

FOREWORD

Each year since the opening of the Cancer Therapy Centre (CTC) in 1995 the staff have undertaken an annual review with the production of a written report. The principle value of this is to reflect on the objectives of the Cancer Service and how those objectives have been met. In addition it is an opportunity to communicate with our wider circle of stakeholders about our achievements and aspirations for the future.

The mission statement of the CTC is “to promote and deliver comprehensive quality cancer services for the community of South Western Sydney, supported by a commitment to education and research.” And so, after six years we may ask: have we achieved these ideals? In my view, the answer is: we have worked hard, delivered much needed services by dedicated professionals, developed educational programs and actively engaged ourselves in research; but there is still much more to be done.

We have committed ourselves to an Area – wide service model that will link with all the providers of cancer related care in South Western Sydney to ensure that the entire community has access to a world class standard of care. This implies coordinated quality driven multidisciplinary management.

Although service activity is one measure of productivity, it does not provide information on the outcomes of our interventions in terms of efficiency, effectiveness, survival, quality of life and satisfaction with services. The key to providing this information is the development and use of a common communication system that links patients and service providers. The CTC has been actively collaborating with NSW Health over the past four years to access a statewide electronic information management system. We have waited a long time in anticipation that a well-planned effort will reap rich rewards; it is hoped that 2002 will be the year that we begin to realise the benefits of a system that will provide the tools to assess the quality of our outputs.

The clinicians at the CTC have embraced the concept of multidisciplinary care by engaging with the diverse groups of service providers in South Western Sydney to form specialised teams. This model was promoted by NSW Health as the optimal way to deliver cancer care. Consumer participation in decision making and strategic planning for these teams will be a necessary component to ensure relevance to patient needs. Active involvement of general practitioners and community support services in care planning and delivery will be fundamental to the success of the team approach.

The planned commissioning of the new cancer centre at Campbelltown in 2003 is an opportunity to demonstrate how collaboration between different health sectors can provide best practice standards of care without the need for patients to travel far from home.

Progress and change within cancer services has been rapid and exciting and appears to be gaining greater momentum as our organisation develops greater sophistication. Our advantage is that we are traversing new territory that provides opportunities for discovery and to be leaders in the way we care for our patients.

DEPARTMENT OF MEDICAL ONCOLOGY & PALLIATIVE CARE

2000/2001

1. General

The 2000/2001 year has seen the Medical Oncology service reach a plateau in new patient consultations and follow-up visits as the staff achieves full capacity. There has not been a significant waiting-list problem generated at this stage as demand for services has also begun to plateau, reflecting near self-sufficiency within the Liverpool and Macarthur sectors of the SWSAHS in the provision of Medical Oncology services.

A weekly outreach clinic continues to be provided at the Campbelltown Hospital campus and considerable effort has been committed by Dr. Della-Fiorentina for the opening of the Macarthur Cancer Centre in 2002/2003. From July 2001 Dr. Della-Fiorentina will reduce his appointment at Liverpool Hospital to 0.9 FTE to facilitate ongoing provision of Medical Oncology services to the Wingecarribee sector at the Bowral Diagnostic Centre (a private health facility).

In January 2001 Dr. Bassim Al-Bahrani returned to Oman after completing his Medical Oncology training at Liverpool and achieving his goal of a Fellowship in the Royal Australasian College of Physicians. Bassim's role as Advanced Trainee has been occupied by Dr. Minjae Lah (Radiation Oncology Registrar on rotation) and Dr. David Thomas.

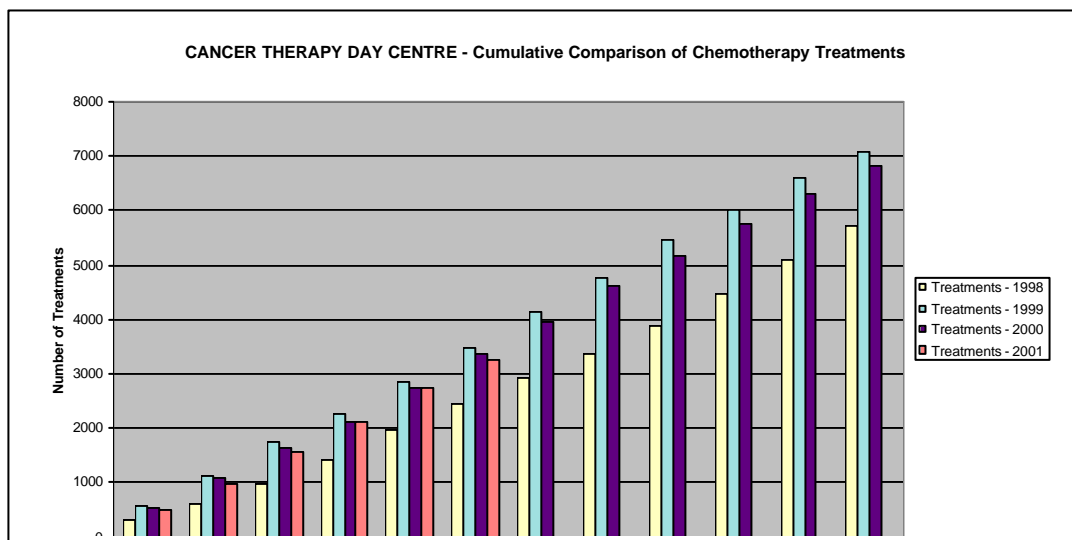
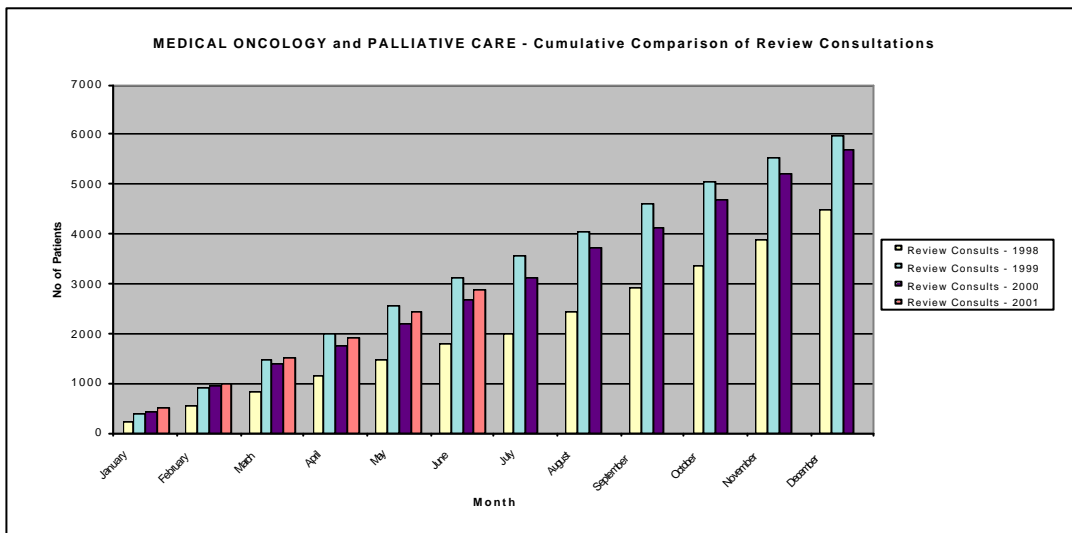
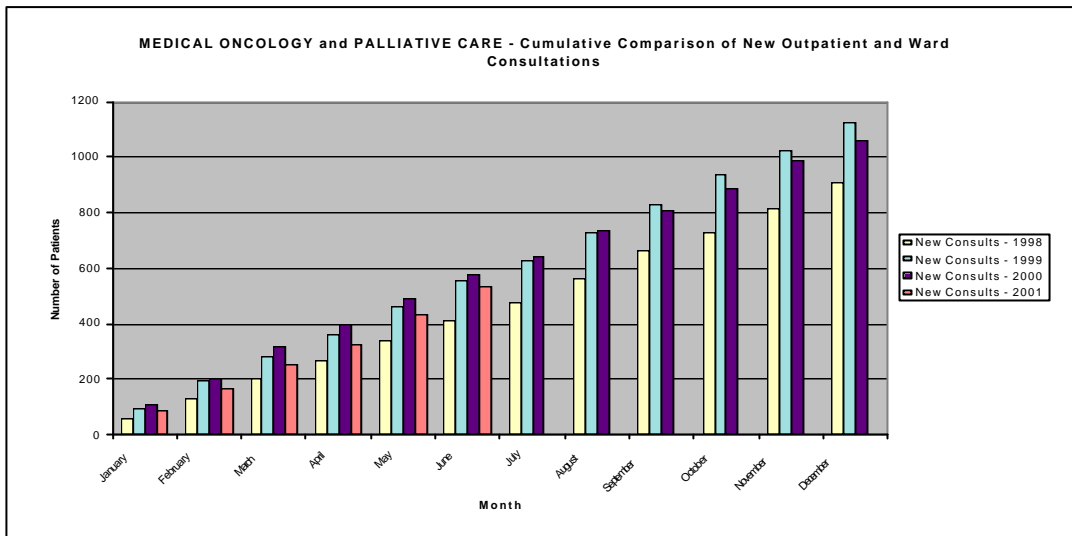
During the past twelve months, Locum Staff Specialists within the Department have included Dr. Peter Ellis (June – September 2000) and Dr. Gavin Marx (February – March 2001). The locum positions have partially filled a 0.6 FTE staff vacancy to be occupied in July 2001 by Dr. Elizabeth Hovey.

From July 2001 the senior Medical Staff profile in Medical Oncology will consist of:-

➤ Dr. Eugene Moylan	1.0 FTE	Director
➤ Dr. Amanda Goldrick	0.5 FTE	
➤ Dr. Stephen Della-Fiorentina	0.9 FTE	
➤ Dr. Eva Segelov	0.2 FTE	
➤ Dr. Elizabeth Hovey	0.6 FTE	

Dr. Goldrick continues to provide a 0.5 FTE Palliative Care consultative service within the Liverpool Hospital (see Palliative Care report). Dr. Segelov has a significant role in the SWSAHS Clinical School and Colorectal Laboratory (see Cancer Research report). As well as her clinical appointment, Dr. Hovey will be employed 0.4 FTE within CCORE researching clinical outcomes in Medical Oncology patients within SouthWestern Sydney.

The following graphs reflect clinical workload over the past three years in Medical Oncology and the Cancer Therapy Centre Chemotherapy Delivery Suite (Day Centre):-



2. *Clinical Trials / Research*

The Department of Medical Oncology continues to remain active in a large number of multi-centre clinical trials aimed at improving outcomes for patients with malignant disease. A separate research report is enclosed within this publication.

3. *Teaching*

The senior staff of the Medical Oncology Department remain active teachers of both undergraduate and post-graduate medicine. This involves clinical tutorials, student attachment to clinics and inpatient care, lectures, seminars, etc. Information obtained from participation in National and International Meetings is shared with colleagues via formal and informal teaching methods.

4. *Publications*

The following articles have been published:-

- Patterson P., Moylan E., Bannon S., Salih F. Needs analysis of a cancer education program in SouthWestern Sydney. *Cancer Nursing* Vol. 23, No. 3, 2000.
- Moylan E., Al-Bahrani B., Patterson P. Evaluation of an adjuvant psychological treatment in pre-menopausal node positive breast cancer receiving adjuvant chemotherapy. *ASCO Abstracts*. May 2001.
- Al-Bahrani B., Thomas D.J., Moylan E.j. What's causing that gas? *Medical Journal of Australia*. Vol. 174, No. 12, p. 652. 18 June 2001.
- Smith A., Sharma P., Tomlinson J., Robson L., Goldrick A. Solid variant of alveolar rhabdomyosarcoma with unbalanced t(2; 13) and hypotetraploidy, without mycn amplification. *Pathology* 33: 108-111, 2001.

Articles awaiting publication are as follows:-

- Punt K., Nagy A., Moylan E., et al. Edrecolomab (17-1A Antibody) alone or in combination with 5-Fluorouracil and Leukovorin in the adjuvant treatment of stage III colon cancer: Results of a multinational phase III study.
- Al-Bahrani B., Moylan E. A short outpatient hydration schedule for cisplatin administration.
- Lin P., Chu J., Kneebone A., Moylan E., et al. F-18 Flurodeoxyglucose imaging with a coincidence dual-head gamma camera (FDG Co-PET) in staging of lymphoma: Comparison with CT and gallium-67 scans.
- Ellis P.M., Delaney G., Della-Fiorentina S., Moylan E. Assessing outcomes of cancer care: A retrospective review of the management of small cell lung cancer at the Cancer Therapy Centre, Liverpool Hospital January 1996 – July 2000.

- Shannon C., Wain G., Byth K., Goldrick A., Lynch J., Harnett P. Epithelial ovarian carcinoma over the last decade: Effectiveness of evolving treatment protocols.

5. *Conferences Attended and Sponsorship Acknowledgments*

The members of the Medical Oncology Department attended the following conferences/meetings over the past year and acknowledge the sponsorship of such meetings:-

Date	Conference	Sponsor	Location	Attendee
Jul 2000	ANZ Breast Cancer Trials Group Annual Scientific Meeting	-	Queenstown, New Zealand	EJM
Sep 2000	9 th World Congress – International Association For Study Of Lung Cancer	Aventis	Tokyo, Japan	SDF EJM
	5 th World Congress Of Psycho-Oncology	-	Melbourne, Victoria	AG
Oct 2000	25 th Annual Congress – European Society For Medical Oncology	Schering-Plough	Hamburg, Germany	AG
	Asia Pacific Regional Medical Conference	Eli Lilly	Couran Cove, Queensland	EJM
Nov 2000	4 th Leura International Breast Cancer Conference	-	Leura, NSW	AG SDF
	Head & Neck 2000	-	Gold Coast, Queensland	BA
	COSA Annual Scientific Meeting	-	Adelaide, South Australia	DT
	Aromatase 2000	Novartis	Port Douglas, Queensland	EJM
Feb 2001	Adjuvant Therapy Of Primary Breast Cancer	Aventis	St. Gallen, Switzerland	AG
Mar 2001	Asia-Pacific Cancer Conference	Eli Lilly	Malaysia	SDF
	37 th Annual Meeting – American Society of Clinical Oncology	Astra Zeneca	San Francisco, USA	SDF

	37 th Annual Meeting – American Society of Clinical Oncology	-	San Francisco, USA	EJM

The following sponsors of the weekly CTC Oncology Educational Seminar are also gratefully acknowledged:-

- Abbott Australasia Pty. Limited
- AMGEN Australia Pty. Limited
- AMRAD Pharmaceuticals Pty. Limited
- ASTA Medica Australasia Pty. Limited
- Aventis Pharma Pty. Limited
- Bristol-Myers Squibb Australia Pty. Ltd
- CSL Limited
- Eli Lilly Australia Pty. Limited
- Glaxo Wellcome Australia Limited
- Janssen-Cilag Pty. Limited
- Mundipharma Pty. Limited
- Novartis Pharmaceuticals Pty. Limited
- Nycomed Amersham Pty. Limited
- Pfizer Pty. Limited
- Pharmacia & Upjohn Pty. Limited
- Roche Products Pty. Limited
- Schering Plough Pty. Limited
- Schering Pty. Limited
- Servier Laboratories (Aust) Pty. Limited
- Smith Kline Beecham International
- Wyeth Australia Pty. Limited

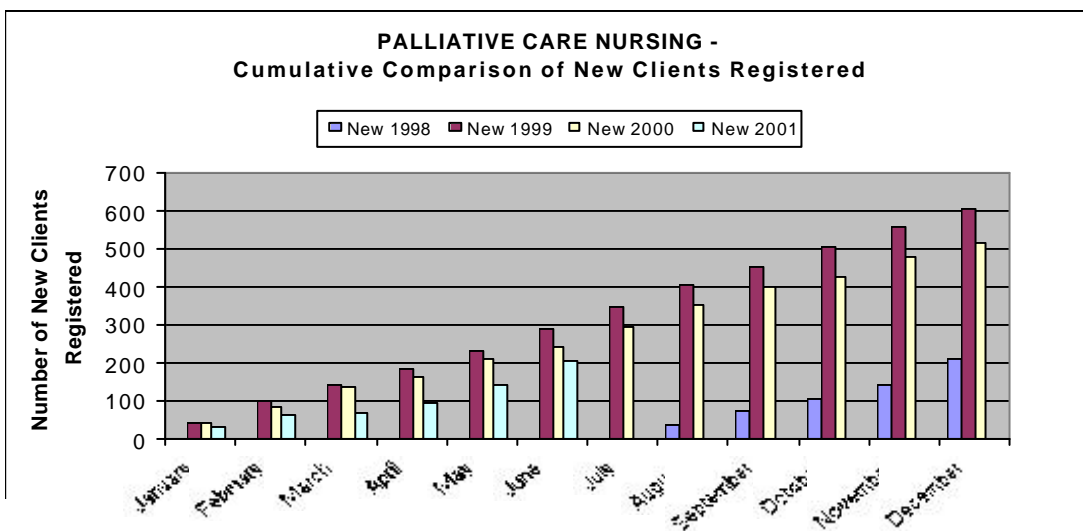
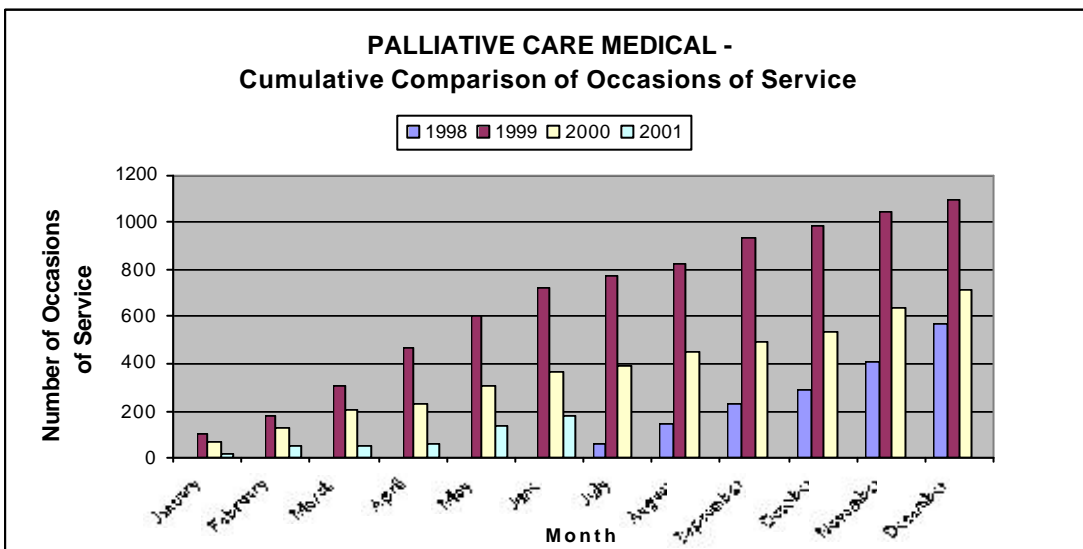
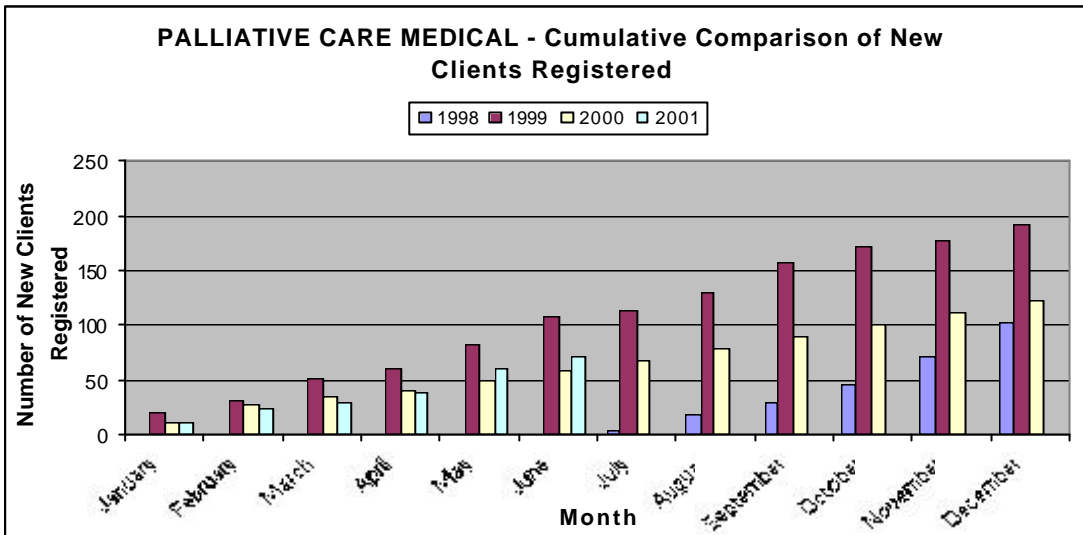
PALLIATIVE CARE SERVICES

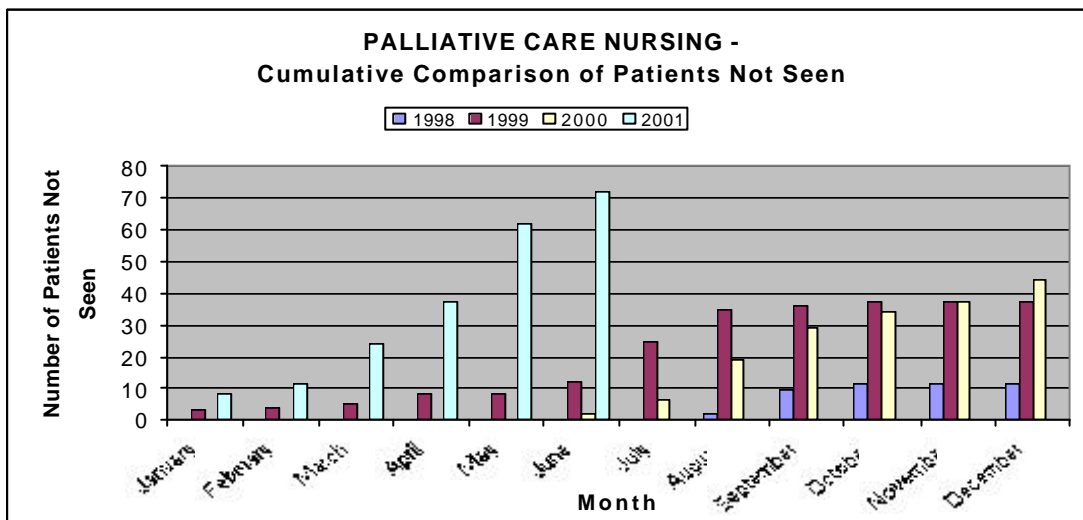
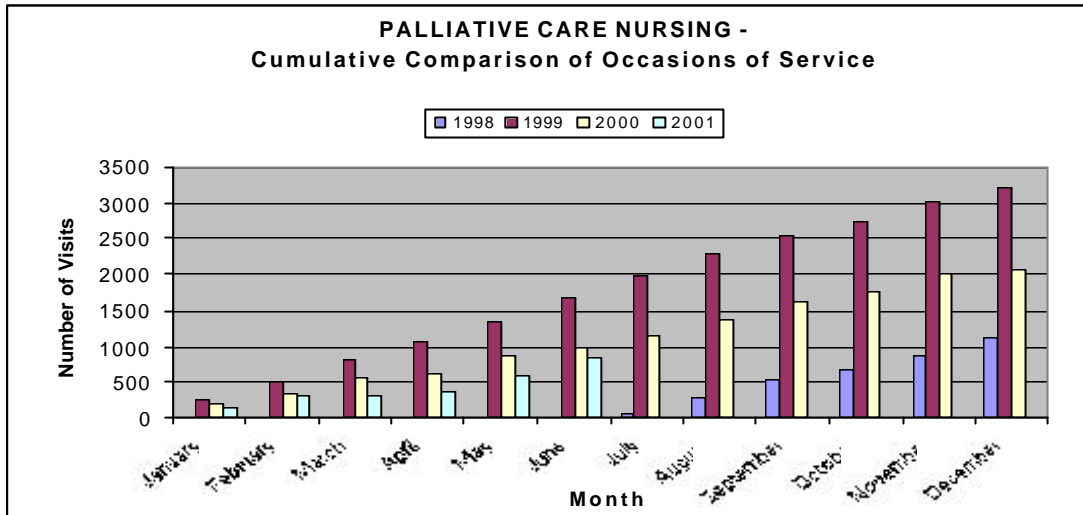
1. General

This 12 month period marked another year of great change within the Palliative Care service with Mrs Megan Luhr-Taylor returning from maternity leave & Ms. Debby Couldridge returning from her secondment to the Breast Cancer Nurse position. During their absence Mrs Colleen Carter & Mrs Bron Heron were seconded into Liverpool Hospital from Fairfield Palliative Care Service & Braeside Hospital respectively. Late in 2000, Mrs Luhr-Taylor & Ms Couldridge resigned and both positions were left vacant for a number of months with the exception of a six-week period in February-March when Mrs. Pauline Parahi from the Hoxton Park Palliative Care Service, covered the nursing service. In April Mrs Colleen Carter was appointed as CNC and Mrs Bron Heron was appointed as the Registered Nurse. It has been difficult to rebuild the service after such a long period of absence.

In the year July 2000–June 2001 there were 152 medical referrals and 534 medical occasions of service, and 653 nursing referrals and 1,946 nursing occasions of service.

2. STATISTICAL DATA (2000-2001)





3. SERVICE ACHEIVEMENTS (2000-2001)

Medical Activities:

The Clinical Achievements of Palliative Care in the past year have been:

- The provision of inpatient consultation and review of patients referred for hospice placement.
- Participation in monthly Pain Service meetings.
- Ambulatory consultations.

- Maintaining the Medical service has been difficult with no registrar for several weeks at a time, particularly at the end of last year.
- Participation in the SWSAHS Palliative Care Review, which made several recommendations including:
 - That Liverpool Hospital was priority No. 2 after Macarthur (position now filled) for a further full-time staff specialist.
 - The need for Palliative Care to be a separate department.
- Discussion underway regarding the recruitment process for Staff Specialist for Palliative Care funding available from April 2002.
- Have completed a draft business plan.

Teaching and Education

Palliative Care staff have been involved in the following educational activities over the past year:

- A presentation at Medical Grand Rounds, May 2001 addressing the Number and Impact of Patients with Brain Tumours in Liverpool Hospital.
- Year 4 tutorial Grief And Loss.
- Year 6 tutorials - Pain, Palliation and Breaking Bad News and core medical oncology.
- FRACP teaching- Palliative Medicine.

Staff have attended meetings & conferences

- ESMO, Hamburg October 2000 - Palliative Care with particular emphasis on Anaemia & Fatigue.
- 5th World Congress of Psycho-oncology, Melbourne September 2000.
- Production of a Video for General Practitioners on the role of Durogesic for Janssen-Cilag.

Nursing Activities

Over the past year Palliative Care Nursing has provided an inpatient consultation service and review of patients referred for Community Referral and Inpatient Palliative Care hospital placement.

Teaching and Education

Nursing Staff have been involved in the following educational activities over the past year:

- Continuing to supply orientation packages for all new graduates employed in GGE/CTC, involving a one-week placement for each new nurse with the Service.
- Participation in all New Graduate nursing programs, Liverpool Hospital.
- Continuation of In-service education programs for wards/Units/CTC within Liverpool Hospital.
- Continued participation in the CTC Education Committee.
- Attended 5th World Congress of Psycho-oncology, Melbourne during September 2000
- Member of the SWSAHS Palliative Care Annual Conference and Chairing a session at the Conference, March 2001.

Quality Assurance:

In order to improve the quality of care offered, Palliative Care Services has undertaken the following:

- Late in 2000 a program was implemented to develop a resource person for each ward within the hospital. This program was enthusiastically accepted by the nurses within Liverpool hospital and it is our plan to further develop it over the next twelve months.
- Review and modification of the CTC Day Centre/Clinic referral form for Palliative Care Services.
- Continued development and review of Palliative Care Services Policy & Procedures manual.
- Participation in Area Palliative Care monthly meetings to review issues of care and service provision.

CANCER RESEARCH LABORATORIES, LIVERPOOL HOSPITAL, UNIVERSITY OF NEW SOUTH WALES

The Cancer Research Laboratories were established in June 1999. The past year has been a most important one, with significant achievements. These are listed below.

Staff

The current staff are:-

- Dr. Eva Segelov MBBS (Hons 1), PhD, FRACP: Head of the Cancer Research Laboratories
- Dr. Najah Nassif BSc (Hons), PhD: Senior Scientist
- Mr. Glenn Lobo BSc (Hons): PhD student

- *Ms. Sheri Nixdorf BSc (Hons): Colorectal Tumour Bank Coordinator*

We were very pleased that Mr. Glenn Lobo was awarded a three year postgraduate scholarship from the South Western Sydney Clinical School of the University of New South Wales. He commenced his studies in July 2000. The topic of his research is "The role of the PTEN tumour suppressor gene in sporadic colorectal cancer".

Ms. Sheri Nixdorf was appointed in August 2000 to replace Glenn as the Tumour Bank Coordinator. She has worked hard to establish relationships with surgeons and theatre staff from Liverpool, Fairfield, Campbelltown and Bankstown Hospitals, so that almost all cases of colorectal cancer are now referred to the Tumour Bank. Sheri has expressed interest in undertaking postgraduate studies in the Laboratory and is currently applying for scholarships.

Projects

The Cancer Research Laboratories currently run two major projects:-

- The Colorectal Tumour Bank, and
- The translational molecular project identifying new genes involved in colorectal tumorigenesis.

THE COLORECTAL TUMOUR BANK

a) Notification:

During the past year, the Tumour Bank has become an integral part of the management of patients with colorectal cancer in SWSAHS. The Tumour Bank has seen excellent cooperation between surgeons, histopathologists and oncologists. A tight network for notification of cases has been developed and is successful for most cases, although there are still some problems in liaison with theatres at Fairfield Hospital. Samples are being collected from Liverpool, Sydney South West Private, Bankstown, Campbelltown, and Fairfield Hospitals.

Hospital	No. specimens	% specimens in total*
Liverpool	50	38%
Sydney South West Private	1	1%
Bankstown	49	37%
Campbelltown	27	21%
Fairfield	4	3%

*rounded off to nearest percent.

b) Consent:

There continues to be great community support for the collection and study of samples, with consent being denied in only 5 cases. Written informed consent is currently being obtained by the surgeon, registrar (after “training” from the Tumour Bank Coordinator) or the Tumour Bank Coordinator. The issue of informed consent for the collection and storage of human tissue samples has been debated in the general community during the past year, and the Tumour Bank protocol deals with all issues of concern.

c) Samples:

A new cryo-preserved is being tried which may obviate the need to store specimens in liquid nitrogen, allowing them to be maintained indefinitely at -70 degrees.

The current storage of the Tumour Bank consists of:-

- 131 patients to 4/6/01, all with informed consent.

- 61 patients are female, 70 patients are male.
- 516 tissue samples: including 204 samples of tumour tissue, 248 samples of normal bowel, 24 of involved lymph nodes, 40 of polyps concurrent with tumour, and 2 from liver metastases.
- Of the tumour samples, 124 patients had only 1 tumour, 6 patients had 2 separate synchronous tumours and 1 patient had 3 separate synchronous tumours

d) Database:

The current custom written database has entries for all patients for whom samples have been collected. All data, including clinical follow-up, is current. The Tumour Bank Coordinator has been involved with the development of a new data collection form and database for the Colorectal Tumour Group. The Tumour Bank Coordinator will take over the collection of family history for the CRTG database, at the time of gaining consent for the Tumour Bank. Liaison with the CRTG Database Manager is underway to ensure compatibility of our databases to allow for transfer of data. In February 2001, Sheri completed a full training course on Microsoft Access to ensure that data can be entered and analysed efficiently.

STUDY OF CANDIDATE GENES IN SPORADIC COLORECTAL CANCER

This molecular and cellular biology project involves examination of Tumour Bank material for mutations in certain candidate genes.

a) The PTEN gene:

This gene was examined first, with the very significant finding that 45 % of our cases of sporadic colorectal cancer harbour mutations in this gene. This has not previously been described, in fact previous reports in the literature had almost dismissed this gene as playing any role in colorectal cancer. A novel germ-line mutation and a number of somatic mutations in various exons of the PTEN gene have been characterised. These findings have been presented in poster form at international and national meetings (see below), and are currently being written up into two scientific papers to be submitted to leading international research journals. More samples are being studied so that correlations can be made with clinical behaviour of individual tumours. A number of grants have been submitted for funding to explore the functional consequences of these mutations by transfecting them into colon cancer cells lines and determining if they alter their growth and cell cycle characteristics. Two different research groups, one in Melbourne and one in the USA, which study PTEN in a different context, have expressed interest in our work and development of collaborative studies is underway. Of particular interest is that the pharmaceutical company Wyeth currently has a new anti-cancer drug in Phase II studies that is proposed to have particular efficacy in PTEN-deficient tumours. Preliminary discussions are in progress with this company about potential collaboration.

b) MSI:

Microsatellite instability, which is a marker for defective DNA mismatch repair, has been recently described in the literature to occur in 10-15% of sporadic colorectal tumours. There is also evidence that it predicts for a certain pattern of clinical tumour behaviour. We examine all tumours with a panel of 8 microsatellite markers and have found a positivity rate of 9%, in keeping with the literature (the number will probably rise slightly as more samples are studied). Clinical correlates will be examined in the coming year, as the follow-up data matures.

Scientific Presentations and Publications

a) Posters:

Posters were presented at two conferences, attended by Dr. Najah Nassif and Mr. Glenn Lobo:-

- The Keystone Conference on Colorectal Cancer, New Mexico, USA. Jan. 2001: Somatic mutation of the PTEN tumour suppressor gene in sporadic colorectal cancer. Nassif N.T., Lobo G.P., and Segelov E.
- The Lorne Cancer Conference, Australia, Feb 2001: Somatic and Germline mutation of the PTEN tumour suppressor gene in sporadic colorectal cancer. Lobo G.P., Nassif N.T., Henderson C.J.A., Wu X.J., and Segelov E.

b) Papers:

In preparation:

- PTEN is frequently mutated in sporadic colorectal cancer. Nassif N.T., Lobo G.P., Nixdorf S., Henderson C.J.A. and Segelov E.
- A novel germline mutation in the PTEN gene that is not associated with a known syndrome. Lobo G.P., Colley A., Nixdorf S., Nassif N.T., and Segelov, E.

c) Educational Seminars:

Throughout the Laboratory organised and participated in the Research Seminar Program, Division of Medicine, Liverpool Hospital. Dr. Nassif also presented a series of lectures on "Introduction to Molecular Biology" to both FRACP candidates and Oncology trainees at Liverpool Hospital. Dr. Nassif attended a workshop on microarray technology at the Peter MacCallum Cancer Institute in Victoria in May 2001. She has been invited to deliver a seminar on our work in July 2001 at the ANZAC Institute at Concord Hospital.

Grants

Many applications for grant funding were made to various bodies (see table). Success was obtained in gaining a PhD scholarship for Mr. Glenn Lobo, which commenced July 2001. Travel grants, that partly covered the cost of attending conferences, were obtained by Dr. N. Nassif and Mr. G. Lobo. All other grants were unsuccessful; however, most of these were submitted before May 2000, at which stage very few samples had been studied. Grant funding continues to be sought for 2002 and

should be more successful because of our findings. An NHMRC project grant will be submitted. It still remains difficult to compete with long established laboratories that have had many years of track record. There are very few specific “start-up” grants.

GRANT APPLICATIONS 2000-2001

<i>NAME</i>	<i>GRANTING BODY</i>	SUBMISSION	STATUS
<u>Mr. G. Lobo</u> Postgraduate scholarship	SWS Clinical School	2000	Successful
Postgraduate scholarship	<i>SWS Health Research Foundation</i>	2000	Unsuccessful
Postdoctoral Fellowship		2000	Unsuccessful
Project grant		2001	To be submitted
<u>Mr. G. Lobo</u> Student travel subsidy	<i>Lorne Cancer Conference, Australia</i>	2001	Successful
Student travel subsidy	Keystone Conference on Colorectal Cancer, USA	2001	Successful
<u>Dr N Nassif</u> Postdoctoral Registration Award	Keystone Conference on Colorectal Cancer, USA	2001	Successful
Establishment Grant	<i>Viertel Foundation</i>	2000	Unsuccessful
		March 2001	Submitted
The Gilbert Estate	NSW Cancer Council	2000 2001	Unsuccessful Submitted
Equipment Grant	Clive and Vera Ramaciotti Foundation	2000	Unsuccessful
		2001	Submitted

Project Grant	Leo and Jenny Leukemia Foundation	2000	Unsuccessful
		2001	Submitted
Project grant	Dust Diseases Board	2000	Unsuccessful
		2001	Due in July
Equipment grant	Rebecca L Cooper Foundation	2000	Unsuccessful
		2001	Due in September
Research Support Program	UNSW	2000	Unsuccessful
		2001	Due in October

Equipment purchases

Lack of funds prevented the planned purchase of a GS2000 laser automated gel system, an item that is still very much needed to improve the efficiency of screening samples for mutations (cost \$50 000). The only item of equipment purchased was a second PCR machine that was desperately needed to process samples.

Laboratory Tours

The Cancer Research Laboratory hosted visits from members of the Health Research Foundation in 2000 and again in June 2001, along with members of local Rotary clubs. An explanation of our work was given, with a demonstration of how DNA is extracted. Very positive feedback was received.

Committees

Dr. Segelov is a board member of the Colorectal Tumour Group and has been involved with formulating an Area plan for SWSAHS colorectal services. Dr. Segelov also attended Health Research Foundation seminars and planning days for a proposal that was submitted to the NSW Government for a research facility at Liverpool Hospital.

Finances

Donations were gratefully received from:-

- Mrs. C. Field from the estate of Mr. R. Field
- Amgen Australia
- St. George Bank

Funding of the Senior Scientist is gratefully acknowledged from the Bowel Cancer Foundation/Colorectal Tumour Group. Funding for the Tumour Bank Coordinator is gratefully acknowledged from the Departments of Medical and Radiation Oncology (Cancer Therapy Centre,

Liverpool Hospital). Funding for airfares for Dr. Nassif to attend the Keystone Conference on Colorectal Cancer in New Mexico, USA was generously supplied by the Department of Medical Oncology, Liverpool Hospital.

Priorities for 2001/2002

The excellent results of the past year have provided the basis for a sound line of experimental investigation into the PTEN gene and its role in colorectal cancer. Many publications are expected from the current work. Funding for a Research Assistant is needed before work can begin on investigating the functional consequences of the newly described mutations. A number of other projects are being developed, such as the collaborations previously mentioned, as well as a project with SWAPS (Anatomical Pathology – Dr. C. Henderson) to examine PTEN using immunohistochemistry in tumour specimens. Funding remains a major concern with no surety of ongoing funding for the Senior Scientist or for laboratory consumables at the time of writing this report. A PhD scholarship for Ms. Sheri Nixdorf is also urgently being sought.

Radiation Oncology

GENERAL

The dominant issue facing the Radiation Oncology Department over the past year has been a decreasing capacity to provide timely treatment. A mismatch of supply and demand in the workforce is a national problem that has affected Liverpool through the indefinite closure of a linear accelerator. With increasing need for radiation treatment within South Western Sydney, and the planned opening of a new facility in Macarthur in early 2003, retention and recruitment of staff has become a major priority for the Area's health service.

The radiation oncologists are committed to supporting the Area's principles of access, equity, efficiency, effectiveness, and acceptability as they relate to management of patients with cancer. Clinics are held throughout South Western Sydney in collaboration with other oncology disciplines to promote evidence based best practice within the constraints of available resources. Service obligations are balanced by active participation in research, education, and administrative roles that promote radiation therapy as an important and cost effective treatment for cancer.

The ability to support a quality driven service is largely dependent on information management. Since opening six years ago, the Radiation Oncology Department has anticipated implementation of a comprehensive electronic information system and has actively engaged with New South Wales Health in achieving this goal through the New South Wales Radiotherapy Information Strategy. We hope we will see the benefits of this in Liverpool in the next year and plan to build on the radiotherapy system to develop a broad-based oncology information system throughout the network of providers in the area.

Formalisation of cancer site specific clinics in the Cancer Therapy Centre has now become possible with recruitment of sufficient staff to support sub-specialised services that will facilitate optimal patient care. The challenge will be to sustain this approach as the area cancer service grows with the opening of the Macarthur centre in 2003.

STAFFING

Shalini Vinod joined the consultant medical staff as 0.6 FTE in 2001. Appointment to her position was largely based on the increased administrative and research commitments of Martin Berry and Geoff Delaney. The allocation of tumour site sub-specialisation and administrative roles are as follows:

Martin Berry: Genito-Urinary, Paediatrics, Director of Radiation Oncology, Cancer Therapy Centre and Area Cancer Services.

Michael Barton: Central Nervous System, Lymphoma Director of CCORE and Chairman CTC Undergraduate Education Committee.

Geoff Delaney: Breast, Lung and Upper Gastrointestinal, Deputy Director Radiation Oncology, Chairman Information Management and Technology Committee.

Allan Fowler: Gynaecology, Head and Neck, Skin, Bowral Clinic, Chairman CTC Quality Improvement Committee.

Andrew Kneebone: Colorectal, Lymphoma, Genito-Urinary, Bankstown Clinic, Supervisor of Training in Radiation Oncology.

Shalini Vinod: Breast, Lung, Campbelltown Clinic.

REGISTRARS AND FELLOWS

Shalini Vinod completed her Fellowship in 2000 and was appointed to the consultant staff in 2001. Andrew Hui has continued as Clinical Fellow with research activities based at CCORE.

Lynette Austen vacated her registrar position in early 2001 with plans to commence an overseas fellowship training program. Her position was filled by Marketa Skala. Funding was provided for two further registrar training positions that enabled recruitment of Upendra Parvathaneni and Karen Lim. Minjae Lah is now Senior Registrar and working part time following recent maternity leave and birth of her son.

TEACHING/EDUCATION

Liverpool continues in a lead role for Radiation Oncology Training through active involvement in the Faculty and the New South Wales Education Coordinating Committee. Andrew Kneebone coordinates the local training program and is Secretary for the State Education Committee that is chaired by Martin Berry. Shalini Vinod has provided leadership through her activities as Coordinator of the New South Wales Cooperative Teaching Program and her input into the State Education Committee. Martin Berry continued as Examiner for the Faculty.

Michael Barton has continued his role as Coordinator for the Basic Sciences of Oncology Teaching course in collaboration with the New South Wales Cancer Council and its Professional Education and Training Committee. He was also an instigator of a distance learning teaching program in radiation oncology in collaboration with the International Atomic Energy Agency. Coordination of undergraduate oncology education for the South Western Clinical School is provided by Michael and he oversees the weekly oncology education program at the Cancer Therapy Centre.

RESEARCH AND SCHOLARLY ACTIVITIES

The Radiation Oncologists, Fellows, and Registrars all actively contribute to research in clinical trials, clinical audit, and health service related research. The Collaboration for Cancer Outcomes Research and Evaluation (CCORE) is the principle research thrust and nidus of activity for Liverpool Radiation Oncology. The following is a summary of research and scholarly activities carried out by the medical staff of the Department of Radiation Oncology:

Presentations/invited Lectures

Barton, M. Global Health Economics Forum, ISRRT/AIR Radiography Conference, Sydney, Australia, 2000.

Barton, M. IAEA Guest Lecturer, Annual General Meeting, Philippine Radiation Oncology Society, Manila, Philippines, 2000.

Barton, M. 50% and all that. NSW Cancer Council Radiotherapy 2000 Summit. Darling Harbour, Sydney, 2000.

Barton, M. Radiotherapy in the Pacific Region. Annual Conference Newcastle of the Engineering and the Physical Sciences in Medicine. 2000.

Barton, M. Screening of Individuals at above Average Risk of Colorectal Cancer. Health Outcomes for the Nation: Best Bets and Best Buys, Canberra. 2000.

Barton, M. Collaborative Research Workshop. Australian College of Physicists, Scientists and Engineers in Medicine. NSW Branch Meeting, 2000.

Barton, M. Pre-operative Radiotherapy for Rectal Cancer – A Wolf in Sheep's Clothing, Radiation Induced GI Injury Workshop. Port Douglas, Queensland. 2000.

Barton, M. Boyle, F. Supervisors of Trainees Workshop. Medical Oncology Group and Faculty of Radiation Oncology Conference. 2000.

Barton, M. The European Association for Cancer Education, Antwerp, Belgium, 2001.

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Berry, M. A Study of Computer Touchscreen Technology in Assessing Radiation Treatment Toxicity. A CCORE project.

Berry, M. Retrospective Evaluation of Outcomes of Radiation Treatment for Prostate Cancer. A CCORE project in collaboration with Westmead Hospital.

Berry, M. A National Data Base for Paediatric Radiation Oncology – in Collaboration with Members of the ANZCCSG Radiation Oncology Special Interest Group.

Austen, L. Kneebone, A. Berry, M. Lalak, A. Moylan, E. A Survey of Patterns of Care for Prostate Cancer.

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In collaboration with M. Gattellari and J. Ward, Division of Population Health, SWSAHS. Evaluation of GP Education for PSA Screening.

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Kneebone, A. Drummond, M. Cachia, A. Turner, S. The Incidence and Significance of Positive Biopsies Following Definitive Irradiation for Carcinoma of the Prostate.

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To be submitted for publication late 2001.

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(Currently accruing patients. Responsible for quality assurance for patients on study – which will be publishable on its own right)

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Chong, C.C.W. Kneebone, A. Kirsh, G. First Case Report of Recurrent Synovial Chondromatosis Treated with Adjuvant Radiotherapy. Submitted for publication.

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Final draft being prepared.

Vinod, S. Lung Cancer: A Patterns of Care Study in Lung Cancer in the South Western Sydney Area Health Service (ongoing).

Vinod, S. Collaboration with Dr. Andrew Hui in a study looking at Lung Cancer and Socioeconomic Factors

Vinod, S. Collaboration with Prof. Michael Hensley re Lung Cancer POCS in Hunter region.

Vinod, S., Jalaludin, B., Rodger, A., Turner, S., Kelly, L., Thornton, D., Clark, C. Part-time Consultants in Radiation Oncology. To be submitted for publication in October, 2001.

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Latimer, J. Beckham, W. Delaney, G. West, M. Utilising an expandable micro-shell to minimise skin dose and support large breasts during tangential irradiation.
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Lah, M. Delaney, G. Barton, M. Jalaludin, B. Burns, D. Au, G. Pryor, A. Patient Anxiety Associated with Cancer Follow-up Clinic Attendance – Patient Survey.

Medical Physics

The Medical Physics group provides scientific, technical and engineering support for radiation oncology. It also provides radiation safety support throughout Liverpool Health Service. Its role encompasses

- Management of radiation therapy equipment – including commissioning of new equipment, radiation safety, calibration, quality assurance, maintenance, and system management for computer systems
- Clinical physics – including support for treatment planning, radiation dosimetry and TLD dosimetry service.
- Teaching and education
- Research and development
- Radiation safety

2 Staff

The group has staff in full time clinical roles who do routine and development work, as well as staff in full time research and development roles.

Clinical Staff

Lynne Greig, Chief Physicist

Robin Hill, Senior Physicist

Mario Perez, Senior Physicist to January 2001
Mark West, Medical Physicist
May Whitaker, Technical Officer to June 2001, Medical Physicist thereafter
Matthew Williams, Medical Physicist to March 2001, p/t Project Physicist thereafter
Vacant, Technical Officer

Research and Project staff

Lois Jones, Physics Research Fellow
Matthew Williams, p/t Project Physicist and PhD student since March 2001

Staff Movements

There were a number of staff movements during the year

- Mario Perez, one of two senior physicists, left to take up a position at Royal Prince Alfred Hospital in January 2001 and a suitable replacement was not found during the year. Mario had worked for the CTC since it opened.
- Matthew Williams joined us in July 2000 as a medical physicist but resigned in March 2001 in order to work towards a PhD. He remains with the department whilst doing his PhD and has taken a part time project physicist role.
- May Whitaker was promoted from technical officer to fill the vacant medical physicist position in June.
- Robin Hill was regraded from Senior Hospital Scientist-in-charge-of-a-section to Senior Hospital Scientist, which is the career grade for medical physicists.

The various staff movements meant that there were 3 clinical physicist vacancies during the second half of the year. This shortage caused considerable pressure on the remaining staff as their workload increased.

Of concern was that the senior medical physicist position was advertised twice with no success. Many applicants did not meet the minimum experience criteria and others took positions in other centres. In general, the training of new physicists has not kept pace with the continuing growth in radiation therapy facilities in the NSW, and there has been a consequent dilution of expertise in departments.

The clinical staff profile is also weighted with medical physicists who are not yet accredited in radiation oncology, and this generates a large training workload for the senior (accredited) physicists which is not always handled successfully. A preferred staff profile would have at least equal numbers of senior and medical physicists.

3 *Highlights*

The dominant issue for the Cancer Therapy Centre during the year was the severe shortage of radiation therapist staff, and the subsequent closure of one accelerator and growth in waiting time for radiation therapy. The medical physics group responded to this by undertaking a number of development initiatives that were designed to reduce the time taken to create treatment plans and deliver treatment.

Participation in planning for the MacArthur cancer therapy centre was also on-going throughout the year, mainly for building design and service development aspects.

3.1 Radiotherapy Equipment

Although the department is relatively young, a number of radiation therapy equipment items are starting to age and so a 10-year replacement plan was prepared early in the year as a guide for future upgrades and replacements in the centre. Approval was later obtained from NSW Health to proceed with two upgrades at a cost of about \$1.8m, and orders were placed late in the year. The first was an upgrade of one of the Siemens linear accelerators with multileaf collimator (MLC) to improve productivity and quality of care, and to reduce OH&S risks. The second was the purchase of a new treatment planning system to replace the existing one.

The maintenance of the Siemens equipment complement continued to be contracted out to Medtech Solutions Ltd, an arrangement which serves the department well. Equipment performance was, on the whole, good whilst expenditure was relatively modest.

Quality assurance continued to be an important part of the physicist's work. The centre's 3 linear accelerators are withdrawn from use on only 1 day per month for essential maintenance and to permit rostered days off for staff, so quality assurance work typically is carried out in the evenings once treatments conclude for the day. As part of a process of continually reviewing quality assurance procedures, the programs for dosimetry equipment and for electronic portal imaging were substantially reviewed during the year.

3.2 Treatment Planning Support

Although only 2 or 2.5 of the 3 accelerators were operational, patient numbers decreased by only 2% from 1999/00 figures. Routine physics support activities were therefore fairly constant throughout the year.

Several major development initiatives were undertaken during the year, with the emphasis being quality of care improvements and streamlining of processes in treatment planning:

- development of physical compensators, prepared using the HEK automatic compensator cutting system, for improved dose uniformity in head and neck radiation therapy
- introduction of computerised treatment time calculation on the Cadplan treatment planning system, to replace the previous manual method and to improve accuracy and reduce time in preparation of treatment plans
- introduction of electronic data transfer between the treatment planning and delivery systems to improve accuracy and reduce time taken to prepare treatment plans
- testing and introduction of v6.08 and then v6.27 of Cadplan software
- reviewed planning data manuals to improve usefulness to staff in treatment planning

3.3 Education

Medical Physics staff participated in a number of educational activities, as outlined below.

Teaching and Lecturing

Orientation program for new medical physics recruits

Practical and theoretical training for medical physics trainees

Tutorials for radiation oncology registrars undertaking part 1 physics exams

Supervision of PhD student

Presentations at internal physics seminars, radiotherapy and CTC combined education meetings, and therapist inservices

Lectures for Basic Sciences of Oncology course

Radiation safety inservices

Preparation of training modules for IAEA support registrar training scheme

Invited presentations

The Radiobiology of IMRT, Wollongong University, Dept of Physics Seminar, September 2000

IMRT. What is it? What's the point in the exercise? and IMRT planning: The theory and processes, Australian College of Radiographers/ IMRT workshop, May 2001

Conferences and workshops

- Robin Hill attended the annual meeting of the European Society for Therapeutic Radiology and Oncology in September 2000
- Lynne Greig, Lois Jones, Mario Perez and May Whitaker attended the annual meeting of the Australasian College of Physical Scientists and Medicine in November 2000
- Lynne Greig attended the annual meeting of the American Society for Therapeutic Radiology and Oncology in Boston, October 2000
- Lynne Greig attended the annual meeting of the Australasian Brachytherapy Group on November 2000
- Lois Jones attended the National workshop, Experimental Radiation Oncology
- Lois Jones and Matthew Williams attended the annual physics workshop, Australia and New Zealand Society of Nuclear Medicine

3.4 Research

Publications

Jones, L. C. and Hoban, P. W. 2001a A comparison of physically and radiobiologically-based optimization for IMRT *Med Phys* submitted.

Jones, L. C. and Hoban, P. W. 2001b A method for physically based radiotherapy optimisation with intelligent tissue weight determination. *Med Phys* submitted.

Jones, L. C., Hoban, P. W. and Metcalfe, P. E. 2001 The use of the Linear Quadratic model in radiotherapy: A review *Australasian Physical Sciences and Engineering in Medicine* In Print.

Presentations

Greig, L. and Whitaker, M. 2000 Implementation of IAEA TRS 381 for electron beam calibration *Australasian Physics and Engineering Sciences in Medicine* 23 161.

Jones, L. and Hoban, P. 2000 A method for determining tissue importance weighting factors for inverse planning *Australasian Physics and Engineering Sciences in Medicine* 23 152.

Perez, M., Hill, R., Whitaker, M., Greig, L., West, M. and Jones, L. 2000 Dosimetry of small electron fields shaped by lead *Australasian Physics and Engineering Sciences in Medicine* 23 147-148.

West, M. P. and Jones, L. C. 2000 Using MLCs to deliver compensated fields In *World Congress on Medical Physics and Biomedical engineering*. Chicago.

4 Conclusion

It was a busy year due to the large number of development initiatives under way and the shortage of staff in the second half of the year. Staff worked really hard during this period and they should be congratulated for managing to cope with routine work as well as completing the more important projects.

The next year will be equally full. Plans include commissioning of the new treatment planning system (a significant undertaking), development of IMRT treatment techniques, possible introduction of the use of ultrasound localisation for prostate radiation therapy and continuing planning for the MacArthur centre.

Radiation Therapy

Introduction.

The past year again has seen staffing shortages and therefore a reduction in services provided. The staff shortage is a global problem and within Australia, NSW is the hardest hit State with the largest number of vacancies. The Radiation Therapy department operated 2.5 Linear Accelerators until January 2001 after which time the department could only operate 2 Linear Accelerators because of staffing numbers.

The number of Brachytherapy patients treated continues to be high. The waiting list for treatment has continued to grow during the year because of the reduced ability to treat patients. The new cases seen by the Radiation Oncologists have been capped in an attempt to minimize the waiting time. During the year the waiting time for a standard patient has been as long as 7 to 8 weeks.

The annual State statistics for 2000 have not been received to date from the Health Department and therefore a comparison with other like Centres can not be done. No analysis of how many SWSAHS patients are treated by other Health Areas can be looked at either.

Staffing.

Staffing and recruitment has been extremely difficult. The department was fortunate to gain 4 new graduates at the beginning of 2001. This made the situation not as bad as it could have been. Four staff left at the beginning of 2001 for Canada, one to Saudi Arabia and one to Singapore while staff from three FTE positions are on maternity leave. Another left to work in a department closer to where they had bought property.

In the last annual report it was stated that it was hoped to operate 3 Linear Accelerators from January 2001. This did not happen because of the staffing situation. In fact the department had to consolidate the staffing and operate only 2 Linear Accelerators.

It is pleasing that in the past year some staff have gained personal upgrades that recognizes their advanced technical ability in various aspects of radiation therapy.

The department is working with Area Human Resources to try and turn around the staff shortages. Radiation Therapy are investigating various avenues on how to compete for the scarce resource of Radiation Therapists with other departments in Australia and overseas.

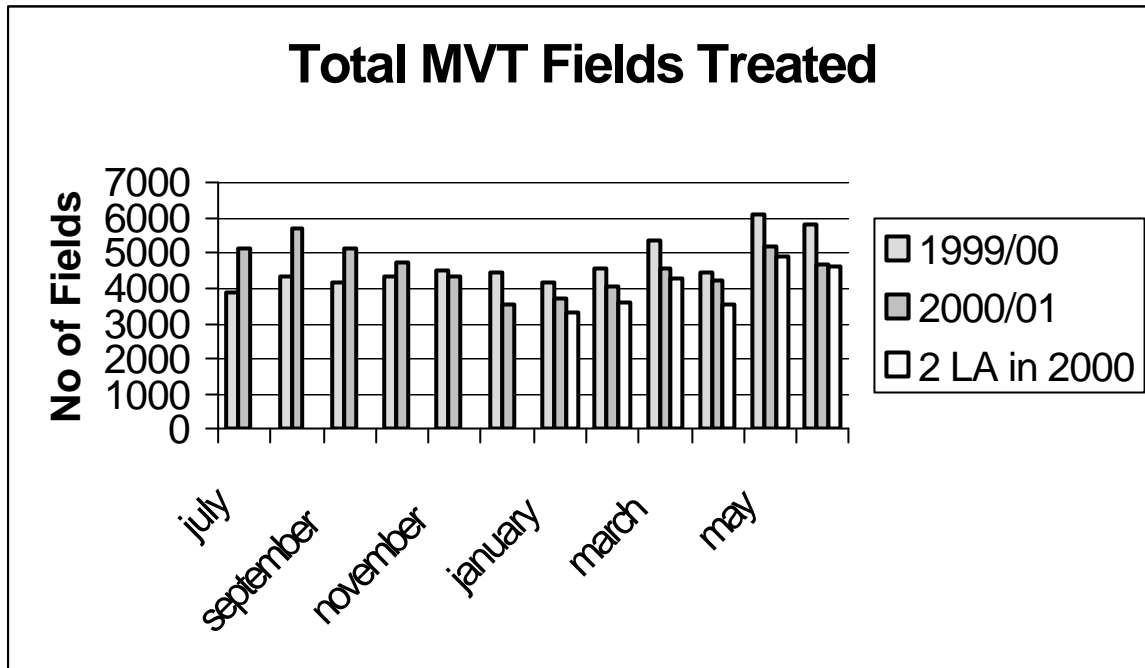
Statistical Data

The Radiation Therapy department operates from 8.00 am to 5.20 pm daily. The preventative maintenance program organized by Physics for the Linear Accelerators has kept the machine downtime low.

During the past year the variety techniques and complexity of the techniques has continued to change and expand. The treatment of prostate cancer with the 6 field conformal technique is now routine and the dose is being escalated.

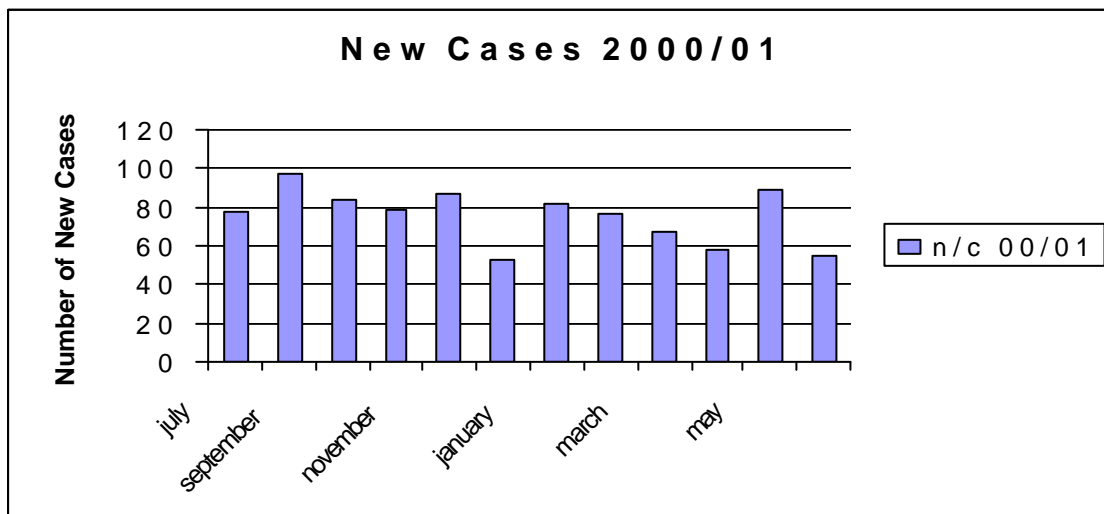
The annual statistics indicate the increase in the number of fields per technique and the number of increments also increasing as the doses are taken higher with planned escalation. BTEs have contributed to better and more efficient appointment system. This method takes into account the complexity of techniques and therefore distributes the workload more evenly.

The graph below show that the number of fields treated has continued to increase over the past 12 months. When the figures are corrected for the number of machines operating there has been an increase of almost 10% over the number of fields in 1999/00 when calculated for 2 machines. Without taking into account the different number of Linear Accelerators operating, the past year was only 2% less than the previous. This was exceptional considering there were only 2 Linear Accelerators operating for 6 months of the year.



Throughout the past year the department has maintained figures for treatment similar to those the year before. The average number of fields per attendance was 2.92 in 1999/2000 and 2.95 in 2000/2001. While the average number of fields treated per course was 61.8 in 1999/2000 and 59.7 in 2000/2001 and the average number of attendances per course of radiation therapy was 21.1 in 1999/2000 and 20.2 in 2000/2001. These slight changes may reflect an increase in palliative patients being treated or a change in prescribing by the Radiation Oncologists in an attempt to contain the waiting list.

The Radiation Therapy department treated a total of 908 patients commencing a course of radiation therapy in 2000/2001. As stated previously this was 2% less than 1999/2000 but there was also less Linear Accelerators operating during part of the year than in the previous year.



The above graph shows the decrease in new cases commenced from January 2001 that is associated with the reduction in the number of Linear Accelerators operational due to staffing difficulties.

The department had a total of 19518 outpatient attendances in the year 2000/2001, which included attendances for aspects of planning, as well as those for brachytherapy and orthovoltage. For brachytherapy there were 25 patients who had a total of 96 treatments, and on orthovoltage there were 38 patients who had a total of 773 areas treated attending for treatment 680 times. There is no staff allowance made for these later forms of treatment so their delivery is additional workload to that of treatment planning and the operation of the linear accelerators.

CT scans were performed on 677 patients as part of the planning process. This shows that nearly 75% of patients receiving radiation therapy treatment had a CT scan for planning. This figure is consistent with 1999/2000. The average number of slices taken on the CT scan per patient has increased from 32.5 in 1999/2000 to 31 in 2000/2001. This indicates the increase in conformal and complex treatment plans being undertaken in the department.

Year	Simulator		Shielding		impression	shells	MLC check
	attend	films	blocks	trays			
1999/2000	1073	1776	2155	1233	141	121	820
2000/2001	1167	1604	1959	915	194	156	1019

During the year the treatment planning staff did 1167 treatment simulations which involved taking 1604 films. This shows that 29% of patients have one or more simulations that often indicate changes in treatment technique and therefore another plan to be completed. The staff in planning fabricated 1959 shielding blocks and mounted 915 personalized shielding trays. 194 impressions were taken during the year and 156 immobilization shells were made and fitted. The other impressions would be used to make lead shielding either for orthovoltage treatment or electron treatments. Some of these figures such as the impressions and immobilization shells shows a substantial increase from the previous year. This increase demonstrates the increase workload both planning and treatment in the department from head and neck and neurosurgical patients.

Year	Portal Films	Electronic Portal Imaging
1999/2000	3689	781
2000/2001	3226	817

On the treatment machines the staff took 3226 treatment portal films and 817 electronic portal images (EPI). These films and EPIs then need to be processed and viewed by the Radiation Therapy staff and the Radiation Oncologist.

Teaching/Education

Again this year the department has had students from both University of Sydney and the University of Newcastle for clinical experience. Nursing undergraduates and new graduates have spent time in the department learning what radiation therapy is.

Staff have participated in various educational and inservice programmes across the Health Area. There has been work experience students from the local area. It is hoped that some of these work experience students may enter one of the courses and become radiation therapists.

The Radiation Therapy staff have an excellent programme for undergraduate students using a 'buddy' system. Feedback from both the students and the Universities is positive and the students enjoy their time here. It is hoped this extra effort by staff may ultimately pay off with a number of the students wishing to work in the Area.

Inservice programmes have continued where possible with the staffing numbers. Radiation Therapists are regular attendees and presenters at the Monday lunchtime Radiation Oncology meetings. A number of staff also attend the Cancer Therapy Centre Oncology meetings on Wednesday mornings. From time to time the radiation therapists present at this meeting.

Patient education continues to be via the patient video that is found to be very good and received by patients well. The Radiation Therapists then spend time talking to the patients in clinic at first contact, at the treatment planning stage and again at beginning of treatment and any time during treatment the patient or carers want to talk or have information presented to them.

Staff members have continued to undertake courses offered by the hospital and Area. These include computer skill courses and personal skills courses. Staff have participated in the Division of Medicine Mandatory Training days. These training days cover all the mandatory needs in one day session.

During the year staff members have been fortunate enough to attend conferences and seminars related to Radiation Oncology:

Val Antov and Vincent Towell attended QA in Diagnostic Radiography to learn how to look after and carry out QA on the film processor and associated areas.

Marcia Fleet attended American Society of Radiation Technologist conference in conjunction with ASTRO in Boston, USA in October 2000

Debra Vincent, Marcia Fleet, Nicole Cusack, Kirrily Banister, Vincent Towell and Jillian Hawes attended the Australasian Brachytherapy Group 19th Annual Meeting in the Hunter Valley in November 2000

Debra Vincent and Marcia Fleet attended the Summit 2000 conference organised by the NSW Cancer Council at Darling Harbour in November 2000

Debra Vincent attended the Leura International Breast conference at Leura in November.

Vincent Towell attended the 10th International Brachytherapy conference in Madrid, Spain in November 2000

Vincent Towell attended Brachytherapy training at the Nucletron factory in The Netherlands in November 2000

Marcia Fleet, Jillian Hawes and Joanne Veneran attended the Siemens Users meeting in Melbourne in January 2001

Marcia Fleet attended ICRO 2001 Conference held in Melbourne in January 2001

Marcia Fleet, Leanne Elich, Roshni Prasad, Val Antov, Sonia Lee, Matthew Fuller and Joanne Veneran attended the 19th Radiation Therapy Symposium in Brisbane in March 2001

Marcia Fleet attended the UKRO1 conference in York, UK in April 2001

Leanne Elich attended the International Society of Radiographers and Radiological Technologists, 5th Conference of the Americas in Bridgetown, Barbados in April 2001.

James Latimer attended Peter MacCallum Cancer Institute in Melbourne in May to observe and learn cast making and head and neck stabilization.

Joanne Veneran the ESTRO teaching course in IMRT and other Conformal Techniques in Practice in Amsterdam, The Netherlands in June 2001.

A number of the staff attended the Cancer Council Basic Sciences of Oncology Course.

Research

The Radiation Therapists have continued to involve themselves in research where possible. This has had to be fairly limited in the second half of the year particularly because of the staffing situation.

David Sampson, Matthew Fuller and Leanne Elich are participating in the Touchscreen trial recruiting the patients to participate. Other staff are investigating possible density changes with contrast in lung fields, use of different forms of compensation to improve dosage in the breast, treatment of limbs in water tanks as well as ongoing improvement projects as techniques evolve.

Patient information booklets and information are an ongoing task. This is very time consuming and in the past few months have been difficult to find time.

It is hoped the coming year will allow Radiation Therapists to again increase their time for research as the staffing numbers hopefully improve. There are a number of projects that could be started.

General Comments

The Radiation Therapy department continues to deliver quality care to patients and provide support for both patients and carers. The care is delivered in a cheerful and professional manner. Even with the difficult staffing situations over this past year the staff have maintained this high level of patient care. As a group of professionals they take pride in delivering an affective and efficient service through the delivery of timely and technically accurate treatment. The waiting list has continued to lengthen up to 7 to 8 weeks at times during the year. This has placed added pressure on the already limited staff resources. The staff have taken in their stride the increased workload and the changing and more complex techniques. The department has increased productivity on a comparable machine basis over the year. As stated in the report last year there remains little room to move in the Radiation Therapy system.

The clerical assistance provided to Radiation Therapy has been greatly appreciated and very successful. This has allowed Radiation Therapists to devolve clerical tasks previously undertaken by them in the absence of clerical assistance. The Therapist now uses that time to do tasks they are trained to do such as patient care and treatment.

It is hoped that in the coming year there will be sufficient staff to allow Radiation Therapists to participate in clinics with the Radiation Oncologists and to become even a more integrated part of the Radiation Oncology team looking after the patient.

Presentations at Conferences

19th Radiation Therapy Symposium of Australian Institute of Radiography

Fleet, M.

A CT Scanner! What do we do?

Fuller, M Elich, L

Radiation Therapy of the Rectum: a Retrospective Comparison of Two Bellyboard Positions

Prasad, R

Patient Education Video on Radiation Therapy

Veneran, J

Prostate Movement Study

Summit 2000 Conference

Vincent, D., Lewis, J

Radiation Therapist Manpower in NSW

Conclusions

2000/2001 has again seen the Radiation Therapy staff rise and meet new challenges in maintaining the efficiency and productivity of the department. The department has continued to treat a large number of high dose rate brachytherapy patients.

Staffing has remained a major concern throughout the year. Work is continuing to try and attract staff to the Centre. The staff take great pride in their undergraduate student training using the philosophy that if a student has a positive experience while on clinical they are more likely to come and work in the department. The staff are to be congratulated for their efforts in this respect. It is hoped that 2002 will see an improvement in the staffing and staff will be able to again take up projects, courses and further education. It is hoped to encourage many of them to register in the Australian Institute of Radiography's Continuing Professional Development programme.

As the new year approaches it is hoped to have staff in sufficient numbers to operate at least two and a half machines but the ultimate aim is to have all three machines fully operational.

The coming year will see the Radiation Therapy staff involved in the commissioning of a number of pieces of new equipment with the Physics staff. There is the new treatment planning system, the BAT ultrasound, a new CT Scanner and hopefully the long awaited Clinical Data Management System. All these will take time and manpower to implement but in the long term hopefully will improve the efficiency of the department and the effectiveness of the treatment. They also open a whole opportunity for research projects and ability to improve treatment techniques.

Staff will also be involved in the planning, equipment purchase and ultimate commissioning of the department at Macarthur. The year ahead looks exciting with a number of new aspects of Radiation

Therapy to be included into our practice. It is hoped that the staffing situation will improve in the new year and that the waiting list for treatment will be reduced.

Annual Report - Cancer Services

Nursing Services

There have been a number of changes in the nursing staff in cancer services over the past year.

Mr Paul Grimmond commenced in the role of Nurse Manager – Cancer services in July 2000. Paul comes to Liverpool Health Service from St Vincent's Hospital, Darlinghurst and brings with him a wealth of clinical and management experience.

In palliative care, Megan Luhr-Taylor returned from maternity leave to her CNC position, but then obtained a higher CNC, grade 3 position in Wentworth Health Service. We all wish Megan all the best as she climbs up the career ladder. CNS, Debby Couldridge resigned and moved interstate.

Replacements for these positions have been Colleen Carter as CNC from Fairfield community and Bronwyn Heron from Braeside Hospital as registered nurse. Both Colleen and Bronwyn bring an enormous amount of experience to the palliative care nursing service at Liverpool, from both an inpatient and community perspective.

Staff members have continued their involvement in the 'Look good – feel better' program, while also conducting education sessions for patients in conjunction with the multidisciplinary team.

There are currently three nurses enrolled in the Oncological Nursing course conducted by the NSW College of Nursing and will complete this at the end of the year. The college also offers distance education courses of which three of our nurses have completed the haematology nursing module and two the chemotherapy nursing practice module.

Education on apheresis has been ongoing over the year and we now have three nurses trained to work in the apheresis unit.

Education and its provision continue to be an important aspect of the nursing service, with staff participating in both formal and informal sessions. Regular education sessions are conducted in all areas. Nursing staff have been able to attend conferences and external seminars.

Over the year we have also had a number of new nursing staff commence in both CTC and the ward and they all bring great experience and knowledge to Liverpool. Like the rest of the state recruitment and retention of nurses continues to be a challenge, but our managers strive to develop innovative ways to recruit staff to our service. This is not an easy job considering they are competing with every other major tertiary referral hospital in the metropolitan area. Grimson Ground East staff shortage was not due to staff leaving, but due to staff maternity leave. The ward currently has five new babies. Mum and babies all well and we are looking forward to everyone returning to work.

Grimson Ground East has also been able to offer casual assistant nursing positions to nursing students in their final year of university and this has worked very well, with both positive feedback from patients, staff and students. Hopefully we will be able to show these students how rewarding it is to work with patients who have cancer.

This year also saw the opening of the new patient lounge on Grimson Ground East by the general manager, Mr Raad Richards. This was only possible due to donations from patients, families and friends, which allowed the purchase of lounges, tables, TV and video. The room looks great and is used extensively by patients and their families for some relaxation out of the ward area.

Quality improvement remains at the forefront of everyone's mind as accreditation with EquIP occurs early next year. Audits of medication charts, SD4 & S8 drugs and documentation continue throughout the year to aid in identifying areas for improvement.

As stated last year our goals are to provide a high quality nursing service to patients and their significant others, and to look at ways of enhancing our service in the future.

Some of the directions planned for the coming year include commencing the position of Nurse Unit Manager in CTC, offering secondment to oncology CNC position, continue to update policies and procedures, develop patient education strategies and resources, yearly accreditation of staff in chemotherapy administration and fostering a positive working environment.

SPEECH PATHOLOGY

Overview of Past Activities, including staff movements:

CTC/Oncology/Head & Neck is serviced by 1.5 FTE Speech Pathologists (Nicola Belcastro, Meredith Porter). 1 FTE became a Senior Grade II position, resulting in increased staffing stability. The remaining 0.5 position continues to be a Grade I rotational position. Clients continue to be seen in as inpatients and in CTC as outpatients.

The Speech Pathologists continue to be involved in the Southern Districts Branch of the Laryngectomee Association.

Statistics:

From July 1999 to June 2000, Speech Pathology recorded:

- Head and Neck Inpatients: 331 individual occasions of service and 50 new referrals
- Head and Neck Outpatients: 300 individual occasions of service and 94 new referrals
- Oncology Inpatients: 219 individual occasions of service and 61 new referrals
- Oncology Outpatients: 10 individual occasions of service and 4 new referrals
- Group Occasions of Service: 11 group occasions of service

Activities:

- Speech Pathology continued to provide services to cancer patients who require assessment and management of their communication and/or eating and drinking skills.
- All CTC Head & Neck patients are seen jointly by the Speech Pathologist and Dietitian. Liaison with other CTC staff occurs as needed. Over the past 12 months these appointments have been formalised. Two half-day clinics are run weekly, with bookings made through CTC Main Reception. This has resulted in increased efficiency and access to medical records.

- The Speech Pathologists continue to attend the multidisciplinary Head and Neck clinic.
- The Endoscopic Swallowing Clinic continues to operate, offering patients multidisciplinary assessment. CTC, Oncology and Head & Neck patients have all benefited from this service.
- The Southern Districts Laryngectomy support group has commenced its 5th year of operation.

Teaching and Education:

- Education provided by Speech Pathologists over the past 12 months has focused on the management of patients with tracheostomies and laryngectomies. Activities undertaken in this area have included, presentations to CTC and GGE nursing staff as well as part of the Tracheostomy Care Workshop.
- All ambulance officers within South Western Sydney have now had the opportunity to attend education seminars on the management of patients with laryngectomies and tracheostomies. This quality project was presented and awarded runner up in the 2000 SWSAHS Quality Awards.
- Senior Speech Pathologist is currently enrolled in Masters of Public Health at Sydney University.

SOCIAL WORK

Staffing

The staffing has remained stable in the past year with the three social workers covering inpatient and outpatient oncology and haematology patients. The social work staff are Heather Aldis, Teresa Simpson and Alison Pryor

Highlights

- Haematology Education and Support Group – Thanks to Heather Aldis coordination this monthly program has very good attendance with increasing input of patients and carers in to the program.
- Increasing number of ongoing outpatient counselling sessions in Cancer Therapy Centre - Teresa Simpson particularly has provided grief counselling for a number of spouses of patients. Teresa is on track to complete a Masters of Counselling degree at the end of this year.
- Four social work students completing their university field education placements in cancer therapy outpatients and Grimson Ground East ward.
- Ongoing meetings of the social workers in oncology and palliative care across SWSAHS to look at increasing quality of services and input in to area policy and service developments.
- Liaison with the cancer education information and patient services units of the Cancer Council NSW regarding programs such as ‘Living with Cancer’ group program and ‘Telelink’ support for adolescents helping to look after an parent with cancer.
- Coordinating cancer fundraising events such as Australia’s biggest morning tea and Daffodil Day together with the hospital volunteers and reception staff in CTC, \$3200 raised for these to events alone.
- Maintenance of the cancer resource centre in the CTC together several regular volunteers

- Presentation in two international conferences - International Psychoncology conference in Melbourne and 3rd International Conference on Social Work in Health Care, Tampere Finland by Alison Pryor.
- The improvements in the patient/lounge family area GGE have improved the facilities for social workers to meet with families on the ward – Heather has worked with the ward nurses on this.
- Increased focus with adolescent haematology patients and contacts relevant community agencies such as schools and TAFE, CanTeen, Malcolm Sargent fund and the leukaemia foundation.
- Another year of smooth processing transport and parking concession requests and other practical matters that assist patients and their families.

Service Statistics

	New Referrals	<i>Individual Sessions</i>	Family or Group Sessions	Totals
<i>Outpatients</i>	742	1499	410	2651
Inpatients	825	2854	2251	5930
Totals	1567	4353	2661	8581

There has only been a slight increase in the service statistics over the past 3 years with the staffing level remaining the same. There has been significant change in the balance between inpatients and outpatients with an increase in the numbers of new outpatients referred and subsequent increase in the number of occasions of service with outpatients.

Goals

- Continued collaboration with the cancer council in program development particularly in running one of the cancer education group programs in a community language
- Planning for the opening of the Cancer Centre at Campbelltown forming a collaborative process of planning programs such as support and education groups, resource centres etc.
- Working with others to see how allied health staff can contribute to the establishment by the medical staff of 'tumour group' structure.
- Contribute the SWOG (Social Work Oncology Interest Group) manual on best practice protocols
- Work with Liverpool Palliative care team to co-ordinate bereavement follow-up arrangements such as the memorial service, providing information about support services in the community.
- Review group programs on the basis of what worked this year and what didn't including looking at specific sets of clients such as brain tumour patients.

PHYSIOTHERAPY

Overview of Past Year's Activities

Physiotherapy services for the Cancer Therapy Centre over the past 12 months have been concentrating on the continuity of care and maximising quality of lives for oncology patients. The further development of post mastectomy, gynaecological, lymphoedema physiotherapy services for inpatients and outpatients as well as the community has been a major focus.

Referrals from the Cancer Therapy Centre, GPs, specialists and other health professionals have been regular and challenging. The continuation of the central intake line for the Liverpool Lymphoedema Service has been effective. This intake officer is still based at the Rainbow Cottage and will continue to operate from this location.

A new agreement has been reached with PADP to help fund custom made garments to ensure maximum quality of care to clients with Lymphoedema. There has also been a successful submission for an adjustable height bed for Room 12 in the CTC .

Physiotherapy Service Include:

- Lymphoedema inpatient and outpatient management
- Exercise prescription for post mastectomy inpatients and organised outpatient follow-up.
- Management of musculoskeletal condition for oncology patients
- In depth education program for post mastectomy, gynaecological, lymphoedema patients
- Home visit to oncology and lymphoedema clients who are unable to attend the Physiotherapy department

Teaching and Education

- Attended Biersdorf Lymphoedema Course at North Ryde for 6 days
- Presented Lymphoedema Prevention and Management talk to Breast Cancer Support Group
- Lymphoedema inservice presented to physiotherapy staff
- Attended Greater Western Sydney Lymphoedema
- Education to Medical and Physiotherapy student
- Attendance of Basic Wound Care Workshop
- Attended SWAHS research forum

Research

- Continual update of new research to stay abreast with current best practices

Goals

- Continue promoting Liverpool Lymphoedema Service and monitoring the demand of Physiotherapy services over the next 12 months.
- To establish a permanent position for the Liverpool Lymphoedema Service

DIETETICS

The Dietitian's role in the Cancer Therapy Centre (CTC) is to assist patients to optimise their nutrition before, during and after treatment. Chemotherapy and radiotherapy can cause patients to experience a range of gastrointestinal problems including poor appetite, weight loss, nausea, vomiting and changes in taste.

Staffing

Dietetic services have consisted of 1-1.5FTE dietitians working in the Centre and with Oncology/Haematology inpatients.

New Initiatives

Head & Neck Dietitian Clinics

In order to improve services for patients with head and neck cancers a twice weekly clinic was established in conjunction with the Speech Pathologist. These patients were previously seen on a more ad hoc basis but with the establishment of the clinics the patients Medical Records are more readily available at the appointment, there is improved access for patients and staff are able to make better use of their time.

Home Enteral Feeding

Access to enteral feeding pumps by patients requiring enteral feeding at home has been improved with the purchase of three additional pumps.

Teaching/education

Patients and Carer Education

The Dietitian has continued to be involved in patient/carer education programs including the breast cancer, prostate cancer, laryngectomy and leukemia support groups. The Dietitian also participates in the 'Dealing with Cancer' program.

Staff Education

Nursing staff in the CTC were inserviced in regards to Nutrition and Cancer.

Community Education

The Dietetics service participated in the CTC Open Day.

Continuing Education and Student Education

The Dietitian has continued to attend the Dietitians Association of Australia HIV/Oncology Special Interest Group (SIG) with involvement in activities and establishing networks with other oncology dietitians.

Dietetic students from Sydney, Newcastle and Wollongong Universities have attended the Centre as part of their clinical placement in Liverpool Health Service.

Statistics

New Referrals to Cancer Therapy Centre Dietitian : 390

Occasions of Service : 1332

Community Occasions of Service : 34

Goals for 2001/2002

Dietetics goals for the coming year

- review all Dietetic policies and procedures in the CTC
 - review provision of enteral and oral supplements to CTC patients
- to develop and update education resources (including cultural specific)

CLINICAL PSYCHOLOGY

Objectives of services

- Assist cancer patients and their families to adapt to the process of their diseases and treatments

- Assess and treat psychological problems secondary or pre-existing to cancer diagnosis or treatment
- Provide a psychological input to enhance staff's awareness, understanding and management of the psychological issues in the care for cancer patients and their families

Overview of activities

- Psychological assessment and intervention for cancer patients and families, covering both inpatients and outpatients across all the clinical departments of CTC
- Conducting the 'Dealing with Cancer' education programmes for patients and families
- Presenting on adjustment and coping with cancer for patients and families at the "Life after cancer" education programmes, "Haematology Education and Support Group" and "Prostate Support Group"
- Convening the Psycho-Oncology Group, providing educational presentations and projects for staff interested in psychological issues in oncology
- Production of a video tape "Relaxation techniques for patients undergoing radiation therapy treatment"

Statistics

Total no. of occasions of service	Outpatients	Inpatients	New referrals	No. of group sessions	Total no. in group sessions
297	236	61	96	29	351

Professional and continuing education activities

- Bi-monthly meetings with psychologist clinicians and researchers in oncology in Sydney
- Regular professional consultations and peer review with clinical psychologists in related fields
- Presentation on "Effective psychological approaches in cancer pain management" at the "Cancer Pain Management: Unravelling the Mystery" clinical meeting

- Attended “5th Work Congress of Psycho-Oncology”
- Attended workshops on “Hypnosis & suggestion in the treatment of pain” and “Entering the practitioner’s sanctuary – an interactive model of suggestion in psychotherapy”
- Attended “Implementing the psychosocial guidelines: Recognizing and improving psychosocial care for cancer patients”

Goals for the Year 2001/02

- Develop group intervention programmes for cancer patients
- Develop cancer education programmes for patients from NESB
- Promote projects and researches in the Psycho-Oncology Group
- Develop mechanisms for identifying patients’ psychosocial needs and linking patients with services

Clinical Trials

STAFF

Ms Denise Burns (Clinical Nurse Consultant – Clinical Trials)
 Ms Seini Taufa (Full-Time Research Officer)
 Mr Vu Nguyen (Full-Time Research Officer)
 Ms Lyn Ounthoulay (Full-Time Research Assistant)

OVERVIEW OF 2000/2001

This year has seen a continued rise in the number of patients recruited to Clinical Trials and the number of Ethics Applications for new clinical trial protocols. We have seen the addition of two new staff members to the Clinical Trials Department to continue the high standard of clinical trial work within the CTC.

The CTC is now a national leader in recruitment to medical clinical trials and the high quality of data management and case report form completion is commented upon by many of the collaborative groups supervising our trial work. The quality of submissions to the Ethics Committee has been favourably noted by the South Western Sydney Area Health Service Ethics Committee, and Denise Burns is seen as an excellent resource person for other units within Liverpool to seek out her knowledge and expertise in ethics submissions.

Our place as a high quality Clinical Trials Centre is reflected in the number of clinical trials offered to investigators at the CTC, and the involvement of many of these investigators directly in protocol

development. An increasing number of clinical trials and studies developed within the CTC is now occurring, and the ethos of clinical trials is becoming increasingly evident within the Centre.

'MEMORABLE MOMENTS' DURING 2000/2001

- Mr. Vu Nguyen joined the staff in July 2000 as a Research Officer.
- Ms. Lyn Ounthoulay joined the staff in October 2000 as a Research Assistant.
- Approval for a dedicated Clinical Trials Centre Pharmacist has been obtained.
- Increase in local investigator initiated clinical trials within the CTC, e.g. Soap study in radiation therapy; Lenogratin mouth washes in high dose chemotherapy and oral Dolasetron as an antiemetic in chemotherapy.

CCORE

The Collaboration for Cancer Outcomes Research and Evaluation was established by the senior Radiation Oncologists from the Cancer Therapy Centre at Liverpool Health Service. The five Radiation Oncologists, Dr Martin Berry, (Director), Associate Professor Michael Barton, (Research Director) Dr Geoff Delaney, Dr Allen Fowler and Dr Andrew Kneebone have committed their time and considerable talents to establish and maintain research in both radiation oncology and cancer in general. CCORE sponsors an active clinical fellow research programme, which supports young clinicians for two years to develop their research skills. Dr Shalini Vinod and Dr Andrew Hui have held these positions over the past two years. We also have recently been joined by Dr Liz Hovey a staff specialist, who will be conducting health service research in Medical Oncology.

CCORE has a support staff consisting of administration assistant, data, business and project managers who have a wide variety of skills covering amongst others, health information management, health service management and public health.

The aim of CCORE is to improve treatment outcomes and service satisfaction for cancer patients and their carers. This will be achieved through research, implementation and evaluation of the best clinical and service practice for the management of cancer. In the past much of the research emphasis for cancer control has gone into laboratory experimentation and trials for exploring new treatments. However there is good evidence to show that by improving the delivery of existing cancer services, substantial gains can be made toward increasing life expectancy for those suffering from cancer.

Health Services Research is a relatively new discipline drawing upon knowledge from clinical research, epidemiology, public health, health economics and medical sociology to deliver optimal health outcomes. The advantage of health service providers involving themselves with improving health services through research is that they are in a key position to identify the major problems and also implement solutions.

In addition to its research agenda, CCORE has been involved with implementing the recommendations of the Optimising Cancer Care Report. Dr Martin Berry has been appointed as Director of the SWSAHS Area Cancer Control Network. He is assisted by Gerard Viswasam as a senior project officer and associate Professor Bill Kricker, who has contributed significantly to the process of developing an implementation framework for the Area Cancer Network in SWSAHS. The Network aims to organise cancer services along site-specific tumour lines such as breast, colorectal, lung and prostate etc. This population approach to cancer services incorporates screening and prevention, diagnosis, treatment, support and follow-up services. The aim is to link these services to provide a seamless care plan for patients with cancer. The management structure and business strategy is emphasised as it underpins improvements in service delivery. Innovations arising from health service research without an understanding of how to manage resources to implement improvements remain at best academic.

CCORE has also been involved with the implementation of an Area Clinical Cancer Registry to capture local treatment and outcome data on patients in SWSAHS. This is a small part of an overarching plan for an Area Clinical Cancer Information System. Dr Geoff Delaney is the Chair of the Information and Technology Committee and has been a major driver in progressing this initiative along with Associate Professor Kricker and Dr Martin Berry. The first stage is now under-way and is project managed by Dr Val Poxon who has had extensive experience in Clinical database design and implementation. This is the first in NSW and provides a unique opportunity to inform quality improvement, service utilisation and service satisfaction of patients and carers.

It is just on three years since the original business case for CCORE was completed. This has been a busy time and one of steep learning. Thanks for the support provided by the radiation oncology partners, CCORE now has a solid track record of publications, research funding, contracts and successful graduates.

Current Research Projects

1. Colo-Rectal Cancer - Patterns of Care in the Western and Wentworth Areas

Barton MB, Miles SE, Ctercteko G.

The salvage of colo-rectal cancer following recurrence is so poor that primary treatment is critical. The aim of this study is to develop baseline patterns of care data for the treatment of colo-rectal cancer. Patterns of care have been documented by the type and duration of treatment and investigative procedures performed. Long-term follow-up has been monitored with respect to survival, recurrence and morbidity. Three hundred and seventy patients have been entered onto this study and follow-up is nearing completion.

2. Sites of local recurrence of rectal cancer and the implications for radiotherapy field design

Hruby G, Barton MB, Miles SE, Carroll S, Nasser E, Stevens G.

The results of adjuvant radiotherapy for rectal cancer are highly dependent on the balance between tumour control and small bowel damage. The volume of small bowel in the treatment field is the greatest determinant of small bowel damage. This study examines the sites of pelvic recurrence in patients previously untreated with radiotherapy to determine the sites and risks of recurrence within the pelvis. Two hundred and sixty patients referred to Radiation Oncology Departments at Westmead Hospital, Royal Prince Alfred Hospital and Prince of Wales Hospital were included and a paper is now being written for publication.

3. Study of the effectiveness of computerised (touchscreen) patient feedback in the clinical management of cancer patients

Berry M, Jacob S, Kneebone A, Fowler A, Delaney G, Barton M.



In cancer service provision, attention is usually focussed on the diagnosis and treatment of the cancer and its symptoms. However, the diagnosis and treatment of anxiety, depression and the side effects associated with cancer treatment can have very significant effects on the quality of life of patients undergoing radiation therapy for cancer. This project aims to (1) identify the level of anxiety and depression associated with the diagnosis of cancer and its treatment by radiation therapy in patients

with breast, prostate, bowel or head and neck cancer, (2) to identify and provide accurate information on the rates of radiation toxicity (side effects of radiation treatment) that patients experience during their radiation treatment and (3) to assess whether giving computerised feedback to oncologists about their patients' incidence of radiation toxicity and level of anxiety and/or depression would result in improved management and hence better patient outcomes. The system has been successfully trialed on 50 patients to assess patient satisfaction with the touchscreen computer system.

4. Lung Cancer: A Patterns of Care Study in the South Western Sydney Area Health Service

Vinod SK, Barton MB, Delaney G, Jalaludin B, Miles SE.

Lung cancer is an important health problem in NSW particularly so in the South Western Sydney region where the incidence is significantly higher than the state average. It is associated with

poor survival of 10%-12% at 5 years. A lung cancer patterns of care study is to be performed in SWSAHS for the years 1993 and 1996. The aim is to identify all lung cancer patients who were diagnosed in those two years and document their management and outcome. As well as providing an audit of results for the Area, we hope to document utilisation rates of the various treatment modalities and assess the relationship of socioeconomic factors to management and outcome. Upon completion we will recommend how processes and outcomes of lung cancer management can be improved and outline areas of priority research.

5. A Basic Treatment Equivalent for Gynaecological Brachytherapy – A Pilot Study

Vinod SK, Fowler A, MacLeod C, Delaney G, Jalaludin B.

Brachytherapy is an important part of the radiotherapeutic management of cervical, endometrial and vaginal cancer, involving the insertion of radioactive sources in the vagina and / or uterus. The aim of this study is to see if a Basic Treatment Equivalent (BTE) can be defined for gynaecological brachytherapy. The project involves measuring how the complexity of different parameters, including several patient and treatment variables in gynaecological brachytherapy, affects the duration of treatment. It will be performed at Liverpool Hospital and Royal Prince Alfred Hospital.

6. Waiting Times for Radiotherapy – A Survey of Patients' Attitudes

Barton MB, Jacob S, Delaney G, Lehman, M., Cail S.

Waiting lists for radiotherapy are a global problem, as a result of increasing demand for radiotherapy coupled with a scarcity of health resources. This study aims to assess how patients respond to these waiting times, and their willingness to participate in strategies designed to reduce waiting times. A Trade-off technique is used to determine the maximal acceptable waiting time for radiotherapy before patients elect to seek treatment elsewhere. This is part of a multicentre study involving radiation oncology departments at Liverpool, Westmead, St George and Newcastle Mater hospitals in New South Wales and in Geelong Hospital in Victoria.

7. Use of Telemedicine in multidisciplinary breast cancer clinics in South Western Sydney

Delaney G, Jacob S, Bonar FJ, Barton MB.



Treatment of breast cancer ideally involves a multidisciplinary team approach, since treatment may include surgery, radiation, chemotherapy, hormone therapy or a combination of these. Multidisciplinary meetings between treating medical specialists are usually held in large hospitals but not in smaller hospitals which may not have enough patients or specialists to hold regular meetings.

This project aimed to test the feasibility of telemedicine as an aid to multidisciplinary breast cancer clinics in the South Western Sydney area. A telemedicine link-up between Liverpool Hospital, Bankstown Hospital and Campbelltown Hospital enabled clinicians at the peripheral hospitals to participate in the multidisciplinary breast meetings held once a week at Liverpool Hospital. This study was funded by the National Breast Cancer Centre (NBCC). It was

presented as a poster at the Fourth Leura International Breast Cancer Conference, where it won the People's Choice Poster Award.

8. The Development of a new model to measure chemotherapy delivery throughput in the outpatient setting

Delaney G, Jalaludin B, Gildea B, Moylan E, Barton MB.

Currently the measure of workload in chemotherapy treatment delivery is based loosely on the ability to treat a certain number of patients in a day, with patient treatment being classified as either of short (1-6 hours) or long (> 6 hours) duration. This is not necessarily a sensitive enough measure to allow for efficient service delivery. The aims of this study are to assess the impact of various treatment-related and patient-related factors on chemotherapy treatment duration; and to develop a better model to measure chemotherapy outpatient throughput. This could then lead to identification of those areas in outpatient chemotherapy delivery where changes in practice could lead to efficiency gains without compromising patient outcome or satisfaction.

9. Prostate Specific Antigen (PSA) driven outcome and toxicity following small volume irradiation for carcinoma of the prostate

Kneebone A, Turner S, Gebiski V, Berry M.

Conventional treatment options for men who present with clinically localised prostate cancer include observation, radiation therapy, radical prostatectomy or endocrine manipulation. Whilst external beam radiotherapy is the most commonly used potentially curative treatment, its role in the management of prostate cancer is controversial, as indeed is the use of any other treatment modality. This study aims to determine the PSA driven outcome for patients receiving definitive external beam irradiation for clinically localised prostate cancer; to analyse the prognostic importance of pre-treatment PSA, T stage and Gleason grade on PSA driven outcome; and to analyse clinical outcome following PSA failure. The study is being conducted in the radiation oncology departments of Liverpool and Westmead Hospitals, on all patients with histologically confirmed prostate cancer with no evidence of distant metastases, who commenced radiation with curative intent between May 1993 and December 1997. The study is nearing completion, and will be presented at the Annual Meeting of the Royal Australian and New Zealand College of Radiologists.

9. Project Proposal to Enhance Appropriate Screening for Individuals at Increased Risk of Colorectal Cancer.

Tender for the NSW Cancer Council.

Barton MB, Frommer M, Brassil A.

Australia has one of the highest rates of Colorectal Cancer (CRC) in the world with one in 20 Australians developing the disease in their lifetime. Despite improvements in treatment over recent years, there has been little improvement in survival. Pilot studies for 'average risk' screening trials are currently under development. However the recently released NH&MRC *Guidelines for the Prevention, Early Detection and Management of CRC* recommend that individuals of 'above average' risk of CRC be triaged into more intensive screening or surveillance programmes.

The NHMRC define above average risk as >3 times higher than background risk. We have identified six distinct groups which fall into this category. These are:

1. Individuals who have had a colorectal cancer;
2. First-degree relatives of individuals who were diagnosed with colorectal cancer before the age of 55 years;

3. First-degree relatives of individuals who (a) were diagnosed with colorectal cancer when aged 55 years or older, and (b) have one other first-degree relative with colorectal cancer;
4. Individuals who have had an adenomatous colonic polyp;
5. Individuals with inflammatory bowel disease;
6. Individuals with rare familial predispositions to colorectal cancer, such as familial adenomatous polyposis (FAP) or hereditary non-polyposis carcinoma of the colon (HNPCC).

A model was developed to estimate the burden of illness and numbers of kindred at increased risk, both prevalent and incident. The greatest opportunity to improve outcomes is by targeting screening interventions toward the first degree relatives of Index cases defined in groups 2 and 3 above.

11. Contract for the International Atomic Energy Agency (IAEA) to develop distance learning modules for the Basic Science of Oncology Course
Barton MB.
International Atomic Energy Agency.
See 'Special Projects' section.
12. Distance learning website-based cancer program.
Jaggannath P, Barton MB, Tattersall M.
This program is for medical students and general practitioners and contains three modules for colorectal, cervix and head and neck cancers. The International Union Against Cancer strongly endorses this project and has provided funding.
13. New Medical Graduates' Knowledge About Cancer: The Australian Cancer Society Cancer Education Survey
Barton MB, Tattersall MH, Butow P, Crossing S, Jamrozik K, Jalaludin B, Miles S.
See 'Special Projects' section.
14. Quality assurance – Prospective study of limited chemotherapy and involved field radiotherapy for patients with I-II Hodgkin's Disease.
Kneebone A, Barton MB.
This is a clinical trial being conducted by the Trans-Tasman Radiation Oncology Group and the Australia and New Zealand Lymphoma Group. The trial is administered by the Peter MacCallum Cancer Institute in Melbourne and there are 28 participating centres across Australia and New Zealand. The aim of this project is to evaluate the efficacy of a chemotherapy regimen and radiotherapy in patients with clinical stage I-II Hodgkin's Disease. Michael Barton and Andrew Kneebone are acting as an independent audit team to review:
 1. Staging and prognostic material
 2. Radiotherapy treatment details
 3. Chemotherapy treatment details

It is planned to review the first two patients registered from each participating centre and, if there have been no unacceptable protocol violations, one quarter of the subsequent patients from each centre. Data management is being performed by Sharon Miles.

15. A prospective, non-randomised study of chemotherapy and radiotherapy for Osteolymphoma.
Christie D, Barton MB, Wirth A, Porter D, Roos D, Pratt G.

This is a clinical trial conducted by the Trans-Tasman Radiation Oncology Group, The Australian and New Zealand Lymphoma Group and the Australasian Radiation Oncology Lymphoma Group. This is a non-randomised prospective study to determine the outcome of optimal treatment and to further investigate the natural history of lymphoma. Sharon Miles is the Co-ordinating Data Manager across Australia and New Zealand.

16. Lung Cancer: A patterns of care study in the Northern Sydney Area Health Service

Hui A, Vinod, S, Yuile, P, Barton, M, Delaney, G, Jalaludin, B, Miles, S.

This retrospective study explores the associations between socioeconomic factors and lung cancer management and outcome. It compares the patterns of care and outcome of lung cancer patients in two different Area Health Services in NSW. Patients with newly diagnosed lung cancer in 1996 in the Northern Sydney Area Health Service will be studied. Data on patient demographics, tumour characteristics, management details, patient outcome and survival will be collected. The results will be compared with those of the South Western Sydney Area Health Service which are being collected in another study by Vinod et al. The socioeconomic indicators of the two Area Health Services will be obtained from the Australian Bureau of Statistics data.

17. Assessment of the Basic Treatment Equivalent model of linear accelerator throughput under English conditions.

Griffith S, Delaney G, Jalaludin B, Barton MB.

Currently, radiation oncology productivity is measured by treatment fields per hour per machine.

However, this is a crude measure at best and makes no consideration of the variations in treatment technique and treatment complexity. Therefore departments that have a large proportion of complex cases are not able to maintain the same fields per hour as the departments with less complex casemix. Another model to assess linear accelerator output is the Basic Treatment Equivalent. While this model has been tested in Australia and New Zealand, it has not been tested overseas. This study tests the model in a radiation oncology department in Cookridge, Leeds, England.

18. A systematic review of the complications of adjuvant radiotherapy for rectal cancer

Hui A, Barton MB, GebSKI V.

Radiotherapy has an established role as adjuvant therapy in high-risk non-metastatic rectal cancer. Both pre-operative and post-operative radiotherapy have been shown to decrease the risk of local recurrence. However, the toxicity related to pre-operative or post-operative radiotherapy is not well reported. This systematic review aims to examine the toxicity of adjuvant radiotherapy above that of radical surgery in rectal cancer, as well as the effect of the timing of radiotherapy (pre-operative versus post-operative), the quality of radiotherapy and the addition of chemotherapy on toxicity.

19. Changes In Prostate Cancer Management Across Australia Between 1996 and 2000

Austen L, Kneebone A, Lalak A, Berry M.

In 1996 the Urological Society of Australia surveyed members and a small number of interested parties in NSW regarding patterns of care in prostate cancer. The aim of this study was to assess changes in patterns of care since the initial survey and to document the current patterns of care in new areas of practice. All urologists, medical oncologists and radiation oncologists in clinical practice in Australia and New Zealand were approached to participate.

20. Radiotherapy in cancer care: estimating the optimal utilisation from a review of evidence-based clinical guidelines

Delaney G, Jacob S, Barton M, Frommer M, Roder D.

The utilisation rate for radiotherapy is a vital benchmark of access that is essential for the management and planning of facilities and workforce capacity for existing and future demands for radiotherapy services. The World Health Organisation recommends that 50% of all newly diagnosed cancer patients should receive radiotherapy at some point in the management of their cancer, either in anticipation of cure or for palliation. The utilisation rate of 50% is widely cited but is based solely on expert opinion but not on evidence. The aim of this project is to estimate the optimal requirements for radiotherapy services for the control of cancer in Australia, using evidence based guidelines.

CCORE has been contracted to conduct this project by the Commonwealth Department of Health and Aged Care, under the supervision of a steering committee determined by the National Cancer Control Initiative. We will develop a model, based on the best available evidence, that can be used to estimate the proportion of new cases of cancer that should receive radiotherapy. This model of radiotherapy utilisation can then be applied to predict the impact of future changes in cancer incidence rates, stage at presentation and indications for radiotherapy.

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- 2001 A trial of videoconferencing of multidisciplinary breast cancer clinical meetings in South Western Sydney.
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- 2001 The Hidden Burden – Cancer in Papua New Guinea
Cancer Services Report for AusAID.
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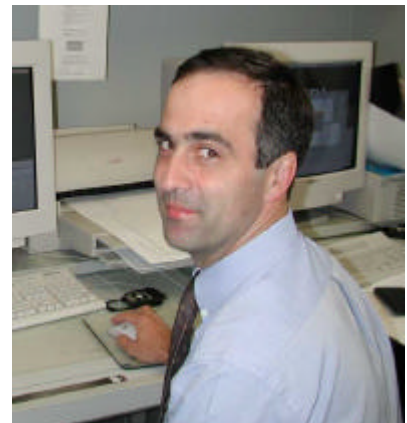
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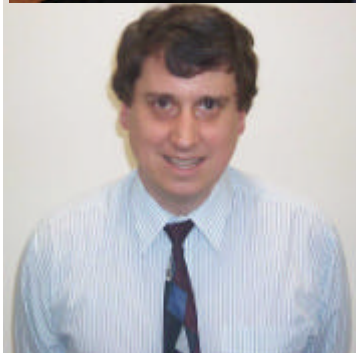
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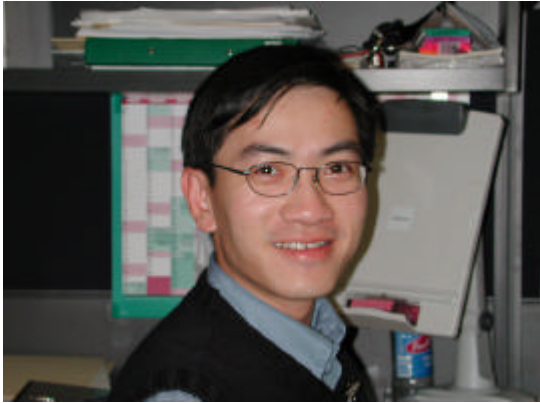
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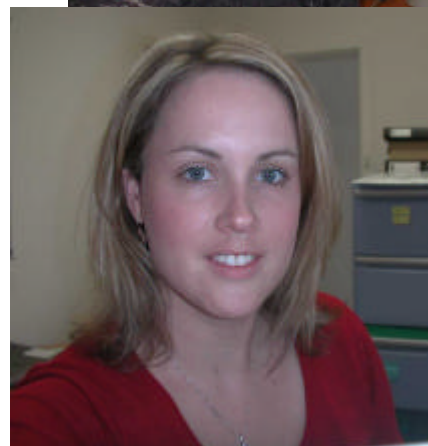
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QUALITY IMPROVEMENT COMMITTEE REPORT

The Quality Improvement Committee meets regularly to document, review, and initiate quality improvement activities within the CTC.

A major focus is participation in the ACHS EQuIP accreditation process for SWSAHS. Area wide self assessment was completed in March 2001. The current EQuIP accreditation cycle will be completed in 2003 when the final assessment is performed. The 6 quality standard area for EQuIP are continuum of care, leadership and management, human resources management, information management, safe practice and environment, and improving performance.

CTC also provides ACHS with Clinical Indicator reports every 6 months. These indicators are designed to be an overall measure of the quality of the clinical service. The current indicators are: use of adjuvant chemotherapy in stage II breast cancer, laryngectomy free survival in early stage laryngeal cancer treated by radiation, late rectal toxicity free survival in prostate cancer treated by radiation, and radiotherapy waiting times.

A new initiative in 00/01 has been the Visible Management Strategy. This involved a series of visits to worksites within the CTC by the CTC director, business manager, and QI committee chair. The sites visited have been Front Office, Clinic Reception, Chemotherapy Day Centre, Radiation Oncology nursing, Radiation Therapists, Physics and Engineering, and transcription and secretaries. The aim is to highlight the interest of management in work processes, quality and the work environment and to give all staff members a voice in the organization and operation of the CTC. Issues of importance to staff within their local work environment are discussed. Feedback is initially to the section managers and subsequently to QI committee and CTC executive.

Another major area of interest is the CTC clinical record. The upkeep and tracking of clinical records consumes a significant amount of CTC resources. A comprehensive audit of the accuracy of the records according to set criteria has been done. Results will be used to help maintain a high standard of clinical record keeping. As the CTC will soon be adopting an electronic clinical data management system, which will incorporate an electronic medical record, the importance of accuracy and standardization of the clinical record will only increase.

Committee members:

Allan Fowler
David Kelly
Marcia Fleet

Paul Grimmond
Melinda Wright
Gerald Au
Mark West
Cheryl Knight

I.T. INITIATIVES CANCER THERAPY CENTRE

The CTC IT committee first met in September, 1997. The purpose of that inaugural meeting was to form a strategy for the future use of Information Technology in the Cancer Therapy Centre. One recommendation from that inaugural meeting was to form a CTC IT committee. Since then the committee has been meeting on a monthly basis. The committee changed names in January, 2001 to the CTC IM and T (Information management and technology) committee to better reflect the fact that this committee oversees management of information in the CTC not just the technology.

The Terms of Reference of the CTC IM and T committee are:-

Information Management

1. Identify the information needs of those who are associated with the provision or use of cancer services, including clinician, management, staff, General Practitioners, other clinicians external to the CTC and patients and their carers so that the mission of the CTC to be a world leader in cancer control is realised.
2. Formulate a strategic plan for the development of information networks, including the supporting information technology and staffing required, across CTC and the Area in line with the identified SWSAHS, Cancer Advisory Committee and Department of Health priorities. Formulate and implement an annual business plan addressing the immediate needs identified in the Strategic Plan.
3. Develop and maintain a comprehensive information system that meets the identified needs of the Cancer Therapy Centre.
4. Support and assist in the development of an area-wide information management system that supports the SWSAHS Cancer Control Network.
5. Develop and maintain a database that captures accurately information pertaining to patient demographics, disease and treatment outcomes
6. Provide advice and actively coordinate in the implementation of an Areawide Clinical Cancer Registry.

7. Identify the organisation structure required to support existing and developing information systems in CTC and Area-wide.
8. Evaluate and monitor utilisation of technology to provide the information to all users, including developing training programs that address identified deficits.
9. Establish and maintain close linkages with Liverpool Computers and Communication Department and the SWSAHS Information Services Department and represent CTC on appropriate committees in the hospitals and in the Area..

Information Technology

1. Identify the information technology (IT) needs of the Cancer Therapy Centre (CTC), both from an internal and external perspective.
2. Detail a short and long term IT plan to improve communication links with health care providers, patients and carers through the use of appropriate networks and other technology.
3. Develop a prioritised program for IT purchase and replacement, with identified funding sources. Define minimal standard of hardware and software acceptable for meeting the long term information needs of CTC and the Area Cancer Network.
4. Coordinate and oversee the implementation of IT projects. Evaluate effectiveness of IT purchased for CTC.
5. Be proactive in the use of new technology within CTC. Consider and activate new initiatives in line with Department of Health and Area IT strategic plans.

Committee composition

The committee has representation by, data manager, radiation therapy, physics, nursing, CTC administration and ISD and clinicians representing radiation oncology, medical oncology and palliative care. I am indebted to the committee members for their input and time devoted to IM and T committee issues.

There have been a large number of projects that have been co-ordinated by the IM and T committee since 1997. Some projects are ongoing. A brief description of the projects is below:-.

IM and T projects 1997-2001

1. Acquisition of adequate I.T. technical support

A large amount of the daily activities in a cancer centre revolve around Information Technology. The IT needs of a cancer department are quite different to those of other medical departments and therefore specialised computer support was thought justified. The committee recommended the employment of a 1 F.T.E. technical support officer who would then develop an intimate knowledge of the specific I.T. needs of CTC and provide appropriate I.T. support and training.

This role being filled by Sue-Ellen Gerrey (1998-2000) and then Richard Bryson (2000-). Both have been responsible for a substantial amount of the progress made in all of the listed committee projects and their hard work has justified the ongoing financial support for this position.

2. Development of CTC Website

The Cancer Therapy Centre has had a website for about 2 years. The website is intended to supply patients, carers and other health service providers, information about our centre, advertise specific medical research that is conducted in the department, provide information to prospective employees and to provide general medical information to cancer sufferers and their carers. We have had website hits from around the world enquiring about our department and these enquiries have resulted in the employment of some of our overseas staff. We have had medical enquiries from the United States, Canada and the United Kingdom. Richard is currently undertaking a review of the site which will result in a new format for the website in the near future. We also hope to introduce email patient registration and GP communication in the future.

The website address is <http://www.swsahs.nsw.gov.au/cancer>.

3. Patient Resource Computer

The CTC Education Committee had identified a need by patients to access information about cancer. To improve this, a "Patient Resource Library" comprising books, pamphlets, audio and video tapes with information on health, cancer, cancer treatment, psychology, support and alternative medicine was established.

As a further initiative, a computer with Internet access has been installed to allow patients to surf the net for cancer information. The CTC website will be the default page and patients may either use the suggested links or surf the net as they see appropriate.

Printing facilities are also available. This initiative is also under constant review by the I.T. Committee.

4. Identifying staff I.T. training needs

This is an ongoing initiative. CTC staff have been given individual access to the SWSAHS network and training provided to all staff in the best use of MS Outlook and other network software. An in-house manual was developed as part of the training program. All managers in the department have been asked to review the job descriptions of their staff and identify the IT education needs of their staff.

5. File and film tracking with barcodes

The introduction of file bar-coding has reduced the clinical time needed looking for misplaced files.

6. Resource scheduling/patient management system

This is by far our biggest project to date.

Steps have included identifying business processes within the CTC and then I.T. specification needs, identifying scope, reviewing available and future systems, writing up a specification list and business case and trying to keep everybody happy.

The benefits of such a management system include:

- Improve time utilisation.
- Optimise appointment scheduling for patients with multiple appointments.
- Reduce time spent searching manual diaries
- Reduce delays in clinics.
- Improve communication with referring doctors.
- Improve communication with ward and outreach clinics.
- Allow automatic and timely generation of summary letter of patient's condition/treatment to health providers.
- Complete generated statistical reporting and analysis.
- Release of trained staff (eg. Nursing, radiation therapy) from clerical duties (such as generation of letters, appointment making) to functions for which they are trained (eg. Delivery of patient treatment).

The new system will be an integrated information system, possibly modular in design, and consisting of the following functions:

- Scheduling - Physical Resources & Staffing
- Billing
- Management of Clinical Trials
- Data Management of patient - Registration, Assessment, Treatment, Follow-up
- Clinical pathways
- Electronic Ordering – Pharmacy
- Equipment QA/maintenance
- Patient tracking
- CTC file tracking
- Research & Development

Currently the NSW Department of Health have assessed the statewide need for such a system and have advertised a restricted tender for a statewide solution. The Liverpool CTC have provided the Department of Health with assistance in this process. It is planned that the CTC should have an electronic scheduler and patient data management system in place in 2002. This will ultimately be linked electronically to the Campbelltown campus and will be the backbone of a fully electronic cancer record for our patients.

7. Identification of hardware needs, purchase and future plans

CTC has continued to review the hardware needs for the adequate function of the department. The Radiation Oncology Private Practice Trust Fund has provided the funding for this. This has provided access to the network to a large number of users who either did not have access previously, or who had to use Vax terminals which had limited functionality. Plans for continuing upgrades will be formulated soon. It is imperative that hardware needs are met as the move towards electronic records intensifies.

8. Purchase of Winscribe

Winscribe Dictation System has been installed to streamline the process of dictation and transcription.

9. Digital Camera/ Photo Library

A database of clinical photographs (with patient consent) for research and education purposes has been established. Purchase of a CD burner and juke box will help storage and allow tutorials to be illustrated with real clinical cases.

10. Development of touchscreen technology for collection of patient quality of life data.

We are currently involved in a pilot study to collect patient quality of life data prior to consultation by an easy-to-use touchscreen computer program.

11. Videoconferencing facilities

A project to assess the role of videoconferencing to facilitate multidisciplinary case discussion has occurred. Future funding is awaited. The Campbelltown Cancer Unit also has funding allocated for a videoconferencing facility and hopefully that this will streamline case discussions between campuses and across medical disciplines.

12.

12 Future initiatives

- (a) External review of I.T. resources involving personnel within the department (with particular respect to identifying the amount of personnel required for maintenance of a new management system).
- (b) Identification of new technologies in radiation oncology treatment delivery with respect to computerization.
- (c) Review of current data collection processes within CTC and recommend changes to streamline the process and improve data capture and accuracy.
- (d) Identification of the needs of referring doctors and patients in terms of information on our website.
- (e) Introduction of patient bookings via E-mail.
- (f) Assessment of electronic medical records.
- (g) The assessment of the feasibility of a hospital-based cancer registry

Data Management

Introduction

The Data Management team is responsible for managing the development, processing and supporting documentation of the CTC data collection. The Data Management Team supports the main centre for the collection of patient information at the Cancer Therapy Centre. This includes the facilitation of the provision of clinical records, which allows for efficient and effective patient care, and retrieval of data for research and management.

Activities for 2000/2001

The Data Management Department was without a manager for the first 5 months of the financial year. The data entry clerks Denise McDonnell and Lyn Ountholay were jointly sharing this role from June 2000 until November 2000. In November 2000 Melinda Wright was appointed to the Data Manager position.

The Data Management Department has been involved in ongoing QA activities related to data collection and the reduction in backlog in data entry. They have also been heavily involved in the planning and development of the Area Cancer Registry. In particular with the defining of minimum data sets. They have also had an active involvement in the planning of the Clinical Data Management System (CDMS).

In May 2001 the Data Management Department expanded its role to include medical record control. This was an initiative to improve the information flow processes through the Cancer Therapy Centre.

Staffing

Melinda Wright – Data Manager

Theresa Stephenson – Data Entry Clerk

Fatgieya Sallie – Data Entry Clerk

Holanda Bentancor – Medical Oncology Filing Clerk

Franca Serafin – Radiation Oncology Filing Clerk

There has been a number of staff and structural movements within the Data Management Team in the past year.

- Resignation of Lyn Ountholay (October 2000) from her position of data entry clerk. Lyn was successful in her application for a position as a research assistant in the Clinical Trials Department.
- Employment of Melinda Wright (November 2000) as Data Manager. Melinda previously worked in the Clinical Trials Department of Cancer Therapy Centre. She also did a short stint as a Data Manager at a contract research organisation.
- The resignation of Denise McDonnell from her position of data entry clerk (February 2001).
- The appointment of Theresa Stephenson to the position of data entry clerk. Theresa previously worked in the Mental Health Unit as an admin officer.
- The appointment of Fatgieya Sallie to a 6 month secondment position in data entry. Fatgieya previously worked as Radiation Oncology filing clerk.
- The appointment of Franca Serafin to a 6 month secondment position as Radiation Oncology filing clerk. Franca previously worked as an office manager at St George Hospital.

Highlights of 2000/2001

- Audit on medical records was completed. Awaiting recommendations.
- Initiation of monthly activity statistics for clinicians
- Elimination of data entry backlog to zero.
- Ongoing reporting and reduction of 12 month backlog in cancer notification to NSW Cancer Council.
- Tightening of security measures on the CTC database.
- Having full quota of staff by end of financial year.

Appendices

Statistical Data

