National Screening Unit

BreastScreen Aotearoa

WORKFORCE DEVELOPMENT

A National Approach to Recruitment and Retention of Medical Radiation Technologists and Radiologists

Report of Workforce Activities for BSA Age Extension

BreastScreen Aotearoa

February 2007

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Executive Summary

1. In November 2003, the NSU Workforce Development Steering Group was established to provide oversight, guidance and support for workforce development across the NSU as a whole. The purpose of the group was to provide advice on NSU workforce initiatives and to ensure a nationally consistent approach to workforce development by providing feedback to the group from NSU work plans and Ministry wide groups.

2. As a result of the extension of the eligible age range for women accessing the national breast screening programme, from 50-64 years to 45-69 years, there has been an imperative for BSA to implement a series of initiatives to build the capacity of the breast screening programme, which centres on increasing the number of MRTs and radiologists specialising in mammography.

3. There has been difficulty in accessing up to date and reliable workforce data which has lead to significant constraints in accurately planning supply and demand for BSA MRTs and radiologists in New Zealand. There is need for benchmarking the health workforce and NZ currently uses the Australian Medical Workforce Advisory Committee (AMWAC) figures as empirical foundation for workforce planning. Planning workforce demand for breast screening cannot be done in isolation as it needs to be done as an integral part of the wider MRT and radiologist workforce as well as looking forward to where strategic movement of the profession will lead, e.g. the UK has introduced a skill mix for MRTs to include undergraduate entry to the profession and introduction of an extended role for MRTs reporting images and carrying out protocolled radiology investigations.

4. The BSA Age Extension Workforce Development Strategy and Action Plan, ('the Strategy'), completed in 2004 addresses the workforce implications of the extension of the age range for BSA eligibility. The Government decision to offer breast cancer screening to women aged 45 to 69 increased the projected number of women screened by 70% within four years, in other words, from 104,526 in 2003/04 to 178,262 in 2007/08. The consequent requirement for increased staffing levels was considerable, especially for MRTs and radiologists. The growth of BSA required new strategies to recruit and retain personnel, and to ensure that services continued to be delivered at a high level of quality.

5. The objectives of the Strategy were:
    - Increase the number of MRTs and radiologists available to be employed by BSA providers
    - Increase retention of the BSA workforce
    - Ensure skill levels of the BSA workforce continue to be high
    - Monitor the BSA workforce on an ongoing basis

- Resource BSA workforce development on an ongoing basis
- Identify the workforce implications of age extension on the treatment workforce, and work collaboratively to address issues arising.

6. As a result of implementing many of the initiatives in the Strategy, the NSU has strengthened its relationships across the breast screening workforce particularly with the medical imaging professional bodies, such as the Medical Radiation Technologists Board (MRTB), the New Zealand Institute of Medical Radiation Technologists (NZIMRT) and the Royal Australian and New Zealand College of Radiologists (RANZCR), as well as the MRT educational institutes such as UCoL, Unitec and CPiT. Many of the subprojects undertaken within Age Extension have been successful to increase the capacity of the medical imaging health professionals and an added advantage has been to increase the capability of the workforce through educational and training resource development.

7. Successes of BSA workforce projects have been mixed; the reimbursement of the Certificate of Proficiency in mammography has raised the awareness of MRTs to comply with BSA National Policy and Quality Standards (NP&QS) but the reimbursement of the cost of training has not been a particular incentive; the development of annual BSA workforce surveys has been extremely useful as we now have longitudinal information on the BSA MRT and radiologist workforce; the radiology fellowships have been very successful with the fellowships being oversubscribed and feedback to the NSU is for continuation of this project; the BSA Recruitment Scheme has had mixed success with recruitment for MRTs being peaks and troughs in response to advertising. Recruitment of radiologists has been poor with overseas radiologists wishing to work in BSA for continual professional development reasons and not for permanent relocation. It is a recommendation from the pre-evaluation of the Geneva Health contract that this initiative be extended for a further 12 months (see appendix). Although the return to practice for MRTs was considered a good incentive, it showed that with good research and surveying of stakeholders in advance, valuable NSU resources were used elsewhere for better benefit.

8. It is important the NSU continues to maintain its relationships across BSA work groups such as those with BSA MRT and radiologist unidisciplinary groups (UDGs) as well as close liaison with educational institutes, registration bodies and professional institutes and colleges. The projects undertaken since the commencement of Age Extension have enabled increase in MRT and (temporarily) radiologist numbers, but these strategies do not address the longer term issue of workforce shortages. It is expected the gradual implementation of digital mammography over the next five years will go some way to improving the way MRTs and

radiologists work, that is, each MRT is able to increase their throughput due to improved workflow using digital mammography and radiologists will be able to read mammograms from other sites using telemammography.

9. Changes to the workforce structure through the Careers Framework (currently under development through the Ministry of Health Sector Policy Workforce Group) could potentially provide extended roles for MRTs and for the introduction of an MRT technical assistant role. The introduction of skill mix in NZ gives rise to the opportunity for flexibility for roles currently carried out by radiologists and MRTs.

1. Overview of BSA Workforce Development

1.1 Purpose of the Overview

This overview of workforce development for BreastScreen Aotearoa (BSA) Medical Radiation Technologists (MRTs) and radiologists is part of the wider workforce initiatives for health professionals within the Ministry of Health.

The National Screening Unit (NSU) has a strategic leadership role in developing the screening workforce through policy development to facilitate outcomes that ensure access to quality screening services, appropriate to the needs of screening programme participants. Workforce development is one of the 'Areas for Action' in the NSU Strategic Plan that will assist the NSU to achieve the Strategic Objectives of Sustainability, Maximising Benefits and Building Understanding.

This overview discusses the strategies and activities undertaken by BSA to increase the recruitment and retention of MRTs and increase participation of radiologists within BSA.

1.2 Structure of the Overview

The BSA workforce planning process is informed and supported by NSU planning and strategy documents such as:

- The Cervical and Breast Cancer Screening Programmes Workforce Development Strategy and Action Plan 2002-2007
- The BSA Age Extension Project Workforce Development Strategy and Action Plan (2004),

as well as wider Ministry of Health workforce development documents and international literature. The Ministry of Health, Health Workforce Advisory

Committee (HWAC) key publications have also informed BSA workforce development such as:

1. The New Zealand Health Workforce - Future Directions – Recommendations to the Minister of Health (2003).
2. Strategic Principles for Workforce Development in New Zealand (2005)
3. Health Workforce Development: An Overview (2006).
4. Fit for Purpose and for Practice: Advice to the Minister of Health on the Issues Concerning Medical Workforce in New Zealand (2006).

In November 2003, the NSU Workforce Development Steering Group was established to provide oversight, guidance and support for workforce development across the NSU as a whole. The purpose of the group was to provide advice on NSU workforce initiatives and to ensure a nationally consistent approach to workforce development by providing feedback to the group from NSU work plans and Ministry wide groups.

Further to strategy and planning there is need for accurate and reliable data and information on the existing workforce and future requirements. This data and information feeds into the planning process and is essential for accurate and reliable workforce planning. Nationally accurate workforce data has been fragmented, particularly access to information on inflow (education, immigration, non practising health professionals) and outflow (retirement, emigration, movement to other careers).

It is proposed the Health Workforce Information Project (HWIP) developed by DHBNZ in collaboration with the Clinical Training Agency (CTA) will resolve some of these issues. The HWIP is a programme of activity to provide DHBs, the Clinical Training Agency and the wider sector with workforce information, analysis and forecasting. HWIP activity is designed to support District Health Boards (DHBs) to deliver on the objectives of the collective DHB *Future Workforce* strategy (2005). HWIP also responds to the Clinical Training Agency's need for good data to forecast, and a best practice forecasting method(s). HWIP is managed by DHBNZ on behalf of DHBs and has wide ranging sector participation through both a Steering Group and a User Reference Group. HWIP went 'live' February 2007 with information on the regulated workforce. Information on the non-regulated workforce is expected February 2008.

Currently MRT workforce data has been fragmented and unreliable. The annual MRT workforce survey carried out by New Zealand Health Information Service (NZHIS) is voluntary therefore reliable and complete data on the MRT workforce is not available. Similarly the Medical Radiation Technologists Board (MRTB), the MRT professional registration board, identifies MRT scope of practice (as well as therapy or diagnostic MRT) but the dynamics of the profession, such as MRT turnover or those leaving the profession, is not included. Further data on MRT new graduates is able to be sourced directly from the educational institutes

(Unitec in Auckland, UCoL in Palmerston North and CPiT in Christchurch), but this information is often not readily available.

Workforce data for radiologists has been more reliable as the Royal Australian and New Zealand College of Radiologists (RANZCR) carries out a biennial radiologist workforce survey. There are often considerable 'gaps' in required data due to non responders to workforce surveys leading to extrapolated findings; similar to that for other health professionals.

The difficulty in accessing up to date and reliable workforce data has lead to significant constraints in accurately planning supply and demand for BSA MRTs and radiologists in New Zealand. There is need for benchmarking the health workforce and NZ currently uses the Australian Medical Workforce Advisory Committee (AMWAC) figures as empirical foundation for workforce planning. Planning workforce demand for breast screening cannot be done in isolation as it needs to be done as an integral part of the wider MRT and radiologist workforce as well as looking forward to where strategic movement of the profession will lead, e.g. the UK has introduced a skill mix for MRTs to include undergraduate entry to the profession and introduction of an extended role for MRTs reporting images and carrying out protocolled radiology investigations.

The NSU initiated the Screening Workforce Information Framework (SWIF) project during 2003/04. The aims of the project were to improve the specification, collection and analysis of workforce information to assist the monitoring of the screening workforce and the implementation of specific workforce initiatives. This project was put on hold with the expectation the DHBNZ HWIP project would perform this role.

1.3 Where to Start

The workforce planning cycle takes place through the following areas of work:

- Prepare for workforce planning
- Assess workforce demand and supply
- Develop, implement and review plans.

This planning process takes place within the context of a number of equally important areas of work including:

- Service change and innovation, particularly with changes in technology
- Partnership and collaborative work, ensuring connectivity with the wider MRT and radiologist profession, educational institutes and advisory groups
- Personal and people development
- Equality, diversity and rights, particularly as reducing inequalities is a major focus for the NSU
- Management of resources at an operational level.

Cross Ministry links to other workforce development initiatives are important to inform BSA workforce planning as well as from other stakeholders such as:

- Ministry of Health Workforce Development Advisory Group (WDAG)
- Ministry of Health Public Health Workforce Development Steering Group (PHWFD)
- Educational institutes (Unitec, UCoL, CPiT)
- Professional college (New Zealand Institute of Medical Radiation Technologists (NZIMRT))
- Registration bodies (Medical Radiation Technologist Board (MRTB), NZ Medical Council (NZMC))
- International professional links (colleges and registration bodies)
- District Health Boards
- BSA Lead Providers and their subcontractors.

The terminology associated with workforce retention and recruitment is 'workforce planning' and 'workforce development'. The two are commonly interchangeable but there are differences in their approach.

2. Workforce Planning

Workforce planning involves a systematic and integrated process to ensure that the service can strategically plan to have sufficient number of staff (clinical and non-clinical), with the appropriate skills, to meet the current and future needs of their populations. The planning takes place within a variety of legal, regulatory, financial, local and political constraints, and is an integral part of service, business and financial planning (see Figure one).

The Ministry of Health workforce planning links to District Health Boards New Zealand (DHBNZ) workforce planning as well as cross-Ministry of Health directorate workforce plans. All workforce plans take into account the policy and legislative environment as well as the educational sector such as the Tertiary Education Commission (TEC), Clinical Training Agency (CTA) and Independent Training Organisations (ITOs), although ITOs are not relevant to MRT and radiologist workforces.

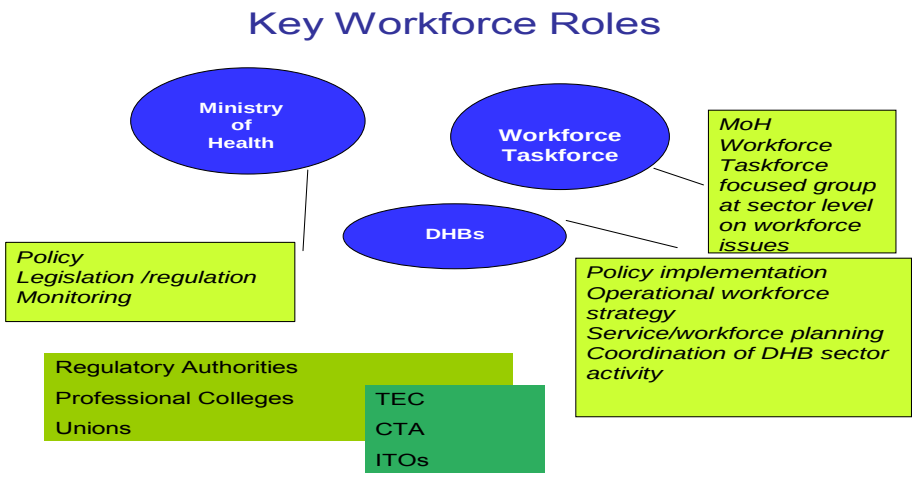

Figure one: Key inputs to workforce planning[1]

Health workforce planning needs to take place at local, regional and national levels with appropriate levels of complexity and detail. National planning needs to both feed, and be fed by, local and regional, workforce, business and educational institutes and vice versa.

Workforce planning for the health service, i.e. the breast screening service, requires a broader approach than simply head counting. Head counting may address short to medium term recruitment for BSA but not address long term retention and recruitment needs. To consider the 'wellness' of the medical imaging profession it is necessary to look globally at the professions and the

[1] DHBNZ Presentation to Ministry of Health Workforce Champions Meeting, 4th October 2006.

ways used to address recruitment and retention of MRTs and radiologists (and other health professionals).

Further, the lead times required to train MRTs and radiologists (particularly radiologists) are lengthy. There is uncertainty regarding the level of workforce need that will exist at the completion of the training programmes (the radiation therapy students are an example where shortages in the late 90's and in early 2000, which led to increased student numbers, but then resulted in an oversupply of graduates in 2007 due to lack of clinical placements). There is also uncertainty about the number of students who will complete the training, year by year, and the number that will be retained in the health workforce beyond their first few years. This has been a significant issue for medical school graduates with the NZ Medical Council estimating a loss of 25% of new graduates overseas.[2]

2.1 Setting the Scene

The BSA Age Extension Workforce Development Strategy and Action Plan, ('the Strategy'), completed in 2004 addresses the workforce implications of the extension of the age range for BSA eligibility. The Government decision to offer breast cancer screening to women aged 45 to 69 increased the projected number of women screened by 70% within four years, in other words, from 104,526 in 2003/04 to 178,262 in 2007/08. The consequent requirement for increased staffing levels was considerable, especially for MRTs and radiologists. The growth of BSA required new strategies to recruit and retain personnel, and to ensure that services continued to be delivered at a high level of quality.

The objectives of the Strategy are:

1. Increase the number of MRTs and radiologists available to be employed by BSA providers
2. Increase retention of the BSA workforce
3. Ensure skill levels of the BSA workforce continue to be high
4. Monitor the BSA workforce on an ongoing basis
5. Resource BSA workforce development on an ongoing basis
6. Identify the workforce implications of age extension on the treatment workforce, and work collaboratively to address issues arising.

[2] NZMC Workforce Survey 2004

The key themes underpinning the success of meeting the objectives are:

Building Capacity	Having the right workforce composition (eg numbers, cultural makeup, skill mix) and distribution.
Building Capability	Fostering an environment that supports career pathways through attaining the right skills and competencies (including cultural competencies).
Information and Research	Obtaining timely and accurate information and research on the breast screening workforce.
Relationships	Ensuring effective relationships that support a collective effort towards building the workforce.
Policy and Regulation	Ensuring workforce development initiatives are consistent with wider Ministry of Health policy and regulation.

The following table shows the approach taken to plan for implementation of initiatives from the Strategy.

OVERVIEW OF WORKFORCE PLANNING

1 Prepare for workforce planning based on service needs	**Activity**	**Responsibility and When**
Identify the purpose and scope of a workforce plan based on service needs	Assess existing requirements for BSA MRTs within BSA; future needs; the changing workforce and international changes eg UK skill mix	Lead Providers, BSA Workforce Development Senior Analyst. December 2004
Identify and evaluate forces for change that may impact on the workforce		
Contribute to preparing for workforce planning based on service needs		
Map the environment in which service delivery operates		

2 Assess workforce demand and supply	**Activity**	**Responsibility and When**
Assess workforce demand	Evaluate MRT and radiologist needs for expanded service delivery ie BSA Age Extension through use of surveys and student numbers; compare regional and national needs	BSA Workforce Development Senior Analyst, Educational institutes. June 2005
Assess workforce supply		
Contribute to assessing workforce demand and supply		

3 Develop, implement and review plans to increase personnel resources in the service	Activity	Responsibility and When
Develop a workforce plan	Prioritise initiatives from BSA Workforce Development Strategy and Action Plan	BSA Workforce Development Senior Analyst, MRT and radiologist Unidisciplinary Groups (UDGs). June 2005
Implement and review a workforce plan		
Contribute to developing and implementing a workforce plan		
Plan the workforce		

4 Collect, analyse and present data and information to support workforce planning	Activity	Responsibility and When
Identify and specify data and information requirements	Review workforce surveys; consult with Lead Providers on recruitment initiatives; disseminate survey report to unidisciplinary groups	BSA Workforce Development Senior Analyst. June 2005
Collect and validate data and information		
Analyse data and information and present outputs of analysis		

5 Service change and innovation	Activity	Responsibility and When
Develop and review a workforce strategy	Identify workforce initiatives – plan to implement; scope planned initiatives and evaluate effectiveness; consult with stakeholders	BSA Workforce Development Senior Analyst, MRT Advisory Group, MRT and radiologist UDGs. December 2005 to December 2006.
Lead development of initiatives		
Plan delivery of initiatives		
Implement initiatives and evaluate outcomes		

6 Partnership and collaborative work	Activity	Responsibility and When
Develop, sustain and evaluate collaborative work with others	Collaboration with educational institutes (Unitec, Ucol, CPiT), the professional bodies, NZIMRT and RANZCR, the registration boards (MRTB, NZMC) and international equivalents. Attend conferences and maintain networks.	BSA Workforce Development Senior Analyst and all associated BSA stakeholders. December 2004 to June 2007.
Develop and sustain effective working relationships with staff in other organisations		
Develop joint working agreements and practices, and review their effectiveness		
Develop your personal networks		

3. Workforce Development

Workforce development is a whole of system approach to developing a workforce. The Health Workforce Advisory Committee (HWAC) has described workforce development in the report 'Fit for Purpose and for Practice' (2005) as:

> "…a broader concept than just workforce planning. Workforce development is a dynamic approach to producing… (a health workforce)…who are fit for purpose, in the right numbers and in the right place at the right time. It treats the workforce as a whole, rather than dividing it into separate employer or professional groups, and is based on the principles of partnership. Workforce development aims to respond to changing service demands in creative and innovative ways. It links workforce needs to service redesign and new working styles to provide flexible strategies suited to an ever-changing environment."

The Ministry of Health published the report 'Health Workforce Development: An Overview' (2006) which gives a comprehensive overview of health workforce development in New Zealand. The report provides a framework, taken from the mental health workforce development plan, for conceptualising and summarising the various activities involved in workforce development. The framework includes:

Area	**Goal**
Workforce development infrastructure	A national and regional workforce development infrastructure which supports stakeholders to progress workforce development.
Organisational development	Health services develop the organisational culture and systems which will attract and grow their workforce and meet service needs.
Recruitment and retention	Health services have a nationally and regionally co-ordinated approach to recruiting and retaining staff, which results in increased capacity and capability of the health workforce.
Training and development	All stages of health workforce training are aligned to service needs and promote retention.
Information, research and evaluation	Information and research are available to support workforce development planning.

Table1: Workforce Development Framework from Mental Health Workforce Development Plan[3]

[3] Health Workforce Development: An Overview. Ministry of Health, April 2006.

The District Health Boards New Zealand (DHBNZ) 'Future Workforce 2005-2010' plan (2005), is seen as the overall plan for the workforce development activity of the health sector, identifies the following eight priorities in developing the health and disability workforce:

Sustaining and Nurturing the Health and Disability Workforce	**Developing Workforce/Sector Capability**
Priority 1: Fostering supportive environments and positive cultures Priority 2: Enhancing people strategies Priority 3: Education and Training	Priority 4: Models of Care Priority 5: Primary health workforce Priority 6: Maori health workforce Priority 7: Pacific health workforce Priority 8: Non-regulated and voluntary health and disability workforce

Table 2: DHBNZ Future Workforce Priorities 2005 -2010[4]

Collectively these two documents focus on a collaborative approach to workforce development identifying the need for a whole of sector approach and to access reliable workforce data as well as sourcing information and research.

The NSU workforce development approach has been to identify international evidence on role development for the radiology workforce, namely MRTs and radiologists, as well as to develop relationships with the educational sector, professional bodies, registration bodies, Clinical Training Agency (CTA), Ministry of Health workforce development groups such as the Workforce Development Advisory Group (WDAG) and the Public Health Workforce Development (PHWFD) Steering Group. The most important relationships have been with the BSA MRT and radiologist Unidisciplinary Groups (UDGs) to advise on activities and sentiment at the coal face of the BSA radiology workforce; this was particularly important at the commencement of BSA Age Extension when there was severe shortages of MRTs affecting provider screening capacity.

4. BSA Workforce Development Key Initiatives

The NSU Workforce Development Strategy and Action Plan published in May 2004, was based on advice from key sector groups and individuals. The BSA Expert Advisory Group was made aware of the extent to which workforce issues will need to be managed as age extension is implemented. Information from Lead Providers, MRT-related organisations, the Royal Australian and New Zealand College of Radiologists (RANZCR), and the education sector were integrated into the analysis and the proposed initiatives in the Strategy.

[4] District Health Boards New Zealand. Future Workforce 2005-210. August 2005.

From the recommendations from the Strategy, and as a result of Age Extension, the BSA Workforce Development Strategy and Action Plan was completed in September 2004. The Action Plan identified key workforce priorities and issues in implementing BSA Age Extension. Key workforce projects were undertaken from 1 July 2004 and to conclude 30 June 2007. The projects proposed to assist Lead Providers with workforce constraints experienced as a result of Age Extension.

A survey of Lead Provider recruitment initiatives was undertaken in July 2004. Lead Providers indicated they had difficulty recruiting radiologists and MRTs from the limited pool available in New Zealand. As a result of Lead Provider feedback, a coordinated and centralised approach to national and international recruitment was seen as an effective way to immediately significantly increase workforce numbers. Other initiatives identified through the Unidisciplinary groups were:

1. Reimbursement of training costs for Certificate of Proficiency in Mammography (CoP)
2. Return to Practice MRTs
3. Role Extension MRTs
4. Training and Educational Resources developed
5. Mammography Training Scholarships
6. Annual BSA MRT and radiologist Workforce Surveys
7. MRT Workforce Advisory Group
8. Scope of practice for MRTs in mammography only
9. Radiology Fellowships

Further workforce projects were undertaken for other BSA health professionals such as development of postgraduate qualification in breastcare nursing for BSA breastcare nurses, and BSA radiology fellowships for radiology registrars to enter BSA.

The growth of BSA required new strategies to recruit and retain personnel, and to ensure continued delivery of a high quality programme. Ways to reduce future reliance on some of the professional groups, and develop possible new roles, also needed to be investigated. These new approaches build on work already commenced by the NSU.

4.1 Workforce Advisory Group

As part of the BSA Age Extension project the MRT Workforce Advisory Group was set up in 2002 to advise on initiatives to increase MRTs working within BSA. This group enabled the NSU to implement MRT initiatives in a manner, which was acceptable to and supported by the sector, and to the extent possible using available resources.

The Group consisted of representatives from BSA MRTs, the medical imaging education sector, the MRTB and the NZIMRT. The advice of the Group was particularly useful for the development of the BSA Age Extension Workforce Development Strategy and Action Plan, completed in 2004.

In April 2005 the Group completed its key advisory tasks post implementation of Age Extension. Advice required by the NSU on MRT workforce issues was sought from the MRT UDG with invitation to attend the UDG to representatives of the MRTB, NZIMRT and education sector when required.

4.2 BSA Recruitment Scheme

As a result of the announcement of the extended age range for women accessing the national breast screening programme, Lead Providers and their subcontractors were required to significantly increase their workforce and facilities to cope with the increase demand for services. Recruitment of MRTs and radiologists was the critical issue to be addressed. National and international health professional recruitment is generally carried out by individual DHBs and private providers, whether directly or via recruitment firms. Lead Providers indicated in 2004 that recruitment of health professionals is "costly, intensive and sometimes fruitless". Age extension saw all providers trying to recruit from the same limited pool of professionals, which was a cause for concern.

One of the initiatives of the Action Plan was a co-ordinated approach to recruitment of key professionals, medical radiation technologists (MRTs) and radiologists. The proposed recruitment scheme was therefore a departure from usual practice in NZ, but comparable to an initiative in the UK to recruit radiographers (MRTs), especially for those returning to practice. In the UK scheme, central funding was made available for a recruitment infrastructure based around return to work co-ordinators in workforce development confederations and in the larger service providers. As NZ has a smaller breast screening workforce than the UK, a centralised recruitment approach was considered the most suitable method. In this way Lead Providers would have equal access to candidates and the candidates themselves could select the region they wished to live.

4.2.1 Precedent

The Ministry of Health General Practitioners' (GP) Rural Recruitment Service and the GP Rural Support was a precedent to the BSA Recruitment Scheme. Both these schemes were funded by the Ministry of Health, for a period of three years, 1 December 2003 to30 June 2006, to recruit locum and permanent placement of GPs to rural areas within NZ.

The UK also launched a 4 million pound National Health Service Careers Campaign seeking staff for more than 70 professions, with TV and print advertisements aimed at priority groups, including radiographers (MRTs). It was within this global market that the BSA Recruitment Scheme was advertising for MRTs and radiologists to work in NZ.

4.2.2 The Recruitment Scheme Proposal

It was proposed the NSU fund and pilot a co-ordinated recruitment consultancy, via a contestable process. The recruitment consultancy was required to recruit, on behalf of Lead Providers, MRTs and radiologists to meet workforce requirements within BSA. This was to prevent providers trying to recruit from the same limited pool of professionals. Geneva Health Limited was the successful provider of the recruitment service who commenced a recruitment strategy on May 2005.

It was proposed to run the BSA Recruitment Scheme was for a period of two years. For medical practitioners, recruitment overseas routinely offers relocation and immigration assistance for permanent and locum positions. It was decided that assistance with relocation expenses (up to a predetermined limit) would also be offered to MRTs, as well as radiologists, to better attract candidates. The aim was to recruit 20 MRTs and 8 radiologists for minimum six month contracts over two years.

At the time of writing the recruitment scheme has successfully recruited 12 MRTs and 2 radiologists from overseas (another radiologist was recruited for a short-term locum but did not qualify under the BSA Recruitment Scheme for relocation costs). Recruitment of radiologists has been particularly difficult mainly because of the disparity in pay between NZ and other countries. For example the average salary in the USA is US$255,000 (auntminnie.com) and in Australia radiologists are being offered salaries upward of A$300,000. Radiologist recruitment in the UK includes paid housing, school fees and return trips to country of origin under the two year international fellowship scheme.

Four overseas placements recruited through the BSA Recruitment Scheme, one radiologist and three MRTs, were surveyed as to their experience using Geneva Health Limited. The findings were:

- A significant professional barrier to recruiting radiologists to NZ is due to perceived professional isolation

- NZ salaries for radiologists are considerably lower than overseas. Radiologists coming to NZ have to take a large drop in salary as well as fewer incentives such as payment for school fees or salary bonus payments for recognition of professional excellence

- MRTs consider the reimbursement of relocation allowance a significant incentive to relocate to NZ

- There are still issues with the delay in gaining professional registration for MRTs through the Medical Radiation Technologists Board (MRTB)

- MRTs considered the actual role to the advertised role to be more demanding that portrayed.

The BSA Recruitment Scheme was funded annually for a period of two years and is currently under evaluation as to whether there is a need for its continuation. The contract with Geneva Health concludes May 2007 at which time an evaluation report will be carried out.

4.3 Reimbursement of Training Costs for Certificate of Proficiency in Mammography (CoP)

MRTs were identified as the profession with the greatest shortage within BSA and were critical to increasing breast screening volume throughput and in achievement of BSA targets. It was proposed that the NSU would reimburse training costs for MRTs to gain the Certificate of Proficiency (CoP) in Mammography in order to meet the BSA National Policy and Quality Standards (NP&QS). MRTs gaining a CoP in Mammography would also be able to meet competency standards as set out in the BSA NP&QS as well as those set out by the Health Professionals Competency Assurance Act (HPCA) and the Medical Radiation Technologist Board (MRTB). The reasons for this project were:

- Many MRTs did not comply with the NP&QS as they did not have the CoP in mammography
- One of the barriers to obtaining the CoP in mammography was the cost
- Assistance for New Zealand MRTs or MRTs who are recruited from overseas would be of benefit to the Programme

4.3.1 Objectives of the CoP in Mammography

The key objectives of reimbursing the cost of the CoP in Mammography were:

- Increase the number of MRTs available to be employed by BSA providers
- Ensure skill level of the BSA workforce continue to be high
- Compliance with BSA NP&QS, HPCA and MRTB
- Increase perception of the BSA Providers as a ‘good’ employers

To ensure all BSA MRTs held a CoP in mammography Lead Providers and Lead MRTs encouraged BSA MRTs to complete the academic and clinical component of the CoP. The Lead Provider then funded the CoP and applied for reimbursement from the NSU on the MRT completing and passing the course. The CoP in Mammography was extended to allow those MRTs who were recruited through the BSA Recruitment Scheme.

To date the number of MRTs who do not hold a CoP in Mammography has halved from 46% in 2004 to 22% in 2006. The project was budgeted for a three year period. There are a further 10 MRTs completing the CoP in the first half on 2007 which will bring the total number of MRTs completing CoP through this initiative to 26.

Anecdotally, many providers have omitted to request reimbursement for their MRTs completing the CoP, therefore the precise number completing CoP in the last three years is likely to be more than the 26 reimbursed for completion of the CoP.

4.4 Return to Practice BSA MRTs

Another recruitment initiative for BSA MRTs was potentially a Return to Practice scheme. Return to Practice for MRTs and nurses was successfully undertaken in the UK through 2003 to 2005. The UK Return to Practice Project was undertaken by the South West London Health Authority (SWLHA) on behalf of the Department of Health). The project concentrated on medical imaging as a career of choice and addressed a variety of issues around recruitment, retention and return. The key aim of the UK Project was to increase the radiography workforce (across all modalities and not just breast screening) in the NHS in England by 1,000 by December 2005. The total cost of the NHS Recruitment, Retention and Return to Practice Project was £3 million pounds for the period January 2004 until December 2005 and was successful in meeting its target.

A similar initiative was carried out in New Zealand in 2000; where the Ministry of Health surveyed non-practising nurses and midwives to establish how many were not in clinical practice and the factors that would encourage them back into clinical practice. The survey found that 2071 registered nurses and midwives were not in clinical practice, and that of these, 1576 would be encouraged to return if:

- Childcare facilities were available
- Return to nursing programmes were available
- Hours were more flexible

Following publication of the survey report, the Ministry together with NZHIS visited District Health Boards to share the findings. In 2003, as part of the annual nursing and midwifery workforce survey distributed by the Nursing Council, the Ministry asked registered nurses and midwives whether they had returned to

clinical practice within the last two years and the factors that encouraged them back into clinical practice. It was found that District Health Boards had implemented strategies, based on the findings of the 2000 survey, to encourage nurses and midwives to return to practice. The implementation of strategies had been successful in recruiting a total of 2807 registered nurses and midwives to return to clinical practice between 2001 and 2003. This initiative demonstrated that return to practice for health professionals are realistic and practicable but requires a robust Return to Practice Project Plan.

As the UK has a larger MRT population to draw from, it was decided to survey non-practicing MRTs in NZ to gauge the interest in developing a Return to Practice initiative within each Lead Provider organisation. Further, a Return to Practice refresher course was offered through Unitec (Auckland) for radiation therapists but the course was poorly attended, with two MRTs enrolled for 2003 and only one for 2004. Due to lack of interest the course was no longer offered after 2004.

BSA sent a survey to 110 diagnostic MRTs who were no longer in clinical practice; 24 completed surveys were received (22%) and two were return to sender. Of the 24 completed surveys, 16 (67%) non-practicing MRTs stated they did not wish to return to practice. Only two MRTs wished to return to practice and contacted NSU directly. One of the MRTs had been out of the medical imaging profession for more than 10 years and was therefore ineligible for a return to practice and would need to retrain. The other MRT lived in a rural location and was unable to travel to a main centre for further training.

As the response rate to the survey was poor it was assumed that the 86 non-practicing MRTs who did not return their surveys were not interested in returning to practice. If that was the case then the survey results indicated that 109 MRTs (99%), did not wish to return to medical imaging.

A Return to Practice scheme was discussed with BSA Lead Provider managers. The majority considered the training initiative to be too resource intensive for the workplace in that the breast screening environment is fast moving with quick turnaround for mammogram appointments. They considered their staff would be unwilling to invest the considerable amount of time to orientate, mentor and retrain an MRT who had been out of the medical imaging workforce. The Lead Provider managers considered it was a good initiative to think collaboratively with the NSU to develop a similar scheme to attract new graduates to part time positions. That way new graduate need lesser time to train and can still maintain competency in other modalities (to work in breast screening need a minimum of 0.4FTE).

Following consultation across BSA and as a result of the survey, this project was not initiated.

4.5 Role Extension MRTs

The New Zealand Institute of Medical Radiation Technologists (NZIMRT) set up a working party early 2006 to carry out a literature review and survey of NZ MRTs on the need for role extension for MRTs. The literature review and the survey (carried out at the annual NZIMRT conference, Wellington 2005) was that NZ MRTs were overwhelmingly supportive of development of a career pathway and extended roles such as film reading.

The UK has developed the 'Four Tier Mix' which defined the career pathway for breast screening MRTs. The tiers are:

- Assistant Practitioner
- Registered Practitioner
- Advanced Practitioner
- Consultant Practitioner

The aim of the four tier skill mix was:

- To create new roles based on skills and experience rather than profession
- To improve recruitment and retention of staff
- To promote life long learning through extended roles and
- To help all practitioners to develop to their full potential.

The assistant practitioner role enabled individuals to train at undergraduate level specifically on the role of taking the mammogram under the supervision of a registered practitioner. At the other end of the tier the consultant practitioner is able to carry out breast ultrasound, breast biopsy, as well as first or second read of mammograms.

Based on the success of the UK NHS Skill Mix Project the NZIMRT and Unitec advise three pilots are underway in 2006/07 to assess the capability of NZ MRTs to film read basic Accident and Emergency films (Appendicular reporting ie bony fractures) and mammography reading. The evaluation of these pilots will be completed mid 2007, the results of which will be published prior to implementing at a national level.

4.6 Digitised Training and Educational Resources

In November 2005 the NSU purchased a digitiser and printer to develop a database of digital mammograms. The intention of the database is to develop training and educational resources for MRTs and radiologists. The resources completed or under development to date are:

- Exemplar sets of mammograms for MRTs for grading of BSA mammograms
- Introduction to the digital world workbook and CD for MRTs
- Diseases of the breast cases for site and regional peer review and Discussion for MRTs
- New Zealand set of PERFORMS, which is a national testing set of cancer seeded mammograms for new radiologists to BSA.

The aim of the database is to continually produce multiple sets of digital and digitised mammograms to enable ongoing competency and interest for MRTs and radiologists. The test set of PERFORMS will ensure ongoing training and competency requirements for BSA radiologists. Further, a digital training set of mammograms is expected to be developed to train radiologists in digital reading of mammograms.

4.7 Mammography Training Scholarships

The NSU intended to set up mammography scholarships for MRTs to enable third year student MRTs to undertake mammography study and training. In consultation with the sector, the New Zealand Breast Cancer Foundation (NZBCF) indicated they intended to offer these scholarships. The NZBCF has set up six scholarships that commenced in 2005. The scholarships were offered to third year MRTs at Unitec or CPiT, to begin second semester of the student's third and final training year. The scholarships are of $2,000 value each to cover the academic component (offered through Unitec and CPiT) and the clinical component (offered at a clinical training site when the MRT graduates). The scholarship also covers travel and accommodation costs, as the course costs are $1,500 each. Medical radiation technologists are eligible for the scholarships through application to the Head of School, Department of Health and Community Studies. Selection is based on student application to studies, financial need and desire to work within mammography.

The NSU communicates with the NZBCF on the uptake of the scholarships and their continuation. The NZBCF advise these scholarships have been oversubscribed by student MRTs for the last two years.

4.8 Annual BSA MRT and Radiologist Workforce Surveys

Prior to 2004 annual workforce surveys were not undertaken within BSA. As a result of age extension workforce surveys were sent out to MRTs and radiologists to assess the number of these health professionals, what FTE they were employed, breast screening volumes and film reading for radiologists, and ability of the sector to increase hours in BSA. The surveys also asked for qualitative information from respondents on working conditions and thoughts on working within BSA.

The surveys were developed in collaboration with the MRT and Radiologist unidisciplinary groups (UDG) and distributed by the BSA Lead MRT and the BSA Clinical Director for the respective groups. The surveys were carried out in 2004, 2005 and in 2006. The information in the surveys is confidential and completed anonymously by the MRTs and radiologists. The key information to date for the 2004, 2005 and 2006 surveys are:

- MRTs have a high attrition rate (18% in 2005 and 23% in 2006) citing occupational overuse syndrome (OOS) and desire to practice in other modalities e.g. CT, MRI or angiography
- There has been significant use of MRT locums in 2004 and 2005 due to unfilled vacancies. The number of locums in 2006 decreased significantly
- Most BSA MRTs enjoy the flexibility of breast screening and no on-call work
- The average hours worked for MRTs increased from 23 hours per week in 2004 to 28 hours per week in 2005. The average hours worked per week in 2006 decreased to 19.4. The number of MRT FTEs increased significantly by 34% since 2004 (45 FTEs) to 60.4 FTEs in 2006
- BSA radiologists were reading more mammograms in 2005 compared to 2004 (average 116 in 2004 to 153 in 2005) but had decreased slightly in 2006 to 135.
- Comments from radiologists included the suggestion to train MRTs to read mammograms and to introduce assistant practitioners to take mammograms.
- The total number of BSA radiologists increased from 50 to 64 (headcount) since 2004.
- The total number of BSA MRTs increased from 93 to 118 (headcount) since 2004.

The 2006 annual BSA workforce survey included two new providers in the Auckland region, BreastScreen Waitemata and Northland (BSWN) and BreastScreen Counties Manakau (BSCM). Surveys were sent out to BSA Clinical Directors who distributed the surveys to 65 BSA radiologists. This is an increase of 15 radiologists over those working in the programme in 2004 (n=50).

4.9 Radiology Fellowships

The NSU offered Radiology Training Fellowships for New Zealand resident radiologists who wish to work within the national breast screening programme.

The Fellowships offer radiologists educational and research activities as well as practical experience under the supervision of the Clinical Director of a BSA Lead Provider organisation. The fellowships were offered from 2004 to 2007. One twelve month fellowship was taken up in 2004; two six month fellowships were taken up in each of the years 2005, 2006 and two six month fellowships are offered for 2007. The fellowships enabled registrars to meet the following:

1. To become proficient in all aspects of Screening and Diagnostic Breast Imaging.
2. Develop the general skills required to function effectively as the Radiologist in a Screening team.
3. Learn and develop screen-reading skills by parallel reporting of National Screening Programme cases on the radiology information system.
4. Become competent in all diagnostic modalities and radiology procedures required by a screening programme.
5. Participate in the BSA screening programme assessment sessions on a weekly basis.
6. To actively participate in the regular Multidisciplinary Team (MDT) meetings related to the BSA screening programme.
7. To plan, undertake, complete and document audit and research activities in conjunction with the Supervising Radiologist.

Fellows were also encouraged to attend and give a paper at one local and one Australasian radiology meeting during or shortly after (within 4 months of the time of) the fellowship and to publish the results of their research project.

4.9.1 Radiology Registrars

	December 2004		Dec 2005		Dec 2006	
	Contracted volume	Actual volume	Contracted volume	Actual volume	Contracted volume	Actual volume
Pre part 1	16	23	17	23	19	45
Post part 1	45	43	48	48	50	41
Total	61	66	65	71	69	86

The CTA projections suggest that the specialist workforce in radiology is slightly behind the level required to meet the specialist to population ratio suggested by the Australian Medical Workforce Advisory Committee (AMWAC) as being adequate. The shortfall is expected to close this year (2007) or next (2008).

CTA anticipates that HWIP will lead to improved workforce projections for radiologists.

4.10 Other Initiatives

4.10.1 Scope of Practice for MRTs

In August 2004, BSA requested the MRTB grant a scope of practice in 'mammography only' for MRTs who practice in mammography and in no other medical imaging modality. This was to alleviate the condition of BSA MRTs having to show competency across general radiology even if they practice only in mammography. The MRTB granted this request for a scope of practice in mammography only.

4.10.2 Introducing Mammographic Technicians in NZ

The National Health Service (NHS) introduced Skill Mix and the four tier skill mix for MRTs in 2000. This initiative was introduced as a result of extending the breast screening age range and taking of two position mammographic images instead of one. In NZ it is standard practice to take two views of the breast. The impact for the NHS on increasing the number of women accessing the breast screening programme and essentially increasing MRT time spent in taking the mammograms meant that more MRT staff were required. Currently there is significant debate here in NZ and in Australia as to introducing expanded roles for MRTs, namely film reading and to introduce an assistant practitioner role (mammographic technician).

The NSU keeps in contact with all medical imaging educational organisations, registration bodies and professional bodies associated with the future potential for expanded roles for MRTs.

5. The Future of Workforce Development

The RANZCR published a literature review 'Establish Roles and Standards for Non-Medical Diagnostic Imaging Staff' as part of their Quality Use of Diagnostic Imaging Programme (Sub Project QS3) in August 2006. The literature review analysed international trends in establishing extended roles for MRTs and for those entering the profession at undergraduate level.

The RANZCR published a response to the literature review emphasising the extensive training undertaken to become a radiologist and that clinical risk and assurance comes from the fact that radiologists are 'the experts'. The response

also states that the proposed solutions in the review may shift the workforce shortages to other groups. The RANZCR have published an interim position statement on task delegation and role evolution in medical imaging (June 2006) stating:

> "…the RANZCR supports role extension only in the confines of delegation and with defined and agreed supervision by a Radiologist, who remains responsible for the conduct of the service and issuing the report."

The Australian Institute of Radiography (AIR) Professional Advancement Working Party published a report in April 2006 outlining the pathway of role expansion (advanced practice) for radiation therapists and radiographers (MRTs). The report maintains there could be expected advantages to advanced practice such as:

- Benefits to patient management
- A reduction of issues related to patient mismanagement
- Value adding to the health care team and
- Value adding to the scope of practice for the professions.

The AIR proposes three levels of practitioner. An accredited Practitioner (base grade), the Advanced Practitioner who will perform role extension which involves an additional educational component and a Consultant Practitioner allows for Advanced Practitioners to perform role expansion with increased education and clinical requirements.

In New Zealand, the NZIMRT and MRTB are considering advanced roles for MRTs and direct entry role for assistant practitioners at undergraduate level. The NZIMRT Working Party has worked with the educational institutes to develop advanced academic papers for MRTs to read trauma films. Role extension in NZ for MRTs is already underway with MRTs using 'red dot' in the accident and emergency department to alert the registrar to possible abnormalities as well as intravenous injection for certain radiological examinations, particularly in MRI. Reading of radiology images by MRTs in NZ is proposed but requires further work with the RANZCR and the NZIMRT Working Party.

Alongside the activities of medical imaging bodies, the Ministry of Health, Sector Policy for workforce are developing a Careers Framework, working with DHBNZ to evaluate health professional roles and assessing if other roles can be developed for health professional groups with severe shortages. A similar project has been underway in the NHS in the UK, for example, perioperative nursing and minor surgery.

5.1 Digital Mammography

There are significant advantages to installing digital mammography. Two out of eight BSA providers will have digital mammography by April 2007. Digital mammography has the potential to change the way the existing workforce currently works. There are significant advantages for the use of FFDM within BSA:

1. Improved diagnostic performance as a result of the preliminary results of the DMIST[5] trial which indicates digital mammography is beneficial to pre and peri menopausal women and women with dense breasts. This could be a significant benefit to women in the BSA newly eligible 45 to 49 age group which constitutes 26.6% of BSA women
2. FFDM enables a substantial increase (25-33%) in screening volumes per mammography machine, thereby reducing the number of machines required for the screening programme
3. FFDM may allow a 20-25% increase in Medical Radiation Technologist (MRT) productivity thereby reducing the number of MRTs required in the screening programme
4. FFDM eliminates the necessity of x-ray film processing, handling and displaying, thereby saving staff time on these processes. Films, chemicals and film-related equipment units are no longer required
5. FFDM creates an up-to-date high-tech working environment for MRTs and radiologists, thereby attracting these specialists to work in a DM screening service. This may help to alleviate the problem of workforce shortage or misdistribution in BSA
6. FFDM has an important technological advantage over film screen mammography as it enables telemammography, i.e. transmitting images from one screening centre/site to another through telecommunication channels. This technological feature of FFDM will change screening workflow and practices, leading to a film free environment with the possibility of a centralised mammogram database. Furthermore, well integrated telemammography offers the significant advantage of alleviating our main radiology workforce problem of intermittent misdistribution of reading capacity. The images for reading could be sent immediately/over night to any site where there is an available reading workforce.

At such time when all BSA providers are using digital mammography there will be significant benefits to the workforce, particularly with health and safety benefits of not having to use chemicals for film processing and reduction in RSI with automated movements of x-ray machinery.

[5] Pisano ED, Gatsonis C, Hendrick E, et al. Diagnostic Performance of Digital versus Film Mammography for Breast-Cancer Screening. *N Engl J Med*. 2005.

6. Next Steps

It is important the NSU continue to maintain its relationships across BSA work groups such as those with BSA MRT and radiologist UDGs as well as close liaison with educational institutes, registration bodies and professional institutes and colleges. The projects undertaken since the commencement of Age Extension have enabled increase in MRT and (temporarily) radiologist numbers, but these strategies do not address the longer term issue of workforce shortages. It is expected the gradual implementation of digital mammography over the next five years will go some way to improving the way MRTs and radiologists work, that is, each MRT is able to increase their throughput due to improved workflow using digital mammography and radiologists will be able to read mammograms from other sites using telemammography.

Changes to the workforce structure through the Careers Framework (currently under development through the Ministry of Health Sector Policy Workforce Group) potentially could provide the leavers to introduce extended roles for MRTs and for the introduction of an MRT technical assistant role. The introduction of skill mix in NZ gives rise to the opportunity for flexibility to roles currently carried out by radiologists and MRTs.

There are significant lessons learned from the NHS recruitment and retention activities where going too hard and too fast has resulted in NHS over recruitment and overspending on workforce[6]. With the benefit of learning from overseas experiences with recruitment and retention activities, NZ is in a good position to adapt 'the best bits' to our own environment.

7. Conclusion

Since the commencement of BSA Age Extension on 1 July 2004, BSA has strengthened its relationship across the breast screening workforce particularly with the medical imaging professional bodies, such as the MRTB, NZIMRT and the RANZCR, as well as the educational institutes. Many of the subprojects undertaken within Age Extension have been successful to increase the capacity of the medical imaging health professionals and an added advantage has been to increase the capability of the workforce through educational and training resource development.

Successes of BSA workforce projects have been mixed; the reimbursement of the Certificate of Proficiency in mammography has raised the awareness of MRTs to comply with BSA NP&QS but the reimbursement of the cost of training has not been a particular incentive; the development of annual BSA workforce surveys has been extremely useful as we now have longitudinal information on

[6] Workforce Planning: Fourth Report of Session 2006-07, House of Commons Health Committee, March 2007.

the BSA MRT and radiologist workforce; the radiology fellowships have been very successful with the fellowships being oversubscribed and feedback to the NSU is for continuation of this project; the BSA Recruitment Scheme has had mixed success with recruitment for MRTs being peaks and troughs in response to advertising. Recruitment of radiologists has been poor with overseas radiologists wishing to work in BSA for continual professional development reasons and not for permanent relocation. It is a recommendation from the pre-evaluation of the Geneva Health contract that this initiative be extended for a further 12 months. Although the return to practice for MRTs was considered a good incentive, it showed that with good research and surveying of stakeholders in advance, valuable NSU resources were used elsewhere for better benefit.

BSA workforce development staff have linked BSA workforce initiatives across the Ministry of Health through representation on the Ministry of Health Workforce Development Advisory Group (WDAG) and the Public Health Workforce Development (PHWFD) Steering Group workforce projects. The BSA workforce programme has also considered the work already carried out by the Health Workforce Advisory Committee (HWAC) such as 'Fit for Purpose and for Practice' and the NZ Institute of Economic Review (NZIER) 'Ageing New Zealand and Health and Disability Services: Demand Projections and Workforce Implications, 2001-2021'. These specific workforce publications inform BSA planning for the breast screening workforce future needs and how the breast screening environment overlaps with national workforce initiatives for future development.