

Research Space

Journal article

An analysis of advanced and specialist posts in diagnostic radiography: Do job descriptions describe advanced practice?

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Introduction

Although diagnostic radiography has a long history of role development^{1,2} it was in 2003 that the concept of advanced practice was formally introduced into the profession in the UK as part of the *Radiography Skills Mix* strategy.³ This presented the four-tier service delivery model, incorporating the relatively new consultant level⁴ as well as an assistant practitioner tier. Often cited as driven by increased demands for imaging services and gaps in the radiologist workforce,⁵ the focus of the 2003 strategy was to stimulate career pathways and expand the diagnostic imaging workforce.⁶ The subsequent years have seen a marked change in roles with a widened scope of practice to meet changing healthcare demands and patient needs. As allied health professionals (AHPs) the effective utilisation of skills has been identified as a key factor to transforming future healthcare.⁷ As such, radiographers are well placed to influence the future shape of services.

Advanced practice requires individuals with expert clinical knowledge and competence enabling the individual to make complex clinical decisions.⁸ They must also be able to act as an agent for change, educator and motivator.⁸ Role preparation and work practice is expected to include not only high-level clinical skills but also broader capabilities in leadership; education and research. The extent to which these domains, also known as 'pillars of practice',² are incorporated into individual job plans has been shown to vary between organisations, roles and over time both in diagnostic radiography⁹⁻¹¹ and other professions.¹²⁻¹⁴ As a way of re-defining education and practice levels a multi professional framework for advanced clinical practice (ACP) was published by Health Education England (HEE) in 2017¹⁵ encompassing non-medical practitioners regardless of profession, specialty or setting. The framework was collaboratively designed to ensure consistency across roles and to enable translation across healthcare professions. Although this has been heralded as a turning point in the standardisation of advanced practice,¹⁶ a Welsh version preceded it by seven years.¹⁷ Parallel frameworks have also been published within the other home countries.^{18,19}

The concept of role standardisation and a consistent approach to levels of practice is not a new phenomenon. All non-medical roles within the NHS in England are subject to review against prescribed criteria since the national roll-out and implementation of a national pay strategy for the National Health Service (NHS), Agenda for Change (AfC). In 2005 NHS job evaluation profiles were developed which outlined the duties/requirements of a role area according to predetermined domains²⁰ to ensure consistent reward for knowledge, skills and responsibilities.²¹ Although a small number of supplementary diagnostic radiography profiles have been published, the original profiles have not been updated since 2005 and

include *Radiographer Advanced* and *Radiographer Specialist* as well as *Radiographer Consultant (Diagnostic)*. Therefore, a job description (JD) not only describes the role content in terms of level and complexity but also are used as a way of determining salary scales.

This study aims to empirically identify the expected knowledge, skills and responsibilities of radiographers working in advanced and specialist roles with mapping of competencies to the relevant home country advanced practice framework¹⁵⁻¹⁸ and the Society of Radiographers Education and Career Framework.²²

Methods

The study evaluated the capability and experience requirements of diagnostic radiographers in advanced and specialist roles. The study will inform the future training and development of advanced practice radiographers and enable them to meet the required standards for both service and career development, if so desired.

A consecutive sample of UK job advertisements published on NHS jobs websites (jobs.nhs.uk; jobs.scot.nhs.uk) between March and September 2019 was undertaken. This site represents the most common location for advertisement of vacant health service roles. The inclusion criteria were: diagnostic radiographer posts advertised at AfC band 6 and above where the role title and/or purpose indicated the individual will be 'advanced', 'specialist' and/or 'reporting' role regardless of imaging modality. Advanced and reporting radiographer roles from independent sector providers were included in the sample only if advertised through the NHS jobs portal. Ultrasound and radiotherapy roles were excluded as these were outside of the scope of the project. The document analysis method was deemed appropriate as it captures data from a population of geographically diverse employers within a realistic timeframe. The advertisement, JD and person specification (PS) were downloaded and salient information extracted into Microsoft Excel (Microsoft Corporation, USA) for systematic qualitative content analysis of each item.

The analytic framework developed for this study considered role focus, professional and clinical responsibilities, reporting or procedural expectations (where relevant), and required knowledge and experience. Role responsibilities identified in the JD or PS were mapped to the relevant advanced practice framework and the SCoR education and career framework²². This mapping considered whether the role satisfied the clinical practice, facilitated learning, leadership and evidence, research and development conditions. Although the documents were reviewed and coded independently by different members of the research team, a consensus approach was taken to role mapping during the data validation phase and agreement of the final framework was achieved prior to the synthesis, descriptive analysis and interpretation of findings. Statistical analysis was undertaken in SPSS v26.0 included

Chi-squared and test of proportions for comparison of groups in relation to role mapping. Ethical approval for this study was obtained prior to study commencement.

Results

Descriptive analysis

A total of 43 unique job descriptions were identified. One duplicate was identified on initial review and excluded leaving 42 document sets for full analysis. The sample comprised adverts from across UK Trusts and Health Boards, although the majority were from English Hospitals (Table 1). The job advertisements ranged from AfC band 6 (n=8; 19.0%) to band 8 (n=2; 4.8%), with three of the band 6 posts being labelled as a ‘trainee’ role. In four instances (9.5%), the pay banding assigned to the successful candidate was subject to experience and meeting all elements of the personal specification. Additionally, a single job advert specifically quoted Annex 21, the AfC pay banding arrangements for trainees.

Table 1: Geographic location of the job advertisements

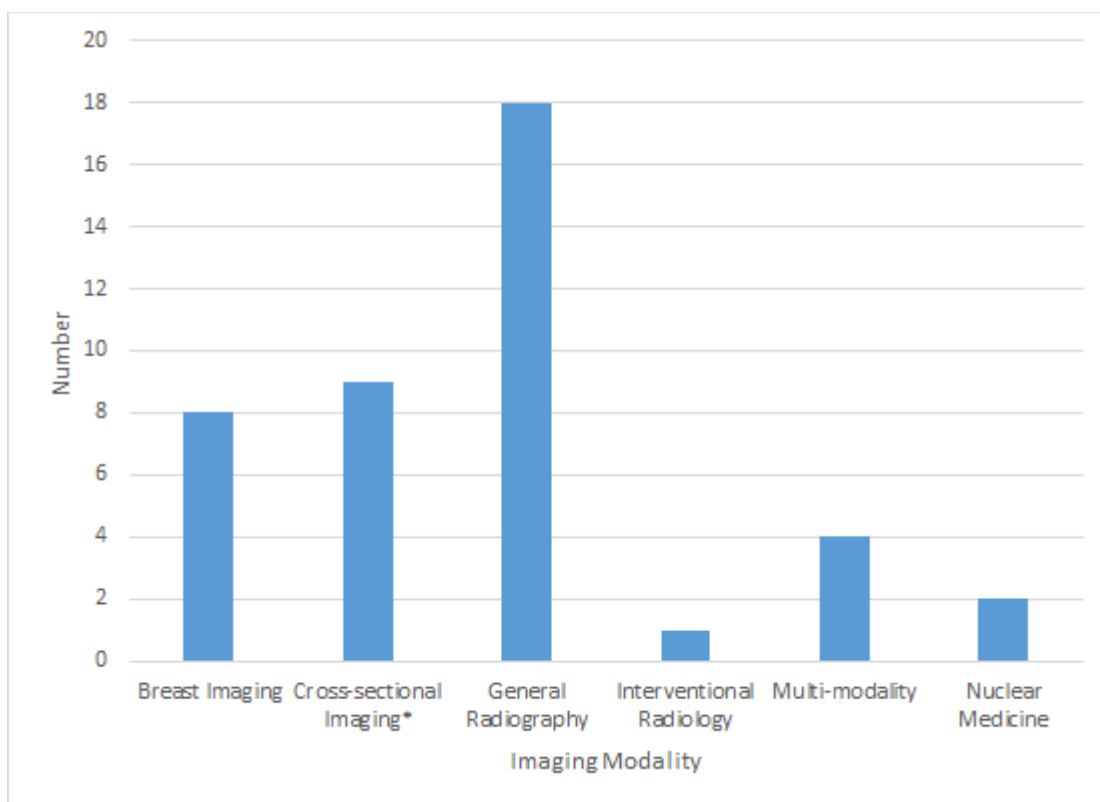
County English geographic region	Number (%)
England	40 (95.2)
East	8 (19.0)
London	6 (14.3)
Midlands	8 (19.0)
North East	1 (2.4)
North West	2 (4.8)
South East	3 (7.1)
South West	10 (23.8)
Yorkshire and Humber	2 (4.8)
Northern Ireland	-
Scotland	1 (2.4)
Wales	1 (2.4)
Total	42

There was large variation in role titles with 31 (73.8%) containing the terms advanced and or specialist with no standardisation within the geographical region or area of imaging practice. Role titles included ‘advanced practitioner’, ‘advanced research radiographer’, ‘advanced specialist radiographer’, ‘advanced reporting radiographer’ and ‘senior radiographer advanced’. The remaining 11 job adverts were specific for appointment of a ‘reporting radiographer’. Only one-third of documents (n=14) stated a minimum length of experience and this ranged from 1-5 years.

A range of imaging services made up the sample including a small number of interventional and hybrid imaging roles (Figure 1). Job adverts highlighted a number of clinical sub-

specialties or role focuses within imaging modalities, examples of which included procedural stereotactic breast biopsies (n=6), cardiac MRI (n=1), multi-modality oncological imaging (n=1), therapeutic nuclear medicine (n=2), and paediatric imaging (n=1), with the opportunity to expand into reporting. Other responsibilities within the roles included clinical skills such as rectal catheterisation for CT colonography (n=1), intravenous cannulation and medicines administration under patient group directives (n= 6); as well as supplementary capabilities of modality leadership (n=4), practice development (n=1) and participation in research (n=1). However, these activities were not always replicated in the responsibility statements of the job description.

Figure 1: Imaging modalities represented by the advertised roles



Note: * CT +/- MRI

Half of the advertised roles clearly described expected proficiency in reporting (n=21; 50%) and two further job descriptions were ambiguous as to whether reporting duties featured within the role. The majority of the sample were general radiography reporting roles (n=17 40.5%) across axial and appendicular systems (n=5; 23.8%) chest and abdominal reporting (n=3; 14.2%) or a combination of both (n=9; 42.8%). However, four roles specialised in mammography, CT colonography, fluoroscopy or MRI (intra-orbital foreign body) reporting.

Only a third of person specifications (14; 33.3%) went as far to state their minimum post-registration experience requirements and where this was explicit, it ranged between 1 and 5

years. A BSc (hons) diagnostic radiography degree (or equivalent) was the most commonly listed minimum essential qualification (n=23; 54.7%) to undertake all advanced, specialist and reporting roles. A postgraduate certificate in reporting or in the area of specialist practice related to the role was also an expectation in 31 roles (73.8%) and desirable for 19 roles (42.9%). A Master's degree was not listed as an essential qualification for any roles, although it was a desirable criterion in seven (16.7%) with others included 'working towards Masters' (n=4; 9.5%).

Role mapping

Content analysis of the JDs demonstrated that responsibilities and wider soft skills mapped to the practice outcomes of the SCoR framework (n=31/42; 73.8%). The 40 (n=40/42; 95.2%) responses from English employers were evaluated against the HEE framework with significantly ($\chi^2=14.6$; $p<0.01$) fewer capabilities being identified (n=13/40; 32.5%)(Table 2). Most JDs appeared to include language specific to the relevant role profile for AfC pay banding with phrases such as:

'highly specialist', 'barriers to understanding', 'concentration for long periods of time', 'dexterity, co-ordination and sensory skill required for precise positioning of patients', 'Recording personally generated information' and 'frequent concentration'.

In relation to the language the capabilities listed in the HEE framework were mapped to 85.0% (n=34/40) of roles for clinical practice, 82.5% (n=33/40) for leadership and management, 67.5% (n=27/40) for education but in less than half of JDs for the research component (45%; n= 18/40). No apparent difference was found in mapping of roles advertised as 'reporting radiographer' without advanced prefix or suffix compared to those using the 'advanced' term in relation to either the HEE framework (37.5% vs 35.7%) or SCoR criteria (72.7% vs 74.2%) although the overall sample was relatively small.

Table 2: A breakdown of the mapping by professional framework and pillar of practice (England only).

Mapping of competencies	Overall (%)		Pillar of practice							
			Clinical Practice (%)		Leadership & management (%)		Education (%)		Research (%)	
Met HEE criteria for advanced practice	No	27 (67.5)	No	6 (15.0)	No	7 (17.5)	No	13 (32.5)	No	22 (55.0)
			Yes	21 (52.5)	Yes	20 (50.0)	Yes	14 (35.0)	Yes	5 (12.5)
	Yes	13 (32.5)	Yes	13 (32.5)	Yes	13 (32.5)	Yes	13 (32.5)	Yes	13 (32.5)
Total		40		40		40		40		40
Met SCoR criteria for advanced practice	No	11 (26.0)	No	4 (36%)	No	7 (64%)	No	7 (64%)	No	10 (91%)
			Yes	7 (64%)	Yes	4 (36%)	Yes	4 (36%)	Yes	1 (9%)
	Yes	31 (74.0)	No	2 (6%)	No	1 (3%)	No	6 (19%)	No	12 (39%)
			Yes	29 (94%)	Yes	30 (97%)	Yes	25 (81%)	Yes	18 (58%)
Total		42		42		42		42		42

Across all document sets clinical practice capabilities were most easily identified in the text with keywords such as *autonomous* and *independent* prefixing many statements. It was acknowledged that advanced practice required individuals to have complex discussions with patients, families and a range of professionals and use high levels of professional judgment and reflective thinking whilst managing a diverse clinical caseload. Although a broadened level of responsibility and accountability for decisions was evident, there was limited acknowledgement of the need to work collaboratively across professional and organisational boundaries to optimise care delivery. Other examples confirmed their vital role within responsive care delivery, clinical pathways and the multi-professional team using such terms as:

“Act as an autonomous expert practitioner”

“Act as a clinical expert and point of highly specialised advice”

“Act as a highly specialised resource for developing new imaging techniques and adapting these to meet individual needs”

“use advanced expert knowledge to ensure that examinations, techniques and technology are optimised”

“Making informed and co-partnered decisions with patients around their care”

“Refer to other specialities”

“Recommend further imaging, offer opinions for onward referral”

“Develop multiprofessional care pathways”

Leadership and management expectations were less overt, with any statements referring to effective relationships, support or supervision of a team and role modelling, with fewer identifying the wider leadership opportunities. Where there were opportunities to influence practice or policy change, or re-design services based on stakeholder feedback, there was variation as to whether the radiographer at this level assisted in, or led, the development through to implementation and monitoring. Although active involvement in peer review as an audit function was common, there were few examples where it was explicit that this involved the oversight and critique of other's practice and the formulation and/or implementation of strategies for improvement. Example phrases for this domain included:

"Act as the team leader"

"Professional leadership within the area"

"Promote team working, build rapport and collaborative working practices"

"Use initiative to ensure effective running of the area"

"Developing and enhancing the service"

"Evaluate and implement new technologies."

"Regularly review practice to maintain a cost effective service"

Education and training was a visible component of many roles, identifying expectations to develop staff, both internal and external to the imaging department, particularly in relation to image interpretation skills. Less apparent in role descriptors was the need to critically reflect on own practice and learning needs to build a continuous professional development (CPD) plan that encompasses the four pillars of practice. Such facets were described as:

"Actively encourage an educational environment in all areas"

"Deliver specialist education and training to multidisciplinary teams"

"Supervision and teaching of trainee reporting radiographers"

"Deliver in service training to students other staff including medical"

"Act as a teacher and a mentor to all staff"

"Develop and deliver annual training and education strategy for all non-medical diagnostic imaging staff"

"Provide off-site teaching at HEIs"

Engagement in research, including dissemination and translation into practice featured to a lesser degree, although many JDs expected individuals to participate in audit and clinical governance processes using the outcomes to improve services. Where research-specific activities were identified in the JD, no correlation with educational preparation for the role, with no significant difference between those desiring a Master's degree (or working towards) compared to other postgraduate education ($\chi^2=0.2$; $p=.695$). The JDs which matched the four pillars most accurately and incorporated comprehensive research responsibilities, were breast imaging roles ($n=4$). Only a single Trust expected advanced practitioners to provide research supervision and no JD cited collaborative networking with active researchers (academic or clinical) as a requisite.

“Contribute the development of EBP and local protocols”

“Auditing own practice and those of others”

“Use audit to continually improve practice and development of radiographer reporting service”

“To be able to participate and encourage the participation of research and audit to further improve the current services”

Discussion

Whereas previous studies have documented the experiences of advanced practice individuals and their perceptions of expectations of their role activities²³⁻²⁶ no evaluation of the actual job requirements has been undertaken. Typically used in the recruitment process, a job description forms the basis of human resource (HR) processes, playing a vital part in staff selection but also in attracting individuals to the role.^{27,28} Job descriptions must be fit for purpose, and it is suggested that authoring such documents should not be a process driven exercise.²⁹ Once in post, the JD can also be used as the basis for performance appraisal and training needs analysis,^{27,28} as they outline the responsibility, accountability and autonomy of a role.³⁰ As such, it is essential that the document provides an accurate account of the role, scope of practice and expectations.

The document analysis method considered vacant advanced and specialist diagnostic radiography roles and as such has provided a snapshot of current clinical expectations, although the adverts obtained largely represented English Trusts. Analysis of the advert, JD and PS allowed a robust scrutiny of primary records authored by employers. The disparity in geographic spread may relate to the slower uptake of advanced roles in the other home countries^{24,31} or be related to alternative recruitment routes. In this study by far the most common banding for roles advertised was AfC band 7 (73.8%). The SoR advocates the NHS pay spine of Bands 7 and 8 for roles encompassing advanced level competencies where the expectations include knowledge and skills across the four domains of practice, dependent

upon the exact responsibilities and comparison to advanced practitioner profiles.³² Whilst there was a relatively consistent approach to the banding, variation in role title was more evident. This is similar to previous research^{9,33,34} and justified the broader inclusion criteria, with similar posts describing the role function, for example reporting, rather than the level of practice (advanced), as expected within the guidance.³⁵ This was greater in roles where 'advanced' was a suffix and did not appear to be the main focus of the role. It may be that the employer is either over- or under-stating the level of responsibility with the use of the term and additional guidance on titles is warranted at a national, or home country level.³⁶

A wide range of imaging modalities were included in the sample, but perhaps unsurprisingly at least half of the advertised roles were for independent image interpretation (reporting), the majority of these being in general radiography. Reporting has a history within advanced practice in radiography there have been previous issues raised as to whether these two are equivalent.⁹ This focus upon reporting reinforces the original skill mix strategy³ to build imaging capacity, with expansion of services requiring additional roles but does not evidence pathway improvements or development of the wider workforce. The other key area identified in the 2003 Skills mix document³ was breast imaging, with reporting and procedural skills specifically mentioned. Although other modalities have introduced increased roles and responsibilities related to burgeoning demand, including clinical skills development, these roles have not necessarily been at an advanced practice level, or adopted widely.

Along with variation in role title, clinical focus and responsibility there was a range of JD formats across the advanced radiographer roles and the key words and phraseology used to describe the specific elements of practice. Many mapped closely to the language used in AfC job profiles,²⁰ but there was inconsistency in the inclusion of activities which mapped to the four pillars of advanced practice. This echoes the results of previous research targeted at individuals undertaking reporting of general radiography examinations.⁹ All pillars were incorporated to some degree but there tended to be a focus on clinical skills rather than the wider expectations of practice at this level. It is unclear within this cohort whether this was related to a lack of desire to fulfil the wider functions of advanced practice or a preference to remain clinically focussed.³⁷ As the analysis was based on JDs it is unclear whether this is driven by individual choice or workload expectations. Previous research has demonstrated that some radiographers do not value the non-clinical pillars and see accreditation as a bureaucratic exercise, rather than external validation of their practice level.^{9,38} With HEE accreditation of academic awards and practitioners nearing reality³⁹ and the regulatory body considering regulation of advanced practice,⁴⁰ the ability to hide from external scrutiny may be time limited.

In relation to the leadership responsibilities of the posts these focussed on operational activities or the radiographic team rather than pathway or strategy. Role modelling was a

common theme, and multi-professional team leadership was evident, but the focus was often to assist rather than lead. Whereas HEE define 'peer review' as a leadership capability, to improve the practice of self and others,¹⁵ many JDs appear to describe this as a purely audit function and did not necessarily identify the wider implications of the phrase. Education responsibilities were frequently task related clinical skills development and internally focussed mentorship, although multidisciplinary teaching was included, particularly in relation to image interpretation. A small number of JDs did identify an expectation for external teaching through partner academic institutions and perhaps more important a few required the post-holder to undertake education strategy development as part of advanced roles. Although audit and service evaluation featured, undertaking primary research and then disseminating the findings was only identified in a few documents. Where mentioned there was also a disconnect between the JD (role purpose and responsibilities) and the PS (knowledge and skills required) for the research pillar as many roles expected an individual to be involved in research, but without educational preparation. Although the SCoR will accredit individuals as advanced practitioners whilst working towards a postgraduate qualification, re-accreditation requires achievement of the full Master's award.⁴¹ This aligns with the professional body expectations in their 2015 research strategy⁴² that by 2021 all radiographers working at an advanced level should hold a Master's degree. The radiography professional body (SCoR) expects individuals to be involved in *practice and service development, research and evaluation*^{22,41} whereas HEE¹⁵ define eight specific capabilities, which include research, audit and service evaluation, but these are not alternative approaches rather they must all be included within the capabilities of individuals working at an advanced level. Importantly, HEE expect advanced practitioners to identify gaps within the evidence base, act as an innovator and seek research funding.¹⁵ It is unclear whether the omission, or limited inclusion, of research from such roles relates to a lack of perceived benefit and relevance of research to these posts, as has been observed with consultant radiographers.⁴³

It is perhaps disappointing that less than one third of English posts analysed met the HEE criteria for advanced practice, the framework has been published for three years, providing sufficient time for review of roles and JDs to be updated. Interestingly 74% of the reviewed documents did achieve the SCoR's expectations. The latter echoes the findings of Torrington and D'Angelo⁴⁴ in their analysis of sonographers. It may be that for individuals mapping against the professional body standards is easier as the criteria are broader whereas the HEE capabilities are much more defined.

Limitations

The job descriptions were largely collected from a limited source, the NHS Jobs websites, during a single timeframe. This has led to a predominantly England-centric dataset which should be interpreted across the UK with caution. It may therefore not acknowledge

variations in roles, skills or role complexity. It may be considered that this is a small sample of job descriptions to analyse however this should serve as introductory work to the topic and initiate discussion both within the profession and wider.

Conclusions

The findings suggest that many 'advanced' diagnostic radiographer posts differ from the advanced practice roles as defined the HEE ACP framework, instead they are still constructed around the historic KSF and Agenda for Change job profiles. JDs themselves provide clarity about the scope of an individual role but greater consistency is required to provide credibility to diagnostic radiography advanced practice. Importantly, where high level clinical skills are employed but without an expectation for the other facets of advanced practice a suite of roles should be recognised in terms of reward, but not attempted to be categorised in the same bracket.

Based on this analysis of higher-level job descriptions, utilisation of diagnostic radiographers as 'true' advanced clinical practitioners remains intermittent. Despite the current lack of clarity that this project has highlighted, there is great potential for advanced practitioners to evolve and raise the profile of the diagnostic radiography profession, particularly through greater leadership and evaluation.

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