

The role, scope and utilisation of the imaging support workforce in England: A qualitative framework analysis

NIGHTINGALE, Julie <<http://orcid.org/0000-0001-7006-0242>>, SEVENS, Trudy, ETTY, S., FOWLER-DAVIS, S., KELLY, S., APPLEYARD, Robert <<http://orcid.org/0000-0002-8882-6813>> and SNAITH, B.

Available from Sheffield Hallam University Research Archive (SHURA) at:

<https://shura.shu.ac.uk/34620/>

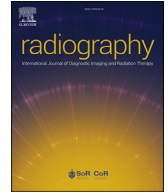
This document is the Published Version [VoR]

Citation:

NIGHTINGALE, Julie, SEVENS, Trudy, ETTY, S., FOWLER-DAVIS, S., KELLY, S., APPLEYARD, Robert and SNAITH, B. (2025). The role, scope and utilisation of the imaging support workforce in England: A qualitative framework analysis. *Radiography*, 31 (1), 264-274. [Article]

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>



The role, scope and utilisation of the imaging support workforce in England: A qualitative framework analysis



J. Nightingale ^{a, *}, T. Sevens ^a, S. ETTY ^a, S. Fowler-Davis ^b, S. Kelly ^a, R. Appleyard ^a, B. Snaith ^c

^a Sheffield Hallam University, UK

^b Anglia Ruskin University, UK

^c University of Bradford, Mid Yorkshire Teaching NHS Trust, UK

ARTICLE INFO

Article history:

Received 23 October 2024

Received in revised form

23 November 2024

Accepted 25 November 2024

Keywords:

Workforce

Staffing

Support worker

Assistant practitioner

Radiography

Skills mix

ABSTRACT

Introduction: Effective utilisation of the unregistered support workforce is essential to counter a well-documented imaging workforce crisis, yet it is unclear how imaging departments deploy their support staff. As part of a wider explanatory mixed methods study, this research explored models of support workforce deployment across England, identifying the factors which may encourage or inhibit implementation of these models.

Methods: Imaging support workforce deployment at regional and place (NHS Trust) level was investigated using Framework Analysis to combine interviews with Imaging Network representatives and Radiology Service Managers (RSMs) alongside workforce establishment data. Purposefully selected imaging services represented varying regions, sizes and support workforce proportions.

Results: Forty-two interviews represented 18 (81.8 %) Imaging Networks, and 24 imaging services (17.5 % eligible NHS Trusts). Additional workforce data was supplied by 18 RSMs. Three themes (Deployment Rationale and Decision-Making, Innovations in Support Workforce Activities, Stability and Sustainability of the Support Workforce) demonstrated the pivotal role enacted by the imaging support workforce. Extensive variations in role utilisation, deployment, scope of practice and pay rates were recognised, alongside inconsistently implemented Assistant Practitioner roles with a limited scope of deployment.

Conclusion: This is the first research to explore support workforce deployment at regional and place levels. The imaging support workforce in England is operationally managed rather than strategically planned, exposing services to local variation with deployment models developing in isolation. This pivotal workforce can support greater service capacity development but requires a more consistent approach to utilisation and deployment.

Implications for practice: National alignment of roles and competencies is urgently required. At regional and place levels, deployment models should be interrogated as a first step towards longer term workforce planning for this essential, yet under-utilised, workforce.

© 2024 The Author(s). Published by Elsevier Ltd on behalf of The College of Radiographers. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Introduction

The demand for imaging services in the United Kingdom (UK) continues to increase¹ in response to population needs and national health policy drivers, particularly around cancer, heart disease and stroke. This is against a backdrop of persistently high radiographer and radiologist vacancy rates^{2,3} resulting in a 31 % rise in the

number of imaging reports failing to be issued within the four week target.⁴ An unsustainable £276 million was spent in 2023 alone by National Health Service (NHS) imaging departments on expensive insourcing (overtime), outsourcing (to private companies) and agency and locum staff to fill the service shortfalls.²

In response to the imaging workforce crisis three high profile national reports^{5–7} signalled wide-scale changes to imaging infrastructure and pathways, including the establishment of Imaging Networks across England.⁵ All three reports emphasised an urgent need to develop the capacity and capability of the unregistered support workers and Assistant Practitioners who are providing care

* Corresponding author.

E-mail address: J.Nightingale@shu.ac.uk (J. Nightingale).

and clinical support to patients in imaging, known collectively as the support workforce.^{5–7} However, in the five years since publication of the reports it is unclear what progress, if any, has occurred. Lack of innovation in the support workforce is not unique to imaging services. A 2024 report⁸ highlighted the lack of progress since the publication of the Cavendish Review⁹ over a decade ago, which identified the NHS support workforce as frequently underutilised, undervalued, inconsistently deployed and often unable to progress their careers.⁹

A four-tiered model structures the UK imaging support workforce, in order of increasing autonomy; Clinical Support Workers, Senior Clinical Support Workers, Associate Practitioners and Assistant Practitioners (AP).^{10–12} These tiers correspond to Bands 2–4 in 'Agenda for Change' (AfC), the system used by the NHS for staff pay.¹³ With appropriate supervision the imaging support workforce can undertake many patient-facing activities (including image acquisition) that were formerly in the domain of the registered radiographer,¹⁰ providing backfill to enable registered staff to undertake complex imaging procedures and definitive reporting. However, it is unclear how imaging departments deploy their support staff, and whether there is sufficient capacity and capability in this workforce to deliver the envisioned transformation.^{5–7}

Two recent scoping reviews show that cost-effectiveness of the support workforce has not been formally evaluated in any Allied Health Professional (AHP) discipline or setting,¹⁴ and no previous studies have evidenced the impact or effectiveness of imaging support worker deployment.¹⁵ In addition, a national census showed that support workers and assistant practitioners comprise approximately one fifth of the imaging workforce in England (Median 22.27%, IQR 14.9–29.1).¹⁶ This is a much smaller contribution when compared to the proportion of support workers within the wider non-medical NHS workforce (36.1%),^{17,18} suggesting that there may be scope to expand, or perhaps that the use of ionising radiation may be a limiting factor. This article presents the findings from a large-scale multi-centre qualitative study which was subsequently launched to explain and expand upon the census findings,¹⁶ addressing the following research question: *What models of deployment of the Support Workforce exist within diagnostic imaging departments and what service, hospital, regional and national factors may encourage or inhibit implementation of these models?*

Methods

This study reports on two workstreams within an explanatory, mixed methods research study [NIHR133813]¹⁹ investigating the deployment and contribution of the support and assistant workforce to diagnostic imaging activity across England. A pragmatic qualitative description research design,²⁰ combined with framework analysis,²¹ was combined to investigate two research objectives. Objective 1 explored the contribution of Imaging Networks to disseminating and implementing effective support workforce strategies. Objective 2 explored contextual factors at imaging service level which serve to facilitate or inhibit the support workforce contribution. The multi-disciplinary research team shared an interest in skills mix and career frameworks and included backgrounds in diagnostic radiography [JN, BS, TS], therapeutic radiography [RA], psychology [SE], health policy research and data analysis [SK], and a health policy researcher [SFD].

National and institutional ethical approval was obtained [Health Research Authority 22/HRA/4272; Sheffield Hallam University Research Ethics Committee ER53139410 and ER50766713], alongside Health Education England (HEE) gatekeeper permission to access anonymised data from the national NHS workforce payroll dataset, the Electronic Staff Record (ESR).^{16,22}

Sampling and data collection

Objective 1 was addressed by inviting representatives of all 22 imaging networks across England by email to participate in an online structured interview to outline their regional support workforce strategies. The interview schedule [Appendix 1] explored regional approaches to support workforce recruitment and retention, education and training including the role of imaging training academies,²³ competency assessment, supervision, and deployment. Interview questions were informed by the self-assessment questions for regions, systems and organisations within the HEE Allied Health Professions support workforce: readiness toolkit.²⁴ After sharing participant information and receiving informed consent, interviews were undertaken by experienced, post-doctoral female qualitative workforce researchers [TS, SE] not known to the participants; most interviews had a second researcher in attendance to record field notes. Interviews were recorded using the Microsoft Teams™ platform, each lasting between 23 and 57 min. Three pilot interviews were undertaken, two with system-wide lead radiographers and one with a system workforce lead. As no significant changes were made to the interview questions, the pilot interviews were included in the analysis of the wider data set.

Objective 2 was addressed through a combined qualitative and quantitative approach. A census of 124 imaging services across England drawn from ESR data¹⁶ (accessed Dec 2022) enabled services to be ranked into three 'adopter' categories (high, medium, low) based on the proportions of imaging support workers within their imaging establishment. The full methodology is outlined in a previous publication.¹⁶ Purposeful sampling of eight imaging departments within each of the three adopter categories ($n = 24$) ensured inclusion of varied levels of support workforce utilisation, department sizes and geographical locations. A Radiology Services Manager (RSM) and/or their representative at each of the 24 selected NHS Trusts was invited by email to complete a workforce data questionnaire (Supplementary Materials 1) and participate in an online semi-structured interview to discuss the deployment of their support workforce. Following a pilot interview with a RSM, two additional questions were added to an interview topic guide (Appendix 2) which was informed by findings from earlier publications.^{14–16} Following informed consent, a female researcher with a diagnostic radiography background and extensive post-doctoral qualitative experience [JN], not known to the participants, conducted all 24 interviews. Each interview lasted between 35 and 50 min, and field notes were recorded immediately after each interview. Online interviews were recorded through Microsoft Teams™ and transcribed in full. All participants had access to the Microsoft Teams transcript and were invited to receive the completed full transcript if this was requested.

Data analysis

Imaging Network qualitative themes were generated using a descriptive thematic approach,²⁰ with initial coding undertaken by a diagnostic radiographer [TS] seconded to a system-level imaging workforce role. The themes were discussed and refined within the wider team and subsequently combined with the Imaging Services analysis which used the Gale et al. approach of framework analysis²¹ to organise and compare data from quantitative and qualitative findings. The analytic framework was generated in Microsoft Excel following the five steps in framework analysis (data familiarization, framework identification, indexing, charting, and mapping and interpretation).^{25,26} The researcher who completed the interviews and was most familiar with the data [JN] completed qualitative data extraction into an initial framework matrix, with a second researcher [SE] extracting quantitative data from the

workforce data questionnaire. The wider research team then discussed and debated the emerging framework and confirmed that data saturation had been achieved. An independent policy researcher with extensive expertise in framework analysis [SFD] subsequently reviewed and validated the initial framework and supported the generation of final framework themes.

Findings

Forty-two interviews were completed, the majority with a single participant but some had more than one representative (n = 48 participants). Eighteen of the 22 Imaging Networks participated, representing 81.8 % of the established networks in England. Four networks did not respond to the email invitations. Interviews with Radiology Service Managers from the 24 NHS Trusts represented 17.5 % of all eligible NHS Trusts; the majority (n = 18) provided additional support workforce data. The participating imaging services (cases 1–24) were evenly spread across the seven NHS England regions,²⁷ representing varying workforce sizes (radiographic and support staff combined) including six large services (>150 staff), nine medium (80–150 staff), and nine smaller services (<80 staff). These services were drawn equally from the high, medium and low ‘adopter’ categories (Supplementary Material 2).

Analysis of the 42 interviews yielded three primary themes encompassing seven categories (Table 1). Both quantitative and qualitative findings are explored under these theme headings. Where appropriate, links are made to participating organisations using the acronym RSM (1–24) for the Radiology Service Managers (or representatives) of the NHS Trusts, and INR (1–18) for the Imaging Network Representatives.

Theme 1 – Deployment Rationale and Decision making

Category 1.1. Lack of professional identity

The deployment of support worker roles is unique to the individual imaging service. This is characterised by an extensive range of job titles varying between Trusts, sites within a Trust, and even within a single department, suggesting that the professional identity of support workers is not considered in their deployment.

Table 1
Framework themes and categories.

Theme	Category	Description
1. Deployment Rationale and Decision-Making	1.1. Lack of professional identity	Extensive variation in job titles, job descriptions, pay banding and scope of practice blurs role boundaries and causes confusion both within and between imaging departments. Poor professional identity and visibility, particularly at band 2 and 3, is mitigated by a trend towards placing support workers in leadership roles.
	1.2. Varied Workforce Profile	The size of the support workforce as a proportion of the wider imaging establishment varies widely between services, but this is not significantly correlated with department size. Managers prefer deployment of either band 2 or band 3 support workers, with few deploying Assistant Practitioners. Few sites had reviewed their support workforce demographics.
	1.3. Workforce Flexibility	The main deployment decision is shaped by the approach to rotational activity, either rotating support workers through several imaging modalities, or utilising a static specialist model. Different grades of support workers tend to be deployed in different imaging modalities; bands 2 and 3 often deployed in CT and ultrasound, band 4 in x-ray (projection imaging) and mammography.
2. Innovations in Support Workforce Activities	2.1. Evolving Scope of Practice	There was limited innovation in many services, however clinical skills innovations resulted in a wider scope of practice for Assistant Practitioners in departments that embraced them. Support worker ‘in-patient’ care coordination and navigation roles were pivotal in improving patient flow, and leadership roles encouraged cohesion in the support workforce teams.
	2.2. Embracing Apprenticeships	Some services had embraced Degree Apprenticeships (DA), an alternative employer-supported pathway to registered practice, though few had embraced apprenticeships below degree level. Early DA adopters described them as a key enabler for recruitment and retention, others highlighted lack of funding and training capacity as a barrier to innovation.
3. Stability and Sustainability of the Support Workforce	3.1. A Stable Workforce	Support workers are the local supply pipeline for assistant practitioners, apprentices and radiographers with low vacancy levels reported. Recruitment is positive except in more remote or expensive locations. Retention at band 2 can be challenging with high turnover in some services.
	3.2. Added Value	A pivotal workforce adding vital stability to imaging services, although opinions are divided on whether they enable radiographer advanced practice.

Variations blur grade boundaries; Band 2 titles such as *Health Care Assistant* (RSM7) and *Medical Imaging Assistant* (RSM15) appear very similar to Band 3 titles in other organisations, such as *Diagnostic Imaging Assistant* (RSM6) and *Radiographic Assistant* (RSM24). Three departments used the historical term ‘Helper’ at Band 2 level (RSM10, 13, 24) which lacks acknowledgement of the contemporary skillset required. However, *Assistant Practitioner/Assistant Radiographic Practitioner* are titles uniformly used to denote the band 4 role, providing a professional identity within and between organisations. Some RSMs recognised that there was “*Too much disparity in job titles in the trust*” (RSM23) and that by utilising titles recognised across the organisation, their support staff can access shared training and development opportunities. Imaging Network participants identified the diversity of role titles as a barrier to achieving harmonisation between Trusts, with “*huge discrepancies*” (INR6) causing misunderstandings:

“... support workers, they think if they go and work somewhere else, they might get paid more because they are called something different. It causes a lot of confusion within the workforce.” (INR6)

“They [organisation] tend to say that their band 3s are APs whereas I would say they’re support workers, and there’s a difference.” (INR3)

Imaging network participants also revealed “... a lot of variation across the trusts ... varying degrees of competencies and training” (INR7) and inconsistencies in job descriptions, AfC banding and scope of practice, evident within and across NHS Trusts. Following widespread re-grading of band 2 up to band 3 ward-based support workers in many organisations, one network representative believed that imaging services had “*missed the boat*” (INR1) and were now having to find funding from within their own budgets to upgrade relevant staff. This variable utilisation and deployment created a barrier to developing network-wide support workforce strategies, particularly where there was potential for cross-organisation working: “*They’re using that support workforce differently in each trust, there’s no consistency.*” (INR12)

Recognising a lack of professional identity within the support workforce, one RSM commented: “*[They] were a team that felt that*

they weren't included, that they didn't have the support, that people didn't understand, and actually all of the support workers are so instrumental to our workflow, to our patient care ... that we felt that they did need somebody that was managing them and also that they had a voice" (RSM5). Several RSMs had created opportunities for support workers to develop into a leadership role, with responsibility for rosters, personal development reviews, annual leave requests, management requests and in some cases even disciplinary procedures. In the absence of national guidance, this innovation is accompanied by wide grading discrepancies between AfC Band 3, 4 or 5. Some RSMs were recognising the value of a leadership role to their support workforce:

"I'd really like to have two band 4 support workers that would be able to line manage ... they don't need a band 7 nurse [the usual] to be able to do this" (RSM16)

"It would give them ownership over their work ... that could be the tie in that we need, that could be the cohesion that sort of fits them together ... I think maybe this would help them to feel like a team" (RSM17).

Category 1.2. – Varied workforce profile

Sixteen organisations provided workforce data reflecting the size and scale of their service. Fig. 1 presents the funded Whole Time Equivalent (WTE) for radiographic and support staff, with combined establishments ranging from 78 in the smallest service (Trust 20) to 292 in the largest service (Trust 8). The support workforce (bands 2–4) is shown as a proportion of the total radiographic workforce (bands 2–8), and these proportions vary widely between 10 % (Trust 18) and 34 % (Trust 6). An important finding is that the support workforce proportions are not significantly correlated with department size ($r(16) = -0.19, p = 0.478$).

Fig. 2 displays deployment by headcount and grade of support worker. Grade balance was critical to deployment decisions, with most RSMs primarily deploying either band 2 or band 3 support workers. Some dissatisfaction in grade balance was highlighted:

"we used to do the film processing ... and then it went to digital, all the band threes were disbanded. Now I feel that there is a gap in the service, we are saturated with Band 2s" (RSM9). Band 4 AP staff are deployed significantly less than bands 2 and 3, with 29 % of the departments having none or only one band 4 (Fig. 2). The exception is Trust 4 with fifteen band 4 staff (30 % of the support workforce); while Trust 8 has the highest number of APs ($n = 18$), the relative proportion of band 4 is lower (23 %).

Some RSMs struggled to see a role for APs in their department, while others were more positive: *"I'd like us to have more ... to release some of the registered staff from some of the tasks that perhaps you don't have to be a registered radiographer to do"* (RSM7). Imaging Network representatives noted a recent deployment shift towards cross-sectional imaging: *"modalities are embracing the band 4 AP roles a lot more"* (INR6), although the RSM-supplied data showed that most services deployed APs only in mammography and X-ray. Lack of supervision was described as a barrier to deployment, requiring *"more flexibility of what is considered supervision and what is not"* (INR7). Using technology as an enabler for remote supervision, many participants advocated for a national job description and an AP scope of practice extension into operating theatre and mobile work.

Imaging Network participants described band 2 roles as 'flexible' with elements of clerical, portering and chaperoning, whereas other roles (usually band 3) involved clinical elements such as cannulation and sterile trolley preparation. Band 2 roles were often indistinguishable from band 3; several RSMs were gradually phasing out band 2 roles in favour of increasingly clinical and patient-facing roles. Support workers appear to be vital for improving the flow of patients by liaising with other departments and wards, and one imaging service (RSM19) had embraced this concept with a new patient-facing role (*Radiology Clinical Coordinator*). However, none of the RSMs had involved patient or public groups in the design and development of new support worker roles.

Many RSMs were unsure of their support workforce gender, age and ethnic diversity profile, although the workforce appeared to be more diverse in urban imaging services. Most departments report a predominantly female, white and older support workforce, with

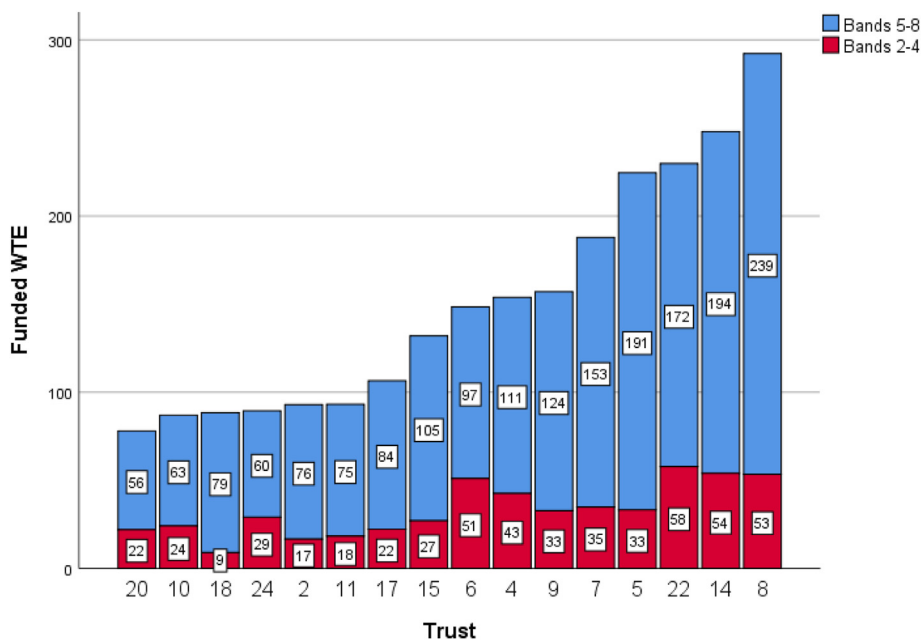


Figure 1. The funded radiographic establishment in Whole Time Equivalents (WTE) for bands 5–8 (radiographers), and bands 2–4 (support workforce), for 16 NHS trusts supplying data.

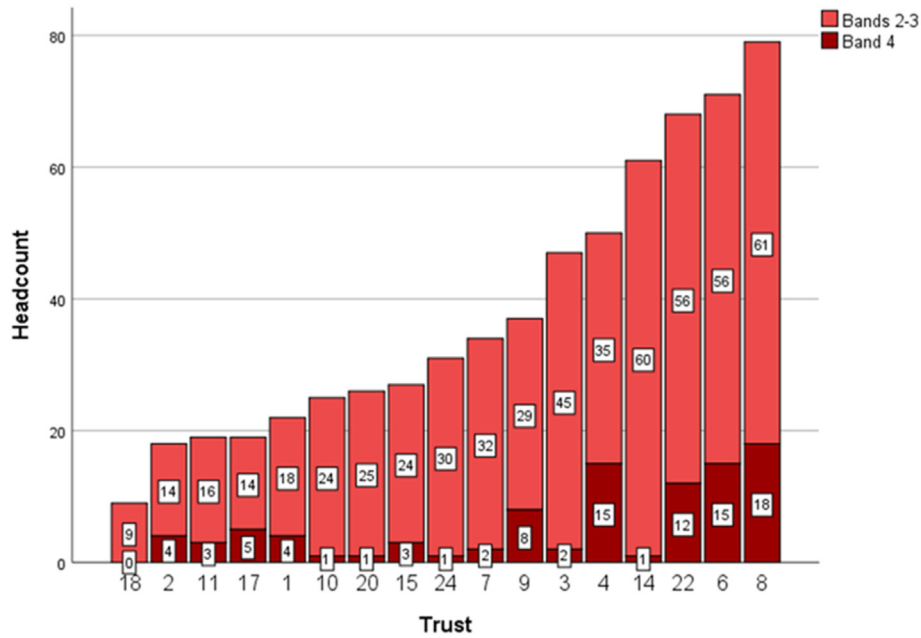


Figure 2. Shows the headcounts for bands 2–3 (support workers and senior support workers), and band 4 (Assistant Practitioners), for 17 NHS trusts supplying data.

widening diversity over time: “[Now] quite ethnically diverse, Filipino, Indian ... they have several male assistants and a wide age range ... but the younger ones don't stay” (RSM24). One RSM noted the benefits that a diverse support workforce can bring: “Support workers help break down cultural and language barriers as they have a broad range of ethnicities and cultural backgrounds” (RSM10). Support workforce diversity is an area for further consideration and benchmarking specifically to ensure the workforce reflects the local population.

Category 1.3. - Workforce flexibility

Band 2 and 3 support workers are often deployed in CT and Ultrasound (Fig. 3), mainly for pastoral support, chaperoning and patient flow, yet band 4 staff do not normally feature in these modalities (Fig. 4). These figures illustrate that the support workforce may be deployed in rotational posts through two or more modalities, with rotational patterns more commonly seen at bands 2 and 3 than at band 4. There appears to be no pattern to this deployment, with the workforce strategy at each organisation apparently based on local decision-making and context. For example, two of the larger services demonstrate opposing deployment patterns; Trust 3 commits all support workers (bands 2–4) to rotational posts, whereas Trust 8 has only modality specific roles.

Some support workers are reported by RSMs to prefer rotation to build skills, perceiving that it is ‘harder work’ to be static in one modality, while others recognise an eroding of skills when the rotation involved too many modalities. Imaging Network participants confirm that the main deployment decision is shaped by the approach to rotational activity. Some rotational models extend between hospital sites, though they acknowledged a potential impact on staff wellbeing:

“Support workforce in [Trust] moves across the whole county, they rotate around the acute trust, ... the community hospitals and the CDC [Community Diagnostic Centre], but we are careful to make sure people move around in the vicinity of where they live” (INR3).

“Because of the relatively large numbers, there was still that flexibility to work across the trusts there. But the wellbeing and job satisfaction I don't think was maximised, I think it affected that” (INR7).

Static deployment models were reported to be preferred by some support workers as they allow them to concentrate on one area as “natural territory” (RSM23) with better supervision prospects and a chance to become highly skilled. This is particularly the case for APs: “I think there are a couple of places which have started to look at APs being on a rotation, but they've realised there might be pitfalls with that because it's hard for them to get to the top of where they want to be” (INR6). The static models potentially reduce workforce flexibility, creating challenges of covering sickness and annual leave; some RSMs deploy part time and bank staff flexibly to cover service gaps. One service manager recognised a need to embrace both sides of the debate: “There's pros and cons on both sides, but without that rotation you just don't have that flexibility of staff ... it's worked so much better when the static posts have been filled by people that know what they like because they're more likely to stay because they've got that passion for the area” (RSM22). An element of rotation is, however, seen as important in a preceptorship period to expose support workers to the range of working environments, enabling them to apply with confidence for future static roles.

Theme 2 - Innovations in Support Workforce Activities

Category 2.1. – Evolving scope of practice

In addition to novel support worker leadership roles, most innovation related to training and development, including accessing wider Trust level training opportunities such as assistance to gain maths and English qualifications. Clinical skills innovations included a wider scope of practice for APs: “I think they've definitely got more autonomy now” (RSM6), such as working in MRI, DEXA, Nuclear Medicine, Interventional Radiology (IR), and the operating theatre. Imaging Network representatives highlighted innovations

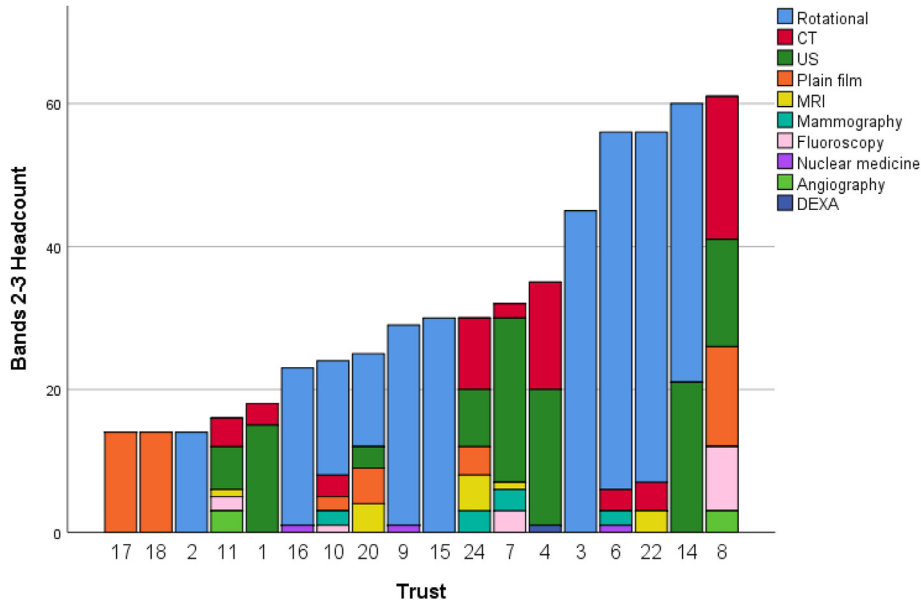


Figure 3. Band 2 and 3 support workers headcount by specialty area and rotational posts for 18 NHS Trusts who supplied data.

extending the scope of practice: “a band 4 Assistant Practitioner who’s working in cardiac imaging ... they’ve got their own list and they kind of run a lab there” (INR9).

Support workforce in-patient care coordination and navigation roles were pivotal in improving patient flow in IR, Cardiac, CT, MR and Ultrasound. In one setting, this included visiting patients on wards to check readiness for scans (e.g. consent, fasting, bowel preparations) (RSM13). Demands on Imaging Networks for further support workforce training were associated with management skills, supervision, radiation protection training and for support to undertake non-complex CT/MR scans under supervision. However, innovation was not uniformly supported with some reports of limited demand for training and progression and lack of backfill preventing opportunity. Others noted a lack of innovation, stating their departments were “pretty standard” (RSM2, RSM3).

Category 2.2. – Embracing apprenticeships

All participants noted the growing influence of FHEQ (Frameworks for Higher Education Qualifications) Level 6 Degree Apprenticeships, an alternative employer-supported pathway to registered practice for support workers. Few services had embraced support worker apprenticeships at FHEQ levels 2 (support worker), 3 (senior support worker) and 5 (assistant practitioner). Services with a substantive commitment to Degree Apprenticeships described them as a key enabler for recruitment and retention:

“[We have] challenges recruiting new graduates, who will stay in area, and mature students, who now have fees to pay ... it means more emphasis on ‘grow your own’ and international recruitment, with its own challenges” (RSM9)

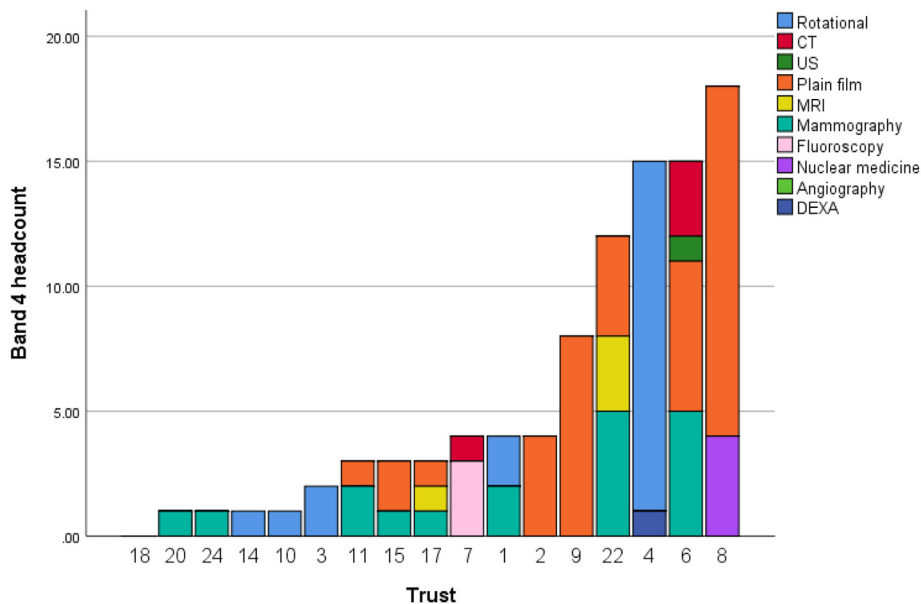


Figure 4. Band 4 support worker headcount by specialty area and rotational posts for 17 NHS Trusts who supplied data.

“Phenomenally successful ... It’s been absolutely brilliant. The best thing that has happened to radiography in my opinion for a lot of years is the apprenticeship route” (RSM4).

While most RSMs were keen to ‘watch and wait’, some early adopters believed that apprenticeships improved employment continuity and removed the “glass ceiling” (RSM21) for support workers: “[Having] Apprentice radiographers prompted thinking around how support workers’ career pathways can be aligned” (RSM13). One RSM was delighted to report: “... the first imaging care assistant to qualify, so will go from band 2 to band 6 in six years via apprenticeships” (RSM14).

Barriers to apprenticeships include the “burden of red tape” (RSM23) with many highlighting “lack of backfill”; in most organisations apprentices are not counted as ‘in training’ and still appear within the establishment budget. Apprentices add to the training burden, so were not embraced by some services with large numbers of traditional students: “Too much training causes issues: You have too many people in this department. It’s trying to balance it all” (RSM18). To counter a lack of training capability and capacity, several RSMs called for a regional or academy approach to apprenticeship training. However, a limiting factor noted by Imaging Networks is the discrepancy in pay rates and other factors like access to public transport in rural locations which was perceived to be limiting apprentice movement.

Theme 3 - Stability and Sustainability of the Support Workforce

Category 3.1. – A stable workforce

Data supplied by 16 of the 24 imaging services indicates a high proportion of vacancies in the registered radiographer workforce (Fig. 5). Two services report over recruitment of qualified staff, potentially indicating ‘point in time’ survey data (e.g. new graduates entering the workforce) or in advance of service expansion. Support workforce ‘actual’ employment (bands 2–4), however, closely matches the funded establishment, suggesting low vacancy rates in the support workforce. Three NHS Trusts (Fig. 5, Trusts 6, 8, 15) report over recruitment, which may be a consequence of radiographer vacancy underspend being allocated to temporary support worker appointments. The support workforce is therefore likely to be more stable than the radiographer workforce, with

recruitment reported as strong by all RSM participants. Some Imaging Network representatives revealed local challenges in support worker recruitment in more remote geographical locations and/or where Band 2 salaries were unattractive in higher cost locations. Recruitment was more successful following specific attention to the advertisement and job description and where there were initiatives to recruit internally via domiciliary services or portering; networks also identified the importance of targeted recruitment drives. Lengthy Human Resources processes were described as a barrier for several RSMs, with high volumes of applications in each recruitment round.

Support staff are often a local workforce who have homes and family ties in the area, leading to a low turnover in band 3 and 4 roles, however in some services there is considerable turnover in band 2 posts:

“They use it as a stepping stone to other things. No one wants to stay as a band 2 support worker forever, do they?” (RSM9)

“As soon as they arrive, they tend to either get a promotion ... or they go and work somewhere else, it’s an ongoing battle ... A lot of the support workers are ambitious young people who want to move on to the next steps. It’s no longer seen as a role that you stay in and don’t progress” (INR15).

Network participants highlighted a retention trend of band 2 staff gaining automatic uplifts to band 3 within 6–12 months on completion of competency frameworks, prompting RSMs to re-negotiate role descriptions to enable them to recruit directly to band 3 posts. Other network-wide interventions included providing pre-employment experience, and ensuring more robust on-boarding procedures, induction and preceptorship. Support workers were seen as the supply pipeline for assistant practitioners, apprentices and radiographers, with the need for a clear career pathway and succession planning advocated by Imaging Network representatives. Providing progression opportunities positively affects retention, with some services proactively promoting “grow your own” routes from bands 2 to 5 (RSM8, 20).

Category 3.3. – Added value

Support workers are highly valued by Imaging Networks and RSMs as they enable efficiency and ‘flow’ of patients. Imaging

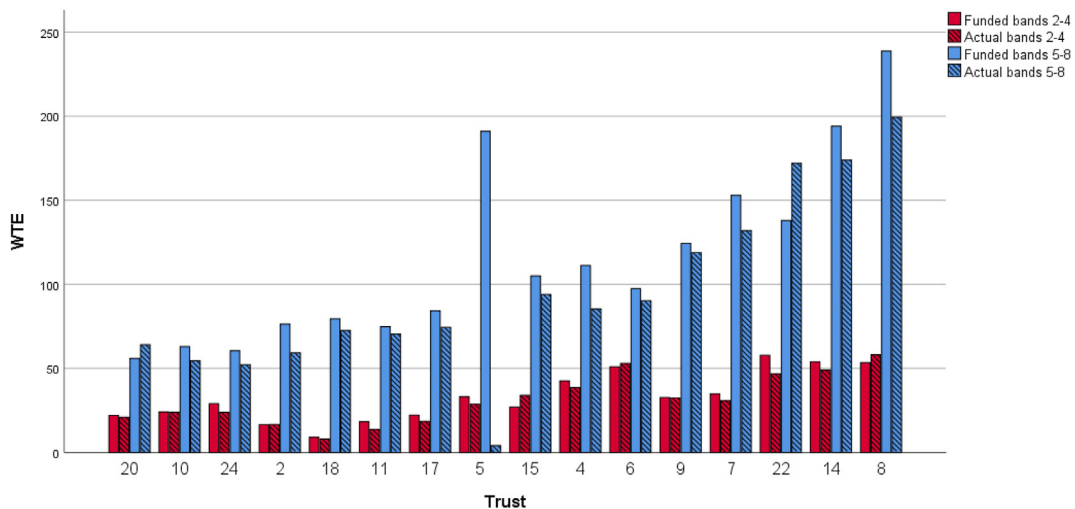


Figure 5. Funded (establishment) and actual (currently in post) Whole Time Equivalent posts reported by 16 NHS Trusts (bands 2–4 and 5–8).

Network representatives describing the support workforce as “*absolutely the lynchpin ... the glue that kind of holds it all together*” (INR12). The RSMs confirmed they are: “*Absolutely pivotal, [we] need to understand their diverse needs and interests and work with them to keep them happy*” (RSM4), and this extends to careful attention to their pay and conditions aligned to a national scope of practice.

Some RSMs acknowledged that apprentices and senior support workers were starting to release radiographers to extend their practice, though many did not recognise any alignment between advanced practice and support worker development. Others recognised that the support workers add vital stability to the workforce, allowing qualified staff to take on advanced skills.

Discussion

This is the most comprehensive research to date focused on support workforce deployment at regional and place (NHS Trust) level. The most significant finding is that the imaging support workforce in England is operationally managed rather than strategically planned. Staff in diagnostic imaging at bands 2, 3 and 4 have evolved as an adjunct to the radiography workforce, with roles gradually emerging from historical service delivery where dark-room technicians were employed to process and display x-ray images. The transfer to contemporary digital delivery has required staff redeployment to more administrative and patient facing roles and further inclusion into the mainstream workforce arrangements. However, the localised operational management exposes the imaging support workforce to local variation in terms of a) deployment models b) role visibility and c) development opportunities. This is because most services undergo development in isolation, heavily influenced by local organisational service requirements and efficiency savings. RSMs are beginning to re-design this workforce, but this is going to require longer-term planning, facilitated by NHS annual budgeting strategies and strategic planning at organisation, regional and national levels. The focus on the imaging support workforce is, however, an opportunity linked to required improvements nationally for capacity and capability building as has been evidenced in this research. In addition, any focus on the support worker strategies could enable NHS Trusts to fulfil one of their roles as an ‘anchor’ institution,²⁸ implementing equality, diversity and inclusion initiatives in their local community to widen access to healthcare occupations. This is particularly vital for NHS Trusts situated in economically deprived rural, coastal, and urban locations, where communities are likely to have the greatest need, yet conversely the hospitals experience more challenges in recruitment and retention.²⁹

For many years the wider NHS has neglected to implement policy to shape the healthcare support workforce. A decade on from the hard-hitting Cavendish review,⁹ the consequences of a lack of mandated policy for the support workforce are recognised by Griffin et al.⁸ as “*inconsistencies, underutilisation, under-deployment and wasted resources*” (p34). A concerning finding from their 2024 survey was that 73 % of support workers believed that they were an ‘invisible’ workforce.⁸ In imaging services, the absence of national policy has reduced the potential for significant impacts on the workforce crisis^{2–4} and has led to the highly varied deployment patterns seen in this study. Wide variations in support workforce size, grades, job titles, deployment models, scopes of practice and areas of work exist, not only between organisations but also within individual services. These variations reduce the visibility of this “*absolutely pivotal*” workforce not only within imaging services and across healthcare organisations but, most importantly, with patients.

This research confirmed a lack of engagement with patient and public representatives in support workforce planning, yet the Quality Standard for Imaging (QSI), which sets national quality criteria for imaging services, requires that “*Patient partnerships with the service are used to design and improve future care and service provision*” (p22).³⁰ However, an opportunity is emerging through the Imaging Networks which, upon reaching the required ‘maturity’ level by March 2025,³¹ will be well-placed to undertake collaborative working and sharing of best practice between partner NHS Trusts. This network engagement which should include patient and public involvement, promises to impact directly on future support workforce deployment decisions at regional and place levels.

To support Imaging Networks in regional planning, guidance and toolkits relevant to the support workforce are now emerging from policy makers and professional organisations. Radiography was one of the first AHP professions to include APs in their career framework,¹⁰ yet these roles appear to be sporadically implemented. Professional restriction of the AP scope of practice (published in 2007),³² was cited as a barrier to deployment in mobile radiography and operating theatre settings where supervision is challenging. Professional guidance needs to reflect a more contemporary view of AP practice, using technology as an enabler to support remote supervision. In contrast to the Assistant Practitioner career level, the wider support workforce has not, until recently, received attention. The publication of the AHP Support Worker Competency, Education and Career Development Framework (2021),³³ which aims to reduce unwarranted variation in support worker roles, pay band and progression, expedited a timely professional and policy intervention to influence and shape the deployment of the imaging support workforce.³⁴ At the time of this study’s data collection, however, knowledge of these frameworks, guidance and projects was relatively poor, suggesting a need for targeted dissemination to Imaging Networks and RSMs.

A potential limitation of this research is the use of different researchers from different professional backgrounds for data collection and analysis for the two participant groups, however this was mitigated by the standardised framework approach,²¹ regular debriefing with the full research team, and the validation of framework themes by an experienced policy researcher independent of the research team. The quality of reporting of the research is supported by completion of a COREQ (Consolidated criteria for REporting Qualitative research) checklist (Supplementary Materials 3).³⁵ Most NHS Trust representatives (18/24) supplied additional workforce data, but this was occasionally incomplete, making direct comparisons between services challenging. In addition to the rigorous framework approach, strengths include the identification of imaging services through analysis of the national ESR dataset^{16,22} to minimise selection bias, alongside the greater representation afforded by a large participant sample drawn from 17.5 % of all eligible NHS Trusts and 81.8 % of imaging networks in England.

This research has explored the deployment of the imaging support workforce at regional and local levels from the perspective of service and network leaders; further research will investigate the perspectives of the support workforce and their workplace supervisors at individual department and modality level.

Conclusions

This research reports on the national visibility, deployment and roles enacted by the imaging support workforce in delivering imaging services. The value of support workers was recognised in improving patient flow through the department and there were many innovative examples of how support workers contributed to

the leadership, management and the delivery of services, in some cases releasing radiographer capacity but also seeking to improve patient experience. However, in many imaging services the limited adoption of Assistant Practitioner roles was concerning and limited the potential for the imaging support workforce to implement best practices and engage in learning and development.

Comprehensive national policies and strategic planning are needed to support more uniform role utilisation, deployment, and progression so that scope of practice, role titles and pay rates, can be understood and widely adopted. With defined training and progression opportunities this workforce can support greater capacity development within services, however, deployment and utilisation require a more consistent approach and consensus.

Imaging Departments and Imaging Networks are urged to review the grade, role, job titles and demographic profile of the support workforce, under-pinned by regional and national alignment of roles and competencies, including modality-specific guidance. Policy makers and the profession are urged to review restrictions to career progression and Assistant Practitioner deployment for this essential, yet under-utilised, workforce.

Conflicts of interest statement

All authors have no conflicts of interest to declare.

Acknowledgments

This study is funded by the NIHR Health Services and Delivery Research programme (I.D. NIHR133813). The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care. For the purpose of open access, the author has applied a Creative Commons Attribution (CC BY) licence to any Author Accepted Manuscript version of this paper, arising from this submission. The authors wish to thank the Imaging Networks and Imaging Departments who participated in this study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radi.2024.11.021>.

Appendix 1. Workstream 3 interview schedule questions

-
1. What is your imaging network/ICS name?
 2. How many NHS Trusts does your imaging network/ICS cover?
 3. Which NHS region is your imaging network/ICS in?
 4. What is your role title within the imaging network/ICS?
 5. What is your professional background?
 6. Can you confirm whether the scope of your imaging network/ICS workforce role covers radiographers only, all of the imaging workforce or a wider remit (other professional groups)?
 7. In terms of your role, how long have you been in post?
 - 7b If < 1 year – did you previously work in the same region (in a Trust or other area)?
 8. Were you involved in the development of your system or place level AHP workforce plans?
 - 8b Did your AHP workforce plans include the support and assistant workforce?
 - 8c If yes – is this available on your website or would you be able to share this with us please?
 9. Do you think the HEE national AHP workforce Supply Project has changed how people in your ICS are thinking about using these staff groups? 9b. In what way?
 10. Does your ICS/imaging network have a plan or strategy specifically focussed on the imaging workforce?
 - 10b If YES - are the imaging support and assistant workforce mentioned in the plan/strategy?
 - 10c If yes – is this available on your website or would you be able to share this with us please?
 11. Are there any system/network level plans for recruitment/retention of imaging assistant/support workers?
 - 11b What are they, and do they include the potential for flexibility and utilisation across Trusts?
 - 11c Do they include any form of community engagement, or differences in advertising posts for example?
 12. Do you know if assistant practitioner and support workforce are included in academy development plans?
 13. Across your imaging network/ICS do you see similar utilisation of assistant practitioner roles (Band 4)?
 - 13b Are there any Trusts who are not using APs, or have high or low numbers of APs (seek names)?
 - 13c Is there any difference in utilisation across modalities in your Trusts?
 14. Do you see similar utilisation of support worker roles at Band 2 or 3 across sites? 14b. Are there any Trusts who are not using Band 2 or 3 support workers, or have a noticeably large or small support workforce? 14c. Is there any difference in utilisation across modalities in your Trusts?
 15. Can you tell us about any innovative or novel ways the assistant and support worker workforce are used within your system? 15b. Do you know if there are any associate practitioner roles in your ICS at Band 5?
 16. Based on your knowledge of Trusts across your imaging network/ICS how easy or challenging is it to recruit to support worker or assistant posts?
 - 16b Are Trusts succession planning for these roles, or 'growing their own'?
 - 16c Does this include the use of apprenticeships for support workers and/or assistant practitioners?
 17. Going back to the wider radiographer workforce, are there radiography recruitment and/or retention challenges in your network/system?
 - 17b Is this specific posts/Trusts? 17c. Does access to CPD/training/education affect it?
 - 17d Do you think these recruitment or retention challenges for radiographers has opened (affected) opportunities for support worker development?
 18. Is there anything else you want to share about the current utilisation of, or plans for, the support workforce across your network/system?
-

Appendix 2. Radiology service manager interview schedule

1. Have you had the opportunity to complete the data collection questionnaire yet? 1b. If yes, how easy or difficult was it to access the data that was requested? 1c. Did you access ESR data to complete it?
2. We've noted from reviewing electronic staff records, that there are a wide range of job titles for support workers and assistant practitioners. In your Trust, how are these roles referred to?
3. Do you feel that your Trust has sufficient support workers and assistant practitioners to fulfil the requirements of the imaging departments? 3b. If no – why?
4. Do you feel that you employ more, less or roughly the same proportion of support workers compared to other Trusts that you are familiar with? 4b. Why do you think that is?
5. Have you a good balance between different grades of support workers and assistant practitioners?
 - 5b Do you have a support worker who has some responsibility for managing other support staff?
6. Do you feel that you have a good spread of support workers across the different imaging modalities?
 - 6b Are there any innovative uses of support workers within these modalities?
 - 6c Have you had any PPI engagement in the development or design of new support roles?
7. Is there any variation across your different sites (if relevant) in terms of the skill mix of support workers, and how support workers are utilised?
8. What is the diversity of your support workforce?
 - 8a Do you have any male support workers? 8b. Do you have some ethnic diversity?
9. Has there been any expansion to the support and assistant workforce in your Trust in recent years?
 - 9b If so, what were the drivers for this change?
 - 9c Have you any Trust plans for Community Diagnostic Centres, and if so, has funding for clinical support workers been included in the business plan?
 - 9d Are you aware of the Health Education England support workforce project, and if so has this had any influence on your support worker roles?
10. Are there any organisational barriers, capacity constraints, or economic challenges that may restrict any further expansion of your support workforce?
 - 10b If so – what are they (and are there any workarounds)?
11. In your department, do you have any issues with the recruitment and retention of support workers?
12. In terms of career development for your support workforce, are you utilising apprenticeships?
 - 12b If so, at which level? 12c. Are there any challenges to utilising apprenticeships?
13. Do you feel that there is a link between how you have used your support workforce and the development of radiography advanced and consultant practice?
14. Are you struggling to fill posts for any radiographer staff group? 14.b. Where you have challenges with vacancies, does this lead to support workers potentially working above and beyond their grade?
15. Is there anything else that you would like to add about your support and assistant workforce?

References

1. NHS England. *Diagnostic waiting times and activity*. <https://www.england.nhs.uk/statistics/statistical-work-areas/diagnostics-waiting-times-and-activity/>. 20.06.24.
2. The Royal College of Radiologists. *Clinical Radiology workforce census 2023 report*. London: The Royal College of Radiologists June; 2024. <https://www.rcr.ac.uk/media/5bafgiss/rcr-census-clinical-radiology-workforce-census-2023.pdf>. 06.06.24.
3. Society of Radiographers. *Diagnostic radiography workforce UK census*. <https://www.sor.org/getmedia/6994cd5d-0155-4a7e-a8a7-32a9bbda81c3/Diagnostic-Radiography-Workforce-UK-Census-2022-report.pdf>; 2022. 06.06.24.
4. Royal College of Radiologists. *The RCR policy reports and initiatives: turnaround times - what are we seeing?*. <https://www.rcr.ac.uk/news-policy/policy-reports-initiatives/turnaround-times-what-are-we-seeing/>. 20.04.24.
5. NHS England and NHS Improvement. *Transforming imaging services in England: a national strategy for imaging networks*. NHS Improvement publication code: CG; 2019. 51/19; <https://www.england.nhs.uk/transforming-imaging-services-in-england/>. 20.04.24.
6. Richards M. NHS England. *Diagnostics: Recovery and Renewal*, October 2020. Independent Review of Diagnostic Services for NHS England. Prof Sir Mike Richards. <https://www.england.nhs.uk/publication/diagnostics-recovery-and-renewal-report-of-the-independent-review-of-diagnostic-services-for-nhs-england/>.
7. Halliday K, Maskell G, Beeley L, Quick E, NHS. *Radiology GIRFT programme national specialty report*. <https://www.gettingitrightfirsttime.co.uk/wp-content/uploads/2020/11/GIRFT-radiology-report.pdf>; 2020.
8. Griffin R, Hall A, Kessler I. *The cavendish review ten years on: are NHS support workers still 'invisible'? 23 July 2024*. <https://www.kcl.ac.uk/news/crucial-nhs-staff-still-undervalued-and-invisible-report-finds>. 10.10.24.
9. Department of Health. *The Cavendish Review: an independent review into healthcare assistants and support workers in the NHS and social care*. https://assets.publishing.service.gov.uk/media/5a7b9df6e5274a7202e18537/Cavendish_Review.pdf; 2013. 10.10.24.
10. College of Radiographers. *Education and career framework for the radiography workforce*. 4th ed. 2022 London, UK. College of Radiographers <https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/education-and-career-framework-fourth>. 20.04.24.
11. The Society and College of Radiographers. *The Radiography Support and Assistant Workforce: regulatory compliance, governance arrangements, supervision and delegation. Guidance to support delegation and supervision of the radiography support workforce*. 2023. ISBN: 978-1-909802-88-9, <https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/the-radiography-support-and-assistant-workforce-re>.
12. Health Education England and Society of Radiographers. *Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities*. <https://www.sor.org/getmedia/7ed9af1c-5a33-4b81-97f3-59118ad285c9/Developing-career-pathways-for-diagnostic-imaging-support-worker-roles>; 2023. 20.04.24.
13. NHS Employers. *NHS terms and conditions of service (agenda for change)*. <https://www.nhsemployers.org/topics/pay-pensions-and-reward/nhs-terms-and-conditions-service-agenda-change>. 20.02.24.
14. ETTY S, Snaith B, Hinchcliffe D, Nightingale J. The deployment and utilization of the allied health professions support workforce: a scoping review. *J Multidiscip Healthc* 2024;**17**:2251–69. <https://doi.org/10.2147/JMDH.S460543>.
15. Snaith B, ETTY S, Nightingale J. Has the skills mix promise been broken? A scoping review of the support and assistant workforce in diagnostic imaging. *Radiography* 2024;**30**:1468–73. <https://doi.org/10.1016/j.radi.2024.08.006>.
16. Nightingale J, ETTY S, Snaith B, Stevens T, Appleyard R, Kelly S. Establishing the size and configuration of the Imaging Support Workforce: a census of national workforce data in England. *BJR Open* 2024. <https://doi.org/10.1093/bjro/tzae026>. tzae026.
17. Imison C, Castle-Clarke S, Watson R. Reshaping the workforce to deliver the care patients need. Research Report. *Nuffield Trust* 2016. <https://www.nuffieldtrust.org.uk/research/reshaping-the-workforce-to-deliver-the-care-patients-need>. 30.09.24.
18. NHS England. *NHS Workforce Race Equality Standard (WRES) 2022 data analysis report for NHS trusts*. <https://www.england.nhs.uk/long-read/nhs-workforce-race-equality-standard-wres2022-data-analysis-report-for-nhs-trusts/>; 2023. 30.09.24.
19. National Institute for Health and Care Research (NIHR). Research Awards. *The determinants of the utilisation of the support and assistant workforce in diagnostic imaging: a multi-methods investigation*. <https://fundingawards.nihr.ac.uk/award/NIHR133813>. 30.09.24.
20. Bradshaw C, Atkinson S, Doody O. Employing a qualitative description approach in health care research. *Glob Qual Nurs Res* 2017;**4**. <https://doi.org/10.1177/2333393617742282>.
21. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol* 2013;**13**:117. <https://doi.org/10.1186/1471-2288-13-117>.
22. NHS Business Services Authority. *Introduction to ESR*. <https://my.esr.nhs.uk/dashboard/web/esrweb/introduction-to-esr>. 10.10.24.

23. NHS England. *Imaging training academies*. 20.06.24. <https://www.hee.nhs.uk/our-work/cancer-diagnostics/training-academies/imaging-training-academies>. 10.10.24.
24. Health Education England. *Allied Health Professions support workforce: readiness toolkit*. https://www.hee.nhs.uk/sites/default/files/documents/AHP_SupportWorker_Toolkit_Acc_Form.pdf; 2021. 10.10.24.
25. Goldsmith LJ. Using framework analysis in applied qualitative research. *Qual Rep* 2021;**26**(6):2061–76. <https://doi.org/10.46743/2160-3715/2021.5011>.
26. Srivastava A, Thomas SB. Framework analysis: a qualitative methodology for applied policy research. *Journal of Administration and Governance* 2009;**4**(2): 72–9. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2760705. 19.10.24.
27. NHS England. *Regional teams*. <https://www.england.nhs.uk/about/regional-area-teams/>. 19.10.24.
28. Reed S, Göpfert A, Wood S, Allwood D, Warburton W. *Building healthier communities: the role of the NHS as an anchor institution*. Health Foundation; 2019. <https://www.health.org.uk/publications/reports/building-healthier-communities-role-of-nhs-as-anchor-institution>. 03.10.24.
29. Whitty C. *Chief medical officer's annual report 2021: health in coastal communities*. London: Department of Health and Social Care; 2021. <https://www.gov.uk/government/publications/chief-medical-officers-annual-report-2021-health-in-coastal-communities>. 03.10.24.
30. The Royal College of Radiologists and The College of Radiographers. *Quality standard for imaging version 1.1*. London: The Royal College of Radiologists; 2022. <https://www.rcr.ac.uk/our-services/management-service-delivery/quality-standard-for-imaging-qs1/>. 03.10.24.
31. NHS England. *Diagnostic imaging network implementation guide*. <https://www.england.nhs.uk/wp-content/uploads/2021/04/B0030-Implementation-guide.pdf>; 2021. 03.10.24.
32. The College of Radiographers. *The scope of practice of assistant practitioners in clinical imaging*. First edition; 2007. 1 871101 40 9, https://www.sor.org/getmedia/0db3daee-93c4-4b5b-b6e4-676ad0e8d145/sor_scope_practice_assistant_practitioners.pdf_1. 23.11.24.
33. Health Education England. *Allied health professions (AHP) support worker competency, education and career development framework*. <https://www.hee.nhs.uk/our-work/allied-health-professions/enable-workforce/developing-role-ahp-support-workers/ahp-support-worker-competency-education-career-development>; 2021. 30.09.24.
34. NHS England. *Workforce, education and training: diagnostic radiography support workers*. <https://www.hee.nhs.uk/our-work/allied-health-professions/enable-workforce/developing-role-ahp-support-workers/diagnostic-radiography-support-workers>. 03.10.24.
35. COREQ (COnsolidated criteria for REporting Qualitative research) Checklist. https://onlineibrary.wiley.com/pb-assets/assets/15532712/COREQ_Checklist-1529502668927.pdf Adapted from Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care* 2007;**19**(6):349–357.