CENTRE FOR WORKFORCE INTELLIGENCE

Securing the future workforce supply

Sonography workforce review

March 2017

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Executive summary

Overview

The Centre for Workforce Intelligence (CfWI) was commissioned by the Department of Health (DH) and Health Education England (HEE) to contribute qualitative and quantitative research, data analysis, and modelling to support HEE and NHS England in providing sufficient ultrasound practitioners to deliver diagnostic services across England. The research will inform short and long term workforce plans up to 2035.

This project supports the DH drive to ensure that the NHS has the right number of trained staff available to deliver current and future demand for diagnostic tests. It will also help to improve HEE's understanding of the current ultrasound practitioner workforce – the outputs from the review will be used by HEE and HEE local team workforce planners, responsible for planning at a local level, to inform the commissioning of education and training and the resourcing of the ultrasound practitioner workforce in England and to inform HEE commissioning and investment plan for 2017/18.

This report represents the most complete picture to date of the ultrasound workforce in England up to December 2015. Survey results data, coupled with wider work as described below, will shed new light on this workforce. It will also support initial skeleton modelling as a single workforce, allowing a degree of extrapolation of demand and supply. However, it will not answer all questions about all sub-components of this workforce.

This review was split into two phases:

- Phase one includes an ultrasound workforce survey and semi-structured interviews with a range of stakeholders and acknowledged experts in the field of ultrasound imaging. **This report is a summary of the ultrasound workforce survey findings and initial ultrasound activity analysis.**
- Phase two includes continuation of the semi-structured interviews, horizon scanning, elicitation and modelling the current and forecast demand for, and supply of, this workforce. As the CfWI contract with the DH ended on 31 March 2016, the ongoing modelling work from horizon scanning and other activities will be developed by HEE.

The practice of ultrasound imaging is more commonly known as sonography or ultrasonography. However, in the UK, there is a distinction between a 'sonographer' and an 'ultrasound practitioner' as defined by the Royal College of Radiologists (RCR) and the Society and College of Radiographers (SCoR) (RCR/SCoR 2014). So while all ultrasound practitioners perform sonography, not all ultrasound practitioners are sonographers. Detailed explanations of both are discussed in the current practice section of the report. Throughout this report both terms are used in the context of defined by the RCR and SCoR.

The RCR and SCoR definition of an **ultrasound practitioner** below (RCR/SCoR, 2014) is inclusive of all who scan and who are qualified to do so, whether registered with the General Medical Council or not. Ultrasound practitioners, would therefore, include a wide range of professionals who use ultrasound as a 'tool', even if it represents a small part of their overall activity. An ultrasound practitioner is defined as:

> *A healthcare professional who holds recognised qualifications in medical ultrasound and is able to competently perform ultrasound examinations falling within their personal scope of practice. The professional background of ultrasound practitioners can be varied and will include radiologists, radiographers, sonographers, midwives, physiotherapists, obstetricians, physicists, and clinical scientists.*

The RCR and SCoR definition of a **sonographer** (RCR/SCoR, 2014) excludes General Medical Council (GMC) registered doctors but includes non-GMC registered doctors:

> *A healthcare professional who undertakes and reports diagnostic, screening or interventional ultrasound examinations. They will hold qualifications equivalent to a postgraduate certificate or post graduate diploma in medical ultrasound that has been accredited by the Consortium for the Accreditation of Sonographic Education (CASE). They are either not medically qualified or hold medical qualifications but are not statutorily registered as a doctor in the UK.*

Sonographers therefore assess referrals for ultrasound imaging; undertake the most appropriate examination to aid the diagnosis; and record images appropriate to the diagnosis. Sonographers in the UK are also responsible for interpreting images and issuing diagnostic reports, so have a high degree of responsibility in the diagnostic process.

Workforce data limitations

The makeup, size, and age profile of the ultrasound practitioner workforce in England is not known because:

- sonography is not currently a regulated profession in the UK
- there are multiple staff groups involved in ultrasound service provision
- there are multiple national qualifications/certifications for ultrasound practitioners
- each staff group may have its own ultrasound practitioner qualification/certification
- organisations tend not to collect data on additional or specialist qualifications of its members
- there is a lack of data detailing ultrasound activity by specialty/profession/staff group as organisations tend not to collect data on ultrasound specific activity.

To relieve some these limitations, the CfWI was commissioned to produce a survey and analyse its results. As a result, this report represents the most complete picture to date of the ultrasound workforce in England. The results gathered are intended to support sophisticated initial skeleton modelling and to inform interim extrapolation of demand and supply analysis. However, this work will not answer all questions about all sub-components of this workforce.

A major driver for the development of the CfWI survey was to capture ultrasound practitioner workforce data not otherwise captured. The CfWI asked various stakeholder groups and bodies for ultrasound specific workforce data during the project. In analysing survey responses, it was found that organisations do not tend to collect data on additional or specialist qualifications of its members. For example, they may record total numbers of members but not which of those members have the skillset or qualification of ‘ultrasound practitioner’.

As a result, there is no reliable ultrasound practitioner specific workforce data to compare against the CfWI survey results. Additionally, organisations do not tend to collect data on ultrasound specific activity so there is a lack of data detailing ultrasound activity by specialty/profession/staff group.

The survey process

As the ultrasound practitioner workforce profile in England is not known, this survey aimed to collect a **baseline** set of workforce data. As there are multiple staff groups involved in ultrasound service provision, respondents were asked to:

- include all the different staff groups involved in ultrasound service provision, not just those defined in the UK as 'sonographers'
- submit information at a department or service-delivery level i.e. those departments that run ultrasound as a service or use ultrasound as a tool — not answer the survey at an organisational level.

The overall focus and structure of the survey was developed by the CfWI in conjunction with senior HEE and Health Education West Midlands (HEWM) managers. HEWM had previously conducted its own regional ultrasound workforce survey in 2013, so were able to support the development of this survey. The link to download the survey from the CfWI website was cascaded through HEE, HEE local teams, NHS trusts, clinical commissioning groups (CCGs), and some Any Qualified Provider (AQP) and allied health professional (AHP) networks.

The survey was available for download for a period of almost seven weeks from Monday 22 June to Friday 7 August 2015, with survey returns accepted up to Thursday 13 August 2015. To add to the information received, a more concise supplementary survey was circulated via email to targeted HEE local teams. HEE asked HEE local team workforce planners to cascade the supplementary survey to relevant trusts on 2 October 2015, and to return completed questionnaires by 5 November 2015.

Overview of survey findings

A total of 385 survey downloads were recorded during the initial survey period, of which 148 were returned completed. Nine completed supplementary surveys were returned. One hundred separate organisations responded to both surveys across all HEE local teams, and the quality of responses was high. The survey identified the following findings and observations:

- the majority of core[1] staff providing ultrasound services work in radiology and diagnostic imaging
- diagnostic radiographer is the most common job role
- radiology is the most common department for both medical and non-medical core staff[2]
- non-medical staff make up around 83 per cent of the core workforce
- consultants make up around 92 per cent of core medical staff
- radiographers make up around 71 per cent of core non-medical staff
- imaging is the primary area of work for around 88 per cent of consultants who provide ultrasound
- around 80 per cent of the total ultrasound workforce are women; women account for 88 per cent of the non-medical workforce, and 45 per cent of the medical ultrasound workforce
- around 33 per cent of all women who provide ultrasound are aged 50 plus

[1] Core staff = full-time permanent and part-time permanent staff. It includes core staff on leave or absent e.g. maternity/sick. It excludes agency, locum and bank staff, and vacant and frozen posts.

[2] The CfWI cannot quantitatively confirm the response rate as, due to the nature of the ultrasound workforce, it is not known which departments and how many of them were eligible to complete the survey.

- agency, locum and bank (ALB) staff make up around 12 per cent of the total ultrasound workforce
- agency staff make up around 8 per cent of the total ultrasound workforce
- around 64 per cent of ALB staff providing ultrasound work in radiology and diagnostic imaging departments
- the total snapshot vacancy rate across all HEE local teams at the time of survey was around 10 per cent
- the total long-term vacancy rate across all HEE local teams at the time of survey was around 4 per cent
- only two frozen posts were recorded across all survey submissions
- general abdominal scans are the most common, at 22 per cent of all reported scans in this survey
- the trainee-to-core-staff ratio is 0.15, or for every trainee there are about seven core staff
- a postgraduate diploma in medical ultrasound is the most common qualification currently held, and being studied for
- around 42 per cent of staff in training were expecting to qualify within six months of the survey
- 'insufficient training staff available' was cited as the most likely reason why departments would not offer, are undecided, or plan to reduce ultrasound training in the future
- 'improved recruitment to qualified posts' was cited as the most common benefit of offering ultrasound training.

The CfWI believes that these findings are the most comprehensive report of the sonography workforce to date, but cannot quantitatively confirm the survey response rate. This is due to the nature of the ultrasound workforce, where it is not known which departments and how many of the departments were eligible to complete the survey. Even though the CfWI received survey submissions that were data rich, it is apparent that data gaps existed at the time of the study, so the survey sample may not be representative of the whole of England.

Key activity and waiting times findings

Diagnostic imaging dataset (DID) data provided by the Health and Social Care Information Centre (HSCIC) shows that the number of NHS diagnostic ultrasonography imaging events in England increased at a compound annual growth rate (CAGR) of 4.6 per cent per annum between 2012-13 and 2014-15 (June to May).

Monthly diagnostic waiting times and activity (MDWTA) data provided by NHS England shows that the number of non-obstetric ultrasound planned tests increased at a CAGR of 8.4 per cent per annum between 2007-08 and 2014-15, and 4.0 per cent between 2012-13 and 2014-15. This data indicates that while overall ultrasound activity is increasing, the rate of increase appears to be slowing.

The percentage of people waiting for non-obstetric ultrasound tests/procedures in England after six weeks of request for diagnostic test/procedure increased from an average of 0.5 per cent between 2008 and 2013, to an average of 1.0 per cent between 2013 and 2015. This indicates that the service is not coping as efficiently as before, but 1 per cent off-target after six weeks is still relatively minor.

Next steps

The CfWI contract with DH ended on March 31, 2016 and HEE has taken over responsibility for the second – workforce modelling – phase of this project. This phase will build on the baseline data in this report, and on other activities undertaken by CfWI including elicitation work with stakeholders. The modelling work will inform HEE commissioning and investment plan - 2017/18.

1. Introduction

1.1 Background

The Centre for Workforce Intelligence (CfWI) was commissioned by the Department of Health (DH) and Health Education England (HEE) to contribute qualitative and quantitative research, data analysis and modelling to support HEE and NHS England in providing sufficient ultrasound practitioners to deliver diagnostic services.

The purpose of this project is to undertake a workforce planning and modelling review to identify the extent of ultrasound practitioner shortages, to assess the severity of these shortages and their impact on service delivery and to identify ways of reducing these workforce shortages, for example through the provision of innovative service delivery models and alternative training options. The project will:

- collect baseline ultrasound practitioner training and workforce data
- describe existing training and career pathways
- consider the factors driving the demand for, and supply of, the ultrasound practitioner workforce
- model current and future demand for, and supply of, the ultrasound practitioner workforce (the extent of the modelling is largely dependent upon data availability)
- provide suggestions for workforce planning, including training numbers needed to broadly balance the supply of adequately trained ultrasound practitioners in the medium-to-long term looking ahead 15 years up to 2030.

This project supports the DH drive to ensure that the NHS has the right number of trained staff in England available to deliver current and future demand for diagnostic tests.

It will also help to improve HEE's understanding of the current ultrasound practitioner workforce – the outputs from the review will be used by HEE and HEE local team workforce planners to inform the commissioning of education and training and the resourcing of the ultrasound practitioner workforce in England.

This review is separated into two phases:

- phase one includes an ultrasound workforce survey and semi-structured interviews with a range of stakeholders and acknowledged experts in the field of ultrasound imaging
- phase two includes continuation of the semi-structured interviews, horizon scanning, elicitation, and modelling the current and forecast demand and supply of this workforce.

This report summarises phase one, in particular, the ultrasound workforce based on the survey sample, and initial ultrasound activity analysis. Chapters 1-5 discuss the current workforce. The survey is discussed from chapter 6 onwards.

1.2 Stakeholder engagement

Dialogue with stakeholders underpins the work of the CfWI, and helps the CfWI understand how to best provide quality intelligence and tools to support workforce planning and development in the health, public health and social care sectors. During phase one of this project, the CfWI engaged with as many stakeholders as possible, alongside commissioners, to gain evidence to inform workforce planning. The CfWI endeavoured to ensure that as many relevant stakeholders fed into the process as possible.

The CfWI would like to thank all stakeholders for their time and contributions, without which this project would not have been be possible. The list of stakeholders can be found in Appendix C. The key stakeholder groups and their functions are as follows.

Project leads/commissioners
To ensure the final delivery to standards agreed in the work order.

Steering group
To ensure the strategic direction and methodology of the CfWI's sonography workforce review meets the needs of senior leaders, workforce planners and service deliverers, and to ensure that the deliverables of the project are of high quality.

Wider stakeholder group
To contribute to the CfWI robust workforce planning stages such as survey responses, stakeholder interviews, elicitation exercises, horizon scanning and scenario generation, and clustering workshops as required. Participants include representatives from NHS England, HEE local teams, higher education institutions (HEIs), royal colleges, professional bodies and advisory groups, the profession, and service providers.

1.3 Context

This project builds on:

- The CfWI review of the Shortage Occupation List (SOL) for the Migration Advisory Committee (MAC), which identified the sonography workforce as a shortage occupation (MAC, 2015).
- *A mandate from the Government to Health Education England: April 2015 to March 2016* (DH, 2015, NHS England 2014) which set out plans to deliver integrated care with the focus on prevention, treatment and care over the coming years. As part of this drive, there is a need for a sufficient sonographer workforce.
- Health Education West Midlands (HEWM) 2013 regional ultrasound workforce report (HEWM, 2013). This paper summarises the key findings from a regional review of the NHS ultrasound workforce, including staffing and activity forecasts to 2018-19. The report focuses on the provision of general (including paediatrics), obstetric, gynaecological and vascular ultrasound services. The rationale being that these are the most frequently used services and there are a number of West Midlands-specific service issues that have a direct impact on these services in particular.
- *Sonographer Workforce Survey Analysis* (SCoR, 2014b). In 2014, the SCoR surveyed ultrasound departments in the UK to obtain data on the number of sonographers employed and the number of vacancies. A total of 59 ultrasound departments employing sonographers responded to an online questionnaire covering a range of questions about staffing and vacancy levels. The responding departments had a total of 506 whole-time equivalent (WTE) sonographer posts.

- *Horizon Scanning, an evaluation of imaging capacity across the NHS in England* (CRUK, 2015a). **Cancer Research UK (CRUK)** commissioned this work to understand the pressures facing imaging services in England, and to identify solutions for addressing these issues.
- *Achieving world-class cancer outcomes: a strategy for England 2015-2020* (CRUK, 2015b). In 2015 the Independent Cancer Taskforce published this report which sets out recommendations for a new cancer strategy for England. The report was informed by responses to a call for evidence. Nearly 100 workshops and meetings were held, involving around 600 participants, the proactive involvement of patients, consultation with around 30 cancer charities, and professional groups.

1.4 Purpose of the survey

The size and age profile of the ultrasound practitioner workforce is not known because:

- there is no single definitive source of ultrasound practitioner workforce numbers
- sonography is not currently a regulated profession in the UK
- there are multiple staff groups involved in ultrasound service provision
- there are multiple national qualifications/certifications for ultrasound practitioners
- each staff group may have its own ultrasound practitioner qualification/certification
- organisations tend not to collect data on additional or specialist qualifications of its members
- there is a lack of data detailing ultrasound activity by specialty/profession/staff group as organisations tend not to collect data on ultrasound specific activity.

The survey was developed by the CfWI in conjunction with senior HEE and HEWM staff to collect a **baseline dataset** for the ultrasound workforce. It included all the different staff groups involved in ultrasound service provision, not just those defined as sonographers.

A major driver for the development of the CfWI survey was to capture ultrasound practitioner workforce data not otherwise captured. The CfWI asked the various stakeholder groups and bodies for ultrasound specific workforce data during the project, but organisations tend not to collect data on additional or specialist qualifications of its members.

For example, they may record total numbers of members but not which of those members have the skillset or qualification of 'ultrasound practitioner', so there is no reliable ultrasound practitioner specific workforce data to compare against the CfWI survey results. Additionally, organisations tend not to collect data on ultrasound specific activity, so there is a lack of data detailing ultrasound activity by specialty/profession/staff group.

1.5 Current challenges in sonography workforce planning

The key challenges for sonography workforce planning are as follows:

Registration and regulation

The fact that sonography is not a regulated profession in the UK makes it difficult to ensure consistent professional standards, training and accreditation. While some trusts in England may recruit unregistered sonographers, many are reluctant to recruit unregulated professionals due to potential issues with patient protection, Care Quality Commission (CQC) registration, training, registration/certification, and the need for continuing professional development (CPD).

Size of workforce

As the size and age profile of the ultrasound practitioner workforce is not known the supply forecast for this workforce will be established on an estimated starting point based on the findings of this report.

Education and training

Ultrasound training is fragmented and complex, reflecting the 50 years or so of development with many different groups currently involved. All ultrasound education is currently at postgraduate level. There are three new models of sonographic education under discussion nationwide (Waring, Miller & Sloane, 2015).

Service demand

There are increasing demands on the workforce due to increasing demands for ultrasound services, particularly for newer areas of work provided in the main by sonographers such as musculo-skeletal ultrasound examinations, evaluations of deep vein thrombosis, and carotid artery investigations (SCoR, 2014). This is exacerbated by indications that the increasing demand cannot be met by the current supply of sonographers in England (SCoR, 2014b).

2. Current practice

2.1 Definitions of ultrasound practitioners and sonographers

Ultrasound practitioners are healthcare professionals who use ultrasonic imaging devices to produce diagnostic images, scans, and videos. There are multiple staff groups involved in ultrasound imaging services, including radiologists, radiographers, sonographers, midwives, physiotherapists, nurses, obstetricians, physicists and clinical scientists.

Sonographers specialise in the use of ultrasonic imaging devices to produce diagnostic images, scans and videos, and usually provide sonography as a core service. Sonographers assess referrals for imaging, undertake the most appropriate examination to aid the diagnosis, and record images appropriate to the diagnosis. Sonographers in the UK are also responsible for interpreting images and issuing diagnostic reports. Because of the high levels of decisional latitude and diagnostic input, sonographers in the UK have a high degree of responsibility in the diagnostic process, so require specialised education and skills, and must understand ultrasound physics, cross-sectional anatomy, physiology, and pathology.

The RCR and SCoR have a joint **sonographer** definition (RCR/SCoR, 2014), which is used by SCoR for the Public Voluntary Register of Sonographers (PVRS). This definition, which follows, excludes General Medical Council (GMC) registered doctors but includes non-GMC registered doctors:

> *A healthcare professional who undertakes and reports diagnostic, screening or interventional ultrasound examinations. They will hold qualifications equivalent to a postgraduate certificate or post graduate diploma in medical ultrasound that has been accredited by the Consortium for the Accreditation of Sonographic Education (CASE). They are either not medically qualified or hold medical qualifications but are not statutorily registered as a doctor in the UK.*

According to the CfWI survey, most current sonographer training is delivered as a Postgraduate Diploma or Certificate in Medical Ultrasound (PGD MU, PGC MU, respectively). Training is delivered by universities and accredited by the CASE. There are currently no direct entry routes to qualification so all sonographer training is delivered at postgraduate level. All prospective sonographers must have a bachelor degree or equivalent, and a recognised supervised clinical placement, prior to undertaking training.

The RCR and SCoR definition of an **ultrasound practitioner** below (RCR/SCoR, 2014) is inclusive of all who scan and who are qualified to do so, whether registered with the GMC or not. Therefore, ultrasound practitioners include a wide range of professionals who use ultrasound as a 'tool', even if it represents a small part of their overall activity:

> *A healthcare professional who holds recognised qualifications in medical ultrasound and is able to competently perform ultrasound examinations falling within their personal scope of practice. The professional background of ultrasound practitioners can be varied and will include radiologists, radiographers, sonographers, midwives, physiotherapists, obstetricians, physicists, and clinical scientists.*

2.2 Sonographer overview

The SCoR represents the majority of sonographers, and estimates that more than 70 per cent of sonographers are from a radiography background, particularly diagnostic radiographers (SCoR, 2015). Many sonographers are also members of The British Medical Ultrasound Society (BMUS). There are increasing numbers of sonographers working in the UK who trained overseas as a doctor but who are not registered with the GMC (SCoR, 2015).

The majority of sonographers in England are employed by **NHS trusts**, but work in all sectors including independent hospitals, community GP settings, independent providers, agencies (employed or self-employed basis), and self-employed or small businesses/partnerships. Some independent providers and self-employed sonographers provide NHS non-obstetric ultrasound (NOU) services via Any Qualified Provider (AQP) provision (SCoR, 2015).

Some sonographers, nurses, and midwives are employed by the NHS during the day and by private firms in the evening and weekends or part-time between private practice and the NHS. Stakeholder consensus is that private provision has plateaued across the NHS, but that there is an increase in private services in fertility and 3D/4D scanning.

CfWI stakeholder interviews indicate that few locums are used across the service. This is corroborated by the survey results, which indicate that only a very small fraction of the workforce are locums. Stakeholders suggest that locums trained in Canada and Australia seem to be preferred, as they have similar professional standards to those in the UK and are therefore able to do reporting. However, stakeholder consensus seems to be that the main advantage of a locum (no time spent training) is outweighed by the disadvantages (expensive, prone to low standards of service, likely not to maintain CPD, and a lack of loyalty to the department).

Sonographers are particularly found in these main departments within NHS trusts in England:

- **Radiology/diagnostic imaging** (typically radiographer-sonographers and radiologists).
- **Obstetrics/gynaecology** (typically radiographer-sonographers, midwife-sonographers, obstetricians, and radiologists).
- **Vascular** (typically radiographer-sonographers and vascular scientists).
- **Cardiac** (typically clinical physiologists and echocardiographers, occasionally cardiac sonographers).
- **Early pregnancy assessment units** (typically radiographer-sonographers, nurse-sonographers, midwife-sonographers, and gynaecologists/ obstetricians).
- **Musculo-skeletal ultrasound** (typically radiographer-sonographers, sonographers, radiologists, physiotherapists, rheumatologists, chiropractors, osteopaths and sports physicians).

Course leaders and academic staff in universities represent a relatively small number of sonographers, and there are only a few research sonographers employed by universities or funded research organisations (SCoR, 2015).

2.3 Ultrasound practitioner overview

The NHS Abdominal Aortic Aneurysm (AAA) Programme has some part time qualified sonographers, mainly as clinical skills leads and trainers. However, most of the screening is done by assistant practitioners employed at

the Agenda for Change (AfC) band 4 pay scale and who do not meet the RCR/SCoR's definition of a sonographer (SCoR, 2015).

Much of the ultrasound in specialist care baby units (SCBUs) is undertaken by neonatologists, although there may be radiographer-sonographers and radiologists also involved (SCoR, 2015). Paediatric cardiologists and specialist echocardiographers carry out neonatal cardiac scanning on SCBU (BSE, 2015b).

Musculo-skeletal ultrasound (MSK) is particularly mixed with radiographer-sonographers, sonographers, radiologists, physiotherapists, rheumatologists, chiropractors, osteopaths and sports physicians all using ultrasound (note that these also include therapeutic ultrasound) (SCoR, 2015).

The majority of cardiac ultrasound examinations (echocardiography) are done by cardiac physiologists. Some cardiac ultrasound examinations are done by specialist doctors and GPs. Those not medically qualified are often known as echocardiographers or cardiac sonographers (SCoR, 2015) (BSE, 2015b).

Doctors registered with the GMC with a licence to practise make a large contribution to ultrasound. For example, radiologists make a major contribution in general ultrasound imaging and MSK, as well as other areas. Obstetricians also contribute widely in their field, for example, scanning in fetal medicine units (SCoR, 2015).

A wide range of professionals use ultrasound as a 'tool', as a small part of their overall activity. For example, breast specialists guiding biopsies, physicians inserting venous lines, and accident and emergency (A&E) specialists doing focused assessment with sonography for trauma (FAST) scans (SCoR, 2015).

Emergency medicine (EM) doctors undertake training in targeted ultrasound examinations to be performed when patients present to the emergency department. This training is specific to their role as EM doctors and they do not provide diagnostic ultrasound examinations outside of this context (SCoR, 2015).

Similarly, intensive care doctors can carry out limited bedside ultrasound examinations to check for specific problems but this does not contribute to the wider ultrasound workforce. Likewise, anaesthetists can use ultrasound for epidurals and regional anaesthesia (SCoR, 2015).

These examples show how ultrasound is being used by doctors to help them provide better treatment as a part of the work they normally do; i.e. as a tool, and is not a direct 'primary" ultrasound procedure.

2.4 Registration and regulation

Sonography is not currently a regulated profession in the UK, so one does not have to be a sonographer to do sonography. There are multiple staff groups involved in ultrasound service provision i.e. groups that provide ultrasound as a service or use ultrasound as a tool. This makes it difficult to ensure consistent professional standards, training, and accreditation.

Although there is currently no requirement for a sonographer to be state registered in the UK, the majority are statutorily registered with the Health and Care Professions Council (HCPC) as a radiographer (radiographers, nurses and midwives have primary legislation). Sonographers can register voluntarily on the Public Voluntary

Register of Sonographers (PVRS), administered by SCoR (SCoR, 2015b). There are approximately 750 voluntary registrants on the PVRS, of which 130 have no statutory registration. The remainder are both voluntarily and statutorily registered (SCoR, 2015).

The sonographer profession has been seeking state registration of sonographers for some time. In 2009, the then Health Professions Council (HPC), led by SCoR, recommended to the Secretary of State for Health that sonography become a registered profession, seeking to protect the titles 'sonographer' and 'ultrasonographer'. However, current government policy prevents the application from proceeding (SCoR, 2015).

The University of the West of England report, *The long and winding road to achieving professional registration for sonographers,* (Gibbs, 2012) discusses the evolution of sonography practice in the UK and explores some of the complex issues associated with the professionalisation of sonography.

Stakeholder interview consensus is that trusts are reluctant to recruit unregulated professionals due to potential issues with data protection, CQC registration, training, registration/certification, and the need for CPD. All interviewed stakeholders (see Appendix C) agreed that sonography should be a regulated profession, and that the quality of service needs to be kept to an optimal level. At time of publication of this report, the SCoR is in discussion with the Health Select Committee on this issue (SCoR, 2015).

In terms of existing registration possibilities, the GMC, HCPC and the Nursing and Midwifery Council (NMC) are the main statutory regulators. The possible categories are:

- **GMC** registered without a license to practise (a few)
- **HCPC** registered as a radiographer (most sonographers are in this category)
- **HCPC** registered as a clinical scientist (some vascular scientists and medical physicists are in this category)
- **HCPC** registered as a physiotherapist (musculo-skeletal ultrasound mainly)
- **NMC** registered as a midwife
- **NMC** registered as a nurse
- **NMC** registered as a nurse and also as a midwife (dual qualified)
- other statutory regulatory body (very few, mainly chiropractors or osteopaths)
- not statutorily registered but voluntarily registered with the **Registration Council for Clinical Physiologists** (most echocardiographers (cardiac ultrasound))
- not statutorily registered but voluntarily registered with the **PVRS**
- not statutorily registered but voluntary registered with the **Academy for Healthcare Science** (some healthcare scientists following Modernising Scientific Careers pathways)
- no statutory or voluntary registration (there is no requirement other than from an employer to be either statutorily or voluntarily registered if working as a sonographer; there is no protection of title)
- registered with the **GMC** with a licence to practise (these are the doctors, e.g. radiologists and obstetricians who fall under the definition of ultrasound practitioner).

2.5 Challenges of ultrasound provision

There are increasing demands on the workforce due to increasing demands for ultrasound services, particularly for newer areas of work provided in the main by sonographers such as musculo-skeletal ultrasound examinations, evaluations of deep vein thrombosis, and carotid artery investigations (SCoR, 2014). There are indications that the increasing demand cannot be met by the current supply of sonographers (SCoR, 2014b).

Diagnostic imaging dataset (DID) data (HSCIC, 2015a) provided by the Health and Social Care Information Centre shows that the number of NHS diagnostic ultrasonography imaging events in England increased at a compound annual growth rate (CAGR) of 4.6 per cent per annum between 2012 and 2015. This is discussed in more detail in the activity section of the report.

The SCoR's recent *Sonographer Workforce Survey Analysis* (SCoR, 2014b) suggests that 65 per cent of respondent departments had sonographers working additional hours on at least one day a month to meet demand. This indicates that the increasing demand for sonography cannot be met by the current supply of sonographers. Stakeholder interview consensus is that the biggest issue with retirement is the loss of knowledge and experience, especially in reading complex scans, which is compounded by an already existing shortage of staff.

Sonography is a shortage occupation on the MAC Tier 2 list. It does not have its own occupation code and is currently listed with radiography. Sonographers have been on the SOL for the last five years or more (MAC, 2015).

The SCoR's 2014 *Sonographer Workforce Survey Analysis* (SCoR, 2014b) found that vacancy rates across 59 responding departments was 18.1 per cent compared to 10.9 per cent in its 2011 survey, with the main reason cited as an inability to recruit suitable applicants. Health Education East Midlands (HEEM, 2014) found in 2014 that national deficit rates are 11 per cent.

Most sonographers first train as diagnostic radiographers, creating a drawdown from the already stretched diagnostic radiography workforce, where there has also been a historical shortage (MAC, 2015), indicating another possible shortage in the supply pipeline.

The RCR and SCoR joint 2014 document, *Standards for the provision of an ultrasound service*, (RCR/SCoR, 2014) sets standards in key areas that the RCR and SCoR consider essential for the delivery of high-quality and effective ultrasound imaging services and examinations. The aim is to clarify the components of a clinically safe and efficient ultrasound service, and is relevant to all services that carry out ultrasound and to those individuals responsible for the commissioning of such services.

2.6 International comparisons

The requirements for clinical practice vary greatly by country. In Europe, most ultrasound is done by medical teams. The UK is one of the few countries with qualified sonographers who work autonomously, so international models of ultrasound service provision are unlikely to be suitable in England.

However, sonographers from Australia, Canada and New Zealand have similar professional standards to those in the UK so have the breadth and depth of skill to potentially fulfil sonographer roles in the UK. The UK is an attractive place for international sonographers to work because they have more professional responsibilities such as being able to review their own results (SCoR, 2014).

2.7 Other workforces/professions that contribute to the ultrasound service

2.7.1 Clinical scientists

While most clinical scientists do not perform ultrasound scans they do perform a key role in the provision of ultrasound services, as ultrasound quality assurance (QA) is carried out predominantly by clinical scientists. QA of ultrasound units is mandatory in NHS screening programmes. In the UK, the DH, the CQC, the National Health Service Litigation Authority (NHSLA), and the Medical and Healthcare Products Regulatory Authority (MHRA) all recognise the importance of QA for diagnostic equipment (IPEM, 2015).

Clinical scientists also provide specialist advice regarding the use of ultrasound equipment, the development of new techniques and the introduction of new ultrasound technologies, which is essential for the progression of these services (IPEM, 2013).

2.7.2 Echocardiographers

The majority of cardiac ultrasound examinations (echocardiography) are done by clinical physiologists, specifically cardiac physiologists. Some cardiac ultrasound examinations are done by specialist doctors and GPs. Those not medically qualified use the term **echocardiographer** or **cardiac sonographer**.

Most echocardiographers work in cardiac departments i.e. not in radiology, imaging or obstetrics. Some work in silos in GP practices and some offer purely locum or freelance services.

The British Society of Echocardiography (BSE) has indicated that the current workforce shortage in cardiac physiology services means there are insufficient numbers of echocardiographers to deliver a seven day a week diagnostic echocardiography service. This is documented in the joint Society for Cardiological Science and Technology (SCST) and British Cardiovascular Society (BCS) report *Strategic Review of Cardiac Physiology Services* (BSE, 2015) and in the CfWI healthcare scientists training capacity survey report (CfWI, 2015). It is further exacerbated by the currently low intake of Scientist Training Programme (STP) trainees (CfWI, 2015), which the BSE fears will result in further echocardiographer shortages and the inability to meet expected future demand.

The BSE maintains that this will result in inadequately qualified staff being expected to deliver echocardiography, which will have a direct negative impact on patient care and put a greater burden on senior staff and cardiologists.

The HEE are considering a review of the cardiology workforce in 2017. This would be the most opportune time to consider the issues facing echocardiography in terms of cardiac ultrasound provision.

3. Current education and training

3.1 Training routes

Current ultrasound training is fragmented and complex, reflecting the 50 years or so of development with many different healthcare workforces and qualifications involved.

There is currently no undergraduate or direct route to qualify in sonography and all ultrasound education is currently delivered at postgraduate level.

Most sonographers first train as diagnostic radiographers, then undertake an accredited post-registration course offered by a higher education institution (HEI). The courses are a minimum of one academic year and prepare trainee sonographers clinically and academically for practice. Normally a prerequisite for acceptance is access to a clinical department with supervised practice for students. Other NHS staff, including nurses, midwives, and healthcare science staff working in vascular technology and cardiac physiology, can also train in sonography.

There has been ongoing debate in the profession whether sonography should be studied as a single degree, but no satisfactory resolution has been reached so far. The policy of the SCoR is to support the introduction of primary (BSc) degrees in ultrasound as one of the ways of increasing sonographer numbers, although there are a number of complex issues that the SCoR 2013 briefing document outlines that will first need to be considered (SCoR, 2013). The document is not meant to be prescriptive but does provide a discussion framework for HEIs, service providers, HEE local teams, and other regional and national organisations.

The Programme Director of Medical Ultrasound at King's College London notes there is an increasing number of applicants to BSc radiography (diagnostic imaging) programmes who state that they are applying to radiography because it is currently the most direct route to sonography (Halson-Brown, 2015). This indicates an interest in sonography at undergraduate level, which HEE will explore further with stakeholders.

3.2 Qualifications

Below is a list of all qualifications available, including those no longer available to new students. Some practitioners may hold more than one qualification. The majority of PGC MU, PGD MU, and MSc courses for sonographers are CASE accredited however a few universities have chosen not to seek this (SCoR, 2015).

- Postgraduate Certificate in Medical Ultrasound (PGC MU)
- Postgraduate Certificate in Vascular Ultrasound (PgC VU)
- Postgraduate Certificate in Specialist Ultrasound Practice
- Postgraduate Certificate in Ultrasound in Emergency & Critical Care
- Postgraduate Diploma in Medical Ultrasound (PGD MU)
- Postgraduate Diploma in Vascular Ultrasound (PgD VU)
- Master of Science (MSc) in Medical Ultrasound (this is usually only after an optional dissertation stage. The exact title of the award depends on the university)
- Master of Science (MSc) in Vascular Ultrasound
- Diploma/Certificate in Medical Ultrasound of the SCoR (available circa 1979 to 1997) – does not apply to current trainees

- accreditation by the Society for Vascular Technology of Great Britain and Ireland (SVTGBI)
- accreditation by the British Society of Echocardiography (BSE)
- 'focused' course of less than 60 Masters level credits
- in-house training
- postgraduate medical training (e.g. professional awards of the RCR and Royal College of Obstetricians and Gynaecologists (RCOG))
- overseas qualifications.

3.3 New models of training

There are three new models of sonographic education under discussion nationwide. These models are discussed in detail, including pros, cons, and challenges, in the University of Cumbria report, commissioned by Health Education North West (HENW), *The Future of Sonographic Education* (Waring, Miller & Sloane, 2015). The three new proposed routes are:

- the 'direct entry undergraduate model' (DEUM). No courses of this kind currently run within the UK, but it is a potential long-term strategy to address the current workforce issues affecting ultrasound. The term 'direct entry' relates to the fact that there would be no requirement to have studied or work within a healthcare setting prior to application. Applications would be welcomed from any potential candidate as long as they met the academic and other associated requirements of the programme of study.
- the 'direct entry postgraduate (MSc) model' (DEPM). Although direct postgraduate access into ultrasound does currently exist in some educational institutes in the UK, it is largely underutilised. It remains, however, a potentially valuable medium term-strategy for addressing the current shortage of ultrasound practitioners. The term 'direct entry' in this case relates to the fact that the course is open to applicants with any honours degree, negating the need to have a degree in radiography or a background in healthcare. Applications would be welcomed from any potential candidate as long as they met the core academic requirements of the programme of study.
- the '3 + 1 postgraduate model' (31PM). The term '3+1' relates to the fact that the PG course is offered to a limited number of high achieving radiography students as they come to the end of their three year primary degree; essentially, they are given the opportunity to add an extra year onto the end of their degree to gain a postgraduate qualification in ultrasound. The model is currently available in some domains, but incidences of its use are still relatively rare.

The weaknesses and strengths of each model of training are discussed in detail in this report. The report states that each new educational model proposed, in particular the direct entry routes, would require a radical change in the way sonography education is approached. The current arrangement whereby hospitals send members of staff to a higher education institute (HEI) to undertake training would be replaced by an arrangement where the HEI would send their students to placement hospitals to gain their clinical experience. This would remove the financial and operational burden from the placement trust.

The HENW report also states that there is an overwhelming preference for postgraduate level training among the participants of its study mainly because service provision, training and pay banding currently reflects a postgraduate sonographer post.

The report further states that the direct access undergraduate route has been accepted as a possible long term approach but that there is unease with this model in the profession as (1) no clear career structure, role definition or pay banding has been proposed for the graduate sonographer, and (2) there is concern about the possible lack of maturity and life skills of the applicants with this undergraduate route.

The perceived waste of both financial and time input into training a radiographer for them to go straight onto sonography training, along with the condensed one year postgraduate training make the 3+1 model unpopular among the respondents although this model in general was more popular than direct entry undergraduate.

The report concludes that there is broad agreement that the current approach to sonographer training is falling short in meeting the needs of many departments, and that change is needed, and in many cases welcomed (HENW, 2015).

The HENW study also concludes that although there is a general acceptance that the approach to sonography education needs to change, there are concerns that the service will suffer if current educational standards are not maintained. It highlights the importance of continuous and thorough consultation between the HEIs and local clinical stakeholders.

In the CfWI survey, 'insufficient clinical training staff' and 'increasing service delivery workload of staff' were the most common reasons cited by departments for not offering, being undecided, or planning to reduce sonographer training in the future.

HENW is now working with the University of Cumbria on a pilot to support students and placement providers on a direct entry master's programme for sonography, which will run in addition to the post-registration sonography training already funded by HENW (HENW, 2015).

The SCoR published *Developing and Growing the Sonographer workforce: Education and Training needs* in 2009, which identified ultrasound educational pathways for the sonographer workforce in the UK, and set out a range of possible solutions that could be used to secure the sonographer workforce for the short, medium, and longer term (SCoR, 2009). This can be read to provide a background to the more recent report by Waring, Miller & Sloane, (2015) above.

4. Activity and waiting times

4.1 Overview

The CfWI analysed the diagnostic imaging dataset (DID) provided by the Health and Social Care Information Centre (HSCIC, 2015a), monthly diagnostic waiting times and activity (MDWTA) dataset provided by NHS England (NHS England, 2015), and hospital episode statistics (HES) (HSCIC, 2015b) dataset for year-on-year trends for diagnostic ultrasound tests/procedures/events.

The DID is a monthly mandated collection of data on diagnostic imaging tests, extracted from providers' radiology information systems (RIS). DID diagnostic ultrasonography data includes obstetric ultrasound (OU) and non-obstetric ultrasound (NOU), and is currently the most comprehensive dataset in terms of diagnostic imaging tests. As this dataset started in 2012, the extent of year-on-year analysis is currently limited.

The DID shows that the number of NHS diagnostic ultrasonography imaging events in England has been increasing at a CAGR of 4.6 per cent per annum between 2012-13 and 2014-15 (June to May).

The MDWTA collects data on waiting times and activity for 15 key diagnostic tests and procedures, including NOU. The MDWTA does not collect OU data. However, this data goes back to 2006, so extensive year-on-year analysis of the measures in this dataset are possible.

The MDWTA shows that the number of NOU planned tests increased at a CAGR of 7.3 per cent per annum between 2007 and 2015, and 4.0 per cent between 2012 and 2015. This data indicates that while overall activity is increasing, the rate of increase appears to be slowing.

HES is a data warehouse containing details of all admissions, outpatient appointments and A&E attendances at NHS hospitals in England. It is an administrative dataset designed for secondary use i.e. non-clinical purposes. It is possible to identify ultrasound in HES from a range of MDWTA codes. However, it reflects only approximately 12 per cent or less of ultrasound activity taking place in a hospital setting[3]. The shortfall in HES may reflect a number of factors, e.g. that procedure coding in general is more focused on surgical interventions than non-surgical tests, that outpatient procedure coding is somewhat patchy – especially because this would not affect tariff, and that outpatient activity was originally defined as a consultant-led activity and some activity may take place in other hospital settings. As a result, the CfWI only focused on the DID and MDWTA datasets.

The SCoR suggests that MSK ultrasound may be the fastest-growing ultrasound activity at the time of writing this report – with a wide range of professionals involved, including radiographer-sonographers, sonographers, physiotherapists, chiropodists, chiropractors, sports medicine specialists and rheumatologists (SCoR, 2015). The CfWI did not have activity data at this level of granularity to compare activity for the above-mentioned staff groups.

[3] The MDWTA return (DM01) lists codes for tests that are part of non-obstetric ultrasound (NOU). Using these codes on 2013-14 HES data, there are a total of 690,000 NOUs. However, DM01 reports activity of 5.9 million NOUs in the same year, so HES reflects only 12% or less of the NOU activity taking place in a hospital setting. When comparing obstetric ultrasound (OU) codes for a given period, the HES records about 10 times fewer OUs than on the DID dataset.

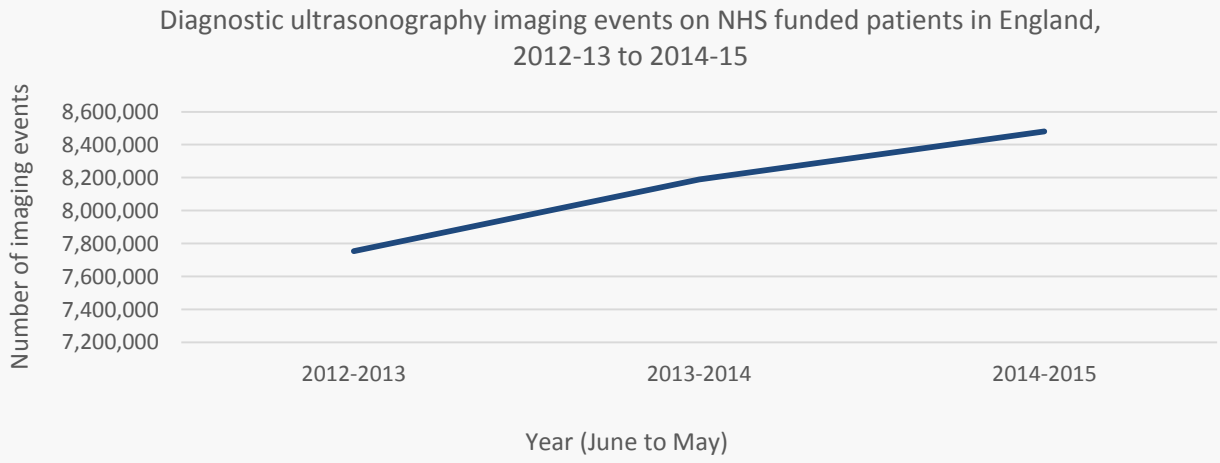
4.2 Recent ultrasound activity

Figure 1 shows the total yearly imaging event counts between 2012-13 and 2014-15 (June to May) for diagnostic ultrasonography as recorded on the DID. The DID dataset started in 2012, so analysis of longer-term trends in activity are not possible. It includes both obstetric and non-obstetric ultrasound activity.

There was a **9.4** per cent growth in the total yearly count of ***diagnostic ultrasonography*** imaging events on NHS funded patients in England between 2012-13 and 2014-15, a compound annual growth rate of **4.6** per cent.

Figure 1: DID diagnostic ultrasonography activity between 2012-13 and 2014-15 (June to May)

There was a 9.4 per cent growth in diagnostic ultrasonography on NHS funded patients in England between 2012-13 and 2014-15, a compound annual growth rate of 4.6 per cent.



Source: HSCIC, 2015a

Similarly, for the same period, MDWTA shows:

- An **8.1** per cent growth in the total yearly number of NOU ***planned tests/procedures*** in England, a compound annual growth rate of **4.0** per cent.
- A **12.4** per cent growth in the total yearly number of NOU ***waiting list tests/procedures (excluding planned)*** in England, a compound annual growth rate of **6.0** per cent.
- However, MDWTA also shows a **1.0** per cent decline in the total yearly number of NOU ***unscheduled tests/procedures*** in England, a compound annual growth rate of **-0.5** per cent.

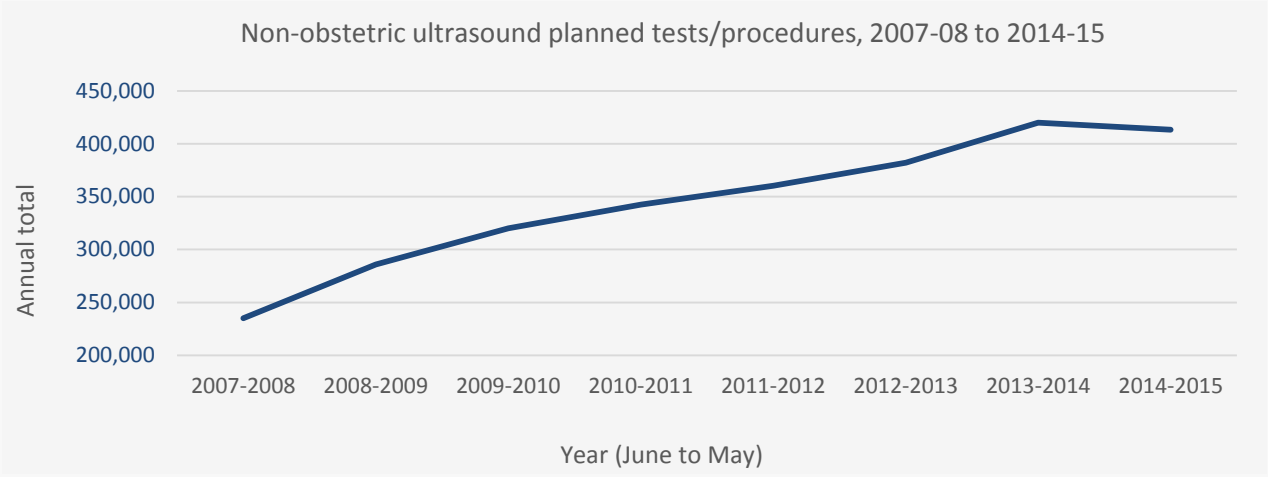
These figures show that the general trend in overall ultrasound activity is rising, but that between 2012-13 and 2014-15 (June to May) the number of unscheduled NOU tests has declined.

4.3 Ultrasound activity over the medium-term

However, Figure 2 shows MDWTA activity between 2007-08 and 2014-15 (June to May) which indicates a **75.8** per cent growth in the total yearly number of NOU ***planned tests/procedures*** in England, a compound annual growth rate of **8.4** per cent.

Figure 2: MDWTA planned test/procedures between June 2007-08 and 2014-15 (June to May)

There was a 75.8 per cent growth in the number of NOU planned tests/procedures in England between 2007-08 and 2014-15, a compound annual growth rate of 8.4 per cent.



Source: NHS England, 2015

Similarly, over the same seven year period, MDWTA shows:

- A **64.8** per cent growth in the total yearly number of NOU ***waiting list tests/procedures (excluding planned)*** in England, a compound annual growth rate of **7.4** per cent.
- A **20.1** per cent growth in the total yearly number of NOU ***unscheduled tests/procedures*** in England between 2007 and 2015, a compound annual growth rate of **2.7** per cent.

These figures show that the general trend in overall ultrasound activity between 2007-08 and 2014-15 has been rising. However, when compared to between 2012-13 and 2014-2015, the figures suggest that, while overall activity is increasing, the rate of increase appears to be slowing.

4.4 Waiting times

The **percentage** of people waiting for *non-obstetric ultrasound tests/procedures* in England after **six weeks** of request for diagnostic test/procedure has increased from an average of 0.5 per cent between 2008 and 2013, to an average of 1.0 per cent between 2013 and 2015 (NHS England, 2015).

If the overall percentage of people waiting for tests after a given period remains static then it is fair to assume that that the service is coping with the increased demand as efficiently as it did before. However, these figures show a clear increase in the percentage of people waiting for tests after six weeks, indicating that the service is not coping as efficiently as before. The figures suggest that twice as many patients, proportionally, are waiting for tests after six weeks now than a few years ago.

4.5 Obstetric ultrasound activity

Hospitals offer all pregnant women at least two ultrasound scans during their pregnancy as a minimum: at 8 to 14 weeks, and between 18 and 21 weeks (NHS Choices, 2015). However, depending on their health and their pregnancy, 'higher-risk' women will be offered additional scans for foetal surveillance (RCOG, 2014) (note that other scans during pregnancy are arranged for a clinical reason as per local, NICE, RCOG or NHS England guidelines).

Assuming that nearly all women would accept these routine scans (they are not compulsory), and that those who would opt out would be more than balanced out by those who received additional scans, it would be fair to assume that obstetric ultrasound (OU) activity should reflect at least two routine ultrasound scans per pregnancy plus the 'non-routine' scans.

HES (HSCIC, 2015b) records 671,255 deliveries in England in 2012-13, and 646,904 in 2013-14. Using the assumption above, the OU data should indicate at least 1.34 and 1.29 million routine scans respectively.

However, Table 1 shows that DID OU activity data records 1.13 and 1.06 million routine scans for 2012-13 and 2013-14, representing 84 and 82 percent of expected routine scans, respectively. Total OU activity is recorded as 1.20 and 1.15 million scans respectively, which is still less than the number of estimated routine scans.

This indicates the possibility that not all OU activity is being recorded, or there are less than two routine ultrasound scans per pregnancy. This presents a risk when calculating future OU demand based on incomplete current activity. Going forward, the CfWI will have to make assumptions by analysing past trends, and engaging with professional and expert representatives for consensus.

Table 1: Obstetric ultrasound activity on DID

It is likely that not all OU activity is being recorded on the DID.

Year	Deliveries in England	Expected routine OU scans	Recorded routine OU scans (DID)	% of expected routine scans	Recorded total OU activity (DID)
2012-13	671,255	1,342,510	1,128,125	84%	1,196,715
2013-14	646,904	1,293,808	1,063,425	82%	1,149,940
2014-15	Not yet known	Not yet known	1,110,420	Not yet known	1,219,895

Source: ONS (2015), HSCIC (2015a, 2015b)

4.6 Patient age profiles

Table 2 shows percentage of activity by patient age for diagnostic ultrasonography for three years between 2012 and 2015, recorded on the DID. The use by all age bands (as presented in Table 2) shows no significant variance across the three years, and the highest users of diagnostic ultrasonography are patients aged over 65 years, at around 22 per cent, and patients between 25 and 34 years of age, at around 23 per cent. The relatively high use in the 25 to 34 age bands may possibly be due to OU, but this has not been verified at this stage of the project.

The activity to population proportion ratio shows the corresponding size of the population in those age bands to activity. It is clear that the age bands 65+, and between 25 and 34 years of age, are high compared to other age bands.

Table 2: Percentage of activity by patient age for diagnostic ultrasonography, 2012-2015

The highest users of diagnostic ultrasonography are patients aged 65 and older and those between 25 and 34 years of age.

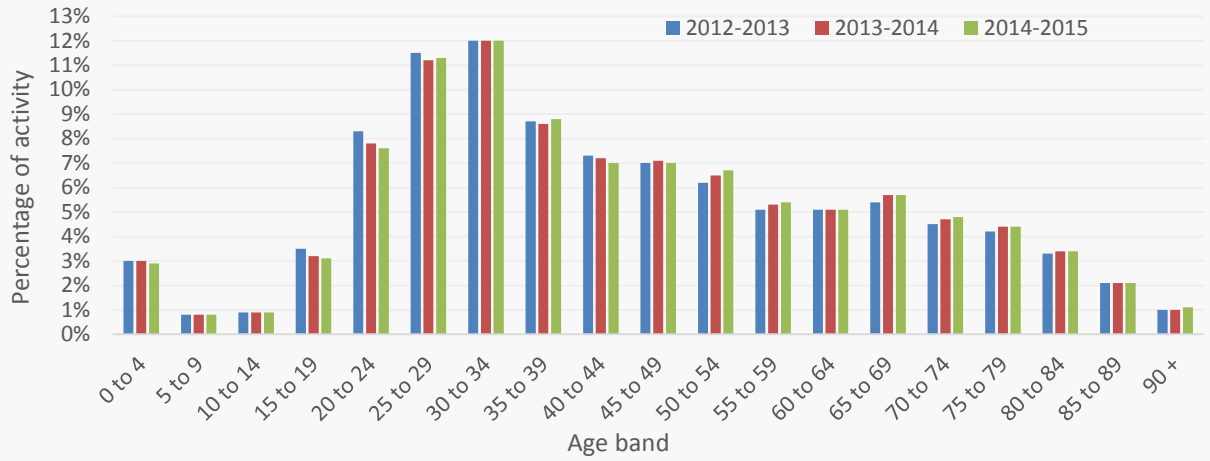
Age	Diagnostic ultrasonography activity			Population by age band	Population proportion	2014-15 activity to population proportion ratio
	2012-2013	2013-2014	2014-2015			
0 to 4	3.0%	3.0%	2.9%	3,608,632	6.3%	0.46
5 to 9	0.8%	0.8%	0.8%	3,448,689	6.0%	0.13
10 to 14	0.9%	0.9%	0.9%	3,138,146	5.5%	0.16
15 to 19	3.5%	3.2%	3.1%	3,419,401	6.0%	0.52
20 to 24	8.3%	7.8%	7.6%	3,823,995	6.7%	1.14
25 to 29	11.5%	11.2%	11.3%	3,910,483	6.8%	1.66
30 to 34	12.0%	12.0%	12.0%	3,889,281	6.8%	1.77
35 to 39	8.7%	8.6%	8.8%	3,563,751	6.2%	1.42
40 to 44	7.3%	7.2%	7.0%	3,903,960	6.8%	1.03
45 to 49	7.0%	7.1%	7.0%	4,136,176	7.2%	0.97
50 to 54	6.2%	6.5%	6.7%	3,932,946	6.9%	0.98
55 to 59	5.1%	5.3%	5.4%	3,379,275	5.9%	0.92
60 to 64	5.1%	5.1%	5.1%	3,101,464	5.4%	0.94
65 to 69	5.4%	5.7%	5.7%	3,168,294	5.5%	1.03
70 to 74	4.5%	4.7%	4.8%	2,333,027	4.1%	1.18
75 to 79	4.2%	4.4%	4.4%	1,899,567	3.3%	1.33
80 to 84	3.3%	3.4%	3.4%	1,397,185	2.4%	1.40
85 to 89	2.1%	2.1%	2.1%	855,152	1.5%	1.41
90 +	1.0%	1.0%	1.1%	499,230	0.9%	1.26
Total	**100%**	**100%**	**100%**	**57,408,654**	**100%**	

Source: ONS (2015), HSCIC (2015a, 2015b)

Figure 3 also shows, in graphical format, the percentage of activity by patient age for diagnostic ultrasonography for three years between 2012 and 2015, recorded on the DID. Within each age band there is no significant variance across the three charted years.

Figure 3: Percentage of activity by patient age for diagnostic ultrasonography, 2012-2015

The highest users of diagnostic ultrasonography are patients aged 65 and older and those between 25 and 34 years of age.



Source: HSCIC (2015a)

5. Survey approach

5.1 Survey scope

The CfWI designed a survey to collect a baseline set of data for the ultrasound practitioner workforce across England; to better understand the ultrasound workforce across key specialities; and to support long-term workforce planning. The survey included questions relating to:

- the respondent organisation
- headcount (HC) core[4] staff
- HC of agency, locum, and bank (ALB) staff
- whole-time equivalent (WTE) in terms of time devoted to ultrasound scanning i.e. from ID checks through scan and reporting (a complete patient episode)
- numbers of vacancies and frozen posts
- planned ultrasound scans
- current training numbers.

As there are multiple staff groups involved in ultrasound service provision, respondents were asked to:

- include all the different staff groups involved in ultrasound service provision, not just those defined as 'sonographers'
- submit information at a department or service-delivery level i.e. those departments that run ultrasound as a service or use ultrasound as a tool i.e. not answer the survey at an organisational level.

The approach included asking respondents to provide the assignment numbers as recorded in the NHS Electronic Staff Record (ESR) for each employee who provides ultrasound services. Assignment numbers are also referred to as payroll or personnel numbers. Assignment numbers were requested for three reasons:

- To allow the results of the survey to be verified and checked, ensuring any double counting or erroneous entries are accounted for across departments.
- To allow HEE to extract further information about staff as recorded in the ESR, beyond what is collected in this survey.
- To reduce the burden on those filling out the survey by not asking questions that can be easily answered using ESR, so long as the appropriate staff are known.

The CfWI does not have access to the ESR. All submitted assignment number information was extracted by HEE from the ESR and anonymised before being shared with the CfWI, to ensure data protection protocols were followed, according to the terms of the Data Protection Act 1998.

[4] Core staff = full-time permanent and part-time permanent staff. It includes core staff on leave or absent e.g. maternity/sick leave. It excludes agency, locum and bank staff, and vacant and frozen posts.

5.2 Survey development

The overall focus and structure of the survey was developed by the CfWI in conjunction with senior HEE and Health Education West Midlands (HEWM) managers. HEWM had previously run its own regional ultrasound workforce survey in 2013, so were able to provide support developing this survey. The survey was developed and tested through the following main phases:

- **Consultation with HEWM and HEE.** To agree the overall focus and structure of the survey based on the previous HEWM ultrasound survey (HEWM, 2013).
- **Consultation with project steering group and professional representatives.** To agree wording of the questions, and any amends (Appendix C).
- **Piloting with individual departments.** To ensure the questions were understood, and to identify any technical difficulties in completing the survey. A number of departments were asked by HEE to complete the pilot survey with information for their department, and minor amendments were made to the survey following this phase, with confirmation from HEE (Appendix C).

5.3 Survey live

The HEE diagnostics team cascaded the survey download link through HEE local teams, NHS trusts, Clinical Commissioning Groups (CCGs), and some Any Qualified Provider (AQP) and Allied Health professional (AHP) networks. The SCoR also cascaded the survey through its member network, and independent sector or non-NHS providers were also encouraged to take the survey.

The CfWI sent out weekly reminders to those that had downloaded but not yet returned a survey, and promoted the survey in a range of supporting communications, including:

- CfWI website news pages
- CfWI social media.

The survey was available for download for a period of almost seven weeks from Monday 22 June until Friday 7 August 2015, with survey returns accepted up to Thursday 13 August 2015.

To add to the information received, the HEE diagnostic team circulated a more concise supplementary survey via e-mail to targeted HEE local teams. HEE diagnostic team asked HEE local team workforce planners to cascade the supplementary survey to relevant trusts on 2 October 2015, and return completed questionnaires by 5 November 2015.

6. Survey responses

6.1 Total responses

A total of 385 survey downloads were recorded during the initial survey period, of which 148 were returned completed. The CfWI received nine completed supplementary survey returns. A total of 157 surveys were returned. Some surveys were returned with data for multiple departments. The returned surveys were from 133 hospitals over 100 NHS trusts across all 13 HEE local teams across both surveys. Around 48 per cent of estimated eligible trusts returned a survey. Note, this is not the survey response rate as due to the nature of the ultrasound workforce it is not known which or how many departments within trusts were eligible to complete the survey.

There were a small number of submissions from the private/independent sector with a relatively small total headcount of 45. The CfWI did not do a separate analysis of these, but wherever possible and appropriate, the data from these submissions was incorporated into the overall HEE local team figures.

Table 3 shows the breakdown of the number of submissions by HEE local team over the two surveys. West Midlands submitted the highest number of returns. Note that this table shows the number of submissions as opposed to the eligible department submission response rate i.e. the number of responding departments as a percentage of the number of departments eligible to respond.

The CfWI considers the survey findings to be the most comprehensive report to date of the sonography workforce in England but it cannot quantitatively confirm a definitive response rate for the respondent eligibility reasons stated above. However, the survey captured the full range of places/areas that the workforce works across.

Table 3: Survey submission by HEE local team

157 responses were received across all HEE local teams across both surveys.

HEE local team	Submissions
West Midlands	33
North West	21
South West	18
Yorkshire and the Humber	15
East of England	14
Kent, Surrey and Sussex	11
Wessex	9
North, Central and East London	8
East Midlands	7
South London	7
North West London	5
North East	5
Thames Valley	4
Total	**157**

Source: HEE/CfWI ultrasound survey, 2015

6.2 Estimated proportion of eligible trusts that returned surveys

The total number of trusts that provide ultrasound services was estimated by removing the mental health trusts and trusts that were confirmed by HEE local team leads to not offer ultrasound services. However not all HEE local teams provided this confirmation and therefore, it is likely that there are other trusts which do not offer ultrasound that the CfWI has not been made aware of, so the total number of estimated trusts that do ultrasound listed here may be an overestimate.

Table 4 shows the breakdown of the estimated proportion of trusts that do ultrasound that returned surveys. Note that this is not about the total number of surveys from all departments, nor is it a reflection of department response rate. The table shows that **around 48 per cent of estimated eligible trusts returned a survey**, 100 separate organisations responded to both surveys across all HEE local teams, and West Midlands HEE local team had the highest return at 100 per cent.

This suggests that London, East of England and the North East are relatively less well represented compared to other regions, so any national conclusions drawn by CfWI will take that into consideration.

Table 4: Estimated proportion of trusts that do ultrasound that returned surveys

48 per cent of estimated eligible trusts returned a survey.

HEE local team	Estimated number of trusts that do ultrasound	Of which returned surveys	Proportion
West Midlands	18	18	100%
East Midlands	9	6	67%
Wessex	9	6	67%
South West	20	10	50%
Kent, Surrey and Sussex	17	8	47%
North West	38	17	45%
Yorkshire and the Humber	22	9	41%
Thames Valley	5	2	40%
North West London	11	4	36%
East of England	26	9	35%
North, Central and East London	15	5	33%
North East	10	3	30%
South London	10	3	30%
Total	**210**	**100**	**48%**

Source: HEE/CfWI ultrasound survey, 2015

6.3 Validity of survey submissions

The CfWI calculated the completeness and quality of the submitted responses for core staff with the following variables/checks, after the data had been cleaned of any obvious errors: (1) Valid assignment number; (2) Valid quantitative WTE value; (3) Valid ultrasound department.

Table 5 shows the breakdown of these variables/checks, and shows that of the 2,210 core individuals who were reported to provide ultrasound services in England at the time of survey 1,524 had valid assignment numbers specified, 2,096 had valid WTE values submitted, and 2,090 had valid departments specified.

Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this analysis.

Table 5: Data completeness and quality – core staff

69 per cent of individual entries passed all three validity checks.

Variable/check	Submitted number	Number of valid entries	Proportion of valid entries compared to submitted entries
Valid assignment number	2210	1524	69%
Valid quantitative WTE value	2210	2096	95%
Valid ultrasound department	2210	2090	95%

Source: HEE/CfWI ultrasound survey, 2015

6.4 Assignment numbers

The survey request for workforce assignment numbers were the main barrier for people submitting valid entries, as respondents were uncertain about data governance, despite assurances from both HEE and the CfWI.

Table 6 shows the breakdown of valid assignment numbers by staff group. Core staff submissions were populated with a substantial proportion of valid assignment numbers, and slightly less so for the current training section. However, a very low proportion of valid assignment numbers were submitted for ALB staff. This is most likely owing to the lack of assignment numbers for those roles in general.

Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this analysis.

Table 6: Valid assignment numbers by staff group

Core staff submissions were populated with a relatively large proportion of valid assignment numbers.

Staff group	Submitted headcount	Total valid assignment numbers	Proportion
Core staff	2210	1524	69%
ALB staff	318	19	6%
Current training	326	185	57%

Source: HEE/CfWI ultrasound survey, 2015

6.5 Total headcounts by HEE local team

Table 7 shows the submitted headcount totals by HEE local team for core and ALB staff across both surveys. The supplementary survey captured data for an additional 111 staff. In total, the two surveys captured data for 2,639 core and ALB members of staff. In terms of proportions of headcount, 87 per cent are core and 13 per cent ALB.

This survey submission data shows that there are **at least 2,306 core ultrasound practitioners in England**. However, as we calculate that around 48 per cent of estimated eligible trusts returned a survey, the actual number may be twice as many. HEE will take this into consideration when making a calculation to inform the supply assumptions and modelling outputs.

Table 7: Headcount breakdown by HEE local team - core and ALB staff

Both surveys captured data for 2639 members of staff

HEE local team	Core staff HC primary survey	Core staff HC both surveys	ALB staff HC primary survey	ALB staff HC both surveys
East Midlands	122	122	27	27
East of England	122	147	30	37
Kent, Surrey and Sussex	133	133	26	26
North East	65	70	4	6
North West	226	292	42	48
North West London	41	41	11	11
North, Central and East London	147	147	17	17
South London	75	75	11	11
South West	189	189	20	20
Thames Valley	46	46	8	8
Wessex	128	128	13	13
West Midlands	630	630	77	77
Yorkshire and the Humber	286	286	32	32
Total	**2,210**	**2,306**	**318**	**333**
Proportion of total headcount		**87%**		**13%**

Source: HEE/CfWI ultrasound survey, 2015

6.6 Core staff whole time equivalents (WTEs) by HEE local team

Table 8 shows the distribution range of submitted WTE totals for core staff by HEE local team for both surveys. There were 114 invalid WTE entries for the 2,306 declared core staff entries across both surveys. As WTE was submitted in terms of time devoted to ultrasound scanning, the WTE values varied from just over 0 to 1 because not all surveyed staff do ultrasound scanning as core provision.

The highest proportion of WTE was '1 WTE' at 16 per cent of the submissions. However, the next highest range was '0.10 to 0.19' WTE at 14 per cent of submissions, followed by '0.20 to 0.29' at 11 per cent of submissions. These figures show the large variance in ultrasound scanning as core provision across the survey sample.

Table 8: Core staff WTE breakdown by HEE local team

The highest proportion of WTE was '1 WTE' at 16 per cent of the submissions

HEE local team	0.01 to 0.09	0.10 to 0.19	0.20 to 0.29	0.30 to 0.39	0.40 to 0.49	0.50 to 0.59	0.60 to 0.69	0.70 to 0.79	0.80 to 0.89	0.90 to 0.99	1.0	Invalid	Total
East Midlands	13	14	5	4	11	6	10	4	13	7	19	16	**122**
East of England	0	3	12	6	21	11	25	7	21	15	23	3	**147**
Kent, Surrey and Sussex	0	13	26	8	27	8	8	8	13	2	19	1	**133**
North East	2	6	6	1	3	8	8	3	6	4	15	8	**70**
North West	2	16	26	6	22	20	23	63	29	25	42	18	**292**
North West London	0	1	3	0	6	2	2	4	2	16	4	1	**41**
North, Central and East London	3	36	23	5	1	9	5	8	2	10	26	19	**147**
South London	0	1	1	1	3	14	11	4	19	11	7	3	**75**
South West	0	27	26	6	21	13	25	8	15	18	27	3	**189**
Thames Valley	0	0	3	1	5	6	3	3	6	2	17	0	**46**
Wessex	1	14	21	8	10	13	25	6	7	6	17	0	**128**
West Midlands	28	180	73	30	63	36	59	15	45	12	58	31	**630**
Yorkshire and the Humber	15	4	16	9	28	29	36	20	19	4	95	11	**286**
Total	**64**	**315**	**241**	**85**	**221**	**175**	**240**	**153**	**197**	**132**	**369**	**114**	**2,306**
Proportion of WTE	3%	14%	11%	4%	10%	8%	10%	7%	9%	6%	16%	5%	100%

Source: HEE/CfWI ultrasound survey, 2015

6.7 Suitability of survey data to inform supply and demand modelling (phase two)

The CfWI considers its survey results to be the most comprehensive report, to date, of the sonography workforce in England. However, as aforementioned in this report, the total makeup, size, and age profile of the ultrasound practitioner workforce is not known because:

- there is no single definitive source of ultrasound practitioner workforce numbers
- sonography is not currently a regulated profession in the UK
- there are multiple staff groups involved in ultrasound service provision
- there are multiple national qualifications/certifications for ultrasound practitioners
- each staff group may have its own ultrasound practitioner qualification/certification
- organisations tend not to collect data on additional or specialist qualifications of its members
- there is a lack of data detailing ultrasound activity by specialty/profession/staff group as specialties/organisations tend not to collect data on ultrasound specific activity
- the CfWI cannot quantitatively confirm a definitive response rate as, due to the nature of the ultrasound workforce, it is not known which departments and how many of them were eligible to complete the survey
- even though the received survey submissions were data rich, the CfWI suspects that data gaps still exist, so the survey sample may not be representative of the whole of England.

Because a precise figure for the existing workforce is one of the key factors in accurate modelling, the supply forecast for this workforce was considered based on an estimated starting point. The existing workforce size, makeup, and age profile will therefore have to be estimated using the survey data and a series of assumptions, reached by analysing past trends, and engaging with professional and expert representatives for consensus.

HEE will use the data yielded to date, coupled with wider work, to continue shedding new light on this workforce. It will support initial skeleton modelling as a single workforce, allowing a degree of extrapolation of demand and supply. However, it will not answer all questions about all subcomponents of this workforce.

In phase two, HEE will endeavour to support the robustness of sonography workforce demand and supply by:

- consulting professional and expert representatives widely on the data and data gaps
- conducting data confidence analysis to assess the quality of each model input variable
- testing modelling assumptions and preliminary model outputs with key stakeholders.

Full CfWI survey result breakdowns are covered in the remainder of this report and in the Appendix.

7. Survey results – core staff job roles, qualifications, and areas of work

7.1 Core staff: job roles

All the data shown is based on the sample collected during this survey and may not be representative of the whole of England.

Table 9 shows the job roles for core staff with valid assignment numbers. Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this table.

From the survey responses, diagnostic radiographer is the most common job role of the ultrasound practitioner workforce at 59 per cent of the sample – almost four times that of the nearest, consultant.

Table 9: Core staff job roles

Diagnostic radiographer is the most common job role.

Job Role (according to ESR)	Number of valid assignment numbers	Proportion of whole sample of valid assignment numbers
Radiographer	901	59.10%
Consultant	241	15.80%
Healthcare scientist	194	12.70%
Midwife	65	4.30%
Technician	43	2.80%
Advanced Practitioner	31	2.00%
Specialty Doctor	21	1.40%
Nurse	15	1.00%
Manager	8	0.50%
Helper/Assistant	3	0.20%
Physiotherapist	1	0.10%
Adviser	1	0.10%
Total	**1,524**	**100%**

Source: HEE/CfWI ultrasound survey, 2015. ESR data

7.2 Core staff: qualifications

Table 10 shows the breakdown of submitted core staff qualifications. Note that the supplementary survey responses, which did not request qualification details, are excluded from this table.

Around 8.5 per cent of submissions did not state a qualification and just under 1 per cent stated 'no qualification'. Postgraduate Diploma in Medical Ultrasound is the most common, followed by postgraduate medical training. These two currently make up nearly half of all stated qualifications held by core staff.

The Diploma/Certificate in Medical Ultrasound awarded by the SCoR was the first-ever UK ultrasound qualification and was available between 1979 and 1997. It was replaced with the postgraduate diploma and postgraduate certificate following the move of traditional hospital based schools of radiography to the higher education sector in the early 1990s (SCoR, 2015).

Table 10: Core staff qualifications

Postgraduate Diploma in Medical Ultrasound is the most common qualification currently held.

Qualification	Total	Percentage
Postgraduate Diploma in Medical Ultrasound	650	29.4%
Postgraduate medical training (e.g. professional awards of the RCR and RCOG).	392	17.7%
Postgraduate Certificate in Medical Ultrasound	256	11.6%
Diploma/Certificate in Medical Ultrasound of the Society and College of Radiographers	206	9.3%
No option selected	188	8.5%
MSc in Medical Ultrasound	118	5.3%
Other	106	4.8%
Accreditation by the British Society of Echocardiography	95	4.3%
In-house training	58	2.6%
Accreditation by the Society for Vascular Technology of Great Britain and Ireland	54	2.4%
'Focused' course of less than 60 M level credits	39	1.8%
Overseas qualifications	30	1.4%
No qualification	18	0.8%
Total	**2,210**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

7.3 Core staff: registration

Table 11 shows the breakdown of submitted core staff registration statuses. The largest group are those registered with HCPC as a radiographer, at around 47 per cent of the total sample. Note that the supplementary survey responses, which did not request registration details, are excluded from this table.

Table 11: Core staff registration status

The largest group is those registered with HCPC as a radiographer.

Registration status	Total	Percentage
HCPC registered as a radiographer	1,037	46.9%
No option selected	409	18.5%
Registered with the GMC with a licence to practise	425	19.2%
NMC registered as a midwife	106	4.8%
No registration	78	3.5%
Voluntary registered with the RCCP	53	2.4%
Voluntary registered with the PVRS	42	1.9%
NMC registered as a nurse	25	1.1%
HCPC registered as a clinical scientist	14	0.6%
Other statutory body	9	0.4%
GMC without a licence	4	0.2%
Voluntary registered with the AHS	4	0.2%
HCPC registered as a physiotherapist	2	0.1%
NMC dual qualified	2	0.1%
Total	**2,210**	**100%**

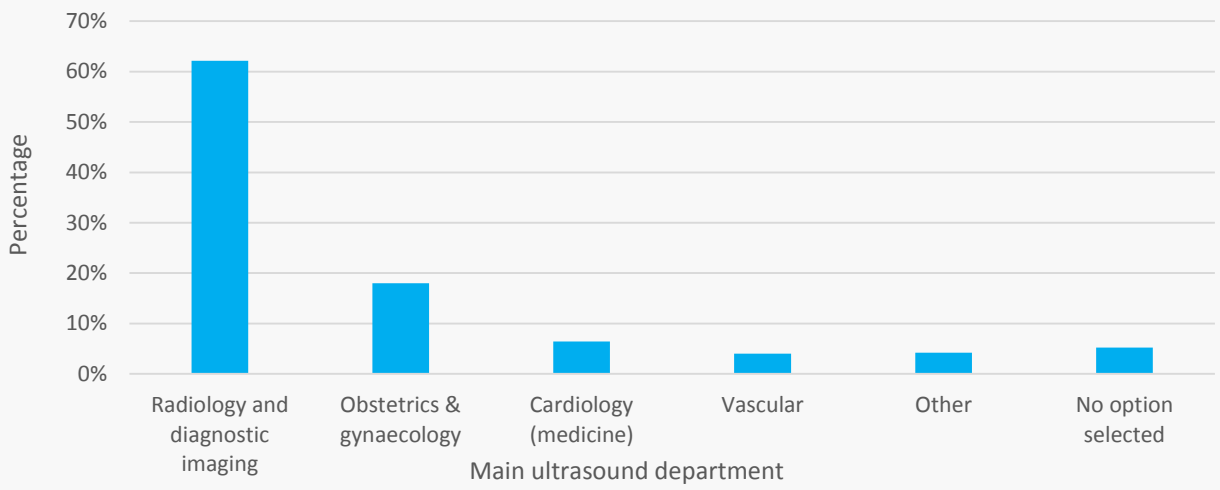
Source: HEE/CfWI ultrasound survey, 2015

7.4 Core staff: department proportions

Figure 4 shows the breakdown of core staff areas of work, submitted through the survey. The majority (62 per cent) of core staff providing ultrasound services work in radiology and diagnostic imaging, 18 per cent in obstetrics and gynaecology, 6 per cent in cardiology (medicine), and 4 per cent in vascular. Four per cent of core staff providing ultrasound services were recorded in the 'other' category. Over 41 per cent (39/94) of 'other' entries did not elaborate, but the majority of 'elaborated other' is made up of breast and AAA screening, GP surgeries and local community hospitals, and maternity and paediatrics units.

Figure 4: Core staff department proportions

The majority of core staff providing ultrasound services work in radiology and diagnostic imaging.



Source: HEE/CfWI ultrasound survey, 2015

7.5 Core staff: medical and non-medical by department

Table 12 shows medical and non-medical core staff with valid assignment numbers, by department. Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this table.

In this survey sample medical staff have a headcount (HC) of 262, and non-medical staff have a HC of 1,262, indicating that about 83 per cent of core staff are non-medical. Radiology and diagnostic imaging is the department where both medical and non-medical staff sonographers are most commonly found, and is proportionally more dominant for medical staff.

Table 12: Medical and non-medical core staff by department (headcount)

Radiology & diagnostic imaging is the most populated department for medical and non-medical core staff. Non-medical staff make up around 83 percent of the core workforce.

Department	Medical HC	Non-medical HC
Radiology & diagnostic imaging	230	797
Obstetrics & gynaecology	16	215
Cardiology (medicine)	2	124
Other	14	65
Vascular	0	55
Early pregnancy assessment units	0	6
Total	**262**	**1,262**
Proportion	**17%**	**83%**

Source: HEE/CfWI ultrasound survey, 2015. ESR data

7.6 Core staff: medical staff by job role

Table 13 shows core medical staff with valid assignment numbers, by job role and whole time equivalent (WTE). Of the 262 core medical staff in this survey sample, there were 241 consultants and 21 specialty doctors. However, there were 5 consultant and 13 specialty doctors without valid WTE figures, so the WTE/HC ratio figures are calculated only on those entries that had both HC and WTE.

Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this table.

Consultants have a comparable 236 HC to 40.6 WTE. As WTE was submitted in terms of time devoted to ultrasound scanning, this may indicate that a significant proportion of consultants do not provide ultrasound scanning as core provision.

Similarly, specialty doctors have a comparable 8 HC to 1.8 WTE, also indicating that a significant proportion of specialty doctors do not provide ultrasound scanning as core provision. However, in terms of WTE/HC ratio, this survey sample suggests that specialty doctors spend a little more relative time scanning than consultants.

Table 13: Core staff, medical staff by job role

Consultants make up around 92 per cent of core medical staff.

Job role	Total Headcount	Comparable Headcount	Whole Time Equivalent	WTE/HC ratio
Consultants	241	236	40.6	0.17
Specialty doctors	21	8	1.8	0.23
Total	**262**	**244**	**42.4**	**0.17**

Source: HEE/CfWI ultrasound survey, 2015. ESR data

7.7 Core staff: non-medical staff by job role

Table 14 shows core non-medical staff with valid assignment numbers, by job role and WTE. Of the 1,262 core non-medical staff in this survey sample, there were 22 without valid WTE figures, so the WTE/HC ratio figures are calculated only on those entries that had both HC and WTE. Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this table.

Staff roles were combined into broader terms, e.g. 'radiographer – diagnostic' and 'radiographer – diagnostic, specialist practitioner' are combined into an umbrella job role 'radiographer'.

The survey results show that radiographers make up around 71 per cent of core non-medical staff. The comparable WTE/HC ratios show that, overall, non-medical staff spend relatively more time scanning than medical staff. However, these figures also show a large variation across job roles in terms of scanning as a proportion of total work time. In this survey sample those in the role of advanced practitioner, radiographer and healthcare scientist undertake the highest proportion of scanning in terms of WTE/HC ratio.

Table 14: Non-medical staff by job role

Radiographers make up around 71 per cent of core non-medical staff.

Job role	Total Headcount	Comparable Headcount	WTE	WTE/HC ratio
Radiographer	901	890	591.9	0.67
Healthcare scientist	194	193	128.9	0.67
Midwife	65	60	36	0.60
Technician	43	38	25.9	0.68
Advanced Practitioner	31	31	22.9	0.74
Nurse	15	15	9.3	0.62
Manager	8	8	4.2	0.53
Helper/Assistant	3	3	1.4	0.47
Physiotherapist	1	1	0.3	0.30
Adviser	1	1	0.2	0.20
Total	**1,262**	**1,240**	**821**	**0.66**

Source: HEE/CfWI ultrasound survey, 2015. ESR data

7.8 Core staff: medical consultants by primary area of work

Table 15 shows core medical consultants with valid assignment numbers. Note that the supplementary survey responses, which did not request assignment numbers, are excluded from this table.

In this survey sample, around 88 per cent of consultants providing ultrasound services, work in imaging and 7 per cent in obstetrics and gynaecology, as their primary area of work.

Table 15: Core staff: medical consultants by primary area of work

88 per cent of consultants providing ultrasound work in imaging as their primary area of work.

Consultant primary area of work	Total Headcount	HC Proportion
Imaging	212	88%
Obstetrics and Gynaecology	16	7%
Clinical Support	6	2%
Medicine	5	2%
General Acute	2	1%
Total	**241**	**100%**

Source: HEE/CfWI ultrasound survey, 2015. ESR data

8. Survey results - age profiles

8.1 All staff age profile

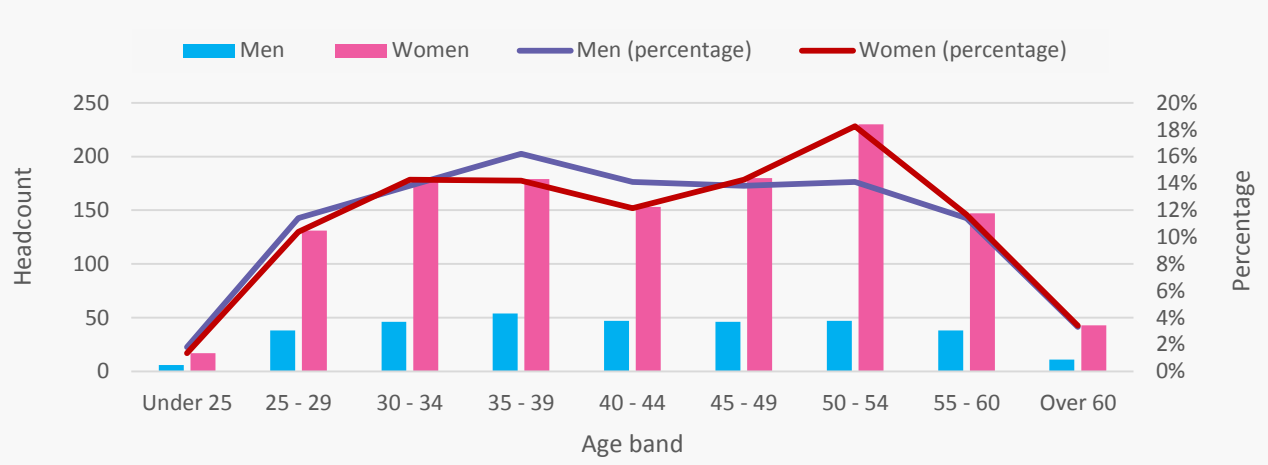
Figure 5 shows the age profile of all staff with valid assignment numbers, including trainees. The age bands were determined from the valid assignment numbers provided in the survey via the ESR.

From the survey submissions it was determined that around 80 per cent of the ultrasound workforce are women. The graph also shows that around 33 per cent of women are aged 50 or older, and 44 per cent are over the age of 45. In addition, 28 per cent of men are aged 50 or older, and 42 per cent over the age of 45.

About 31 per cent of the workforce will be retiring in the next 10 to 15 years, according to the survey. However the proportion of the workforce in the 35 to 49 age group also accounts for about 40 per cent of the workforce which may mitigate against the loss of the older workforce, particularly considering the spike in the 50 to 54 age range.

Figure 5: All staff age profile

Around 80 per cent of the ultrasound workforce are women. About 31 per cent of the workforce will be retiring in the next 10 to 15 years.



Source: HEE/CfWI ultrasound survey, 2015. ESR data

8.2 Core staff expected retirements within five years of survey

The survey respondents were asked whether each of the submitted members of staff were expected to retire within the next five years from survey to inform HEE plans for the non-medical workforce. Table 16 shows the responses for all submitted staff by HEE local team. Across all HEE local teams, 12 per cent (270 HC) of recorded staff expect to retire within five years of the CfWI survey. This is more or less in line with the staff age profile (Figure 5) where 239 HC are aged 55 and above.

In terms of individual HEE local teams, Wessex and the South West indicated the highest potential percentage of staff retiring within the next five years, at 20 and 19 per cent respectively.

Table 16: Core staff expected retirements within five years of survey

Across all HEE local teams, 12 per cent of recorded staff expect to retire within the five years of the CfWI survey.

HEE local team	Expected to retire	Not expected to retire	No expectation given	Total	Approximate % of recorded staff expected to retire within 5 years
East Midlands	15	50	55	**122**	12%
East of England	20	90	40	**147**	14%
Kent, Surrey and Sussex	15	95	20	**133**	11%
North East	5	45	15	**70**	7%
North West	30	150	110	**292**	10%
North West London	5	35	0	**41**	12%
North, Central and East London	5	85	55	**147**	3%
South London	5	70	0	**75**	7%
South West	35	150	0	**189**	19%
Thames Valley	0	45	0	**46**	0%
Wessex	25	90	10	**128**	20%
West Midlands	75	435	120	**630**	12%
Yorkshire and the Humber	25	195	65	**286**	9%
Total	**270**	**1543**	**493**	**2306**	
Proportion	**12%**	**67%**	**21%**	**100%**	

Source: HEE/CfWI ultrasound survey, 2015. Rows and columns may not sum to the totals because values have been rounded to the nearest multiple of 5.

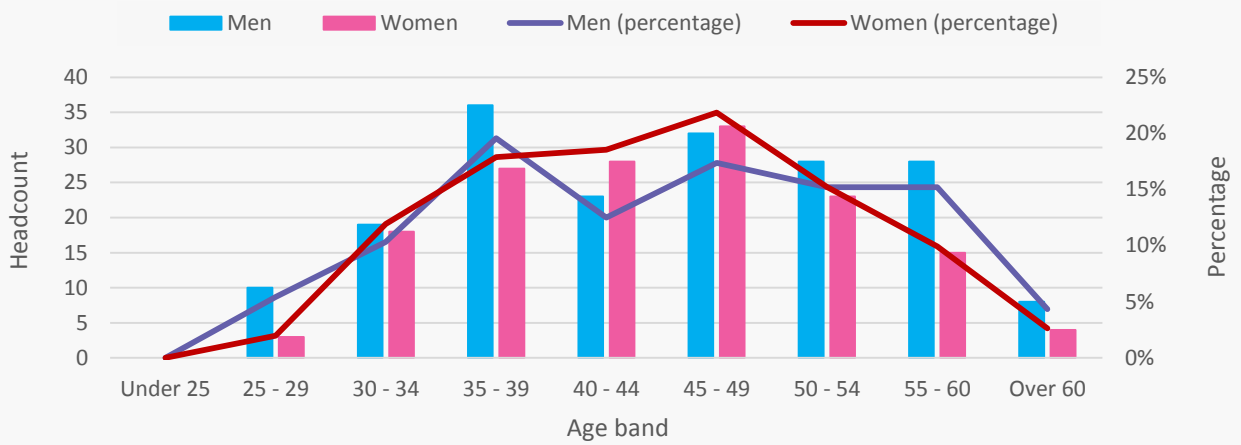
8.3 Medical staff age profile

Figure 6 shows the age profile of ultrasound medical staff with valid assignment numbers in this survey sample. In this sample, men outnumber women in all age ranges except 40–49 years, and make up 55 per cent of ultrasound medical staff. There is no indication of a pending retirement bulge.

Figure 7 also shows the same age profile, split by consultants and specialty registrars. Specialty registrars almost exclusively populate the 25–39 year age range before they become consultants.

Figure 6: Medical staff age profile

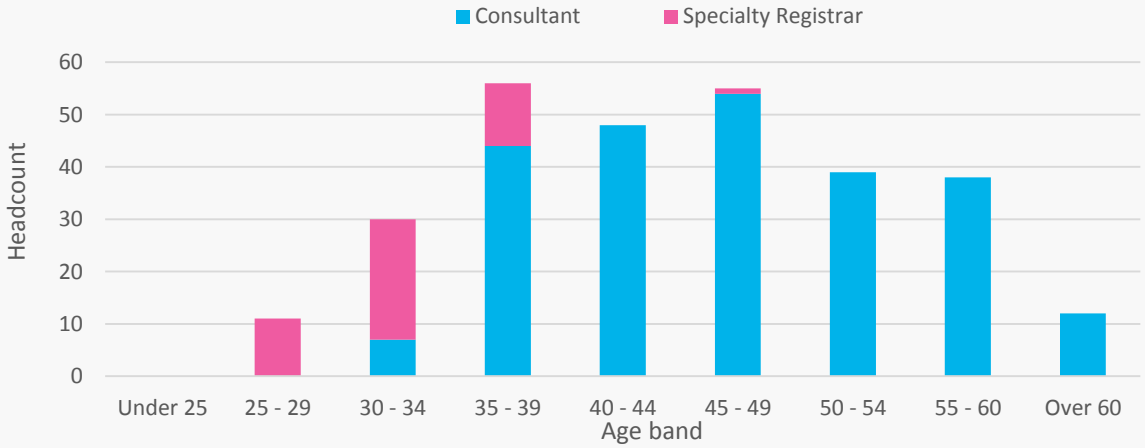
Men make up 55 per cent of the total medical ultrasound workforce. There is no indication of a pending retirement bulge.



Source: HEE/CfWI ultrasound survey, 2015. ESR data

Figure 7: Medical staff age profile – consultants vs specialty registrars

Specialty registrars almost exclusively populate the 25–39 year age range before they become consultants.



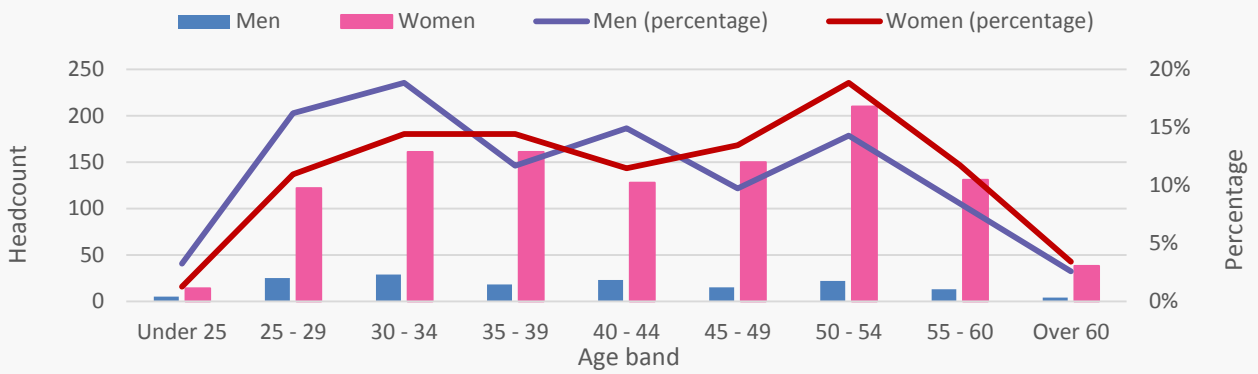
Source: HEE/CfWI ultrasound survey, 2015. ESR data

8.4 Non-medical staff age profile

Figure 8 shows the age profile of ultrasound non-medical staff with valid assignment numbers in this survey sample. In this sample, women outnumber men by more than 7:1 at around 88 per cent of the ultrasound non-medical workforce. This sample indicates a slight risk of a pending retirement bulge for women in the medium term.

Figure 8: Non-medical staff age profile

Women outnumber men by more than 7:1 in the non-medical ultrasound workforce. This sample indicates a slight risk of a pending retirement bulge for women in the medium term.



Source: HEE/CfWI ultrasound survey, 2015. ESR data

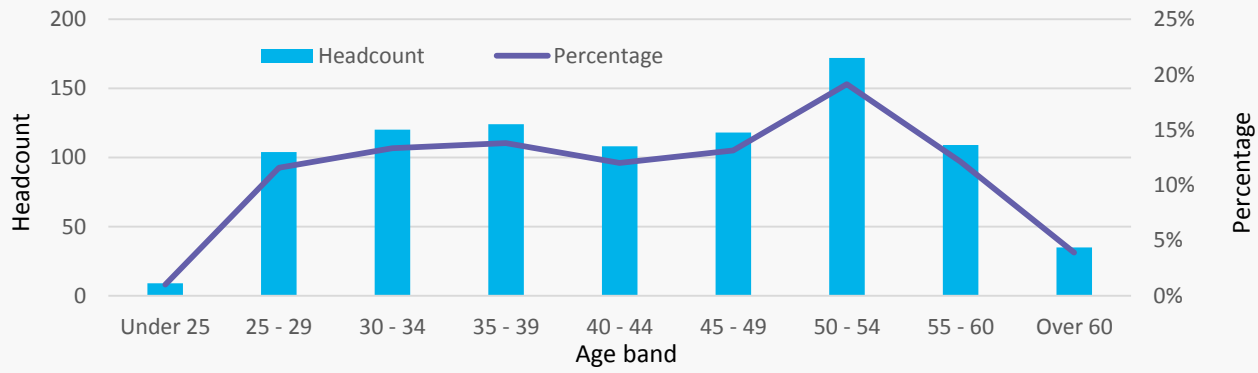
8.5 Diagnostic radiographer age profile

Figure 9 shows the age profile of diagnostic radiographers in this survey sample. This age profile is similar to the non-medical and all staff age profiles, reflecting the majority of the ultrasound workforce are diagnostic radiographers. This sample indicates a slight risk of a pending retirement bulge in the medium term.

About 35 per cent of the diagnostic radiographer workforce will be eligible for retirement in the next 10 to 15 years. However the proportion of the workforce in the 35 to 49 year age group also accounts for about 39 per cent of the workforce which may mitigate against the loss of the older workforce, particularly considering the spike in the 50–54 year age range.

Figure 9: Diagnostic radiographer age profile

The majority of the ultrasound workforce are diagnostic radiographers.



Source: HEE/CfWI ultrasound survey, 2015. ESR data

9. Survey results – agency, locum, and bank staff

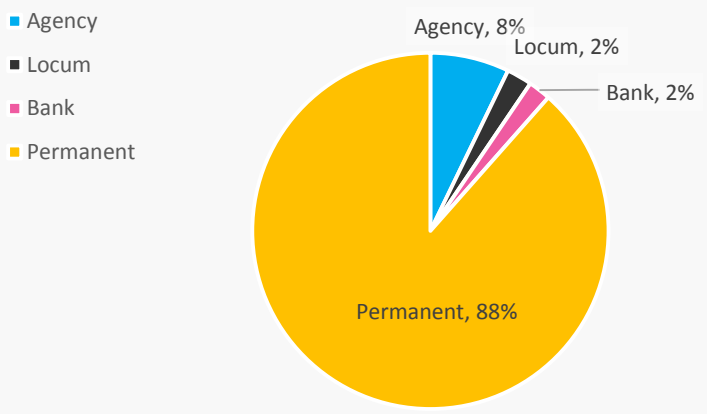
9.1 Proportions of permanent, agency, locum and bank staff

Figure 10 shows that around 12 per cent of staff in the ultrasound workforce survey are agency, locum and bank (ALB) staff, with agency staff at around 8 per cent, and locum and bank around 2 per cent each.

This figure includes the supplementary survey responses as this analysis is by total submitted headcounts.

Figure 10: Proportions of permanent, agency, locum and bank staff

Around 12 per cent of staff in the ultrasound workforce are agency, locum and bank (ALB) staff.



Source: HEE/CfWI ultrasound survey, 2015

9.2 Permanent, agency, locum and bank (ALB) staff numbers by HEE local team

Table 17 shows the headcounts and proportions of permanent and ALB staff by HEE local team across this survey sample. This table includes the supplementary survey responses as this analysis is by total submitted headcounts. Also note that there were 19 ALB staff in the survey submissions which did not select the agency, locum or bank option.

All HEE local teams except the North West and North East have a greater proportion of agency staff compared to locum or bank staff. Around 34 per cent of ALB staff have been in post for up to one year, 16 per cent between one and two years. However, 38 per cent of ALB staff submissions did not indicate length of time in post.

Table 17: Headcounts and proportions of permanent and ALB staff by HEE local team

Most HEE local teams have a greater proportion of agency staff compared to locum or bank staff.

HEE local team	Permanent	Agency	Locum	Bank	ALB not specified
East Midlands	122 (81.9%)	20 (13.4%)	0 (0%)	5 (3.4%)	2 (1.3%)
East of England	147 (79.9%)	21 (11.4%)	13 (7.1%)	1 (0.5%)	2 (1.1%)
Kent, Surrey and Sussex	133 (83.6%)	21 (13.2%)	3 (1.9%)	2 (1.3%)	0 (0%)
North East	70 (92.1%)	0 (0%)	5 (6.6%)	1 (1.3%)	0 (0%)
North West	292 (85.8%)	20 (5.9%)	6 (1.8%)	21 (6.2%)	1 (0.3%)
North West London	41 (78.9%)	10 (19.2%)	0 (0%)	1 (1.9%)	0 (0%)
North, Central and East London	147 (89.6%)	11 (6.7%)	1 (0.6%)	5 (3.1%)	0 (0%)
South London	75 (87.2%)	7 (8.1%)	2 (2.3%)	1 (1.2%)	1 (1.2%)
South West	189 (90.4%)	11 (5.3%)	1 (0.5%)	7 (3.3%)	1 (0.5%)
Thames Valley	46 (85.2%)	8 (14.8%)	0 (0%)	0 (0%)	0 (0%)
Wessex	128 (90.8%)	6 (4.3%)	5 (3.5%)	1 (0.7%)	1 (0.7%)
West Midlands	630 (89.1%)	42 (5.9%)	16 (2.3%)	13 (1.9%)	6 (0.8%)
Yorkshire and the Humber	286 (89.9%)	16 (5%)	10 (3.2%)	1 (0.3%)	5 (1.6%)
Total	**2,306 (87.4%)**	**193 (7.3%)**	**62 (2.3%)**	**59 (2.3%)**	**19 (0.7%)**

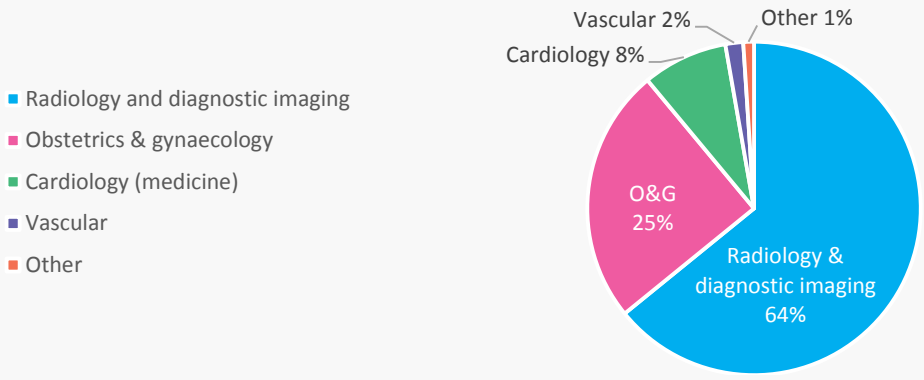
Source: HEE/CfWI ultrasound survey, 2015

9.3 Agency, locum and bank staff by department

Figure 11 shows the proportions of ALB staff by department, in this survey sample. Radiology and diagnostic imaging has more ALB staff than all other departments combined with around two-thirds of all ALB staff. Note that this figure includes the supplementary survey responses, as this analysis is by total submitted headcounts by declared department. However, 43 ALB staff in the survey submissions did not have a department selected, so the proportions are calculated on declared figures only.

Figure 11: Agency, locum, and bank staff by department

Two-thirds of ALB staff work in the radiology and diagnostic imaging departments.



Source: HEE/CfWI ultrasound survey, 2015

10. Survey results – vacancies and frozen posts

10.1 Vacancies by HEE local team – as at June/August 2015

Table 18 shows the breakdown of reported vacancies and calculated vacancy rates[5] by HEE local team at time of survey, across the survey sample. Note that this table includes the supplementary survey responses.

There were 258 vacancies recorded across all HEE local teams at the time of survey. The total snapshot vacancy rate across all HEE local teams was **around 10 per cent**, and varied widely across HEE local teams from 5 to 25 per cent. North West London and Thames Valley had the highest vacancy rates of 25 and 23 per cent respectively and Wessex and West Midlands had the lowest, both with 5 per cent.

Table 18: Snapshot vacancies by HEE local team – as at June/August 2015

The total snapshot vacancy rate across all HEE local teams at the time of survey was around 10%.

HEE local team	Core staff HC	Vacancies HC	Vacancy rate	Vacancy WTE
East Midlands	122	19	13%	16.7
East of England	147	19	11%	13.9
Kent, Surrey and Sussex	133	21	14%	14.5
North East	70	11	14%	8.4
North West	292	35	11%	29.2
North West London	41	14	25%	12.3
North, Central and East London	147	10	6%	9.5
South London	75	16	18%	15.4
South West	189	13	6%	9.6
Thames Valley	46	14	23%	13.6
Wessex	128	7	5%	3.4
West Midlands	630	34	5%	27.3
Yorkshire and the Humber	286	45	14%	33.4
Total	**2306**	**258**	**10%**	**207.2**

Source: HEE/CfWI ultrasound survey, 2015

10.2 Vacancies by department – at time of survey

Table 19 shows the breakdown of reported vacancies at time of survey, by department by HEE local team, across the survey sample. Note that this table includes the supplementary survey responses.

[5] Vacancy rates calculated as per standard note SN/SG/2669, NHS vacancy statistics: England (House of Commons library, 2008).

A total of 65 per cent of all vacancies reported were in radiology and diagnostic imaging, followed by obstetrics and gynaecology at around 15 per cent. Nine per cent of vacancy submissions did not specify a department.

Table 19: Vacancies by department by HEE local team – as at time of survey

The highest proportion of vacancies at the time of survey was for radiology and diagnostic imaging at around 65 per cent.

HEE local team	Obstetrics & gynaecology	Radiology and diagnostic imaging	Early pregnancy assessment units	Cardiology (medicine)	Vascular	Other	No department given	Total
East Midlands	8	6	1	2	0	2	0	19
East of England	1	15	0	3	0	0	0	19
Kent, Surrey and Sussex	4	15	0	0	1	1	0	21
North East	0	1	0	2	0	0	8	11
North West	9	21	0	2	0	0	3	35
North West London	11	3	0	0	0	0	0	14
North, Central and East London	0	10	0	0	0	0	0	10
South London	0	11	0	0	0	0	5	16
South West	0	10	0	0	3	0	0	13
Thames Valley	0	8	0	4	2	0	0	14
Wessex	0	4	0	1	0	0	2	7
West Midlands	3	27	0	3	0	0	1	34
Yorkshire and the Humber	2	37	1	2	0	0	3	45
Total	**38**	**168**	**2**	**19**	**6**	**3**	**22**	**258**
Proportion	**15%**	**65%**	**1%**	**7%**	**2%**	**1%**	**9%**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

10.3 Vacancies by type – at time of survey

Table 20 shows the breakdown of reported vacancies by type of vacancy by HEE local team at time of survey, across the survey sample. Note that this table includes the supplementary survey responses.

Of all vacancies reported, 92 per cent were for permanent posts, 2 per cent were for temporary posts, and 6 per cent of submissions did not specify.

Table 20: Vacancies by type by HEE local team – as at time of survey

The highest proportion of vacancies at the time of survey was for permanent posts at around 92 per cent.

HEE local team	Permanent	Temporary	Unknown	Total
East Midlands	19	0	0	19
East of England	15	0	4	19
Kent, Surrey and Sussex	18	3	0	21
North East	9	0	2	11
North West	27	0	8	35
North West London	14	0	0	14
North, Central and East London	9	1	0	10
South London	16	0	0	16
South West	13	0	0	13
Thames Valley	14	0	0	14
Wessex	6	1	0	7
West Midlands	33	1	0	34
Yorkshire and the Humber	43	0	2	45
Total	**236**	**6**	**16**	**258**
Proportion	**92%**	**2%**	**6%**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

10.4 Long-term vacancies by HEE local team – at time of survey

Table 21 shows the breakdown of reported long-term vacancies (i.e. vacancies open for 12 months plus) and vacancy rates[6] at the time of survey, by HEE local team, across the survey sample. Note that the supplementary survey responses, which did not request length of vacancy, are excluded from this analysis.

The total long-term vacancy rate across all HEE local teams at the time of survey was around 4 per cent, and varied between 0 and 18 per cent for each HEE local team. Thames Valley and North West London had the highest long-term vacancy rates of 18 and 16 per cent, respectively and Wessex and South West had the lowest at 2 and 0 per cent, respectively.

[6] Vacancy rates calculated as per standard note SN/SG/2669, NHS vacancy statistics: England (House of Commons library, 2008).

Table 21: Long-term vacancies by HEE local team – as at time of survey

The total long-term vacancy rate across all HEE local teams at the time of survey was around 4%.

HEE local team	Core staff HC	Long-term vacancies HC	Long-term vacancy rate
Thames Valley	46	10	18%
North West London	41	8	16%
South London	75	9	11%
East Midlands	122	11	8%
Yorkshire and the Humber	286	19	6%
North West	226	12	5%
Kent, Surrey and Sussex	133	7	5%
East of England	122	7	5%
North, Central and East London	147	6	4%
West Midlands	630	11	2%
North East	65	1	2%
Wessex	128	3	2%
South West	189	0	0%
Total	**2,210**	**104**	**4%**

Source: HEE/CfWI ultrasound survey, 2015

10.5 Long-term vacancies by department by HEE local team – at time of survey

Table 22 shows the breakdown of reported long-term vacancies at time of survey, by department by HEE local team, across the survey sample. Note that this table includes the supplementary survey responses.

Of all reported long-term vacancies, 71 per cent were in radiology and diagnostic imaging, followed by obstetrics and gynaecology at around 17 per cent, and then cardiology at 8 per cent. Three per cent of long-term vacancy submissions did not specify a department.

Table 22: Long-term vacancies by department by HEE local team – as at time of survey

The highest proportion of long-term vacancies at the time of survey was for radiology and diagnostic imaging at around 71 per cent.

HEE local team	Obstetrics & gynaecology	Radiology and diagnostic imaging	Cardiology (medicine)	Vascular	No department given	Other	Total
East Midlands	8	1	2	0	0	0	11
East of England	1	6	0	0	0	0	7
Kent, Surrey and Sussex	0	7	0	0	0	0	7
North East	0	0	0	0	1	0	1
North West	3	9	0	0	0	0	12
North West London	5	3	0	0	0	0	8
North, Central and East London	0	6	0	0	0	0	6
South London	0	8	0	0	1	0	9
South West	0	0	0	0	0	0	0
Thames Valley	0	5	4	1	0	0	10
Wessex	0	1	1	0	1	0	3
West Midlands	1	9	1	0	0	0	11
Yorkshire and the Humber	0	19	0	0	0	0	19
Total	**18**	**74**	**8**	**1**	**3**	**0**	**104**
Proportion	**17%**	**71%**	**8%**	**1%**	**3%**	**0%**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

10.6 Frozen posts

There were only two frozen posts submitted across the 148 original survey submissions. The first was in an obstetrics and gynaecology department in North West London, frozen for less than six months. The second was in a radiology department in the West Midlands, frozen for between 6 and 12 months.

The supplementary survey did not request information about frozen posts.

11. Survey results – scans

11.1 Scan type by prevalence

Table 23 shows the top 10 scan types by prevalence for 2014-15, as reported in the CfWI survey. The full range of reported scans can be found in Appendix B of this report. General abdominal scans are the most common, and represent around 22 per cent of all reported scans in this survey.

However, the data suggests that pregnant women are getting more third trimester growth scans than second trimester anomaly scans. Every pregnant woman is offered a second trimester anomaly scan, and very few decline, while third trimester growth scans are not generally routine but are done when clinically indicated, which suggests that there ought to be more second anomaly trimester scans than third trimester growth scans (Langford, 2015). This contradiction is most likely due to inconsistencies in the data submissions to this survey.

However, it could also indicate an increasing trend in women having routine third trimester growth scans. NHS England's care bundle 'Saving Babies' Lives' launched in March 2016 (NHS England, 2016) is expected to lead to a significant increase in the number of third trimester growth scans.

HEE will take this into account in phase two of the project to inform the demand assumptions and modelling outputs.

It should also be noted that the Gen – trans-vaginal scans are not really an entity in their own right but are a subset of obstetrics and gynaecology. Sonographers decide to conduct an examination either transabdominally or transvaginally, and in some cases both techniques are used to scan the same patient.

Table 23: Top 10 scan types by prevalence

General abdominal scans are the most common, and represent around 22 per cent of all reported scans in this survey.

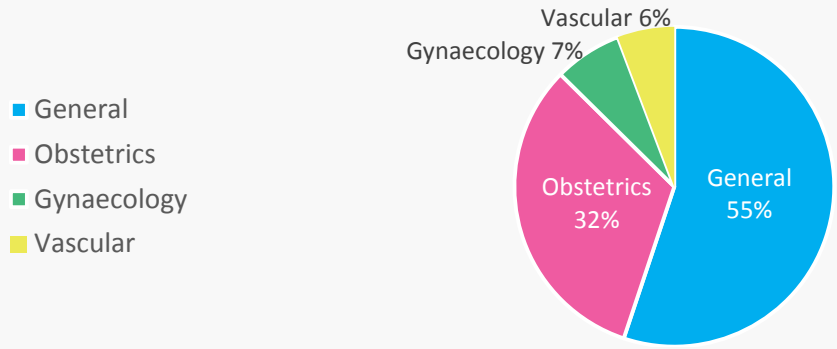
Rank	Main area	Scan type	Reported scans 2014-15	Proportion
1	General	Gen - Abdominal	654,799	22%
2	Obstetrics	Obs - 3rd trimester - growth	256, 043	9%
3	Obstetrics	Obs - 2nd trimester - anomaly scanning	249,252	8%
4	General	Gen - Renal Tract	218,007	7%
5	General	Gen - Musculoskeletal	209,047	7%
6	General	Gen - Trans-vaginal	200,790	7%
7	Gynaecology	Gynae - Non pregnancy related	185,141	6%
8	Obstetrics	Obs - 1st trimester - nuchal translucency scanning	162,627	5%
9	General	Gen - Small parts / superficial (non-MSK)	137,209	5%
10	Obstetrics	Obs - 1st trimester - dating	100,814	3%
other	Other	Other	610,670	21%

Source: HEE/CfWI ultrasound survey, 2015

Figure 12 shows, as reported in the CfWI survey, that general scans account for more than half (55 per cent) of all scans in 2014-15, with obstetrics accounting for about a third (32 per cent). Gynaecology and vascular account for 7 and 6 per cent, respectively.

Figure 12: All scan types by prevalence in main area

General accounts for over half of all scans, with obstetrics accounting for about a third.



Source: HEE/CfWI ultrasound survey, 2015

11.2 Average time per scan

Table 24 shows the average reported time taken to complete each of the top 10 scan types for 2014-15, as reported in the survey. The full range of reported times can be found in Appendix B of this report. The data shows significant variance in the time range, demonstrating the range of complexity across all scan types.

In addition to scanning variables, such as extending the scanning time if an anomaly is detected (all scan types), and multiple pregnancies for example, there are many varying factors that can affect how long an ultrasound examination will take. These factors include the nature of the local protocols for such examinations, departmental resources, referral source, patient mobility, support available for the scanning session and for how long a particular intensity of work can and should be maintained. The experience of the sonographers is also a factor and newly qualified sonographers need a longer period of time than experienced staff. Additional time will be required if the sonographer is to teach trainees effectively (SCoR, 2015d).

The Fetal Anomaly Screening Programme (FASP) recommends that 20 minutes is allowed for the dating/nuchal scan, and 30 minutes allowed for a singleton pregnancy (45 minutes for a multiple) for the fetal anomaly screening scan. NICE recommends that 30 minutes is allowed for growth scans for multiple pregnancies (SCoR, 205d).

In the absence of a valid and agreed assessment of examination times for general medical ultrasound examinations that fully takes into account the local circumstances, the SCoR advises that a minimum of 20 minutes per examination is allocated (SCoR, 2015d). The CfWI survey suggests that an average of 20 minutes would be sensible for most of the top 10 scan types, with anomaly scanning requiring closer to 30 minutes.

However it should be noted that there is significant variation across departments due to the factors explained earlier.

Norfolk and Norwich University Hospital (NNUH) conducted an exercise earlier in 2015 looking into ultrasound activity, which includes ultrasound scanning times. This data is currently being analysed and, when available, would be useful to compare to these survey findings, especially in terms of clarity regarding trans-vaginal scan times, and to inform phase two modelling.

Table 24: Average time per scan type (top ten)

There are significant variances in the time range across all scan types.

Main area	Scan type	Average scan time (minutes)	Range (minutes)
General	Gen - Abdominal	19	15 - 30
Obstetrics	Obs - 3rd trimester - growth	18	15 - 30
Obstetrics	Obs - 2nd trimester - anomaly scanning	27	20 - 40
General	Gen - Renal tract	18	15 - 30
General	Gen - Musculoskeletal	17	10 - 30
General	Gen - Trans-vaginal	19	15 - 30
Gynaecology	Gynae - Non pregnancy related	20	15 - 30
Obstetrics	Obs - 1st trimester - nuchal translucency scanning	22	15 - 45
General	Gen - Small parts / superficial (non-MSK)	17	15 - 30
Obstetrics	Obs - 1st trimester - dating	18	10 - 30

Source: HEE/CfWI ultrasound survey, 2015

12. Survey results – training

12.1 Training number proportions by HEE local team

Table 25 shows the training numbers in relation to the number of core staff at the time of survey, by HEE local team, across the survey sample. The supplementary survey did not request information on training numbers, so this table only relates to the primary survey.

The trainee to core staff ratio is 0.15, or for every trainee there is about seven core staff. This varies from a low of two in Thames Valley to a high of around 13.5 in the East of England.

It should be noted however, that many core staff work very low WTEs in delivering sonography services and, therefore, the time available for supervision of trainees or newly qualified staff may be significantly lower than this table suggests.

Additionally, the training headcount includes a relatively small number of core staff also in training. This includes core staff who are 'upgrading' their current qualification, for example there are 12 core staff in this survey sample who already have a PGC MU and are currently training towards a PGD MU. There are also 14 core staff with 'no' or 'other' qualifications, and eight with 'overseas' qualifications, that are training towards a recognised qualification or certification.

Table 25: Training number proportions by HEE local team

There is an average core staff to trainee ratio of 6.8.

HEE local team	Core staff HC	Trainee HC	Core staff to trainee ratio
East Midlands	122	17	7.2
East of England	122	9	13.6
Kent, Surrey and Sussex	133	14	9.5
North East	65	5	13.0
North West	226	35	6.5
North West London	41	6	6.8
North, Central and East London	147	20	7.4
South London	75	18	4.2
South West	189	32	5.9
Thames Valley	46	21	2.2
Wessex	128	14	9.1
West Midlands	630	72	8.8
Yorkshire and the Humber	286	63	4.5
Total	**2210**	**326**	**6.8**

Source: HEE/CfWI ultrasound survey, 2015

12.2 Training qualifications by prevalence

Table 26 shows training qualifications being studied, by prevalence at the time of survey, across the survey sample. There were currently 326 people working towards a qualification in ultrasound at the time of survey.

Approximately twice as many people were studying for a Postgraduate Diploma in Medical Ultrasound (PDMU) than Postgraduate Certificate in Medical Ultrasound (PCMU). These are the most common qualifications being studied for, and make up 51 per cent of all survey entries.

Table 26: Training qualifications by prevalence

The postgraduate diploma and postgraduate certificate in medical ultrasound are the most common qualifications being studied, and make up over 50 per cent of all survey entries.

Training qualification	HC	Proportion
Postgraduate Diploma in Medical Ultrasound (PDMU)	111	34%
Postgraduate Certificate in Medical Ultrasound (PCMU)	55	17%
Postgraduate medical training (e.g. professional awards of the RCR and RCOG).	36	11%
Other	32	10%
Accreditation by the British Society of Echocardiography	30	9%
'Focused' course of less than 60 M level credits	17	5%
MSc in Medical Ultrasound	14	4%
In-house training	4	1%
Accreditation by the Society for Vascular Technology of Great Britain and Ireland	2	1%
No qualification	0	0%
Overseas qualifications	0	0%
No option selected	25	8%
Total	**326**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

12.3 Time left in training

Table 27 shows time left in training, at the time of survey, across the survey sample. Around 42 per cent of trainees expect to qualify within six months of the survey, 64 per cent within a year, and 88 per cent within two years. This suggests that most new training can be completed within two years.

Table 27: Time left in training

Around 42 per cent of trainees are expected to qualify within six months of the survey.

Qualifying time	Proportion of trainees
0-6 months	42%
6-12 months	22%
12-24 months	24%
2-3 years	5%
3-4 years	3%
4-5 years	5%

Source: HEE/CfWI ultrasound survey, 2015

12.4 Expected trainees in the next 12 months

Survey respondents were asked how many trainees planned to start ultrasound training in their departments within the next 12 months on a Consortium for the Accreditation of Sonographic Education (CASE) accredited postgraduate diploma, postgraduate certificate in medical ultrasound, or equivalent.

Table 28 shows the total responses by number of expected trainees, at the time of survey, across the survey sample.

A total of 102 respondents answered the question, of which 76 selected at least one trainee, which suggests that about 75 per cent of those responding to this question expect to train more staff in sonography. Conversely, 25 per cent of total responses indicated that they did not expect any trainees within the next 12 months.

Table 28: Expected trainees in the next 12 months

75 per cent of respondents expect at least one trainee within 12 months of survey.

Number of trainees	No of responses	% of total
0	26	25%
1	37	36%
2	25	25%
3	5	5%
4	6	6%
5	2	2%
6	0	0%
7	1	1%
Total	**102**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

12.5 Benefits of offering sonographer training

Survey respondents were asked what benefits their departments received from offering sonographer training, or if they did not offer training, what benefits would their departments receive from doing so.

Table 29 shows the chosen benefits, by prevalence at the time of survey, across the survey sample. Improved recruitment to qualified posts, and development of existing staff who provide training, are the most common choices.

Table 29: Benefits of offering sonographer training

Improved recruitment to qualified posts, and development of existing training staff are the most common choices.

Benefits of sonographer training	No of selections	% of total
Improved recruitment to qualified posts	104	21%
Development of existing staff who provide training	104	21%
Staff retention	89	18%
Additional service delivery	79	16%
Links with universities and current research	78	15%
Additional financial revenue	42	8%
None of the above	11	2%
Total	**507**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

12.6 Support to maintain, increase or start sonographer training

Survey respondents were asked how their departments could be further supported to maintain, increase or start providing sonographer training.

Table 30 shows the chosen areas of support, by prevalence at the time of survey, across the survey sample. More staff to train people, and increased internal training budget were the most common choices.

Table 30: Support to maintain, increase, or start sonographer training

More training staff and increased internal training budgets are the most common choices.

Further support element	No of selections	% of total
More staff to train people	97	15%
Increased internal training budget	91	14%
Increased access to training resources	71	11%
More availability of 'train the trainer' training	67	11%
A separately funded educator post or lead trainer in my trust/organisation	65	10%
Increased administrative support	54	9%
Increased communication with universities	39	6%
Better access to professional networks	38	6%
Better support for identifying what training could be offered	37	6%
More information on offering trainee placements	34	5%
Longer, less fragmented student/trainee placements	27	4%
No further support required	8	1%
Access to tariff for training places	0	0%
Flexibility to take students for part rotations	0	0%
None of the above	4	1%
Total	**632**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

12.7 Pressures of service delivery preventing increased training provision

Respondents were asked to select the reason(s), specifically related to pressures of service delivery, why they were not going to offer, are undecided, or plan to reduce sonographer training in the future.

Table 31 shows the chosen areas of service delivery, by prevalence at the time of survey, across the survey sample. Increasing service delivery workload of staff was the most common reason selected.

Table 31: Pressures of service delivery preventing increased training provision

Increasing service delivery workload of staff was the most common reason selected.

Pressure of service delivery	No of selections	% of total
Increasing service delivery workload of department/staff	30	34%
Introduction of the six to seven day working week and extended working hours	20	22%
Prioritisation of up-skilling existing staff to provide service, through informal training	16	18%
None of the above	23	26%
Total	**89**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

12.8 Issues around training resources preventing increased training provision

Respondents were asked to select the reason(s), specifically about issues around training resources and/or training arrangements, why they were not going to offer, were undecided, or planned to reduce sonographer training in the future.

Table 32 shows the selected issues around training resources and/or training arrangements, by prevalence at the time of the survey, across the survey sample. Insufficient training staff, and already at maximum training capacity were the most common selections.

Table 32: Issues around training resources preventing increased training provision

Insufficient training staff was the most common selection.

Issues around training resources and/or training arrangements	No of selections	% of total
Insufficient training staff available	37	21%
Already have trainees and are at maximum training capacity	33	18%
Funding issues	24	13%
Administrative burden of delivering training	22	12%
Multiple student cohorts all in training at the same time	16	9%
Unable to offer the breadth or depth of training required	12	7%
Fragmented timetabling is difficult to accommodate	9	5%
Unable to attract trainees	4	2%
Training not available	3	2%
Prioritisation of non-ultrasound training programmes	3	2%
Lack of information about training	1	1%
Lack of the need to offer training	1	1%
None of the above	14	8%
Total	**179**	**100%**

Source: HEE/CfWI ultrasound survey, 2015

Appendix A: Reference tables

Appendix A provides all the survey questions, and the answers as originally provided by survey respondents. For more detailed analysis by question, please see Appendix B.

Section 1: This part of the survey asked for summary information on the respondent hospital/trust and their location.

A total of 157 survey submissions were received from 100 NHS trusts across all HEE local teams across both surveys.

HEE local team	Number of surveys received	Percentage of total surveys received
East Midlands	7	**4%**
East of England	14	**9%**
Kent, Surrey and Sussex	11	**7%**
North East	5	**3%**
North West	21	**13%**
North West London	5	**3%**
North, Central and East London	8	**5%**
South London	7	**4%**
South West	18	**11%**
Thames Valley	4	**3%**
Wessex	9	**6%**
West Midlands	33	**21%**
Yorkshire and the Humber	15	**10%**
Total	**157**	**100%**

Section 2: This part of the survey asked for information about core staff.

The CfWI identified a total of 2,306 core staff from both surveys.

HEE local team region	Number of core staff individuals described	Percentage of total core staff individuals described
East Midlands	122	**5%**
East of England	147	**6%**
Kent, Surrey and Sussex	133	**6%**
North East	70	**3%**
North West	292	**13%**
North West London	41	**2%**
North, Central and East London	147	**6%**
South London	75	**3%**
South West	189	**8%**
Thames Valley	46	**2%**
Wessex	128	**6%**
West Midlands	630	**27%**
Yorkshire and the Humber	286	**12%**
Total	**2,306**	**100%**

Section 3: This part of the survey asked for information about agency locum and bank (ALB) staff

The CfWI identified a total of 333 agency, locum and bank (ALB) staff from both surveys.

HEE local team	Number of agency locum and bank staff described	Percentage of total agency locum and bank staff described
East Midlands	27	**8%**
East of England	37	**11%**
Kent, Surrey and Sussex	26	**8%**
North East	6	**2%**
North West	48	**14%**
North West London	11	**3%**
North, Central and East London	17	**5%**
South London	11	**3%**
South West	20	**6%**
Thames Valley	8	**2%**
Wessex	13	**4%**
West Midlands	77	**23%**
Yorkshire and the Humber	32	**10%**
Total	**333**	**100%**

Section 4: This part of the survey asked for information about vacancies for staff roles

The CfWI identified a total of 264 vacancies from both surveys.

HEE local team	Number of vacancies	Vacancy rate
East Midlands	21	**15%**
East of England	20	**12%**
Kent, Surrey and Sussex	21	**14%**
North East	11	**14%**
North West	34	**10%**
North West London	14	**25%**
North, Central and East London	11	**7%**
South London	16	**18%**
South West	14	**7%**
Thames Valley	14	**23%**
Wessex	8	**6%**
West Midlands	35	**5%**
Yorkshire and the Humber	45	**14%**
Total	**264**	**10%**

Section 5: This part of the survey asked for information about frozen posts

The CfWI identified a total of two frozen posts in the original survey. The supplementary survey did not request information about frozen posts.

HEE local team	Number of frozen posts
East Midlands	0
East of England	0
Kent, Surrey and Sussex	0
North East	0
North West	0
North West London	1
North, Central and East London	0
South London	0
South West	0
Thames Valley	0
Wessex	0
West Midlands	1
Yorkshire and the Humber	0
Total	**2**

Section 6: This part of the survey asked for information about ultrasound scans

Section 6 contained five main fields:

1. the time taken to complete each type of ultrasound scan (time)
2. the number of scans completed in 2012-2013
3. the number of scans completed in 2013-2014
4. the number of scans completed in 2014-2015
5. the number of planned scans for 2015-2016 (planned).

The CfWI identified between 84 and 116 responses for each question field.

HEE local team	Number of responses to scan time	Number of responses to completed scans in 2012-13	Number of responses to completed scans in 2013-14	Number of responses to completed scans in 2014-15	Number of responses to planned scans in 2015-16
East Midlands	6	5	5	6	3
East of England	8	7	7	7	5
Kent, Surrey and Sussex	8	8	8	8	5
North East	3	3	3	3	2
North West	15	12	13	12	8
North West London	5	4	4	4	3
North, Central and East London	8	8	8	8	6
South London	4	4	4	4	4
South West	13	13	13	14	11
Thames Valley	3	2	2	2	2
Wessex	7	6	7	7	3
West Midlands	26	24	25	25	25
Yorkshire and the Humber	10	10	10	10	7
Total	**116**	**106**	**109**	**110**	**84**

Section 7: This part of the survey asked for information about staff training

The CfWI identified a total of 326 staff in training. The supplementary survey did not request information on training numbers.

HEE local team	Number of individuals in training	Percentage of total individuals in training
East Midlands	17	**5%**
East of England	9	**3%**
Kent, Surrey and Sussex	14	**4%**
North East	5	**2%**
North West	35	**11%**
North West London	6	**2%**
North, Central and East London	20	**6%**
South London	18	**6%**
South West	32	**10%**
Thames Valley	21	**6%**
Wessex	14	**4%**
West Midlands	72	**22%**
Yorkshire and the Humber	63	**19%**
Total	**326**	**100%**

Section 8: This part of the survey asked for qualitative training information

There were 149 responses to Section 8.

HEE local team	Number of responses to Section 8	Percentage of received responses by HEE local team
East Midlands	7	5%
East of England	10	7%
Kent, Surrey and Sussex	11	7%
North East	4	3%
North West	17	11%
North West London	5	3%
North, Central and East London	8	5%
South London	7	5%
South West	18	12%
Thames Valley	4	3%
Wessex	9	6%
West Midlands	34	23%
Yorkshire and the Humber	15	10%
Total	**149**	**100%**

Appendix B: Analysis tables

Appendix B outlines the results of further investigation of trends, where referenced in the report by section.

Core staff employee's main ultrasound department (Section 2)

Respondents were asked to specify the main ultrasound departments of core staff.

HEE local team	Radiology and diagnostic imaging	Obstetrics & gynaecology	Cardiology (medicine)	Vascular	Other	No option selected	Total
East Midlands	79	20	2	13	8	0	**122**
East of England	86	37	5	6	13	0	**147**
Kent, Surrey and Sussex	83	19	0	0	30	1	**132**
North East	57	4	5	0	2	2	**68**
North West	123	81	36	14	21	17	**275**
North West London	21	19	0	0	0	1	**40**
North, Central and East London	134	6	0	4	1	2	**145**
South London	33	0	24	16	0	2	**73**
South West	134	22	12	13	7	1	**188**
Thames Valley	26	0	14	6	0	0	**46**
Wessex	63	32	25	1	7	0	**128**
West Midlands	367	133	22	19	5	84	**546**
Yorkshire and the Humber	233	39	2	0	2	10	**276**
Total	**1439**	**412**	**147**	**92**	**96**	**120**	**2306**

Core staff employee's qualification (Section 2)

Respondents were asked to specify the main qualifications of core staff.

HEE local team	PGC Medical Ultrasound	Focused course	MSc Medical Ultrasound	PG Medical training	SVTGB accreditation	PGD Medical Ultrasound	Overseas	SCR Diploma/Certificate	In-house training	BSE accreditation	No qualification	DMU	Other	No option selected	Total
East Midlands	12	4	30	25	4	35	1	6	0	2	0	0	3	0	**122**
East of England	19	6	3	4	3	44	0	21	5	1	3	0	1	37	**110**
Kent, Surrey and Sussex	14	1	4	26	0	34	1	14	1	0	0	0	22	16	**117**
North East	19	0	1	6	0	11	0	9	3	4	3	0	9	5	**65**
North West	18	1	6	27	9	74	0	30	2	31	0	0	8	86	**206**
North West London	6	0	6	0	0	22	6	0	0	0	0	0	0	1	**40**
North, Central and East London	7	0	2	22	4	40	3	3	0	0	0	0	15	51	**96**
South London	6	0	14	0	2	23	4	1	0	12	3	0	7	3	**72**
South West	25	1	17	17	8	71	2	26	1	12	0	0	5	4	**185**
Thames Valley	1	0	1	1	3	16	7	8	3	1	0	0	5	0	**46**
Wessex	18	0	6	34	0	14	5	12	0	15	9	0	6	9	**119**
West Midlands	74	26	10	192	16	130	1	45	41	14	0	0	19	62	**568**
Yorkshire and the Humber	37	0	18	38	5	136	0	31	2	3	0	0	6	10	**276**
Total	**256**	**39**	**118**	**392**	**54**	**650**	**30**	**206**	**58**	**95**	**18**	**0**	**106**	**284**	**2306**

Core staff employees' registration (Section 2)

Respondents were asked to specify the registration status of core staff.

HEE local team	Voluntary registered with the PVRS	No registration	HCPC registered as a radiographer	NMC registered as a midwife	HCPC registered as a physiotherapist	Voluntary registered with the AHS	HCPC registered as a clinical scientist	Registered with the GMC with a licence to practise	Voluntary registered with the RCCP	NMC registered as a nurse	Other statutory body	GMC without a licence	NMC dual qualified	No option selected	Total
East Midlands	7	7	71	6	1	1	1	0	0	0	0	0	0	28	**122**
East of England	3	3	95	8	0	0	0	3	5	1	2	0	0	27	**147**
Kent, Surrey and Sussex	0	11	69	7	0	0	0	32	0	3	0	0	0	11	**133**
North East	0	0	21	3	0	0	0	1	0	0	0	0	0	45	**70**
North West	2	7	117	6	0	0	0	17	29	0	1	0	0	113	**292**
North West London	4	1	28	3	0	0	1	0	0	1	0	2	0	1	**41**
North, Central and East London	3	2	49	3	1	0	1	38	0	0	2	0	0	48	**147**
South London	0	0	34	1	0	0	1	0	0	0	0	0	0	39	**75**
South West	13	6	127	4	0	1	2	18	5	2	3	0	2	6	**189**
Thames Valley	0	12	25	0	0	0	1	0	1	1	1	0	0	5	**46**
Wessex	0	8	35	4	0	0	1	39	6	0	0	0	0	35	**128**
West Midlands	7	4	207	60	0	0	5	239	5	14	0	2	0	87	**630**
Yorkshire and the Humber	3	17	159	1	0	2	1	38	2	3	0	0	0	60	**286**
Total	**42**	**78**	**1037**	**106**	**2**	**4**	**14**	**425**	**53**	**25**	**9**	**4**	**2**	**505**	**2306**

Core staff employees expecting to retire in the next five years (Section 2)

Respondents were asked to specify which core staff were expecting to retire within five years.

HEE local team	Expected to retire	Not expected to retire	No expectation given	Total
East Midlands	15	50	55	**122**
East of England	20	90	40	**147**
Kent, Surrey and Sussex	15	95	20	**133**
North East	5	45	15	**70**
North West	30	150	110	**292**
North West London	5	35	0	**41**
North, Central and East London	5	85	55	**147**
South London	5	70	0	**75**
South West	35	150	0	**189**
Thames Valley	0	45	0	**46**
Wessex	25	90	10	**128**
West Midlands	75	435	120	**630**
Yorkshire and the Humber	25	195	65	**286**
Total	**270**	**1543**	**493**	**2306**

Core staff employee's average WTE per week (Section 2)

Respondents were asked to specify the average WTE per week of core staff.

HEE local team	Ultrasound scanning	Non ultrasound scanning	Total
East Midlands	0.47	0.05	**0.52**
East of England	0.65	0.06	**0.71**
Kent, Surrey and Sussex	0.50	0.12	**0.62**
North East	0.73	0.21	**0.93**
North West	0.65	0.27	**0.93**
North West London	0.71	0.11	**0.82**
North, Central and East London	0.47	0.41	**0.88**
South London	0.68	0.24	**0.92**
South West	0.56	0.12	**0.68**
Thames Valley	0.73	0.14	**0.86**
Wessex	0.52	0.19	**0.70**
West Midlands	0.40	0.17	**0.57**
Yorkshire and the Humber	0.66	0.13	**0.80**
Total	**7.72**	**2.22**	

Agency, locum and bank staff (ALB) headcount (Section 3)

Respondents were asked to specify the headcounts of ALB staff.

HEE local team	Agency	Locum	Bank	No option selected	Total
East Midlands	20	0	5	2	**27**
East of England	21	13	1	2	**37**
Kent, Surrey and Sussex	21	3	2	0	**26**
North East	0	5	1	0	**6**
North West	20	6	21	1	**48**
North West London	10	0	1	0	**11**
North, Central and East London	11	1	5	0	**17**
South London	7	2	1	1	**11**
South West	11	1	7	1	**20**
Thames Valley	8	0	0	0	**8**
Wessex	6	5	1	1	**13**
West Midlands	42	16	13	6	**77**
Yorkshire and the Humber	16	10	1	5	**32**
Total	**193**	**62**	**59**	**19**	**333**

Agency, locum and bank (ALB) staff main ultrasound department (Section 3)

Respondents were asked to specify the main ultrasound departments of ALB staff.

HEE local team	Obstetrics & gynaecology	Radiology, diagnostic imaging	Early pregnancy assessment	Cardiology (medicine)	Vascular	Cardiac (surgery)	Vascular flow	Other	No department given	Total
East Midlands	13	9	0	2	1	0	0	0	2	**27**
East of England	2	26	0	2	1	0	0	3	3	**37**
Kent, Surrey and Sussex	3	20	0	0	0	0	0	0	3	**26**
North East	0	4	0	2	0	0	0	0	0	**6**
North West	14	13	0	3	1	0	0	0	17	**48**
North West London	7	3	1	0	0	0	0	0	0	**11**
North, Central and East London	0	16	0	0	1	0	0	0	0	**17**
South London	0	8	0	0	0	0	0	0	3	**11**
South West	3	14	0	2	0	0	0	0	1	**20**
Thames Valley	2	3	0	3	0	0	0	0	0	**8**
Wessex	1	9	0	2	0	0	0	0	1	**13**
West Midlands	18	46	0	4	1	0	0	0	8	**77**
Yorkshire and the Humber	8	15	0	4	0	0	0	0	5	**32**
Total	**71**	**186**	**1**	**24**	**5**	**0**	**0**	**3**	**43**	**333**

Agency, locum and bank (ALB) staff length of time in post (Section 3)

Respondents were asked to specify the time in post for ALB staff.

HEE local team	0 (inclusive) to 1 year	1 (inclusive) to 2 years	2 (inclusive) to 3 years	3 (inclusive) to 4 years	4 (inclusive) to 5 years	5 (inclusive) to 6 years	6 (inclusive) to 7 years	7 years and over	No time given	Total
East of England	17	9	1	0	0	0	0	1	9	**37**
North West London	5	2	0	0	0	0	0	0	4	**11**
West Midlands	27	10	5	1	3	0	0	0	31	**77**
Yorkshire and the Humber	6	4	10	0	0	0	0	0	12	**32**
Thames Valley	4	2	2	0	0	0	0	0	0	**8**
East Midlands	9	11	3	1	0	0	0	0	3	**27**
North West	11	1	0	0	0	0	0	0	36	**48**
North East	2	1	0	0	0	0	0	0	3	**6**
South West	10	5	2	0	0	0	0	0	3	**20**
North, Central and East London	6	2	3	0	0	1	0	1	4	**17**
Kent, Surrey and Sussex	10	1	0	0	0	1	0	0	14	**26**
South London	3	5	2	0	0	0	0	0	1	**11**
Wessex	4	1	3	0	0	0	0	0	5	**13**
Total	**114**	**54**	**31**	**2**	**3**	**2**	**0**	**2**	**125**	**333**

Agency, locum and bank (ALB) staff age (Section 3)

Respondents were asked to specify the age bands of ALB staff.

HEE local team	20 - 24	25-29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 and over	No age given	Total
East Midlands	0	0	1	1	3	0	2	0	0	0	20	**27**
East of England	0	2	2	2	5	3	5	5	0	0	13	**37**
Kent, Surrey and Sussex	0	0	0	2	7	1	1	0	0	0	15	**26**
North East	0	0	0	0	0	0	0	0	0	0	6	**6**
North West	0	3	2	1	0	1	2	3	1	1	34	**48**
North West London	1	0	0	1	1	0	3	0	0	0	5	**11**
North, Central and East London	0	0	4	0	0	0	1	0	0	0	12	**17**
South London	0	7	1	1	0	0	0	1	0	0	1	**11**
South West	0	0	1	3	0	0	0	1	2	1	12	**20**
Thames Valley	0	0	1	0	1	0	2	1	1	0	2	**8**
Wessex	1	0	1	1	2	2	1	0	0	0	5	**13**
West Midlands	0	1	8	2	5	8	6	6	1	1	39	**77**
Yorkshire and the Humber	0	0	2	2	2	1	3	0	2	0	20	**32**
Total	**2**	**13**	**23**	**16**	**26**	**16**	**26**	**17**	**7**	**3**	**184**	**333**

Agency, locum and bank (ALB) staff WTE spent ultrasound scanning (Section 3)

Respondents were asked to specify how long in WTE per week each ALB employee spends on ultrasound scanning, from ID checks through to scans and reporting of findings.

HEE local team	0 WTE	0.1 WTE	0.2 WTE	0.3 WTE	0.4 WTE	0.5 WTE	0.6 WTE	0.7 WTE	0.8 WTE	0.9 WTE	1 WTE	No time given	Total
East Midlands	2	5	4	0	3	0	5	1	3	0	3	1	**27**
East of England	1	5	10	0	3	1	5	1	0	3	7	1	**37**
Kent, Surrey and Sussex	7	1	3	3	5	0	2	0	2	0	2	1	**26**
North East	0	0	1	1	1	0	0	0	0	0	3	0	**6**
North West	5	3	5	0	6	0	1	0	1	0	13	14	**48**
North West London	0	1	0	0	0	0	0	0	0	1	9	0	**11**
North, Central and East London	0	1	4	1	0	1	0	0	1	0	8	1	**17**
South London	1	0	0	1	0	0	0	0	2	1	6	0	**11**
South West	1	2	8	0	4	1	0	0	1	0	1	2	**20**
Thames Valley	0	0	1	0	2	0	0	0	3	0	2	0	**8**
Wessex	1	0	0	1	3	1	3	0	1	0	3	0	**13**
West Midlands	13	7	17	6	9	4	7	1	2	1	6	4	**77**
Yorkshire and the Humber	6	2	4	5	3	1	2	0	1	0	8	0	**32**
Total	**37**	**27**	**57**	**18**	**39**	**9**	**25**	**3**	**17**	**6**	**71**	**24**	**333**

Agency, locum and bank (ALB) staff WTE not spent ultrasound scanning (Section 3)

Respondents were also asked how long in WTE per week does each member of ALB staff spend on ultrasound related duties that are not scanning related e.g. managerial/admin sessions, research, teaching.

HEE local team	0 WTE	0.1 WTE	0.2 WTE	0.3 WTE	0.4 WTE	0.5 WTE	0.6 WTE	0.7 WTE	0.8 WTE	0.9 WTE	1 WTE	No time given	Total
East Midlands	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**
East of England	33	0	0	0	0	0	0	0	0	0	0	4	**37**
Kent, Surrey and Sussex	26	0	0	0	0	0	0	0	0	0	0	0	**26**
North East	6	0	0	0	0	0	0	0	0	0	0	0	**6**
North West	46	0	0	0	0	0	0	0	0	2	0	0	**48**
North West London	9	1	0	0	0	0	0	0	0	0	1	0	**11**
North, Central and East London	16	1	0	0	0	0	0	0	0	0	0	0	**17**
South London	9	0	0	1	0	0	0	0	1	0	0	0	**11**
South West	19	0	0	0	0	0	0	0	0	0	0	1	**20**
Thames Valley	8	0	0	0	0	0	0	0	0	0	0	0	**8**
Wessex	9	0	0	0	0	0	0	0	0	0	0	4	**13**
West Midlands	71	2	0	1	0	0	0	2	0	0	0	1	**77**
Yorkshire and the Humber	20	0	0	0	0	0	0	0	0	0	0	12	**32**
Total	**299**	**4**	**0**	**2**	**0**	**0**	**0**	**2**	**1**	**2**	**1**	**22**	**333**

Agency, locum and bank (ALB) staff qualification (Section 3)

Respondents were asked to specify the main sonographic qualification of ALB staff.

HEE local team	PGC Medical Ultrasound	Focused course	MSc Medical Ultrasound	PG Medical training	SVTGB accreditation	PGD Medical Ultrasound	Overseas	SCR Diploma/Certificate	In-house training	BSE accreditation	No qualification	Other	No qualification given	Total
East of England	4	1	3	0	1	13	0	5	0	2	0	0	8	**37**
North West London	0	0	2	1	0	3	4	0	1	0	0	0	0	**11**
West Midlands	5	3	1	9	1	36	0	5	1	2	0	4	10	**77**
Yorkshire and the Humber	2	0	4	0	0	12	2	3	0	3	0	0	6	**32**
Thames Valley	0	0	0	0	0	3	2	2	0	0	0	1	0	**8**
East Midlands	3	0	3	0	0	16	0	1	0	0	0	2	2	**27**
North West	2	0	1	0	1	14	3	1	0	1	0	2	23	**48**
North East	0	0	0	0	0	0	0	0	0	0	0	4	2	**6**
South West	1	0	0	1	0	6	0	9	0	2	0	0	1	**20**
North, Central and East London	1	0	0	0	1	11	2	0	0	0	0	2	0	**17**
Kent, Surrey and Sussex	2	0	0	3	0	11	6	0	0	0	0	0	4	**26**
South London	1	0	0	0	0	7	0	0	0	0	0	2	1	**11**
Wessex	0	0	2	1	0	2	1	0	0	0	0	6	1	**13**
Total	**21**	**4**	**16**	**15**	**4**	**134**	**20**	**26**	**2**	**10**	**0**	**23**	**58**	**333**

Agency, locum and bank (ALB) staff registration (Section 3)

Respondents were asked to specify the registration status of ALB staff.

HEE local team	NMC registered as a midwife	GMC with a licence to practise	HCPC	NMC registered as a nurse	GMC without a licence to practise	Voluntary registered with the PVRS	Not registered	Voluntary registered with the AHS	Voluntary registered with the RCCP	HCPC registered as a physiotherapist	HCPC registered as a clinical scientist	Other statutory regulatory body	No registration given	Total
East Midlands	2	0	20	0	0	1	0	0	0	0	0	2	2	**27**
East of England	3	0	19	0	0	1	0	1	2	3	0	0	8	**37**
Kent, Surrey and Sussex	1	5	12	0	4	0	0	0	0	0	0	0	4	**26**
North East	0	0	0	0	0	0	0	0	0	0	0	0	6	**6**
North West	0	0	11	0	0	1	1	0	1	0	0	0	34	**48**
North West London	0	0	4	0	0	1	2	0	0	0	0	0	4	**11**
North, Central and East London	0	0	10	0	0	1	1	0	0	0	0	1	4	**17**
South London	1	0	2	0	0	0	0	0	0	0	0	2	6	**11**
South West	0	2	15	0	0	0	1	0	0	0	0	0	2	**20**
Thames Valley	0	0	5	0	0	0	3	0	0	0	0	0	0	**8**
Wessex	0	1	5	0	0	0	0	0	0	0	0	0	7	**13**
West Midlands	3	10	46	1	0	1	0	1	2	0	0	5	8	**77**
Yorkshire and the Humber	0	0	19	0	0	0	2	0	3	0	1	0	7	**32**
TOTAL	**10**	**18**	**168**	**1**	**4**	**6**	**10**	**2**	**8**	**3**	**1**	**10**	**92**	**333**

Department of vacancy (Section 4)

Respondents were asked to specify in which departments the vacancies exist.

HEE local team	Obstetrics & gynaecology	Radiology and diagnostic imaging	Early pregnancy assessment units	Cardiology (medicine)	Vascular	Other	No department given	Total
East Midlands	8	6	1	2	0	2	0	**19**
East of England	1	15	0	3	0	0	0	**19**
Kent, Surrey and Sussex	4	15	0	0	1	1	0	**21**
North East	0	1	0	2	0	0	8	**11**
North West	9	21	0	2	0	0	3	**35**
North West London	11	3	0	0	0	0	0	**14**
North, Central and East London	0	10	0	0	0	0	0	**10**
South London	0	11	0	0	0	0	5	**16**
South West	0	10	0	0	3	0	0	**13**
Thames Valley	0	8	0	4	2	0	0	**14**
Wessex	0	4	0	1	0	0	2	**7**
West Midlands	3	27	0	3	0	0	1	**34**
Yorkshire and the Humber	2	37	1	2	0	0	3	**45**
Total	**38**	**168**	**2**	**19**	**6**	**3**	**22**	**258**

Type of vacancy (Section 4)

Respondents were asked to specify the type of vacancy (permanent or temporary) using the drop down options provided.

HEE local team	Permanent	Temporary	No option given	Total
East Midlands	19	0	0	**19**
East of England	15	0	4	**19**
Kent, Surrey and Sussex	18	3	0	**21**
North East	9	0	2	**11**
North West	27	0	8	**35**
North West London	14	0	0	**14**
North, Central and East London	9	1	0	**10**
South London	16	0	0	**16**
South West	13	0	0	**13**
Thames Valley	14	0	0	**14**
Wessex	6	1	0	**7**
West Midlands	33	1	0	**34**
Yorkshire and the Humber	43	0	2	**45**
Total	**236**	**6**	**16**	**258**

Length of time vacancy has been open (Section 4)

Respondents were asked to specify the length of time the vacancy had existed using the drop down options provided.

HEE local team	0 - 6 months	6 - 12 months	Over 12 months	No time given	Total
East Midlands	7	1	11	0	**19**
East of England	6	2	7	4	**19**
Kent, Surrey and Sussex	4	10	7	0	**21**
North East	6	2	1	2	**11**
North West	6	8	12	9	**35**
North West London	6	0	8	0	**14**
North, Central and East London	2	2	6	0	**10**
South London	5	2	9	0	**16**
South West	13	0	0	0	**13**
Thames Valley	1	3	10	0	**14**
Wessex	4	0	3	0	**7**
West Midlands	13	7	11	3	**34**
Yorkshire and the Humber	9	15	19	2	**45**
Total	**82**	**52**	**104**	**20**	**258**

Reason for vacancy (Section 4)

Respondents were asked to specify the reason for each post's vacancy using the drop down options provided.

HEE local team	Vacant as waiting for trainee to qualify	Vacant as unable to recruit suitable applicant	Vacant for other reason	No reason given	Total
East Midlands	9	4	6	0	**19**
East of England	4	9	2	4	**19**
Kent, Surrey and Sussex	0	15	4	2	**21**
North East	0	1	8	2	**11**
North West	2	22	3	8	**35**
North West London	2	11	1	0	**14**
North, Central and East London	2	3	5	0	**10**
South London	0	9	7	0	**16**
South West	5	6	2	0	**13**
Thames Valley	2	11	1	0	**14**
Wessex	0	2	5	0	**7**
West Midlands	5	23	6	0	**34**
Yorkshire and the Humber	13	24	4	4	**45**
Total	**44**	**140**	**54**	**20**	**258**

WTE of vacancy (Section 4)

Respondents were asked to specify the whole time equivalent (WTE) for each vacant post.

HEE local team	0 WTE	0.1 WTE	0.2 WTE	0.3 WTE	0.4 WTE	0.5 WTE	0.6 WTE	0.7 WTE	0.8 WTE	0.9 WTE	1 WTE	No WTE given	Total
East Midlands	0	0	0	0	0	2	3	0	0	0	14	0	**19**
East of England	1	2	0	0	0	1	1	2	0	4	8	0	**19**
Kent, Surrey and Sussex	4	0	0	1	1	1	1	0	1	0	12	0	**21**
North East	0	0	0	0	1	0	4	0	1	1	4	0	**11**
North West	0	0	2	0	2	1	4	1	1	0	24	0	**35**
North West London	0	0	1	0	0	0	2	0	0	0	11	0	**14**
North, Central and East London	0	0	0	0	0	1	0	0	0	0	9	0	**10**
South London	0	0	0	0	0	0	1	0	1	0	14	0	**16**
South West	1	1	1	1	0	0	0	0	0	0	9	0	**13**
Thames Valley	0	0	0	0	0	0	0	0	2	0	12	0	**14**
Wessex	0	2	1	0	1	0	0	0	1	0	2	0	**7**
West Midlands	2	0	0	0	1	1	4	1	2	2	20	1	**34**
Yorkshire and the Humber	6	3	0	0	0	0	5	0	1	2	28	0	**45**
Total	**14**	**8**	**5**	**2**	**6**	**7**	**25**	**4**	**10**	**9**	**167**	**1**	**258**

Frozen posts (Section 5)

Respondents were asked to specify how many frozen posts existed.

HEE local team	Obstetrics & gynaecology	Radiology and diagnostic imaging	Early pregnancy assessment units	Cardiology (medicine)	Vascular	Other	Total
East of England	0	0	0	0	0	0	**0**
North West London	1	0	0	0	0	0	**1**
West Midlands	0	1	0	0	0	0	**1**
Yorkshire and the Humber	0	0	0	0	0	0	**0**
Thames Valley	0	0	0	0	0	0	**0**
East Midlands	0	0	0	0	0	0	**0**
North West	0	0	0	0	0	0	**0**
North East	0	0	0	0	0	0	**0**
South West	0	0	0	0	0	0	**0**
North, Central and East London	0	0	0	0	0	0	**0**
Kent, Surrey and Sussex	0	0	0	0	0	0	**0**
South London	0	0	0	0	0	0	**0**
Wessex	0	0	0	0	0	0	**0**
Total	**1**	**1**	**0**	**0**	**0**	**0**	**2**

All ultrasound scans in survey, times, totals by year (Section 6)

Respondents were asked to specify the number of scans that happened and are predicted to occur in the years specified, and the average scan times.

Main ultrasound specialty area	Scan type	Average completion time and range (mins)	Total scans 2012 - 13	Total scans 2013 -14	Change 2012-13 to 2013-14	Total scans 2014 - 15	Change 2014-14 to 2014-15	Change 2012-13 to 2014-15
General	Gen - Abdominal	19 mins (15-30)	499,917	624,550	25%	654,799	5%	31%
Obstetrics	Obs - 2nd trimester - anomaly scanning	29 mins (20-40)	230,616	241,779	5%	249,252	3%	8%
Obstetrics	Obs - 3rd trimester - growth	19 mins (15-30)	220,216	238,185	8%	256,043	7%	16%
General	Gen - Renal Tract	19 mins (15-30)	200,080	211,666	6%	218,007	3%	9%
General	Gen - Trans-vaginal	20 mins (15-30)	179,394	183,894	3%	200,790	9%	12%
General	Gen - Musculoskeletal	18 mins (10-30)	148,441	182,322	23%	209,047	15%	41%
Gynaecology	Gynae - Non pregnancy related	21 mins (15-30)	165,462	186,347	13%	185,141	-1%	12%
Obstetrics	Obs - 1st trimester - nuchal translucency scanning	23 mins (15-45)	143,502	158,358	10%	162,627	3%	13%
General	Gen - Small parts / superficial (non-MSK)	18 mins (15-30)	109,188	128,031	17%	137,209	7%	26%
Obstetrics	Obs - Early pregnancy	19 mins (15-30)	94,544	98,111	4%	95,833	-2%	1%
Obstetrics	Obs - 1st trimester - dating	19 mins (10-30)	78,021	95,469	22%	100,814	6%	29%
Vascular	Vasc - Veins	25 mins (10-60)	74,148	87,196	18%	86,125	-1%	16%
General	Gen - Pelvic (non-gynae)	19 mins (15-30)	53,471	65,637	23%	69,968	7%	31%

All ultrasound scans in survey, times, totals by year (Section 6) continued

Main ultrasound specialty area	Scan type	Average completion time and range (mins)	Total scans 2012 - 13	Total scans 2013 -14	Change 2012-13 to 2013-14	Total scans 2014 - 15	Change 2014-14 to 2014-15	Change 2012-13 to 2014-15
Obstetrics	Obs - 3rd trimester - umbilical artery doppler	19 mins (10-30)	51,592	51,147	-1%	64,141	25%	24%
General	Gen – US guided intervention (e.g. thyroid nodule FNA, venous access, pleural effusion drainage)	27 mins (15-60)	45,479	51,104	12%	59,048	16%	30%
Vascular	Vasc - Arterial	30 mins (15-60)	43,495	55,172	27%	55,704	1%	28%
General	Gen - Neonatal / paediatric hips	17 mins (10-24)	30,777	31,219	1%	32,228	3%	5%
Vascular	Vasc - Aorta / AAA screening	17 mins (7.5-30)	22,805	27,571	21%	23,195	-16%	2%
General	Gen – Interventional Musculoskeletal	26 mins (15-40)	18,802	23,180	23%	28,679	24%	53%
Obstetrics	Obs - 2nd trimester - dating	21 mins (15-30)	21,597	23,022	7%	25,788	12%	19%
General	Gen - Other type of scan specify	19 mins (17-20)	13,450	15,984	19%	18,940	18%	41%
Gynaecology	Gynae - Pregnancy related	20 mins (15-30)	13,545	13,745	1%	14,472	5%	7%
General	Gen - Cranial	17 mins (10-30)	12,708	9,678	-24%	9,646	0%	-24%
Obstetrics	Obs - Dating prior to termination of pregnancy	16 mins (10-30)	9,093	9,197	1%	8,586	-7%	-6%
Vascular	Vasc - Other type of scan specify	23 mins (20-30)	3,464	3,970	15%	6,797	71%	96%
General	Gen - Transrectal +/- biopsy	28 mins (20-45)	4,619	4,884	6%	4,714	-3%	2%
Gynaecology	Gynae - Interventional	29 mins (15-30)	1,902	1,854	-3%	2,921	58%	54%
General	Gen - Spine	17 mins (10-30)	1,721	1,797	4%	1,989	11%	16%
Gynaecology	Gynae - Other type of scan specify	20 mins (20-20)	1,006	10,333	869%	1,896	-82%	78%

Staff in training, main department (Section 7)

Respondents were asked to specify the trainee's main departments.

HEE local team	Radiology and diagnostic imaging	Obstetrics & gynaecology	Cardiology (medicine)	Vascular	Other	No department given	Total
East Midlands	10	5	0	2	0	0	**17**
East of England	5	3	0	0	0	1	**9**
Kent, Surrey and Sussex	11	0	0	0	3	0	**14**
North East	5	0	0	0	0	0	**5**
North West	15	9	8	2	1	0	**35**
North West London	2	3	0	0	0	1	**6**
North, Central and East London	17	2	0	1	0	0	**20**
South London	4	0	6	3	5	0	**18**
South West	17	6	1	6	2	0	**32**
Thames Valley	4	0	14	3	0	0	**21**
Wessex	7	4	0	0	0	3	**14**
West Midlands	37	17	1	2	0	15	**72**
Yorkshire and the Humber	54	3	2	2	0	2	**63**
Total	**188**	**52**	**32**	**21**	**11**	**22**	**326**

Staff in training, qualification (Section 7)

Respondents were asked to specify the sonography qualifications which the trainees are pursuing.

HEE local team	Focused course of less than 60 M level credits	Accreditation by BSE	Accreditation by SVT	In-house training	MSc in Medical Ultrasound	Other	Postgraduate Certificate	Postgraduate Diploma	Postgraduate medical training	No option selected	Total
East Midlands	0	0	0	0	7	2	6	2	0	0	**17**
East of England	2	0	0	0	0	0	2	4	0	1	**9**
Kent, Surrey and Sussex	3	0	0	0	0	0	4	7	0	0	**14**
North East	0	1	0	0	0	3	0	1	0	0	**5**
North West	6	8	1	0	0	2	2	14	0	2	**35**
North West London	0	0	0	0	0	0	3	2	0	1	**6**
North, Central and East London	0	0	0	0	2	4	1	13	0	0	**20**
South London	0	0	0	0	3	11	0	4	0	0	**18**
South West	2	1	0	0	2	4	3	16	2	2	**32**
Thames Valley	0	12	1	2	0	2	2	2	0	0	**21**
Wessex	1	0	0	0	0	4	4	4	0	1	**14**
West Midlands	3	6	0	2	0	0	23	19	4	15	**72**
Yorkshire and the Humber	0	2	0	0	0	0	5	23	30	3	**63**
Total	**17**	**30**	**2**	**4**	**14**	**32**	**55**	**111**	**36**	**25**	**326**

Staff in training, length of time employee has been in training (Section 7)

Respondents were asked to specify the length of time the trainees had been in training.

HEE local team	0 to 6 months	6 to 12 months	12 to 24 months	2 to 3 years	3 to 4 years	4 to 5 years	Over 5 years	No time given	Total
East Midlands	0	11	5	1	0	0	0	0	**17**
East of England	0	8	0	0	0	0	0	1	**8**
Kent, Surrey and Sussex	4	5	4	0	0	0	1	0	**14**
North East	1	1	0	3	0	0	0	0	**5**
North West	4	19	10	2	0	0	0	0	**35**
North West London	0	2	3	0	0	0	0	1	**5**
North, Central and East London	3	13	3	1	0	0	0	0	**20**
South London	8	7	2	1	0	0	0	0	**18**
South West	1	9	18	3	0	0	0	1	**31**
Thames Valley	3	1	0	4	9	2	2	0	**21**
Wessex	3	5	3	0	0	0	2	1	**13**
West Midlands	16	30	12	0	0	1	0	13	**59**
Yorkshire and the Humber	3	27	10	4	9	5	1	4	**59**
Total	**46**	**138**	**70**	**19**	**18**	**8**	**6**	**21**	**326**

Staff in training, expected length of time before qualifying (Section 7)

Respondents were asked to specify the expected length of time before each trainee qualifies.

HEE local team	0 to 6 months	6 to 12 months	12 to 24 months	2 to 3 years	3 to 4 years	4 to 5 years	No time given	Total
East Midlands	15	0	2	0	0	0	0	**17**
East of England	4	4	0	0	0	0	1	**9**
Kent, Surrey and Sussex	10	2	2	0	0	0	0	**14**
North East	2	2	1	0	0	0	0	**5**
North West	12	8	13	2	0	0	0	**35**
North West London	3	2	0	0	0	0	1	**6**
North, Central and East London	6	12	1	1	0	0	0	**20**
South London	10	2	4	0	0	0	2	**18**
South West	13	7	6	3	2	0	1	**32**
Thames Valley	7	1	12	1	0	0	0	**21**
Wessex	6	3	2	0	2	0	1	**14**
West Midlands	21	14	17	5	0	2	13	**72**
Yorkshire and the Humber	20	10	14	4	6	6	3	**63**
Total	**129**	**67**	**74**	**16**	**10**	**8**	**22**	**326**

Responses to Question "*Please specify the reason(s) why you are not going to offer, are undecided, or plan to reduce sonographer training in the future. Please tick all that apply.*" (Section 8)

Respondents were asked to list the reasons why their department was not going to offer, are undecided, or plan to reduce sonographer training in the future, in terms of (1) issues around training resources and/or training arrangements, and (2) pressures of service delivery.

Issues around training resources and/or training arrangements	Number of responses	% of total
Insufficient training staff available	37	**21%**
Already have trainees and are at maximum training capacity	33	**18%**
Funding issues	24	**13%**
Administrative burden of delivering training	22	**12%**
Multiple student cohorts all in training at the same time	16	**9%**
None of the above	14	**8%**
Unable to offer the breadth or depth of training required	12	**7%**
Fragmented timetabling is difficult to accommodate	9	**5%**
Unable to attract trainees	4	**2%**
Training not available	3	**2%**
Prioritisation of non-ultrasound training programmes	3	**2%**
Lack of information about training	1	**1%**
Lack of the need to offer training	1	**1%**
Total responses	**179**	**100%**

Pressures of service delivery	Number of responses	% of total
Increasing service delivery workload of department/staff	30	**34%**
None of the above	23	**26%**
Introduction of the six to seven day working week and extended working hours	20	**22%**
Prioritisation of up-skilling existing staff to provide service, through informal training	16	**18%**
Total responses	**89**	**100%**

Responses to Question: "*What benefits do your departments receive from offering sonographer training? If you do not offer training, what benefits would your departments receive from doing so? Please tick all that apply.*" (Section 8)

Respondents were asked to list the benefits their departments received from offering sonographer training.

Benefits of sonographer training	Number of responses	Percentage of total
Improved recruitment to qualified posts	104	**21%**
Development of existing staff who provide training	104	**21%**
Staff retention	89	**18%**
Additional service delivery	79	**16%**
Links with universities and current research	78	**15%**
Additional financial revenue	42	**8%**
None	11	**2%**
Total responses	**507**	**100%**

Responses to Question: "*In general terms, how could your departments be further supported to maintain, increase or start providing sonographer training? Please tick all that apply*." (Section 8)

Respondents were asked to list how their departments could be further supported to maintain, increase or start providing sonographer training.

Support to maintain, increase or start sonographer training	Number of responses	Percentage of total
More staff to train people	97	**15%**
Increased internal training budget	91	**14%**
Increased access to training resources	71	**11%**
More availability of 'train the trainer' training	67	**11%**
A separately funded educator post or lead trainer in my trust/organisation	65	**10%**
Increased administrative support	54	**9%**
Increased communication with universities	39	**6%**
Better access to professional networks	38	**6%**
Better support for identifying what training could be offered	37	**6%**
More information on offering trainee placements	34	**5%**
Longer, less fragmented student/trainee placements	27	**4%**
No further support required	8	**1%**
None of the above	4	**1%**
Access to tariff for training places	0	**0%**
Flexibility to take students for part rotations	0	**0%**
Total responses	**632**	**100**

Responses to Question: "Do any of the listed departments offer ultrasound training?"

Respondents were asked to list their departments which offer ultrasound training.

Departments	Number of responses	Percentage of total
Radiology and diagnostic imaging	45	**67%**
Cardiology (medicine)	7	**10%**
Obstetrics & gynaecology	6	**9%**
Vascular	5	**7%**
Other	4	**6%**
Early pregnancy assessment units	0	**0%**
Vascular flow	0	**0%**
Cardiac (surgery)	0	**0%**
Sub-fertility	0	**0%**
Total responses	**67**	**100%**

Responses to Question: "How many trainees (HC) are planned to start ultrasound training in each department in the next 12 months on a Consortium for the Accreditation of Sonographic Education accredited PgC/PgD or equivalent (HC)?"

Respondents were asked how many trainees they expected to start ultrasound training by department within the next 12 months.

Number of trainees	Number of responses (per department)	Percentage of total
0	26	**25%**
1	37	**36%**
2	25	**25%**
3	5	**5%**
4	6	**6%**
5	2	**2%**
6	0	**0%**
7	1	**1%**
Total responses	**102**	**100%**

Appendix C: Stakeholder involvement

The CfWI sought input from a wide range of health professionals as part of this project. The following individuals participated in one or more of the following: as a member of the project steering group, professional advisor, stakeholder interview participant, provider of data/information, attendance at consultative meetings/teleconferences, and general correspondence regarding this project. We would like to thank them for their time and contributions.

Name	Representing	Steering group
Kerry Tinkler	AHCS - Academy for Healthcare Science	
Melanie Mawby	Ashford and St. Peter's Hospitals	
Colin Deane	BMUS - British Medical Ultrasound Society	
Keith Pearce	BSE - British Society of Echocardiography	
Rick Steeds	BSE - British Society of Echocardiography	
Mike Smith	Cardiff University, School of Healthcare Sciences	
Gill Dolbear	CASE - Consortium for the Accreditation of Sonographic Education	
Susan Halson-Brown	CfWI - Centre for Workforce Intelligence, professional advisor	
Crispian Oates	Freeman Hospital	
Fiona Leat	Health and Social Care Information Centre	
Anita Garvey	Health Education England	•
Donna Sidonio	Health Education England	•
John Stock	Health Education England	•
Mary Lewis	Health Education England	•
Patricia Saunders	Health Education England	•
Louise Stewart	Health Education England (West Midlands)	•
Pamela Parker	Hull Royal Infirmary & Castle Hill Hospital	
Rosalind Lea	Leighton Hospital, Crewe and Victoria infirmary, Northwich	
Caroline Waterfield	NHS Employers	
Erika Denton	NHS England	
Julia Grace	NHS England	
Sheila Dixon	NHS England	
Joanne Harcombe	PHE - Public Health England	
Alexandra Drought	Queen Mary Women's Health Unit	
Jaque Gerrard	RCM - Royal College of Midwives	
Carmel Bagness	RCN - Royal College of Nursing	
Manjiri Khare	RCOG - Royal College of Obstetricians and Gynaecologists	
Richard Fitzgerald	RCR - Royal College of Radiologists	
Tracey Blacker	Royal United Hospital	
Charlotte Beardmore	SCoR - Society and College of Radiographers	
Nigel Thomson	SCoR - Society and College of Radiographers	
Maria Dore	Southampton Hospital	
Charles Sloane	University of Cumbria	

The CfWI would also like to extend a very special thank you to all the survey respondents, below, for their time and contributions, without which this project would not have been possible.

Name	Representing
Helen Campbell	Aintree University Hospital NHS Foundation Trust
Gurjit Rai-Tidbury	Ashford & St. Peter's NHS Trust
Melanie Mawby	Ashford & St. Peter's NHS Trust
Debbie Prince	Aspen Healthcare
Joanne Roebuck	Aspen Healthcare
Saranjit Dogra	Barnsley Hospital NHS Foundation Trust
Anne Knowles	Barts Health NHS Trust
Carmel Evans	Barts Health NHS Trust
Kate Crawford	Barts Health NHS Trust
Katharine Foster	Birmingham Children's Hospital NHS FT
Jean Cahalane	Birmingham Children's Hospital NHS FT
Krishna Kumar	Birmingham Children's Hospital NHS FT
Annette Noona	Birmingham Women's Hospital
Nicole Stacey	Black Country Partnership NHS Foundation Trust
Jenny Protheroe	Blackpool Teaching Hospitals NHS Foundation Trust
Catherine Walsh	Bolton NHS Foundation Trust
Wendy Hall	Bradford Teaching Hospitals NHS Trust
Geraldine Metcalfe	Bradford Teaching Hospitals NHS Trust
Julie Allen	Brighton and Sussex University Hospitals NHS Trust
Teresa Boylan	Cambridge University Hospitals Foundation Trust
Jo Boyd	Care & Support Partnership
Jeanette Ryder	Central Manchester University Hospitals NHS Foundation Trust
Helena Edlin	Central Manchester University Hospitals NHS Foundation Trust
Carien Morabito	Chelsea and Westminster NHS Foundation Trust
Kevin Freeman	Chesterfield Royal Hospital
David Griffith	Colchester Hospital University NHS FT
Catalina Macdonald	Countess of Chester NHS Foundation Trust
Robert Kent	County Durham & Darlington NHS Foundation Trust
Pauline Mellor	Dartford & Gravesham NHS Trust
Penny Owens	Derby Teaching Hospitals NHS Trust
Pamela Grayson	Doncaster & Bassetlaw Hospital NHS Foundation Trust
Alison Bromley	Dorset County Hospital NHS Foundation Trust
Ian Wright	Dudley Group NHS Foundation Trust
Tracey Bayliss	Dudley Group NHS Foundation Trust
Anne Drewnicki	Dudley Group NHS Foundation Trust
Anne Gregory	Dudley Group NHS Foundation Trust
June Peck	East and North Hertfordshire NHS Trust
Denise De Lord	East Kent Hospitals University NHS Foundation Trust
Linda Neale	George Eliot Hospital NHS Trust
Beverley Gray	Gloucestershire Hospitals NHS Foundation Trust
C Wakely	Gloucestershire Hospitals NHS Foundation Trust
Fariba Williams	Great Ormond Street Hospital for Children NHS Foundation Trust
Soundrie Padayachee	Guy's and St Thomas' NHS Foundation Trust
Sheila Subbiah	Guy's and St Thomas' NHS Foundation Trust

Name	Representing
Sharon Dam	Guy's and St Thomas' NHS Foundation Trust
Kelly Peacock	Guy's and St Thomas' NHS Foundation Trust
Valerie Lee	Hampshire Hospitals NHS Foundation Trust
Kamaljeet Nagra	Heart Of England NHS Foundation Trust
Sally Daniels	Homerton University Hospital
Pamela Parker	Hull & East Yorkshire Hospitals NHS Trust
Suzanne Beattie-Jones	Imperial College Healthcare NHS Trust
Julie Long	Isle of Wight NHS Trust
Sally Holloway	James Paget University Hospital
Colin Deane	King's Healthcare
Samantha Bainbridge	Leeds Teaching Hospitals NHS Trust
Karen Harrison	Leeds Teaching Hospitals NHS Trust
Marianne Hamer	Liverpool Women's NHS Foundation Trust
Sujata Patel	London North West Healthcare NHS Trust
Safwat Ashour	London Women's Clinic
Gemma Wren	Medway NHS Foundation Trust
Rosalind Lea	Mid Cheshire Hospitals Foundation Trust
Elizabeth Churches	Mid Essex Health Trust
Alison McGuinness	Mid Yorkshire Hospitals NHS Trust
Owain Zahan-Evans	North Bristol NHS Trust
Alan Jennison	North Cumbria University Hospitals
Kirsty Kent	North Lincolnshire NHS Trust
Kirsty Kent	North Lincolnshire NHS Trust
Beverley Evans	North Lincolnshire and Goole NHS Trust
Sam Frater	Northampton General Hospital
Lesley Snell	Northern Devon Healthcare NHS Trust
Mahdi Malik	Northumbria Healthcare NHS Foundation Trust
Andrew Beech	Nottingham University Hospital
Louise Doody	Nottingham University Hospitals NHS Trust
Andrea McCulloch	Oxford University Hospitals NHS Trust
Cassandra Hammond	Oxford University Hospitals NHS Trust
Klaus Bond	Oxford University Hospitals NHS Trust
Marcia Wild	Pennine Acute Trust
Tanyah Ewen	Peterborough & Stamford NHS Foundation Trust
Karen Groom	Poole Hospital NHS Foundation Trust
Ernest Wong	Portsmouth Hospitals NHS Trust
Jane Anderson	Portsmouth Hospitals NHS Trust
Steph Metcalfe	Princess Alexandra
Clair Powell	Queen Elizabeth Hospital Birmingham
Becky Godbehere	Queen Elizabeth King's Lynn NHS Foundation Trust
Rebecca Hazelden	Queen's Medical Centre
Sue Carrington and Janet Cort	RJF Healthcare
Eric Hughes	Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust
Glyn Hooper	Royal Cornwall Hospitals Trust
Glyn Hooper	Royal Cornwall Hospitals Trust
Janet French	Royal Devon and Exeter NHS Foundation Trust
Sally Blackmore	Royal Free London NHS Foundation Trust
Colin Griffin	Royal Liverpool & Broadgreen University Hospitals NHS Trust

Name	Representing
Karen Wardle	Royal Liverpool & Broadgreen University Hospitals NHS Trust
Claire Mitchell	Royal Liverpool & Broadgreen University Hospitals NHS Trust
Sharon McGarry	Royal Orthopaedic Hospital Birmingham
Hariksha Lapham	Royal Surrey County Hospital Guildford
Tracey Blacker	Royal United Hospitals Bath NHS Foundation Trust
Susan Burford	Royal Wolverhampton NHS Trust
Gill Taberner	Salford Royal NHS Foundation Trust
Helen Lloyd	Salford Royal NHS Foundation Trust
Vanetta Brandrick	Sandwell and West Birmingham Hospitals NHS Trust
Joan Lilburn	Sandwell and West Birmingham Hospitals NHS Trust
Martin Peacock	Sheffield Teaching Hospitals NHS Foundation trust
Ann Allen	Sherwood Forest Hospitals Trust
Maggie Kennerley	Shrewsbury and Telford Hospitals NHS Trust
Helen Brown	Shrewsbury and Telford Hospitals NHS Trust
Sylvia Foster	Shrewsbury and Telford Hospitals NHS Trust
Emma Smith	South Devon Healthcare NHS Foundation Trust
Emma Smith	South Devon Healthcare NHS Foundation Trust
Jayne Richardson	South Tyneside NHS Foundation Trust
Tracey Arji	South Warwickshire NHS Foundation Trust
Suzanne Adams	St George's Hospital Foundation Trust
Colin Diment	St Helens & Knowsley Teaching Hospitals NHS Trust
Bruno Tonello	St Mary's Hospital
Christine Hooson	Stockport NHS Foundation Trust
Justine Osborne	Stoke Mandeville/ Wycombe General, Amersham General hospitals
Jacqueline Jenkins	Surrey Ultrasound Services Ltd
Sarah Booth	Sussex Community NHS Trust
Tracey Bayliss	The Dudley Group
Julia Cherrill	The Great Western Hospitals NHS Foundation Trust
Annette Brammer	The Rotherham NHS Foundation Trust
Yvonne Shanks	The Walton Centre NHS FT
Alexandra Drought	The West Middlesex University Hospital NHS Trust
Rebecca Steele	University College London Hospitals NHS Trust
Lisa Ball	University Hospitals Birmingham NHS Foundation Trust
Martin Nelson	University Hospital Bristol NHS Foundation Trust
Lynn Wilcox	University Hospital Bristol NHS Foundation Trust
Sue Harrington	University Hospital Coventry & Warwickshire NHS Trust
Alice Turner	University Hospital of North Midlands NHS Trust
Nick Savage	University Hospital of North Midlands NHS Trust
Debbie Tidmarsh	University Hospital of North Midlands NHS Trust
Karen Taylor	University Hospital Southampton NHS Foundation Trust
Famida Sadak	University Hospital Southampton NHS Foundation Trust
Geoff Roberts	University Hospital Southampton NHS Foundation Trust
Tina Stoyles	University Hospitals Bristol NHS Foundation Trust
Teresa Robinson	University Hospitals Bristol NHS FT
Lisa Maycock	University Hospitals Coventry and Warwickshire NHS Trust
Parmjit Cheema	University Hospitals Coventry and Warwickshire NHS Trust
Tim Hartshorne	University Hospitals of Leicester
Ashleigh Marshall	University Hospitals of Morecambe Bay NHS Foundation Trust

Name	Representing
Christine Spry	University Hospitals of Morecambe Bay NHS Foundation Trust
Rita McAvinchey	Virgin Care
Julie Hannon	Walsall Healthcare NHS Trust
Jill Giles	West Hertfordshire NHS Trust
Mandie Johnson	West Hertfordshire NHS Trust
Caroline Alff	West Middlesex University Hospital
Nigel Beeton	West Suffolk NHS FT
Caroline Davidson	Western Sussex Hospitals NHS Foundation Trust
Debbie Mills	Wirral University Teaching Hospital
Aldona Morrison	Worcestershire Acute Hospitals NHS Trust
Nicola Davidson	Worcestershire Acute Hospitals NHS Trust
Susan Atkinson	Wrightington Wigan and Leigh NHS Trust
Andrea Jones	Wye Valley NHS Trust
Steve Savage	Yeovil District Hospital NHS Trust

References

British Society of Echocardiography (BSE) (2015) Strategic Review of Cardiac Physiology Services [online]. Available at: http://www.bsecho.org/media/159922/strategic_review_of_cardiac_physiology_services_full.pdf [Accessed November 2015].

British Society of Echocardiography (BSE) (2015b) Sonography workforce review, stakeholder communications with CfWI.

Cancer Research UK (CRUK) (2015a) Horizon Scanning: an evaluation of imaging capacity across the NHS in England [online]. Available at: http://www.cancerresearchuk.org/about-us/we-develop-policy/our-policy-on-early-diagnosis/our-policy-on-gp-access-to-diagnostics [Accessed November 2015].

Cancer Research UK (CRUK) (2015b) Independent Cancer Taskforce Report: Achieving world-class cancer outcomes: a strategy for England 2015-2020 [online]. Available at: http://www.cancerresearchuk.org/about-us/cancer-taskforce [Accessed January 2016].

Centre for Workforce Intelligence (CfWI) (2015) Healthcare scientists training capacity survey [online]. Available at: http://www.cfwi.org.uk/publications/healthcare-scientists-training-capacity-survey [Accessed November 2015].

Department of Health (DH) (2015) 'A mandate from the Government to Health Education England: April 2015 to March 2016 [online]. Available at: https://www.gov.uk/government/publications/healtheducation-england-mandate-april-2015-to-march-2016 [Accessed May 2015].

Gibbs, V., (2012) The long and winding road to achieving professional registration for sonographers. University of the West of England [online]. Available at: http://www.sciencedirect.com/science/article/pii/S1078817412001009 [Accessed November 2015].

Halson-Brown, S., (2015) *Sonography workforce review* [email]. Communication to CfWI [November 2015].

Health and Social Care Information Centre (HSCIC) (2015a). Diagnostic Imaging Dataset [online]. Available at: https://did.hscic.gov.uk/ [Accessed October 2015].

Health and Social Care Information Centre (HSCIC) (2015b). Hospital Episode Statistics [online]. Available at: http://www.hscic.gov.uk/catalogue/PUB16725 [Accessed October 2015].

Health Education East Midlands (HEEM) (2014) Sherwood Forest Hospitals Foundation Trust - Securing the future of sonography workforce 2014 [online]. Available at: http://em.hee.nhs.uk/files/2014/04/12-Ann-Allen-Securing-the-Future-of-the-Sonography-Workforce.ppt [Accessed October 2015].

Health Education West Midlands (HEWM) (2013) West Midlands regional ultrasound workforce report 2013 [online]. Available at: http://wm.hee.nhs.uk/files/2014/01/Enc.-9-Sonography-Workforce-Shortages.pdf [Accessed November 2015].

Health Education North West (HENW) (2015) S The future of sonography education [online]. Available at: https://nw.hee.nhs.uk/2015/08/24/the-future-of-sonography-education/ [Accessed October 2015].

House of Commons Library (2008) NHS vacancy statistics: England [online]. Available at: http://researchbriefings.files.parliament.uk/documents/SN02669/SN02669.pdf [Accessed October 2015].

Institute of Physics and Engineering in Medicine (IPEM) (2013) The Role of the Clinical Scientist in Medical Ultrasound [online]. Available at: http://www.ipem.ac.uk/Portals/0/Documents/Publications/Policy%20Statements/Policy%20Statement%20Ultrasound%20%20-%20New%20format.pdf [Accessed October 2015].

Institute of Physics and Engineering in Medicine (IPEM) (2015) Sonography workforce review, stakeholder communications with CfWI

Langford, K., (2015) *Sonography workforce review* [email]. Communication to CfWI [November 2015].

Migration Advisory Committee (MAC) (2015) Shortage occupation list [online]. Available at: https://www.gov.uk/government/publications/partial-review-of-the-shortage-occupation-lists [Accessed October 2015].

NHS Choices (2015) Ultrasound scans in pregnancy [online]. Available at: http://www.nhs.uk/conditions/pregnancy-and-baby/pages/ultrasound-anomaly-baby-scans-pregnant.aspx#close [Accessed November 2015].

NHS England (2014) Five Year Forward View [online]. Available at: http://www.england.nhs.uk/wpcontent/uploads/2014/10/5yfv-web.pdf [Accessed May 2015].

NHS England (2015) Monthly Diagnostic Waiting Times and Activity [online]. Available at: https://www.england.nhs.uk/statistics/statistical-work-areas/diagnostics-waiting-times-and-activity/monthly-diagnostics-waiting-times-and-activity/ [Accessed October 2015].

NHS England (2016) Saving Babies' Lives, A care bundle for reducing stillbirth [online]. Available at: https://www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf [Accessed March 2016].

Office for National Statistics (ONS) (2015) Birth Characteristics in England and Wales, 2014 [online]. Available at: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-401556 [Accessed November 2015].

Royal College of Obstetricians and Gynaecologists (RCOG) (2014) Green top guideline No. 31. The Investigation and Management of the Small–for–Gestational–Age Fetus [online]. Available at: https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_31.pdf [Accessed January 2016].

Royal College of Radiologists (RCR) and Society and College of Radiographers (SCoR) (2014) Standards for the provision of an ultrasound service [online]. Available at: https://www.rcr.ac.uk/publication/standards-provision-ultrasound-service [Accessed October 2015].

Society and College of Radiographers (SCoR) (2009) Developing and Growing the Sonographer workforce: Education and Training needs [online]. Available at: http://www.sor.org/learning/document-

library/developing-and-growing-sonographer-workforce-education-and-training-needs [Accessed November 2015].

Society and College of Radiographers (SCoR) (2013) Direct Entry Undergraduate Ultrasound Programmes (with competency to practise) [online]. Available at: http://www.sor.org/learning/document-library/direct-entry-undergraduate-ultrasound-programmes-competency-practise-briefing-society-and-college [Accessed November 2015].

Society and College of Radiographers (SCoR) (2014a) Response to MAC call for evidence and MAC SOL communications with CfWI. [Accessed April 2015].

Society and College of Radiographers (SCoR) (2014b) Sonographer Workforce Survey Analysis [online]. Available at: http://www.sor.org/learning/document-library/sonographer-workforce-survey-analysis [Accessed October 2015].

Society and College of Radiographers (SCoR) (2015) Sonography workforce review, stakeholder communications with CfWI.

Society and College of Radiographers (SCoR) (2015b) Public Voluntary Register of Sonographers [online]. Available at: http://www.sor.org/practice/ultrasound/register-sonographers [Accessed October 2015].

Society and College of Radiographers (SCoR) (2015c) Ultrasound Training, Employment, Registration and Professional Indemnity Insurance [online]. Available at: http://www.sor.org/learning/document-library/ultrasound-training-employment-registration-and-professional-indemnity-insurance-0 [Accessed October 2015].

Society and College of Radiographers (SCoR) (2015d) Ultrasound examination times and appointments [online]. Available at: http://www.sor.org/learning/document-library/ultrasound-examination-times-and-appointments-0 [Accessed November 2015]

Waring, L., Miller, PK., & Sloane, C., (2015) The future of Sonographic education. University of Cumbria [online]. Available at: http://nw.hee.nhs.uk/files/2015/08/Ultrasound-Futures-Waring-Miller-Sloane-June-2015-v4.pdf [Accessed October 2015].

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CENTRE FOR WORKFORCE INTELLIGENCE

Centre for Workforce Intelligence
209-215 Blackfriars Road
London SE1 8NL United Kingdom

T +44 (0)20 7803 2707
E enquiries@cfwi.org.uk

www.cfwi.org.uk