

**COMPREHENSIVE REVIEW
OF THE
RADIOGRAPHY WORKFORCE**

**REPORT OF THE
PROJECT GROUP**

April 2002

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EXECUTIVE SUMMARY

In September 2001, the DHSSPS commenced a series of uni-professional workforce reviews, which, over the period of one year, would cover the main clinical professions within the HPSS. There were a number of drivers behind the initiative and these included, the publication of the Hayes Report on the future of Acute Hospital Services and the DHSSPS consultation document 'The Employer of Choice'. Both documents highlighted the urgent need to put in place structures that will support workforce planning within and across all of the HPSS Professions. While it was determined that the initiatives, at this stage, would be taken forward on a uni-professional basis, the information and recommendations from this work would provide an important baseline in terms of developing workforce planning within HPSS across service sectors and professions.

Introduction

The document presented sets out a comprehensive review of the HPSS Radiography profession. The review was undertaken during the period September – December 2001 and was co-ordinated by a Project Group, which comprised of representatives of the DHSSPS, providers, education, commissioners and staff side. The content of the report includes background details (including terms of reference), the project methodology, and a detailed profile of the current radiography workforce, a projection of the supply and demand for radiographers within the HPSS workforce over the 5 year period 2002-2006 and recommendations to address issues arising from the review.

Background

The principal focus of the review was to provide the DHSSPS and service providers and commissioners with information concerning recruitment and retention issues within radiography and a projection of supply and demand within the profession. This information is vital to assist the Department in developing strategies that will ensure that the correct numbers of professionals are trained, in place and working effectively to offer the maximum benefit to patients and clients.

In considering the above, it is also important to review the current health policy context for the delivery of health and social care services in the future. A number of strategic documents have been reviewed and highlight the focus now being given to the delivery of high quality accessible care, with the development of the HPSS workforce being key to achieving this.

Terms of Reference

1. Provide a profile of the current radiography workforce in Northern Ireland, including:
 - Numbers employed, specialism in which employed, grading distribution age and gender balance.
 - Working conditions and patterns, grading and distribution.
 - Continuing professional development opportunities.

2. Provide an analysis of current and future recruitment and retention issues, including:
 - Remuneration
 - Career development and specialisation
 - Career breaks / leaving the profession
 - Working arrangements

3. Provide a prediction of the future supply of radiographers over the next 5 years within the workforce and demand, including:
 - Number of radiographers required to meet service demands
 - Specialism distribution

This review will focus on providing a qualitative report and was not required to examine economic issues or carry out detailed feasibility studies.

Methodology

The following methodology was employed:

- Audit of current workforce identifying the staffing profile and characteristics. This baseline information was primarily gathered from existing information held within the Department and at Trust level on the Human Resource Management Information Systems, and supplemented as possible by the respective professional bodies.

- Background research conducted to identify future and current trends impacting upon the staff and involved a keyword and heading search of relevant professional databases; policy document review; a review of Trust and commissioner strategies to identify proposed service developments or changes and a review of benchmark data sources.

- Consultation with stakeholders involving extensive consultation across all relevant disciplines and areas of the workforce as identified by the Project Board, through 27 key informant interviews and 8 focus groups.
- Analysis of data gathered to develop a workforce model to aid the prediction of supply and demand of the workforce over the period of 2002 - 2006.

Key findings of the review – supply and demand issues

Supply Issues

Current Staffing Profile

- The radiography workforce represents a total headcount of 517 in Northern Ireland with diagnostic making up 471 & therapeutic the remaining 46.
- The ratio of headcount to whole time equivalent for this work force is 1.14:1
- The workforce is predominantly made up of the female gender with only 7% of the workforce male.
- The age profile of the radiography workforce shows that approximately 8% fall within the 55 + category and that 60 is the ‘eligible’ age for retirement within the general radiography profession.
- The grade breakdown of radiographers within Northern Ireland identifies a considerable proportion of qualified radiographers qualified at basic grade level.
- The total number of current vacancies within this profession was identified as 24 WTE [4.6%] This equates to 22 posts within the diagnostic population and 2 posts within the therapeutic population.
- Current figures show 26 staff are registered on Staff Banks but many of these individuals have permanent contracts with Trusts and are therefore not readily available to cover requirements during day-time hours.

Recruitment and Retention

- There are currently no issues with regard to recruiting to training places at the University of Ulster with the application to places ratio 2.5:1

- The attrition rate of UU is 8% for radiography students and on average 43% do not enter the HPSS sector in Northern Ireland upon graduation. The Trusts depend upon graduates to fill radiography grade posts.
- There are increasing problems with recruiting and retaining the radiography workforce across N.I with particular difficulty recruiting to basic grade posts, filling temporary posts and attracting Bank Staff.
- Staff requests are increasing for work-life balance practices and it is estimated that currently this accounts for a loss of 1.75% of the radiography workforce and the trend is likely to increase.
- Recruitment and retention issues are being exaggerated by the current pressurised establishment due to under resourced services and increases in activity.
- The increasing workload during the out of hours service plays a major role in the difficulties in the recruitment and retention of staff as well as the inequalities with the out of hours payments between Trusts.

Career Progression

- Lack of career opportunities and progression is a significant factor in demotivating the work force. Some radiographers remain static at radiographer grade for a number of years and with no opportunity to progress. There is a limited career path at senior level with often the only available promotional route into management, which has very limited opportunities.

Lifelong Learning

- Difficulties are encountered in ensuring continual Professional Development for post-graduate staff both from a time and funding prospective.
- There is difficulty ring fencing time to properly mentor and train students on clinical placements due mainly to pressure on the operational service delivery.

Under representation

- There is a lack of leadership representation for the profession, which correspondingly means a lack of inclusion in the decision and communication process.

Demand Issues

Service Developments

- Extension of the NHS Breast Screening Programme from females aged 50-65 years to include up to 70 years.
- A possible requirement in the future to extend the clinical service hours to reflect demand from the primary and secondary sectors.
- The introduction and implementation of the IR [ME] ionising radiation regulations has brought an increase in workload.
- Sub-specialisation and role extension has increased demand for specialist radiographers within the profession in line with the development of the medical profession and advances in technology.
- Specialist skills in both diagnostic and therapeutic services have extended the role and the clinical responsibility of the radiographer.

Capital Developments

- The introduction of 5 new MRI Units at Antrim, Altnagelvin, BCH, Craigavon and Ulster Hospitals.
- Additional 4 CT scanners at Antrim, BCH, Royal Belfast Hospital for Sick Children and South Tyrone Hospitals.
- The initiation of a Nuclear Medicine Service at the RBHSC and the Ulster Hospital.
- The new Cancer Centre with an additional 7 linear accelerations, 2 CT Scanners, Ultrasound equipment and an Interventional Service.
- The installation of Picture Archiving and Communications System (PACS) across Northern Ireland.
- The initiation of a bone densitometry service at South Tyrone Hospital.

Skill Mix

- An increasing amount of radiographer's time is spent on administrative and clerical tasks.

- Some tasks undertaken by radiographers do not require professional skills and there are opportunities to further allocate tasks to assistant grades.

Operational difficulties

- Pressures experienced within the Radiology Service often results in longer clinical waiting lists.
- An increase in patient awareness of technology available, medical and diagnostic knowledge, Patients Charter, rights access to services, complaints systems and this causes increasing pressure on the operational service delivery.
- An ageing growing population, increased dependency of patients, increased referral activity patterns and the sophistication of treatments available are the causes of pressure on the clinical services.

Projected Supply and Demand Conclusions

Conclusions were drawn and assumptions made concerning the future profile of the workforce and supply and demand projections have been detailed in Section 7 of this report. They have been developed into a workforce model to predict the requirement of the radiography workforce over the period 2002 - 2006.

All data presented has been gathered from discussions with the project group, key informant interviews, HPSS Project Support Analysis statistics and current business cases.

The demand for radiography professionals has been presented at three scenario levels and categorised as Diagnostic or Therapeutic:

Scenario One: *Agreed and resourced capital and service plans with identified workforce requirement within the 5-year plan.* This refers to capital and service developments that have been agreed within the current HPSS policy framework with required resources identified or likely to be approved over the course of the 5-year workforce plan.

Scenario Two: *Capital and service requirements, that are likely to be resourced within the 5- year plan.* This refers to service developments that have been identified via the key informant interviews and Project Group that are likely to be supported over the next 5 years, although resources have yet to be allocated.

Scenario Three: Current and future demand with no identified funding. This refers to additional demands within the current and future services, identified via the key informant interviews and the Project Group that do not have a funding allocation.

Summary table of scenarios 1, 2 & 3

Workforce requirements in WTE	2002	2003	2004	2005	2006	Total
<i>Scenario One (agreed and resourced capital & service plans with identified workforce requirements)</i>						
<i>Diagnostic</i>	32.5	15	0	9	0	56.5
<i>Therapeutic</i>	12.5	10.5	10.5	10.5	0	44
<i>Scenario Two (capital & service requirements, likely to be resourced)</i>						
<i>Diagnostic</i>	16	16.5	6	1	4	43.5
<i>Therapeutic</i>	–	–	–	–	–	–
<i>Scenario Three (current and future demand with no funding)</i>						
<i>Diagnostic</i>	22.5	16	15	15	5	73.5
<i>Therapeutic</i>	3.5	1	1	1	1	7.5

For the initial purposes of this workforce plan a combination of scenarios 1 + 2 has been adopted. These scenarios include agreed and resourced capital and service plans with identified workforce requirements and those that are likely to be resourced within the 5-year plan. The following table illustrates this shortfall in the workforce.

Projected numbers in WTE of scenarios 1+2 **NB [] indicates shortfall**

PROJECTED NUMBERS	2002	2003	2004	2005	2006	Total
SCENARIO 1 + 2						
Diagnostic	[45.5]	[28.5]	[1]	[6]	[1]	[82]
Therapeutic	[7.5]	[1.5]	[2.5]	[0.5]	8	[4]

This shortfall is further increased if the figures are converted from WTE to headcount, as seen in the following table:

Projected shortfall figures – WTE/Headcount for 5-year plan

Projected Shortfall	Diagnostic		Therapeutic	
	WTE	Headcount	WTE	Headcount
Scenario 1+2	[82]	[94]	[4]	[5]

Sensitivity Analysis

- If the HPSS were able to attract a greater % of UU diagnostic radiography graduates into the NI HPSS workforce [from 57%, at present, to 70-75%] an additional 10-15 qualified radiographers would be included in the workforce over the 5-year plan. (NB 100% of therapeutic radiographers already enter the NI HPSS workforce after graduation from UU).
- If the HPSS were able to reduce by 30% the number of the diagnostic radiographers leaving the workforce each year, an additional 5 radiographers would be available in the 5-year period. The number of therapeutic radiographers leaving the workforce is less significant at a rate of 1 per annum.
- If the NI HPSS were to increase the university intake by 35% immediately, there would over the 5-year plan be an additional 6 diagnostic and 3 therapeutic radiographers graduating.

A number of recommendations are outlined below that are aimed at addressing the shortfall identified in the radiography workforce.

RECOMMENDATIONS

The timescale for the implementation of the key recommendations outlined below is twelve months to coincide with the follow up review.

Workforce Planning

- Now that the workforce planning process is established it is recommended that the Project Board should be retained to review supply and demand on an ongoing basis. It should utilise the information gathered in the review building and expanding on it taking into account such factors as the impact on the workforce on the Working Time Directive, an extended hours service, role extension, sub-specialisation, capital plans and service development business cases.
- The Project Board should ensure that there is a more consistent and targeted approach to gathering relevant supply and demand data and should include a review of current IT capabilities and manpower recording processes.
- Student places for the UU 2002 intake should be increased by 5 [total 40] for diagnostic and by 1 [total 16] for therapeutic radiography.
- Further discussions should take place between the DHSSPS and the University to establish a more effective way of providing clinical placements for students throughout the degree programme. All Trusts with radiography services should also provide student clinical placements for each year of training.
- All Trusts with radiography services should be surveyed with regards to the existing numbers of clinical placements and the maximum numbers that may be accommodated for each training year. There should be an identification of any barriers to these placements and solutions found so Trusts will be in a position to accommodate any additional clinical placements required in response to an increase in degree places.

Recruitment & Retention

- Employers should address current Recruitment and Retention practices in an innovative manner, sharing successful ideas and initiatives to achieve synergistic benefits. With this purpose they should assess and evaluate the Society of Radiographers document “The Future of

Radiography Services in NI, 2001” taking into account the Agenda for Change initiative.

- Employers should build relationships with students, such as activity development programmes and should establish a targeted recruitment programme throughout the four-year training period and post registration programmes with the aim of increasing the percentage entering the NI radiography sector upon graduation.
- Trusts should project their workforce requirements one year in advance and the recruitment process should commence 6 months prior to the graduation date of radiography students. It is suggested that provisional offers of employment could then be made with a defined acceptance time limit. This would provide Trusts with a more clearly defined recruitment process.
- The UU and Trusts should work together to ensure that the elective clinical placements are based within Trusts in NI with a view of retaining a considerably higher percentage of graduates within the NI workforce.
- All employers should put in place policies to incorporate planned induction, consolidation and mentorship programmes for all new staff and review the effectiveness of these in a quantitative and qualitative manner.
- Further work should be carried out to examine the benefits and costs associated with a Return to Practice initiative. This could involve advertising campaigns to ascertain interest and should be carried out regionally.
- The feasibility of offering more flexible working practices to radiographers in line with anticipated increased hours provision should be explored for example, an extended working day or weekend-only working.
- Employers and the profession should put in place a consistent approach to the implementation of work-life balance policies and procedures and this should be factored into workforce planning.

Utilisation of the available Workforce

- A Working Party should be established to address a skill mix review and more closely the issue of the required roles and responsibilities of radiographers in today’s healthcare environment. This should involve as a matter of urgency looking at the benefits and associated costs of

developing Radiography Assistants to NVQ Level 3. This should be taken forward and co-ordinated by the DHSSPS.

- Employers should carry out further work into the possibility of reallocating non-clinical responsibilities to other health care workers.
- A co-ordinated approach should take place with regard to workforce planning of both radiology and radiography, particularly in relation to role extension and development issues.

Development

- There should be an increased focus placed on Continuing Professional Development (including leadership development) and all employers should ensure that the recommended hours provision is accounted for through the workforce planning process.
- Consideration should be given to providing a centre for CPD for radiography, which could be linked, to an existing training provider.
- Employers should ensure training is available for all staff that will be required to provide mentorship or coaching support as part of their role.
- The Department should take forward the development of the PAMS consultant role to acknowledge the high levels of clinical expertise within the profession.

CONCLUSION

This radiography workforce review can be only viewed as a starting point, or baseline for further work to be carried forward. This includes the development of an action plan to take forward the recommendations outlined above. The models presented in the report will need updated and refined on a regular basis to continue to inform decision making and priorities concerning the investment in the NI HPSS radiography workforce over the five year plan.

1. INTRODUCTION

An in-depth review of the radiography workforce in Northern Ireland took place between September and December 2001 and was co-ordinated by a Project Group, which comprised of representatives of the DHSSPS, HPSS commissioners and providers, education and staff side. The report includes:

- A background to the project
- The project methodology
- A summary of the recruitment and retention issues arising from the review and a projection of the supply and demand for radiographers over the next five years within HPSS.

The report concludes with a list of recommendations, which seek to contribute to the addressing current and future workforce issues within the NI HPSS radiography workforce.

The Department of Health, Social Services and Public Safety Northern Ireland's aim of the review is to develop strategies that can assure the correct numbers of radiographers are in place and working in the most effective way to offer optimal benefit to the overall healthcare team and the patient.

1.1 Terms of Reference

The following specific terms of reference were applied when carrying out this review:

Provide a profile of the current Radiography workforce in Northern Ireland, including:

- Numbers employed, grading, distribution, age and gender balance.
- Working conditions and patterns.
- Continuing professional development commitments.
- Provide an analysis of current and future recruitment and retention issues, including:
 - Remuneration.
 - Career development and specialisation.

- Career breaks/leaving the profession.
- Working arrangements.
- Provide a prediction of future supply of radiographers over the next 5 years and demand for radiographers, including:
 - The number required to meet service demands.
 - Specialism distribution.

The requirement for this piece of work was to review issues at a generic, strategic level and provide sound conclusions and recommendations relevant to the workforce as a whole. This review was not required to examine economic issues or carry out detailed feasibility studies.

The aim of the report is to provide a starting point and baseline for workforce planning which could then be built on and expanded through future analysis and focus using identified workforce representatives at all levels throughout the sector.

1.2 Methodology

The methodology for the review focused on consulting with those within the current workforce, across the geographical regions of Northern Ireland. The views of under graduate students were also sought as they represent a substantial part of the future supply of the workforce.

All representatives were identified by the Project Board, Appendix 1, set up to manage this review.

The methodology adopted for this review contained the following:

- Key Informant Interviews: Semi-structured in-depth interviews were carried out with 27 key representatives, Appendix 2.
- Focus Groups: 8 focus groups were held made up of a representative mix of disciplines, grades and primary and secondary care employees.
- Literature Review and Desk Research: A vast amount of good work already exists relating to the radiography workforce in Northern Ireland and it was key that these references were utilised to inform the review, Appendix 4.

2. CONTEXT

It was important to set this review within an appropriate context before carrying out any data gathering to inform the design of pertinent survey tools and ensure relevancy of conclusions and recommendations. This necessitated looking at the current situation with regard to the wider Health Policy context and the roles diagnostic and therapeutic radiographers could play within this.

Health Policy Context

The overall aim of the Department of Health, Social Services and Public Safety is to improve the health and well being of the people of Northern Ireland within the resources available. It must also seek to increase the effectiveness of clinical intervention. That is to maintain or improve health and to secure the greatest possible health gain from available resources. Those NHS employees which fall within the Professions Allied to Medicine, specifically Radiography, are key to achieving this overall clinical effectiveness it is estimated that over 80% of acute patients require the services of the radiology department, and with 10% of patients on a general Practitioner' list being referred for direct access imaging each year (1).

In order to develop strategies that can ensure the correct numbers of these skilled employees are in place, working on an integrated basis and in the most effective way, offering maximum benefit to the health care team and optimal patient outcomes. Sir Maurice Hayes has further reinforced this in the Acute Services Review consultation document (May 2001) (2) where he states that the DHSSPS, in consultation with the service, should as a matter of urgency undertake an assessment of service needs and the skills and staff required to deliver these services efficiently and effectively.

Great Britain and Northern Ireland Context

The strategic focus outlined above was first detailed in 'The New NHS – Modern and Dependable' (3) which set out the Government's vision for the National Health Service (NHS) in England. The Government plans for NHS modernisation are intended to ensure a high quality, national service that is clinically sound, cost-effective and equitable This was emphasised by Alan Milburn, speaking at Farnborough Hospital on 13 October 1999, saying, "By the time we finish our 10-year programme of modernisation, the NHS of 1948 will be unrecognisable. It will remain true to its values but they will be delivered in new and modern ways". The NHS white paper (4) and subsequent quality consultation document (5) identified requirements for consistent, high quality care throughout the health service and all health organisations, including primary care. This will mean that all areas of healthcare, including radiography deliver care to the patient in the most timely and most cost

effective ways possible. Radiography services have a large role to play within this setting due to their usage in the early identification and subsequent treatment of some of the most significant diseases affecting the population.

In line with the above, the Northern Ireland Executive in its Programme for Government 2001-2004 (6) identified “Working for a Healthier people” as one of its priorities and has stated that “we will work to reduce waiting lists, implementing new management arrangements, and recruiting additional front line staff”.

The Programme focuses specifically on the following:

- Reducing preventable diseases, ill health and health inequalities
- Ensuring that the environment supports healthy living and that recreational facilities are improved
- Modernising and improving hospital and primary care services to ensure more timely and effective care and treatment for patients
- Enabling those who suffer from disability, chronic mental or terminal illness to live normal lives.

The Programme commits the Executive to the following actions, which affect radiographers directly:

- Providing 40-50 extra specialist medical, nursing and other staff to improve treatment of people with breast, lung and colorectal cancers
- Addressing workforce shortages in the health service.

The document ‘Priorities for Action’ (7) details the DHSSPS planning priorities for 2001-2002, in the context of the Programme for Government as outlined above. It states the objectives, and targets that will ensure their achievement. In meeting it’s responsibility for setting strategic direction, overseeing the delivery of the health and social services, the DHSSPS has set targets for Boards and Trusts.

Secondary Care

In the provision of secondary services, the Acute Hospital Review Group Report 2001(2) is the most recent document to address the structure of the HPSS as a whole in Northern Ireland. The Report highlights key recommendations, which include:

- To significantly shift the balance of care from secondary care to primary care.
- To provide acute hospital services that are consultant delivered rather than consultant led.
- Primary care organisations should be given the responsibility for the commissioning of community services and non-regional hospital services in the context of the strategic plan.

In particular, the Hayes Review proposes three new organisational structures in Northern Ireland. It also suggests a comprehensive review of Radiology services is required, and that future services should be planned on a regional basis. The Report outlines comprehensive changes in the existing range of radiology services, such as priority for the installation of Magnetic Resonance Imaging (MRI) Units at all of the designated cancer units (Altnagelvin Hospital, Antrim Area Hospital, Craigavon Hospital and Ulster Hospital) and the Belfast City Hospital and the Royal Group of Hospitals to support their Cancer Centre role. Such recommendations are central to this review, and their implementation has major impacts on the structure of the radiographer workforce within Northern Ireland in the future.

Quality and Primary Care

These principles outlined above have been reinforced in the context of Northern Ireland in the recent Consultation Paper, “Best Practice – Best Care” (9). This paper, published in April 2001, focuses on the three interlocking strands of setting standards (improving services and practice), delivering services (ensuring local accountability) and improving monitoring and regulation of the services. In addition, identifying new ways for health professionals to be involved in the delivery of NHS services has been a key principle identified in the Consultation Paper “Building the way forward in Primary Care” (10), which clearly sets out a number of priority areas for development in primary care relevant to this review.

The Clinical Imaging Strategy Group, which has representation from the professions of radiology, notes that while it is impossible that general practitioners, particularly those involved in commissioning, may wish to

establish local diagnostic imaging services, it is more likely that any future provision of radiology services is likely to develop in the community hospital settings (1).

In Northern Ireland these proposals have been supported by the ‘Professions Allied to Medicine’, which includes Radiography. The position paper ‘Primary Care – Professions Allied to Medicine’ (11), endorses the priority given to breaking down traditional boundaries so that all care professionals use their skills in the most appropriate way to treat and care for people, the development of new and innovative models of service delivery and the support of emerging new professional roles. However in order for this to happen it is argued that there must be greater representation of the Professions Allied to Medicine to influence the decision making process in strategic planning, policy formulation, commissioning and in the general management of the HPSS (12).

Public Health

In the UK, public health strategies have recently been produced for Scotland (Working together for a Healthier Scotland 1998) (13), Wales (Better Health – Better Wales 1998) (14) and England (Saving Lives: Our Healthier Nation 1999) (15).

In Northern Ireland these key issues are reinforced in the strategic documents “Investing for Health” (16), and “Well into 2000: A positive agenda for Health and Social Well-being” (17) which underpin the government’s vision for the Health Service. The proposals encourage professions to work with the community to promote health and well-being rather than focus on the treatment of ill health. In radiography a key priority is now to focus to the importance of the overall prevention and early detection of cancer through awareness, eg breast screening.

The Radiography profession

The professional status of radiography was recognised through establishment of the Radiographers Board through the Professions Supplementary to Medicine Act 1960, giving a considerable degree of professional autonomy to radiographers and allowing them to maintain their own professional discipline and standards of conduct and to set standards of education and training for entry to the profession.

The NHS employs 90% of the UK’s 18,000 radiographers who are state registered with the Council of Professions Allied to Medicine (CPSM). The others mainly work in private clinics and industry. In Northern Ireland there are 517 state registered radiographers working in the Health Service, of which there are 499 diagnostic and 46 therapeutic radiographers (18).

The Society of Radiographers defines each specialist area as follows, and the issues raised below are developed further in this report:

Diagnostic Radiographers make up the largest percentage of the overall radiographer group. They produce high quality images of the body to allow diagnosis of injury and disease. Mainly working in radiology departments of hospitals, they perform a wide range of imaging investigations eg ultrasound, magnetic resonance imaging and plain film imaging. Close liaison with a wide range of health care professionals is vital. Over the past decade both the volume of referrals and the introduction of complex imaging technology has expanded exponentially. Together with new imaging modalities, the radiographer's role has expanded into areas, which were once considered a medical responsibility. These significant changes are now consolidated into routine practice in many hospitals and the pace of change is unlikely to abate.

Therapeutic Radiographers primary role is the treatment of the patient with Cancer using high-energy ionising radiation in carefully monitored doses. This involves liaising closely with other health professionals to maintain a holistic approach to patient care. Therapeutic radiographers are not only responsible for the delivery of radiotherapy but also for providing the counselling, information and supportive care necessary to the patient with cancer. This includes specialising in site-specific cancers, the monitoring and review of patients during and after treatment, the management of acute treatment related side effects, psychosocial care and ever more increasing quality assurance. The face of therapeutic radiotherapy is continually improving and changing which means that the therapeutic radiographers now need a wide range of skills to cope both with the pace of technical innovations and also with the greater interpersonal role as patients become more informed of the treatment options available.

The Importance of the Workforce

The underlying strategic theme of effective and co-ordinated workforce planning is documented in a number of NHS documents in England and Wales (21, 22). In the consultation paper "A Health Service of all Talents: developing the NHS workforce" (2000) (19) the Department of Health acknowledging problems with the current workforce development and planning. The paper made a range of recommendations including improving training education and regulation, increasing staff numbers and changing career pathways whilst achieving better integration between workforce, service and financial planning. A National Workforce Development Unit, Care Group Workforce Teams and a Workforce Numbers Advisory Board will be established to implement the recommendations.

The consultation paper "Acute Hospital Services Review" published in May 2001 (2) reinforces the fact that over 70% of HPSS expenditure is on

staffing, so it is obviously critical for employers to have in place a planning system to help managers set appropriate establishment levels. The report puts forward the idea that the main asset of the current system is a “skilled, dedicated, caring and motivated workforce”. The key issue in achieving change is the need to consider the impact of on the existing workforce, their need for training and support, and the development of new skills and work practices to meet the needs of the future. In developing the workforce to meet the new challenges, The Acute Hospital Services Review (2) notes that emphasis should be on:

- Team working across professional and organisational boundaries.
- Flexible working to make the best use of the range of skills and knowledge staff have.
- Patient focused workforce planning and development, stemming from the needs of patients not professionals.
- Maximising the contribution of all staff to patient care, doing away with barriers.
- Modernising education and training.
- Developing new, more flexible careers for staff from all professions.
- Expanding the workforce to meet future demands.

The Society of Radiographers in their Framework document (23) proposes changes to implement more flexible service delivery in Northern Ireland.

The above is set against a background of increased demand for the radiography profession and their skills.

Supply Issues

It is generally accepted that there is an increasing shortage of radiographers and radiologists within the global pool some of the inherent issues are outlined below.

Remuneration

The Staffing Levels Survey (2000) (24) conducted by the Society of Radiographers, indicated that UK respondents stated pay (48%) and lack of career progression (54%) were perceived as significant factors in the current difficulties recruiting staff. In particular many managers commented that the combination of lack of career progression opportunities, understaffed

departments, low pay and the perception that radiography is not a high profile profession, all play a major role in not being able to recruit or indeed retain staff. The ease with which graduates are offered employment elsewhere for more attractive salaries and conditions was also a concern.

Career Structure and Progression

In addressing the concerns of lack of career progression within Radiography (25), 'The Regional Partnership of Northern Ireland's', framework document (23) takes account of the issues surrounding the structure, career progression and responsibilities expected of today's radiographer. This document details a competency and role development framework to clarify responsibilities and career progression.

Subject to acceptance by the Society of Radiographers. Proposals in the document will include:

- A competency based framework to facilitate development through grades. Specifically a 'link grade' between Radiographer and Senior 11 following two years post qualification employment.
- The introduction of Clinical Specialist Grades which will enable radiographers to progress to pay levels equivalent to existing superintendent grades, rewarding their clinical expertise. This will also bring about opportunities for regarding of radiographers already undertaking a specialised clinical role.
- Extended Service Delivery. Subject to acceptance of the new pay and competency based framework, the Society of Radiographers will agree to introduce flexible working including cover for additional patient lists from 8am-6pm weekdays and Saturday mornings 9am-12 noon.
- Extension of the Working Time Directive by entering into a collective agreement, which provides for working beyond the 13 hours maximum to 16 hours.

Recruitment Issues

The interdependent relationship between radiologists and radiographers is well documented. The Royal Society of Radiologists uses the Addenbrooks Formula, which links radiology staffing levels and clinical workload (25) and indicates an activity level of 12,500 reports per annum for a DGH radiologist. It is estimated that the benchmark ratio of radiologists to radiographers for Northern Ireland is 1.0 to 6.07 (26).

In Northern Ireland there has been growing concern within the Radiological community regarding radiologist shortages, and, as a result, the 'Radiology Workload and Manpower survey published in NI' (27) estimates 60-64 vacancies over the next 10 years. The report proposes that for 2011 the target number of consultant posts be increased to 100 and that from 2002 the number of Specialist Registrar Training posts in radiology be increased by three. The extended diagnostic radiography service is also widely recognised by Dr Maurice Hayes in the Acute Services Review (2), where he recommends the funding of an additional 35-40 consultant posts to add to the current complement of 61 and indicates a greater demand for all radiography professionals.

In the USA, there are more vacancies for radiologists than there are trained doctors to fill them (28,290); this has been compounded by a 7% decline in the number of radiology residencies since 1995, accelerating retirements and a growing workload.

In a recent survey undertaken by the DHSSPS current funded vacancies in Northern Ireland was indicated as 5% for diagnostic radiography and 6.52% for therapeutic radiography (18). In England and Wales there is also clear evidence of significant problems of recruitment, with an absolute shortage of skilled staff meaning that some posts remain unfilled for a considerable amount of time, with some regions and specialist areas experiencing more acute problems than others. Within radiography, recruitment to specific specialist clinical areas such as paediatrics, mammography and ultrasound are particularly difficult, mainly due to increased demand for these services and too few specialist staff trained and available (30).

In the Republic of Ireland, the Irish Institute of Radiography stated in July 2001 (31) that a serious shortage of radiographers is curtailing the amount of imaging services available in hospitals. This has led to several hospitals introducing 'a programme of rolling closures'. Whereby CT, MRI and Ultrasound services only operate on alternate days. They stated that smaller hospitals were also viewed as unattractive due to the onerous on-call commitment involved.

Worldwide shortages of both therapeutic and diagnostic radiographers are well documented in New Zealand, Canada and USA where they are experiencing shortages similar to the UK and Ireland. In New Zealand this is compounded by a shortage of training places and limitations on clinical placements available due to staff shortages. In the USA there are shortages for all clinical specialist areas, but is particularly acute in ultrasound (32), nuclear medicine (eg operating PET) and mammography services.

Shortages of Therapeutic Radiographers

The NHS Cancer Plan (2000) (33) notes the high vacancy rate for therapeutic radiographers indicating 103 vacant posts (3mths or more) across the country, which equates to 7% of all therapeutic radiography posts (March 2000).

The Royal College of Radiologists and the College of Radiographers have also published documents recommending minimum staffing levels for therapy radiographers (34). They recommend a minimum of five whole time equivalent radiographers to staff a linear accelerator working an eight-hour day. The more complex linear accelerators should have a higher-grade mix, with additional staff required on a pro-rata basis for machines working an extended day (35). The document also recommended an additional 20% to provide cover for annual leave and CPD to ensure an appropriate level of service is maintained.

Educating and Training the Workforce for England (2001) Report (21) details the imbalance between supply and demand for therapeutic radiographers, stating that over the last few years the number of newly qualified UK therapeutic radiographers has been insufficient to compensate for those leaving the profession. In March 2000, the College of Radiographers undertook a survey of registered non-practising therapeutic radiographers and found that the numbers who would be prepared to return to work were very low (less than 10 nationally). A recent letter has also been circulated to radiographers (UK, including NI whose state registration has lapsed) encouraging a return to the workplace. The Department of Health's Recruitment and Retention division (in conjunction with CPSM and the SOR) have indicated there have been no responses from NI (36) although no specific data is available.

Education and Training

Research shows that a number of strategic documents review education, training and development for health professionals in England and Wales. Educating and Training the Workforce for England (2001) (21) concluded that achieving the planned expansion set out in the July 2000 NHS Plan (38) depends on increased investment in teaching staff and accommodation at higher education institutions; achieving value for money in the provision of training courses; a reduction in student drop out rates and a larger number of good quality practice placements.

The English and Welsh Reports (21, 22) also note the availability of suitable practice placements as a critical limiting factor on the number of training places that can be commissioned and that given current staffing levels, most hospital departments are close to or have already reached their capacity for supervising students. In England there have also been problems with recruitment and retention for undergraduate places. With an average 20% under recruitment

against available places and with student attrition rates at around 27% in recent years (around one third of cases due to academic failure). As a result a number of institutions have introduced continuous assessment to target learning support more effectively. The Department's Human Resource Performance Framework (38, 39) includes targets to reduce attrition rates with the 2000/01 – intake non-completion not to exceed 10% for allied health professionals nationally.

In Northern Ireland statistics from the University of Ulster indicate overall the number of places has increased for both Diagnostic (60%) and Therapeutic (38%) between 1996 and 2000. In addition, the attrition rate is lower in Northern Ireland than in England and Wales, with rates of 8% for Diagnostic and 2% for Therapeutic Radiography (40). There are still a high percentage of Northern Ireland graduates who do not enter the Northern Ireland HPSS workforce immediately upon graduation.

The predominately female radiography workforce, 93% in Northern Ireland (40, 41) has implications for both part-time working and the need for family flexible working policies. In England and Wales, this is documented in the third Report of the House of Commons Select Committee on Health (42). In considering NHS workforce issues the report details the government's commitment to introduce a range of family friendly policies including childcare facilities, flexible hours and job share opportunities. The fact that the NHS operates a comprehensive 24 hour service indicates there is a need for employers to allow staff to 'marry their work and out of work responsibilities'.

Demand Issues

To estimate future demand full understanding of the relevant indicators is required. Some of which are highlighted below:

Training

Advances in technology have impacted on the profession and will continue to do so (43). The speed at which technology changes are rapid and these advancements have resulted in the need for continual retraining with new equipment receiving frequent software updates. This has been the case worldwide, with continual updating of skills and knowledge with particular emphasis on time and subsequent resources required for Continual Professional Development (32).

In the UK, although there has been no statutory requirement, CPD has actually been a requirement of the Society and College of Radiographers since 1994, in which the code of professional conduct made it clear that all radiographers 'must take every opportunity to update their knowledge and skills' (44). The view is that this will secure mandatory change when the Health Professions

Council (HPC) replaces CPSM as the statutory body for radiographers in April 2002. It was previously suggested that thirty-five hours per annum would serve as an indication of a minimum level of CPD activity. This has now however been superseded with the provision of a reflective portfolio (the Society of Radiographer CPD manager) as a member benefit (45).

Legislation

One of the main legislative documents, which encompass Radiography, is the Clinical Governance Framework (46), which modernises and strengthens professional self-regulation and builds on the principles of performance review, evidence-based practice and learning the lessons of poor performance. “Clinical Governance in Action: radiology” (47) lays out how this strategy is implemented by local frameworks in developing straightforward and practical procedures, which benefit both radiologists and patients.

The new IR (ME) R NI regulations (48), which came into force in June 2000, relate to the medical use of ionising radiation stipulated by the 1997 Medical Exposures Directive (49) and the Ionising Radiation Regulations 1999 (50), have also had a significant impact on radiography. It requires all medical radiation exposures to be justified. Clinical referrals must include adequate medical information prior to justification and the investigation carried out. Legal responsibility for the implementation lies with the employers (51). The implementation of these regulations, the processes and associated documentation has resulted in the radiographer spending a greater amount of time per examination.

Role Extension

As the role changes and expands, the skill mix of those filling the positions must also. The Employers Skill Survey (2000) (30) notes that overall the work of radiographers is becoming more complex, with the technical and IT skill demands increasing and the underpinning of knowledge base also expanding. The range of tasks radiographers have to perform has also increased. Radiographers working outside normal working hours have to demonstrate expertise across a wide range of imaging modalities.

Getting the skill mix of the profession correct is key to the successful delivery of high quality services in the future. Anecdotal evidence from a three year project under way in England, “Radiography: New Ways of Working” (2000) (52) which has been set up to examine the skills mix of radiography in its current state and design and evaluate new functional mapping and the occupational standards process. It suggests that on appointment graduates perform routine tasks and are not using the critical thinking skills which they acquire during their degree and as a result the project has set up nine test centres to explore and evaluate the introduction of assistant practitioners,

working under supervision to carry out routine tasks. The possibility of creating Consultant and Advanced Practitioner roles is being examined, with the possibility that this will mean radiographers will perform more tasks traditionally undertaken by doctors.

This skills mix is also explored in “Meeting the Challenge” 2000 (53) where the creation of assistant practitioners in the breast screening services is detailed, the aim being to release radiographers to extend their role into some of the tasks undertaken by radiologists, in turn increasing the capacity of the NHS to deliver the national breast screening service.

This is further detailed in the NHS Cancer Plan, 2000, (33) which sets out how this investment plan will need to be accompanied by reform such as streamlining services and extending the roles of radiographers, nurses and other staff with the focus on the patient’s needs. With key service extensions in breast screening, new ways of staffing the programme has involved the Society of Radiographers with pilots underway to the current two-tier approach (i.e. radiographers taking mammograms and radiologists/clinicians reporting) to a four tier approach involving:

- Lead practitioners who leads the team (radiologist, clinician or radiographer)
- Advanced Practitioners who provide advanced training in reporting, and investigate procedures (radiologist, clinician or radiographer)
- Practitioners undertaking all practical aspects of mammography imaging and supervision/mentoring of assistants (state registered radiographers)
- Assistant practitioners carrying out mammograms under supervision by practitioners.

The aim of the assistant practitioner role is to free up time to enable radiography role development and more appropriate use of skills and expertise.

In Northern Ireland definitions of such roles, including ‘assistant radiographer’ and ‘clinical specialist’ are detailed in the proposed Northern Ireland Framework document (23). It is important to note that the document suggests that whilst the assistant radiographer helps the radiographer in routine tasks it would not include making medical radiation exposures.

Other examples of role extension associated skill mix are shown in the literature where radiographers/ultrasonographers have been shown to be as effective as radiologists in interpreting some types of imaging investigations (54). In some hospitals, radiographers now undertake some of the procedures traditionally performed by radiologists and they have been shown to produce

consistent diagnostic results (55). Evidence supports radiographers giving an immediate opinion on radiographs e.g. radiographers have been shown to be accurate in interpreting skeletal images within an A&E department (56). And in a trial in a regional cardio thoracic centre in England, radiographers were found to be sensitive and highly specific (90% and 99%, respectively) in identifying abnormal chest x-rays requiring urgent medical attention (57). There is also evidence that experienced radiographers are as accurate as radiologists at interpreting abdominal ultrasound images (58). Radiographers have performed high-quality barium enema examinations (59).

It is common for ultrasonographers to perform and report on obstetric scans, but less common for general ultrasound scans. However, in one trial in an English hospital, where radiographers undertook general ultrasound examinations, it was found that there was close correlation between the radiographers and radiologists reviewing the examinations and the service was considered to provide a satisfactory level of accuracy (66).

Research in Northern Ireland suggests that radiographers have already undertaken tasks previously undertaken by consultant radiologists in at least 11 trusts e.g. barium studies (61) to good effect.

In therapeutic radiography, some radiographers have developed and extended their roles in areas such as treatment localisation and dosimetry planning, review of patients during radiotherapy, drug prescribing and quality assurance whilst cancer nurses undertake the administration of cytotoxic therapy and, in some units, nurse-led follow-up clinics (62, 63).

Technology developments have increased the performance and diagnostic capability of modalities with an associated increase in demand and skills. There is evidence of increased work pressure on radiographers as waiting lists have increased significantly in the UK and Northern Ireland over the last number of years (64).

These combined factors have led to an increased focus on clinical specialism. This is particularly evident in the area of diagnostic radiography, where it is anticipated that the widening of specialist procedures available through direct access, such as ECHO cardiography, CT, DEXA and MRI scans will increase over the next 5-10 years (1). There is already a requirement for 24 hour, seven day availability of some imaging, however it is generally accepted that in order to help achieve the aims of the Programme for Government 2001-2004, an extended working day would be necessary for many more imaging modalities and this obviously has an impact on staffing in terms of numbers and hours worked.

Specifically there have been significant increases in workload and associated specialist training for the following modalities in Northern Ireland.

Medical Diagnostic Ultrasound is an essential imaging modality and requires specific specialist skills. As demand has increased, so have waiting lists. The RVH Report (2001) (64) notes that since 1995 there has been a 48% increase in ultrasound workload and increased wait for routine outpatient ultrasound scans from 4-6 wks, 1995, to 28 weeks in 2001.

Magnetic Resonance Imaging - it has been accepted that the regional demand for MRI services cannot be met by the current service provision. At the RVH, MRI waiting times have increased from 8 months to “an indefinite waiting period”. Plans to introduce a further five MRI Units in the province over the next two years at Altnagelvin, Antrim Belfast City, Criagavon and the Ulster Hospitals will alleviate this situation but will have significant resource implications.

Computerised Tomography - local research indicates a significant increase in demand for CT examinations. The RVH reports an increase of 53% between since 1995. The combination of increased workload and in some cases scanners put into operation without any additional resources has compounded the problem. Current staffing levels in some hospitals (in some cases one radiographer to each scanner) has also prohibited practical training, and arguably patient care (65). An increase in CT Units recent and planned has South Tyrone, Antrim and Belfast City; RBHSC Hospitals have resource implications for the workforce.

Increased Out of Hours Workload and the Working Time Directive

The requirement for a minimum 11-hour rest period in each 24 hours, as stipulated in the Working Time Directive (67) has implications for out of hours working for radiographers. Providing an out of hours radiography service is resource intensive, and a period of rest is required on the following working day. This time averages at 54 hours/months, which is 0.4wte (Senior II) (65). At the RVH following a formal review of workload and radiographic staffing on night duty, it was agreed that an additional 1.6-wte radiographers were required to provide night duty. The Regional Partnership Framework document suggests, subject to conditions, that this WTR 13 hour maximum be extended to 16 hours (10.1 of WTR) (23).

Further research outlined in the Radiology Value For Money Study 1997 (26) details the various systems in operation in Northern Ireland Trusts in relation to out-of-hours payments. Some trusts operate a fixed rate payment scheme for each out of hour's session and others remain under Whitley Council arrangements. In the Follow-up Health Service Audit 2001 (61) recommends [1997 study] a shift system operates when demand is high, and Whitley terms when demand is low which has been considered by only two trusts. It notes that one trust has aimed to develop an out of hours team, based on part-time

staff operating a fixed cost system between outside normal working hours however this system has not yet been implemented.

Societal/Technological Changes

In terms of demand, research indicates that the changing demographics of the population, specifically the growth of an ageing population and the related health services required, has implications for workforce planning throughout the NHS (33). The public demands high quality services, new treatments to be available promptly and have a choice of options of treatment and care and an involvement both in the choices they have and how services are planned for their community (61).

Advances in technology are also changing the way services are delivered, and are changing the way service is managed in the acute setting. More care services are to be delivered in the community setting ie community hospitals and outreach clinics with increased diagnostic and surgical activity provided at primary care level (62).

In Radiography the use of hospital picture archiving and communication systems (PACS) has been shown to provide greater image storage/archive ability, reduced radiation exposure per examination, less diagnostic error and shorter clinic consultations, effectively revolutionising the way radiology departments work. PACS has been implemented in hospitals worldwide. However whilst bringing many operational and clinical benefits, net running costs were similar to previous systems and there was no perceived resource saving to clerical staff or in the time spent per examination. It should be noted that all departments with PACS underestimated the complexity of the system and subsequent training required (67). It is estimated implementation of this new web-centric technology is inevitable in Northern Ireland and will take place over the next 3-6 years, depending on the availability of funding (68).

Research indicates that in countries such as the US and New Zealand, the use of DICOM systems (69) and the increasing use of telemedicine (70) enable cost effective rapid centralised reviews and decisions (71), and are revolutionising the way in which radiology departments operate (72).

Cancer Services

The NHS Cancer Plan (33) and the Calman-Hine Report (73), in England and Wales, were published with the aim to create a network of cancer care within England and Wales so that every patient wherever he or she lives, receive a uniformly high standard of care.

'A Survey of Radiotherapy Services in England' (35), states that the demand for radiotherapy in the past 10 years has grown by 3% per annum and that this is due to the following factors:

- Increasing incidence of Cancer due to an ageing population
- Increased awareness amongst clinicians of the role and benefits of radiotherapy leading to an increase in referral rates

The role of the diagnostic radiographer is also recognised as vital in relation to the early detection of cancer, staging during treatment and subsequent follow-up.

The Calman-Hine Report sets out a strategic framework to help commissioners and providers of cancer services make well-informed decisions and the NHS Cancer Plan details how the Government's Strategy will be implemented. The NHS Cancer Plan (33) pledges commitment to new funding will provide an extra 1000 cancer specialists, more radiographers and nurses by 2006. There is a commitment to increase the training places for radiographers indicated by a 12% increase in the number of places over the last two years, and a target of 39% increase in therapeutic places in 2000/01. The report states that however once retirement is taken into account projected staff numbers do not show the same increase. It states that in the interim period other action is necessary including extending the careers of current staff, recruiting from overseas, extending the roles of staff, introducing new assistant practitioner grades and national and local actions in retain existing staff by improving their career prospects and opportunities.

In the Government's strategic document 'Investment for Health' Northern Ireland (16), it states that as the second most frequent cause of death men have a 1 in 6 and women a 1 in 8 chances of dying from cancer before the age of 75 years. The most common killers are lung, breast, colorectal and prostate cancer with breast cancer accounting for one in three cases in women.

The Campbell Report (1996) (8) was a key document as it shows that treatment by specialist, multi-disciplinary teams leads to better outcomes for patients and to ensure that all people with the disease have rapid access to cancer services need to be re-organised, "with radical changes" to the current system. In particular it is felt that staff shortages are inhibiting the implementation of this strategy and therefore restricting the extent to which specialist services can be made available outside the Belfast area. The Acute Services Review (4) proposes that there is an immediate need to add an additional 9-10 oncologist posts to the current compliment of 14 posts in order for this to take place.

It is proposed that cancer services will therefore be provided at one regional cancer centre, at the Belfast City Hospital, which would also provide cancer

services for its local catchment population (500 000) and four additional cancer units, one for each Board area (250 000). It is recommended that radiotherapy and chemotherapy services be moved from their existing Belvoir Park location to Belfast City Hospital.

3. FINDINGS

This section details the findings of the analysis of the workforce profile information.

3.1 Workforce Demographic Profile

Available information was compiled of the current demographic profile of the radiography workforce of Northern Ireland to use as baseline information. The key sources utilised are highlighted below:

- HRMS – current HR system in use by the Trusts across Northern Ireland.
- PMIS – current HR system in use by the Department at a regional level.
- DHSSPS – Workforce Questionnaire, August 2001.
- Society of Radiographers – The Future of Radiography Services in Northern Ireland 2001.
- Report of the Clinical Imaging Strategy Sub-Group – Northern Ireland May 2001.
- CPSM – Council of Professions Supplementary to Medicine.
- University of Ulster – Students statistics.

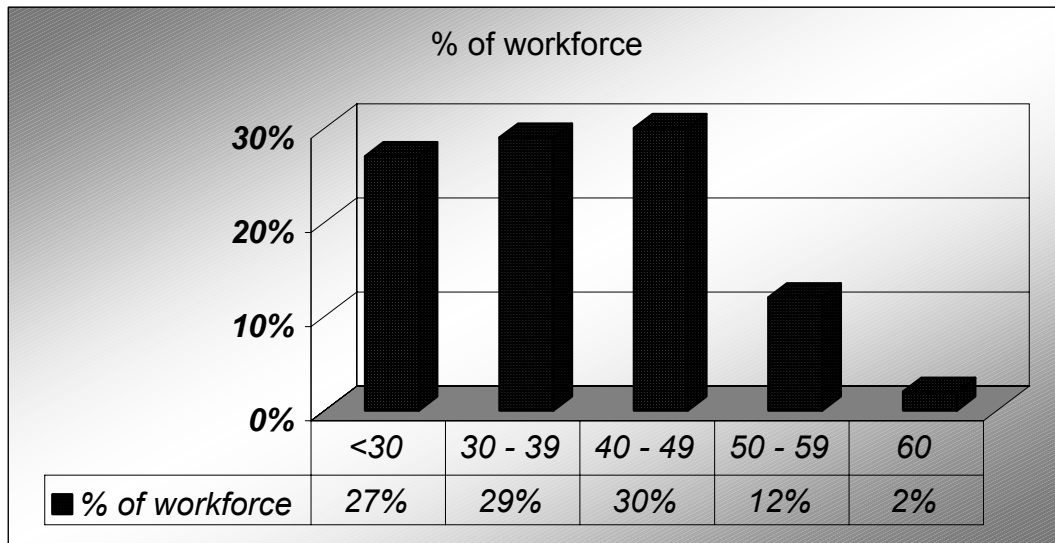
3.2 Current Profile of the Radiography Workforce

In Northern Ireland there are currently 517 state registered radiographers working in the Health Service, of which there are 471 diagnostic and 46 therapeutic radiographers. The source of this information is the DHSSPS Data Base. Figures obtained from the CSPM, indicate that there are 611 radiographers registered with a NI address.

Of these 7% are male and 93% are female. The overall age profile of the group is shown in Fig 3.2.1.

Overall there are limited numbers of radiographers working as bank staff throughout NI (currently 26 recorded on the DHSSPS Data Base) and these numbers have remained constant since 1999. It should be noted that bank radiographers, in many instances, have permanent contracts with Trusts and back work is therefore additional in their substantive posts.

Figure 3.3 Age Profile of Radiographers in Northern Ireland



Source: DHSSPSNI (September 01).

Table 3.4 The ratio of headcount on WTE within the workforce

Figure	Number
Headcount	517
WTE	453.18
Ratio	1.14

The ratio indicates that for every WTE radiographer post, there are 1.14 individuals employed within the workforce.

3.5 Breakdown of radiographers by grade

Analysis at a province wide level showed that the breakdown by grade (3.5.1) was as follows:

Table 3.5.1: Breakdown by grade across NI radiographic staffing

GRADE	WTE	HEADCOUNT
Area Radiographer II	1	1
Supt Radiographer I	2	3
Supt Radiographer II	9	9
Supt Radiographer III	4.2	44
Supt Radiographer IV *	31.50	34
Senior I *	137.00	158
Senior II	92.00	113
Radiographer	138.50	155
TOTAL	453.00	517

Source: DHSSPSNI (September 01)

* It should be noted that remuneration is equal at these two grades

In addition to the qualified staff there are 35 radiographic helpers/assistants employed within the DHSSPS.

3.6 Vacancies

Based on information obtained from a DHSSPS survey (March 2001) the number of vacancies across the workforce at this point in time was identified as 24, 22 Diagnostic vacancies were included and 2 Therapeutic. Overall the total number of vacancies indicated by Trusts, related to 4.6 % of the total workforce.

3.7 Undergraduate places over the next 4 years

Based on information provided by the University of Ulster the table 3.7.1 provides details of anticipated number of undergraduates entering the degree course for qualification as a radiographer, over the next 4 years.

Table 3.7.1: Estimates of students entering UU over the next 4 years

Graduation year	Therapeutic	Diagnostic	Total
2002	8	29	37
2003	12	29	41
2004	11	35	46
2005	15	35	50

Source: University of Ulster

3.8 Attrition Rates and Destination of Graduates

The University of Ulster have provided details of the attrition rate for each intake of students and the first employment destination of graduates.

The details indicate an attrition rate of 8% per intake of radiography students at UU.

The following table details the occupation by destination of graduates 6 months post graduation from 1998–2000.

Table 3.8.1: Destination of Graduates

Destination	1998	1999	2000
NI	22 (54%)	23 (53%)	16 (64%)
GB	7	8	2
ROI	5	4	5
Additional Training	4	3	0
Other	3	5	2
Total Graduating	41	43	25
% students not entering NI workforce	46%	47%	36%

The figures provided above will inform the future supply projections for the workforce outlined in section 5.

4. KEY FINDINGS IN INTERVIEWS AND FOCUS GROUPS

This section collates the various views expressed throughout the 27 key informant interviews and 8 focus groups. Different individuals raised many of the same issues and the implications and conclusions of various findings are drawn out with recommendations indicated later in the report.

4.1 Supply Issues

4.1.1 *Recruitment and Retention*

The majority of respondents in the focus groups and key informant interviews stated that they had been experiencing increasing difficulties with regard to the attraction, recruitment and retention of staff. Others although they had no current vacancies felt that they were providing a service that “**were just about holding together**”.

A number of respondents also indicated that these diagnostic and therapeutic vacancies are not just a local or national problem, but also indeed a global issue. Respondents indicated that the real ‘**danger period**’ for radiography workforce in Northern Ireland is “**over the next few years with the planned expansion of cancer services**”, given the current under funding of the establishment and the shortage of qualified radiographers.

Recruitment difficulties manifested mainly at the radiographer level. Smaller trusts located in more rural areas indicated that they have had to “**go out on three successive occasions to successfully fill a post**”. A factor, which further compounds recruitment in smaller trusts, is the “**uncertainty over the future**”, as highlighted by consultative documents such as the Acute Services Review.

All key informants from both therapeutic and diagnostic radiography indicated that at radiographer grade relies entirely on attracting University of Ulster graduates, as there is “**no real influx of staff from outside of Northern Ireland**”.

Over 80% of key informants and students within the focus groups, indicated that interviews for new graduates “**were getting earlier and earlier each year**” an example was provided of a student who has already been offered a contract in Australia to start September 2003. The majority of key informant interviews, and a number of individuals from the focus groups, indicated that their Trust “**couldn’t fill short-term contracts or cover long-term sick leave.**” There was a general feeling that there were few numbers on banks that

could be drawn on by managers and consequently many trusts experienced difficulty filling temporary posts and this fact is **“compounding the shortages against a setting of continually increasing demand”**.

All key informants and focus group respondents indicated that turnover in Northern Ireland tended to be low for both therapeutic and diagnostic radiographers, and any movement was **“primarily for career progression, or in some cases to return closer to home”**. Although it was noted that this movement had been starting to increase over the past 12 months and it tended to be the larger establishments who were benefiting due to their ability to offer further career progression to radiographer grade or specialist grade radiographers.

All respondents from key informant interviews and focus groups indicated there are increasing options for graduates at the moment, with trusts in England and further a field offering incentives to attract graduates for example **“guaranteed training and CPD associated with a specialist area over a two year period, payment of loans, free flights and golden hellos”**. It was also indicated by a number of key informants that students are now willing to undertake clinical placements overseas which again can increase the likelihood of working outside Northern Ireland. Many students indicated that **“unless the current situation changed and they were able to progress more quickly and into specialist areas”**, they would consider moving out of radiography to pursue other careers e.g. research, lecturing and medical commercial representatives. They indicated that this was due to a **“perceived lack of opportunities and promotion, low salaries and lack of responsibility.”**

4.1.2 Competition between Trusts

Competition between Trusts was highlighted as an increasing issue within the province and the situation had come to a point where Trusts were **“robbing Peter to pay Paul”**. Focus groups indicated the main reasons for this movement between hospitals was that some trusts were able to pay more than others, offering more prospects and increased opportunity to work with the latest technology and specialised services. A number of trusts have also had recent organisational review and some element of re-grading which has increased their ability to recruit and retain staff. This competition was particularly apparent between smaller and larger trusts, with smaller trusts experiencing difficulty competing. Undergraduates have clinical placements throughout a number of hospitals during training and select posts based on experiences of the **“equipment and associated specialisation, facilities, prospects, remuneration and management style”**.

4.1.3 *Career Breaks/Return to practice*

Most respondents in key informant interviews indicated that maternity leave accounted for the vast majority of career break due to a predominately female workforce. A large percentage noted a tendency for extended sick leave after maternity leave, which further pressurised service delivery. A significant number of respondents stated that a large percentage of radiographers wanted to return to work after taking their maternity leave on reduced/flexible hours basis and therefore one was **“continually trying to make up numbers to cover basic core service hours.”**

Respondents from both focus groups and key informant interviews indicated that whilst return to practice does occur, it requires a significant amount of re-training because of technological advances. As a result a lot of time and effort is required to tailor training individual needs. Nevertheless managers commented after the initial training period these members of staff rapidly became **“an integral part of the team.”**

4.1.4 *Private Sector*

It was stated by all respondents that the private sector did not have a major impact on the workforce market within Northern Ireland.

4.1.5 *Sub-Specialisation*

Focus groups indicated that there was a strong desire to continually develop their skills particularly in specialist areas and this would increase in the future following the lead of radiologists. A number of individuals expressed concern that this practice is **“starting to create shortages within the core workforce”**.

A significant number of both key informant and focus group respondents mentioned **“job rotation”** as a means of maintaining skills and making the work more varied. However, groups acknowledged rotation required careful management to ensure staff maintained their competence levels on specialised equipment.

4.1.6 *Career Progression*

Many respondents felt that this was **“too slow to happen”** and key to the motivation, retention, development of staff and a **“key factor in individuals considering leaving the profession”**. They felt that there were limited opportunities for progression and therefore limited opportunities for appropriate reward. One focus group respondent stated that she had **“been at a basic grade for 15 years”** and yet was operating at a higher level without recognition or reward.

Another key concern was that whilst many had entered the profession to progress along a clinical route, the grading structure in place did not encourage this. They felt that they were either stuck at the lower grades or had to move to a management-based role, reinforcing further the perception that clinical progression is not valued. A number of radiographers felt that more resources should be provided to fund the provision of an extended clinical career structure.

Focus groups commented on discretionary points and the fact they are seen by many as “**divisive**” and “**operated in an inconsistent, arbitrary way**”. It was also commented that they were perceived to be used in some instances to “**avoid upgrading**”.

The proposed framework document compiled by the Society of Radiographers was discussed which could address issues mentioned and the groups were encouraged by this and eagerly awaited approval by the Trusts.

In general the respondents indicated a very “**inconsistent approach to CPD**”. Trusts appeared to have an inequity of funding which was reflected in the support given. Focus group attendees gave examples of not being allowed to attend self-funded work related courses even if it meant minimal time off. The respondents felt there was no parity in resources allocated for CPD in radiography when compared to other professions within the healthcare field. They also recognised an increasing focus on CPD and the requirement for protected time per radiographer should be built in to the workforce planning process.

Discussions took place around the fact that because adequate resources did not support CPD it became a de-motivating factor and this was not acceptable in a degree-based profession.

4.1.7 Under representation

The majority of individuals in key informant interviews indicated that they felt radiography had been an under represented profession, and to a degree this continues with a lack of inclusion in the decision and communication process at trust level. One individual indicated that radiography suffered from “**under representation at the highest levels**” and as with other Professions Allied to Medicine, tended to “**fail in influencing decisions at Directorate level**”.

4.1.8 Leadership

There was a general feeling amongst focus groups that there was a “**lack of leadership within the radiography profession**” and that “**communication between managers and employees could be improved**”. This was rated as

one of the top five de-motivators with regard to their role. There were also comments from some students that whilst on clinical placement they felt that there was no time to spend with them and that occasionally they ended up feeling like they were a “nuisance”.

Management approach to “**role extension, CPD, promotion opportunities, team working, flexible working and family friendly policies all varied**”. It should be noted that there were some very positive examples of Trusts accommodating staff requests and adopting successful flexible working.

4.1.9 Out Of Hours Cover

Focus group respondents complained about the quantity of work that they were expected to deal with on their own during out of hours cover. There were particular concerns about “working alone out of hours without the support of other care workers” i.e. nurses, porters, assistants and clerical.

Respondents also expressed concern at the current inequalities and variations across the province with regard to overtime payments and systems and indicated this was a significant factor in retention and recruitment of staff.

Over 50% of key informants indicated that there is concern around staff working periods over the maximum 13hrs as stipulated in The Working Time Directive and indicated full implementation of the legislation would require significant staff resources. Staff receive additional overtime payments for participating in the out of hours systems and informants recognised these may reduce with the changes required to comply with The Working Time Directive and this resource will be factored in to the equation.

4.2 Demand Issues

The majority of respondents expressed general concern about meeting the expanding service requirements with little or no increase in resources.

4.2.1 Service Developments

Sub specialisation would “**increase demand for specialist radiographers**” within the health sector and that this specialising would continue to expand in line with the medical profession and it was felt that this trend would inevitably mean a need for more staff. Concern was expressed about the transfer into sub-specialisation would mean that the core radiography workforce is being drained and this “**must be managed alongside the development of specialisation.**”

Technological advances in clinical diagnosis techniques have also increased the demand for radiography services and the availability of new technology is now giving medical personnel more options for treatment and diagnosis.

Role development in radiography is likely to continue along the specialist route. The majority of individuals indicated that they felt that this role extension was a positive move for the profession but that it needed to be more effectively managed with adequate consideration given to resources. In the main they highlighted the “**developments in technology and modalities**” and the “**shortage of consultants radiologists and oncologists**” as the driving force to extend radiography roles.

4.2.2 Key areas were identified as requiring additional resources within the Radiology service.

Diagnostic Radiography

Key areas were identified as requiring additional resources within the Radiology service.

- General Image Reporting
- A&E / trauma service
- Medical Diagnostic Ultrasound
- Barium Enema Examinations
- Interventional/Vascular Radiography
- Gastro- intestinal, intravenous & general fluoroscopic studies
- Neuro Radiology
- Angiocardiology
- Computerised Tomography Scanning. One individual indicated that demand had increased by 60% in the last 5 years and this is set to continue.
- MRI (Magnetic Resonance Imaging) - Due to the widening applications of MRI most individuals indicated the need and demand has increased and will continue to do so.
- PET (Position Emission Technology) - It was felt that this area of Nuclear medicine with in particular the treatment of patients with cancer and heart disease will be a modality which will be in use in NI in the future.

- Micturating cystogram examinations
- Insertion of IV central lines
- diagnostic prescribing
- PACS (Picture Archiving and Communication System) - although not yet in operation across NI most individuals mentioned PACS as a future digital technology development which will significantly impact on secondary and primary care imaging applications and will revolutionise working processes for radiographers.
- Breast Screening/Imaging Service-Extension of the NHS Screening Programme, which currently includes females aged 50-64 years, will be extended to include up to 70 years. The current service will also be upgraded to a higher standard by including a 2-image examination. It is estimated this will lead to a 40% improvement in detection rates.
- Increased Service Cover – It was generally recognised by respondents that healthcare services are moving towards providing an extended service in larger hospitals, particularly those with A&E departments. This must be factored into workforce planning.

Therapeutic Radiography

- The role of site specialist.
- Changes in clinical practice - in both the sense of the overall growth in the detection of and therefore the treatment of cancer in Northern Ireland.
- Increased complexity of treatment i.e. conformal therapy, IMRT, stereotactic radiotherapy.
- Greater evidence supporting hyperfractionated treatment e.g. CHART for some sites.
- Increased multidisciplinary liaising thus ensuring optimal patient care.
- Increased Quality Assurance.
- The growth of research and clinical trials.
- Counselling of patients prior to and following treatment.

- Health education and promotion.
- First level prescribing.
- Treatment review clinics with radiographers monitoring patients on a weekly basis.

As indicated earlier a number of these initiatives are currently underway and early evidence suggests benefits to the patient and the healthcare system in effective use of available resource. As always with radiography the development of services is very dependant upon financial resource available due to the cost of new equipment.

4.2.3 IR (ME) R Regulations

The majority of respondents highlighted the introduction of IR (ME) R regulations as a source of increase in pressure of work. A considerable amount of investment of time has been required in the interpretation of the regulations both in terms of protocol formulation, procedure setting, documentation, endorsement, training and awareness, and on an operational basis time added per examination. This has also meant an increase in the amount of time spent carrying out monitoring and auditing tasks and the respondents felt that this should be accounted for in terms of workforce planning.

4.2.4 Increasing Focus on CPD

As highlighted earlier in this report, CPD and a commitment to facilitating staff training is viewed as a key factor in recruiting and retaining staff. It was also highlighted by respondents in both focus groups and key informants interviews, that to facilitate role extension there must be **“adequate theoretical training, development of clinical skills and competency based assessment”**. A number of respondents indicated that they felt that the Society of Radiographers would be auditing compliance and recommending that hospitals establish a CPD leader with time set aside to manage these areas within their Trust.

4.2.5 Student Training/Mentorship Responsibilities

This was an area of concern for all respondents within the interviews and focus groups. They felt that given the current shortage, not enough time or focus was allocated to this area and they felt that this should be reflected in the workforce planning. This was also reflected in comments from students who indicated that whilst on some clinical placements, they were made to feel like **“asking questions was a nuisance”** and **“they just don’t have the time”**.

The respondents also wanted to express their concern that if the numbers going through the university system did increase then this would place even greater strain on an already stretched workforce to provide additional clinical placements with associated supervision and training.

4.2.6 Increasing paper work and bureaucracy

Focus groups commented on the increasing requirement for documentation. It was indicated that a considerable amount of time was spent completing clerical tasks, which could be reallocated if clerical staff were available.

4.2.7 Increasing Patient Expectations

It was clear from respondents that patient' expectations have undoubtedly increased through the Patients Charter and the increased availability and access to information.

Staffs feel that they are managing additional workload with no additional resources, and spend **“increasing amounts of time dealing with enquiries or complaints.”** The interface with the patient can be stressful, particularly in the provision of cancer care with therapeutic radiographers and in A&E with diagnostic radiographers.

4.2.8 Societal Factors

The majority of respondents highlighted the following societal factors as leading to an increase in demand:

- Ageing Population - advances in medicine and technology have resulted in people living longer and this has resulted in an increase in demand for both diagnostic and therapeutic services.
- More complex treatment - the advances in medicine and associated technology have resulted in a greater range of diagnostic tools, interventional treatments, monitoring of patients and screening.

4.2.9 Capital Development

The capital development plan for NI, requires additional staffing resources and the key areas identified were:

Diagnostic Radiography

- MRI Scanners – The introduction of 5 new MRI units at Antrim, Altnagelvin, BCH, Craigavon and the Ulster Hospitals.

- CT Scanners – An additional 4 CT scanners at Antrim, BCH, South Tyrone and RBHSC Hospitals.
- Picture Archive and Communications Systems (PACS) – The introduction of PACS.
- The introduction of a Nuclear medicine service at the RBHSC and the Ulster Hospital [cancer services].
- The initiation of a Bone Densitometry Service at South Tyrone Hospital.
- Cancer Centre – The proposed Cancer Centre in Northern Ireland to be based at BCH will require diagnostic radiography staff with the additional installation of 2 CT Scanners, an Ultrasound machine and an interventional service.

Therapeutic Radiography

- Cancer Centre – It is planned that a range of therapeutic services will transfer from Belvoir Park Hospital to the new Cancer Centre at BCH site with additional services being phased in over a 4-year period.

4.2.10 *Skill Mix*

Overall most respondents in key informant interviews felt that there was a place for radiography assistants/helpers in the current skill mix, particularly in the general assistance of getting patients ready for the procedure or intervention. This would require a formalised training programme with clear working protocols and a structured career path.

Overall there was a less enthusiastic response for the role of assistants taking any responsibility for radiation equipment without being registered through a formal training programme.

There was some very positive feedback about the use of extended roles for these individuals from key informant interviews, as long as the training and registration was appropriate and time was set-aside for current radiographers to assist with their clinical training.

4.2.11 *Increased Focus on Primary Care/Health Promotion*

There was an acknowledgement of a possible extension of the radiographers role within the primary care setting and that this would be **“an extension of diagnostic services to be made available to GP’s on an extended hours basis”** with provision of radiology services in community hospital settings.

PACS was also highlighted as a key piece of technology which would enable an extension of the radiographers role in the primary care setting by putting in place fundamental architecture required to **“allow the efficient communication of images and interpretations between professionals”**.

Therapeutic radiographers felt that within the community clinic model they would be able to add value in the role of counselling and public health education and promotion.

4.2.12 Working Time Directive

Full implementation of the WTD across the NI radiography workforce will have considerable staffing implications given that the majority of sites operate a 24-hour out of hour's service.

The majority of the respondents from the interview and focus groups indicated a concern that recruitment into the Radiography Workforce would significantly worsen over the next few years.

5. WORKFORCE SUPPLY AND DEMAND PROJECTIONS

The Project Board agreed a set of assumptions around key supply and demand factors that are and will affect the radiography workforce in the next 5-year time span. These assumptions were then used to formulate a “ model” from which certain predictions around projected supply and demand could be calculated. The key assumptions utilised have been outlined.

5.1 Supply assumptions for those entering the workforce

An attrition rate of 8% for students on the University of Ulster course for radiographers has been included.

The supply of students entering the workforce in N.Ireland HPSS has been estimated as an average 57% of those graduating within diagnostic services. This is based on destination figures supplied by the University of Ulster over the three-year period 1998-2000. It is assumed that all students graduating from the therapeutic radiography course enter this specialist workforce.

Anecdotal evidence would suggest that there are potentially a small number of qualified radiographers within NI, who are not currently working and who may be attracted back into the workforce via a ‘Return to Practice’ initiative. A projection of a maximum of 3 per annum has been included as entering the radiography workforce via this route. However, following action to assess interest in a return to work initiative, this figure will require review.

The view from Radiographer Managers in the Project Group and evidence gathered from the key respondents interviews indicated that there would be the equivalent of three qualified radiographers p.a. entering the overall Northern Ireland HPSS sector from outside of Northern Ireland. This has been projected to remain static over the 5 year workforce projections included in the report.

5.2 *Supply assumptions for those leaving the workforce*

A worst-case scenario with regard to retirees has been assumed by calculating the numbers retiring based on earliest eligible retirement age (ie 60 years). Therefore as all radiographers over 55 years at present have been assumed as leaving the workforce over the next 5 years. Evidence from the DHSSPS Project Support and Analysis Branch would support this assumption.

Included in the retirement figures will be a small number of staff retiring due to incapacity. This has been recorded as an average of 4 per annum over the period 1999–2002, with a mean age of 53 years. Some of these individuals are under 55 years. Therefore a small number of additional retirees (1 per annum) have been included as leavers, over the course of the 5 year plan.

Based on anecdotal evidence from the key informant interviews and feedback from the project group, it has been suggested that, at present, 1.75% of the total workforce capacity is lost due to an increase in the uptake of part-time working and work-life balance policies. An assumption has been made that this figure will increase on a cumulative basis of 0.1% per annum until a static figure of 2.15% is achieved.

Based on anecdotal evidence from the key informant interviews and feedback from the project group, it has been estimated that the number of radiographers leaving the HPSS sector will be 3-4 each year [for reasons other than retirement/medical]

5.3 *Demand Assumptions Utilised*

The demand projections for additional radiographers required within the HPSS over the next 5 years have been based on the following:

- 1.** *Agreed and resourced capital and service plans with identified workforce requirements within the 5-year plan.*

This refers to capital and service developments that have been agreed within the current HPSS policy framework with resources identified required or are likely to be approved over the course of the 5-year workforce plan. This will be referred to as *scenario one*.

2. ***Capital and service requirements that are likely to be resourced within the 5-year plan.***

This refers to service developments that have been identified via the key informant interviews and project group that are likely to be supported over the next five years, although resources have yet to be identified. This will be referred to *as scenario two*.

3. ***Current and future demand with no identified funding.***

This refers to additional demands within the current and future services, identified via the key informant interviews and project group that do not have a funding allocation. This includes educational requirements at both under and post graduate level including continual professional development, time allocated to students on clinical placements, progressing towards an extended hours clinical service, sub-specialisation in line with medical trends, role development and meeting clinical governance. This will be referred to *as scenario three*.

5.3.1 ***SCENARIO ONE Agreed and resourced capital and service plan with identified workforce requirements***

These include the following identified capital developments;

- MRI Units at Antrim, Altnagelvin, Belfast City, Craigavon and the Ulster Hospitals will in total require 15 WTE additional diagnostic radiographers, as per business cases. This will singularly have significant impact on workforce requirements, as all projects are due for completion in 2003.
- 4 additional CT Scanners at Antrim, Belfast City, RBHSC and South Tyrone Hospitals will in total require 9.5 WTE additional diagnostic radiographers during 2002.
- The Bone Densitometry Unit at South Tyrone Hospital will require 1 WTE diagnostic radiographer.
- To meet the requirements of the new Cancer Centre an additional 42 WTE therapeutic radiographers * phased over a 4 year term to staff 6-8 linear accelerators and 9 WTE diagnostic radiographers will be required for the additional 2 CT Scanners, Ultrasound equipment and an Interventional Radiography Service.

*An independent review of staffing levels for therapy radiographers in Northern Ireland is presently reaching completion.

- In March 2001 there were 24 unfilled posts in NI, 22 diagnostic and 2 therapeutic, totalling to 4.6% of the workforce.

Taking into account planned capital development in line with service delivery and vacancies identified in scenario one an additional 56.5 WTE diagnostic and 44 WTE therapeutic radiographers will be required over a 5-year period.

5.3.2 SCENARIO TWO. Capital and service requirements that is likely to be resourced within the 5-year plan.

- The Working Time Directive will require an additional 21 WTE radiographers to meet compliance. This is an estimate based on initial information from the Royal Hospitals Trust.
- Development of PACS would require WTE diagnostic radiographers over the next 5 years.
- Nuclear Medicine Service requirements at the RBHSC and Ulster Hospitals will require 5 WTE diagnostic radiographers.
- To comply by 2004 with the extension to the National Breast Screening Programme to include the screening of females aged 65-70 years there will be an additional requirement of 12.5 WTE diagnostic radiographers

Taking into account all the identified demands in scenario two at total of 43.5 WTE diagnostic radiographers required.

5.3.3 SCENARIO THREE Current and future demand with no identified funding.

- It is suggested the time spent on Continuing Professional Development should equate to 35 hours per radiographer per annum. This translates into an additional 9.5 WTE diagnostic and 1.0 WTE therapeutic radiographers.
- There is a requirement for protected time allocated to students by radiographers during their clinical training in respect of adequate mentoring and support. It is suggested this should equate to 3 hours per week per student over the course of their clinical placements. This allocation will require an additional 3 WTE diagnostic and 1.5 WTE therapeutic radiographers.
- To meet the delivery expectations associated with role extension sub-specialisation, together with clinical governance will require an additional 40 WTE diagnostic and 5 WTE therapeutic radiographers.

- An extended hours service from 8am-8pm 6 days per week to make more effective use of expensive equipment and meet the requirements of the primary and secondary care sectors will require an additional 21 WTE diagnostic radiographers.

The workforce requirement of scenario three is 73.5 WTE diagnostic and 7.5 WTE therapeutic radiographers. It is important to use the figures presented in scenario three as a baseline and to recognise the need for further work to be carried out to refine and align them with the individual Trusts in order to provide a more accurate projection.

6. CONCLUSIONS

6.1 *Projected Supply of Radiography Workforce*

In using the previous assumptions based on our consultation process the projected supply of radiographers has been calculated between the years of 2002-2006. Highlighted are relevant supply issues separately on tables (7.1) for diagnostic radiography and (7.2) therapeutic radiography, which utilises elements of different supply figures based on feedback from respondents and literature review.

Table 6.1.1 Projected Supply of Overall Radiography workforce in NI (2001 - 2006)

Supply	2002	2003	2004	2005	2006
University of Ulster Graduate Figures	22	26	28	32	30
Those entering the workforce - Return to practice	3	3	3	3	3
Entering N.I. from elsewhere	3	3	3	3	3
Entering Total	28	32	34	38	36
Those leaving the Workforce – Retirees [inc. incapacity]	8	8	8	10	10
Family friendly lost capacity	9	9	10	10	11
Leaving radiography	3	3	4	4	4
Leaving Total	20	20	22	24	25
Those currently in the workforce	517	525	537	549	563
Projected number in the workforce	525	537	549	563	574
Net Increase (Decrease)	1.55%	2.29%	2.23%	2.55%	1.95%

Table 6.1.2 Projected Supply of Diagnostic Radiographers in NI (2001-2006)

Supply	2002	2003	2004	2005	2006
UUJ Graduates	15	15	18	18	18
Those entering the workforce - Return to practice	3	3	3	3	3
Entering N.I. from elsewhere	3	3	3	3	3
Entering Total	21	21	24	24	24
Those leaving the workforce- Retirees [inc. incapacity]	8	8	8	9	9
Family friendly lost capacity	8	8	8	8	9
Leaving Radiography	2	2	3	3	3
Leaving Total	18	18	19	20	21
Those currently in the workforce	471	474	477	482	486
Projected number in the workforce	474	477	482	486	489
Net Increase (Decrease)	0.64%	0.63%	1.05%	0.83%	0.62%

Table 6.1.3 Projected Supply of Therapeutic Radiographers in NI

(2001-2006)

Supply	2002	2003	2004	2005	2006
UUJ Graduates	7	11	10	14	12
Those entering the workforce - Return to practice	0	0	0	0	0
Entering N.I. from elsewhere	0	0	0	0	0
Entering Total	7	11	10	14	12
Those leaving the workforce - Retirees [inc. incapacity]	0	0	0	1	1
Family friendly lost capacity	1	1	2	2	2
Leaving Radiography	1	1	1	1	1
Leaving Total	2	2	3	4	4
Those currently in the workforce	46	51	60	67	77
Projected number in the workforce	51	60	67	77	85
Net Increase (Decrease)	10.9%	17.7%	11.7%	15	10.4

Areas that could have an effect on the supply equation have been noted.

- Euro/Pound Equilibrium - could have the effect of decreasing the supply of the radiography workforce in the Northern Ireland marketplace. Consideration should be given to the effect of the recently announced strategy for the health service in the Republic of Ireland.
- More effective utilisation of the available workforce - as the evidence in this report and historical data shows there is some potential for a more effective utilisation of the available workforce either by a re-allocation of certain duties to non-qualified staff, an increase in the WTE equivalent ratio, an increase in the amount of qualified radiographers returning to the workforce or a more effective and efficient way of setting up care pathways and the delivery of services that is not as labour intensive.

- The University of Ulster increase its intake and subsequent output of graduates. At the moment all information suggests that the recently increased intake will remain static for the foreseeable future.
- A consolidation of the service provision, which frees up resources from current posts.

In conclusion, based on the above analysis and assumptions a prediction that the supply of the overall radiography workforce over the course of the next 5 years will increase by between 1.5%-2.6%.

6.2 *Demand for the Radiography Workforce*

Based on information gathered during the project, specific educational, capital and service developments, with associated staffing implications, have been identified over the 5 year plan. In order to estimate the demand numbers of professionals the summary figures have been profiled on table 6.2.1.

Demand figures are based on identified radiography requirements over the 5-year workforce plan (2002-2006) as provided by the key informants, the Project Board, relevant policy and capital and service development business cases. Summary figures have been profiled in table 6.2.1.

Table 6.2.1: Projected Demand Figures – Overall Radiography Workforce

WORKFORCE REQUIREMENTS	2002	2003	2004	2005	2006	Total WTE
SCENARIO ONE – Agreed capital & service requirements						
<i>DIAGNOSTIC</i>						
MRI	0	15	0	0	0	15
CT	9.5	0	0	0	0	9.5
B/DENSITOMETRY	1	0	0	0	0	1
CANCER CENTRE	0	0	0	0	0	9
VACANCIES	22	0	0	0	0	22
<i>SUBTOTAL</i>	32.5	15	10.5	9	0	56.5
<i>THERAPEUTIC</i>						
CANCER CENTRE	10.5	10.5	10.5	10.5	0	42
VACANCIES	2	0	0	0	0	2
<i>SUBTOTAL</i>	12.5	10.5	10.5	10.5	0	44
SCENARIO TWO – Capital and service requirements that are likely to be resourced						
<i>DIAGNOSTIC</i>						
<i>WORKING TIME DIRECTIVE</i>	10	11	0	0	0	21
<i>PACS</i>	1	1	1	1	10	5
<i>NUCLEAR MEDICINE</i>	2	0	0	0	3	5
<i>BREAST SCREENING</i>	3	4.5	5	0	0	12.5
<i>SUBTOTAL</i>	16	16.5	6	1	4	43.5
SCENARIO THREE-Current demand, with no identified funding						
<i>DIAGNOSTIC</i>						
- <i>Dev of service specialisms</i>	10	10	10	10	0	40
- <i>Extended Hours Services</i>	0	6	5	5	5	21
- <i>Student Training</i>	3	0	0	0	0	3
- <i>CPD</i>	9.5	0	0	0	0	9.5
<i>SUBTOTAL</i>	26	17	16	16	6	81
SCENARIO THREE						
<i>THERAPUETIC</i>						
Role development	1	1	1	1	1	5.0
Student Training	1.5	0	0	0	0	1.5
CPD	1.0	0	0	0	0	1.0
<i>SUBTOTAL</i>	3.5	1	1	1	1	7.5

The total demand for additional radiographers at the three scenario levels over the 5-year period is as follows:

Scenario One: Agreed capital and service plans with identified workforce requirements within the 5-year plan

Diagnostic Radiographers	56.5 WTE
Therapeutic Radiographers	44.0 WTE

Scenario Two: Capital and service requirements that are likely to be resourced within the 5-year plan

Diagnostic Radiographers	43.5 WTE
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Scenario Three: Current and future demand with no identified funding.

Diagnostic Radiographers	73.5 WTE
Therapeutic Radiographers	7.5 WTE

These demand figures are based on identified additional demand as provided by the key informant interviews and the Project Board.

7. SUPPLY V DEMAND FOR THE RADIOGRAPHY WORKFORCE

In order to estimate the numbers of additional professionals required to meet over the course of the next 5 years the summary figures of supply and demand have been profiled at the scenarios 1, 1+2 and 1+2+3.

Table 7.1: Profile of projected supply against projected demand over a 5-year period.

DIAGNOSTIC

Key Factors	2002	2003	2004	2005	2006	TOTAL
Total Supply Entering NI Workforce	21	21	24	24	24	114
Leavers	18	18	19	20	21	96
Net Supply	3	3	5	4	3	18
Scenario one	32.5	15	0	9	0	56.5
Over [Under]	[29.5]	[12]	5	[5]	3	[38.5]
Scenario 1+2	48.5	31.5	6	10	4	100
Over [Under]	[45.5]	[28.5]	[1]	[6]	[1]	[82]
Scenario 1+2+3	71	47.5	21	25	9	173.5
Over [Under]	[68]	[44.5]	[16]	[21]	[6]	[155.5]

Table 7.2: Profile of projected supply against projected demand over a 5-year period.

THERAPEUTIC

Key Factors	2002	2003	2004	2005	2206	TOTAL
Total supply entering NI workforce	7	11	10	14	12	54
Leavers	2	2	3	4	4	15
Net Suply	5	9	7	10	8	39
Scenario One	12.5	10.5	10.5	10.5	0	44
Over [under]	[7.5]	[1.5]	[2.5]	[0.5]	8	[4]
Scenario 1+2+3	16	11.5	11.5	11.5	1.0	51.5
Over [under]	[11]	[2.5]	[4.5]	[1.0]	[1.0]	[20]

From the previous tables it can be concluded that demand outweighs supply for both diagnostic and therapeutic staffing levels at each of the scenarios presented.

It can also be noted that demand is significantly higher in the early years of 2002/03 in the diagnostic workforce due to both current vacancies and the additional capital projects initiating throughout NI.

When the figures presented are transcribed from WTE to headcount (ratio 1:1.14) the requirements are indicated on table 7.3.1.

Table 7.3: Radiography Staffing Shortfall – WTE/Headcount

Demand v Supply	Diagnostic		Therpeutic	
	WTE	Headcount	WTE	Headcount
Scenario 1	38.5	44	4	5
Scenario 1+2	82	94	4	5
Scenario 1+2+3	155.5	178	20	23

7.4 CONCLUSIONS ON SUPPLY AND DEMAND

It can be seen from the figures presented that there is range in the projected shortfall within the scenarios 1, 2 + 3 over the 5-year workforce plan. For the initial purpose of this workforce plan a combination of scenarios 1 + 2 has been adopted. These scenarios include agreed and resourced capital and service plans with identified workforce requirements and those that are likely to be resourced within the 5-year plan.

Table 7.5: Projected numbers in WTE of scenarios 1 + 2 [] indicates shortfall

PROJECTED NUMBERS	2002	2003	2004	2005	2006	Total
SCENARIO 1 + 2						
Diagnostic	[45.5]	[28.5]	[1]	[6]	[1]	[82]
Therapeutic	[7.5]	[1.5]	[2.5]	[0.5]	8	[4]

8. SENSITIVITY ANALYSIS

A number of scenarios are presented to analyse their impact on the projected shortfall figures.

8.1 *Increasing the percentage of UU students who take up post in NI following graduation from 57% to 70-75%.*

If the HPSS were able to attract a greater % of UU graduates into the NI HPSS workforce to 70-75% an additional 10-15 qualified radiographers would be included in the workforce. (NB 100% of therapeutic radiographers already enter the NI HPSS workforce after graduation from UU).

8.2 *Decreasing the % of radiographers leaving the NI workforce.*

If the HPSS were able to reduce the 30% the number of the diagnostic radiographers leaving the workforce each year, an additional 5 radiographers would be available in the 5-year period. The number of therapeutic radiographers leaving the workforce is less significant at a rate of 1 per annum.

8.3 *Increase the number university places*

If the NI HPSS were to increase the university intake by 35% immediately there would over the 5-year plan be an increase of 6 diagnostic and 3 therapeutic radiographers graduating.

A summary of the impact of the sensitivity analysis is provided in the table below:

Table 8.4: Sensitivity Analysis. Impact on the projected shortfall in the radiography workforce (scenario 1 + 2)

Scenario 1+2	Diagnostic (Staff shortfall)	Therapeutic (Staff shortfall)
Current projection	[82]	[4]
An Increase % of UU grads entering HPSS (70-75%)	[72-67]	[4]
B Decrease % of leavers (by 30%)	[77]	[4]
C Increase university places by 35%	[76]	[1]

9. Recommendations

The timescale for the implementation of the key recommendations outlined below is twelve months to coincide with the follow up review:

Workforce Planning

- Now that the workforce planning process is established it is recommended that the Project Board should be retained to review supply and demand on an ongoing basis. It should utilise the information gathered in the review building and expanding on it taking into account such factors as the impact on the workforce of the Working Time Directive, an extended hours service, role extension, sub-specialisation, capital plans and service development business cases.
- The Project Board should ensure that there is a more consistent and targeted approach to gathering relevant supply and demand data and should include a review of current IT capabilities and manpower recording processes.
- Student places for the UU 2002 intake should be increased by 5 [total 40] for diagnostic and by 1 [total 16] for therapeutic radiography.

- Further discussions should take place between the DHSSPS and the University to establish a more effective way of providing clinical placements for students throughout the degree programme. All Trusts with radiography services should also provide student clinical placements for each year of training.
- All Trusts with radiography services should be surveyed with regards to the existing numbers of clinical placements and the maximum numbers that may be accommodated for each training year. There should be an identification of any barriers to these placements and solutions found so Trusts will be in a position to accommodate any additional clinical placements required in response to an increase in degree places.

Recruitment & Retention

- Employers should address current Recruitment and Retention practices in an innovative manner, sharing successful ideas and initiatives to achieve synergistic benefits. With this purpose they should assess and evaluate the Society of Radiographers document “The Future of Radiography Services in Northern Ireland 2001” taking into account the Agenda for Change initiative.
- Employers should build relationships with students, such as activity development programmes and should establish a targeted recruitment programme throughout the four-year training period and post registration programmes with the aim of increasing the percentage entering the Northern Ireland radiography sector upon graduation.
- Trusts should project their workforce requirements one year in advance and the recruitment process should commence 6 months prior to the graduation date of radiography students. It is suggested that provisional offers of employment could then be made with a defined acceptance time limit. This would provide Trusts with a clearer recruitment pathway.
- The UU and Trusts should work together to ensure that the 4th year clinical placements are based within Trusts in Northern Ireland with a view to retaining a considerably higher percentage of graduates within the Northern Ireland workforce.
- All employers should put in place policies to incorporate planned induction, consolidation and mentorship programmes for all new staff and review the effectiveness of these in a quantitative and qualitative manner.

- Further work should be carried out to examine the benefits and costs associated with a Return to Practice initiative. This could involve advertising campaigns to ascertain interest and should be carried out regionally.
- The feasibility of offering more flexible working practices to radiographers in line with anticipated increased hours provision should be explored for example, an extended working day or weekend-only working.
- Employers and the profession should put in place a consistent approach to the implementation of work-life balance policies and procedures and this should be factored into workforce planning.

Utilisation of the available Workforce

- A Working Party should be established to address a skill mix review and more closely the issue of the required roles and responsibilities of radiographers in today's healthcare environment. This should involve as a matter of urgency looking at the benefits and associated costs of developing Radiography Assistants to NVQ Level 3. This should be taken forward and co-ordinated by the DHSSPS.
- Employers should carry out further work into the possibility of reallocating non-clinical responsibilities from radiographers to other health care workers.
- A co-ordinated approach should take place with regard to workforce planning of both radiography and radiology, particularly in relation to role extension and development issues.

Development

- There should be an increased focus placed on Continuing Professional Development (including leadership development) and all employers should ensure that the recommended hours provision is accounted for through the workforce planning process.
- Consideration should be given to providing a centre for CPD for radiography, which could be linked, to an existing training provider.
- Employers should provide training to all staff that will be required to provide mentorship or coaching support as part of their role.

- The Department should take forward the development of the PAM consultant role to acknowledge the high levels of clinical expertise within the profession.

CONCLUSION

This radiography workforce review can only be viewed as the starting point, or a baseline for further work to be carried forward. This includes the development of an action plan to take forward the recommendations outlined above. The models presented in the report will need updated and refined on a regular basis to continue to inform decision-making and priorities concerning the investment in the NI HPSS radiography workforce over the 5-year plan.

Appendix 1

Project Board Members

Workforce Planning Group – Radiography
David Bingham, Director of Human Resources, DHSSPS
Jennifer Thompson, Human Resources Directorate, DHSSPS
Nuala McArdle, PAMS Advisor, DHSSPS
Maureen McMillan, Radiography Services Manager, Royal Hospitals Trust
John Cathcart, Radiography Department, Antrim Hospital (Society Representative)
Gill Hodges, Clinical Tutor, Belvoir Park Hospital, (Therapy Representative)
Edna Robinson, Radiography Services Manager, Down Lisburn Trust
Ivan Craig, Radiography Services Manager, Altnagelvin Hospital Trust
Fiona Beattie, Radiography Services Manager, Tyrone County Hospital
Ruth Orr, Radiography Services Manager, United Hospitals Trust
Irene McIntyre, University of Ulster (Jordanstown), (ACTPAM Representative)
Sharon Conway Superintendent Radiography, A&E Royal Hospitals Trust, (ACTPAM Representative)
Jeanette Robinson, Radiography Services Manager, Daisy Hill Hospital
Manus Doherty, Director of Personnel, Altnagelvin Hospital
Arelene Hamilton, KPMG

Appendix 2 – Key Informant Interviews

Representative	Organisation
G Rankin	SHSSB
N McArdle	M & A Branch
Dr R Houston	Belvoir Park
J Simpson	Down Lisburn Trust
D Jeffrey	Ulster Hospital
R Herbert	Belfast City Hospital
P Faulkner	Belfast City Hospital
J Cathcart	Antrim Area Hospital
Dr O’Rorke	Craigavon
Dr L Rock	Royal Victoria Hospital
Dr D Hill	Antrim Area Hospital
G Hodges	Belvoir Hospital
S Conway	Royal Victoria Hospital
F Beattie	Sperrin Lakeland Trust
J Dornan	Royal Victoria Hospital
I Craig	Altnagelvin Hospital
N Kelso	Causeway Hospital
M McMillan	Royal Victoria Hospital
Professor P Johnson	City Hospital
D McCurdy	Mater Hospital
A Ross	Musgrave Park Hospital
E Robinson	Down Lisburn Trust
R Orr	Antrim Area Hospital
G Biggart	Belvoir Park
I McIntyre	UUJ
G Mock	DHSSPS
Dr Sweeney	Royal Victoria Hospital

Appendix 3 – Focus Groups

Group	Location	Relevant Specialism
1	Musgrave Park Hospital	Diagnostic
2	Belvoir Park Hospital	Therapeutic
3	UUJ	Students
4	UUJ	Students
5	Tyrone County Hospital	Diagnostic
6	Craigavon Area Hospital	Diagnostic
7	The Royal Victoria Hospital	Diagnostic
8	Braid Valley hospital	Diagnostic

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