As RHAC remoteness increased, chemotherapy was increasingly administered by people other than a chemotherapy-trained nurse, such as other trained nurses and GPs.

The majority (83%) of RHAC had their chemotherapy made up by a dedicated manufacturing facility.

Chemotherapy Nurses

The safe administration and risk-management of chemotherapy depends on the experience and training of nursing staff involved. Experienced nurses play a pivotal role in educating, supporting and monitoring patients and in early intervention as problems develop.

Of the 157 RHAC, a total of 309 nurses (207.7 FTE) with a recognised oncology certificate were identified.

Of concern was the high number of nurses in all states giving chemotherapy without a recognised certificate qualifying them to do so (105 total or 63 FTE).

Western Australian and South Australia had fewer nurses with a recognised oncology certificate compared to RHAC in other States. In remoteness areas 2 and 3, there were more nurses giving chemotherapy without a recognised certificate than those with a certificate. In the most remote areas there were no certified oncology nurses.

The numbers of certified nurses who reported not giving chemotherapy were high (80), particularly in remoteness area 1 (59), indicating their underemployment oncology.

Chemotherapy Outside a Recognised Facility

Thirty-seven RHAC reported that chemotherapy was given outside a recognised facility in their region, including Hospital-in-the-Home (HITH), GP surgeries (sometimes for arthritis), by a carer or through self-medication at home. This was more common in Queensland and NSW, and generally in remoteness area 1.

Breast Cancer Nurses

There were 309 reported dedicated breast cancer nurses in RHAC. Victoria (105) and NSW (94) had the most and the Northern Territory, South Australia and Western Australia the fewest (4, 8 and 3 respectively). No breast cancer nurses were funded in regional Tasmania. Queensland had 76.

Breast cancer nurses were less likely to be found and funded in areas of more remoteness. Many qualified breast cancer nurses were performing their roles but were not funded to do so. Only 15% of the 76 breast cancer nurses in regional Queensland reported being funded.

Palliative Care

Only 22% of RHAC had a dedicated palliative care doctor and 59% had dedicated palliative care nurses. GPs and nurses played a crucial role in the provision of palliative care services in rural and regional areas.

Only 50% of private RHAC hospitals provided a dedicated palliative care doctor service. Only 27% of large rural and 13% of medium hospitals (see size definitions, page 16) had a dedicated palliative care doctor service.

Radiation Oncology Services

Seven per cent of hospitals that reported administering chemotherapy had access to a radiation unit – a total of 11 radiation units for all 157 RHAC.

The Northern Territory had access to no units, making Darwin currently the only state or territory capital without one. In Darwin, patients were faced with a four-hour flight to the nearest treatment facility in Adelaide. Top End communities outside Darwin faced even greater challenges.

Of the 26 available machines nationwide, less than half (46%) were reported as fully staffed. When a unit was available, the wait for radiation treatment ranged from 0-5 weeks, with an average of three weeks

Surgical Oncology Services

Surgical oncologists were only available at only five (3%) RHAC nationally. The five surgical oncology services offered by RHAC are located in remoteness areas 1 and 2. General and other surgeons appeared to provide the majority of oncology surgery in rural areas. 63% of RHAC reported that the majority of patients were sent to metropolitan units for major oncological surgery. This was highest in NSW.

48% of RHAC reported performing specialist gynaecology oncology surgery, and some reported performing neurosurgery, thoracic and liver surgery.

Allied Health Services, Multidisciplinary Care and Psychosocial Support

Most RHAC provided access to allied healthcare services. However, many reported long waiting times, out-of-pocket expenses or services restricted to inpatients.

In RHAC nationally, only 43% of hospitals held multidisciplinary clinics. Hospitals most likely to run multidisciplinary clinics were principal referral hospitals (93%), private hospitals (71%) and large rural hospitals (66%). Multidisciplinary clinics were reported for the following tumour types: breast, GIT, head and neck, gynaecological, and prostate cancer but not all tumour streams were treated in a formal multidisciplinary setting.

Dedicated oncology counselling services were only available at 39% of RHAC. Social workers were available at 50%, psychologists at 30% and specialist cancer nurses at 23%.

61% of all RHAC requested urgent access to psychological services and support.

65% indicated travel support was a problem for rural patients. Patient transport refunds were criticised in many returned surveys.

OH&S Guidelines

Occupational health and safety issues were highlighted. Most RAHC reported having cytotoxic guidelines in place. Where guidelines existed they were followed in most instances, mostly followed in the hospital setting but rarely in community and “other” facilities.

Identification of Cancer Services

Cancer is a notifiable disease in all states and territories and is the only major disease category for which an almost complete coverage of incidence data is available.[15]

Excluding non-melanoma skin cancers, there were 88,398 new cancer cases and 36,319 deaths due to cancer in Australia in 2001.[13] At the incidence rates prevailing in 2001, it would be expected that 1 in 3 men and 1 in 4 women will be diagnosed with a cancer in the first 75 years of life.

Further, an estimated 257,458 potential life years would be lost to the community each year as a result of people dying of cancer before the age of 75. Cancer currently accounts for 31% of male deaths and 26% of female deaths. Although there are many types of cancer, the six most common – colorectal (12,844 new cases), breast (11,886), prostate (11,191), melanoma (8,885), and lung (8,275) account for nearly two-thirds of all cases.[13]

Treatment of cancer involves a complex array of services provided by a range of specialists and allied health professionals. Once an abnormality is detected, a patient is usually referred to one or more specialists for diagnosis and treatment. Treatment may be in the form of surgery, radiation therapy, chemotherapy, hormonal therapy or a combination of these modalities.

In addition, psychosocial and practical support services for patients are provided by psychologists, psychiatrists, general practitioners and social workers, physiotherapists, nurses and community health care providers.

Palliative care services focused on symptom management and psychological support is also normally required during active treatment. At later stages of illness, particularly for those with an incurable cancer at an advanced stage, the role of palliative care for symptom relief, psychological support and family support is particularly important.

The provision of an acceptable medical oncology service requires adequate infrastructure and the above-mentioned support services. The Australian Medical Workforce Advisory Committee (AMWAC) defines an acceptable medical oncology service as follows:

> ***"An acceptable specialist medical oncology service is able to diagnose and manage patients with various malignancies, [provide] a high level chemotherapy service, undertake all modalities required for palliation, practice a high level of communication skills, and be part of a multi-disciplinary team."[16]***

Methodology

A survey instrument was developed and piloted at one regional centre. During 2005, all RHAC in the public and private sector were identified. At each RHAC a chemotherapy nurse or oncologist was identified, telephoned by a project officer and invited to complete the survey instrument or to seek the assistance of other personnel at the RHAC to complete the survey. Detailed questions were asked regarding the remoteness of the RHAC, the population served, the level of resident and visiting medical oncology, haematology, radiation oncology, palliative care, allied health, surgical oncology, psycho-oncology support services and the availability of multidisciplinary clinics. Questions were also asked about the availability of certified and uncertified oncology nurses, and chemotherapy prescribing practices. Some qualitative data was also collected. Follow-up telephone calls were made to clarify or complete missing data.

The response rates for this data collection were extremely high. There was a 100% response rate in NSW, NT and VIC, 95% in Queensland, and 85% in Tasmania.

Key Limitations with Data Collection and Interpretation

- Due to privacy concerns we were unable to collect staff data by individual name. The collection of de-identified staff numbers did not allow for checking duplicates. Numbers of staff may be inflated i.e., people working in two or more hospitals in a local region would have been counted twice. The exact number of health professionals working in oncology needs to be a focus of another mapping survey to clarify any limitations with this data collection. In these data, we have crossed reference medical workforce data wherever possible to verify the results.

- Wherever possible the Directors of Nursing / Doctors were contacted to complete the questionnaire. The data collected depended completely upon experience and knowledge of the individual completing the questionnaire.

- Lack of access to data or 'real' numbers, the importance of de-identification, no time to collect data or do paperwork, fear of reprisals and a concern for where the data would end up were key concerns for centres. Answers to the questionnaire may have been altered accordingly.

- Individual interpretation of the questionnaire may have altered how individual questions were answered.

- Data were entered as it was supplied by each RHAC.

- In certain tables where objectively acquired data (such as number of actual RHACs) has been matched against the sum of respondents' estimates there are observable anomalies. This data has not been cleaned.

Reported Results

1.0 Regional Hospitals Administering Chemotherapy (RHAC)

	NSW	VIC	QLD	SA	WA	NT	TAS	Total
Number of regional hospitals administering chemotherapy (RHAC)	23	28	43	34	19	3	7	159

In 2003-04 there were 761 public hospitals and 543 private hospitals. In rural and regional areas (i.e. Remoteness Areas 1-3) a total of 159 rural and regional hospitals/health services reported that they administered chemotherapy.

Public health in NSW is divided into eight rural and metropolitan Area Health Services: four in metropolitan and Greater Sydney (which includes the Central Coast in the north, and the Illawarra in the south), and four in country areas. These Area Health Services are responsible for hospitals, dental clinics, community health centres, rehabilitation and psychiatric hospitals, emergency transport, and community support programs in their respective area. In NSW, there are 78 public and private hospitals in rural or regional areas. Of those 23 reported they administered chemotherapy.

In the Northern Territory (NT), there are 570 public hospital beds. There are major public teaching hospitals in Darwin (approximately 300 beds) and Alice Springs (180 beds). Chemotherapy is likely to be administered at these three sites. There are smaller public hospitals in the Arnhem region (Nhulunbuy - Gove Hospital), Katherine (300km south of Darwin) and Tennant Creek (500km north of Alice Springs). Community-based specialist services in the Northern Territory include the Palliative Care team, the Darwin Hearing Centre, the Community Health Paediatric team, the Specialist Adult Health team and the Well Women's screening and advice service for breast and cervical cancer.

Queensland is divided into three health zones; Northern, Central and Southern. Each zone is sub-divided into Health Districts. The population of each District is serviced by one or more base hospitals (95 in all), supported by nursing homes, outpatient clinics, community health centres and/or multipurpose services (combinations of hospitals, nursing homes and community centres). Queensland also has 55 private hospitals and 46 private day hospitals. The Queensland Government provides a range of community-based and state-based primary health care services, such as the Home and Community Care program, breast screening, quit smoking and early intervention mental health programs. In Queensland, of the 95 rural and regional hospitals, 43 reported administering chemotherapy.

There are nine public hospitals in metropolitan Adelaide (seven of them major teaching hospitals) and 63 hospitals in country regions. There are also 25 private hospitals in the metropolitan area of Adelaide and nine in country regions. Of those, 34 reported administering chemotherapy. South Australia provides a range of primary health care services in community settings, covering areas including nursing, dental health, drug and

alcohol services, child and youth health, women's health, mental health and contraceptive advice and education. Some are regionally focused, while others are state-wide with offices in metropolitan and rural areas. Country SA has seven Regional Health Services (RHSs), providing a different range of services to meet the needs of their local communities. These include hospitals, community health centres and Aboriginal Health clinics and outreach services.

In Tasmania, there are three major public teaching hospitals: Royal Hobart Hospital (incorporating the Repatriation General Hospital), Launceston General Hospital, and North West Regional Hospital in Burnie. There is also a network of smaller district public hospitals and three multipurpose service centres (integrated services that include residential aged care, GP and community health services) at Beaconsfield, Campbell Town and Nubeena. There are 11 private hospitals, some of which – for example, the North West Private Hospital, Hobart Private and the Mersey Community Hospital – are contracted by the Department of Health and Human Services to provide services to public patients. The total number of district or regional hospitals administering chemotherapy was seven.

In Victoria there are 247 hospitals, of which 104 are public hospitals. There are 31 metropolitan hospitals and 73 regional hospitals. There are five regional health divisions and four metropolitan health regions. In addition to these hospitals, there are a range of state government funded primary health care services in community settings covering areas including nursing, dental health, drug and alcohol services, child and youth health, women's health, mental health and contraceptive advice and education. There are also 75 private hospitals in Victoria, 56 day procedure centres and 12 bush nursing hospitals. Victoria has seven Multi-purpose service centres in rural areas, which allow smaller communities to co-ordinate health services according to their needs. In Victoria, 28 were identified as administering chemotherapy.

2.0 Distribution of Rural/Regional Hospitals Administering Chemotherapy (RHAC)

Three criteria sets were utilised to review the data collected:

1) Distribution by State
2) Hospital Peer Group
3) Remoteness Area

RHAC by Hospital Peer Group

Hospital Peer Groups are utilised by the AIHW. This organises hospitals into broadly similar groups in terms of their range of admitted patient activities and geographical location, with the peer groups allocated names broadly descriptive of the types of hospitals included in each category.[17]

Table 1: RHAC State Breakdown by Hospital Peer Group

Hospital Peer Group (Separations)	NSW	NT	QLD	SA	TAS	VIC	WA	**TOTAL RHAC**
Metropolitan Benchmarks	2					1		
Principal referral-Metropolitan (>20,000 separations) & rural (>16,000 separations)	3	1	5		2	3		**14**
Large rural (>8,000) & remote (>5,000)	8	1	4			4	1	**18**
Medium 2,000–10,000	9		9	9		8	3	**38**
Remote acute <5,000	1	1	4				6	**12**
Small non-acute <2,000			4	8				**12**
Small rural acute <2,000	2		2	11		3	2	**20**
Private Hospitals			13		3	5		**21**
Cancer Service			1			2		**3**
Multi-purpose						1	6	**7**
Other non-acute	1							**1**
Palliative Care	1							**1**
Specialist Centre			1					**1**
Unpeered and other acute (<200)				5	2	1	1	**9**
Unclassified			2	1		1		**4**
TOTAL	**25**	**3**	**45**	**34**	**7**	**28**	**19**	**161**

RHAC State Breakdown by Remoteness Area (RA)

Remoteness Area (RA) categories are a useful way to compare regions according to distance from a metropolitan centre. The classification for each RA is listed in Table 2.

Table 2: Remoteness Area (RA) Classifications

Remoteness Area (RA)	Classification	Ratio of deaths from cervical cancer	Significantly different from 1 (i.e., rates are significantly different from those in Major Cities).
0	major cities		
1	inner regional	0.95	
2	outer regional	1.27*	
3	remote	1.53	
4	very remote	3.32*	
Unspecified			

The State breakdown of the collected data by RA's is presented in Table 3.

Table 3: RHAC State Breakdown by Remoteness Area (RA)

Remoteness Area (RA)		NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL RHAC
0 Benchmark		2					1		**3**
0	major cities	2		1			2		**5**
1	inner regional	18		17	7	4	17	1	**64**
2	outer regional	4		16	18	3	8	11	**60**
3	remote		2	3	8			5	**18**
4	very remote	1	1	2				1	**5**
Unspecified				6	1		1	1	**9**
TOTAL RHAC		**25**	**3**	**45**	**34**	**7**	**28**	**19**	**161**

3.0 Medical Oncologists

Most oncology services in Australia are based on medical oncologists providing a consultation service in private rooms or public clinics.

A resident rural medical oncology service offers the potential to increase accessibility and provide greater continuity of care for local cancer patients. The provision of such a service, however, can be affected by a range of factors in addition to the population catchment size, and the availability of appropriate infrastructure and support services. In particular, the provision of services can be affected by the funding priorities of State and regional health authorities and the ability to recruit and retain specialists in areas where there is a sustainable demand for their services.

Where population levels do not justify a resident medical oncologist, outreach clinics and visiting medical oncologists provide much needed services. It is important that support/funding systems are in place to ensure quality care via outreach services for cancer patients living in those areas.

Survey Results
The mapping survey identified only 21% of all RHAC provided a resident medical oncology service. 41% of RHAC had access to a visiting service, with access ranging from weekly to as little as once every six months.

Based on remoteness, medical oncologists provided services in RA 1 (56%), RA 2 (22%), and RA 3 (11%) RHACs. There were no medical oncologists (residential or visiting) providing services in RA 4 areas.

Table 4: Medical Oncologists by State

	NSW	VIC	QLD	SA	WA	NT	TAS	Total	%
RHAC with Resident medical oncologists	6	10	11.5	0	2*	1	2	32.5	**21%**
RHAC with access to a visiting service:	17	12	21.5	7	4	2	2	65.5	**41%**

4.1 Ordering Chemotherapy in Rural and Regional Areas

Chemotherapy is used to treat a wide range of cancers, and usually involves the administration of one or more cytotoxic drugs at regular intervals, or cycles, over a period of time.

Most chemotherapy agents have a narrow range of safe and effective doses, requiring the precise calculation of dosages. Monitoring of response is necessary during the course of treatment. While the doses required to effectively treat tumours can cause severe and sometimes life-threatening side-effects, the delivery of inadequate doses of chemotherapy drugs can have an adverse impact on survival and effective palliation.[18] An effective chemotherapy regimen aims to carefully balance these risks.

In metropolitan regions, the prescription, management and supervision of chemotherapy are usually undertaken by a specialist, and the drug is usually physically administered by specialist chemotherapy nurses in appropriate facilities. The toxicities of the drugs pose risks both to the patient and treating staff if inappropriately administered and handled, including the risks of immediate extravasation of vesicant drugs. Special precautions need to be taken in handling the drugs, and in disposing of materials used when mixing and administering them.

As resources and staff may be limited in rural and regional areas, we evaluated whether this practice was adhered to. Table 3 documents State variations, and Table 4 documents who orders chemotherapy according to RA. Table 5 reviews ordering by hospital peer group.

Survey Results

Only 58% of rural hospitals administering chemotherapy (RHAC) reported the majority of orders written by a medical oncologist. NSW had the highest percentage (96% of hospitals), followed by Victoria/Tasmania (71%). Queensland was comparable to the rest of the nation at 58%. In WA, only 47% of RHAC reported that the majority of orders were taken by a medical oncologist. In SA, the figure was only 24%. GPs and 'other' doctors appeared to pick up the additional burden in SA.

As remoteness increased, the ordering of chemotherapy by medical oncologists decreased. Principle referral centres, large rural, medium sized and private hospitals all reported the majority of those ordering chemotherapy were medical oncologists. General physicians and haematologists also appeared to order chemotherapy in those same hospital peer groups.

Haematologists had a large role in ordering chemotherapy across all States, except NT and SA. General physicians and haematologists also ordered chemotherapy in RA 1 and RA 2. General practitioners ordering chemotherapy increased in RA 2. The category of 'other' doctors ordered chemotherapy as much as General physicians.

General practitioners were more likely to order chemotherapy in medium and small acute hospitals. This was mostly done under guidance from a medical oncologist. In small acute and non-acute hospitals, 'other' doctors and GPs mostly ordered chemotherapy.

Table 6: Ordering Chemotherapy by State

State	Number of RHAC	Majority by Medical Oncologist	Surgeon	General Physicians	Haemat-ologists	GP	Others
NSW	23	22 (96%)	1	6	13	2	3
NT	3	2 (66%)	0	1	0	2	0
QLD	43	25 (58%)	2	10	19	6	17
SA	34	8 (24%)	1	2	1	10	19
TAS	7	5 (71%)	0	1	5	0	3
VIC	28	20 (71%)	1	10	8	4	3
WA	19	9 (47%)	0	4	3	3	2
TOTAL	157	91 (58%)					

Table 7: Ordering Chemotherapy by Remoteness Area

RA	Number of RHAC	Majority by Medical Oncologist	Surgeon	General Physicians	Haemat-ologists	GP	Others
0 Benchmark	3	3 (100%)	0	0	3	0	0
1	64	47 (73%)	3	17 (27%)	29 (48%)	6	16
2	60	33 (55%)	1	14 (23%)	13 (21%)	16	19
3	18	3 (17%)	1	2	1	3	8
4	5	1 (20%)	0	0	0	1	1
Unspecified	9	5 (55%)	0	1	5	1	2

Table 8: Ordering by Hospital Peer Group

Hospital Peer Group	Number of RHAC	Majority by Medical Oncologist	Surgeon	General Physicians	Haemat-ologists	GP	Others
Metropolitan Benchmarks	3	3 (100%)	0	0	3	0	0
Principal referral. - Metropolitan (>20,000 separations) & rural (>16,000 separations)	12	11 (92%)	1	3	9	2	3
Large rural (>8,000) & remote (>5,000)	18	13 (72%)	1	5	10	2	4
Medium 2,000–5,000	38	24 (63%)	2	9	9	7	11
Remote acute <5,000	12	4 (33%)	0	1	1	2	3
Small non-acute <2,000	12	2 (17%)	0	2	0	4	7
Small acute <2,000	20	6 (30%)	0	3	2	6	8
Private Hospitals	18	16 (88%)	1	5	11 (61%)	1	4
Cancer Service	2	0	1	2	0	0	0
Multi-purpose	7	4	0	2	1	2	1
Other non-acute	1	1	0	0	0	0	0
Palliative Care	1	0	1	0	0	0	0
Specialist Centre	1	1	0	0	1	0	0
Unpeered and other acute (<200)	9	3	0	1	1	0	4
Unclassified	3	0	0	1	0	1	2

4.2 Administering Chemotherapy in Rural and Regional Areas

While no statistics are available for Australian rural health services, Schulmeister[19] indicates that some form of chemotherapy error occurs in 63% of specialist oncology units in the United States, with nurses involved in 73% of these errors. Errors that can be attributed solely to nurses administering the drugs are estimated to be between 2 and 10%. The consequences of mistakes can be devastating – 10% of patients required extended and expensive hospitalisation in the Schulmeister study, with medical intervention required in a further 22% of cases that did not require hospitalisation. In the US in 1994, there were 11 reported cases of death due to chemotherapy overdose. Factors attributed to chemotherapy administration errors in metropolitan areas include stress, understaffing, lack of experience and fatigue. These factors are exacerbated in the rural context, and have been identified in Australian research as key variables of nurses work in rural health services.[20]

Survey Results
Across Australian RHAC, chemotherapy trained nurses, other trained nurses and GPs were responsible for administering chemotherapy. Nationally, chemotherapy trained nurses administered chemotherapy in only 61% of RHAC. In 96% of NSW RHAC, trained chemotherapy nurses administered treatment. This compared with only 21% in SA, 32% in WA, and 60% in Queensland. In SA and WA, chemotherapy was mostly administered by GPs or other trained nurses.

Chemotherapy trained nurses administered chemotherapy in 76% of RA 1, and 56% of RA 2 RHAC administered chemotherapy. This figure dropped significantly in RA 3, and there were no reported chemo trained nurses in RA 4 sites. As remoteness increased, hospitals reporting chemotherapy administered by people other than a chemo-trained nurse also increased - e.g. other trained nurses and GPs. GPs played a significant role in the administration of chemotherapy in RA 2-3 sites. Across national hospital peer groups for RHAC, the categories responsible for administering chemotherapy were chemo-trained nurses, other trained nurses and GPs. The majority of principle, large rural, private and medium RHAC reported access to chemo-trained nurses for administering chemotherapy. For small and remote hospitals, the majority of chemotherapy was administered by other trained nurses and GPs.

Table 9: Administration of Chemotherapy by State Comparison

State	Number of RHAC	Chemo Trained Nurses	Other Trained Nurses	General Physicians	Surgeons	GP	Others
NSW	23	22 (96%)	4	0	1	2	0
NT	3	2 (66%)	3	0	0	2	0
QLD	43	26 (60%)	15	0	1	5	2
SA	34	7 (21%)	17	2	1	23	3
TAS	7	6 (86%)	4	0	0	1	0
VIC	28	26 (93%)	8	2	0	3	1
WA	19	6 (32%)	6	0	0	6	2
NATIONAL	157	95 (61%)	57 (36%)	4 (3%)	3 (2%)	42 (30%)	8 (5%)

Table 10: Administration of Chemotherapy by Remoteness Area

RA	Number of RHAC	Chemo Trained Nurses	Other Trained Nurses	General Physicians	Surgeons	GP	Others
0	3	3 (100%)	0	0	0	0	1
1	64	49 (76%)	19 (30%)	1	1	10 (16%)	0
2	62	35 (56%)	24 (39%)	1	0	20 (32%)	5
3	18	4 (22%)	9 (50%)	2	1	9 (50%)	0
4	4	0 (0%)	2 (50%)	0	0	0	1
Unspecified	8	5 (63%)	2 (50%)	0	1	2 (25%)	0

Table 8: Administration of Chemotherapy by Hospital Peer Group

Hospital Peer Group	Number of RHAC	Chemo Trained Nurses	Other Trained Nurses	General Physicians	Surgeons	GP	Others
Metropolitan Benchmarks	3	3 (100%)	0	0	0	0	1
Principal referral. - Metropolitan (>20,000 separations) & rural (>16,000 separations)	12	12 (100%)	4	0	0	3	0
Large rural (>8,000) & remote (>5,000)	18	16 (89%)	6	0	0	1	0
Medium 2,000–5,000	38	28 (74%)	11 (29%)	2	2	8 (21%)	1
Remote acute <5,000	12	1 (8%)	6 (50%)	0	0	4 (33%)	1
Small non-acute <2,000	12	3 (25%)	5 (42%)	0	0	4 (33%)	2
Small acute <2,000	20	6 (30%)	10 (50%)	1	0	13 (65%)	2
Private Hospitals	18	15 (83%)	7 (39%)	0	0	2	0
Cancer Service	2	2 (100%)	2	0	0	0	0
Multi-purpose	7	3 (43%)	1	0	0	2	0
Other non-acute	1	1 (100%)	0	0	0	0	0
Palliative Care	1	1 (100%)	0	0	0	0	0
Specialist Centre	1	1 (100%)	0	0	0	0	0
Unpeered and other acute (<200)	9	4 (44%)	3	1	0	3	0
Unclassified	3	0	2	0	0	2	0

4.3 Chemotherapy Preparation

As chemotherapy drugs have a narrow range of safe and effective doses, it is important that preparation is accurate. In large centres, an appropriately experienced pharmacist using equipment with special ventilation systems prepare treatments. Special facilities and precautions are required for their preparation which may not be readily available in some smaller centres. In certain circumstances, it might be necessary for the pre-preparation of chemotherapy drugs by an appropriately experienced pharmacist or commercial supplier. Once the drugs have been prepared, they will require appropriate storage and transport arrangements to safeguard personnel and to ensure the efficacy of the drugs.

Occupational Health and Safety legislation applies to the handling of cytotoxic drugs and related waste, and specific guidelines exist in NSW and Queensland. In addition, the Society of Hospital Pharmacists of Australia has developed a number of guidelines for the packaging, safe handling and transportation of cytotoxic drugs.

The potential for litigation in the area of occupational exposure, for example, is high where documented safety requirements are not adhered to. Health care providers are responsible for ensuring personnel are trained in the procedures necessary to handle cytotoxic drugs at any stage in the process of cytotoxic drug reception, preparation, administration and disposal. Training should occur prior to the commencement of duties and be accredited by the relevant professional body. Validation of accreditation should take place regularly to ensure new developments are learned.[21]

Survey Results

The majority (83%) of RHAC had chemotherapy made up by a dedicated manufacturing facility. Only Victoria and Tasmania made up a significant proportion on-site – this was where access to community pharmacists was greatest.

With increased remoteness, chemotherapy made up on-site decreased. In all areas of remoteness, dedicated manufacturing facilities were relied upon.

At the metropolitan benchmark facilities, 100% of chemotherapy was made up on-site and supplemented with a dedicated manufacturing facility. This was not the case in RHAC. Rural areas relied on dedicated manufacturing facilities. Some principle, large rural, private and medium rural also had on-site facilities and access to an oncology pharmacist. This was not the case in small and remote hospitals.

Table 9: Chemotherapy Preparation by State

State	Number of RHAC	Dedicated Manufacturing Facility	Made up On-Site	When made up on site are OH&S Guidelines Followed -Yes-	RHAC with access to Oncology Pharmacist (not FTE)
NSW	23	21 (91%)	2	100%	1
NT	3	3 (100%)	0	100%	0
QLD	43	33 (77%)	3	100%	6
SA	34	29 (85%)	1	100%	1
TAS	7	6 (85%)	3 (43%)	100%	2
VIC	28	26 (92%)	11 (39%)	100%	11* linked to community pharmacy
WA	19	13 (68%)	2	100%	0
TOTAL	157	131 (83%)	22	100%	

			(14%)		

Table 10: Chemotherapy Preparation by Remoteness Area

RA	Number of RHAC	Dedicated Manufacturing Facility	Made up On-Site	When made up on-site are OH&S Guidelines Followed -Yes-	Oncology Pharmacist
0 Benchmark	3	1	3	100%	3
1	64	55	13	100%	15
2	62	51	7	100%	4
3	18	13	0	100%	0
4	4	2	0	100%	0
Unspecified	8	8	1	100%	1

Table 11: Chemotherapy Preparation by Hospital Peer Group

Hospital Peer Group	Number of RHAC	Dedicated Manufacturing Facility	Made up On-Site	When made up on-site are OH&S Guidelines Followed -Yes-	RHAC with access to Oncology Pharmacist (not FTE)
Metropolitan Benchmarks	3	1	3	100%	3
Principal referral. - Metropolitan (>20,000 separations) & rural (>16,000 separations)	12	12	5	100%	7
Large rural (>8,000) & remote (>5,000)	18	15	5	100%	3
Medium 2,000–5,000	38	34	5	100%	3
Remote acute <5,000	12	7	0	100%	0
Small non-acute <2,000	12	8	0	100%	0
Small acute <2,000	20	16	1	100%	1
Private Hospitals	18	17	2	100%	4
Cancer Service	2	1	1	100%	1
Multi-purpose	7	6	2	100	0
Other non-acute	1	1	0	100%	0
Palliative Care	1	1	0	100%	0
Specialist Centre	1	1	0	100%	0
Unpeered and other acute (<200)	9	6	2	100%	1
Unclassified	3	0	0	100%	0

5.0 Chemotherapy Nurses

In the context of care for a person receiving chemotherapy, nurses are required to have specialist knowledge and expertise to provide information and education about a range of complex treatment regimens. They must also provide support and advocate for patients who may be experiencing profound psychosocial and distress.[22] This is in addition to the requirement that nurses working in chemotherapy settings possess the technical expertise necessary to ensure safe administration of treatments. Many of which have side-effects that can be life threatening. Nurses must also be able to demonstrate high level assessment and problem solving abilities for the early detection and prevention of any adverse effects.[23]

Educational preparation for nurses working in non-specialist cancer settings, particularly in rural and remote practice, has been identified as especially problematic. For example, available studies have reported that despite increased referrals to rural and remote regions, health care professionals may lack the necessary experience to administer chemotherapy competently.[24] Another study has documented the barriers to accessing sound education programs.[25] These barriers included financial burden, separation from family and friends due to distance from training centres, limited access to information seminars, libraries, technology and networking opportunities with peers, and insufficient nursing staff capable of relieving whilst colleagues engage in study.

Survey Results

Number Of Nurses With a Recognised Certificate

Hospitals reported that an estimate of 309 nurses (translating to 240.7 FTE positions) with recognised oncology certificates service RHAC (Table 12). WA and SA had a low number of FTE nurses with a recognised oncology certificate compared to RHAC in other States. NSW had the most FTE positions, followed by Queensland and Victoria. With increased remoteness, the number of nurses working in oncology decreased. In the most remote areas, certified oncology nurses were absent.

The numbers of certified nurses not giving chemotherapy were high, particularly in remoteness area 1 regions. It might be useful for future mapping projects to explore more fully the reasons why approximately 80 certified nurses were not administering chemotherapy.

Number Of Nurses Without a Recognised Certificate

Of concern was the number of nurses giving chemotherapy without a recognised certificate. This practice was reportedly highest in SA, although all states reported significant numbers of uncertified nurses administering chemotherapy. Some centres reported some of these nurses were trained but not certified - i.e. some had completed distance education courses or weekend workshops. Five nurses were undertaking formal qualifications at the time of survey and were administering chemo only under the supervision of certified staff. Four nurses had completed at least module 1 & 2 at the Peter MacCallum centre, or the Chemotherapy II course at Wesley, Royal Perth Hospital Oncology Unit. Others stated they only used uncertified nurses for periods of holiday relief or on a need-only basis. The training of one nurse was out-of-date.

In SA, peer shadowing was not uncommon. A few centres reported using registered nurses under the direction of treating medical officers or medical practitioners for administering chemo.

In RA 2 and 3, there were more nurses giving chemotherapy without a recognised certificate than those with a certificate (Table 13). Consideration should be given to a specialised program targeted at this region.

Medium, small, and remote hospitals were more likely to have nurses without certification administering chemotherapy. Private hospitals also relied on a significant amount of uncertified staff.

PLEASE NOTE: ***Due to privacy concerns we were unable to collect staff data by individual name, the collection of de-identified staff numbers did not allow for duplicates and the numbers may be inflated i.e., people working in two or more hospitals in a local region would have been counted twice. Numbers of health professionals working in oncology needs to be a focus of another mapping survey to clarify any limitations with this data collection and correctly estimate staff numbers.***

Table 12: Numbers of Nurses Administering Chemo a State Comparison

State	No. of RHAC	Nurses With Recognised Oncology Certificate	FTE	Certified Nurses NOT Giving Chemo	Nurses Giving Chemo WITHOUT Recognised Certificate	FTE	Chemo Given Outside Recognised Facility	OH&S Guidelines Available	OH&S Guidelines Followed
NSW	23	94	80.02	21	12	18.1	7	26	26
NT	3	4	2.5	2	2.1	1	1	3	3
QLD	43	76	64.7	12.1	23	24.01	9	36	34
SA	34	8	10.1	16	41	11.575	3	29	29
TAS	7	19	18.4	0	3	3	2	6	6
VIC	28	105	63.5	26.4	15	4	4	25	25
WA	19	3	1.5	3	9	2.65	5	15	14
TOTAL	157	309	240.7	80.5	105.1	63.435	31	137	134

Chemotherapy Given Outside a Recognised facility

37 RHAC reported that chemotherapy was given outside of a recognised facility. This includes Hospital-in-the-Home (HITH), GP surgeries (sometimes for arthritis) and by a carer or self-medicating at home. Giving chemotherapy outside of a recognized facility was more common in Queensland and NSW and in RA 1 hospitals.

OHS Guidelines

Of the 157 rural hospitals reported to be administering chemotherapy, 137 had Occupational Health and Safety (OHS) guidelines available. Of those, 134 followed the guidelines. One centre used the Area's Health Policy guidelines (based on Workcover

guidelines), and they followed educational support from an haematology /oncology CNC. Another centre reported that the OHS guidelines they used were from 1995 and very old.

When reviewing guideline availability across remoteness areas, approximately 86% of RHAC in RA 1 & 2 had guidelines available. Only 66% of RA 3 and 50% of RA 4 hospitals had access to guidelines. Where centres had guidelines available, the reported rate of compliance was extremely high.

Only one private and principal referral hospital reported no access to OHS guidelines. Four large rural and two medium RHAC required guidelines. Remote and small, non-acute RHAC were more likely not to have available guidelines.

It was considered guidelines were mostly followed in the hospital setting, but rarely in community and 'other' facilities.

One larger rural centre reported that 'everyone was terrified' of the guidelines because of lack of knowledge of them.

Table 13: Numbers of Nurses Administering Chemo by Remoteness Area

State	No. of RHAC	Nurses With Recognised Oncology Certificate	FTE	Certified Nurses NOT Giving Chemo	Nurses Giving Chemo WITHOUT Recognised Certificate	FTE	Chemo Given Outside Recognised Facility	OH&S Guidelines Available	OH&S Guidelines Followed
0 Benchmark	2*	28	31	0	1	0	1	100	100
1	64	178	148.12	59.5	27	12.8	15	54 (84%)	54
2	62	54	33.5	10	59	39.035	7	55 (88%)	52
3	18	6	5.1	4	9.1	0.1	4	12 (66%)	12
4	4	0	0	0	1	1	1	2 (50%)	2
Unspecified	8	17	13.1	5	4	1.5	2	8 (100%)	8

*No data for Peter Mac

Table 14: Numbers of Nurses Administering Chemo by Hospital Peer Group

Hospital Peer Group	No. of RHAC	Nurses With Recognised Oncology Certificate	FTE	Certified Nurses NOT Giving Chemo	Nurses Giving Chemo WITHOUT Recognised Certificate	FTE	Is Chemo Given Outside Recognised Facility	OH&S Guidelines Available	OH&S Guidelines Followed

Metropolitan Benchmarks	3	28	31	0	0	1	0	3	3
Principal referral Metropolitan (>20,000 separations) & rural (>16,000 separations)	15	64	50.8	6.5	8	22.9	6	14	13
Large rural (>8,000) & remote (>5,000)	18	50	40.62	26.5	8.1	4.41	4	14	14
Medium 2,000–5,000	38	54	38.7	27	38	18.1	5	36	35
Remote acute <5,000	12	2	2	3	5	1	5	7	7
Small non-acute <2,000	12	3	3	0	13	7.5	1	9	9
Small acute <2,000	20	12	2.6	5	10	6.4	2	16	16
Private Hospitals	21	73	63.8	8	11	10.9	6	20	20
Cancer Service	2	15	5	0	1	0	0	2	2
Multi-purpose	7	0	0	0	4	1.525	2	6	6
Other non-acute	1	2	1.5	0.5	1	0.8	0	1	1
Palliative Care	1	2	2	2	2	2	2	2	2
Specialist Centre	1	3	3	2	0	0	0	1	1
Unpeered and other acute (<200)	9	5	8.6	0	4	2	1	6	5
Unclassified	3	3	2.1	2	1	0	1	3	3

6.0 Breast Cancer Nurses

A trial of the role of breast cancer nurses and their benefits in rural settings have demonstrated clear psychological and physical benefits to women, and have resulted in more coordinated care among practitioners.[26]

Developing the role of specialty oncology nurses in the care coordination and administration of chemotherapy in rural areas is supported by oncologists, but has not been fully evaluated.[27]

Survey Results
70% of all responses in the survey made supplementary efforts to highlight the importance of the breast cancer care nurses for their community. If a centre did not have access to a breast cancer nurse, the respondents made a point of conveying this information.

There were 309 reported dedicated breast cancer nurses in RHAC. Victoria and NSW had the highest number of dedicated breast cancer nurses and NT, SA and WA had the lowest number.

Breast cancer nurses were more likely to be found and funded in areas of low remoteness. Principle, large, medium and private hospitals were more likely to have access to a breast cancer nurse.

Most of the breast cancer nurses were available on a public community basis. Yet not all were funded. 25% of Victorian breast cancer nurses were reportedly funded, as were 22% in NSW. Only 15% were funded in Queensland. None were funded in Tasmania.

A few centres relied on funding of the breast cancer nurse from a range of sources, e.g. the cancer council, State health, or private practice. In Albury-Wodonga, funding was recently stopped for a breast cancer nurse which impacted on a wide area of the NSW/Victorian border. All three breast cancers nurses in WA were funded. In SA, 16 positions reported funding, yet there were only 8 nurses in these positions.

In some areas the breast cancer nurse position was held by people with other responsibilities/titles - for example, the discharge planner, women's health nurse, or palliative care service. Some breast cancers nurses were available for education purposes only.

Table 15: Breast Cancer Nurses by State Comparison

State	No. of RHAC	Dedicated Breast Cancer Nurse	Public or Community based	Funded
NSW	23	94	80.02	21
NT	3	4	2.5	2
QLD	43	76	64.7	12.1
SA	34	8	10.1	3
TAS	7	19	18.4	0
VIC	28	105	63.5	26.4
WA	19	3	1.5	3
TOTAL	157	309	240.7	80.5

Table 16: Breast Cancer Nurses by Remoteness Area

RA	No. of RHAC	Dedicated Breast Cancer Nurse	Funded
0 Benchmark	3		
1	64	42	23
2	62	27	16
3	18	2	1
4	4	1	1
Unspecified	8	2	0

Table 17: Breast Cancer Nurses by Hospital Peer Group

Hospital Peer Group	No. of RHAC	Dedicated Breast Cancer Nurse	Funded
Metropolitan Benchmarks	3	2	2
Principal referral Metropolitan (>20,000 separations) & rural (>16,000 separations)	15	12	9
Large rural (>8,000) & remote (>5,000)	18	13	11
Medium 2,000–5,000	38	23	8
Remote acute <5,000	12	1	2
Small non-acute <2,000	12	2	1
Small acute <2,000	20	4	2
Private Hospitals	21	15	7
Cancer Service	2	2	1
Multi-purpose	7	1	1
Other non-acute	1	1	0
Palliative Care	1	2	2
Specialist Centre	1	0	0
Unpeered and other acute (<200)	9		
Unclassified	3	0	0

7.0 Palliative Care

In a systematic review on the organisation of palliative care for rural populations, Evans, Stone and Elwyn (2003) identified that there is limited published work in the area. Most of the existing work identified problems in the delivery of palliative care in rural areas.[28] Most research has been focused on the discussion of needs and barriers. Since this review, White, Wall and Kristjanson (2004) have argued that this approach has diverted attention away from developing a complementary body of remote area palliative care knowledge.[29]

They advocate the need for palliative care services in rural and remote areas to be 'responsive'. A set of broad principles to assist developing such a service are proposed. Establishing new models of palliative care delivery involves substantial change in local health services and provides a unique opportunity for planning more integrated care. Previous work has revealed a range of unmet needs for palliative care patients and their families in rural and remote areas including access to palliative care services, information about illness, practical care and support.[30,31]

Access to palliative care outside of the specialist palliative care model has been problematic, leading to the disadvantage of large sections of the Australian community. For rural and remote communities with limited access to health resources overall, this can be even more difficult.

Survey Results
While 100% of the benchmark cancer services had palliative care doctors, none were dedicated and all commented they were under-resourced in this area. Key requests for additional palliative care services and hospice access are placed on their 'urgent' need list.

Only 22% of all rural hospitals administering chemotherapy had a dedicated palliative care doctor and only 59% had dedicated palliative care nurses.

Queensland (14) and Victoria (10) had the highest number of RHAC with dedicated palliative care doctors. Per head of population, NSW had the lowest with only four RHAC with dedicated doctors. Queensland had the highest actual number of RHAC with dedicated palliative care, but as a percentage of all services only 32% of sites administering chemotherapy were covered. GPs and nurses played a crucial role in the provision of palliative care services in rural and regional areas, particularly in Queensland and SA.

Access to a dedicated palliative care doctor was available at all but two primary referral hospitals administering chemotherapy. Only 50% of private RHAC hospitals provided a dedicated palliative care doctor service. Only 27% of large rural and 13% of medium hospitals provided a dedicated doctors service. Access to a dedicated service at small, remote, multi-purpose hospitals was uncommon. General practitioners in these areas carried the additional responsibility for palliative care services. Access to dedicated palliative care nurses proportionally decreased with a decreasing number of separations.

Where a dedicated service could not be provided, access to a visiting or outreach service was essential. NSW had the highest percentage of visiting services and outreach palliative care services. In Queensland only 14% had access to a visiting

service. In terms of outreach services, only 23% of RHAC provided outreach services in Queensland compared to 100% in NT, 74% in NSW, 64% in VIC, 52% in SA, 31% in WA.

Access to visiting services varied significantly. RHAC with visiting palliative care included: 66% of principal referral, 62% of small, 55% of large, 45% of medium, 30% of un-peered, 22% private and 0% of remote. Most of these visiting services were reported as on an 'as required' basis.

Domiciliary services were provided in a large proportion of areas with RHAC. The majority of RACH (or surrounding local communities) also provided a palliative outreach service.

Table 18: Palliative Care Services by State Comparison

State	No. of RHAC	Dedicated Resident Palliative Care Doctors	No. that are GP's	No. that are Physicians	No. that are members of Palliative Care Society	Access to a Visiting service	Dedicated Palliative Care Nurses	Domiciliary Service in regional centre	Outreach Palliative care nurse service to remote centres
NSW	23	4	10	7	0	16	20	21	17
NT	3	1	0	2	2	1	3	3	3
QLD	43	14	72	15	10	6	21	34	10
SA	34	1	93	1	1	23	20	33	18
TAS	7	2	1	4	1	4	2	5	5
VIC	28	10	22	7	5	16	18	23	18
WA	19	3	24	1	1	5	8	13	6

Table 19: Palliative Care Services by Remoteness Area

RA	No. of RHAC	Dedicated Resident Palliative Care Doctors	No. that are GP's	No. that are Physicians	No. that are members of Palliative Care Society	Access to a Visiting service	Dedicated Palliative Care Nurses	Domiciliary Service in regional centre (%)	Outreach Palliative care nurse service to remote centres
0 Benchmark	3	3	1	18	unknown	0	3	2	2
1	64	16	47	18	9	33	38	51	33
2	62	14	141	10	9	27	34	53	29
3	18	1	27	3	1	5	8	15	8
4	4	0	4	0	0	0	2	2	0
Unspecified	8	2	5	2	1	3	4	7	4

Table 20: Palliative Care Services Hospital Peer Group

Hospital Peer Group	No. of RHAC	Dedicated Resident Palliative Care Doctors	No. that are GP's	No. that are Physicians	No. that are members of Palliative Care Society	Access to a Visiting service	No. of Dedicated Palliative Care Nurses	Domiciliary Service in regional centre (%)	Outreach Palliative care nurse service to remote centres
Metropolitan Benchmarks	3						3		

Principal referral Metropolitan (>20,000 separations) & rural (>16,000 separations)	12	10	5	20	9	8	10	10	8
Large rural (>8,000) & remote (>5,000)	18	5	1	10	4	10	12	12	8
Medium 2,000–5,000	38	5	94	4	0	17	31	34	22
Remote acute <5,000	12	0	10	1	0	0	2	9	2
Small non-acute <2,000	12	1	11	0	0	8	5	9	6
Small acute <2,000	20	2	49	0	1	12	8	19	12
Private Hospitals	18	9	38	13	6	4	7	15	6
Cancer Service	2	1	1	0	0	1	1	2	1
Multi-purpose	7	0	12	0	1	5	4	6	4
Other non-acute	1	0	0	0	0	0	0	1	1
Palliative Care	1	0	1	0	?	1	0	1	1
Specialist Centre	1	0	0	0	0	1		1	1
Unpeered and other acute (<200)	9	3	4	1	0	3	4	9	4
Unclassified	3	0	0	0	0	0	2	3	1

8.0 Radiation Oncology Service Delivery

There is evidence to suggest that about 50% of all patients with cancer should receive radiotherapy at some stage during their illness.[32] Using that benchmark, a survey estimated that each year in Australia about 10,000 patients who might have benefited from radiotherapy did not receive it.

Radiation therapy is an expensive treatment to establish but is the most cost-effective treatment modality to administer once the infrastructure is established.[33]

There is a core requirement of a population base of 600,000 in order to justify a radiation oncology centre. There are two centres in Tasmania and one in the ACT, however, which highlight the interplay between population requirement and the needs of local communities.

At the time of the 2001 federal election, the Australian Government committed $72.7 million to improve regional access to radiotherapy, including the funding of new facilities.[34] In 2002, the Victorian Government pledged $78 million to build a new radiotherapy department at the Latrobe Regional Hospital in Gippsland, expand facilities at Geelong and Moorabbin hospitals, and replace old linear accelerators at existing metropolitan facilities. In 2003, the New South Wales Government budgeted $85.2 million to build new facilities, replace old equipment and improve training in radiation therapy and physics. NSW Radiation units have subsequently been planned in Lismore, Port Macquarie, and Coffs Harbour. SA committed to the replacement of three linear accelerators, WA to two linear accelerators for Perth, and the NT to a feasibility study of local radiotherapy services.

Because of the long lead times involved, no new facilities have been brought into service since the ROI report was released. Long waiting times persist and are worsening in many centres. In the private sector, which treats more than a one-third of all patients, patient out-of-pocket costs have escalated because outdated Medicare Benefits Schedule rebates fall short of the cost of delivering quality radiotherapy. Although increased government investment in capital equipment is now taking place in the public sector, operational funding constraints continue to limit the ability of departments to meet service requirements.

Survey Results
There were a reported 7% of hospitals administering chemotherapy had access to a radiation unit, i.e. a total of 11 radiation units for 157 RHAC.

NSW had two units, Victoria four, Queensland three, and SA and WA none. The NT had access to no units, which made Darwin the only capital city without a radiation unit. In Darwin, patients had a four-hour flight from the capital to the nearest treatment facility in Adelaide. Communities remote to Darwin had an even greater distance to travel.

Table 21: Radiation Oncology Service Provision by State Comparison

State	No. of RHAC	Are there units in the Health Area	How many machines	Fully Staffed	Visiting Radiation Service	How far to Metro Radiation Centre	Accomodation Available	Cost Per night (AUS)
NSW	23	2	5	3	11	70 - 600	19	$12.50 -

								$100
NT	3	0	0	0	1	1600-3000 (Adelaide)	3	Not known
QLD	43	3	9	3	9	45-1200	28	$40 - $70
SA	34	0	0	0	1	55-650	25	$15 -$85
TAS	7	2	5	2	1	0-240	5	Not known
VIC	28	4	7	4	2	0-300	15	$0 -$100
WA	19	0	0	0	2	100-1700	13	$35-$75
TOTAL	157	11	26	12	27	-	-	-

In all States reporting radiation units, only a small proportion of the machines were fully staffed. Of the 26 available machines, only 46% (12) reported full staffing - in NSW three of the five machines were staffed, in Queensland three of nine, in Victoria four of seven, and in Tasmania two of five.

Current technology allows linear accelerators to treat around 40 patients during a typical nine hour day. When a unit was available, the wait for radiation treatment ranged from 0-five weeks, with an average of three weeks.

A limited visiting radiation service was provided to some areas. There was one to areas in NT, nine in Queensland, 11 in NSW, one in Tasmania, four in Victoria, two in WA, and one in SA.

The remainder of patients' were expected to travel to principal referral or metropolitan centres to access treatment. This can be an expensive process (financially and socially) as patients are removed from their homes and are forced to seek alternative accommodation (mostly motels or specialised accommodation) for the periods of treatment. Some private funds covered a portion of the transport expense, other patients relied on VIPTAS/ IPTAAS/ Canassist/Cancer Council. Some patients opt to not have treatment.

"There are no units in Rockhampton, and some of the younger patients choose not to have radiotherapy as they do not wish to leave their families for up to six weeks duration. Some of these patients live on rural properties and are unable to leave because of workload and replacement problems."

9.0 Allied Health Services

Treatment of cancer involves a complex array of services provided by a range of specialists and allied health professionals. Psychosocial and practical support services for patients are provided by psychologists, psychiatrists, speech pathologists, occupational therapists and social workers, physiotherapists, dietitians and community health care providers.

Survey Results
Most RHACs provided access to allied healthcare services such as physiotherapy, dietetics, occupational therapy and speech pathology. Less common services include mental health support, lymphodema clinics, genetic counselling, podiatry, psychology and psychiatry, hydrotherapy, continence nurse and cancer support co-ordinators. Private and public allied services were reported across a range of services at most sized hospitals in various levels of remoteness.

Centres reported access to these services was not always easy for patients. None of these allied health services were dedicated to oncology patients. Many respondees commented that waiting lists for allied health services were long and services too expensive for many patients.

In both benchmark and RHAC reported a big gap in physical rehabilitation as treatments become more targeted and radical and survival increases eg. physiotherapy and occupational therapy services.

Table 22: Allied Health Services Oncology Patients Can Access by State Comparison

State	No. of RHAC	Physiotherapy	Dietitian	Occupational Therapy	Speech Pathology	Other	Public	Private
NSW	23	23	22	19	18	17	24	10
NT	3	2	2	2	2	1	2	2
QLD	43	38	34	38	36	26	36	27
SA	34	30	27	26	27	18	31	17
TAS	7	6	6	6	6	4	6	3
VIC	28	26	26.5	27.5	25.5	18	26	19
WA	19	17	16	15	14	9	17	10
TOTAL	157	142	133.5	133.5	128.5	93	142	88

Unfortunately, it was not in the framework of this questionnaire to specifically analyse inpatients and outpatient access. Overall, it appears most services were mostly available to inpatients.

Outpatient access was thought to be more difficult and limited by the cost of services from private providers. 42% of RHACs complained of diminishing ‘equity of access’ for allied services.

"Evidence shows that rural people have higher rates of mortality and morbidity from cancer than their metro counterparts - rural people should be able to access these services locally or through regular visiting services to the smaller towns not just the regional centres. Integrated models of service delivery should be funded adequately. Need recognition and funding of remoteness/travel/travel time in service provision in the rural areas."

9.1 Multidisciplinary Clinics

Many people living with cancer require input from more than one discipline to optimise treatment and care. Multidisciplinary care (MDC) relates to the team, communication, the full therapeutic range, standards of care and involvement of the patient. A team agrees on the diagnosis and staging of the disease and on the best treatment option for the patient − taking the patient's preferences into account − before treatment steps are taken.

It is preferable to obtain a clinical consensus about treatment than to risk poorly coordinated, often poorer, care. Of the common cancers, the most advanced models of MDC in Australia are in breast cancer (although other, less common, tumours also have well-developed MDC). In the US and UK, it is the recommended approach for most or all cancers. Some level of MDC is required by the US Cancer Center's accreditation system and by the UK Cancer Plan. While MDC has strengths and weaknesses, for many people living with cancer there is no alternative to ensuring that an adequate range of perspectives are considered before definitive treatment (including palliative and supportive care) is undertaken.

Optimal cancer care is multidisciplinary for the majority of patients, and a formal process is required to ensure that it is available as needed. It is of course recognised that single modality treatment is appropriate for many cancers, but ensuring that these cases are correctly identified requires accounting for all cancer diagnoses in an integrated multidisciplinary setting.

The challenge to provide optimal care for all Australians requires the deployment of approaches which adequately take account of the unique geography and demography of the Australian population. The geographic and cultural challenges in Australia are particular, and require specific approaches which need ongoing evaluation and improvement.

Survey Results

In RHAC nationally, only 43% of hospitals held multi-disciplinary clinics. Multi-disciplinary clinics were more likely in NSW (56%) and Victorian (50%) RHACs, and lowest in SA (9%) and WA (5%). As rurality increased, the number of hospitals undertaking multi-disciplinary clinics decreased. Multi-disciplinary clinics were reported in 22 RHAC in RA 1, and there were none reported in RA 4.

Hospitals most likely to run multi-disciplinary clinics were principal referral hospitals (93%), private hospitals (71%) and large rural hospitals (66%).

Medium and small acute hospitals were the least likely (10%), and none operated in remote and non-peered hospitals.

Multidisciplinary clinics were mostly reported for the following tumour types: breast, head and neck, gynaecological, prostate and GIT.

The specialists most often reported present at clinic meetings were (in order): breast cancer nurses, medical oncologists, surgeons, registered nurses, and radiation oncologists. None reported the inclusion of allied health professionals. Some face-to-face clinics operated in conjunction with metropolitan (e.g. Adelaide Hospital) or principal referral centres (Andrew Love Centre). At Barwon Health (Victoria) and Nambour (WA), teleconferencing was often used to link specialists.

"The depth of knowledge required to fully support and inform the patient and family seems to be lacking and/or not readily available. GPs appear to be the main point of contact and multidisciplinary services are not called in early enough to ease the transition from 'relatively well' to the time when someone in on their death bed and requiring obvious need of palliative care."

Some hospitals held co-ordinated multi-disciplinary clinics at scheduled intervals, many were on an *ad hoc* basis.

Table 23: Multidisciplinary Clinics by State Comparison

State	No. of RHAC	RHAC public hospitals with multi-disciplinary clinics:	RHAC private hospitals with multi-disciplinary clinics:	TOTAL (%)
NSW	23	9	4	56%
NT	3	1	0	33%
QLD	43	11	6	39%
SA	34	2	1	9%
TAS	7	2	1	43%
VIC	28	10	4	50%
WA	19	1	0	5%
TOTAL	157	36	16	43%

9.2 Psychosocial Services

Unlike major urban areas, the availability of psychologists and counsellors trained and experienced in supporting cancer patients is restricted in regional and rural areas.

There is evidence that appropriate support has a positive impact on the health and well-being of breast cancer patients,[35] and that this is likely to translate to other types of cancer care as well.

Survey Results

The mapping survey identified dedicated counselling services were available at only 39% of RHAC nationally. In the verbal statements made, the number one request was for psychological services and support (i.e. 96 /157 or 61% of *all* RHACs).

The main issue with supportive care in both benchmark and RHAC is lack of planned and dedicated resources to service demonstrated needs. Psychological impact of

cancer is a subspecialty and requires specific knowledge and experience. This is lacking in all areas.

NT reported they had no dedicated services, 35% of RHAC offered dedicated services in Victoria, 37% in Queensland, 38% in SA, 43% in NSW and Tasmania, and 52% in WA. In each RA approximately 38% of RHACs offered dedicated cancer counselling services.

Social workers were available at 50% of all RHACs, psychologists at 30%, and cancer nurses at 23%. Other services available at selected sites included Aboriginal health workers and bereavement counsellors. Social workers were easier to access than psychologists in all States, across all areas of remoteness.

Table 24: Psychosocial Services by State Comparison

State	No. of RHAC	Dedicated Cancer Counselling Services	Social Worker	Psychologists	Cancer Nurses	Other	Patient Support Services	Transport Services
NSW	23	10 (43%)	10	5	4	5	15	IPTAS
NT	3	0 (0%)	1	2	0	3	2	PATS
QLD	43	16 (37%)	25	13	6	18	22	PTS
SA	34	13 (38%)	15	10	5	21	12	PATS
TAS	7	3 (43%)	3	2	2	1	1	PATS
VIC	28	10 (35%)	21	14	14	18	13	VPTAS
WA	19	10 (53%)	5	3	5	11	15	PATS
TOTAL	157	62 (39%)	79	47	36	77	75	

Patient support services included patient self-help groups, cancer council access, leukaemia foundation, look-good-feel-better programs, living with cancer, home help, meals-on-wheels, STEPS, church groups etc., and were available in 47% of areas with RHAC. Access in each state ranged between 35% in SA to 78% in WA. Access to patients support services decreased with increased remoteness.

65% of RHAC indicated that travel was a real problem for rural patients. Patient transport refunds were criticised in many returned surveys.

The kilometre limit for refunds varied from over 100-200 kms across the various States, except Tasmania where there was reported an unlimited kilometre access. Patients travelling less distance were not eligible for a refund. Refunds were also reported to be limited to one trip down and back for radiotherapy, whereas some patients travelled weekly/monthly. The means test for the travel assistance was also perceived as limiting. In NSW, it was estimated by one service (RA 2) that approximately 50% of patients were not covered by IPTAAS.

"'Unwell' patients are currently having to fly to Perth every week for Day 8/Day 15 blood tests and chemo which could practically be given in Esperance. The consultants in Perth appear reluctant to let patients' treatment be given here. There is no dedicated 'official' person to liaison services for cancer patients in Esperance - i.e. support groups, knowledge of services available. Patients feel isolated and frightened away from dedicated services."

The red tape associated with access to payment refund was seen as an additional frustration in Victoria.

In some areas the Leukaemia Foundation had donated a car, or the Cancer Patient Assistance Society (CPAS) or Red Cross were able to provide additional support on a needs basis.

For people in far North Queensland and WA, some patients were entitled to fly and to have an escort.

There were calls to extend travel allowances for family travel, especially where sick children were concerned.

10.0 Surgical Oncology Services

Specialist surgical services are rare outside cities and large rural centres in Australia.

Survey Results
Surgical oncologists were only available at five (3%) RHAC nationally. In the NT, SA and WA there were no surgeons working specifically as surgical oncologists. The five surgical oncology services offered by RHAC were located in RA 1 and 2 only. There were no specialist oncology surgeons in other RAs.

General and other surgeons appeared to provide the majority of oncology surgery in rural areas. 63% of RHAC had general surgeons, and 47% had 'other' surgeons operating on cancer. SA had the lowest proportion of General surgeons (only 26% of RHACs) and other surgeons (26%) followed by WA and Queensland.

General surgeon services were utilised across all RAs. As remoteness increased, access to general surgeons decreased.

Other surgeons included gynaecology, urology, orthopaedic, plastics, colo-rectal, ENT, eye and breast surgeons. Gynaecology surgery was the most accessible surgery with 48% of RHAC performing these operations. Neurosurgery was only available at 9 RAHC nationally, thoracic surgery at 17, and liver surgery 14. These procedures were only available in RA 1 and 2 (with the exception of one RHAC which offered gynaecology surgery in RA 4). In SA there was no surgery available for thoracic, neuro-surgical, or liver conditions.

63% of RHAC reported that the majority of patients were sent to Metropolitan units for surgery. This was highest in NSW.

Table 25: Surgical Oncology Services by State Comparison

State	No. of RHAC	Surgeon working solely as Surgical Oncologist	GENERAL Surgeons Operate on Cancer	OTHER Surgeons Operate on Cancer	Thoracic Surgery	Neuro-surgery	Gynae oncoc surgery	Liver Surgery	Majority of pts sent to metro
NSW	23	2	23	14	3	0	16	2	19
NT	3	0	3	2	1	1	2	1	2
QLD	43	1	26	18	4	5	19	6	25
SA	34	0	9	9	0	0	10	0	21
TAS	7	1	5	5	1	1	4	3	3
VIC	28	1	24	22	8	2	18	2	16
WA	19	0	9	5	0	0	8	0	14
TOTAL	157	5 (3%)	99	75	17	9	77	14	100

Table 26: National by Remoteness Area

RA	No. of RHAC	Surgeon working solely as Surgical Oncologist	How Many GENERAL Surgeons Operate on Cancer	How Many OTHER Surgeons Operate on Cancer	Thoracic Surgery	Neuro-surgery	Gynae oncoc surgery	Liver Surgery	Majority of pts sent to metro
0 Benchmark	3	100%	7	33	2	1	2	2	NA
1	64	4	48	35	11	4	37	9	34
2	62	1	31	26	3	4	26	3	45
3	18	0	4	4	0	0	0	0	10
4	4	0	1	0	0	0	1	0	1
Unspecified	8	0	7	4	0	0	4	0	5

Conclusion

This survey provides a snapshot of regional cancer services in Australia.

The collection of data was difficult to due concerns by some participants about privacy issues. In addition, clinical data systems (that can map and monitor the kind of information collected in this report) largely do not exist. However, participation and response rates for this survey were very high.

Variations in care exist between states and between the regional sites and the metropolitan sites benchmarked. Variations of care highlighted included

- Ordering of chemotherapy by a non medical oncologist
- Administration of chemotherapy by non-oncology certified chemotherapy nurse
- Availability of cytotoxic administration guidelines
- Availability of dedicated palliative care specialists/doctors
- Provision of psychosocial support services.

References

[1] Australian Bureau of Statistics. Australian social trends. Canberra: ABS, 2003. (ABS Catalogue No. 4102.0.)

[2] Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. Cancer survival in Australia 1992–1997: geographic categories and socioeconomic status. Canberra: AIHW, 2003. (Cancer Series No. 22. AIHW Catalogue No. CAN 17.)

[3] Jong KE, Smith DP, Yu XQ, et al. Remoteness of residence and survival from cancer in New South Wales. Med J Aust 2004; 180: 618-622.

[4] Condon JR, Barnes A, Cunningham J, Armstrong BK, Long-term trends in cancer mortality for Indigenous Australians in the Northern Territory, Medical Journal Australia, 2004.

[5] Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. Cancer in Australia 2001. Canberra: AIHW, 2004. (Cancer Series No. 28. AIHW Catalogue No. CAN 23.)

6 McCredie M, Bell J, Lee A, Rogers J. Differences in patterns of care of prostate cancer, New South Wales, 1991. Aust N Z J Surg 1996; 11: 727-730.

7 Kricker A, Haskill J, Armstrong BK. Breast conservation, mastectomy and axillary surgery in New South Wales women in 1992 and 1995. Br J Cancer 2001; 85: 668-673.

8 Armstrong K, O'Connell DL, Leong D, et al. The New South Wales colorectal cancer care survey. Part 1: surgical management. Sydney: The Cancer Council NSW, 2004. Available at: www.cancercouncil.com.au/editorial.asp?pageid=1021 (accessed Nov 2004).

9 Jong KE, Vale PJ, Armstrong BK. Rural inequalities in cancer care and outcome. Med J Aust 2005; 182: 13-14.

[10] National Rural Health Alliance, Healthy Horizons Outlook 2003-07, policy document.

[11] COAG communiqué 10/02/06, http://www.coag.gov.au/meetings/100206/index.htm#health

[12] Barton MB, Gebski V, Manderson C, Langlands AO. Radiation therapy: are we getting value for money? Clin Oncol R Coll Radiol 1995; 7(5):287-292

[13] The Cancer Council Australia, COSA, Department of Health and Ageing, Cancer in the Bush, Optimising clinical services, conference report, 2001.

14 Tannock IF, Boyd, Ne, De Boer G, Erlichman C, Fine S, Larocque G, Mayers C, Perrault D, Sutherland H: A randomized trial of two dose levels of cyclophosphamide, methotrexate and fluorouracil chemotherapy for patients with metastatic breast cancer. Journal of Clinical Oncology, 1988 Sep; 6 (9) 1377-87

[15] Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. Cancer in Australia 2001. Canberra: AIHW, 2004. (Cancer Series No. 28. AIHW Catalogue No. CAN 23.)

16 Australian Medical Workforce Advisory Committee, Sustainable Specialist Services – a Compendium

of Requirements, 1998, pg 119

17 Hospital Data AIHW

18 Tannock IF, Boyd, Ne, De Boer G, Erlichman C, Fine S, Larocque G, Mayers C, Perrault D, Sutherland H: A randomized trial of two dose levels of cyclophosphamide, methotrexate and fluorouracil chemotherapy for patients with metastatic breast cancer. Journal of Clinical Oncology, 1988 Sep; 6 (9) 1377-87

19 L Schulmeister. "Chemotherapy medication errors: descriptions, severity and contributing factors." Oncology Nursing Forum, 26, 6 (1999),1033-42.

20 Queensland Health. Ministerial Taskforce into Nursing Recruitment and Retention. GoPrint, Brisbane, 1999.

21 Anthes, J, Australian Health Law Bulletin, Vol 4, May 1996

22 Yates et al, 2000

23 Yates et al, 2001

24 Gilbar, P. Preventing Medication Errors in Cancer Chemotherapy Referred to Rural and Remote Hospitals in Australian Journal of Rural Health, Vol 9, 2001. pp 47-51.

25 McCarthy, A and Hegney, D. A Review of the Educational Needs of Nurses Administering Cancer Chemotherapy in Rural and Remote Areas of Queensland in Cancer Forum, Vol 25, No 1, 2001, March. Pp 17-19.

26 Specialist Breast Nurse Project Team. Specialist breast nurses: an evidence based model for Australian practice. Sydney: National Breast Cancer Centre, 2000. Available at: www.nbcc.org.au/bestpractice/resources/ SBN_Specbreastnurses.pdf (accessed Nov 2004).

27 Rural Oncology Subcommittee. Provision of oncology services to rural and remote regions of Australia. Sydney: Medical Oncology Group of Australia Incorporated, 2001. Available at: www.racp.edu.au/moga/rural_services.pdf (accessed Nov 2004).

28 Evans R, Stone D, Elwyn G. Organizing palliative care for rural populations: a systematic review of the evidence. Fam Pract. 2003 Jun;20(3):304-10.

29 White, K., Wall, D.P., & Kristjanson, L. (2004) Out of Sight Out of Mind - Reframing Remoteness in Providing Palliative Care in Remote Australia. *Collegian,* 11 (3), 29-33

30 Wilkes L, & White K. Support needs of rural families of cancer patients. University of Western Sydney Nepean, Sydney; 1998.

31 Wilkes L, White K, & O'Riordan L. Empowerment through information: supporting rural families of oncology patients in palliative care. Australian Journal of Rural Health 2000; 8: 41-46.

32 Delaney GP, Jacob S, Featherstone C, Barton MB. Radiotherapy in cancer care: estimating optimal utilisation from a review of evidence-based clinical guidelines. Collaboration for Cancer Outcomes Research and Evaluation, 2003.

[33] Barton MB, Gebski V, Manderson C, Langlands AO. Radiation therapy: are we getting value for money? Clin Oncol R Coll Radiol 1995; 7(5):287-292

34 Costello P, Minchin N. Budget strategy and outlook 2002–03. Budget Paper No. 1. Canberra: Commonwealth of Australia, 14 May 2002.

35 National Health and Medical Research Council/National Breast Cancer Centre, Psychosocial Clinical Practice Guidelines: Providing information, support and counselling for women with breast cancer. 1999

x Anthes, J, Australian Health Law Bulletin, Vol 4, May 1996.