Allied Health Professions
Education and Workforce Report
Diagnostic and Therapeutic Radiography
I am delighted to see the publication of this Allied Health Professional (AHP) education and workforce report for diagnostic and therapeutic radiography.

This NHS Education for Scotland (NES) report uses individual level and aggregate data from multiple sources to examine trends in the demand, supply and use of radiography services. It collates, describes and interprets the data to promote understanding of radiographers in education and in the NHS-Scotland workforce; intelligence which may be used to support workforce planning.

This is the first version of this report. It is hoped that future work will extend the quality and range of included data, which will in turn allow further interpretation and analysis.

I am grateful for the support and co-operation of the Scottish Government and the NES Radiography Think Tank. These stakeholders have offered an essential source of professional expertise, knowledge of the context surrounding the radiography workforce and awareness of local and national issues and developments.

Sonya Lam
Director of Allied Health Professions
NHS Education for Scotland
# Contents

Executive summary vii

1 Introduction 1
   1.1 Role definition . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
      1.1.1 Diagnostic radiography . . . . . . . . . . . . . . . . . . . . 2
      1.1.2 Therapeutic radiography . . . . . . . . . . . . . . . . . . . . 2

2 The demand for radiographers 3
   2.1 Diagnostic radiography . . . . . . . . . . . . . . . . . . . . . . 4
   2.2 Therapeutic radiography . . . . . . . . . . . . . . . . . . . . . . 5
   2.3 Population projections . . . . . . . . . . . . . . . . . . . . . . . 6
   2.4 NHSScotland’s demand for radiographers . . . . . . . . . . . . . 7
      2.4.1 Government health spending . . . . . . . . . . . . . . . . . 7
      2.4.2 NHS Board workforce projections . . . . . . . . . . . . . . . 8
   2.5 Summary . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 8

3 Education and training market 10
   3.1 Pre-registration education . . . . . . . . . . . . . . . . . . . . . 10
      3.1.1 Structure and funding . . . . . . . . . . . . . . . . . . . . . 10
      3.1.2 Applications to undergraduate education . . . . . . . . . . . 11
      3.1.3 Students in undergraduate and postgraduate education . 13
   3.2 Summary . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 14

4 Labour market 16
   4.1 Registration with the regulator . . . . . . . . . . . . . . . . . . 16
   4.2 Employment in NHSScotland . . . . . . . . . . . . . . . . . . . . 18
      4.2.1 NHSScotland staff demographics . . . . . . . . . . . . . . . 24
      4.2.2 NHSScotland vacancy rates . . . . . . . . . . . . . . . . . . 25
   4.3 Summary . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 27

5 Conclusion 28
   5.1 Reflections on the available evidence . . . . . . . . . . . . . . . 28
      5.1.1 Diagnostic radiography . . . . . . . . . . . . . . . . . . . . 28
      5.1.2 Therapeutic radiography . . . . . . . . . . . . . . . . . . . . 29
5.2 Avenues for future work ........................................... 29

A Additional education data ........................................... 31
B Additional NHSScotland workforce data ......................... 32
C UK Border Agency shortage occupation list ..................... 37
Glossary ...................................................................... 39
References .................................................................... 40
List of Figures

2.1 Projected size and age composition of the Scottish population 2012-2032 ......................................................... 7

3.1 Ratio of applications to accepted places for undergraduate radiography courses in Scotland 2003-2012 ..................... 11

4.1 Number of AHPs registered in the UK 2003-2013 ................ 17
4.2 Number of male and female registered radiographers in each discipline in Scotland 2009-2012 ................................. 17
4.3 NHSScotland staff groups (left) and AHP staff (right) (WTE) 30th September 2007-2013 ..................................... 18
4.4 NHSScotland AHP staff (left) and radiography staff (right) (WTE) on 30th September 2007-2013 .............................. 19
4.5 Percentage of radiography staff at AfC bands 1-4 and 5-9 on 30th September 2007-2013 ........................................ 20
4.6 NHSScotland radiography staff (WTE) by AfC band on 30th September 2009-2013 ................................................. 21
4.7 Share of radiography staff relative to population by NHS Board on 30th September 2012 ....................................... 23
4.8 NHSScotland radiography staff (headcount) by age on September 30th 2007-2013 .............................................. 24
4.9 Vacancy rates for NHSScotland radiography posts at AfC bands 1 to 4 on September 30th 2007-2013 ..................... 25
4.10 Vacancy rates for NHSScotland radiography posts at AfC bands 5 to 9 on September 30th 2007-2013 .................... 26

A.1 Ratio of applications to accepted places for undergraduate AHP courses in Scotland 2003-2013 ................................. 31

B.1 Percentage of AHP staff at bands 1-4 and 5-9 on 30th September 2007-2013 ........................................ 32
B.2 Percent of NHSScotland AHP staff (WTE) by AfC band 30th September 2007-2013 ............................................. 33
B.3 NHSScotland AHP staff as a proportion of WTE by AfC band on 30th September 2013 - larger professions .......................... 34
B.4 NHSScotland AHP staff as a proportion of WTE by AfC band on 30th September 2013 - smaller professions ...................... 34
B.5 Percent of NHSScotland AHP staff (headcount) by age on September 30th 2007-2013 .................................................. 35
B.6 Vacancy rates for NHSScotland AHP posts at AfC bands one to four 30th September 2007-2013 ................................. 36
B.7 Vacancy rates for NHSScotland AHP posts at AfC bands five to nine 30th September 2007-2013 ................................. 36
List of Tables

2.1 Spending on health from SG annual budget adjusted to 2011-12 prices ........................................ 8

3.1 Total number of accepted places in undergraduate courses Scotland 2003-2013 (*GCU not included), source UCAS .................. 12

3.2 Number of students commencing and completing therapeutic (T) and diagnostic (D) radiography pre-registration programmes, source QMU .................................................. 13

3.3 Number of students commencing and completing undergraduate diagnostic radiography at RGU, source HESA ...................... 14

B.1 Total WTE NHSScotland diagnostic and therapeutic radiography staff by Health Board on 30th September 2012 ......................... 35
Executive summary

This report is part of a programme of data development and analysis on the Allied Health Professions in Scotland by NES. It describes the education and training market and the labour market for diagnostic and therapeutic radiography. Detailed longitudinal data was available on health sector employees, and they comprise the focus of this report.

The demand for radiographers

This chapter showed that:

- both diagnostic and therapeutic radiographers are listed by the UK Border agency as occupations for which there is a national shortage;
- while quantifying the level of current met or unmet need for diagnostic and therapeutic radiography services is beyond the scope of this report, other reports have highlighted a lack of capacity in mammography and therapeutic radiography as a whole. Survival rates for stroke and cardiovascular disease are predicted to increase, as is the diagnosis rate of several types of cancer;
- between 2010 and 2032 Scotland’s population is projected to increase by 8% and the number of people aged 60 and over is projected to increase by almost 40%);
- all of these factors indicate a high and increasing demand for radiography services;
- the extent to which this increased demand for radiography services is translated into increased demand for radiographers is a function of the objectives and constraints of NHS Boards and other potential employers.
Education and training market

This chapter showed that:

- the ratio of applicants to accepted places for pre-registration diagnostic radiography education in Scotland was around four at all three providers in 2003. It doubled to eight at Robert Gordon University (RGU) and tripled to twelve at Glasgow Caledonian University (GCU) by 2013. The ratio for therapeutic radiography programmes has varied between four and twelve; in 2013 it was seven at both GCU and Queen Margaret University (QMU);

- the number of accepted places on diagnostic radiography programmes varied from 107 to 130 between 2003 and 2013. In 2013 41 therapeutic radiography places were offered, the highest ever number;

- the output of all pre-registration diagnostic and therapeutic radiography courses and student demographics cannot be reported due to data quality issues at GCU and QMU. The output of diagnostic radiography at RGU was at least 25 per year between 2008 and 2013. Among RGU students over four out of five were female and a similar proportion were domiciled in Scotland.

Labour market

This chapter showed that

- the combined number of diagnostic and therapeutic radiographers registered in the UK with the Health and Care Professions Council (HCPC) increased by over a third between 2001 and 2013 to 27,814. In Scotland the total number of registrant radiographers increased by 4% between 2009 and 2012 to 2,253, a similar rate of increase to the UK as a whole. The estimated increased in diagnostic and therapeutic radiographers in Scotland was 3% and 9% respectively;

- Information Services Division (ISD) report that the number of diagnostic and therapeutic radiographers employed in NHSScotland on September 30th 2013 was 2,199 and 282 respectively (headcount). Between 2010 and 2013 the total Whole Time Equivalent (WTE) of diagnostic radiographer staff in NHSScotland increased slightly (1.5%) to 1903.8 while in therapeutic radiography is increased by 14.5% to 257.1. The headcount of radiography staff in post at Agenda for Change (AfC) band five or over in 2012 was estimated to equate to 95% and 100% of all Scottish diagnostic and therapeutic radiography registrants respectively;
• the distribution of diagnostic radiography staff employed in NHSScotland by AfC band between 2010 and 2013 was relatively stable, however among therapeutic radiography staff there was evidence of an increase in WTE at bands five and six;

• an annual look at the short term vacancy rate for NHSScotland diagnostic radiography posts at AfC five to nine revealed an increase from 1% in 2010 to over 2% in 2013, while long term vacancies remained below 1%. Similarly vacancies for short term higher grade therapeutic radiography posts increased to almost 3% while long term vacancies remained low. This snapshot of vacancy data is limited to September each year and does not include unfilled posts which are not replaced.
Chapter 1

Introduction

This report is part of a programme of data development and analysis on the Allied Health Professionals (AHPs) in Scotland by NHS Education for Scotland (NES). It describes the education and labour markets for diagnostic and therapeutic radiographers. It offers an initial look at the professions, drawing on several sources of routinely collected data at different stages of the education and employment pathway from application to university through to the provision of services.

Diagnostic and therapeutic radiographers are distinct professional groups with different educational pathways and scopes of practice. For historical reasons some of the data for the professions were only available aggregated at source. This report will attempt to comprehensively describe all available longitudinal data for both professionals with distinct data wherever possible. Profession-specific issues will be discussed separately.

The principle aim is to examine trends in the supply of and demand for diagnostic and therapeutic radiography at a national level, and therefore individual-level longitudinal education and workforce data on each profession were sought. Where this was unavailable, combined data for the two professions, or aggregate data collected over several years was used. One-off surveys and other partial ‘snapshot’ data were not used as they do not demonstrate trends over time and are therefore of limited value. Detailed longitudinal data was available on some pre-registration radiography students and health sector employees in some years, so they comprise the focus of this report. Robust data on the educational pathway for support workers and assistant practitioners in radiography was not available, but these individuals are captured within NHSScotland workforce and this data is reported in detail. It is anticipated that this report will be of interest to radiography leads, the professional body (Society and College of Radiographers (SCoR)) and professionals responsible for planning the education and workforce landscape for diagnostic and therapeutic radiography services.
across Scotland and the rest of the UK.

The remainder of this chapter briefly describes the roles of diagnostic and therapeutic radiographers. Chapter 2 examines some of the determinants of the demand for radiography services and the extent to which they may change in the future. Chapter 3 provides an overview of the structure and funding for pre-registration radiography education in Scotland and trends in the student population. Chapter 4 reports trends in labour market outcomes for the radiography workforce including employment and vacancy data from NHSScotland. Chapter 5 reflects on the included evidence and sets out some avenues for future work.

1.1 Role definition

1.1.1 Diagnostic radiography

The Health and Care Professions Council (HCPC) the professional regulator in the UK states that diagnostic radiographers produce and interpret high-quality images of the body to diagnose injuries and diseases (hcpc-uk.org). Diagnostic radiographers most commonly work in hospitals where they support most departments including accident and emergency, outpatients, operating theatres and wards. They employ a range of different imaging techniques and sophisticated equipment to produce images of an injury or disease and may report on them to ensure the correct treatment is given. Some diagnostic radiographers are based in clinics with a radiology or imaging department, and may work alone or in teams (sor.org).

1.1.2 Therapeutic radiography

The HCPC states that therapeutic radiographers plan and deliver treatment using radiation (hcpc-uk.org). They are responsible for the planning and delivery of accurate radiotherapy treatments using a wide range of complex equipment to treat tumours and destroy diseased tissue while minimising exposure to healthy tissue. Most of their patients have cancer. Therapeutic radiographers are involved in patient care from initial referral, treatment planning and delivery and follow up and usually work closely with the rest of the oncology team in hospital or oncology centres. They are the only healthcare professionals qualified to plan and deliver radiotherapy, and they constitute 50% of the radiotherapy workforce (sor.org).
Chapter 2

The demand for radiographers

Both diagnostic and therapeutic radiographers have been on the UK Border Agency’s annual shortage occupation list since 2011. This list allows potential employers to recruit from overseas with fewer restrictions (such as advertising the post) and preference given to migrants compared to other professions. The other health professions included in the current list are shown in Appendix C and include nuclear medicine technologists and radiotherapy technologists. These are posts which, respectively, can be filled by diagnostic and therapeutic radiographers.

The UK shortage occupation list also includes sonographers. Sonography is not a regulated profession and job titles are not protected; they are not included as a distinct group in this report which focusses on the two registrable AHP groups of radiographers. However, many sonographers are radiographers who are registered with HCPC, others are midwives, medical practitioners or from other healthcare backgrounds. [1] Many employers require or prefer staff to be registered healthcare professionals who have completed additional training. [2] The SCoR have produced a range of publications focusing on sonography and identifying the issues that particularly impact on this group. Their 2014 UK-wide survey (n=59) included two responses from Scotland and reported a high level of vacancies, difficulties in recruiting staff (61% of departments) and a high level of absence (54% of departments). Difficulties in recruitment were most frequently attributed to a lack of suitable applicants. A significant factor in relation to absences was a high and increasing incidence of work related musculo-skeletal disorders in sonographers. [3] Increasing demand for examinations such as vascular and obstetric ultrasound has been identified including the introduction of Ascending Aortic Aneurysm screening. [4, 5]
2.1 Diagnostic radiography

Diagnostic radiography is used to investigate a very wide range of diseases, injuries and symptoms in patients of all ages. Some of the techniques are used in combination, but the following is a simplified list of the common types of medical situations in which each major technique is used, compiled from various sources.

- X-ray
  - single image X-ray (plain film)
    * traumatic injury or pathology of the skeletal system
    * pneumonia, lung cancer or pulmonary oedema
    * bowel or intestinal obstruction
    * image reporting of appendicular skeleton
  - fluoroscopy
    * gastrointestinal tract, including barium enemas and meals
    * guiding or placing devices, such as metalwork in orthopaedic surgery, pacemakers, feeding tubes
    * intervertebral disc pathology
  - angiography
    * pathology of blood vessels and chambers of the heart
    * interventional procedures and staging
  -Computed Tomography (CT) scan
    * initial diagnosis, follow up and staging of cancer in any part of the body
    * tumours, calcifications, haemorrhage and brain trauma
    * acute and chronic lung parenchyma defects
    * complex fractures
  - mammography
    * diagnostic and screening test for the detection of breast cancer

- ultrasound
  - general ultrasound of thyroid, abdominal organs
  - visualising foetal and maternal tissue during pregnancy
  - trauma
  - vascular ultrasound for deep vein thrombosis and carotid artery

- Magnetic Resonance Imaging (MRI) scan
  - myocardial ischaemia and viability, cardiomyopathies, congenital heart disease
  - spinal imaging, assessment of joint disease and soft tissue tumour
  - lesions of the liver, pancreas and bile ducts
  - mapping of the brain in response to external stimuli for neurosurgery
  - pre-operative staging of rectal and prostate cancer
Other techniques which may be employed by radiographers include Positron Emission Tomography (PET) CT and PET MRI for investigation of dementia and nuclear medicine in which radioactive substances are used to diagnose or treat a range of diseases (bnms.org.uk).

It is beyond the scope of this report to document the prevalence or incidence of the above conditions and injuries. It is therefore not feasible here to quantify the current level of provision or unmet demand for diagnostic radiography services in general or in specialist areas e.g. sonography and breast screening services. The fact that much of the service demand for diagnostic radiography is unscheduled adds to the challenge of anticipating need. In 2012, the Centre for Workforce Intelligence (CFWI) anticipated increasing demand for diagnostic radiography in line with predicted increases in supply from pre-registration education but were concerned about the implications of any mismatch. [6] They highlighted a reported shortfall in mammography. In Scotland increased demand is likely as a result of initiatives such as the Heart Disease and Stroke Care Action Plan [7] which aims to improve access to diagnostic imaging for people who have suffered a stroke, and the Scottish Intercollegiate Guidelines Network (SIGN) guideline on management of patients with stroke. [8] Other policy initiatives that are expected to impact on service demands are the four hour Accident & Emergency Treatment Target (gov.scot), the Detect Cancer Early Health Improvement, Efficiency, Access to Services and Treatment (HEAT) targets for breast, colorectal and lung cancer (scotland.gov.uk) and the Diagnostic Waiting Times targets for CT, MRI, ultrasound and barium (isdscotland.org).

The Scottish Clinical Imaging Network (formerly the Managed Diagnostic Imaging Clinical Network) was established with the aim of collecting and standardising national data on targets (nsd.scot.nhs.uk).

### 2.2 Therapeutic radiography

Therapeutic radiography (also referred to as radiotherapy) is almost exclusively concerned with the treatment of patients with cancer, but is sometimes used to treat benign tumours or other benign diseases. Cancer diagnoses are predicted to increase in Scotland (particularly oesophageal, prostate and colorectal) from around 30,000 patients per year in the five years to 2010, to around 35,000 per year in the five years to 2020. [9] This increase is likely to be due to improvements in diagnostic procedures as well as the increasing numbers of older people in the population.

The CFWI report on therapeutic radiography in 2012 stated that optimal treatment levels could not be met with the current workforce, and anticipated further
rise in demand. [10] Detect Cancer Early, as mentioned with respect to diagnostic radiography, is an initiative with the aim of improving five year survival rate for people in Scotland diagnosed with cancer (scotland.gov.uk). This programme of activities was launched by the Scottish Government (SG) in 2012 and included a HEAT target to increase the proportion of people diagnosed and treated in the first stage of breast, colorectal and lung cancer by 25% by 2014-15 (scotland.gov.uk). National screening programmes for cervical, breast and bowel cancers continue to drive demand for radiotherapy services, as do the radiology waiting times targets (for CT scan, MRI scan, barium studies, non-obstetric ultrasound) (isdscotland.org). Other initiatives such as the Human Papilloma Virus Immunisation Programme (nhs.uk) may influence demand. The NHSScotland Local Delivery Plan 2013/14 defined a HEAT standard such that 95% of all patients diagnosed with cancer should begin treatment within 31 days of the decision to treat, and 95% of those referred urgently with a suspicion of cancer should begin treatment within 62 days of receipt of referral. [11] Data from the quarter to November 2012 indicated that 94.2% and 97.5% of patients in these groups respectively did so. The percentage varied by health board (isdscotland.scot.nhs.uk). A sixth cancer centre in Scotland is due to open in 2015 to meet the increase in demand requiring an additional twenty therapeutic radiographers (nhsggc.org.uk). New or expanded services are also expected in Northern Ireland and England.

The Radiotherapy Activity Planning for Scotland 2011-15 report estimated that demand for radiotherapy in Scotland would increase substantially over the subsequent ten to fifteen years due to a combination of demographic and clinical factors. [12] The group which produced the report is now responsible for coordinating national workforce planning and inter-centre contingency work and reports to the SG.

2.3 Population projections

Both the composition of the population and its overall size are key determinants of the future demand for radiography services. Figure 2.1 reports the latest population projections by age group for Scotland (nrscotland.gov.uk). Between 2010 and 2032 Scotland’s population is projected to increase by about 8% and the number of people aged 60 and over is projected to increase by almost 40%. The birth rate in Scotland steadily increased from a low of 10.1 per 1,000 people in 2002 to 11.5 in 2008. It has subsequently decreased again and was 10.5 in 2013. If the incidence and prevalence rates of the conditions diagnosed and treated by radiography stay the same or increase then longer life expectancy, improved survival rates and increasing numbers of people living with chronic conditions
would result in an increase in the number of people who require support, particularly among the older age groups. [13] These changing demographics together with strategic initiatives such as those mentioned above, suggest that the demand for radiography services will increase.

### 2.4 NHSScotland’s demand for radiographers

NHSScotland is a major employer of and key source of demand for diagnostic and therapeutic radiographers. NHS Boards’ demand for health care workers is a function of their objectives and constraints. The objectives of NHS Boards are developed against their local delivery plan, and policies such as the Quality Strategy and the Efficiency and Productivity Framework. [14, 15] Over the last few years the National Delivery Plan for the AHPs in Scotland 2012-2015 has provided some guidance for diagnostic radiography. [16]

Section 2.4.1 reports the planned spending on health by the SG, which represents the budget constraint of NHS Boards.

#### 2.4.1 Government health spending

A key determinant of the demand for health care workers is the budget available to NHS Boards. The SG’s planned expenditure on selected items from their
health, wellbeing and cities portfolio following a spending review in 2011 is shown in Table 2.1. [17]

Table 2.1: Spending on health from SG annual budget adjusted to 2011-12 prices

<table>
<thead>
<tr>
<th></th>
<th>Budget £m</th>
<th>Draft £m</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHS &amp; special health boards</td>
<td>8,645.1</td>
<td>8,717.0</td>
</tr>
<tr>
<td>EDUCATION &amp; TRAINING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce</td>
<td>28.3</td>
<td>30.6</td>
</tr>
<tr>
<td>Nursing, Midwifery &amp; AHP</td>
<td>148.5</td>
<td>146.1</td>
</tr>
<tr>
<td>PRIMARY &amp; COMMUNITY CARE SERVICES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>710.4</td>
<td>698.8</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>185.9</td>
<td>182.9</td>
</tr>
<tr>
<td>Dental</td>
<td>398.7</td>
<td>392.2</td>
</tr>
<tr>
<td>Ophthalmic</td>
<td>93.0</td>
<td>91.5</td>
</tr>
</tbody>
</table>

While the overall NHS budget has increased in real terms annually relative to 2011-12, the allocated education and training budget for Nursing, Midwifery and AHP has decreased, as have the budgets for primary and community care services.

2.4.2 NHS Board workforce projections

NHS Board projections in 2014 showed that employment of all NHSScotland staff was projected to increase by 0.9% in the 12 months to March 2015. [18] For AHPs there was projected to be a 0.5% reduction between March 2014 and March 2015. This follows an increase in 2014 of 1.2%, and decreases of 0.6% and 1.3% in 2013 and 2012 respectively. [19, 20, 21] The increase in 2014 follows the recategorisation of paramedic staff as AHPs. NHS workforce data from 2007 to 2013 are presented in detail in Section 4.2.

2.5 Summary

This chapter showed that:

- both diagnostic and therapeutic radiographers are listed by the UK Border agency as occupations for which there is a national shortage;
• while quantifying the level of current met or unmet need for diagnostic and therapeutic radiography services is beyond the scope of this report, other reports have highlighted a lack of capacity in mammography and therapeutic radiography as a whole. Survival rates for stroke and cardiovascular disease are predicted to increase, as is the diagnosis rate of several types of cancer;

• between 2010 and 2032 Scotland’s population is projected to increase by 8% and the number of people aged 60 and over is projected to increase by almost 40%;

• all of these factors indicate a high and increasing demand for radiography services;

• the extent to which this increased demand for radiography services is translated into increased demand for radiographers is a function of the objectives and constraints of NHS Boards and other potential employers.
Chapter 3

Education and training market

3.1 Pre-registration education

The HCPC lists nine courses in Scotland which lead to registration as a diagnostic or therapeutic radiographer at Bachelor of Science (BSc) Hons, Master of Science (MSc) or postgraduate diploma level (hcpc-uk.org). All of these courses have SCoR approval. Post-registration training for radiography, including training for advanced practitioners, is not described in this report. Detailed data on training of support workers in radiography was not available.

3.1.1 Structure and funding

Pre-registration education in Scotland is offered in diagnostic radiography at Glasgow Caledonian University (GCU), Queen Margaret University (QMU) and Robert Gordon University (RGU) at undergraduate level, and by QMU at postgraduate level. Undergraduate pre-registration education in therapeutic radiography is offered at GCU and QMU and by QMU at postgraduate level. The minimum entry requirements for undergraduate courses in both branches of radiography is four Scottish Highers. Postgraduate courses require an honours degree in a relevant discipline. The courses combine academic learning with practical clinical placements.

In Scotland places on radiography courses are not controlled by government, which means that the number of places is determined by the interaction of the supply of places by universities and the demand for places by students. The availability of practice placements is therefore a key factor influencing the supply of places by universities.
Where eligibility criteria are met, places on radiography programmes taken by Scottish domiciled and European Economic Area (EEA) students are funded by the public sector via the Scottish Funding Council (SFC), assuming that it is their first degree. In addition to demand-side subsidies that are available to all EEA students studying in Scotland, students studying an AHP course also receive an income assessed Scottish Government Health Directorates (SGHD) bursary, a non-income assessed loan and may apply for income-assessed support towards placement expenses. [22].

Student data and demographics are reported in Section 3.1.3.

### 3.1.2 Applications to undergraduate education

The Universities and Colleges Admissions Service (UCAS) collects data on applications and acceptances into undergraduate courses at universities. These data comprise the number of applications to courses through the main application scheme and number of accepted places via all application routes. The ratio is a proxy measure of the demand for course places in Scotland.

The ratio of applications to accepted places on undergraduate radiography preregistration courses in Scotland is shown in Figure 3.1. Data for therapeutic radiography at GCU prior to 2009 were not available. The ratio for places on all radiography courses increased between 2009 and 2013.

**Figure 3.1: Ratio of applications to accepted places for undergraduate radiography courses in Scotland 2003-2012**

Equivalent data for the other AHPs are shown in Figure A.1 in Appendix A.

The total number of accepted places into undergraduate diagnostic radiography programmes in Scotland increased from 108 in 2003 to 130 in 2011 but
subsequently decreased again as shown in Table 3.1. Note that the number of acceptances into therapeutic radiography prior to 2009 did not include the GCU course (marked with an asterisk).

Table 3.1: Total number of accepted places in undergraduate courses Scotland 2003-2013 (*GCU not included), source UCAS

<table>
<thead>
<tr>
<th>Year</th>
<th>Total accepted places</th>
<th>Diagnostic</th>
<th>Therapeutic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>108</td>
<td>10*</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>107</td>
<td>15*</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>113</td>
<td>13*</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>111</td>
<td>13*</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>119</td>
<td>&lt;10*</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>117</td>
<td>10*</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>122</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>128</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>130</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>114</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>123</td>
<td>41</td>
<td></td>
</tr>
</tbody>
</table>
3.1.3 Students in undergraduate and postgraduate education

The Higher Education Statistics Agency (HESA) (hesa.ac.uk) collects an annual record for each student in education and training at UK universities. Institutions submit data to HESA in September each year for the previous academic year, comprising one record for every student registered in each course. In general this data supports longitudinal analysis of students in training, and also provides demographic data on students at an individual level. Data were available from academic years 2005-06 to 2012-13, however it was not possible to isolate information on diagnostic and radiography students for two of the providers due to the way records have been coded.

Undergraduate radiography students at QMU have in some years been coded under the title ‘Radiography Undergraduate Scheme’ or ‘Radiography’ rather than distinct diagnostic and therapeutic programmes. This prevents reporting of any detail for each group of students. Commencement and completion data for the courses for each discipline were provided by QMU, see Table 3.2, but no demographic or longitudinal analysis is possible.

<table>
<thead>
<tr>
<th></th>
<th>2004-05</th>
<th>05-06</th>
<th>06-07</th>
<th>07-08</th>
<th>08-09</th>
<th>09-10</th>
<th>10-11</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commencement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UG T</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>10</td>
<td>10</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>PG T</td>
<td>14</td>
<td>12</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>UG D</td>
<td>23</td>
<td>19</td>
<td>26</td>
<td>37</td>
<td>36</td>
<td>34</td>
<td>43</td>
<td>22</td>
</tr>
<tr>
<td>PG D</td>
<td>&lt;10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Completion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UG T</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>PG T</td>
<td>12</td>
<td>13</td>
<td>12</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>UG D</td>
<td>10</td>
<td>29</td>
<td>28</td>
<td>21</td>
<td>22</td>
<td>20</td>
<td>25</td>
<td>31</td>
</tr>
</tbody>
</table>

GCU were unable to confirm the HESA data for their radiography courses or provide it at aggregate level, and they are therefore not included here.
RGU data extracted from HESA was confirmed as accurate, and so the remainder of this chapter relates only to RGU diagnostic radiography students using the national dataset.

Table 3.3 demonstrates an increase in students commencing and completing undergraduate diagnostic radiography at RGU between 2005-06 and 2012-13.

**Table 3.3:** Number of students commencing and completing undergraduate diagnostic radiography at RGU, source HESA

<table>
<thead>
<tr>
<th></th>
<th>2005-06</th>
<th>06-07</th>
<th>07-08</th>
<th>08-09</th>
<th>09-10</th>
<th>10-11</th>
<th>11-12</th>
<th>12-13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commencement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UG D</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td>31</td>
<td>30</td>
<td>34</td>
<td>34</td>
<td>40</td>
</tr>
<tr>
<td><strong>Completion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UG D</td>
<td>16</td>
<td>18</td>
<td>29</td>
<td>27</td>
<td>25</td>
<td>26</td>
<td>29</td>
<td>25</td>
</tr>
</tbody>
</table>

Between academic year 2005-06 and 2011-12 the mean age of first year undergraduate diagnostic students at RGU was 20.

Around 85% were female. Overall 82% of students were domiciled in Scotland on application to their course and 14% were from EEA countries, most commonly the Republic of Ireland.

Few students reported having dependants (<8%).

Around 6% of students reported having a disability, most commonly a learning disability such as dyslexia or an ‘unseen’ disability such as asthma or diabetes.

The Scottish Index of Multiple Deprivation (SIMD) combines a set of indicators across domains including income, employment, health, education, skills and training, housing, geographic access and crime and is available for students who were domiciled in Scotland on application. SIMD Q1 represents students from the most deprived 20% of datazones. Around 30% of Scottish-domiciled students lived in areas within the least deprived SIMD category on application to their course, and about 4% lived in areas categorised as the most deprived.

### 3.2 Summary

This chapter showed that:

- the ratio of applicants to accepted places for pre-registration diagnostic radiography education in Scotland was around four at all three providers
in 2003. It doubled to eight at RGU and tripled to twelve at GCU by 2013. The ratio for therapeutic radiography programmes has varied between four and twelve; in 2013 it was seven at both GCU and QMU;

- the number of accepted places on diagnostic radiography programmes varied from 107 to 130 between 2003 and 2013. In 2013 41 therapeutic radiography places were offered, the highest ever number;

- the output of all pre-registration diagnostic and therapeutic radiography courses and student demographics cannot be reported due to data quality issues at GCU and QMU. The output of diagnostic radiography at RGU was at least 25 per year between 2008 and 2013. Among RGU students over four out of five were female and a similar proportion were domiciled in Scotland.
Chapter 4

Labour market

4.1 Registration with the regulator

Once qualified, radiographers must register with the HCPC to work in the UK. Anyone using either the title of radiographer, diagnostic radiographer or therapeutic radiographer must be registered with the HCPC. Figure 4.1 shows the number of HCPC AHP registrants in the UK over the last twelve years, among whom the combined group of diagnostic and therapeutic radiographers make up the third largest group. [23, 24] Between 2001 to 2013 the number of UK registered radiographers increased by 39% from 20,073 to 27,814.

Number of registrants is not routinely published for diagnostic and therapeutic radiographers separately. However a small number of freedom of information requests published on the HCPC website report the number and sex of diagnostic and therapeutic radiographers (and those who were registered as both, or not classified as either) in Scotland between 2009 and 2012 (hcpc-uk.org), see Figure 4.2. These data indicated that the total number of radiography registrants in Scotland increased by 4% from 2,164 in 2009 to 2,253 in 2012, while in the UK overall there was a 5% increase. In order to report profession-specific numbers in this report, individuals registered as ‘unclassified’ radiographers were counted as diagnostic radiographers (around 100 each year) and those classified as ‘both’ diagnostic and therapeutic radiographers were counted once in each profession (around 20 each year). This assumption leads to an estimated total of 1,967 diagnostic radiographers in Scotland in 2012, an increase of 3% since 2009, and 304 therapeutic radiographers, an increase of 9% since 2009.

Data on the nationality of registrants were available for the UK-wide registrant population from 2012 to 2013 (hcpc-uk.org.uk). This indicated that the number of new registrants from Europe increased from 84 in 2012 to 97 in 2013. There
Figure 4.1: Number of AHPs registered in the UK 2003-2013

Source: HCPC

Figure 4.2: Number of male and female registered radiographers in each discipline in Scotland 2009-2012

Source: HCPC
were 157 new registrants from the rest of the world in 2012 and 141 in 2013, the vast majority of whom were from Australia or New Zealand.

### 4.2 Employment in NHSScotland

Data on the NHSScotland workforce are collated regularly from NHS Boards and published by the Information Services Division (ISD), a division of NHS National Services Scotland (NSS) (isdscotland.org). Figure 4.3 reports the number of Whole Time Equivalent (WTE) staff in NHSScotland from 2007 to 2013 on the left with AHPs only on the right. On September 30th 2013 AHPs accounted for 8.2% of Hospital, Community and Public Health Service (HCHS), an increase in proportion since 2007 (6.8%). Note, the HCHS excludes staff who work within the general medical and dental service staff.

**Figure 4.3:** NHSScotland staff groups (left) and AHP staff (right) (WTE) 30th September 2007-2013

The total WTE diagnostic radiography NHSScotland workforce was around 20% of the AHP workforce between 2010 and 2013, making it the third largest AHP group, while therapeutic radiographers constituted around 3% of AHPs. These two groups comprised about 1.4% and 0.2% of all staff employed in NHSScotland, respectively. Note that multi-skilled AHP staff work across more than one discipline and include support workers and AHP leads, and therefore are not counted within the relevant professions.
Figure 4.4 shows the WTE radiography staff in NHSScotland between 2007 and 2013. The ISD workforce data did not distinguish diagnostic from therapeutic radiography staff before 2010. The WTE of diagnostic radiographers increased from 1,876.4 in 2010 to 1,903.8 in 2013, an increase of 1.5%. Over the same time, the WTE of therapeutic radiography staff increased from 224.5 to 257.1, an increase of 14.5%.

**Figure 4.4:** NHSScotland AHP staff (left) and radiography staff (right) (WTE) on 30th September 2007-2013
In 2012 1,872 of the total number of diagnostic radiography staff were in posts at Agenda for Change (AfC) band five or over, which equates to 95% of the estimated number of diagnostic radiographers in Scotland registered with the HCPC in November 2012 (the latest date for which Scottish data is available). At the same time there were 304 therapeutic radiography staff in post at AfC band five or over, equating to 100% of the estimated registered population in Scotland. As noted in Section 4.1, some individuals were registered under both disciplines and were used in both of these calculations, and others are registered as ‘unclassified’ radiographers and were counted as diagnostic radiographers for the purpose of this report.

Radiography support staff are typically employed in the NHS at AfC bands one to four, for example a radiography support worker may be employed at band three and radiography assistant practitioner at band four. Figure 4.5 shows that the percentage of diagnostic and therapeutic radiography staff WTE in bands one to four was around 20% and 9% respectively.

Comparable data for the other AHPs are shown in Appendix B Figure B.1.

**Figure 4.5:** Percentage of radiography staff at AfC bands 1-4 and 5-9 on 30th September 2007-2013
The distribution of radiography WTE staff in NHSScotland by AfC band between 2009 and 2013 is shown in Figure 4.6. The distribution of WTE for diagnostic radiographers at each band was relatively stable over the four years in most bands but some reduction evident in posts at band six. Among therapeutic radiography posts there were increases in the proportion of posts at band five and six.

**Figure 4.6:** NHSScotland radiography staff (WTE) by AfC band on 30th September 2009-2013

Comparable data for other AHPs in NHSScotland are shown in Appendix B Figure B.2.
Figure 4.7 shows the distribution of NHSScotland radiography staff of all grades (WTE), between each NHS Board relative to its share of the population as published by National Records of Scotland (NRS) (nrscotland.gov.uk). NHS Boards with a value less than one have fewer radiography staff relative to its population than the other NHS Boards. Using this measure the employment rates of radiography staff between NHS Boards ranges from 0.86 to 1.35 with the highest ratio in the Western Isles. The reported staffing levels do not take into account variation in the health needs of the population, the effect of remoteness and rurality or the provision of services which operate across different NHS Boards or integrate with other sectors. The total WTE of radiography staff by Health Board is given in Appendix B Table B.1.
Figure 4.7: Share of radiography staff relative to population by NHS Board on 30th September 2012
4.2.1 NHSScotland staff demographics

The age distribution of radiography staff (by headcount) employed in NHSScotland is shown in Figure 4.8. Separate data has been available since 2010 for diagnostic and therapeutic radiographers. There is a relatively even distribution of diagnostic radiographers across the age groups between 25-29 and 55-59. Each year since 2010 around one third (32%) were under 35. In 2010 15% were over 54, and this percentage increased to 19% in 2013. There was a greater percentage of younger therapeutic radiography staff; around 57% were under 35 and 9% were over 54. For comparison Figure B.5 in Appendix B illustrates the age distribution of all AHPs since 2007.

Figure 4.8: NHSScotland radiography staff (headcount) by age on September 30th 2007-2013

Around 35% of diagnostic radiography staff (by headcount) between 2010 and 2013 worked part-time compared to around 26% of therapeutic radiography staff. Around 88% of diagnostic radiography staff were female as were 94% of therapeutic radiography staff.

Source: ISD Scotland
### 4.2.2 NHSScotland vacancy rates

ISD publish national statistics on AHP vacancies in NHSScotland as reported by NHS Boards. The vacancy rate is defined as the number of WTE vacancies reported on 30th September divided by the WTE establishment and is reported as a percentage. Information on absences and posts frozen or subject to review is not published. Figure 4.9 reports the trend in vacancy rates in September each year from 2007 to 2013 for radiography staff in AfC bands one to four. The short-term vacancy rate for diagnostic posts increased from under 1% in 2010 to 3% in 2013, while long-term vacancies remained under 1%. Both short and long-term vacancies in therapeutic posts were around 4% in both 2010 and 2013, but none were recorded in between those dates. This snapshot of vacancy data in September each year does not capture gaps filled by the inflow from graduates taking up new posts in July, and does not include unfilled posts which are not replaced.

**Figure 4.9:** Vacancy rates for NHSScotland radiography posts at AfC bands 1 to 4 on September 30th 2007-2013

Comparable data for other AHPs in NHSScotland at bands one to four are shown in Appendix B Figure B.6.

Figure 4.10 reports the trend in vacancy rates on 30th September 2007 to 2013 for radiography posts in NHSScotland at AfC bands five to nine. Short-term vacancies of less than three months increased from 1% in 2010 and 2011 to 4% in 2010. It subsequently decreased again. Long-term vacancies have re-
mained under 1% throughout. Short term therapeutic vacancies at this grade increased to around 3% in 2013 while long term vacancies stayed low. As mentioned above, this is an annual snapshot of vacancy data in September each year.

**Figure 4.10:** Vacancy rates for NHSScotland radiography posts at AfC bands 5 to 9 on September 30th 2007-2013

Comparable data for other AHPs in NHSScotland at bands five to nine are shown in Appendix B Figure B.7.
4.3 Summary

This chapter showed that

- the combined number of diagnostic and therapeutic radiographers registered in the UK with the HCPC increased by over a third between 2001 and 2013 to 27,814. In Scotland the total number of registrant radiographers increased by 4% between 2009 and 2012 to 2,253, a similar rate of increase to the UK as a whole. The estimated increased in diagnostic and therapeutic radiographers in Scotland was 3% and 9% respectively;

- ISD report that the number of diagnostic and therapeutic radiographers employed in NHSScotland on September 30th 2013 was 2,199 and 282 respectively (headcount). Between 2010 and 2013 the total WTE of diagnostic radiographer staff in NHSScotland increased slightly (1.5%) to 1903.8 while in therapeutic radiography is increased by 14.5% to 257.1. The headcount of radiography staff in post at AIC band five or over in 2012 was estimated to equate to 95% and 100% of all Scottish diagnostic and therapeutic radiography registrants respectively;

- the distribution of diagnostic radiography staff employed in NHSScotland by AIC band between 2010 and 2013 was relatively stable, however among therapeutic radiography staff there was evidence of an increase in WTE at bands five and six;

- an annual look at the short term vacancy rate for NHSScotland diagnostic radiography posts at AIC five to nine revealed an increase from 1% in 2010 to over 2% in 2013, while long term vacancies remained below 1%. Similarly vacancies for short term higher grade therapeutic radiography posts increased to almost 3% while long term vacancies remained low. This snapshot of vacancy data is limited to September each year and does not include unfilled posts which are not replaced.
Chapter 5

Conclusion

5.1 Reflections on the available evidence

This examination of longitudinal data on the education and labour markets for diagnostic and therapeutic radiography staff has revealed a number of trends and issues with the data which prevent further analysis.

5.1.1 Diagnostic radiography

Diagnostic radiographers have been in demand in Scotland, the rest of the UK and internationally for several years.

The demand for places on pre-registration courses has gradually increased at QMU and RGU, and more dramatically so at GCU over the last decade. The total number of accepted places on pre-registration courses was over 100 annually for ten years increased steadily with average of around 120 in last five years. There was a lack of good quality information on progression through, and output from, pre-registration education due to coding issues in the data submitted to HESA by two of the providers.

There have been consistent small annual increases in the registrant population of diagnostic radiographers both in Scotland and the UK for the period over which profession-specific data is available. Between 2010 and 2013 headcount and total WTE of diagnostic radiographers employed in NHSScotland increased slightly, and they constitute an estimated 95% of Scottish registrants in 2012. The age distribution of NHS diagnostic radiographers is roughly even across the working age range, with almost one fifth of the NHSScotland diagnostic radiography workforce over 54 in 2013. This may be of concern as diagnostic
radiography is a physical role which involves moving and handling of patients under time pressured and acute conditions.

5.1.2 Therapeutic radiography

Therapeutic radiography is a relatively small profession and only recently have data been reported distinctly from diagnostic radiography which greatly outnumbers it. Therapeutic radiography is also in demand nationally and internationally.

Demand for places on pre-registration therapeutic radiography courses has fluctuated around eight applications to every place over the last ten years. There has been an intake of around 35 to 40 students per year for the last five years, with the biggest intake in the most recent year for which data was available (2013-14). There was a lack of good quality information on progression through, and output from, pre-registration education due to coding issues as described above.

The registrant population grew each year for the period over which distinct data is available both in Scotland and the UK, with an overall increase of 9% in the four years to 2012. The WTE therapeutic radiography staff in NHSScotland employment grew by 14% over a similar time period with most increase in posts at AfC five and six. More than half of this staff group are under 35 and 94% of them are female. In 2012 the number of therapeutic radiographers in NHS-Scotland at bands five or over equated to 100% of Scottish registrants.

5.2 Avenues for future work

Now that most sources of administrative data tend to report data for the two professional groups separately, examination of trends in the education and labour markets will become increasingly informative. Among the sources used to populate this report however this limits the analysis of trends to the most recent four years. Further data development or acquisition may be required, particularly in the following areas.

Concern has been expressed about high attrition rates in both diagnostic and therapeutic radiography courses in the UK. [6, 10, 25] Unfortunately the data submitted to HESA by two of the providers in Scotland did not facilitate detailed reporting on students on pre-registration radiography courses or their output, so it will be a few more years until that dataset can be used to its full informative potential. Information on practice placements would further add to any future analysis of progression and completion rates.
Individual-level data on Scottish registrants was not available therefore reporting on the demographics or retention of the potential workforce was not possible. Correctly identifying radiographers as either diagnostic or therapeutic (or both) would improve the accuracy of reporting and it is hoped that this will be refined in future register updates.

Other sources of data to pursue which would inform on the workforce's capacity to deliver service include data around relevant HEAT standards or other activity data, information on the impact of unscheduled care access and GP referrals. National labour market information may offer some information on the profession but it is not clear how accurate the profession descriptors are for these groups. Information on graduates' next destination would be valuable, particularly for graduates who do not take up posts in Scotland.

Information on the sonography workforce would be valuable and may merit a separate piece of work.

Information on support workers and assistant practitioners in radiography would be helpful, including details of the educational pathways through which individuals progress to take up such posts.
Appendix A

Additional education data

The ratio of applications to accepted places on undergraduate AHP courses at universities in Scotland is shown in Figure A.1.

Figure A.1: Ratio of applications to accepted places for undergraduate AHP courses in Scotland 2003-2013

![Graph showing the ratio of applications to accepted places for various AHP courses in Scotland from 2003 to 2013. The graph includes data for Podiatry, Dietetics, Occupational Therapy, Physiotherapy, Prosthetics, Diagnostic Radiography, Therapeutic Radiotherapy, and Speech & Language Therapy. The source of the data is UCAS.](image-url)
Appendix B

Additional NHSScotland workforce data

The percentage of staff at grade one to four, generally the bands at which support workers are employed for each AHP staff group is shown in Figure B.1.

**Figure B.1:** Percentage of AHP staff at bands 1-4 and 5-9 on 30th September 2007-2013

Figure B.2 shows the distribution of all AHP staff by AfC band.

Figure B.3 shows the distribution of the larger AHP groups in NHSScotland by AfC band. There was some variation in the distribution by AfC band between

---

Source: ISD Scotland
professions, but the majority were on or above AfC band five.

Figure B.4 shows the distribution of the smaller AHP groups in NHSScotland by AfC band. There was some variation in the distribution by AfC band between professions, but the majority were on or above AfC band five.

The total WTE of radiography staff in NHSScotland in September 2012 used to produce the map in Figure 4.7 are shown in Table B.1.

Figure B.5 shows the distribution of AHP staff by headcount in each age group and profession in NHSScotland in September 2013.

Figure B.6 reports the trend in vacancy rates on September 30th for AfC bands one to four between 2007 and 2013. One extreme value of 100% vacancy rate for orthoptists on September 30th 2007 was removed to allow the scale for all graphs to better illustrate the data. It represented a vacancy of one WTE for an establishment of one WTE. In general the rate for vacancies in AfC bands one to four: was less than five percent; was greater for short-term rather than long-term vacancies; and increased for short-term vacancies since 2010.

Figure B.7 reports the trend in vacancy rates on September 30th between 2007 and 2013 for AHP posts at AfC bands five to nine.
Figure B.3: NHSScotland AHP staff as a proportion of WTE by AfC band on 30th September 2013 - larger professions

Figure B.4: NHSScotland AHP staff as a proportion of WTE by AfC band on 30th September 2013 - smaller professions
Table B.1: Total WTE NHSScotland diagnostic and therapeutic radiography staff by Health Board on 30th September 2012

<table>
<thead>
<tr>
<th>Health Board</th>
<th>Diagnostic</th>
<th>Therapeutic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayrshire &amp; Arran</td>
<td>148.4</td>
<td>0</td>
</tr>
<tr>
<td>Borders</td>
<td>29.0</td>
<td>0</td>
</tr>
<tr>
<td>Dumfries &amp; Galloway</td>
<td>35.3</td>
<td>0</td>
</tr>
<tr>
<td>Fife</td>
<td>98.3</td>
<td>0</td>
</tr>
<tr>
<td>Forth Valley</td>
<td>70.3</td>
<td>0</td>
</tr>
<tr>
<td>Grampian</td>
<td>174.8</td>
<td>22.1</td>
</tr>
<tr>
<td>Greater Glasgow &amp; Clyde</td>
<td>551.7</td>
<td>110.1</td>
</tr>
<tr>
<td>Highland</td>
<td>94.0</td>
<td>19.2</td>
</tr>
<tr>
<td>Lanarkshire</td>
<td>145.9</td>
<td>0</td>
</tr>
<tr>
<td>Lothian</td>
<td>275.1</td>
<td>63.4</td>
</tr>
<tr>
<td>Orkney</td>
<td>4.7</td>
<td>0</td>
</tr>
<tr>
<td>Shetland</td>
<td>8.0</td>
<td>0</td>
</tr>
<tr>
<td>Tayside</td>
<td>173.6</td>
<td>29.8</td>
</tr>
<tr>
<td>Western Isles</td>
<td>8.0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1820.7</strong></td>
<td><strong>244.6</strong></td>
</tr>
</tbody>
</table>

Figure B.5: Percent of NHSScotland AHP staff (headcount) by age on September 30th 2007-2013

Graphs by staffgrp
Figure B.6: Vacancy rates for NHSScotland AHP posts at AfC bands one to four 30th September 2007-2013

Figure B.7: Vacancy rates for NHSScotland AHP posts at AfC bands five to nine 30th September 2007-2013

Source: ISD Scotland
Appendix C

UK Border Agency shortage occupation list

There are several health and social care professions on the current UK Border Agency (UKBA) shortage occupation list. An occupation is on the shortage occupation list if there are not enough resident workers to fill the available jobs in that particular occupation.

Highly skilled migrants from outside the EEA who want to work in the UK must apply for visas through the Tier 2 immigration route. [26] Migrant workers can only enter the UK under Tier 2 if the job is on the shortage occupation list or no suitable resident workers apply after advertising the job in the UK for four weeks.

The current shortage occupation list for the UK valid from 6th April 2014 includes the following professions in health and social care. Items in bold text apply to Scotland only.

- Medical radiographers (Standard Occupational Classification (SOC) 2217)
  - HCPC-registered diagnostic radiographer
  - HCPC-registered therapeutic radiographer
  - sonographer
- Nurses (SOC 2231)
  - specialist nurse working in neonatal intensive care units
- Medical and dental technicians (SOC 3218)
  - nuclear medicine technologist
  - radiotherapy technologist
• Medical practitioners (SOC 2211)
  – consultants in emergency medicine, haematology, old age psychiatry
  – non-consultant, non-training, medical staff posts in anaesthetics, general medicine specialities delivering acute care services (intensive care medicine, general internal medicine (acute), emergency medicine (including specialist doctors working in accident and emergency), rehabilitation medicine and psychiatry
  – ST3, ST4, ST5 and ST6 trainees in paediatrics or anaesthetics
  – Scottish Ambulance Service (SAS) staff doctors in paediatrics or anaesthetics
  – consultants in paediatrics or anaesthetics
  – non-consultant, non-training doctors in the specialty obstetrics and gynaecology

• Social workers (SOC 2442)
  – social worker working in children and family services

• Biological scientists and biochemists (SOC 2112)
  – clinical neurophysiologist

• Physical scientists (SOC 2113)
  – nuclear medicine scientist
  – radiotherapy physicist
  – staff working in diagnostics radiology (including magnetic resonance imaging)
Glossary

AfC  Agenda for Change
AHP  Allied Health Professional
Allied Health Professions refers to a wide range of health care professions and includes Art Therapists, Dietitians, Drama Therapists, Music Therapists, Occupational Therapists, Orthoptists, Paramedics, Physiotherapists, Prosthetists and Orthotists, Podiatrists, Diagnostic Radiographers, Therapeutic Radiographers and Speech and Language Therapists

BSc  Bachelor of Science
CfWI  Centre for Workforce Intelligence
CT  Computed Tomography
EEA  European Economic Area
GCU  Glasgow Caledonian University
HCHS  Hospital, Community and Public Health Service
HCPC  Health and Care Professions Council
HEAT  Health Improvement, Efficiency, Access to Services and Treatment
HESA  Higher Education Statistics Agency
ISD  Information Services Division
MRI  Magnetic Resonance Imaging
MSc  Master of Science
NES  NHS Education for Scotland
NRS  National Records of Scotland
NSS  NHS National Services Scotland
PET  Positron Emission Tomography
QMU  Queen Margaret University
RGU  Robert Gordon University
SAS  Scottish Ambulance Service
SCoR  Society and College of Radiographers
SFC  Scottish Funding Council
SG  Scottish Government
SGHD  Scottish Government Health Directorates
SIGN  Scottish Intercollegiate Guidelines Network
SIMD  Scottish Index of Multiple Deprivation
SOC  Standard Occupational Classification
UCAS  Universities and Colleges Admissions Service
UKBA  UK Border Agency
WTE  Whole Time Equivalent
References


