



Tasmanian Department of Health and Human Services

Agency Health Professional Reference Group

Allied Health Professional Workforce Planning Group

Allied Health Professional Workforce Planning Project

Radiation Therapy Information

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3 Preface

This Radiation Therapy Information should be read in conjunction with the main Allied Health Professional Workforce Planning Project Discussion Paper.

4 Overview

Radiation therapists design treatment plans for patients and administer radiation therapy treatment in conjunction with radiation oncologists.

Education programs for entry into the profession of radiation therapy are offered by universities in Victoria, New South Wales, Queensland and South Australia. Students from these universities undertake clinical placements in Tasmania. The numbers of radiation therapy students in Australian universities is limited by the number of clinical placements and Professional Development Year (a mandatory year of clinical practice before eligibility to register is achieved) positions offered by radiation oncology services.

Re-entry to the profession in Tasmania is through in-house education programs.

There were 40 radiation therapists employed in 35.2 FTE positions in the DHHS. It required 1.1 radiation therapists to fill one FTE position. The radiation therapists were employed in the W P Holman Clinics in Hobart and Launceston in the Hospitals and Ambulance Service Division. There were no privately employed radiation therapists in Tasmania.

The average age of DHHS radiation therapists (excluding PDY positions that tend to produce a lower average age) was 41.6 years and this was older than the national radiation therapy workforce (excluding PDY positions) which was 35.5 years and the average age for DHHS allied health professions of 40.3 years.

Females comprised 76 per cent female of the DHHS radiation therapy workforce compared to 71 per cent of the national radiation therapy workforce (in 2000).

In the years 2000 and 2001, an average of 7.5 radiation therapists left the DHHS per year and an average of 8 DHHS radiation therapy positions were advertised per year. Radiation therapy had an average turnover rate of 19 per cent and this was considered to be a medium average turnover rate when compared to all the allied health professions in those years.

There were three DHHS radiation therapy positions vacant for at least six months in the second half of 2001.

There is a growing shortage of radiation therapists internationally, nationally and in Tasmania. In Australia, the shortages are mainly due to the relatively high attrition rate from the profession and of undergraduate students. South Australia is the only state that produces more radiation therapists than the state requires each year.

The Commonwealth Department of Employment and Workplace Relations described the national job prospects for radiation therapists as very good and the vacancy level for radiation therapists as very high.

There is an increasing demand for radiation therapists as the numbers of new cancers increases as the population ages and as Australian radiation oncology services endeavour to treat a benchmark level of 50 per cent of cancer patients with radiation therapy.

In the 1996 census, Tasmania had the highest rates of radiation therapists per population in Australia with 7.0 radiation therapists per 100,000 of the population in Tasmania, compared to a rate of 4.0 radiation therapists nationally. This could be because a higher proportion of cancer patients are treated by radiation therapy in Tasmania (42.3 per cent) than nationally (38 per cent).

A range of staffing benchmarks have been used to estimate the numbers of radiation therapists that Tasmania radiation oncology services currently require and will require in the future. The most recent estimation undertaken in 2002, showed that the current radiation therapy establishment in the Hobart W P Holman Clinic was deficient by one FTE. Predictions are that between 2005 and 2010, or when the cancers referral rate of 50% is achieved, the Launceston radiation oncology services will require an addition of one FTE to its current radiation therapy establishment and the Hobart radiation oncology services will require an addition of two FTEs to its current radiation therapy establishment.

The table also shows that Nationally, strategies have been proposed to assist with radiation therapist numbers. These include:

- facilitating the attraction of radiation therapists back into the workforce.
- establishing Professional Development Year positions outside radiation therapy staffing establishments.
- advocating for the review of career structures to make them more attractive to retain staff within the workforce. Options could include the establishment of clinical support positions, a career pathway based on clinical skills and ways to increase the professional autonomy of radiation therapists.
- introducing clinical preceptor positions to assist with undergraduate students and Professional Development Year staff.
- providing assistance for students to under-take placements in non-metropolitan areas.
- providing increased CPD assistance as a competitive staff recruitment and retention approach and as a way to ensure best practice.
- standardising remuneration across Australia and making salaries internationally competitive.

5 Description of the radiation therapy profession

Radiation therapists design treatment plans for patients and administer radiation therapy treatment in conjunction with radiation oncologists.

Radiation therapists work in hospitals or radiation oncology centres. They work in teams, which include radiation oncologists, nurses, medical physicists and other hospital staff (Commonwealth Department of Education, Science and Training 2002).

Radiation therapists must complete a year of clinical practice, the Professional Development Year (PDY), before receiving full accreditation. On successful completion of the PDY, the graduate is awarded a statement of accreditation and is eligible for membership to the Australian Institute of Radiography (AIR).

All radiation therapists seeking employment in Tasmania must apply to the Medical Radiation Science Professionals' Registration Board (ex Radiographers' Registration Board) for a licence to practise as a radiation therapist. Licenses to operate radiation emitting apparatus and handle radioactive material are required by the Tasmanian Radiation Control Act 1977.

5.1 Description of occupations related to radiation therapy

5.1.1 Radiation oncologists

Radiation oncologists are medical specialists responsible for the treatment of patients with cancer through the use of ionising radiation.

5.1.2 Medical physicists

The role of a physicist in radiation oncology includes equipment quality assurance, dosimetry, provision of radiation beam data, advice in radiation oncology and involvement in the planning and treatment of complex external beam techniques.

5.1.3 Engineers

Engineers work in conjunction with medical physicists and are primarily responsible for equipment maintenance but may be involved in the manufacture of equipment and take on other roles related to equipment quality assurance.

5.1.4 Radiographers (medical imaging technologists)

Radiographers operate x-ray and other imaging equipment to produce radiographs (x-ray films) and other images, which are used in the diagnosis and subsequent management of disease or injury.

(Radiation Oncology Steering Committee 2001)

6 Workforce supply

6.1 Current workforce supply of radiation therapists

6.1.1 National radiation therapy workforce information

The Radiation Oncology Steering Committee (2001) which developed the National Strategic Plan for Radiation Oncology undertook a national study of radiation oncology services in Australia in 2000.

The Steering Committee reported that radiation oncology services were provided through both the public and private sectors in Australia; and all states and territories with the exception of the Northern Territory have treatment facilities. The facilities varied in size from small clinics to specialist departments in public hospitals and comprehensive cancer care centres. At December 2000, radiation oncology services were available from 27 public sector and 17 private sector facilities throughout urban and rural Australia.

As part of the development of the National Strategic Plan for Radiation Oncology, the Steering Committee undertook a study of the national radiation therapy workforce. The Steering Committee found that:

- there were 841 radiation therapists in 770 FTE positions nationally.
- there were 48 FTE positions for new graduates to complete their professional development year (PDY) nationally.
- 75 per cent of radiation therapists were employed in the public sector and 24 per cent were employed in the private sector nationally.
- there were 33.2 FTE positions in Tasmania. This was 4.3 per cent of the available Australian positions for radiation therapists.

Information from the Strategic Plan about national age and gender ratios, vacancy rates and movements of radiation therapists have been used in comparisons with the DHHS radiation therapy workforce later in this document.

6.1.2 Medical Radiation Science Professionals' Registration Board information

There were 31 radiation therapists registered with the Tasmanian Medical Radiation Science Professionals' Registration Board in 2001; 24 of these were female (77 per cent).

6.1.3 Profile of the current DHHS radiation therapy workforce

6.1.3.1 Human Resource Services Information System data

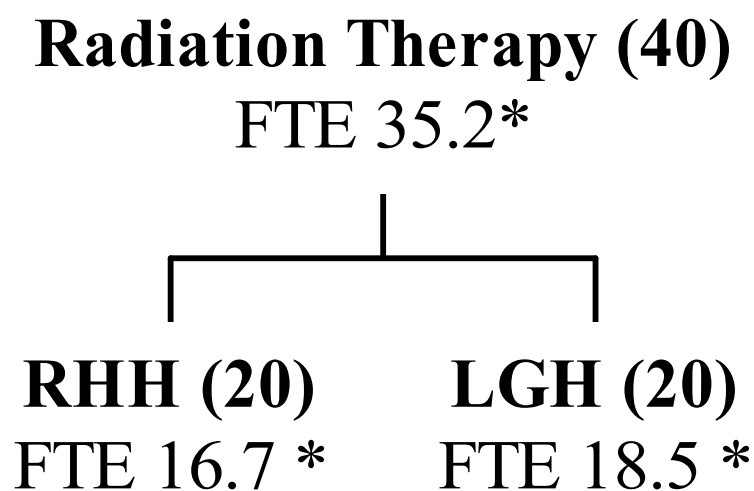
Data on the DHHS radiation therapy workforce from the DHHS Human Resource Services Information System (as at 21 March 2002) has been displayed graphically. The information displayed in these graphs represents

all radiation therapy positions within DHHS regardless of whether these were filled or vacant at the time of this analysis.

Radiation therapists were employed in the radiation oncology services in the W P Holman Clinics at the Royal Hobart Hospital and the Launceston General Hospital in the Hospitals and Ambulance Service Division. As displayed in Figure 1, there were 40 radiation therapists employed in the DHHS in 35.2 FTE positions. It required 1.1 radiation therapists to fill one FTE position.

There were no private sector radiation oncology services in Tasmania.

Figure 1: Service structure of radiation therapists employed within DHHS (headcount in brackets)

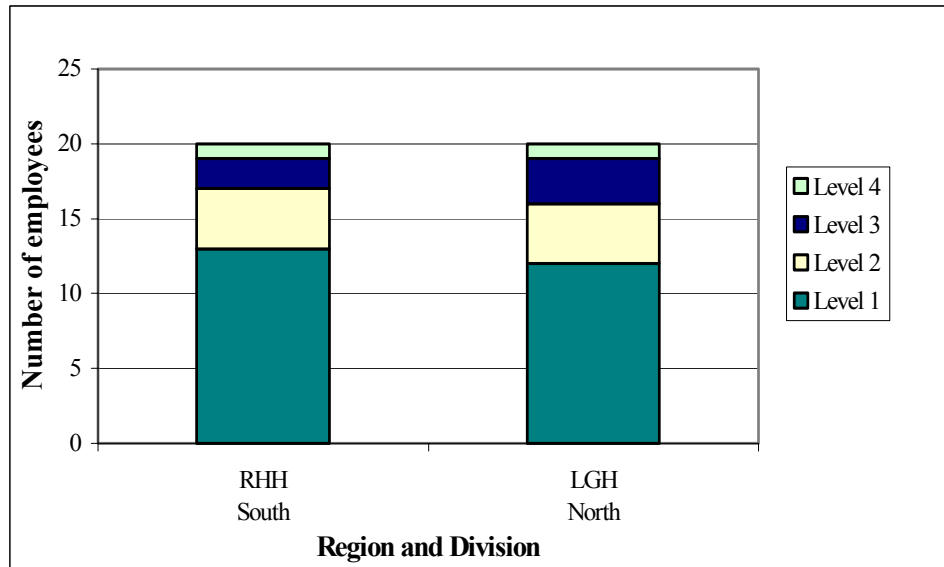


Source: DHHS Human Resource Services Information System 21 March 2002 (filled and vacant positions) and ABS census 2001

* These FTEs include PDY positions, which at 21 March 2002 were two positions in each service. However, the number of PDY positions changes with the availability of fully qualified staff.

Figure 2 displays the distribution of the award levels of the 40 radiation therapists employed in the DHHS.

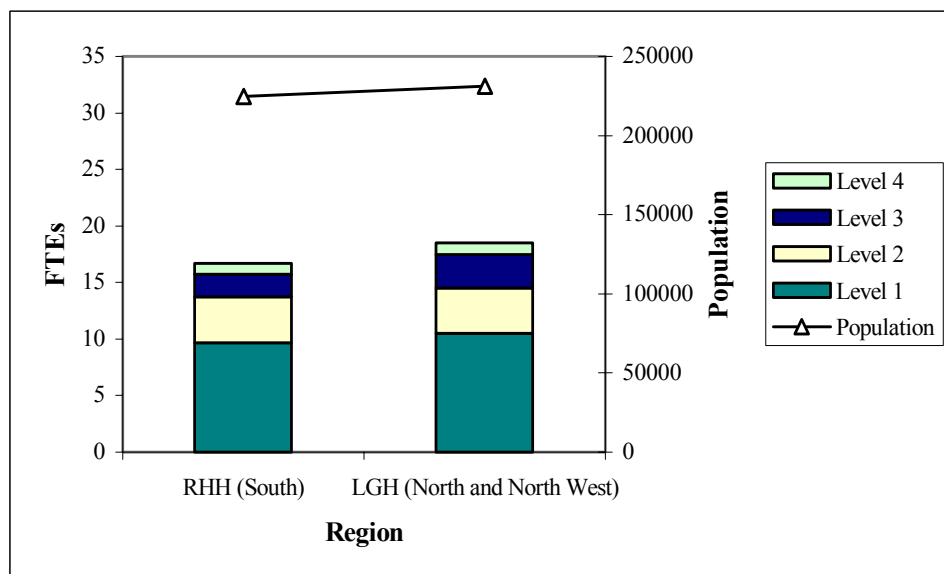
Figure 2: Radiation therapy headcount per award classification across DHHS



Source: DHHS Human Resource Services Information System 2002

Figure 3 displays the distribution of award levels of the 35.2 FTE radiation therapy positions in DHHS. The W P Holman Clinics in Hobart and Launceston have similar roles, however, the W P Holman Clinic in Launceston services patients from the north and north west of the state.

Figure 3: Radiation therapy FTEs per award classification in the HAS with the regional populations in 2001



Source: DHHS Human Resource Services Information System 21 March 2002 (filled and vacant positions) and ABS census 2001

Table 1 shows the numbers of DHHS radiation therapists at the various award levels.

Table 1: Breakdown of the numbers of DHHS radiation therapy FTE positions at specific award levels

Award levels	PF1	PF2	PF3	PF4	State total
FTE radiation therapy positions	20.2 FTEs	8.00 FTEs	5.0 FTEs	2.0 FTEs	35.2 FTEs

Source: DHHS Human Resource Services Information System 21 March 2002 (filled and vacant positions)

Figure 4 displays the age group and award distribution of the DHHS radiation therapy workforce. The DHHS radiation therapy workforce is an older workforce compared to the national radiation therapy workforce, in that:

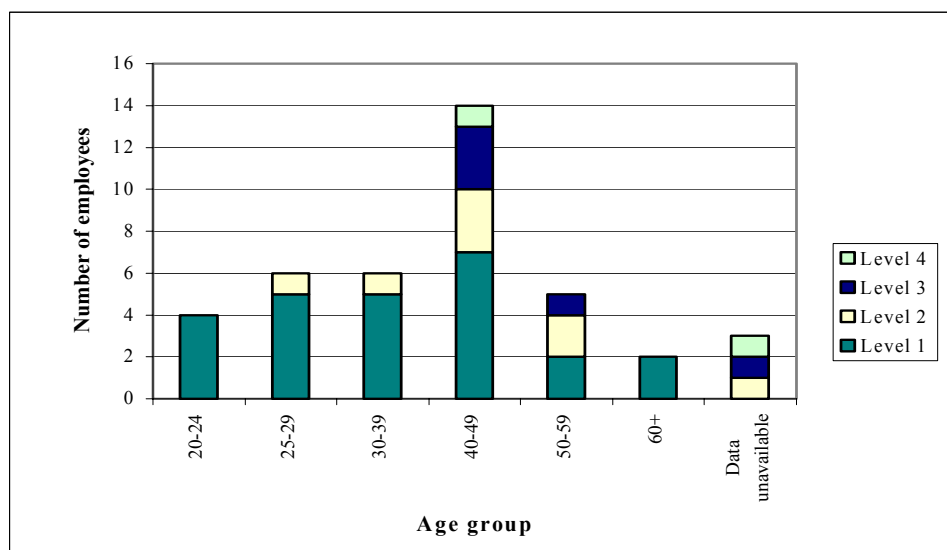
- the majority of radiation therapists employed in DHHS are aged between 40 and 49 years of age, and
- nationally the majority of radiation therapists are in the 21 to 29 years age group.

The average age of:

- DHHS radiation therapists (including PDY positions which tend to produce a lower average age) was 39.5 years
- DHHS radiation therapists (excluding PDY positions) was 41.6 years
- the national radiation therapy workforce (excluding PDY positions) was 35.5 years (National Radiation Oncology Steering Committee 2001)
- other DHHS allied health professions was 40.3 years.

In Figure 4, the employees in the 20 to 24 years age-group had PDY status.

Figure 4: Radiation therapy workforce per age group and award classification (including PDY staff)



Source: DHHS Human Resource Services Information System 21 March 2002

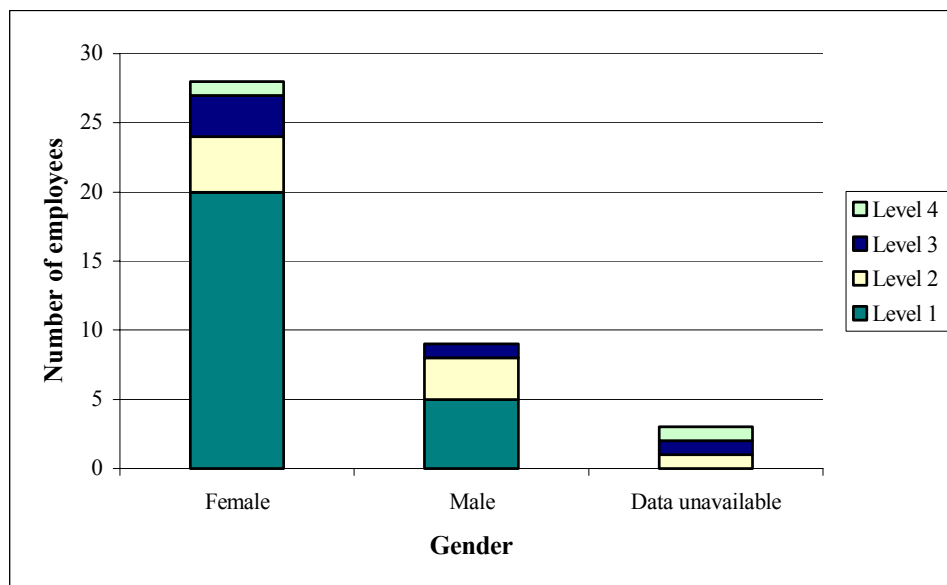
The median age of the DHHS radiation therapy workforce was 42 years which matched the median age of all allied health professionals employed within DHHS, which is 42 years.

Figure 5 displays the gender and award distribution of the DHHS radiation therapy workforce. There were 28 females and 9 males in the workforce.

The DHHS radiation therapy workforce comprised 76 per cent females; the national radiation therapy workforce comprised 71 per cent females in 2000 (National Radiation Oncology Steering Committee 2001).

Nationally, the gender ratio was maintained across the radiation therapy career structure with the exception of the most senior positions, where there was 60 per cent females.

Figure 5: Radiation therapy workforce per gender and award classification



Source: DHHS Human Resource Information System 2002

6.1.3.2 DHHS staff survey data

There were 40 radiation therapists employed by the DHHS and 21 completed a survey form; resulting in a 52 per cent response rate. Due to the low response rate, only responses to some of the questions that were supported by other consultations were used to describe the supply of radiation therapists later in this report.

6.1.3.3 Changes in radiation therapy numbers

6.1.3.3.1 National vacancy rates

Vacancy rates and the following information for national radiation therapy positions were obtained from the National Strategic Plan for Radiation Oncology (2001).

Nationally, the number of FTE vacant positions for radiation therapists and the vacancy rate as a percentage of establishment FTE positions have been climbing steadily since the mid 1990s. As well, the numbers of radiation therapists leaving the profession and the attrition rate (percentage of individuals leaving) has increased.

In 2000, the Australian vacancy rate was 10.3 per cent and the Tasmanian vacancy rate was 5.7 per cent. However, recent (at 1 October 2002) information from radiation therapy services management was that the vacancy rates for the two services in Tasmania has increased and was approximately 18 per cent in the Hobart service at that time.

The National Radiation Oncology Steering Committee surveyed radiation therapists across Australia in 2000 for the development of its Strategic Plan and found the five principal reasons radiation therapists gave when they intended to leave their current positions and the profession in 2001 were as listed below in Table 2.

Table 2: Principal reasons given by Australian radiation therapists in 2000 for intended leaving in 2001

Reason for intended leaving of current position	Per cent	Reason for intended leaving of profession	Per cent
Pay	15 %	Pay	27 %
Travel	13 %	Career change	20 %
Maternity	13 %	Job satisfaction	18 %
Temporary appointment	10 %	Career path	17 %
Overseas work	9 %	Other	8 %

Source: National Radiation Oncology Steering Committee 2001

6.1.3.3.2 DHHS vacancy rates

The DHHS Human Resource Services Information System indicated that for at least six months in the period 1 July 2001 and 1 January 2002, there:

- was one PF1 radiation therapy position vacant at the Launceston W P Holman Clinic
- were two PF1 radiation therapy positions vacant at the Hobart W P Holman Clinic.

6.1.4 Types of work and client groups

Radiation therapy respondents to the DHHS staff survey defined their work as one of these roles: clinician, clinical manager, manager or researcher.

Data was not collected through this project to further breakdown the client casemix of the radiation therapy workforce.

6.1.5 The education of DHHS radiation therapists

6.1.5.1 Professional entry level education

Currently, entry to the radiation therapy profession is a three-year bachelor course offered through universities in Victoria, New South Wales, Queensland and South Australia. Graduates may have one of the following two qualifications: Bachelor of Medical Radiation Science (Radiation

Therapy) or a Bachelor of Applied Science Medical Radiations (Radiation Therapy).

After completion of the bachelor qualification, students are required to undertake a PDY.

There were 112 places offered for students in radiation therapy courses in Australia in 2001 and these are to be increased to 169 in 2003.

There are proposals by some universities to offer graduate-entry programs for radiation therapists. These courses would comprise two years of clinically based education following a science or medical science degree. These courses could assist in the recruitment of graduates who have a greater long-term commitment to a career in radiation therapy.

Student placements for the clinical aspects of the university courses and the number of PDY positions are the factors that are presently limiting the education of an increased number of radiation therapists in Australia.

Two student placements are usually available at any one time through both radiation therapy services in Tasmania and students come from all of the mainland universities.

Each of the two Tasmanian radiation oncology clinics offers up to two PDY positions each year out of their staffing establishments. This number decreases if fully qualified radiation therapists can be recruited to the positions.

6.1.5.2 Postgraduate education

Postgraduate qualifications at graduate certificate, graduate diploma and masters levels are offered through universities across Australia.

6.1.5.3 Re-entry education

In Tasmania, radiation therapists who have not had clinical practice in their profession for more than five years must be referred to the AIR for assessment for retraining. An in-house refresher programme is usually offered.

6.1.5.4 Postgraduate qualifications of DHHS radiation therapists

Eight of the 21 radiation therapy respondents (38 per cent) to the DHHS staff survey indicated that they had postgraduate qualifications. These were qualifications in business management or education.

6.1.5.5 DHHS radiation therapists born outside Australia

Some radiation therapy respondents to the DHHS staff survey indicated that they were born overseas; the majority of these were born in UK/Ireland or New Zealand. However, this information could not be used to indicate where these radiation therapists were educated.

All respondents to the survey stated that they were Australian citizens or permanent residents.

6.2 Projecting the workforce supply of radiation therapists

Workforce supply is a balance between outgoing staff (retirees, those temporarily withdrawing from the workforce, emigrants or those who die or take up employment with other employers) and incoming staff (new graduates, immigrants, staff coming from other employment and staff increasing their hours of employment).

6.2.1 Outgoing radiation therapists

6.2.1.1 National outgoing information

The National Radiation Oncology Steering Committee (2001) stated that nationally, 125 radiation therapists left their positions during 2000. The reasons provided in the Strategic Plan are shown in Table 3.

Table 3: National radiation therapist movements in 2000

Reasons for leaving the Australian workforce	Number	Per cent of total
Maternity/paternity leave	28	22 %
Employment in the same state	26	21 %
Employment overseas	16	13 %
New career	16	13 %
Completion of PDY	13	10 %
Employment interstate	13	10 %
Extended leave	6	5 %
Retirement	5	4 %
Fill time study/research	2	2 %

Source: National Radiation Oncology Steering Committee 2001

The radiation therapists leaving the workforce in 2000 were counterbalanced by 43 recruits from overseas and 11 radiation therapists who returned to the profession. It was noted that overseas-trained radiation therapists tend to enter Australia on short-term visas.

6.2.1.2 DHHS outgoing staff

In the two years 2000 and 2001, there was an average of 7.5 permanent, temporary and casual radiation therapists who left the DHHS per year.

Applying this average to the 21 March 2002 headcount, there was an average DHHS radiation therapy staff turnover of 19 per cent in those two years. This was considered to a medium average turnover rate when compared to all allied health professions, for those years.

In order to ascertain the possible future numbers of outgoing radiation therapists, staff were asked a number of questions in the DHHS staff survey. Staff were asked:

- if the hours they worked were the hours they wanted to work
- if they anticipated a change in their work hours in the next three years and the reasons for this change
- if they were considering leaving the DHHS in the next six to twelve months, and if so, what were the reasons
- what were their levels of satisfaction for a number of professional practice parameters in the DHHS.

Some of the staff, who were not working the hours they wanted to work, stated that they were doing a varying number of unpaid hours (up to five hours per week), some wanted to upgrade from part-time to full-time and some wanted to reduce their number of hours to part-time.

Five radiation therapy respondents indicated that they anticipated a decrease in their hours of employment in the next three years and gave as the reasons: 'lifestyle preference', 'personal health considerations' and 'workplace change'.

Two radiation therapy respondents indicated that they anticipated an increase in their hours of employment in the next three years and gave as the reason: 'changed patient numbers'.

Six of the 21 radiation therapy respondents (29 per cent) indicated that they were considering leaving in the next six to twelve months and the majority gave 'other employment' as the reason.

Information on staff responses on levels of satisfaction with the various professional practice parameters are listed in Table 4.

Table 4: Staff satisfaction with professional practice parameters in DHHS

Criteria measured	Per cent of respondents who were satisfied or very satisfied
Opportunity to use your abilities	48 %
Sufficient work to maintain competence	71 %
Hours of work	71 %
Amount of work	57 %
Overall satisfaction	52%

Source: DHHS staff survey October 2001

There was a low rate of overall satisfaction with practice compared with the response rates of other allied health professions. A further breakdown of responses to this question is displayed in Table 5.

Table 5: Breakdown of responses to 'overall satisfaction with your practice' question on the DHHS staff survey

Taking everything into consideration, how satisfied are you with your practice	Per cent of respondents who were satisfied or very satisfied
Very dissatisfied	0%
Dissatisfied	24 %
Neither dissatisfied or satisfied	24 %
Satisfied	38 %
Very satisfied	14 %
Data unavailable	0 %
TOTAL	100 %

Source: DHHS staff survey October 2001

In the section in the DHHS staff survey following questions about satisfaction with practice, staff were asked to specify other issues of importance. The radiation therapy comments to this section were around issues such as the need for more time for CPD activities, for more

autonomy with respect to work practices and lack of professional recognition.

Other information that was relevant to the numbers of outgoing staff was that there were seven radiation therapists in the DHHS workforce aged 50 years and older and two of these were older than 60 years.

6.2.2 Incoming staff

6.2.2.1 National incoming information

There will be approximately 80 radiation therapists available for PDY positions in 2003 (Commonwealth Department of Health and Ageing 2002).

6.2.2.2 DHHS incoming staff

In the two years 2000 and 2001, there were 16 full time, temporary and casual radiation therapy positions advertised. It was not known if these advertisements were successful.

The advertised positions were:

- 12 x PF1 positions (75 per cent)
- 2 x PF2 positions (13 per cent)
- 1 x PF3 position (6 per cent)
- 1 x PF4 position (6 per cent).

7 Workforce demand

7.1 Current demand for radiation therapists

7.1.1 Current national demand for radiation therapy services

Cancer is the major cause of death in Australia and these cancers (that are potentially fatal and that are recorded by cancer registries) affect approximately 80,000 people per year.

There is evidence that radiation therapy is a cost-effective treatment for cancer. Currently national radiation oncology services are unable to treat all the cancer patients who would benefit from radiation. It is understood that 38 per cent of new cancers diagnosed in 2000 were treated by radiation; the rate recommended by the Radiation Inquiry Committee (2002) was at least 50 per cent of new cancer patients.

It is predicted that the numbers of new cancers will continue to rise as age is the greatest risk factor for cancer and the average age of the Australian population is increasing (Radiation Oncology Steering Committee 2001).

The demand for radiation therapy services has also increased due to increased detection rate of cancers through programs such as breast screen.

7.1.2 Current national demand for radiation therapists

Unpublished research by the Commonwealth Department of Employment and Workplace Relations found that in late 2001, in:

- New South Wales, the demand for radiation therapists remained strong, although employers reported some easing in the severity of shortages due to a greater number of former workers re-entering the occupation. Demand for the occupation was expected to further increase over the medium term as employers attempt to meet recommended staffing ratios. The supply from university completions is projected to increase over the next two years, but it is unlikely that this will be sufficient to meet the current shortfall and growth in demand. A number of radiation therapists from New South Wales have been recruited by other countries (e.g. Canada, Scotland and Sweden) to deal with their acute shortages. There are to be approximately 35 student completions in New South Wales in 2002.
- Victoria, the workforce that was in balance moved into a shortage of 30 to 35 radiation therapists. The Bachelor of Applied Science in Medical Imaging Radiation offered at the Royal Melbourne Institute of Technology has three streams after year one, with approximately 15 per cent of students entering radiation therapy, 60 per cent entering radiography and 25 per cent entering nuclear medicine technology streams. There are to be approximately 8 student completions in Victoria in 2002.
- Queensland, the labour market for radiation therapists was in regional shortage. Strong competition for graduates from overseas employers and the continuing expansion of regional services in the state will mean that the supply of new graduates will not be sufficient to meet the state's overall requirements. Unmet demand will persist in the regional areas and the shortage is likely to extend state wide in the short to medium term. Approximately ten students will complete the radiation therapy course in 2002.
- South Australia, the labour market was in balance and predicted to remain so in the short term due to South Australian training facilities producing more radiation therapists than the job market requires. There will be approximately 7 radiation therapy students who complete their course in 2002 and twice that number in the next few years.
- Western Australia, the labour market for radiation therapists was in shortage and was predicted to remain so. There is no local training school and the job market is dependent on migration from interstate and overseas.
- Tasmania, there were shortages of radiation therapists mainly due to the lack of a local training facility and the consequent difficulties of competing with other states in attracting people to re-locate to the state.

7.1.3 Perceived radiation therapy service gaps in Tasmania

The DHHS report (2000) stated that the number of patients treated by radiation therapy has grown steadily with an average increase of 10 per

cent per annum. In 1991, there were 14,933 patient attendances and in the financial year 1999-2000 there were 27,300 patient attendances.

However, the proportion of cancer patients treated by radiation therapy in Tasmania was 42.3 per cent compared with Australian averages of 38 per cent and European and North American rates of approximately 60 per cent. Although the Tasmanian rate of treatment is high relative to the rest of Australia, there is still a gap between treatment rates in Tasmania and the Australian desired benchmark of 50 per cent (Commonwealth Department of Health and Aging 2002).

7.1.4 Patterns of usage

Tasmanian radiation therapy services performed well in the two usage measures described below: profession to population ratios and staff per linear accelerator hour of operation.

The higher than national average referral rates of new cancer patients for radiation therapy in Tasmania could account for the higher numbers of radiation therapists per population and the higher staff rates per linear accelerator hour of operation in Tasmania.

7.1.4.1 Profession to population ratios

There were 7.06 radiation therapists per 100,000 of the population in Tasmania, compared to a rate of 4.02 radiation therapists nationally. Tasmania had the highest rates of radiation therapists per 100,000 of the population in Australia (Radiation Oncology Steering Committee).

7.1.4.2 Staff per linear accelerator hour of operation

The Radiation Therapy Advisory Panel to the AIR has endorsed a recommendation of 1.06 radiation therapists per hour of linear accelerator operation (Radiation Oncology Steering Committee 2001).

As can be seen in Table 6, when applying this standard, the Tasmanian staffing rate in 2000 was high compared to other areas of Australia and the national average. However, the standard does not include a staffing requirement for the other radiation therapy procedures such as brachytherapy and other specialities which are highly labour intensive and which are carried out in the radiation therapy services in Tasmania. The Steering Committee itself stated that caution should be exercised in interpreting the use of the benchmark as work practices, staffing roles, hours of operation and client casemix vary with each service.

Table 6: Radiation therapists per linear accelerator hour of operation across Australia

Radiation therapists per linear accelerator hour of operation	Aust	NSW	VIC	QLD	SA	WA	TAS
	0.99	1.01	0.94	1.00	0.94	0.94	1.08

Source: National Strategic Plan for Radiation Oncology (2001)

7.1.4.3 Staff workload assessments

The DHHS staff survey asked radiation therapists if they considered their current workload was about right, too much or too little. Of the 21 radiation therapy respondents:

- 13 (62 per cent) stated that their workload was about right
- 7 (33 per cent) stated that their workload was too much.

7.2 Projecting future demand for radiation therapists

7.2.1 Commonwealth Government information

Information from Department of Employment and Workplace Relations' JobSearch web site (2002) described the work prospects for medical imaging professionals, an occupation category that includes radiation therapists as well as radiographers and nuclear medicine technologists.

"Job prospects for medical imaging professionals are very good. Employment growth for medical imaging professionals to 2007-08 is expected to be moderate. Employment in this medium size occupation (8,700 in February 2002) grew slightly over the past ten years and strongly over the past two years. The growing emphasis on preventative medicine is generating strong demand for medical imaging professionals. There are national skill shortages for medical imaging professionals.

The vacancy level for medical imaging professionals is very high. Vacancies arising from job changing (medical imaging professionals changing employers) are expected to provide 95 per cent of vacancies, compared with 5 per cent from new jobs (employment growth for medical imaging professionals)."

7.2.2 Other national information

The Radiation Oncology Steering Committee (2001) predicted a national shortfall of 497 positions between filled FTE radiation therapy positions and projected requirements to 2005.

The Steering Committee stated that the numbers of new graduates entering the profession over the next few years would barely compensate for losses, if present trends continue. Increasing student intakes would not impact on the radiation therapy workforce for four years and would be dependent on the capacities of universities to increase student numbers. The Steering Committee stated that external recruitment of radiation therapists would be necessary. The Steering Committee also outlined a number of critical issues confronting the radiation therapy workforce, which must be addressed to be able to cope with service demands in the next ten years:

- reviewing the adequacy of undergraduate places
- reducing attrition rates amongst undergraduate radiation therapists
- filling existing vacancies
- reducing the vacancy rate
- retaining existing qualified radiation therapists and reducing the attrition rate

- expanding the workforce to achieve desired utilisation rates.

The Steering Committee also provided strategies to be adopted across Australia to assist with the radiation therapy workforce shortages and these are discussed under 8.1 in this document.

7.2.3 Perceived national drivers for radiation therapists

The main driver for an increased national demand for radiation therapists is the increasing numbers of Australians with new cancers. The numbers of new cancers are increasing as the population increases and ages (Radiation Oncology Steering Committee (2000).

The other major driver is the promotion of radiation therapy as the treatment modality for an increasing number of cancer patients to approximate referral rates of 50 per cent.

The Commonwealth Department of Education, Science and Training (2002) stated that across Australia, factors which influence demand for this occupation include government funding and health policy, advances in medicine and technology, ageing of the population and the incidence of cancer.

7.2.4 Perceived drivers for radiation therapists services in DHHS

The majority of radiation therapy respondents to the DHHS staff survey perceived that the factors likely to increase the future size of the radiation therapy workforce were:

- ageing of the population
- changing patterns of health and illness
- patient expectations/knowledge
- requirements for safer procedural practice
- advances in technology
- more defensive practice
- increasing specialisation
- growth in consumer demand.

7.2.5 Demand projections for Tasmanian radiation therapists

Three projections have been undertaken for the Tasmanian radiation therapy workforce; a projection by the Radiation Oncology Steering Committee (2001) and two projections by the Tasmanian radiation oncology services management. They have been undertaken at different times using different staffing benchmarks and hence there are discrepancies in the predictions.

7.2.5.1 Radiation Oncology Steering Committee projection

The National Strategic Plan for Radiation Oncology (2001) estimated requirements for future radiation therapy services in Tasmania, based purely on the projection model of radiation therapists per hour of linear accelerator operation and daily hours of operation. The Strategic Plan's predictions based on 50 per cent of new cancers being referred for radiation therapy are listed in Table 7.

Table 7: Tasmanian radiation therapy projections from the National Strategic Plan for Radiation Oncology

FTEs 2000	Vacancies 2000	Establish- ment 2000	50 % bench- mark 2000	Deficit	Project -ion 2005	Deficit 2000- 2005	Project -ion 2010
33.2	2.0	35.2	33.9	-1.3	33.9	-1.3	35.9
FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE

Source: Radiation Oncology Steering Committee 2001

This information indicated, that based on current combined staffing establishments in the W P Holman Clinics in Hobart and Launceston, the radiation therapy workforce would be adequate until 2010. However, it must be noted that the benchmark used to establish the projections did not include staffing requirements for brachytherapy and other specialities undertaken in Tasmania. It must also be noted that the two radiation therapy services in Tasmania are rarely staffed to full establishment.

7.2.5.2 Tasmanian radiation oncology services management projections

A projection from the DHHS report (2000) predicted that the two Tasmanian radiation therapy services are understaffed by up to three FTE each. The report used the Australian Health Ministers Advisory Council standard which does not take into a radiation therapy service's requirements for education and quality assurance activities and the AIR 1994 standard which does take these into account.

Table 8 displays the DHHS (2000) workforce projections.

Table 8: Radiation therapy projections from the DHHS (2000)

W P Holman Service	Actual establish- ment in 1999	AHMAC standard*	AIR standard (1994)	Shortage to actual (with education and QA)	Shortage to actual (excluding education and QA)
LGH	17.50 FTE	18.55 FTE	20.71 FTE	3.21 FTE	1.05 FTE
RHH	16.7 FTE	18 FTE	20.1 FTE	3.4 FTE	1.3 FTE

Source: DHHS (2000)

* These staffing standards by definition exclude education and quality assurance activities.

Since 2000, the AIR standard has been modified to take into account improved efficiencies in radiation therapy technology. The new AIR (2001) standard has been applied in the draft Business Plan for Radiation Oncology Services in Tasmania (2002).

Table 9 displays the results. Tasmanian radiation therapy referral rates have been slowly increasing and if they continue at the present rate, it is predicted that Tasmanian radiation therapy referral rates for new cancers will reach the 50 per cent mark in about 2005, hence the increase in staffing requirements predicted between 2005 and 2010.

Table 9 shows that when the AIR Standard (2001) is applied, the current establishment at the Royal Hobart Hospital is deficient by one FTE.

The table also shows that between 2005 and 2010, or when the cancers referral rate of 50% is achieved, the Launceston radiation oncology services will require an addition of one FTE to its current radiation therapy establishment and the Hobart radiation oncology services will require an addition of two FTEs to its current radiation therapy establishment.

Table 9: Radiation therapy projections from the DHHS (2002)

W P Holman Service	Actual Establish- ment 2002	AIR Standard (1994)	AIR Standard (2001)	Deficit 2002	Project -ion 2005	Deficit 2005	Project -ion 2010
LGH	18.50 FTE	20.7 FTE	18.5 FTE	nil	18.5 FTE	nil	19.5 FTE
RHH	16.7 FTE	20.1 FTE	17.7 FTE	1.0 FTE	17.7 FTE	1.0	18.7 FTE
Tasman- ian total	35.2	40.8	36.2	1.0	36.2	1.0	38.2

Source: DHHS (2002) Draft Business Plan for Radiation Oncology 2002/03 to 2007/08

8 Workforce planning issues for the DHHS radiation therapy workforce identified through consultations

8.1 National shortages of radiation therapists

The Radiation Oncology Steering Committee (2001) stated that "The present shortages of radiation therapists and trends to increasing loss pose a significant challenge to the (health) sector. Capacity to increase the number of people receiving radiation therapy is dependent on an adequate number of trained health professionals to treat those people. The number of new graduates entering the profession in recent years has been inadequate to compensate for those leaving, placing an increasing reliance on external recruitment of qualified staff. Global competition for radiation therapists is intense and Australia has not been successful in attracting permanent staff from overseas. "

The Report of the Radiation Oncology Inquiry (2002) stated that current national shortages are primarily due to:

- increased rates of attrition from the established radiation therapy workforce
- an increase in the number of facilities being operated, and
- not enough radiation therapists entering the workforce.

The Report also cited the reasons the Radiation Oncology Steering Committee (2001) and the AIR gave for the shortages as:

- the lack of fulfilling career opportunities or career path
- the lack of study or professional development opportunities
- dissatisfaction with role and workload
- dissatisfaction with remuneration and employment conditions, and
- a largely female workforce needing maternity leave, childcare and flexible working hours.

The Radiation Oncology Steering Committee (2001) stated that "increasing the number of graduates from Australian universities cannot provide a solution in the short term, however long term sustainability depends on adequate undergraduate positions and numbers successfully completing training."

Specific strategies recommended by the Steering Committee to assist shortages in the national radiation therapy workforce include:

- linking the number of radiation therapists to a population needs basis
- advocating for reform and expansion of the training programs in radiation therapy
- facilitating the attraction of radiation therapists back into the workforce
- advocating for the review of career structures to make it more attractive to retain staff within the workforce.

8.2 Tasmanian shortages of radiation therapists

The DHHS (2000) report stated that one of the strategic issues facing the radiation oncology services was the recruitment and retention of quality staff. The shortage of radiation oncology staff was the factor limiting the use of equipment to full capacity and hence the level of services provided to cancer patients in Tasmania.

Vacancy rates in the two Tasmanian radiation therapy services in Tasmania have increased in the last few years. Tasmanian services were and are, highly regarded, and are attractive workplaces for new graduate staff, who are exposed to a wide variety of clinical experiences; and overseas staff, who find Tasmania an easy place in which to assimilate into. However national and international shortages of radiation therapists are now effecting the Tasmanian radiation therapy workforce. As well, a number of radiation oncology services are opening in rural areas of mainland Australia and these could be more attractive to radiation therapists seeking a rural lifestyle.

8.3 Professional development year positions

Radiation therapists must complete a year of clinical practice, the Professional Development Year (PDY), before receiving full accreditation. As well as being part of the process for graduates' entry into the profession, these positions are a major source of recruitment for radiation therapy services.

Victoria is the only state where PDY positions are considered supernumerary to radiation therapy staff establishments.

The National Strategic Plan for Radiation Oncology and the Report of the Radiation Oncology Inquiry both recommended that other states also adopt this best practice model.

The Report of the Radiation Oncology Inquiry recommended that state and territory governments should ensure that each facility identifies PDY positions as training positions by 2004.

8.4 Undergraduate clinical placements

The attrition rates of Australian radiation therapy students during undergraduate training are between 25 and 30 per cent. These rates are impacting on the numbers of new graduate radiation therapists available to Australian radiation oncology services.

The Report of the Radiation Inquiry (2002) offered a number of strategies to reduce student attrition rates as well as to increase the numbers of radiation therapists who are trained in the future.

The Committee, which compiled the Report considered that early exposure to clinical areas was important to ensure that radiation therapy students have realistic expectations of the professional workplace and student attrition levels are reduced. The Committee also found that poor clinical

experiences for students were experienced in understaffed services and that again, in order to reduce attrition rates, states and territories should introduce clinical preceptor positions to assist with undergraduate students and PDY staff.

The Committee also recommended that states and territories should provide assistance for students to under-take placements in non-metropolitan areas.

8.5 Professional recognition of radiation therapists

The Report of the Radiation Oncology Inquiry (2002) stated that "radiation therapists play a key role in the delivery of treatment but legally are not responsible for the work they do, nor are they recognised appropriately for their work. According to the Medical Benefits Schedule, radiation therapists are deemed to practise under supervision of the radiation oncologist."

Nationally, radiation therapists are seeking greater recognition of their role. Various ways of expanding the role of radiation therapists are being suggested, such as undertaking formal patient reviews and enabling radiation therapists to make direct referrals to other health practitioners. These could not only improve treatment efficiencies, but facilitate staff retention through increased work satisfaction.

8.6 Staff satisfaction with DHHS employment

Staff satisfaction with DHHS employment was sought through focus groups. Three radiation therapists from the north attended the focus groups. A summary of the information obtained is in Table 10.

Table 10: Summary of information obtained from radiation therapists at the focus groups

Positive attributes of employment in DHHS	Aspirations	Negative attributes of employment in DHHS	Constraints
<ul style="list-style-type: none"> • Client contact • Diversity of work • Innovation 	<ul style="list-style-type: none"> • Time for research, new ideas • Flexibility 	<ul style="list-style-type: none"> • Lack of staff • Low pay compared to the mainland 	Shortage of radiation therapists worldwide
Regional variations			
Participants from Launceston only			

Source: DHHS focus groups December 2001

8.7 Professional development to retain and strengthen a quality workforce

The Report of the Radiation Oncology Inquiry stated that the lack of professional development opportunities for radiation therapists was one reason for attrition from the Australian radiation therapy workforce.

The Report also stated that the provision of funding to attend conferences varied greatly across Australia and suggested that this was one way that staff could be attracted to positions.

8.7.1 Professional association requirements

The AIR has a voluntary CPD program for members. Accumulation of the necessary 24 points of CPD over 24 months provides the member with a certificate of compliance in professional development. The areas of activity are: organised programs, writing, self-directed learning, professional services and other.

The Commonwealth Department of Health and Ageing (2002) recommended that mandatory continuing professional development be undertaken by radiation therapists by 2004. This is partially to improve the efficiency of radiation therapy facilities through reducing variation in treatment protocols.

At present there is no need for radiation therapists to undertake clinical hours to qualify for re-registration, but this will change with the implementation of the new Medical Radiation Science Professionals Registration Act (2000) covering the work of radiation therapists.

8.7.2 DHHS staff survey

The DHHS staff survey asked radiation therapists questions about CPD. All respondents said they were offered regular CPD through their employment.

Eight radiation therapy respondents stated that they had applied to attend a conference in the last two years and seven had been successful in their application, receiving from 50 to 100 per cent assistance to attend the conference.

8.7.3 HAAS Report (2000) information

This report recommended that consideration be given by the DHHS to increased funding for staff development and education to contribute to the maintenance and development of a high quality oncology radiation service.

8.8 Remuneration

The Report of the Radiation Oncology Inquiry stated that remuneration rates for radiation therapists vary across Australia and are lower in comparison to overseas counterparts, e.g. the United States of America and Canada.

Rates of remuneration for DHHS radiation therapists are lower than the average Australian public sector and private sector radiation therapist salaries for all levels, from PDY level to PF4 level (Commonwealth Department of Health and Aging, 2002).

In other areas of Australia, as well as via a managerial career pathway, progress to higher award levels is also possible via a personal classification system based on the contribution the staff member has made to clinical practice, clinical education or clinical research needs of the employer.

8.9 Radiation therapy support staff

The Commonwealth Department of Health and Ageing (2002) stated that the United Kingdom was introducing a multi-tiered radiation therapy workforce structure to enable career progression in the clinical stream. There will be levels such as 'assistant practitioner', 'practitioner', 'advanced practitioner' and 'consultant practitioner'.

The use of radiation therapy support staff is not routine in Australia, however use of this group of workers could assist with acute radiation therapist shortages and provide a career pathway for clinical staff.

8.10 Hours of operation

The Commonwealth Department of Health and Ageing (2002) recommended that state and territory governments should examine options for extending the hours of operation of equipment up to 12 hours per day before the end of 2004, and implement this where staff numbers are adequate.

With the present fluctuations in staffing levels in Tasmanian radiation oncology services and the predicted worsening situation, it is unlikely that extension of hours of operation would be implemented by this time-frame in Tasmania.

9 Annotated bibliography

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The report was presented to Senator Patterson on 18 June 2002.

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The study for this Plan was undertaken in 2000 and provided an analysis of the radiation oncology resources, including the workforce and the issues facing the workforces of the various health disciplines.