



Tasmanian Department of Health and Human Services

Agency Health Professional Reference Group

Allied Health Professional Workforce Planning Group

Allied Health Professional Workforce Planning Project

Radiography Information

Contents

1 List of tables	2
2 List of figures	2
3 Preface	2
4 Overview	3
5 Description of the radiography profession	5
5.1 Description of related radiography occupations	5
6 Workforce supply	6
6.1 Current workforce supply of radiographers	6
6.2 Projecting workforce supply of radiographers	11
7 Workforce demand	13
7.1 Current demand for radiographers	13
7.2 Projecting future demand for radiographers	15
8 Workforce planning issues identified in consultations	16
8.1 Employment opportunities in the private sector	16
8.2 Staff satisfaction with DHHS employment	16
8.3 Professional development to retain and strengthen a quality workforce	16
8.4 Radiography support staff	17
9 Annotated bibliography	18

1 List of tables

Table 1: Breakdown of the numbers of DHHS radiography FTE positions at specific award levels	8
Table 2: Staff satisfaction with professional practice parameters in DHHS	12
Table 3: Summary of the information obtained from radiographers at the focus groups	16

2 List of figures

Figure 1: Division and service structure of radiographers employed within DHHS (headcount in brackets)	7
Figure 2: Radiography headcount per award classification across DHHS	8
Figure 3: Radiography FTEs per award classification in the HAS compared to the northern and southern regional populations in 2001	8
Figure 4: Radiography workforce per age group and award classification	9
Figure 5: Radiography workforce per gender and award classification	9

3 Preface

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

4 Overview

Radiographers (also known as medical imaging technologists or medical diagnostic 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. Radiographers specialise in areas such as sonography, where they operate diagnostic ultrasound equipment.

Undergraduate education programs are offered at universities in all states of Australia, except Tasmania and students from the mainland universities undertake clinical placements in Tasmania. Universities have increased their student intakes into radiography courses and there may be significantly more graduates over the next few years. Re-entry into the profession in Tasmania is through in-house education programs.

DHHS radiography services were provided through the Hospitals and Ambulance Division and the Community, Population and Rural Health Division in the north and south and by a private provider in the north west of the state.

There were 61 radiographers employed in 51.11 FTE positions in the DHHS and these radiographers comprised approximately 48 per cent of the Tasmanian radiography workforce.

Fifty six per cent of the DHHS radiography workforce was female. The median age of the DHHS radiography workforce was 37 years which was younger than the median age of all allied health professionals employed within DHHS, which is 42 years.

In the years 2000 and 2001, an average of 8.5 radiographers left the DHHS per year and an average of 12 DHHS radiography positions were advertised per year. This represented a turnover of approximately 14 per cent of the DHHS radiography workforce per year. This was considered to be a medium average turnover rate, when compared to all allied health professions, in those two years.

There were nine vacant positions of at least six months in 2001.

The demand for all types of medical imaging services continues to expand in line with population increases, the ageing population, developments in diagnostic technology to diagnose and treat medical conditions and for pregnancy related investigations, the level of public sector health funding and the growing emphasis on preventative medicine.

There are shortages of radiographers internationally, nationally and in Tasmania. In general nationally, although there has been the merging of some larger private practices and this has resulted in the need for reduced staff numbers; the factors leading to shortages in the profession have been

the increased specialisation taking radiographers out of the generalist workforce pool, the recruitment of new graduates by offshore employers who realise the high standard of Australian training, and the inadequate numbers of clinical placements for students.

South Australia is the only state that produces more radiographers than they require each year.

There were 28.6 radiographers employed (in the public and private sectors) per 100,000 of the Tasmanian population in 1996. This was slightly under the Australian average of 31.6 radiographers employed per 100,000 population.

As there is no training facility in Tasmania, DHHS radiography services have to compete with other states for staff. The ability to fill vacant positions in the DHHS varies with the time of the year.

There are some losses of DHHS staff, such as ultra-sonographers to the private sector in Tasmania as private radiology services have the ability to be more flexible with employment conditions than the DHHS.

The issue of the establishment of an undergraduate course for radiographers through the University of Tasmania, in partnership with a mainland university, was discussed in late 2001 and early 2002 by the Tasmanian branch of Australian Institute of Radiography, the DHHS and the University of Tasmania through Partners in Health program. No decision has been reached to date on the establishment of a course.

The employment of staff to support radiographers in their work is generally adequate within the two DHHS radiography services.

Radiographers share the general workforce issues faced by other allied health professionals within DHHS and these are described in full in the main Allied Health Professional Workforce Planning Project Discussion Paper.

5 Description of the radiography profession

Radiographers (also known as medical imaging technologists or medical diagnostic 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.

Radiographers may specialise in a number of areas, e.g. as a sonographer who operates ultrasound machines and related equipment to produce images for medical diagnostic purposes.

Radiographers who are employed in a hospital may work in the radiology department, use mobile x-ray units at patients' bedsides or work in an operating theatre. They work as part of a team with other health professionals, medical staff and nursing staff. Hours of work may involve weekend or shift work. Participation in an on-call roster for after-hours emergencies may also be required.

Radiographers are employed in private and public hospitals, private radiology practices and Commonwealth and State health departments (Commonwealth Department of Education, Science and Training 2002).

Following graduation, radiographers need to complete a year of clinical practice in an accredited radiology department. On successful completion of this year, the Professional Development Year (PDY), the graduate must apply for accreditation from the Australian Institute of Radiography. Monash University graduates are eligible for registration at the completion of their degree.

Radiographers seeking employment in Tasmania must be registered with the Medical Radiation Science Professionals' Registration Board (ex Radiographers' Registration Board). Licenses to operate radiation emitting apparatus and handle radioactive material are required by the Tasmanian Radiation Control Act 1977.

5.1 Description of related radiography occupations

5.1.1 Radiation therapists

Radiation therapists design treatment plans for patients and administer radiation therapy treatment in conjunction with radiologists or other medical specialists.

5.1.2 Radiologist

A radiologist is a medical specialist who diagnoses and treats diseases using radiant energies such as x-rays, ultrasound, gamma rays and radio waves.

5.1.3 Nuclear medicine technologists

Nuclear medicine technologists use radioactive pharmaceuticals to diagnose, and sometimes treat, a range of diseases.

5.1.4 Cardiac technologists

Cardiac technologists provide technical services for the investigation, diagnosis and treatment of heart disease.

(Commonwealth Department of Education, Science and Training 2002)

6 Workforce supply

6.1 Current workforce supply of radiographers

6.1.1 AIHW data

The AIHW (2001) stated that there were 133 radiographers (including 19 sonographers) employed in the public and private sector in Tasmania in 1996. The same report stated that there were 211 persons in Tasmania with radiography as their highest education qualification; indicating that for some reason, there were 78 radiographers out of the radiography workforce at that time.

6.1.2 Medical Radiation Science Professionals' Registration Board data

There were:

- 136 radiographers registered by the Medical Radiation Science Professionals' Registration Board of Tasmania in 2001, 34 of these were male (25 per cent)
- 112 radiographers registered as at 1 October 2002, 29 of these were male (26 per cent).

Using registration board data and DHHS Human Resource Services Information System data of 2001, it appeared that approximately 48 per cent of registered radiographers were employed in the public sector in 2001, although some radiographers may have been employed in both sectors.

It also appeared that proportionally, more male radiographers were employed in the public sector than the private sector.

Registration board data was verified by the Partners in Health Report (2002) that stated that in 2001 there were approximately 104 full-time and 61 part-time radiographers employed in Tasmania and six PDY positions.

6.1.3 Demographics of the DHHS radiography workforce

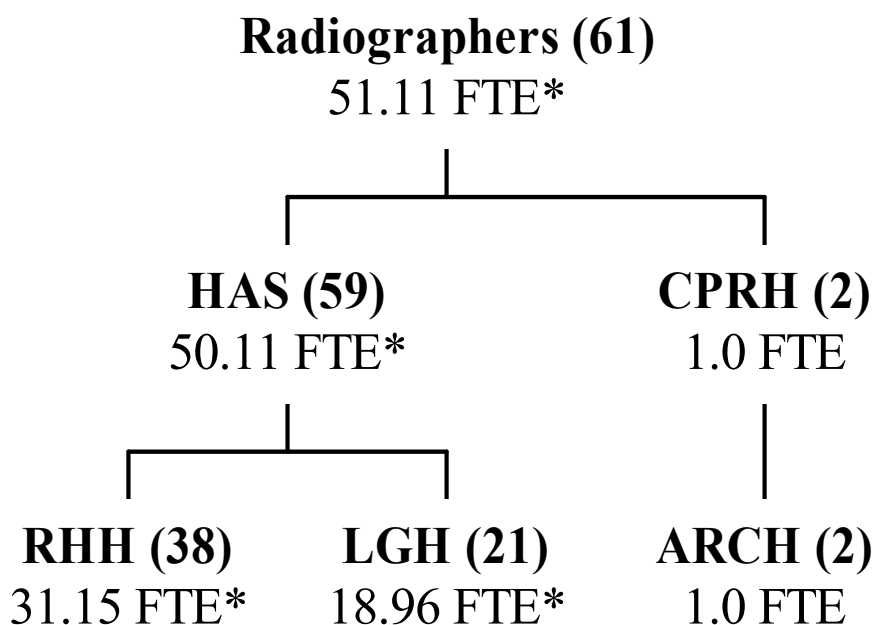
6.1.3.1 Human Resource Services Information System data

Data on the DHHS radiography 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 radiography positions within DHHS regardless of whether they were filled or vacant at the time of this analysis.

As displayed in Figure 1, radiographers were employed in the Royal Hobart Hospital and the Launceston General Hospital in the Hospitals and Ambulance Service Division and in Primary Health Services in the Community, Population and Rural Health Division. Radiography services in the north west of the state are provided by the private sector through a contract with the DHHS and are not included in this document.

The number of PDY positions varies from year to year, but there was usually at least one per year in the staffing establishments in the Royal Hobart Hospital and Launceston General Hospital.

Figure 1: Division and service structure of radiographers employed within DHHS (headcount in brackets)

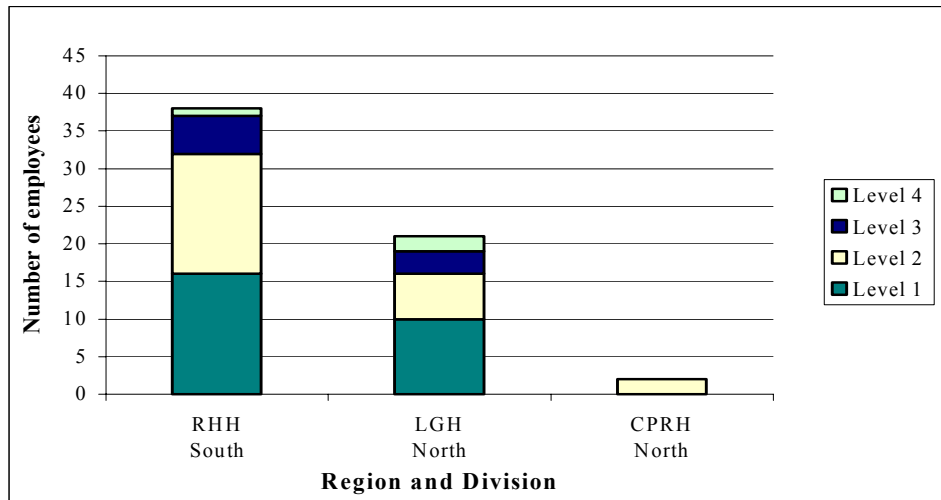


Source: DHHS Human Resource Services Information System 21 March 2002 (filled and vacant and PDY positions)

* These establishments include PDY positions.

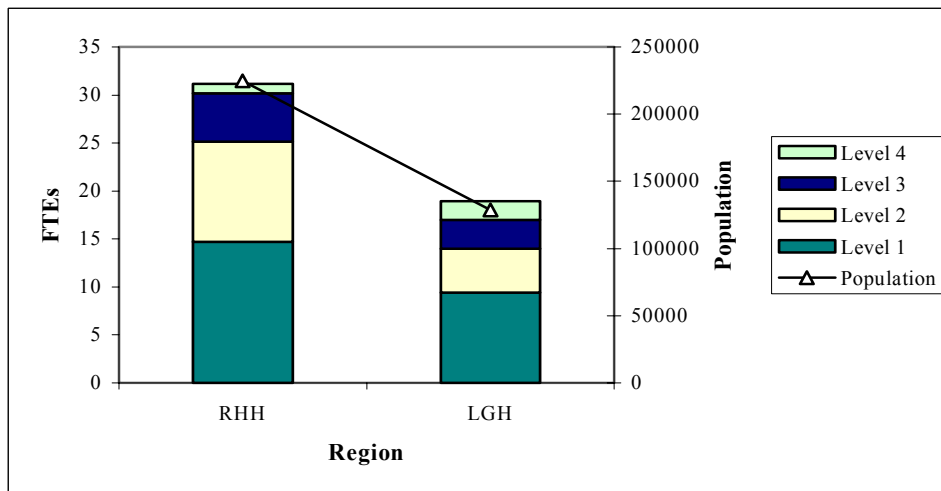
Figures 2 and 3 display the distribution of the 61 radiographers in 51.11 FTEs across the DHHS workforce. It required 1.2 radiographers to fill one FTE radiography position.

Figure 2: Radiography headcount per award classification across DHHS



Source: DHHS Human Resource Services Information System 21 March 2002

Figure 3: Radiography FTEs per award classification in the HAS compared to the northern and southern 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 radiographers at the various award levels.

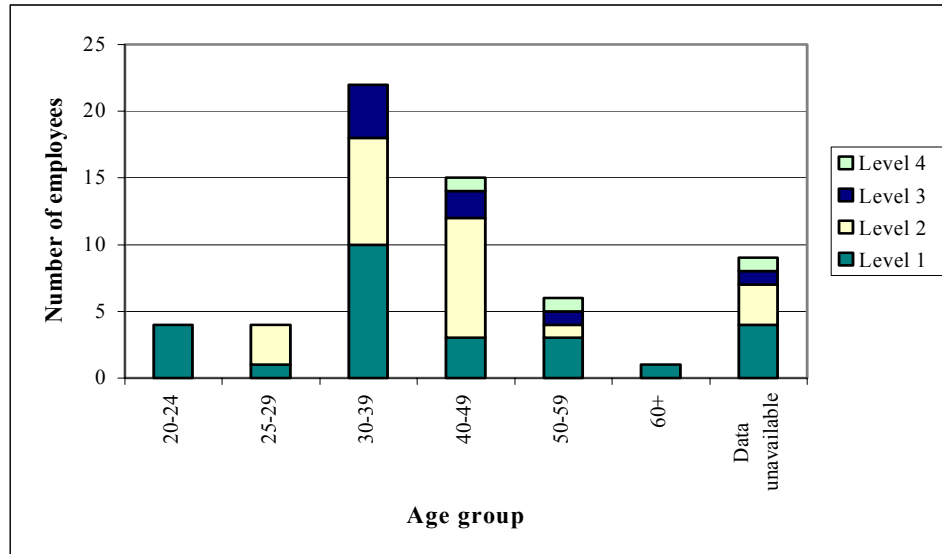
Table 1: Breakdown of the numbers of DHHS radiography FTE positions at specific award levels

Award levels	PF1	PF2	PF3	PF4	State total
FTE radiography positions	24.06 FTEs	15.05 FTEs	8.00 FTEs	3.00 FTEs	51.11 FTEs

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

Figure 4 displays the age group and award level distribution of the DHHS radiography workforce. The average age of the DHHS radiography workforce was 39.7 years which approximates the average age of all allied health professionals employed within DHHS, which is 40.3 years. The median age of the DHHS radiography workforce was 37 years which was younger than the median age of all allied health professionals employed within DHHS, which is 42 years.

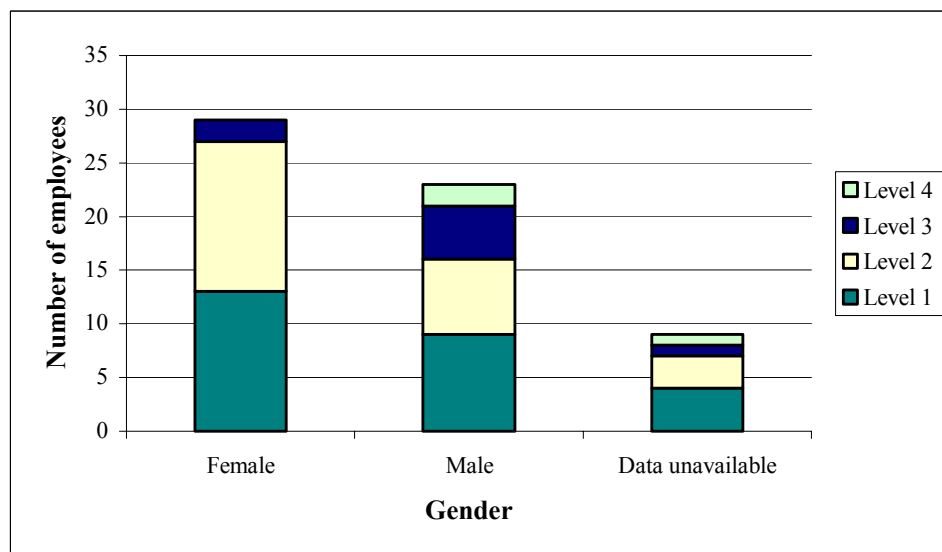
Figure 4: Radiography workforce per age group and award classification



Source: DHHS Human Resource Information System 2002 (filled and unfilled positions)

Figure 5 displays the gender and award distribution of the DHHS radiography workforce. There were 29 females (56 per cent) and 23 males (44 per cent).

Figure 5: Radiography workforce per gender and award classification



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

6.1.3.2 DHHS staff survey data

There were 61 radiographers employed by the DHHS (in October 2001) and 22 completed a survey form; resulting in a 36 per cent response rate. Due to the low response rate, only responses to some of the questions that were supported by responses from other consultations were used to describe the supply of radiographers later in this report.

6.1.4 Changes in radiography numbers

The DHHS Human Resources Service indicated that there were nine radiography positions vacant for six months in the period 1 July 2001 and 1 January 2002. These positions included:

- two PF1 positions (0.54 and 0.32 FTEs), two PF2 positions (1.00 and 0.59 FTEs) and two PF3 positions (both full-time) at the Royal Hobart Hospital
- and a PF1 position (0.4 FTE), one PF2 positions (0.4 FTEs) and a PF4 position (full-time) at the Launceston General Hospital.

6.1.5 Other research data

Walker and Barns in their research of 2001 asked radiographers if they specialised in their field. Of the 62 radiographers who responded to the survey (n=75), 40 (65 per cent) stated that they specialised within the field of radiography.

6.1.6 Types of work and client groups

Radiography respondents to the DHHS staff survey defined their work as one of these roles: clinician, manager or teacher/educator.

Data was not collected through this project to further breakdown the client casemix of the radiography workforce, but it is known that radiographers provide services for all types of patients.

6.1.7 The education of DHHS radiographers

6.1.7.1 Education courses for radiographers in Australia

There are three or four-year undergraduate courses for radiographers offered by universities in all states of Australia, except Tasmania. The degree awarded may include a Bachelor of Medical Radiation, of Medical Radiation Science, or of Applied Science, with a major study in medical imaging.

Most of the universities offer postgraduate certificates and diplomas, masters and PhD level qualifications in areas such computed tomography (CT), magnetic resonance imaging (MRI), medical sonography and radiation therapy. Some offer master and PhD level qualifications by research.

Clinical placements for student radiographers from mainland universities are provided by Tasmanian public and private sector radiography services.

The Partners in Health report (2002) stated that there were approximately 25 Tasmanian students enrolled in various years of mainland radiography courses in 2001.

6.1.7.2 Education courses for radiographers in Tasmania

A radiography course was run in the past in Tasmania by the Hobart Technical College and then by the TAFE and the University of Tasmania. The latter course ceased in 1992.

The issue of the establishment of an undergraduate course for radiographers through the University of Tasmania, in partnership with a mainland university, was discussed in late 2001 and early 2002 by the Tasmanian branch of Australian Institute of Radiography, the DHHS and the University of Tasmania through the Partners in Health program. No decision has been reached to date on the establishment of a course.

6.1.7.3 Re-entry education

In Tasmania, radiographers who have not had any clinical practice in their profession for more than five years must be referred to the Australian Institute of Radiography for assessment for retraining. An in-house refresher programme is usually offered.

6.1.7.4 DHHS radiographers born outside Australia

Some radiographer respondents to the DHHS staff survey indicated that they were born overseas. The largest group was born in the United Kingdom/Ireland. However, this information could not be used to indicate where these radiographers were educated.

6.2 Projecting workforce supply of radiographers

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 DHHS radiographers

In the two years 2000 and 2001, there was an average of 8.5 permanent, temporary and casual radiographers who left the DHHS per year.

Applying this average to the 21 March 2002 headcount, approximately 14 per cent of the DHHS radiography workforce left per year. This was considered to be a medium average turnover rate, when compared to other allied health professions, in those two years.

In order to ascertain the possible future numbers of outgoing radiographers, 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.

It is important to note that 22 radiographers of a possible 61 (36 per cent) responded to the survey.

Some of the radiography respondents indicated that the hours they were working were not the hours they wanted to work. Some staff stated that they were doing a varying number of unpaid hours (up to 10 unpaid hours per week); some wanted to upgrade their employment from part-time to full-time and some wanted to reduce their number of employed hours to part-time.

More radiography respondents anticipated a decrease in their work hours in the next three years than those who anticipated an increase.

Six of the 22 radiography respondents (27 per cent) indicated that they were considering leaving in the next six to twelve months and the reasons stated were mixed: 'travel' (two respondents), 'family considerations' (two respondents), 'promotion', 'other employment' and 'poor conditions and pay' (one respondent each).

Information on staff responses on levels of satisfaction with the various professional practice parameters are listed in Table 2.

Table 2 : 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	91%
Sufficient work to maintain competence	91%
Hours of work	64%
Amount of work	64%
Overall satisfaction	82%

Source: DHHS staff survey October 2001

Other information that was relevant to the outgoing supply was that there were two radiographers in the DHHS workforce aged 55 years and older.

6.2.2 Incoming radiographers

6.2.2.1 National incoming radiographers

There will be approximately 420 new graduate radiographers coming into the job market in 2002 from New South Wales (~150), Victoria (~90), Queensland (~60), South Australia (~80), and Western Australia (~40).

6.2.2.2 Incoming DHHS radiographers

In the two years 2000 and 2001, there were 24 full time, temporary and casual radiography positions advertised.

It is not known if these advertisements were successful. These advertisements were for: 14 x PF1 level positions (58 per cent), 6 x PF2 level positions (25 per cent), 1 x PF3 level position (4 per cent) and 3 x PF4 level positions (13 per cent).

7 Workforce demand

7.1 Current demand for radiographers

7.1.1 Current national demand for radiographers

Unpublished research by the Commonwealth Department of Employment and Workplace Relations stated that in general nationally, although there has been the merging of some larger private practices and this has resulted in the need for reduced staff numbers; the factors leading to shortages in the profession have been the increased specialisation taking radiographers out of the generalist workforce pool, the recruitment of new graduates by offshore employers who realise the high standard of Australian training, and the inadequate numbers of clinical placements for students.

The Commonwealth Department of Employment and Workplace Relations found that in late 2001, in:

- New South Wales, there was a shortage for experienced radiographers. Demand has been growing with growth in private practice activity, the increasing role of sonography, the on-going national breast screening program and steady public hospital expenditure. While the supply of new graduates from universities has increased since the 1990s, it has been constrained by the steady attrition of personnel and limited availability of clinical practice places. Shortages were prevalent in a number of areas: radiographers with CT, MRI and mammography experience; and sonographers with vascular, breast, obstetric, musculo-skeletal, general and soft tissue experience. Recruitment of sonographers in rural areas was particularly difficult. Demand for radiographers is expected to grow further over the short term, but university graduations and net migration are unlikely to expand significantly.
- Victoria, there were continuing shortages of approximately 40 radiographers (without ultrasound skills) and 15 sonographers. An additional number of new 30 graduates at the end of 2001, was expected to assist with shortages.
- Queensland, the radiography workforce market continued to be in shortage, with acute shortages in rural and remote areas. Over the short to medium term, the continuing introduction of new technologies and the development of health facilities in Queensland should see the demand for radiographers continue to grow.
- South Australia, the labour market for radiographers (not requiring ultrasound skills) was in balance, but with shortages for sonographers. Recruitment difficulties are the result of various factors including the

loss of experienced workers to the eastern states of Australia (where remuneration is reportedly higher) and a general lack of suitably qualified sonographers. The supply of new graduate radiographers should remain steady for the next few years and should more than satisfy the demand for entry-level workers.

- Western Australia, with the growth in demand for radiographers and little change in the number of graduates, the labour market for radiographers was in shortage as it had been for a number of years. The demand for sonographers continues to grow without a matching increase in the number of sonographers completing their training.
- Tasmania, there were shortages of both radiographers and sonographers that have been in existence for a number of years mainly reportedly due to the lack of training facilities in the state, reduced access to postgraduate training and diminished career opportunities due to the slow turnover of the small number of senior staff. Shortages were more acute in the north west of the state and in the public sector rather than the private sector due to wage differences.

7.1.2 Perceived DHHS radiography service gaps

The professional association for registered radiographers is the Tasmanian branch of the Australian Institute of Radiography.

Representatives of the professional organisation and managers of public and private sector radiography services stated in the Partners in Health report (2002) that there were shortages of radiographers in Australia and internationally. The report went on to say "The length of vacancies in Tasmania is influenced by the timing of the vacancy, e.g. if the position falls vacant at the end of the year or mid-year, and the type of position. Filling a PDY position at the end of the year is quicker than filling a specialist position in the middle of the year. Recruiting from interstate or overseas also takes longer. On average, it can take three to six weeks to fill a vacancy, and there are a significant number of vacancies that are unfilled for longer than six months. Universities have increased their student intakes into radiography/medical imaging courses so there may be significantly more graduates over the next couple of years."

7.1.3 Patterns of usage

7.1.3.1 Profession to population ratios

There were 28.6 radiographers employed (in the public and private sectors) per 100,000 of the Tasmanian population in 1996. This was slightly under the Australian average of 31.6 radiographers employed per 100,000 population.

7.1.3.2 Staff workload assessments

The DHHS staff survey asked radiographers if they considered their current workload was about right, too much or too little. Of the 22 radiography respondents:

- 16 (73 per cent) stated that their workload was about right
- 6 (27 per cent) stated that their workload was too much.

7.2 Projecting future demand for radiographers

7.2.1 National information

Information from the Commonwealth Department of Employment and Workplace Relations JobSearch web site describes work prospects for medical imaging professionals, an occupation category that includes radiographers as well as radiation therapists 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.

Medical imaging professionals have an above average proportion of full-time jobs (80 per cent) and earnings are above average - in the seventh decile. Unemployment for medical imaging professionals is low.

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 National drivers for radiography services

Unpublished research by the Commonwealth Department of Employment and Workplace Relations stated that demand for all types of medical imaging services continues to expand in line with population increases, the ageing population, developments in diagnostic technology to diagnose and treat medical conditions and for pregnancy related investigations, the level of public sector health funding and the growing emphasis on preventative medicine.

7.2.3 Perceived drivers of radiography services in DHHS

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

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

8 Workforce planning issues identified in consultations

8.1 Employment opportunities in the private sector

Private sector radiology services have the ability to be more flexible with employment conditions for radiographers than the DHHS. Many specialist radiographers, e.g. ultra-sonographers are attracted to the private sector.

However, public sector employment is attractive to many radiographers as the patient load is varied and there is the ability to be more involved in total patient care, education and research.

8.2 Staff satisfaction with DHHS employment

Information on staff satisfaction with DHHS employment was sought through focus groups. Two radiographers from the south attended the focus groups and a summary of feedback is shown in Table 3. The comments expressed also reflected the information obtained through other consultations.

Table 3: Summary of the information obtained from radiographers 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 care• Team work and collaboration	<ul style="list-style-type: none">• CPD encouraged and resources allocated	<ul style="list-style-type: none">• Lack of staff• Poor systems• Poor change management practices	<ul style="list-style-type: none">• Budget

Regional variations

Participants were from the Royal Hobart Hospital only.

Source: DHHS focus groups December 2001

8.3 Professional development to retain and strengthen a quality workforce

8.3.1.1 Professional association requirements

The Australian Institute of Radiography 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 continuing professional development. The areas of activity are: organised programs, writing, self-directed learning, professional services and other.

At present there is no need for radiographers 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 radiographers.

8.3.1.2 DHHS staff survey

The DHHS staff survey asked radiographers questions about CPD. There were no patterns to the responses. Some respondents said they were offered regular CPD through their employment, some staff from the same services said that they were not offered regular CPD, and this did not seem to depend on the full time or part time nature of the staff member's employment or the place of employment.

Staff appear to have different understandings of CPD and their expectations differ across the radiography workforce.

Eight of the 22 radiography respondents to the survey stated they had applied to attend a conference in the last two years and seven were successful in their application. These staff members received varying proportions of funding; from no funding assistance to 100 per cent funding.

8.4 Radiography support staff

Staff are employed within the DHHS to provide support to radiographers. These staff are employed under the operational stream of the Community and Health (Public Sector) Award and perform duties such as assisting patients to dress and undress, entering electronic data and film processing.

Generally the numbers of support staff employed are sufficient to assist radiographers.

9 Annotated bibliography

Australian Institute of Health and Welfare, 2001, *Health and Community Services Labour Force*, 1996, AIHW cat. no. HWL Canberra: AIHW (National Labour Force Series no. 19).

The AIHW has no plans to collect more than ABS census data for the radiography profession (last in 2001).

Commonwealth Department of Education, Science and Training, Good job guide, viewed 29 August 2002,

<<http://jobguide.thegoodguides.com.au/search.cfm>>.

Commonwealth Department of Employment and Workplace Relations, JobSearch web site, viewed 3 October 2002,

<<http://jobsearch.gov.au/joboutlook/SpecOccCat.asp?CatCode=83>>

Medical Radiation Science Professionals Act (2000),

<<http://www.thelaw.tas.gov.au/scanact/ACTTITLE/F/ME>>

Partners in Health Management Committee 2001, Education and Workforce Standing Committee, *Radiography Education Working Party Report*, DHHS.

Tasmanian Department of Community and Health Services, 1992, *The characteristics of the radiography workforce in Tasmania, 1992*.

The document used data collected from a survey sent to radiographers, radiation therapists and nuclear medicine technologists with their re-registration forms. The level of response for each question varied. The data collected covered those employed in private practices and by DHHS as well as those registered, but out of the workforce. The analysis undertaken was for the three groups in combination, not for each group. The report was almost 10 years old and the information was not used in this Radiography Information Paper.

Walker J and Barns J, 2001, *Where are they going? - A project to retain experienced Allied Health Clinicians in rural areas*, Final Report, University of Tasmania, Department of Rural Health.